Progress Energy

Robert J. Duncan, II
Vice President
Harris Nuclear Plant
Progress Energy Carolinas, Inc.

JAN 04 2008

Serial: HNP-07-094
10 CFR 50.90

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

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400/LICENSE NO. NPF-63

REQUEST FOR LICENSE AMENDMENT TO REVISE TECHNICAL SPECIFICATIONS REGARDING CONTROL ROOM ENVELOPE HABITABILITY IN ACCORDANCE WITH TSTF-448, REVISION 3, USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS

Ladies and Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.90, Carolina Power and Light Company, doing business as Progress Energy Carolinas, Inc., requests a license amendment for the Harris Nuclear Plant (HNP) Technical Specifications (TS). The proposed amendment would modify TS requirements related to control room envelope habitability in accordance with Technical Specifications Task Force (TSTF) 448, Revision 3. The Notice of Availability for adopting TSTF-448, Revision 3, using the Consolidated Line Item Improvement Process (CLIIP) was published in the *Federal Register* on January 17, 2007.

Attachment 1 provides a description of the proposed changes, the requested confirmation of applicability, and plant-specific verifications.

Attachment 2 provides the proposed TS changes.

Attachment 3 provides the revised TS pages.

Attachment 4 provides the proposed TS Bases changes (for information only).

Currently, the HNP TS do not contain the TS Bases Control Program that is necessary for the adoption of TSTF-448. On June 15, 2007, Carolina Power & Light, doing business as Progress Energy Carolinas, Inc., submitted a License Amendment Request (LAR) to the Nuclear Regulatory Commission (NRC) for adoption of the required TS Bases Control Program (Serial: HNP-07-005). Carolina Power and Light, doing business as Progress Energy Carolinas, Inc., therefore requests

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that the June 15, 2007, LAR for the TS Bases Control Program be approved by the NRC prior to approval of the control room envelope habitability request submitted with this transmittal.

The LAR dated June 15, 2007, (Serial: HNP-07-005), adds two new programs to TS 6.8.4 (i.e., "m" and "n"). Therefore, with the assumption that the June 15, 2007, LAR will be approved prior to the LAR submitted under this transmission, the control room envelope habitability program is added to TS 6.8.4 as "o".

In accordance with 10 CFR 50.91(b), HNP is providing the State of North Carolina with a copy of the proposed license amendment.

Approval of this proposed License Amendment is requested by July 16, 2008, with the amendment being implemented within 180 days of issuance.

This document contains no new Regulatory Commitments.

Please refer any questions regarding this submittal to Mr. Dave Corlett at (919) 362-3137.

I declare under penalty of perjury that the attached information is true and correct (Executed on JAN 04 2008).

Sincerely

R. J. Duncan, II
Vice President
Harris Nuclear Plant

RJD/kms

Attachments:
1. Description and Assessment
2. Proposed Technical Specifications (TS) Changes
3. Revised Technical Specifications (TS) Pages
4. Proposed Technical Specification (TS) Bases Changes (For Information Only)

cc: Mr. P. B. O'Bryan, NRC Sr. Resident Inspector
Ms. B. O. Hall, N.C. DENR Section Chief
Mr. V. M. McCree, NRC Acting Regional Administrator, Region II
Ms. M. G. Vaaler, NRC Project Manager

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Mr. G. E. Attarian
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Mr. K. Henderson
Mr. E. D. Hux
Mr. C. S. Kamilaris
Mr. R. D. Martin
Mr. H. J. Miller
Mr. T. J. Natale
Nuclear Records
Mr. S. T. O'Connor
Mr. J. Scarola
Mr. D. Song
Licensing Files (2 copies)

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1.0 DESCRIPTION

The proposed amendment would modify Technical Specification (TS) requirements related to control room envelope habitability in TS Section 3/4.7.6, "Control Room Emergency Filtration System," and TS Section 6.8 "Procedures and Programs."

The changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specifications (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

Carolina Power and Light Company (CP&L) 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. CP&L has concluded that with the approval of a TS Bases Control Program, as requested in our June 15, 2007, license amendment request (Serial: HNP-07-005), the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to Harris Nuclear Plant (HNP) and justify this amendment for the incorporation of the changes to the HNP TS.

2.2 Optional Changes and Variations

CP&L is not proposing any significant variations or deviations from the TS changes described in the TSTF-448, Revision 3, or the applicable parts of the NRC staffs 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 plant specific control room habitability design, current licensing basis, or differences due to plant specific non-Standard Technical Specification wording or format. Additionally, the parts of Section 3.0 of the model safety evaluation that are applicable for HNP are stated below.

A. To account for HNP specific control room habitability design, current licensing basis, or differences due to plant specific non-Standard Technical Specification wording or format, the following adjustments have been incorporated into the proposed TS and TS Bases markups. These adjustments are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation.

