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April 12, 2007

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

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Oyster Creek Generating Station
Facility Operating License No. DPR-16
NRC Docket No. 50-219

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A102

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Three Mile Island Nuclear Station, Unit 1
Facility Operating License No. DPR-50
NRC Docket No. 50-289

Subject: Exelon/AmerGen Application to Revise Technical Specifications Regarding Control Room Envelope Habitability in Accordance with TSTF-448, Revision 3, Using the Consolidated Line Item Improvement Process

References: (1) Exelon/AmerGen Letter to USNRC, " Exelon/AmerGen 180-Day Response To NRC Generic Letter 2003-01, 'Control Room Habitability'," dated December 9, 2003

(2) Exelon/AmerGen Letter to USNRC, "Withdrawal of Exelon/AmerGen License Amendment Request Related to Administrative Controls Incorporating Requirements for Control Room Envelope Integrity Program," dated July 11, 2005

In accordance with the provisions of 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) and AmerGen Energy Company, LLC (AmerGen) are submitting a request for an amendment to the technical specifications (TS) for the Facility Operating Licenses listed above.

The proposed amendments would modify TS requirements related to control room envelope habitability in accordance with Technical Specification Task Force (TSTF) Traveler TSTF-448, Revision 3, "Control Room Habitability."

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

The proposed changes are in accordance with the individual plant commitments provided in the Exelon/AmerGen response to NRC Generic Letter (GL) 2003-01, "Control Room Habitability," dated December 9, 2003 (Reference 1). As identified in Reference 2, the commitment date for resubmittal of a proposed License Amendment Request was revised to within 90 days following NRC approval of TSTF-448. NRC approval of TSTF-448, Revision 3 was provided in the "Notice of Availability of Technical Specification Improvement To Modify Requirements Regarding Control Room Envelope Habitability Using the Consolidated Line Item Improvement Process," published in the Federal Register on January 17, 2007.

These proposed changes have been reviewed by the Plant Operations Review Committees at each of the stations, and approved by the Nuclear Safety Review Board.

Pursuant to 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b)(1), a copy of this application for changes to the Technical Specifications and Operating License is being provided to the designated state official for the States of Illinois, New Jersey, and Pennsylvania, as well as to the local township and county officials in which each facility is located, as appropriate.

Exelon/AmerGen requests approval of the proposed License Amendments by April 12, 2008, with the amendments being implemented within 180 days of issuance of the approved amendments.

No new regulatory commitments are established by this submittal. If any additional information is needed, please contact Mr. David J. Distel at (610) 765-5517.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 12th day of April, 2007.

Sincerely,

DJD

Pamela B. Cowan
Director – Licensing and Regulatory Affairs
Exelon Generation Company, LLC
AmerGen Energy Company, LLC

Attachments: 1) Description and Assessment
2) Proposed Operating License, Technical Specification, and Technical Specification Bases Changes

cc: Regional Administrator, NRC Region I
Regional Administrator, NRC Region III
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
NRC Senior Resident Inspector – Clinton Power Station
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector – LaSalle County Station
NRC Senior Resident Inspector – Limerick Generating Station
NRC Senior Resident Inspector – Oyster Creek Generating Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Senior Resident Inspector – Three Mile Island Unit 1
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
C. Gratton, NRC Senior Project Manager
Illinois Emergency Management Agency - Division of Nuclear Safety
Director, Bureau of Radiation Protection, Pennsylvania Department of Environmental Resources
Director, Bureau of Nuclear Engineering, New Jersey Department of Environmental Protection
Chairman, Board of County Commissioners of Dauphin County, PA
Chairman, Board of Supervisors of Londonderry Township, PA
Mayor of Lacey Township, Forked River, NJ
R. I. McLean, State of Maryland
J. H. Riley - NEI

Attachment 1

Description and Assessment

Subject: **Exelon/AmerGen Application to Revise Technical Specifications Regarding Control Room Envelope Habitability in Accordance with TSTF-448, Revision 3, Using the Consolidated Line Item Improvement Process**

1.0 DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (Exelon) and AmerGen Energy Company, LLC (AmerGen) propose changes to the Operating License and Appendix A, Technical Specifications (TS), for the following Operating Licenses:

Exelon

Braidwood Station, Units 1 and 2	Facility Operating License Nos. NPF-72 and NPF-77
Byron Station, Units 1 and 2	Facility Operating License Nos. NPF-37 and NPF-66
Dresden Nuclear Power Station, Units 2 and 3	Renewed Facility Operating License Nos. DPR-19 and DPR-25
LaSalle County Station, Units 1 and 2	Facility Operating License Nos. NPF-11 and NPF-18
Limerick Generating Station, Units 1 and 2	Facility Operating License Nos. NPF-39 and NPF-85
Peach Bottom Atomic Power Station, Units 2 and 3	Renewed Facility Operating License Nos. DPR-44 and DPR-56
Quad Cities Nuclear Power Station, Units 1 and 2	Renewed Facility Operating License Nos. DPR-29 and DPR-30

AmerGen

Clinton Power Station, Unit 1	Facility Operating License No. NPF-62
Oyster Creek Generating Station	Facility Operating License No. DPR-16
Three Mile Island Nuclear Station, Unit 1	Facility Operating License No. DPR-50

The proposed amendments would modify technical specification (TS) requirements related to control room habitability in the following TS Sections:

Braidwood Station, Units 1 and 2
TS 3.7.10, "Control Room Ventilation (VC) Filtration System"
New TS 5.5.18, "Control Room Envelope Habitability Program"

Byron Station, Units 1 and 2
TS 3.7.10, "Control Room Ventilation (VC) Filtration System"
New TS 5.5.18, "Control Room Envelope Habitability Program"

Clinton Power Station, Unit 1
TS 3.7.3, "Control Room Ventilation System"
New TS 5.5.15, "Control Room Envelope Habitability Program"

Dresden Nuclear Power Station, Units 2 and 3
TS 3.7.4, "Control Room Emergency Ventilation (CREV) System"
New TS 5.5.14, "Control Room Envelope Habitability Program"

LaSalle County Station, Units 1 and 2
TS 3.7.4, "Control Room Area Filtration (CRAF) System"
New TS 5.5.15, "Control Room Envelope Habitability Program"

Limerick Generating Station, Units 1 and 2
TS 3/4.7.2, "Control Room Emergency Fresh Air Supply System – Common System"
New TS 6.16, "Control Room Envelope Habitability Program"

Oyster Creek Generating Station
TS 3.17," Control Room Heating, Ventilating, and Air-Conditioning System"
New TS 6.22, "Control Room Envelope Habitability Program"

Peach Bottom Atomic Power Station, Units 2 and 3
TS 3.7.4, " Main Control Room Emergency Ventilation (MCREV) System"
New TS 5.5.13, "Control Room Envelope Habitability Program"

Quad Cities Nuclear Power Station, Units 1 and 2
TS 3.7.4, " Control Room Emergency Ventilation (CREV) System"
New TS 5.5.13, "Control Room Envelope Habitability Program"

Three Mile Island Nuclear Station, Unit 1
TS 3.15.1, "Emergency Control Room Air Treatment System"
TS 4.12.1, "Emergency Control Room Air Treatment System"
New TS 6.19, "Control Room Envelope Habitability Program"

Additionally, in support of these proposed changes, the associated TS Bases Sections will be revised. The proposed Bases changes are provided in Attachment 2 for information only and do not require NRC approval.

The changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification (STS) change TSTF-448, Revision 3, "Control Room Habitability." The availability of this TS improvement was published in the Federal Register on January 17, 2007 as part of the consolidated line item improvement process (CLIIP).

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

Exelon/AmerGen have 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. Exelon/AmerGen have concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC

staff are applicable to the plants identified in Section 1.0 above and justify these amendments for the incorporation of the changes to these plants' TS.

Exelon/AmerGen notes that there may be differences between the wording in Section 2.2 of the model Safety Evaluation and the plant-specific Bases descriptions of the components required to be operable for the control room envelope ventilation system to be operable. Any differences are due to plant-specific design, current licensing basis, or plant-specific non-STS wording or format. These differences are not addressed in this submittal since there were no changes made to these lists of components as part of the implementation of TSTF-448, Revision 3.

2.2 Optional Changes and Variations

Exelon/AmerGen are 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 staff's model safety evaluation dated January 17, 2007. The parts of Section 3.0 of the model safety evaluation that are applicable for each facility are stated below. Additionally, a plant specific listing of any differences is provided below. These differences reflect adjustments, as needed, to account for plant-specific design, current licensing basis, or differences due to plant-specific non-STS wording or format.

Braidwood Station, Units 1 and 2

The following proposed changes to Braidwood Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.10 Limiting Condition for Operation (LCO) by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.10 Condition B, "One or More VC Filtration System trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are

protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.10, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for one VC Filtration System train inoperable, Exelon is proposing that Condition A be revised to state, "One VC Filtration System train inoperable for reasons other than Condition B." In addition, to differentiate the new Condition B from the existing condition for two VC Filtration System trains inoperable, existing Condition E, renumbered as Condition F, is revised to state, "Two VC Filtration System trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new condition to Action E (i.e., current Action D) of TS 3.7.10 that states, "One or more VC Filtration System trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies." The specified Required Action is the same as for the existing condition of Action E which states, "Two VC Filtration System trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies." Therefore, the new condition is stated with the other condition in Action E using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action E is needed because the proposed Action B will only apply in Modes 1, 2, 3, and 4. The addition of the new condition to Action E will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during Modes 5 and 6 and during refueling. (Model Safety Evaluation – Evaluation 4)

5. Exelon proposes to delete the CRE pressurization Surveillance Requirement (SR) 3.7.10.4 that requires verification that one VC Filtration System train can maintain the upper cable spreading room at a positive pressure of ≥ 0.02 inches water gauge and the control room at a positive pressure of ≥ 0.125 inches water gauge relative to areas adjacent to the control room area during the emergency mode of operation at a makeup flow rate ≥ 5400 cubic feet per minute (cfm) and ≤ 6600 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In the Exelon response (Reference 1) to Generic Letter 2003-01, "Control Room Habitability," it was stated that the Braidwood Station CRE pressurization surveillance, SR 3.7.10.4, alone cannot quantify the CRE unfiltered inleakage. Therefore, as documented in Reference 2, Exelon proposed to replace it with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.10.4 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.18 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in

accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.18, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.10.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable VC Filtration System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The Braidwood Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

Exelon is not proposing any variations or deviations from the TS changes described in TSTF-448, Revision 3, or the applicable parts of the NRC staff's model safety evaluation dated January 17, 2007.

The proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.14, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Byron Station, Units 1 and 2

The following proposed changes to Byron Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.10 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.10 Condition B, "One or More VC Filtration System trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.10, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for one VC Filtration System train inoperable, Exelon is proposing that Condition A be revised to state, "One VC Filtration System train inoperable for reasons other than Condition B." In addition, to differentiate the new Condition B from the existing condition for two VC Filtration System trains inoperable, existing Condition E, renumbered as Condition F, is revised to state, "Two VC Filtration System trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new condition to Action E (i.e., current Action D) of TS 3.7.10 that states, "One or more VC Filtration System trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies." The specified Required Action is the same as for the existing condition of Action E which states, "Two VC Filtration System trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies." Therefore, the new condition is stated with the other condition in Action E using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action E is needed because the proposed Action B will only apply in Modes 1, 2, 3, and 4. The addition of the new condition to Action E will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during Modes 5 and 6 and during refueling. (Model Safety Evaluation – Evaluation 4)

5. Exelon proposes to delete the CRE pressurization SR 3.7.10.4 that requires verification that one VC Filtration System train can maintain the upper cable spreading room at a positive pressure of ≥ 0.02 inches water gauge and the control room at a positive pressure of ≥ 0.125 inches water gauge relative to areas adjacent to the control room area during the emergency mode of operation at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the Byron Station CRE pressurization surveillance, SR 3.7.10.4, alone cannot quantify the CRE unfiltered inleakage and, therefore, Exelon proposed to replace it with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.10.4 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.18 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.18, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.10.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable VC Filtration System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Byron Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

Exelon is not proposing any variations or deviations from the TS changes described in the TSTF-448, Revision 3, or the applicable parts of the NRC staff's model safety evaluation dated January 17, 2007.

The proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.14, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Clinton Power Station

The following proposed changes to Clinton Power Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. AmerGen is proposing to modify the TS 3.7.3 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. AmerGen proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, AmerGen proposes to add a new TS 3.7.3 Condition B, "One or More Control Room Ventilation subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.3, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for one Control Room Ventilation subsystem inoperable, AmerGen is proposing that Condition A be revised to state, "One Control Room Ventilation subsystem inoperable for reasons other than Condition B." In addition, to differentiate the new Condition B from the existing condition for two Control Room Ventilation subsystems inoperable, existing Condition D, renumbered as Condition E, is revised to state, "Two Control Room Ventilation subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. AmerGen proposes to add a new condition to Action F (i.e., current Action E) of TS 3.7.3 that states, "One or more Control Room Ventilation subsystems inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs." The specified Required Action is the same as for the existing condition of Action F, which states, "Two Control Room Ventilation subsystems inoperable during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs." Therefore, the new condition is stated with the other condition in Action F using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action F is needed because the proposed Action B will only apply in Modes 1, 2, and 3 and the TS is applicable in Modes 1, 2, and 3, during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, and during operations with a potential for draining the reactor vessel (OPDRVs). The addition of the new condition to Action F will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during all modes of applicability. (Model Safety Evaluation – Evaluation 5)

5. In the high radiation mode of operation, the Control Room Ventilation System isolates unfiltered ventilation air supply intakes, filters the emergency ventilation air supply to the CRE, and pressurizes the CRE to minimize unfiltered air inleakage past the CRE boundary. AmerGen proposes to delete the CRE pressurization SR 3.7.3.6 that requires verifying that each Control Room Ventilation subsystem can maintain a

positive pressure of ≥ 1/8 inch water gauge relative to adjacent areas during the high radiation mode of operation at a flow rate of ≤ 3000 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the Clinton Power Station CRE pressurization surveillance, SR 3.7.3.6, alone cannot quantify the CRE unfiltered inleakage and, therefore, AmerGen proposed to replace it with an inleakage measurement SR and a CRE Habitability Program as specified in the new TS 5.5.15, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, AmerGen proposes to add a new SR 3.7.3.5 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.15 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. AmerGen proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. AmerGen proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.15, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.3.5, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Control Room Ventilation System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Clinton Power Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

To account for plant specific control room habitability design, current licensing bases, or differences due to plant specific non-Standard Technical Specification wording or format, the following adjustments have been incorporated into the proposed TS markups:

1. AmerGen is proposing to delete SR 3.7.3.5, which requires verification that the air inleakage rate of the negative pressure portions of the Control Room Ventilation System is ≤ 650 cfm. As stated in Reference 1, the TS SR 3.7.3.5 negative pressure ductwork test confirms that inleakage in the Control Room Ventilation System located outside the CRE remains within design limits. The surveillances for filtered and unfiltered inleakage were verified to be conservative and adequate as a result of a test performed using ASTM Standard E741 methodology. This test was intended to confirm the inleakage values required by current SR 3.7.3.5 and SR 3.7.3.6. The new SR 3.7.3.5 as described above will provide the required confirmation of the inleakage in the negative pressure ductwork. Therefore, the current SR 3.7.3.5 is not required

any longer once the proposed Control Room Envelope Habitability Program is implemented.

