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10 CFR 50.90

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

Perry Nuclear Power Plant
Docket Number 50-440; License Number NPF-58

Subject: License Amendment Request Regarding Control Room Envelope Habitability In Accordance With TSTF-448, Revision 3, Using the Consolidated Line Item Improvement Process

In accordance with the provisions of 10 CFR 50.90, a license amendment is requested for the Perry Nuclear Power Plant (PNPP). The proposed amendment would modify Technical Specification (TS) requirements related to control room envelope habitability in accordance with Technical Specification Task Force (TSTF) Traveler TSTF-448 Revision 3, and the Consolidated Line Item Improvement Process (CLIIP).

The Enclosure provides a description of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Attachments to the Enclosure provide markups of the existing TS pages, revised (clean) TS pages, and markups of the TS Bases pages (for information). Approval of the proposed license amendment is requested by March 31, 2008, with the amendment to be implemented within 120 days.

No new regulatory commitments are contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 761-6071.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 18, 2007

Barry S. Allen

Barry S. Allen

Enclosure: Evaluation of the Proposed License Amendment

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III
State of Ohio

A102
NRR

EVALUATION OF THE PROPOSED LICENSE AMENDMENT

Subject: License Amendment Request to Modify the Perry Nuclear Power Plant Technical Specifications Related to Control Room Envelope Habitability in accordance with TSTF-448, Revision 3, using the Consolidated Line Item Improvement Process

Attachments:

1. Proposed Technical Specification Changes (Mark Up)
2. Proposed Technical Specification Changes (Re-typed)
3. Proposed Technical Specification Bases Pages (Mark Up)

1.0 DESCRIPTION

The proposed amendment would modify the Perry Nuclear Power Plant (PNPP) Technical Specification (TS) requirements related to control room envelope habitability in TS 3.7.3, Control Room Emergency Recirculation (CRER) System, and in TS Section 5.5, Administrative Controls – Programs and Manuals.

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

Attachment 1 to this Enclosure provides the existing TS pages marked up to show the proposed changes. Attachment 2 provides retyped TS pages, for information only. Attachment 3 provides existing TS Bases pages marked up to show proposed changes and is provided for information only. Technical Specification and Bases pages will be revised and repaginated as necessary to reflect the TS changes being proposed by this request.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

The FirstEnergy Nuclear Operating Company (FENOC) has reviewed the NRC staff's model safety evaluation (SE) dated January 9, 2007, which was published in the *Federal Register* on January 17, 2007, as well as the supporting information provided to support TSTF-448. FENOC has concluded that the justifications presented in the TSTF proposal and in the model SE prepared by the NRC staff are applicable to PNPP, and justify the amendment to incorporate these changes into the PNPP TS. With regard to Section 3.3 of the model SE, it has been determined that Evaluations No. 2, 5 and 6 are applicable to PNPP, with the following clarification for Evaluation 6.

Evaluation 6 in the model SE addresses relocation of the pressurization test of the overall Control Room Envelope (CRE) from Surveillance Requirement (SR) 3.7.3.4 into the Control Room Envelope Habitability Program (as sub-item d), and replacement of the CRE pressurization SR with an inleakage SR. At PNPP, the test required to be performed by SR 3.7.3.4 is different than the Standard Technical Specification SR 3.7.3.4, but the justification for relocating the PNPP test is consistent with the model SE's Evaluation 6. The PNPP SR requires a pressurization/leakage test of six CRER outside air intake and exhaust dampers. Because the PNPP CRER system is a neutral-pressure design rather than a pressurized design, this damper component test was substituted for the standard pressurization test when the original PNPP TS were developed. Relocating the PNPP damper pressurization/leakage test to the CRE Habitability Program as sub-item d (which will continue to require the damper test to be performed at least once per operating cycle) is considered to be enveloped by Evaluation 6 because of the similarity in the action being taken (relocation) and the reason for the relocation. Since the damper test only checks a portion of the CRE, meeting existing PNPP SR 3.7.3.4 is not necessarily a conclusive indication of CRE boundary leak tightness, i.e., CRE boundary OPERABILITY, similar to the discussion in Evaluation 6 for the standard pressurization test. Since the damper component test is not sufficient on its own to ensure ongoing OPERABILITY of the overall CRE envelope, the existing SR 3.7.3.4 test is

replaced with an ASTM E741 unfiltered air inleakage test of the entire envelope, coupled with the new CRE Habitability Program in TS Section 5.5, as also discussed in Evaluation 6.