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1. CP&L proposes to establish new action requirements for an inoperable Control Room Envelope (CRE) boundary. The existing TS 3.7.6 Control Room Emergency Filtration System (CREFS) actions are more restrictive than would be appropriate in situations for which CRE occupant implementation of compensatory measures or mitigating actions would temporarily afford adequate CRE occupant protection from postulated airborne hazards.

   a. To account for such situations in MODE 1, 2, 3, or 4, CP&L proposes to revise TS 3.7.6 Action a.

      Action a.1 will be revised by adding "for reasons other than an inoperable Control Room Envelope (CRE) boundary," following the first inoperable. This will make revised TS 3.7.6 Action a.1 equivalent to TSTF-448 Actions A (for MODES 1, 2, 3, or 4) and C (for Condition A not met) by requiring one inoperable train of CREFS, for reasons other than an inoperable CRE boundary, to be restored to OPERABLE status within seven days or be in HOT STANDBY within the next six hours and COLD SHUTDOWN within the following 30 hours.

      With the CRE boundary inoperable, new Action a.2 would allow 90 days to restore the CRE boundary to operable status (new Action a.2.c), provided action to implement mitigating actions are immediately initiated (new Action a.2.a) and within 24 hours the mitigating actions are verified to ensure, that in the event of a Design Basis Accident (DBA), CRE occupant radiological exposures will not exceed the calculational dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke (new Action a.2.b). New Action a.2 is equivalent to TSTF-448 Actions B and C (for Condition B not met) except that the HNP TS revision only applies limits to radiological exposure of CRE occupants. As documented in the current HNP licensing basis (reference Final Safety Analysis Report, Section 6.4.4.2), the HNP toxic chemical hazards analysis found no impact on control room habitability from toxic chemical sources. Therefore, the CREFS design does not include an automatic toxic gas isolation. Additionally, the capability to maintain reactor control during a smoke event is demonstrated by a qualitative evaluation. Thus applying limits only to radiological exposure in proposed Action a.2 is consistent with the HNP licensing basis.

      Model Safety Evaluation - Section 3.3, Evaluation 1 and Section 3.1 (retention of current licensing basis) are applicable.

   b. To account for such situations in MODE 5 or 6, CP&L proposes to revise TS 3.7.6 Action b.

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Actions b.1 and b.2 will be revised by adding "for reasons other than an inoperable CRE boundary," following the first inoperable. This will make revised TS 3.7.6 Action b.1 equivalent to TSTF-448 Actions A (for MODES 5 or 6) and D (for Condition A not met in MODES 5 or 6) by requiring one inoperable train of CREFS, for reasons other than an inoperable CRE boundary, to be restored to OPERABLE status within seven days or immediately place the operable CREFS train in the recirculation mode. Revised TS Action b.2 will be equivalent to TSTF-448 Action E for two trains of CREFS inoperable in MODES 5 or 6 by requiring the immediate suspension of movement of irradiated fuel assemblies.

Note that in Modes 5 and 6, the HNP TS will retain the current licensing basis to also suspend CORE ALTERATIONS with two trains of CREFS inoperable and to suspend CORE ALTERATIONS and the movement of irradiated fuel if the CREFS train required to be in the recirculation mode by Action b.1 is not capable of being powered from an OPERABLE emergency power source.

New TS 3.7.6 Action b.3 will be added to address one or more CREFS trains inoperable, in MODES 5 and 6, due to an inoperable CRE boundary. Consistent with TSTF-448 Action E, new Action b.3 will require that movement of irradiated fuel assemblies be suspended immediately. Consistent with the current HNP licensing basis in Modes 5 and 6, new Action b.3 will also require the suspension of CORE ALTERATIONS.

Model Safety Evaluation - Section 3.3, Evaluations 1 and 4, and Section 3.1 (retention of current licensing basis) are applicable.

c. To account for situations during the movement of irradiated fuel assemblies or movement of loads over the spent fuel pool, CP&L proposes to revise TS 3.7.6 Action c.

Actions c.1 and c.2 will be revised by adding "for reasons other than an inoperable CRE boundary," following the first inoperable. This will make revised TS 3.7.6 Action c.1 equivalent to TSTF-448 Actions A (during movement of irradiate fuel) and D (for Condition A not met during movement of irradiated fuel) by requiring one inoperable train of CREFS, for reasons other than an inoperable CRE boundary, to be restored to OPERABLE status within seven days or immediately place the operable CREFS train in the recirculation mode. Revised TS Action c.2 will be equivalent to TSTF-448 Action E for two trains of CREFS inoperable during movement of irradiated fuel by requiring the immediate suspension of movement of irradiated fuel assemblies.

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Note that during movement of irradiated fuel and movement of loads over the spent fuel pool, the HNP TS will retain the current licensing basis to suspend the movement of irradiated fuel and the movement of loads over the spent fuel pool if the CREFS train required to be in the recirculation mode by Action c.1 is not capable of being powered from an OPERABLE emergency power source.