2. The proposed TS 3.7.3 Bases for Actions D.1, D.2.1, D.2.2, and D.2.3 have been modified to be consistent with the TSTF-448 markups with one exception. TSTF-448 states that an alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. However, the Clinton Power Station Control Room Ventilation System would not isolate under these conditions. Instead the system would transfer into the high radiation mode of operation. Therefore, the proposed Bases changes associated with Actions D.1, D.2.1, D.2.2, and D.2.3 were marked up to refer to radioactive releases that might require the CRE to transfer to the high radiation mode as opposed to isolating.

3. Condition D and Required Actions D.1, D.2.1 and D.2.2 were incorporated in the CPS Technical Specifications with the additional requirement that Condition D is also applicable during CORE ALTERATIONS. The associated Required Action D.2.2 was included to suspend CORE ALTERATIONS. This Condition and Required Action were added due to existing Technical Specification requirements.

4. Condition F and Required Actions F.1 and F.2 were incorporated in the CPS Technical Specifications with the additional requirement that Condition F is also applicable during CORE ALTERATIONS. Required Action F.2 was added to suspend CORE ALTERATIONS. This Condition and Required Action were added due to existing Technical Specification requirements.

With the exceptions identified above, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.11, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Dresden Nuclear Power Station, Units 2 and 3

The following proposed changes to the Dresden Nuclear Power Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.4 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.4 Condition B, "CREV system inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.4, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for the CREV System inoperable, Exelon is proposing that Condition A be revised to state, "CREV System inoperable in MODE 1, 2, or 3 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new condition to Action D (i.e., current Action C) of TS 3.7.4 that states, "CREV System inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs." The specified Required Action is the same as for the existing condition of Action D which states, "CREV System inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs." Therefore, the new condition is stated with the other condition in Action D using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action D is needed because the proposed Action B will only apply in Modes 1, 2, and 3 and the TS is applicable in Modes 1, 2, and 3, during movement of recently irradiated fuel assemblies in the secondary containment and during operations with a potential for draining the reactor vessel (OPDRVs). The addition of the new condition to Action D will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during all modes of applicability. (Model Safety Evaluation – Evaluation 5)

5. Exelon proposes to delete the CRE pressurization SR 3.7.4.4 that requires verification that CREV System can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the adjacent areas during the pressurization mode of operation at a flow rate of ≤ 2000 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the Dresden Nuclear Power Station CRE pressurization surveillance, SR 3.7.4.4, alone cannot quantify the CRE unfiltered inleakage and, therefore, Exelon proposed to replace it with

an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.4.4 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.14 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.14, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.4.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Control Room Emergency Ventilation System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Dresden Nuclear Power Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

To account for plant specific control room habitability design, current licensing bases, or differences due to plant specific non-STS wording or format, the following adjustment has been incorporated into the proposed TS markups:

1. The Dresden Nuclear Power Station Control Room Emergency Ventilation System is a single train system. Therefore, the TS associated with this system are written to reflect a single train. As a result, the Exelon proposed TS changes do not include any of the TSTF-448 changes for two trains being inoperable.

With the exception identified above, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.10, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

LaSalle County Station, Units 1 and 2

The following proposed changes to the LaSalle County Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.4 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.4 Condition B, "One or more CREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.4, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for one CRAF subsystem inoperable, Exelon is proposing that Condition A be revised to state, "One CRAF subsystem inoperable for reasons other than Condition B." In addition, to differentiate the new Condition B from the existing condition for two CRAF subsystems inoperable, existing Condition D, renumbered as Condition E, is revised to state, "Two CRAF subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new condition to Action F (i.e., current Action E) of TS 3.7.4 that states, "One or more CRAF subsystems inoperable due to an inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs." The specified Required Action is the same as for the existing condition of Action F which states, "Two CRAF subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs." Therefore, the new condition is stated with the other condition in Action F using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action F is needed because the proposed Action B will only apply in Modes 1, 2, and 3. The addition of the new condition to Action F will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during refueling. (Model Safety Evaluation – Evaluation 5)

5. Exelon proposes to delete the CRE pressurization SR 3.7.4.5 that requires verification that each CRAF subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the adjacent areas during the pressurization mode of operation at a flow rate of ≤ 4000 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the LaSalle County Station CRE pressurization surveillance, SR 3.7.4.5, alone cannot quantify the CRE unfiltered inleakage and, therefore, Exelon proposed to replace it with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.4.5 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.15 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.15, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.4.5, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Control Room Area Filtration System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem whole body or its equivalent to any part of the body for the duration of the accident. The LaSalle County Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

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, the following adjustments have been incorporated into the proposed TS markups:

1. The proposed TS 3.7.4 Bases for Actions D.1, D.2.1, D.2.2, and D.2.3 have been modified to be consistent with the TSTF-448 markups with one exception. TSTF-448 states that an alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the CRE. However, the LaSalle County Station CRAF System would not isolate under these conditions. Instead the system would transfer into the pressurization mode of

operation. Therefore, the proposed Bases changes associated with Actions D.1, D.2.1, D.2.2, and D.2.3 were marked up to refer to radioactive releases that might require the CRE to transfer to the pressurization mode as opposed to isolating.

The proposed TS Bases changes have been prepared to reflect applicable Bases statements from the TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.11, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Limerick Generating Station, Units 1 and 2

The following proposed changes to the Limerick Generating Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.2 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing TS 3.7.2 Control Room Emergency Fresh Air Supply (CREFAS) System 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. To account for such situations in Operational Condition 1, 2, or 3, Exelon proposes to add a new Unit 1 TS 3.7.2 Action a.2 and Unit 2 TS 3.7.2 Action a.5, "With one or more control room emergency fresh air supply subsystems inoperable due to an inoperable CRE boundary." New Unit 1 TS 3.7.2 Action a.2.c and Unit 2 TS 3.7.2 Action a.5.c would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented (Unit 1 TS 3.7.2 Action a.2.a; Unit 2 TS 3.7.2 Action a.5.a), and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke (Unit 1 TS 3.7.2 Action a.2.b; Unit 2 TS 3.7.2 Action a.5.b). (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Unit 1 TS 3.7.2 Action a.2 and Unit 2 TS 3.7.2 Action a.5 from the existing Actions for the control room emergency fresh air supply subsystem inoperable, Exelon is proposing that Unit 1 TS 3.7.2 Action a.1, in Operational Condition 1, 2, or 3, be revised to state, "With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition a.2", and for Unit 2 TS