2.2 Optional Changes and Variations

- The term "CRER" has been utilized in place of the bracketed terms [CREEVS] and [CRFA] throughout this amendment request, to be consistent with PNPP-specific terminology.

- The model safety evaluation, the model Control Room Envelope Habitability Program, and the TSTF-448 Bases markups contain bracketed phrases implying that the licensee should choose one of the following: [5 rem whole body dose or its equivalent to any part of the body] [5 rem total effective dose equivalent (TEDE)]. The PNPP TS and Bases markups utilize the second bracketed phrase, since as discussed in the PNPP response to Generic Letter 2003-01 dated May 30, 2006, control room dose analyses have only been docketed and approved by the NRC for the Loss Of Coolant Accident (LOCA) and the Fuel Handling Accidents, and these use the Alternative Source Term (AST) 5 rem TEDE acceptance criteria. As also discussed in the letter dated May 30, 2006, analyses of a Main Steam Line Break Outside Containment, an Instrument Line Break, and a Control Rod Drop Accident were also performed to support the Generic Letter response, and the results were compared against the 5 rem TEDE criteria. The LOCA event was determined to be the most limiting event for determining PNPP control room inleakage criteria.

- The model safety evaluation, the TSTF-448 TS page markups, and the TSTF-448 Bases markups contain a bracketed phrase [primary or secondary containment]. The PNPP TS markups utilize the phrase "primary containment or fuel handling building" to be consistent with the PNPP plant design.

- The proposed PNPP TS 5.5.14 'Control Room Envelope Habitability Program,' sub-item d contains the relocated pressurization/leakage test of the outside air intake and exhaust dampers in place of the TSTF-448 version of sub-item d, which described the pressurization test of the overall envelope. This variation exists because the PNPP CRER system is a neutral-pressure system, and a periodic pressure measurement test of the overall envelope was never required by the PNPP TS. Sub-item f of the Program is also revised to be consistent with the wording of sub-item d.

- Section 2.3 of this LAR proposes a License Condition specifying the schedule for initial performance of new surveillance and assessment requirements. Consistent with an NRC memorandum dated February 2, 2007 (ADAMS Accession No. ML070330657), the 15-month periods described in model License Condition sub-item (a) are corrected to be 18 months (25% of six years).

- Also, sub-item (c) in the proposed PNPP License Condition (see Section 2.3) is revised to include appropriate references to the 24-month damper test, in lieu of the 18 month pressure test.

- The TSTF-448 version of proposed Required Action (RA) B.2 includes words discussing smoke and chemical "limits," which are revised based on the following:

a) Smoke "limits": During development of Revision 3 to TSTF-448, it was agreed that smoke requirements were qualitative rather than quantitative, and the concept of smoke limits was therefore deleted from the Section 5.5 Habitability Program, item e. In the NRC meeting minutes that agreed to this change to Section 5.5 (see ADAMS accession number ML061310293, page 2 of minutes dated May 12, 2006), it was noted that this was acceptable, because general qualitative requirements for protecting CRE occupants from smoke challenges are retained in the first paragraph of the proposed TS 5.5 Habitability Program, along with a licensing basis discussion in the proposed "Applicable Safety Analyses" section of the Bases for TS 3.7.3, which together adequately address the licensing basis requirements for protecting CRE occupants from smoke. To be consistent with this concept, the markup of RA B.2 in PNPP TS 3.7.3 retains a reference to limits for radiological hazards, but does not include a reference to limits for smoke. The proposed wording of RA B.2 with respect to smoke is consistent with the words used in Evaluation No. 2 of the NRC model safety evaluation; and with the words in the model Bases for RA B.2.