New TS 3.7.6 Action c.3 will be added to address one or more CREFS trains inoperable, during movement of irradiated fuel, due to an inoperable CRE boundary. Consistent with TSTF-448 Action E, new Action c.3 will require that movement of irradiated fuel assemblies be suspended immediately. Consistent with the current HNP licensing basis, new Action c.3 will also suspend movement of loads over the spent fuel pools.

Model Safety Evaluation - Section 3.3, Evaluations 1 and 4 and Section 3.1 (retention of current licensing basis) are applicable.

2. CP&L proposes to delete CRE pressurization Surveillance Requirement (SR) 4.7.6.d.3 which requires verification that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge at less than or equal to a pressurization flow of 315 cubic feet per minute (CFM) relative to adjacent areas during system operation. Per Generic Letter 2003-01, "Control Room Habitability," measurements of unfiltered air inleakage into the CRE at numerous reactor facilities have 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 place of the pressurization SR, CP&L proposes to add a new Surveillance Requirement 4.7.6.g that will require performance of CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

   Model Safety Evaluation – Section 3.3, Evaluation 6 is applicable.

3. CP&L proposes a new administrative controls program specification consistent with TSTF-448, Revision 3. This new program is described in TS 6.8.4.o, "Control Room Envelope Habitability Program." The HNP Control Room Envelope Habitability Program contains the required elements identified in TSTF-448, Revision 3. The TSTF-448, Revision 3, Control Room Habitability Program administrative control requirement, 5.5.18 Item d (proposed 6.8.4.o.4), has been revised to state that the results of the CRE pressurization tests shall be trended and

used as part of the assessment of the CRE boundary required by paragraph 3, requirement (ii). Paragraph 3, requirement (ii), specifies that the assessment frequency be in accordance with Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

Model Safety Evaluation – Section 3.4 is applicable.

4. Consistent with the current HNP licensing basis, CP&L will retain the TS Bases paragraph regarding the necessity for the Reactor Auxiliary Building (RAB) normal ventilation system to be secured to assure an operable CRE when the CREFS is operating in the emergency mode.

   Model Safety Evaluation - Section 3.1 (retention of current licensing basis) is applicable.

5. Consistent with the current HNP licensing basis, CP&L will remove discussion of a toxic gas isolation state and toxic gas detectors from the TS Bases provided with TSTF-448. As stated above, the HNP toxic chemical hazards analysis found no impact on control room habitability from toxic chemical sources. Therefore, the CREFS design does not include an automatic toxic gas isolation.

   Model Safety Evaluation - Section 3.1 (retention of current licensing basis) is applicable.

6. Since the HNP design does not include an "outside waste gas tank", CP&L will delete the applicability statement regarding outside waste gas tanks to remain consistent with the current HNP licensing basis.

   Model Safety Evaluation - Section 3.1 (retention of current licensing basis) is applicable.

7. The HNP TS do not contain a Ventilation Filter Test Program (VFTP) in the administrative controls section. Ventilation filter test requirements, consistent with the current licensing basis, are maintained as surveillance requirements within the applicable system TS. Therefore, to be consistent with the TSTF-448 TS Bases format, TS Bases information was added, consistent with the HNP current licensing bases, for existing SRs 4.7.6 b, c, e, and f; 4.7.6 d.1; and 4.7.6 d.4.

   Model Safety Evaluations - Section 3.1 (retention of current licensing basis) and Section 3.2 are applicable.

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B. To account for HNP differences due to plant specific non-Standard Technical Specification wording or format, the following adjustments have been incorporated into the proposed TS and TS Bases markups:

1. Harris Nuclear Plant has not adopted the Standardized Technical Specification Format. TSTF-448 has been incorporated into existing sections utilizing the HNP TS format with new sections being added as applicable. See Section 2.2.A above for a detailed discussion.

   Model Safety Evaluation – Section 3.2 is applicable.

2. "Train" terminology has not previously been used in HNP TS 3/4.7.6. To be consistent with the terminology being incorporated per TSTF-448, "train" or "trains" has been inserted throughout TS 3/4.7.6 (i.e., Limiting Condition for Operation (LCO) 3.7.6; Actions 3.7.6a.1, 3.7.6b.1, 3.7.6b.2, 3.7.6c.1, 3.7.6c.2; SR 4.7.6). This is an editorial change since a "CREFS train" is equivalent to an "independent Control Room Emergency Filtration System." This is an editorial change.

   Model Safety Evaluation – Section 3.2 is applicable.

3. "HOT STANDBY within the next six hours and COLD SHUTDOWN within the following 30 hours" in the HNP TS is equivalent to "Be in MODE 3 in six hours AND in Mode 5 in 36 hours" in TSTF-448. This is an editorial change.

   Model Safety Evaluation – Section 3.2 is applicable.