3.7.2 Actions a.2 and a.3, in Operational Condition 1, 2, or 3, be revised to state, "With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition a.5." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes a new Unit 1 and Unit 2 TS 3.7.2 Action b.3 that states, "With one or more control room emergency fresh air subsystems inoperable due to an inoperable CRE boundary, immediately suspend handling of recently irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel." This new condition in TS 3.7.2 Action b.3 is needed because the proposed Action 3.7.2.a requirements will only apply in Operational Condition 1, 2, and 3 and the TS is applicable in all operational conditions including during handling of recently irradiated fuel in the secondary containment and during operations with a potential for draining the reactor vessel. The addition of the new condition to TS 3.7.2 Action b will ensure that the Actions continue to specify a condition for an inoperable CRE boundary during all modes of applicability. (Model Safety Evaluation – Evaluation 4)

5. Exelon proposes to delete the Unit 1 and Unit 2 CRE pressurization SR 4.7.2.1.e.3 that requires verification that the subsystem can maintain a positive pressure of at least 1/8 inches water gauge relative to the adjacent areas during the pressurization mode of operation at an outdoor air flow rate of ≤ 525 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2, Exelon proposed to replace the existing TS control room pressurization surveillance, TS SR 4.7.2.e.3, with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new Unit 1 and Unit 2 SR 4.7.2.2 that will require performance of CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program. The CRE Habitability Program TS, proposed Unit 1 and Unit 2 TS 6.16 (described below), requires that the program include requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in Unit 1 and Unit 2 TS 6.16, "Control Room Envelope Habitability Program." In combination with the new SR 4.7.2.2, this program is intended to ensure the operability of the CRE boundary, which as part of an operable CREFAS System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE

under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Limerick Generating Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

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, the following adjustments have been incorporated into the proposed TS markups:

1. Limerick Generating Station Units 1 and 2 have not adopted the Standardized Technical Specification Format. TSTF-448 has been incorporated into existing sections with new sections being added as applicable.

2. TSTF-448, Rev. 3, TS Section 3.7.4, Condition 'E' was not incorporated into Limerick Generating Station Technical Specifications because existing Unit 1 and 2 Technical Specification Section 3.0.3 as stated below already applies to this situation.

   3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in an OPERATIONAL CONDITION in which the Specification does not apply by placing it, as applicable, in:

   a. At least STARTUP within the next 6 hours.
   b. At least HOT SHUTDOWN within the following 6 hours, and
   c. At least COLD SHUTDOWN within the subsequent 24 hours.

3. TSTF-448, Rev. 3, TS 3.7.4, Required Action 'B.2' in reference to ensuring exposure to smoke hazards will not exceed limits was reworded to state "actions to mitigate exposure to smoke hazards are taken" as the limit is qualitative not quantitative.

With the exceptions identified above, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 6.8.4.h, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Oyster Creek Generating Station

The following proposed changes to Oyster Creek TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. AmerGen is proposing to modify the TS 3.17 Applicability by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. AmerGen proposes to establish new action requirements for an inoperable CRE boundary specified in new TS 3.17.D. The existing 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. To account for such situations, AmerGen proposes to add a new TS 3.17.D.1, "When one or both control room HVAC systems are determined inoperable due to an inoperable CRE boundary...". New TS 3.17.D.1 would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new TS 3.17.D from the existing condition for one control room air treatment system inoperable, AmerGen is proposing that TS 3.17.B and 3.17.C be revised to state, "With one control room HVAC system determined inoperable for reasons other than specification D", and "With both control room HVAC systems determined inoperable for reasons other than specification D" (Model Safety Evaluation – Evaluation 2)

4. AmerGen proposes a new TS 3.17.D.2, which states that "When one or both control room HVAC systems are determined inoperable due to an inoperable CRE boundary, During Refueling: (a) Immediately suspend movement of irradiated fuel assemblies in the containment and (b) Immediately initiate action to suspend operations with the potential to drain the reactor vessel." The addition of the new TS 3.17.D.2 condition will ensure that the actions continue to specify a condition for an inoperable CRE boundary during irradiated fuel handling operations. (Model Safety Evaluation – Evaluation 5)

5. AmerGen proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 6.22, "Control Room Envelope Habitability Program." This program is intended to ensure the operability of the CRE boundary, which as part of an operable Emergency Control Room Air Treatment System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of a 30-day integrated gamma dose of 5 rem, and a 30-day integrated beta dose of 30 rem. The Oyster Creek CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3, as clarified below.

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, the following adjustments have been incorporated into the proposed TS markups:

1. Model Safety Evaluation (SE) Section 2.2 describes the design of the Control Room Envelope Emergency Ventilation System. The Oyster Creek Control Room Ventilation System design does not include HEPA or charcoal filters.

2. Model SE Sections 2.2, 2.4, and 3.4 discuss unfiltered air inleakage to the Control Room Envelope (CRE). The Oyster Creek CRE boundary operability is not dependent on a measured unfiltered air inleakage value (Reference Oyster Creek letter to NRC dated November 17, 2005, Letter No. 2130-05-20218), and therefore, the proposed TS change does not include a requirement for periodic surveillance testing for unfiltered inleakage. This is consistent with the current licensing basis, which demonstrates that for the supply of 100% outside unfiltered air to the CRE, radiation exposure to personnel occupying the control room is limited to less than a 30-day integrated gamma dose of 5 rem and a 30-day integrated beta dose of 30 rem, and reflects the Oyster Creek plant specific design. Alternative source term application analyses currently under NRC review, demonstrate that for the same condition, radiation exposure to personnel occupying the control room is limited to less than 5 rem total effective dose equivalent (TEDE) for the duration of the accident. Applicable CRE operability and assessment requirements are implemented in the proposed TS change.

With the exceptions identified above, including the Oyster Creek custom TS format differences, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 6.21, "Technical Specifications (TS) Bases Control Program," which provides assurance that AmerGen has established and will maintain the adequacy of the Bases.

Peach Bottom Atomic Power Station, Units 2 and 3

The following proposed changes to the Peach Bottom Atomic Power Station TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.4 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.4 Condition B, "CREV system inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately initiated and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals as applicable and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.4, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for the CREV System inoperable, Exelon is proposing that Condition A be revised to state, "CREV System inoperable in MODE 1, 2, or 3 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new Condition F of TS 3.7.4 for CREV System inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment or during OPDRVs. The specified Required Action is the same as for the existing condition of Action E, which states, "CREV System inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS or during OPDRVs." Therefore, the new condition is stated with the existing Condition E using the logical connector "OR" in accordance with the STS writer's guide. This new condition is needed because the proposed Condition B will only apply in Modes 1, 2, and 3 and the TS is applicable in Modes 1, 2, and 3, during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS and during operations with a potential for draining the reactor vessel (OPDRVs). The addition of the new condition will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during all modes of applicability. (Model Safety Evaluation – Evaluation 5)

5. Exelon proposes to delete the CRE pressurization SR 3.7.4.4 that requires verification that CREV System can maintain a positive pressure of $\geq$ 0.1 inches water gauge relative to the turbine building during operation at a flow rate of $\geq$ 2700 cfm and $\leq$ 3300 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the Peach Bottom Atomic Power Station CRE pressurization surveillance, SR 3.7.4.4, alone cannot quantify the CRE unfiltered inleakage and, therefore, Exelon proposed to replace it with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.4.4 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.13 (described below), requires that the program include requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.13, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.4.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Control Room Emergency Ventilation System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Peach Bottom Atomic Power Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

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, the following adjustments have been incorporated into the proposed TS markups:

1. The Peach Bottom Atomic Power Station TS Bases contains a commitment that the routine survey for hazardous chemicals will be performed at a frequency controlled by administrative procedures in lieu of the 3-year frequency stated in NRC Regulatory Guide 1.196. In addition, if the survey detects new chemicals, only the newly discovered chemicals will be quantitatively evaluated. This is justified based on the long operating history of PBAPS with no significant changes in the surrounding areas with regards to chemical hazards.