b) Chemical "limits": The explicit reference to limits on inleakage for chemical hazards has also been removed from RA B.2, although it is retained in the new Section 5.5.14.e Program discussion. The control room envelope hazard evaluations for hazardous chemicals stored or transported onsite or near PNPP performed per Regulatory Guide 1.78, Revision 0, do not require that isolation of the normal control room ventilation system be credited. The Applicable Safety Analysis section of the included Bases markup explains that the current PNPP licensing basis for hazardous chemicals does not require a limit on control room inleakage, and therefore, the limit on radiological inleakage is the limiting value for control room inleakage. The proposed wording of RA B.2 with respect to chemicals is consistent with the words used in the NRC model safety evaluation, Evaluation No. 2, and with the words in the model Bases for RA B.2. In Section 5.5.14.e of the new Control Room Envelope Habitability Program, the reference to limits on inleakage for hazardous chemicals has been retained to require the establishment of quantitative limits if future licensing basis hazard evaluations determine that limits on chemical inleakage are necessary to protect control room envelope occupants.

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

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

Upon implementation of Amendment No. [xxx] adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by SR 3.7.3.4 in accordance with TS 5.5.14.c(i), and the assessment of CRE habitability as required by Specification 5.5.14.c(ii), shall be considered met. Following implementation:

(a) The first performance of SR 3.7.3.4, in accordance with Specification 5.5.14.c(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from December 2004, the date of the most recent successful tracer gas test as stated in the response to Generic Letter 2003-01 dated May 30, 2006, or within the

next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.14.c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from December 2004, the date of the most recent successful tracer gas test as stated in the response to Generic Letter 2003-01 dated May 30, 2006, 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 outside air intake and exhaust damper leakage, Specification 5.5.14.d, shall be within 24 months, plus the 184 days allowed by SR 3.0.2, as measured from the date of the most recent successful damper leakage test.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

FENOC has reviewed the proposed no significant hazards consideration determination (NSHCD) published in the January 17, 2007 Federal Register as part of the CLIIP. FENOC has concluded that the proposed NSHCD presented in the Federal Register notice is applicable to PNPP, and the determination is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

3.2 Commitments

None

4.0 ENVIRONMENTAL CONSIDERATION

FENOC has reviewed the environmental consideration published in the January 17, 2007 Federal Register as part of the CLIIP. FENOC has concluded that the staff's findings presented in that evaluation are applicable to PNPP, and the evaluation is hereby incorporated by reference for this application.

PROPOSED TECHNICAL SPECIFICATION CHANGES

MARK-UP

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Recirculation (CRER) System

LCO 3.7.3 Two CRER subsystems shall be OPERABLE.

----------NOTE----------
The Control Room Envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

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

(continued)

Actions (Continued)

	B.3 Restore CRE boundary to OPERABLE status.	90 days
~~B.~~ C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	~~B.1~~ C.1 Be in MODE 3. AND ~~B.2~~ C.2 Be in MODE 4.	 12 hours 36 hours
~~C.~~ D. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~C.1~~ D.1 Place OPERABLE CRER subsystem in emergency recirculation mode. OR ~~C.2.1~~ D.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND ~~C.2.2~~ D.2.2 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately

(continued)

Actions (Continued)

~~D.~~ E. Two CRER subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	~~D.1~~ E.1 Enter LCO 3.0.3.	Immediately
~~E.~~ F. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs. OR One or more CRER subsystems inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	~~E.1~~ F.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND ~~E.2~~ F.2 Initiate action to suspend OPDRVs.	Immediately Immediately

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.3.1	Operate each CRER subsystem for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.3.3	Verify each CRER subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	~~Verify leakage through the outside air intake and exhaust dampers is within limits.~~ Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	~~24 months~~ In accordance with the Control Room Envelope Habitability Program.

5.5 Programs and Manuals (continued)

5.5.13.1 Configuration Risk Management Program

The Configuration Risk Management Program (CRMP) provides a risk-informed assessment to manage the risk associated with equipment maintenance activities. The program applies to those structures, systems, or components for which a Technical Specification risk-informed Completion Time has been granted. Specifically, this program applies to:

- Required Action B.4 of LCO 3.8.1, "AC Sources-Operating" from ≥ 72 hours after entering Condition B.

The program shall include the following:

a. Provisions for the control and implementation of the Probabilistic Safety Assessment (PSA) model and methodology. The PSA model shall be capable of performing assessments evaluating the applicable plant configurations.

b. Provisions for performing assessments for preplanned risk–informed activities prior to entering the risk-informed Completion Time.

c. Provisions for performing an assessment after entering the risk-informed Completion Time for an unplanned entry into the risk-informed Completion Time.

d. Provisions for assessing the need for additional actions after the discovery of subsequent equipment out of service conditions while in the risk-informed Completion Time.

e. Provisions for considering other applicable risk significant contributors external to the preplanned activity such as weather conditions, qualitatively or quantitatively.