4. For the Control Room Habitability Program description of measurement frequency of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation given in new TS 6.8.4.o.4, the stated HNP frequency will be "36 months on a STAGGERED TEST BASIS" verses the TSTF-448 value of 18 months on a STAGGERED TEST BASIS. This variance is due to the difference between the HNP TS definition of STAGGERED TEST BASIS and the definition used by Standard Technical Specifications (STS). The HNP definition is:

   "A STAGGERED TEST BASIS shall consist of:
   a. A test schedule for n systems, subsystems, trains, or other designated components obtained by dividing the specified test interval into n equal subintervals, and
   b. The testing of one system, subsystem, train, or other designated component at the beginning of each subinterval."

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The STS definition is:

> "A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function."

Therefore, in order for HNP to prescribe testing one of the trains every 18 months as stated in TSTF-448 (5.5.18.d), the frequency must be stated as "36 months on a STAGGERED TEST BASIS". This is an editorial change.

Model Safety Evaluation – Section 3.2 is applicable.

5. For the Control Room Habitability Program description of measurement frequency of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation given in new Specification 6.8.4.o.4, "the VFTP," included in TSTF-448 (5.5.18.d), is replaced by "SR 4.7.6.d.1." The HNP TS do not contain a VFTP in the administrative controls section. Ventilation filter test requirements, consistent with the current licensing basis, are maintained as surveillance requirements within the applicable system TS. CREFS SR 4.7.6.d.1 requires a flow rate of 4000 CFM ± 10% when performing ventilation filter testing. This is an editorial change.

   Model Safety Evaluation – Section 3.2 is applicable.

6. In new Specification 6.8.4.o.6, the reference to "SR 3.0.2," included in TSTF-448 (5.5.18.f), is changed to "SR 4.0.2." In the HNP TS, SR 4.0.2 provides the allowance for "a maximum allowable extension not to exceed 25% of the specified surveillance interval." HNP SR 4.0.2 therefore allows a 25% extension equivalent to the 25% extension allowed by the reference to SR 3.0.2 in TSTF-448. This is an editorial change.

   Model Safety Evaluation – Section 3.2 is applicable.

7. The acronym for Control Room Emergency Filtration System (CREFS) has been incorporated throughout TS 3/4.7.6. (i.e., LCO 3.7.6; Actions 3.7.6.a.1, 3.7.6.b.1, 3.7.6.b.2, 3.7.6.c.1, 3.7.6.c.2; SR 4.7.6) This is an editorial change.

   Model Safety Evaluation – Section 3.2 is applicable.

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

CP&L proposes the following as a license condition to support implementation of the proposed TS changes:

> Upon implementation of Amendment xxx adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by Surveillance Requirement (SR) 4.7.6.g, in accordance with TS 6.8.4.o.3(i), the assessment of CRE habitability as required by TS 6.8.4.o.3(ii) and the measurement of CRE pressure as required by TS 6.8.4.o.4, shall be considered met. Following implementation:
>
> a) The first performance of SR 4.7.6.g, in accordance with Specification 6.8.4.o.3(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.3(ii), shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.4, shall be within 18 months plus 138 days allowed by SR 4.0.2 as measured from October 13, 2006, the date of the most recent successful pressure measurement test.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Carolina Power and Light Company (CP&L) has reviewed the proposed No Significant Hazards Consideration Determination (NSHCD) published in the *Federal Register* as part of the CLIIP. CP&L has concluded that the proposed NSHCD presented in the *Federal Register* notice is applicable to the Harris Nuclear Plant and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

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3.2 Verification and Commitments

There are no new regulatory commitments contained in this submittal.

4.0 ENVIRONMENTAL EVALUATION

Carolina Power and Light Company (CP&L) has reviewed the environmental evaluation included in the model safety evaluation dated January 17, 2007 as part of the CLIIP. CP&L has concluded that the staff's findings presented in that evaluation are applicable to the Harris Nuclear Plant and the evaluation is hereby incorporated by reference for this application.

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PROPOSED TECHNICAL SPECIFICATIONS (TS) CHANGES

PROPOSED TECHNICAL SPECIFICATIONS (TS) CHANGES

(11) Mitigation Strategy License Condition

Develop and maintain strategies for address large fires and explosions and that include the following key areas:

(a) Fire fighting response strategy with the following elements:
1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training of response personnel

(b) Operations to mitigate fuel damage considering the following:
1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy
7. Spent fuel pool mitigation measures

(c) Actions to minimize release to include consideration of:
1. Water spray scrubbing
2. Dose to onsite responders

(12) ← OL INSERT

D. Exemptions

The facility requires an exemption from Appendix E, Section IV.F.1, which requires that a full participation exercise be conducted within one year before the issuance of a license for full power operation. This exemption is authorized by law and will not endanger life or property or the common defense and security, and certain special circumstances are present. This exemption is, therefore, hereby granted pursuant to 10 CFR 50.12 as follows:

> Shearon Harris Nuclear Power Plant, Unit 1, is exempt from the requirement of 10 CFR Part 50, Appendix E, Section IV.F.1 for the conduct of an offsite full participation exercise within one year before the issuance of the first operating license for full power and prior to operation above 5 percent of rated power, provided that a full participation exercise is conducted before or during March 1987.