2. TSTF-448, Required Action 'B.2' in reference to ensuring exposure to smoke hazards will not exceed limits was reworded to state "actions to mitigate exposure to smoke hazards are taken" as the limit is qualitative not quantitative.

With the exceptions identified above, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.10, "Technical Specifications (TS) Bases Control Program," provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Quad Cities Nuclear Power Station, Units 1 and 2

The following proposed changes to Quad Cities Nuclear Power Station are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. Exelon is proposing to modify the TS 3.7.4 LCO by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the LCO Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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." (Model Safety Evaluation – Evaluation 2)

2. Exelon proposes to establish new action requirements for an inoperable CRE boundary. The existing 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. To account for such situations, Exelon proposes to add a new TS 3.7.4 Condition B, "CREV System inoperable due to inoperable CRE boundary in MODE 1, 2, or 3." New Action B would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. All subsequent Conditions were renumbered to account for the new Condition B. In addition, TS 3.7.4, Condition C was revised to read, "Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3," to recognize the new Condition B. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new Condition B from the existing condition for the CREV System inoperable, Exelon is proposing that Condition A be revised to state, "CREV System inoperable in MODE 1, 2, or 3 for reasons other than Condition B." (Model Safety Evaluation – Evaluation 2)

4. Exelon proposes to add a new condition to Action D (i.e., current Action C) of TS 3.7.4 that states, "CREV System inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs." The specified Required Action is the same as for the existing condition of Action D, which states, "CREV System inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs." Therefore, the new condition is stated with the other condition in Action D using the logical connector "OR" in accordance with the STS writer's guide. This new condition in Action D is needed because the proposed Action B will only apply in Modes 1, 2, and 3 and the TS is applicable in Modes 1, 2, and 3, during movement of recently irradiated

fuel assemblies in the secondary containment and during operations with a potential for draining the reactor vessel (OPDRVs). The addition of the new condition to Action D will ensure that the Actions table continues to specify a condition for an inoperable CRE boundary during all modes of applicability. (Model Safety Evaluation – Evaluation 5)

5. Exelon proposes to delete the CRE pressurization SR 3.7.4.4 that requires verification that the CREV System can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the adjacent areas during the pressurization mode of operation at a flow rate of ≤ 2000 cfm. The deletion of this SR is proposed because measurements of unfiltered air inleakage into the CRE at numerous reactor facilities has demonstrated that a basic assumption of this SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting this SR by achieving the required CRE pressure is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 it was stated that the Quad Cities Nuclear Power Station CRE pressurization surveillance, SR 3.7.4.4, alone cannot quantify the CRE unfiltered inleakage and, therefore, Exelon proposed to replace it with an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. In place of the pressurization SR, Exelon proposes to add a new SR 3.7.4.4 that will state, "Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.13 (described below), requires that the program include, requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. Exelon proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. Exelon proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 5.5.13, "Control Room Envelope Habitability Program." In combination with the new SR 3.7.4.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Control Room Emergency Ventilation System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident. The Quad Cities Nuclear Power Station CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

To account for plant specific control room habitability design, current licensing basis, or differences due to plant specific non-STS wording or format, the following adjustments have been incorporated into the proposed TS markups:

1. The Quad Cities Nuclear Power Station Control Room Emergency Ventilation System is a single train system. Therefore, the TS associated with this system are written to reflect a single train. As a result, the Exelon proposed TS changes do not include any of the TSTF-448 changes for two trains being inoperable.

With the exceptions identified above, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 5.5.10, "Technical Specifications (TS) Bases Control Program," which provides assurance that Exelon has established and will maintain the adequacy of the Bases.

Three Mile Island Nuclear Station, Unit 1

The following proposed changes to TMI Unit 1 TS are consistent with TSTF-448 and the evaluations from the TSTF-448, Rev. 3, Model Safety Evaluation, Section 3.3.

1. AmerGen is proposing to modify the TS 3.15.1 Applicability by adding a note allowing the CRE boundary to be opened intermittently under administrative controls. As stated in the Bases, this Note "only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative 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 control room. 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." (Model Safety Evaluation – Evaluation 2)

2. AmerGen proposes to establish new action requirements for an inoperable CRE boundary specified in new TS 3.15.1.2.d and new TS 3.15.1.5. The existing 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. To account for such situations, AmerGen proposes to add a new TS 3.15.1.5, "From the date that one or both control room air treatment systems are made or found to be inoperable due to an inoperable CRE boundary, ...". New TS 3.15.1.5 would allow 90 days to restore the CRE boundary to operable status, provided the mitigating actions are immediately implemented and within 24 hours are verified to ensure, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. (Model Safety Evaluation – Evaluation 2)

3. To distinguish the new TS 3.15.1.2.d and 3.15.1.5 from the existing condition for one control room air treatment system inoperable, AmerGen is proposing that TS 3.15.1.3 be revised to state, "From and after the date that one control room air treatment system is made or found to be inoperable for a reason other than 3.15.1.2.d,...", and TS 3.15.1.4 be revised to state, "From the date that both control room air treatment

systems are made or found to be inoperable for a reason other than 3.15.1.2d,...". (Model Safety Evaluation – Evaluation 2)

4. AmerGen proposes a new TS 3.15.1.5, which states that "From the date that one or both control room air treatment systems are made or found to be inoperable due to an inoperable CRE boundary, ... fuel handling operations shall be terminated in 2 hours ...". The addition of the new TS 3.15.1.5 condition will ensure that the actions continue to specify a condition for an inoperable CRE boundary during irradiated fuel handling operations. (Model Safety Evaluation – Evaluation 4)

5. The current TMI Unit 1 TS do not include a CRE pressurization surveillance requirement (SR). It is noted that measurements of unfiltered air inleakage into the CRE at numerous reactor facilities have demonstrated that a basic assumption of a CRE pressurization SR, an essentially leak-tight CRE boundary, was incorrect for most facilities. Therefore, meeting a CRE pressurization SR is not necessarily a conclusive indication of CRE boundary leak tightness (i.e., CRE boundary operability). In References 1 and 2 AmerGen proposed to include an inleakage measurement SR and CRE Habitability Program in TS, in accordance with the approved version of TSTF-448, Revision 3. (Model Safety Evaluation – Evaluation 6)

6. AmerGen proposes to add a new TS surveillance requirement 4.12.1.5 that will state, "Control Room Envelope unfiltered air inleakage testing shall be performed in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 6.19 (described below), requires that the program include requirements for determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0. This guidance references ASTM E741 as an acceptable method for ascertaining the unfiltered leakage into the CRE. AmerGen proposes to follow this method. (Model Safety Evaluation – Evaluation 6)

7. AmerGen proposes a new administrative controls program TS consistent with the model program TS in TSTF-448, Revision 3. This new program is described in TS 6.19, "Control Room Envelope Habitability Program." In combination with the new surveillance requirement 4.12.1.5, this program is intended to ensure the operability of the CRE boundary, which as part of an operable Emergency Control Room Air Treatment System will ensure that the CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program will ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The TMI Unit 1 CRE Habitability Program contains the required elements identified in TSTF-448, Revision 3.

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, the following adjustments have been incorporated into the proposed TS markups:

1. TMI Unit 1 has not adopted the Standardized Technical Specification format. TSTF-448 has been incorporated into the existing Technical Specification sections with new sections being added as applicable.