5.5.14 Control Room Envelope Habitability Program

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

continued

5.5 Programs and Manuals (continued)

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

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

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

d. Measurement of leakage through the outside air intake and exhaust dampers at a Frequency of 24 months. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

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

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring outside air intake and exhaust damper leakage, as required by paragraphs c and d, respectively.

PROPOSED TECHNICAL SPECIFICATION CHANGES

RETYPED

(PROVIDED FOR INFORMATION)

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Recirculation (CRER) System

LCO 3.7.3 Two CRER subsystems shall be OPERABLE.

----------NOTE----------
The Control Room Envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

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

(continued)

Actions (Continued)

	B.3 Restore CRE boundary to OPERABLE status.	90 days
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours
D. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- D.1 Place OPERABLE CRER subsystem in emergency recirculation mode. OR D.2.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND D.2.2 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately

(continued)

Actions (Continued)

E. Two CRER subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	E.1	Enter LCO 3.0.3.	Immediately
F. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs. OR One or more CRER subsystems inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	F.1 AND F.2	Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. Initiate action to suspend OPDRVs.	Immediately Immediately

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CRER subsystem for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.3.3	Verify each CRER subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program.

5.5 Programs and Manuals (continued)

5.5.13.1 Configuration Risk Management Program

The Configuration Risk Management Program (CRMP) provides a risk-informed assessment to manage the risk associated with equipment maintenance activities. The program applies to those structures, systems, or components for which a Technical Specification risk-informed Completion Time has been granted. Specifically, this program applies to:

- Required Action B.4 of LCO 3.8.1, "AC Sources-Operating" from ≥ 72 hours after entering Condition B.

The program shall include the following:

a. Provisions for the control and implementation of the Probabilistic Safety Assessment (PSA) model and methodology. The PSA model shall be capable of performing assessments evaluating the applicable plant configurations.

b. Provisions for performing assessments for preplanned risk–informed activities prior to entering the risk-informed Completion Time.

c. Provisions for performing an assessment after entering the risk-informed Completion Time for an unplanned entry into the risk-informed Completion Time.

d. Provisions for assessing the need for additional actions after the discovery of subsequent equipment out of service conditions while in the risk-informed Completion Time.

e. Provisions for considering other applicable risk significant contributors external to the preplanned activity such as weather conditions, qualitatively or quantitatively.

5.5.14 Control Room Envelope Habitability Program

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

continued

5.5 Programs and Manuals (continued)

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

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

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

d. Measurement of leakage through the outside air intake and exhaust dampers at a Frequency of 24 months. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

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

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring outside air intake and exhaust damper leakage, as required by paragraphs c and d, respectively.

PROPOSED TECHNICAL SPECIFICATION
BASES CHANGES

MARK-UP

(PROVIDED FOR INFORMATION)

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Emergency Recirculation (CRER) System

BASES

BACKGROUND

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

The safety related function of the CRER System used to control radiation exposure consists of two independent and redundant high efficiency air filtration subsystems for treatment of recirculated air. Each subsystem consists of a demister, an electric heater, a ~~roughing~~ filter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, a fan, and the associated ductwork, ~~and~~ dampers, and instrumentation. The demister is provided to remove entrained water in the air, while the electric heater reduces the relative humidity of the airstream to less than 70%. The ~~roughing~~ filter removes large particulate matter, while the HEPA ~~pre~~filter is provided to remove fine particulate matter and protect the charcoal from fouling. The charcoal adsorber removes gaseous elemental iodine and organic iodides, and the HEPA after filter is provided to collect any carbon fines exhausted from the charcoal adsorber.

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

The CRER System is designed to maintain ~~the control room environment~~ for a 30 day continuous occupancy after a DBA, ~~per the requirements of GDC 19~~. CRER System operation in maintaining the ~~control room~~ habitability is discussed in the USAR, Sections 6.5.1 and 6.4.1 (Refs. 1 and 2, respectively).

(continued)

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

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 for normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, ceiling, 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.