OL Insert

(12) Control Room Habitability

Upon implementation of Amendment adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by Surveillance Requirement (SR) 4.7.6.g, in accordance with TS 6.8.4.o.3(i), the assessment of CRE habitability as required by TS 6.8.4.o.3(ii) and the measurement of CRE pressure as required by TS 6.8.4.o.4, shall be considered met. Following implementation:

a) The first performance of SR 4.7.6.g, in accordance with Specification 6.8.4.o.3(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.3(ii), shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.4, shall be within 18 months plus 138 days allowed by SR 4.0.2 as measured from October 13, 2006, the date of the most recent successful pressure measurement test.

PLANT SYSTEMS

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Emergency Filtration Systems shall be OPERABLE.* (CREFS trains)

APPLICABILITY: a. MODES 1, 2, 3, and 4
b. MODES 5 and 6
c. During movement of irradiated fuel assemblies and movement of loads over spent fuel pools

ACTION:

a. MODES 1, 2, 3 and 4:

NOTE
In addition to the Actions below, perform Action c. if applicable.

1. With one ~~Control Room Emergency Filtration System~~ CREFS train inoperable, restore the inoperable ~~system~~ CREFS train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. INSERT 1

2. With two Control Room Emergency Filtation Systems inoperable due to an inoperable control room boundary, restore the control room boundary to OPERABLE status within 24 hours. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. INSERT 2

b. MODES 5 and 6

NOTE
In addition to the Actions below, perform Action c. if applicable.

1. With one ~~Control Room Emergency Filtration System~~ CREFS train inoperable, restore the inoperable ~~system~~ CREFS train to OPERABLE status within 7 days or immediately initiate and maintain operation of the remaining OPERABLE ~~Control Room Emergency Filtration System~~ CREFS train in the recirculation mode. INSERT 3

2. With both ~~Control Room Emergency Filtration Systems~~ CREFS trains inoperable, or with the OPERABLE ~~Control Room Emergency Filtration System~~ CREFS train required to be in the recirculation mode by ACTION b.1., not capable of being powered by an OPERABLE emergency power source, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel. INSERT 4

3. Insert 5

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

Insert 1

for reasons other than an inoperable Control Room Envelope (CRE) boundary,

Insert 2

2. With one or more CREFS trains inoperable due to inoperable CRE boundary:
   a. Initiate action to implement mitigating actions immediately or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours;
   b. Within 24 hours, verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits and that CRE occupants are protected from hazardous chemicals and smoke or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours;
   c. Restore CRE boundary to OPERABLE within 90 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Insert 3

for reasons other than an inoperable CRE boundary,

Insert 4

for reasons other than an inoperable CRE boundary

Insert 5

3. With one or more CREFS trains inoperable due to inoperable CRE boundary, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel assemblies.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

c. During movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

1. With one ~~Control Room Emergency Filtration System~~ CREFS train inoperable, restore the inoperable ~~system~~ to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE ~~Control Room Emergency Filtration System~~ CREFS train in the recirculation mode, or immediately suspend movement of irradiated fuel.

2. With both ~~Control Room Emergency Filtration Systems~~ CREFS trains inoperable or with the OPERABLE ~~Control Room Emergency Filtration System~~ CREFS train required to be in the recirculation mode by Action c.1., not capable of being powered by an OPERABLE emergency power source, immediately suspend all operations involving movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

3. Insert 8

INSERT 6 — immediately

INSERT 7

SURVEILLANCE REQUIREMENTS

4.7.6 Each ~~Control Room Emergency Filtration System~~ CREFS train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980; and

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of ≤0.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

Insert 6

for reasons other than an inoperable CRE boundary,

Insert 7

for reasons other than an inoperable CRE boundary,

Insert 8

3. With one or more CREFS trains inoperable due to inoperable CRE boundary, immediately suspend movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of ≤0.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5.1 inches water gauge while operating the system at a flow rate of 4000 cfm ± 10%;

2. Verifying that, on either a Safety Injection or a High Radiation test signal, the system automatically switches into an isolation with recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks;

Deleted

3. ~~Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge at less than or equal to a pressurization flow of 315 cfm relative to adjacent areas during system operation;~~

4. Verifying that the heaters dissipate 14 ± 1.4 kW when tested in accordance with ANSI N510-1980; and

5. Deleted.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the unit satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 4000 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 4000 cfm ± 10%.

INSERT 9 →

Insert 9

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

Insert 10 (Section 6.8.4)

o. CONTROL ROOM ENVELOPE HABITABILITY PROGRAM

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

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

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

3. 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.