2. TS Section 3.15.1.5 states that fuel handling operations shall be terminated in 2 hours, in lieu of immediately, from the time that both control room air treatment systems are made or found to be inoperable due to an inoperable CRE boundary. The 2-hour time period is consistent with current TMI Unit 1 TS requirements for inoperability of both trains of the control room air treatment system during fuel handling operations and allows orderly completion of fuel handling tasks in progress.

With the exceptions identified above, including the TMI Unit 1 custom TS format differences, the proposed TS Bases changes have been prepared to reflect applicable Bases statements from TSTF-448, Revision 3. These changes will be processed in accordance with the requirements of TS 6.18, "Technical Specifications (TS) Bases Control Program," which provides assurance that AmerGen has established and will maintain the adequacy of the Bases.

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

Exelon/AmerGen propose the following as a license condition to support implementation of the proposed TS changes (Since the referenced TS sections vary based on the plant-specific TS changes, the actual wording of the proposed license condition for each plant is provided in Attachment 2):

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.x.x, in accordance with TS 5.5.x, the assessment of CRE habitability as required by Specification 5.5.x.x, and the measurement of CRE pressure as required by Specification 5.5.x.x, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.x.x, in accordance with Specification 5.5.x.x, shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from (date), the date of the most recent successful tracer gas test, as stated in the (date) letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.x.x, shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from (date), the date of the most recent successful tracer gas test, as stated in the (date) letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.x.x, shall be within [24] months, plus the [180] days allowed by SR 3.0.2, as measured from [date], the date of the most recent successful pressure measurement test, or within [180] days if not performed previously.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Exelon/AmerGen have reviewed the proposed no significant hazards consideration determination (NSHCD) published in the Federal Register as part of the CLIIP. Exelon/AmerGen have concluded that the proposed NSHCD presented in the Federal Register notice is applicable to the plants identified on Section 1.0 above, and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

3.2 Commitments

There are no new regulatory commitments contained in this request.

4.0 ENVIRONMENTAL EVALUATION

Exelon/AmerGen have reviewed the environmental evaluation included in the model safety evaluation dated January 17, 2007 as part of the CLIIP. Exelon/AmerGen have concluded that the staff's findings presented in that evaluation are applicable to the plants identified in Section 1.0 above, and the evaluation is hereby incorporated by reference for this application.

5.0 REFERENCES

5.1 Exelon/AmerGen Letter to USNRC, " Exelon/AmerGen 180-Day Response To NRC Generic Letter 2003-01, 'Control Room Habitability'," dated December 9, 2003

5.2 Exelon/AmerGen Letter to USNRC, "Withdrawal of Exelon/AmerGen License Amendment Request Related to Administrative Controls Incorporating Requirements for Control Room Envelope Integrity Program," dated July 11, 2005

Attachment 2

Proposed Operating License, Technical Specification, and Technical Specification Bases Changes

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Braidwood Station, Units 1 and 2

Technical Specification
Pages

3.7.10-1
3.7.10-2
3.7.10-3
3.7.10-4
3.7.10-5
B 3.7.10-1
B 3.7.10-2
B 3.7.10-3
B 3.7.10-4
B 3.7.10-5
B 3.7.10-6
B 3.7.10-7
B 3.7.10-8
B 3.7.10-9
B 3.7.10-10
B 3.7.10-11
B 3.7.10-12
B 3.7.10-13
5.5-25
5.5-26

Facility Operating License Appendix C

Braidwood Unit 1 Page 2
Braidwood Unit 2 Page 2

3.7 PLANT SYSTEMS

3.7.10 Control Room Ventilation (VC) Filtration System

LCO 3.7.10 Two VC Filtration System trains shall be OPERABLE.

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

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One VC Filtration System train inoperable for reasons other than Condition B.	A.1	Restore VC Filtration System train to OPERABLE status.	7 days
B. One or more VC Filtration System trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	AND		
	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, 3, or 4.	~~B~~C.1	Be in MODE 3.	6 hours
	AND		
	~~B~~C.2	Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~C~~D.1.1 Place OPERABLE VC Filtration System train in emergency mode.	Immediately
	AND	
	~~C~~D.1.2 Verify OPERABLE VC Filtration System train is capable of being powered by an OPERABLE emergency power source.	Immediately
	OR	
	~~C~~D.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	~~C~~D.2.2 Suspend positive reactivity additions.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D~~E. Two VC Filtration System trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies. OR One or more VC Filtration System trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~D~~E.1 Suspend movement of irradiated fuel assemblies. AND ~~D~~E.2 Suspend positive reactivity additions.	Immediately Immediately
~~E~~F. Two VC Filtration System trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	~~E~~F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each VC Filtration System train with: a. Flow through the makeup system filters for ≥ 10 continuous hours with the heaters operating; and b. Flow through the recirculation charcoal adsorber for ≥ 15 minutes.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.10.2	Perform required VC Filtration System filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.3	Verify each VC Filtration System train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	~~Verify one VC Filtration System train can maintain the upper cable spreading room at positive pressure of ≥ 0.02 inches water gauge and the control room at a positive pressure of ≥ 0.125 inches water gauge relative to areas adjacent to the control room area during the emergency mode of operation at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm.~~Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	~~18 months on a STAGGERED TEST BASIS~~In accordance with the Control Room Envelope Habitability Program.

B 3.7 PLANT SYSTEMS

B 3.7.10 Control Room Ventilation (VC) Filtration System

BASES

BACKGROUND

The common control room filtration and temperature control are provided by the Control Room Ventilation (VC) System. The common VC System consists of two redundant and independent trains. Each train consists of a makeup air filter unit, makeup air fan, supply fan, return fan, supply filter unit, recirculation charcoal adsorber, comfort heating coils (not required for OPERABILITY), chiller, chilled water pump and cooling coils. Ductwork, dampers, **doors, barriers,** and instrumentation also form part of the system.

The makeup air filter unit includes a moisture separator (not required for system OPERABILITY), heater, prefilter (not required for system OPERABILITY), High Efficiency Particulate Air (HEPA) filter, charcoal adsorber section for removal of gaseous activity (principally iodines), and second HEPA filter. The moisture separator removes any entrained water. The prefilter removes any large particles in the air to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each makeup filter unit for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and charcoal adsorbers.

The VC System operation ~~in maintaining~~**maintains** the control room temperature within limits and habitable ~~is~~ **as** discussed in UFSAR, Section 6.4 (Ref. 1) and Section 9.4 (Ref. 2). The VC System (with the exception of the comfort heating coils and humidifier) is designed in accordance with Seismic Category I requirements. The VC System is an emergency system of which parts operate during normal operation. Normally, the supply and return fans of one train are in service with the recirculation charcoal adsorber bypassed. The makeup air filter unit and fan are not in service.

The filtration system portion of the VC System (VC Filtration System) provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, **hazardous chemicals, or smoke. The VC Filtration System recirculates and filters the air in the control room envelope (CRE). The CRE boundary 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 other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

BASES

BACKGROUND (continued)

Actuation of the VC Filtration System places the system in the emergency mode of operation. Actuation of the system to the emergency mode of operation; starts the makeup fan, opens the turbine building intake damper, isolates the normal intake from outside dampers, isolates the purge dampers (if open), opens the recirculation charcoal adsorber dampers, and closes the recirculation charcoal adsorber bypass dampers. The operating supply and return fans continue to operate. Interlocks are provided such that the makeup fan will not start unless the associated supply fan is in operation. Outside air is filtered and then mixed with the air being recirculated through the ~~control room~~**CRE.** Pressurization of the ~~control room~~**CRE** minimizes infiltration of unfiltered air **through the CRE boundary** from **all** the areas adjacent to the ~~control room envelope~~**CRE boundary.**

The air entering the ~~control room~~**CRE** is continuously monitored by radiation detectors. One outside air intake detector output above the alarm setpoint will cause actuation of the emergency mode of operation and trip the Control Room Offices HVAC (VV), Laboratory HVAC (VL), and Radwaste Building Ventilation (VW) Systems.