INFORMATION ONLY

BASES (continued)

APPLICABLE SAFETY ANALYSES

The ability of the CRER System to maintain the habitability of the ~~control room~~ is an explicit assumption for the safety analyses presented in the USAR, Chapters 6 and 15 (Refs. 3 and 4, respectively). The emergency recirculation mode of the CRER System is assumed to operate following a ~~loss of coolant accident, main steam line break, and control rod drop accident.~~ The radiological doses to ~~control room personnel~~ as a result of the various DBAs are summarized in Reference 4. No single active or passive failure will cause the loss of ability to recirculate air in the ~~control room~~.

The CRER System satisfies Criterion 3 of the NRC Policy Statement in MODES 1, 2, or 3. During MODES 4 and 5, there are no accident analyses that credit the CRER System. However, it was determined that Specifications should remain in place per Criterion 4 to address OPDRVs and fuel handling accidents. Criterion 3 would apply if dose calculations are revised to credit the CRER System during handling of recently irradiated fuel, i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours.

LCO

Two independent and redundant subsystems of the CRER System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ a single failure disables the other subsystem. Total system failure could result in a failure to meet the dose requirements of GDC 19 in the event of a DBA (for the design-basis Alternative Source Term (AST) LOCA and fuel handling accident analyses, the licensing basis Control Room dose limit is 5 Rem TEDE (Ref. 6 and 7).

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

a. Fan~~s~~ ~~are~~ is OPERABLE;

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

(continued)

The CRER can provide protection from smoke and hazardous chemicals to CRE occupants. However, an evaluation of chemical hazards from onsite, offsite, and transportation sources has determined that the probability of a hazardous chemical spill resulting in unacceptable exposures is less than NRC licensing basis criteria. As a result, the plant licensing basis does not postulate hazardous chemical release events (Refs. 2 and 5). Therefore, no quantitative limits on inleakage of hazardous chemicals into the CRE have been established. 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 controls (Ref. 6). Therefore, no quantitative limits on inleakage of smoke into the CRE have been established. Because inleakage limits for hazardous chemicals and smoke are not necessary to protect CRE occupants, the limit established for radiological events is the limiting value for CRE inleakage.

, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary,

CRE occupants; DBA; CRE; if; active; 8; 9; Each; subsystem; limit CRE occupant

INFORMATION ONLY

BASES

LCO (continued)

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

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

APPLICABILITY

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

(continued)

ensure that the CRE will remain habitable

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

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.

INFORMATION ONLY

APPLICABILITY (continued)

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

a. During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building; and

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

Due to radioactive decay, handling of fuel only requires OPERABILITY of the Control Room Emergency Recirculation System when the fuel being handled is recently irradiated, i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours. Although this Function retains APPLICABILITY during "movement of recently irradiated fuel", which could be interpreted to permit fuel handling before 24 hours of radiological decay if certain buildings and filtration systems are OPERABLE, this is not the case. Fuel handling during that period is prohibited since no dose calculations exist to address a fuel handling accident within the first 24 hours after the reactor core is sub-critical (Ref. 4).

OPDRVs assume that one or more fuel assemblies are loaded into the core. Therefore, if the fuel is fully off-loaded from the reactor vessel, the CRER System is not required to be OPERABLE.

ACTIONS

A.1

function.

for reasons other than an inoperable CRE boundary,

With one CRER subsystem inoperable, the inoperable CRER subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CRER subsystem is adequate to perform ~~control room radiation~~ the CRE occupant protection. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE CRER subsystem could result in loss of CRER System function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining CRER subsystem can provide the required capabilities.

(continued)

INFORMATION ONLY

BASES

ACTIONS (continued)

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable CRER subsystem or the CRE boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

(continued)

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

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up 5 Rem TEDE), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. As discussed in the Applicable Safety Analyses section, the current PNPP licensing basis identifies that CRE inleakage limits for hazardous chemicals and smoke are not necessary to protect CRE occupants; therefore the limit established for radiological events is the limiting value for determining entry into Condition B for an inoperable CRE boundary. 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. These mitigating actions are outlined in the PNPP Control Room Habitability Program.