4. 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 CREFS, operating at the flow rate required by SR 4.7.6.d.1, at a Frequency of 36 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the assessment of the CRE boundary required by paragraph 3, requirement (ii).

5. 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 3. 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.

6. The provisions of Surveillance Requirement 4.0.2 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 3 and 4, respectively.

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(11) Mitigation Strategy License Condition

Develop and maintain strategies for address large fires and explosions and that include the following key areas:

(a) Fire fighting response strategy with the following elements:
1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training of response personnel

(b) Operations to mitigate fuel damage considering the following:
1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy
7. Spent fuel pool mitigation measures

(c) Actions to minimize release to include consideration of:
1. Water spray scrubbing
2. Dose to onsite responders

(12) Control Room Habitability

Upon implementation of Amendment adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by Surveillance Requirement (SR) 4.7.6.g, in accordance with TS 6.8.4.o.3(i), the assessment of CRE habitability as required by TS 6.8.4.o.3(ii) and the measurement of CRE pressure as required by TS 6.8.4.o.4, shall be considered met. Following implementation:

a) The first performance of SR 4.7.6.g, in accordance with Specification 6.8.4.o.3(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.3(ii), shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from March 5, 2004, 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 6.8.4.o.4, shall be within 18 months plus 138 days allowed by SR 4.0.2 as measured from October 13, 2006, the date of the most recent successful pressure measurement test.

D. Exemptions

The facility requires an exemption from Appendix E, Section IV.F.1, which requires that a full participation exercise be conducted within one year before the issuance of a license for full power operation. This exemption is authorized by law and will not endanger life or property or the common defense and security, and certain special circumstances are present. This exemption is, therefore, hereby granted pursuant to 10 CFR 50.12 as follows:

> Shearon Harris Nuclear Power Plant, Unit 1, is exempt from the requirement of 10 CFR Part 50, Appendix E, Section IV.F.1 for the conduct of an offsite full participation exercise within one year before the issuance of the first operating license for full power and prior to operation above 5 percent of rated power, provided that a full participation exercise is conducted before or during March 1987.

The facility is granted an exemption from Paragraph III.D.2(b)(ii) of Appendix J to 10 CFR Part 50 (see SER Section 6.2.6). This exemption is authorized by law and will not endanger life or property or the common defense and security, and certain special circumstances are present. In addition, the facility was previously granted an exemption from the criticality alarm requirements of paragraph 70.24 of 10 CFR Part 70 insofar as this section applies to this license. (See License Number SNM-1939 dated October 28, 1985, which granted this exemption).

E. Physical Security (Section 13.6.2.10)

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Guard Training and Qualification Plan" submitted by letter dated October 19, 2004, "Physical Security Plan" and "Safeguards Contingency Plan" submitted by letter dated October 19, 2004 as supplemented by letter dated May 16, 2006.

F. Fire Protection Program (Section 9.5.1)

Carolina Power & Light Company shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility as amended and as approved in the Safety Evaluation Report (SER) dated November 1983 (and supplements 1 through 4), and the Safety Evaluation dated January 12, 1987, subject to the following provision below.

The licensees may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Emergency Filtration System (CREFS) trains shall be OPERABLE.*

APPLICABILITY: a. MODES 1, 2, 3, and 4
b. MODES 5 and 6
c. During movement of irradiated fuel assemblies and movement of loads over spent fuel pools

ACTION:

a. MODES 1, 2, 3 and 4:

---NOTE---
In addition to the Actions below, perform Action c. if applicable.

1. With one CREFS train inoperable for reasons other than an inoperable Control Room Envelope (CRE) boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

2. With one or more CREFS trains inoperable due to inoperable CRE boundary:

   a. Initiate action to implement mitigating actions immediately or be at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours;
   b. Within 24 hours, verify mitigating actions ensure CRE occupant radiological exposures will not exceed limits and that CRE occupants are protected from hazardous chemicals and smoke or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours;
   c. Restore CRE boundary to OPERABLE within 90 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. MODES 5 and 6

---NOTE---
In addition to the Actions below, perform Action c. if applicable.

1. With one CREFS train inoperable for reasons other than an inoperable CRE boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or immediately initiate and maintain operation of the remaining OPERABLE CREFS train in the recirculation mode.

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

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM (continued)

2. With both CREFS trains inoperable for reasons other than an inoperable CRE boundary or with the OPERABLE CREFS train required to be in the recirculation mode by ACTION b.1., not capable of being powered by an OPERABLE emergency power source, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel.

3. With one or more CREFS trains inoperable due to inoperable CRE boundary, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel assemblies.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

c. During movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

1. With one CREFS train inoperable for reasons other than an inoperable CRE boundary, restore the inoperable CREFS train to OPERABLE status within 7 days or immediately initiate and maintain operation of the remaining OPERABLE CREFS train in the recirculation mode; or immediately suspend movement of irradiated fuel.