The VC Filtration System will not automatically realign to the Turbine Building makeup air intake upon receipt of a high radiation or Safety Injection (SI) signal when a VC Filtration System Emergency Makeup Filter unit is in operation and aligned to the outside air intake.

~~One~~ **A single** VC Filtration System train ~~can~~ **operating at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm will** pressurize the ~~upper cable spreading room to ≥ 0.02 inches water gauge and the control room to ≥ 0.125 inches water gauge,~~**CRE** relative to **external** areas adjacent to the ~~control room envelope~~**CRE boundary.**

The control room and the ~~control room envelope~~**CRE** are defined in UFSAR Section 6.4 (Ref. 1). The control room is contained within the ~~control room envelope~~**CRE.** The areas within the ~~control room envelope~~**CRE**, external to the control room, are maintained at a positive pressure.

Redundant filter trains are provided such that if an excessive pressure drop develops across one filter train, the other train is available to provide the required filtration.

BASES

BACKGROUND (continued)

The normally open intake isolation dampers are arranged in a series so that the failure of one damper to shut will not result in a breach of isolation. The VC Filtration System is designed in accordance with Seismic Category I requirements.

The VC Filtration System is designed to maintain ~~the control room~~**a habitable** environment **in the CRE** for 30 days after a Design Basis Accident (DBA) without exceeding the **total effective** dose **equivalent (TEDE)** limits of 10 CFR 50.67 (Ref. 7), (i.e., 5 rem TEDE).

APPLICABLE SAFETY ANALYSES

The VC System components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the ~~control room envelope~~**CRE** ensures an adequate supply of filtered air to all areas requiring access. The VC Filtration System provides airborne radiological protection for the ~~control room operators~~**CRE occupants**, as demonstrated by the ~~control room accident~~**CRE occupant** dose analyses for the most limiting design basis ~~Loss of Coolant Accident,~~**accident** fission product release presented in the UFSAR, Chapter 15 (Ref. 3). The safety analyses assume a 95% filter efficiency for the makeup charcoal adsorber and a 90% filter efficiency for the recirculation charcoal adsorber. For design basis accident radiological dose assessments, the VC Filtration System is assumed to be initiated within 30 minutes.

~~As described in UFSAR Section 6.4 (Ref. 1) and Section 2.2 (Ref. 4), the only potential toxic releases that could pose a risk to the control room operators, are from offsite sources. The probability of such a release is low and there would be sufficient time upon notification to initiate the VC isolation mode of operation.~~**The VC Filtration System provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 4). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the operators to control the reactor either from the control room or from the remote shutdown panels (Ref. 2).**

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

function.

The VC Filtration System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

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

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

a. Makeup air fan is OPERABLE;

b. Supply fan is OPERABLE;

c. Return air fan is OPERABLE;

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

e. Makeup filter unit heater, 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.~~**In order for the VC Filtration System trains to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke.**

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE. This individual will have a

method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, 4, 5, and 6, and ~~at all times~~ during movement of irradiated fuel assemblies ~~in the fuel handling building or containment~~, the VC Filtration System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA~~, including the release from a fuel handling accident~~.

In MODE 5 or 6, the VC Filtration System provides protection from significant radioactive releases.

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

BASES

ACTIONS

A.1

When one VC Filtration System 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 VC Filtration System train is adequate to perform the ~~control room~~CRE occupant protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE VC Filtration System train could result in loss of VC Filtration System function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 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.

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, 3, or 4, if the inoperable VC Filtration System train **or the CRE boundary** cannot be restored to OPERABLE status within the required 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 6 hours, and in MODE 5 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 ~~plant~~ **unit** systems.

BASES

ACTIONS (continued)

~~C~~D.1.1, ~~C~~D.1.2, ~~C~~D.2.1, and ~~C~~D.2.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, if the inoperable VC Filtration System train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE VC Filtration System 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. Action ~~C~~D.1.2 requires the VC Filtration System train placed in operation be capable of being powered by an OPERABLE emergency power source. This action assures availability of electric power in the unlikely event of a loss of offsite power. This power source can be either from Unit 1 or Unit 2, via OPERABLE crosstie breakers.

An alternative to Required Action ~~C~~D.1.1 and ~~C~~D.1.2 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the ~~control room~~**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.

~~D~~E.1 and ~~D~~E.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, with two VC Filtration System trains inoperable **or with one or more VC Filtration System trains inoperable due to an inoperable CRE boundary,** action must be taken immediately to suspend activities that could result in a release of radioactivity that might ~~enter~~ **require isolation of** the ~~control room~~**CRE**. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

~~E~~F.1

If both VC Filtration System trains are inoperable in MODE 1, 2, 3, or 4, **for reasons other than an inoperable CRE boundary (i.e., Condition B),** the VC Filtration System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The makeup air filter unit includes heaters. Therefore, the subsystem must be initiated from the control room and operated for ≥ 10 continuous hours with the heaters energized. The recirculation subsystem filters do not contain heaters and need only be operated for ≥ 15 minutes to demonstrate the function of the system. For purposes of satisfying this SR, the recirculation subsystem may be run concurrently with the makeup subsystem. The 31 day Frequency is based on the reliability of the equipment and the two train redundancy ~~availability~~.

SR 3.7.10.2

This SR verifies that the required VC Filtration System testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VC Filtration System filter tests are in general conformance with Regulatory Guide 1.52 (Ref. 5). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, system flow rates, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP. The acceptance criteria stated in the VFTP, ensure that the filter efficiencies assumed in the safety analyses are met.

SR 3.7.10.3

This SR verifies that each VC Filtration System train aligns, starts, and operates on an actual or simulated actuation signal. The Frequency of 18 months is ~~specified in Regulatory Guide 1.52 (Ref. 5)~~**based on industry operating experience and is consistent with the typical refueling cycle.**

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.4

~~This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of the potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper functioning of the VC Filtration System. During the emergency mode of operation, the VC Filtration System is designed to pressurize the upper cable spreading room to ≥ 0.02 inches water gauge and the control room to ≥ 0.125 inches water gauge, relative to areas adjacent to the control room area in order to minimize unfiltered inleakage. The VC Filtration System is designed to maintain this positive pressure with one train at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm. The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800 (Ref. 6).~~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. 9) 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 Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). 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. UFSAR, Section 6.4.

2. UFSAR, Section 9.4.

3. UFSAR, Chapter 15.

4. UFSAR, Section 2.2.

5. Regulatory Guide 1.52, Rev. 2.

6. ~~NUREG-0800, Section 6.4, Rev. 2, July 1981.~~NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001.

7. ~~7.~~ 10 CFR 50.67.

8. Letter from Eric 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).

9. Regulatory Guide 1.196

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

b. Air lock testing acceptance criteria are:

1. Overall air lock leakage rate is ≤ 0.05 L_a when tested at ≥ P_a; and

2. For each door, seal leakage rate is:

i. < 0.0024 L_a, when pressurized to ≥ 3 psig, and

ii. < 0.01 L_a, when pressurized to ≥ 10 psig.