The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

INFORMATION ONLY

BASES

ACTIONS (continued)

D.1, D.2.1 and D.2.2

The Required Actions of Condition D are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not sufficient reason to require a reactor shutdown. During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs, if the inoperable CRER subsystem cannot be restored to OPERABLE status within the required Completion Time of Condition A, the OPERABLE CRER subsystem may be placed in the emergency recirculation mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing significant amounts of radioactivity that might require isolation of the ~~control room~~ CRE. This places the unit in a condition that minimizes risk. the accident

If applicable, movement of recently irradiated fuel assemblies in the primary containment and fuel handling building must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

E.1

for reasons other than an inoperable CRE boundary (i.e., Condition B),

If both CRER subsystems are inoperable in MODE 1, 2, or 3, the CRER System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

(continued)

INFORMATION ONLY

BASES

ACTIONS (continued)

F.1 and F.2

During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs, with two CRER subsystems inoperable, action must be taken immediately to suspend activities that present a potential for releasing significant amounts of radioactivity that might require isolation of the ~~control room~~ CRE. This places the unit in a condition that minimizes risk. the accident

or with one or more CRER subsystems inoperable due to an inoperable CRE boundary,

If applicable, movement of recently irradiated fuel assemblies in the primary containment and fuel handling building must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

Operating each CRER subsystem for ≥ 10 continuous hours after initiating from the control room and ensuring flow through the HEPA filters and charcoal adsorbers ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on for ≥ 10 continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.7.3.2

This SR verifies that the required CRER testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). ~~The CRER filter tests are in accordance with a Regulatory Guide 1.52 (Ref. 5).~~ The VFTP includes testing HEPA filter efficiency, charcoal adsorber efficiency and bypass leakage, system flow rate, and general operating

(continued)

INFORMATION ONLY

SURVEILLANCE REQUIREMENTS

SR 3.7.3.2 (continued)

parameters of the filtration system. (Note: Values identified in the VFTP are Surveillance Requirement values.) Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.3.3

This SR verifies that each CRER subsystem starts and operates on an actual or simulated initiation signal, and the isolation dampers close within 10 seconds. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.5 overlaps this SR to provide complete testing of the safety function. The 24 month Frequency is based on the need to perform some of the surveillance tests which satisfy this SR under the conditions that apply during a plant outage, and the potential for an unplanned transient if those particular tests were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.

SR 3.7.3.4

This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The Control Room HVAC System is designed so that, when operating in the normal mode, the system automatically maintains a positive differential pressure between the control room and the outside environment. During an emergency, when the CRER System is operating, the supply (M25-F010A and M25-F020B for one train and M25-F010B and M25-F020A for the other train) and exhaust (M25-F130A and M25-F130B) dampers of the Control Room HVAC System are closed (no design admittance of outside air). When in the emergency recirculation mode of operation no attempt is made to pressurize the control room. Thus the leakage through the intake and exhaust dampers is the primary source of leakage into the control structure. The Frequency of 24 months is appropriate since it is consistent with most other valve leak tests, and since significant degradation of the dampers is not expected over this period of time.

(continued)

INFORMATION ONLY

BASES (continued)

REFERENCES

1. USAR, Section 6.5.1.
2. USAR, Section 6.4.1.
3. USAR, Chapter 6.
4. USAR, Chapter 15.
7. Regulatory Guide ~~1.52, Revision 2, March 1978.~~ 1.196
8. Amendment No. 103 to Facility Operating License No. NPF-58, Perry Nuclear Power Plant, Unit 1; and Letter, D. Pickett (NRC) to L. Myers (FENOC), "Issuance of Exemption from 10 CFR Part 50, Appendix A, General Design Criterion 19", dated March 26, 1999.
9. Amendment No. 122 to Facility Operating License No. NPF-58, Perry Nuclear Power Plant, Unit 1.
10. NEI 99-03 "Control Room Habitability Assessment," June 2001.
11. 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. ML 040160868).
5. FSAR, Section 2.2
6. Letter from L. W. Pearce (FENOC) to Document Control Desk (NRC) dated May 30, 2006, "Perry Nuclear Power Plant Final Response to Generic Letter 2003-01, 'Control Room Habitability' (TAC No. MB9839)."

Insert for page B 3.7-15; SR 3.7.3.4

SR 3.7.3.4

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

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 7), which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 10). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 11). 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.

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