2. With both CREFS trains inoperable for reasons other than an inoperable CRE boundary, or with the OPERABLE CREFS train required to be in the recirculation mode by Action c.1., not capable of being powered by an OPERABLE emergency power source, immediately suspend all operations involving movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

3. With one or more CREFS trains inoperable due to inoperable CRE boundary, immediately suspend movement of irradiated fuel assemblies or movement of loads over spent fuel pools.

SURVEILLANCE REQUIREMENTS

4.7.6 Each CREFS train shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980; and

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$0.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$0.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5.1 inches water gauge while operating the system at a flow rate of 4000 cfm ± 10%;

2. Verifying that, on either a Safety Injection or a High Radiation test signal, the system automatically switches into an isolation with recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks;

3. Deleted.

4. Verifying that the heaters dissipate 14 ± 1.4 kW when tested in accordance with ANSI N510-1980; and

5. Deleted.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the unit satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 4000 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 4000 cfm ± 10%.

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

PROCEDURES AND PROGRAMS (Continued

o. CONTROL ROOM ENVELOPE HABITABILITY PROGRAM

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

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

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

3. 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.

4. 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 CREFS, operating at the flow rate required by SR 4.7.6.d.1, at a Frequency of 36 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the assessment of the CRE boundary required by paragraph 3, requirement (ii).

5. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph 3. 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.

6. The provisions of Surveillance Requirement 4.0.2 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 3 and 4, respectively.

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(For Information Only)

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.4 EMERGENCY SERVICE WATER SYSTEM

The OPERABILITY of the Emergency Service Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink level and temperature ensure that sufficient cooling capacity is available either: (1) provide normal cooldown of the facility or (2) mitigate the effects of accident conditions within acceptable limits.

The limitations on minimum water level and maximum temperature are based on providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," Rev. 2, January 1976.

3/4.7.6 CONTROL ROOM EMERGENCY FILTRATION SYSTEM

INSERT 11

The OPERABILITY of the Control Room Emergency Filtration System ensures that the control room will remain habitable for operations personnel during and following all credible accident conditions. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rems or less whole body, or its equivalent. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix A, 10 CFR Part 50. ANSI N510-1980 will be used as a procedural guide for surveillance testing. Criteria for laboratory testing of charcoal and for in-place testing of HEPA filters and charcoal adsorbers is based upon a removal efficiency of 99% for elemental, particulate and organic forms of radioiodine. The filter pressure drop was chosen to be half-way between the estimated clean and dirty pressure drops for these components. This assures the full functionality of the filters for a prolonged period, even at the Technical Specification limit.

The 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 opening is performed by the person(s) entering or 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 isolation is indicated.

Insert 11

BACKGROUND

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

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

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.

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

Actuation of the CREFS places the system in the emergency mode (i.e., isolation with recirculation mode) of operation. Actuation of the system closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the

system for recirculation of the air within the CRE through the redundant trains of HEPA and the charcoal filters. The emergency mode also allows for pressurization and filtered ventilation of the air supply to the CRE.

Outside air is diluted with air from the CRE, filtered, and added to the air being recirculated from the CRE. Pressurization of the CRE minimizes infiltration of unfiltered air through the CRE boundary from all the surrounding areas adjacent to the CRE boundary. The air entering the CRE is continuously monitored by radiation detectors. One detector output above the setpoint will cause actuation of the emergency mode.

A single CREFS train operating with a maximum pressurization flow rate of 400 cfm will pressurize the CRE to at least 0.125 inches water gauge relative to external areas adjacent to the CRE boundary. The CREFS operation in maintaining the CRE habitable is discussed in the FSAR, Section 9.4 (Ref. 1).

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. The CREFS is designed in accordance with Seismic Category I requirements.

The CREFS 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 TEDE or its equivalent to any part of the body.

APPLICABLE SAFETY ANALYSIS

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

The CREFS provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of toxic chemical hazards found no impact on control room habitability from toxic chemical sources (Ref. 3). 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. 4).

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

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

LIMITING CONDITION FOR OPERATION (LCO)

Two independent and redundant CREFS trains are required to be OPERABLE to ensure that at least one is available 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 TEDE or its equivalent to any part of the body to the CRE occupants in the event of a large radioactive release.

Each CREFS train is considered OPERABLE when the individual components necessary to limit CRE occupant exposure are OPERABLE. A CREFS train is OPERABLE when the associated:

a. Fan is OPERABLE,
b. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions, and
c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

In order for the CREFS trains to be considered OPERABLE, the 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.

CONTROL ROOM EMERGENCY FILTRATION SYSTEM (Continued)

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

A failure to secure the RAB Normal Ventilation System, as part of a control room isolation, results in an inoperable control room boundary. Various postulated alignments or malfunctions of the RAB Normal Ventilation System can result in either excessively positive or negative RAB pressures, which can compromise the ability of the CREFS trains to maintain the control room envelope at a positive pressure of 1/8 INWG or greater relative to adjacent areas, thus directly impacting design basis in-leakage assumptions and personnel dose consequences under accident conditions.

INSERT 12

3/4.7.7 REACTOR AUXILIARY BUILDING EMERGENCY EXHAUST SYSTEM

The OPERABILITY of the Reactor Auxiliary Building Emergency Exhaust System ensures that radioactive materials leaking from the ECCS equipment within the pump room following a LOCA are filtered prior to reaching the environment. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing. Criteria for laboratory testing of charcoal and for in-place testing of HEPA filters and charcoal adsorbers is based upon removal efficiencies of 95% for organic and elemental forms of radioiodine and 99% for particulate forms. The filter pressure drop was chosen to be half-way between the estimated clean and dirty pressure drops for these components. This assures the full functionality of the filters for a prolonged period, even at the Technical Specification limit.

The LCO is modified by a note allowing the Reactor Auxiliary Building Emergency Exhaust System (RABEES) ventilation boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of opening is performed by the person(s) entering or 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 RABEES isolation is indicated.

If the RABEES boundary is inoperable in MODES 1, 2, 3, and 4, the RABEES trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE RABEES boundary within 24 hours. During the period that the RABEES boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19, 60, 64, and 10 CFR Part 100) should be

Insert 12

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.

APPLICABILITY

In MODES 1, 2, 3, 4, 5, and 6, during movement of irradiated fuel assemblies, and during movement of loads over spent fuel pools, the CREFS must be OPERABLE to ensure that the CRE will remain habitable during and following a DBA.

During movement of irradiated fuel assemblies and movement of loads over spent fuel pools, the CREFS must be OPERABLE to cope with the release from a fuel handling accident involving irradiated fuel.

ACTIONS

3.7.6 a.1

In MODE 1, 2, 3, or 4, when one CREFS 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 CREFS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE CREFS train could result in loss of CREFS function. The 7 day allowed outage 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.

In MODE 1, 2, 3, or 4, if the inoperable CREFS train cannot be restored to OPERABLE status within the allowed outage times, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed outage 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.

3.7.6 a.2

In MODE 1, 2, 3, or 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 TEDE 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.

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 allowed outage 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 allowed outage 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 allowed outage time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

In MODE 1, 2, 3, or 4, if the inoperable CRE boundary cannot be restored to OPERABLE status within the allowed outage times, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed outage 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.

3.7.6 b.1 and c.1

In MODE 5 or 6, or during movement of irradiated fuel assemblies, or during movement of loads over spent fuel pools, when one CREFS train is inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. If the inoperable CREFS train cannot be restored to OPERABLE status within the allowed outage time, action must be

taken to immediately place the OPERABLE CREFS train in the emergency mode. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure would be readily detected.

3.7.6 b.2 and c.2

When both CREFS trains are inoperable, for reasons other than an inoperable CRE boundary, or when the OPERABLE CREFS train required to be in the emergency mode by ACTION b.1 or c.1 is not capable of being powered by an OPERABLE emergency power source, immediately suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

3.7.6 b.3 and c.3

In MODE 5 or 6, or during movement of irradiated fuel assemblies, or during movement of loads over spent fuel pools, with one or more CREFS trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 4.7.6 a

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. Systems with heaters must be operated for ≥10 continuous hours with the heaters energized. The 31 day Frequency is based on the reliability of the equipment and the two train redundancy.

SR 4.7.6 b, c, e, and f

ANSI N510-1980 will be used as a procedural guide for surveillance testing. Criteria for laboratory testing of charcoal and for in-place testing of HEPA filters and charcoal adsorbers is based upon a removal efficiency of 99% for elemental, particulate and organic forms of radioiodine.

SR 4.7.6 d.1

This SR verifies that the HEPA filters and charcoal adsorbers are not excessively blocked. The filter pressure drop was chosen to be half-way between the estimated clean and dirty pressure drops for these components. This assures the full functionality of the filters for a prolonged period, even at the Technical Specification limit. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.

SR 4.7.6 d.2

This SR verifies that each CREFS train starts and operates on an actual or simulated actuation signal. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.

SR 4.7.6 d.4

This SR verifies that each CREFS train heater operates within assumed parameters. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.

SR 4.7.6 g

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 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.

In MODES 1, 2, 3, or 4, when unfiltered air inleakage is greater than the assumed flow rate, ACTION a.2 must be entered. ACTION a.2 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. 5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 6). These compensatory measures may also be used as mitigating actions as required by ACTION a.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 7). 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.

REFERENCES

1. FSAR, Section 9.4.
2. FSAR, Chapter 15.
3. FSAR, Section 6.4.
4. FSAR, Section 9.5 and Corrective Action Program Assignment 100903-05
5. Regulatory Guide 1.196.
6. NEI 99-03,"Control Room Habitability Assessment," June 2001.
7. 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).