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

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

5.5.17 Battery Monitoring and Maintenance Program

This program provides for restoration and maintenance, based on the recommendations of IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries For Stationary Applications," or of the battery manufacturer of the following:

a. Actions to restore battery cells with float voltage < 2.13 V, and

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 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 Ventilation (VC) Filtration System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

d. Measurement of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the VC Filtration System, operating at the flow rate required by the VFTP, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 18 month assessment of the CRE boundary.

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

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

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-72

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
113	The licensee shall implement modifications as discussed in Section 5.11.9 of the Safety Evaluation to maintain the stability of the Braidwood transmission grid including a reduction in the existing local breaker backup time settings.	Prior to implementation of full power uprate conditions
113	The licensee shall submit to the NRC a confirmatory analysis using a model acceptable to the NRC justifying the value of 8.5 hours for the time of switchover to hot leg injection following a loss-of-coolant accident (Safety Evaluation Section 3.1.3); or recalculate the switchover time using the currently accepted methodology.	Submit by June 1, 2002
113	The licensee shall make the instrumentation changes as described in Section 4.15.2 of the Safety Evaluation.	Prior to implementation of full power uprate conditions
122	The safety limit equation specified in TS 2.1.1.3 regarding fuel centerline melt temperature (i.e., less than 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU burnup as described in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995) is valid for uranium oxide fuel without the presence of poisons mixed homogeneously into the fuel pellets. If fuel pellets incorporating homogeneous poisons are used, the topical report documenting the fuel centerline melt temperature basis must be reviewed and approved by the NRC and referenced in this license condition. TS 2.1.1.3 must be modified to also include the fuel centerline melt temperature limit for the fuel with homogeneous poison.	With implementation of the amendment

Insert new License Condition →

INSERT TO BRAIDWOOD UNIT 1 FACILITY OPERATING LICENSE
APPENDIX C

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-72

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
xxx	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 3.7.10.4, in accordance with TS 5.5.18.c.(i), the assessment of CRE habitability as required by Specification 5.5.18.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.18.d, shall be considered met. Following implementation: (a) The first performance of SR 3.7.10.4, in accordance with Specification 5.5.18.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 7, 2004, the date of the most recent successful tracer gas test, as stated in the February 7, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years. (b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.18.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 7, 2004, the date of the most recent successful tracer gas test, as stated in the February 7, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years. (c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.18.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.	With implementation of the amendment

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-77

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
113	The licensee shall implement modifications as discussed in Section 5.11.9 of the Safety Evaluation to maintain the stability of the Braidwood transmission grid including a reduction in the existing local breaker backup time settings.	Prior to implementation of full power uprate conditions
113	The licensee shall submit to the NRC a confirmatory analysis using a model acceptable to the NRC justifying the value of 8.5 hours for the time of switchover to hot leg injection following a loss-of-coolant accident (Safety Evaluation Section 3.1.3); or recalculate the switchover time using the currently accepted methodology.	Submit by June 1, 2002
113	The licensee shall make the instrumentation changes as described in Section 4.15.2 of the Safety Evaluation.	Prior to implementation of full power uprate conditions
122	The safety limit equation specified in TS 2.1.1.3 regarding fuel centerline melt temperature (i.e., less than 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU burnup as described in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995) is valid for uranium oxide fuel without the presence of poisons mixed homogeneously into the fuel pellets. If fuel pellets incorporating homogeneous poisons are used, the topical report documenting the fuel centerline melt temperature basis must be reviewed and approved by the NRC and referenced in this license condition. TS 2.1.1.3 must be modified to also include the fuel centerline melt temperature limit for the fuel with homogeneous poison.	With implementation of the amendment

Insert new License Condition

INSERT TO BRAIDWOOD UNIT 2 FACILITY OPERATING LICENSE
APPENDIX C

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-77

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
xxx	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 3.7.10.4, in accordance with TS 5.5.18.c.(i), the assessment of CRE habitability as required by Specification 5.5.18.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.18.d, shall be considered met. Following implementation: (a) The first performance of SR 3.7.10.4, in accordance with Specification 5.5.18.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 7, 2004, the date of the most recent successful tracer gas test, as stated in the February 7, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years. (b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.18.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 7, 2004, the date of the most recent successful tracer gas test, as stated in the February 7, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years. (c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.18.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.	With implementation of the amendment

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Byron Station, Units 1 and 2

Technical Specification
Pages

3.7.10-1
3.7.10-2
3.7.10-3
3.7.10-4
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Facility Operating License Appendix C

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Byron Unit 2 Page 2

3.7 PLANT SYSTEMS

3.7.10 Control Room Ventilation (VC) Filtration System

LCO 3.7.10 Two VC Filtration System trains shall be OPERABLE.

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

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One VC Filtration System train inoperable for reasons other than Condition B.	A.1	Restore VC Filtration System train to OPERABLE status.	7 days
B. One or more VC Filtration System trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	AND		
	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, 3, or 4.	~~B~~C.1	Be in MODE 3.	6 hours
	AND		
	~~B~~C.2	Be in MODE 5.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~C~~D.1.1 Place OPERABLE VC Filtration System train in emergency mode.	Immediately
	AND	
	~~C~~D.1.2 Verify OPERABLE VC Filtration System train is capable of being powered by an OPERABLE emergency power source.	Immediately
	OR	
	~~C~~D.2.1 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	~~C~~D.2.2 Suspend positive reactivity additions.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D~~E. Two VC Filtration System trains inoperable in MODE 5 or 6, or during movement of irradiated fuel assemblies. OR One or more VC Filtration System trains inoperable due to an inoperable CRE boundary in MODE 5 or 6, or during movement of irradiated fuel assemblies.	~~D~~E.1 Suspend movement of irradiated fuel assemblies. AND ~~D~~E.2 Suspend positive reactivity additions.	Immediately Immediately
~~E~~F. Two VC Filtration System trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	~~E~~F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each VC Filtration System train with: a. Flow through the makeup system filters for ≥ 10 continuous hours with the heaters operating; and b. Flow through the recirculation charcoal adsorber for ≥ 15 minutes.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.10.2	Perform required VC Filtration System filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.10.3	Verify each VC Filtration System train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	~~Verify one VC Filtration System train can maintain the upper cable spreading room at positive pressure of ≥ 0.02 inches water gauge and the control room at a positive pressure of ≥ 0.125 inches water gauge relative to areas adjacent to the control room are during the emergency mode of operation at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm.~~Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	~~18 months on a STAGGERED TEST BASIS~~In accordance with the Control Room Envelope Habitability Program.

B 3.7 PLANT SYSTEMS

B 3.7.10 Control Room Ventilation (VC) Filtration System

BASES

BACKGROUND

The common control room filtration and temperature control are provided by the Control Room Ventilation (VC) System. The common VC System consists of two redundant and independent trains. Each train consists of a makeup air filter unit, makeup air fan, supply fan, return fan, supply filter unit, recirculation charcoal adsorber~~, comfort heating coils (not required for OPERABILITY), chiller, chilled water pump and cooling coils~~, **comfort heating coils (not required for OPERABILITY), chiller, chilled water pump and cooling coils.** Ductwork, dampers, **doors, barriers,** and instrumentation also form part of the system.

The makeup air filter unit includes a moisture separator (not required for system OPERABILITY), heater, prefilter (not required for system OPERABILITY), High Efficiency Particulate Air (HEPA) filter, charcoal adsorber section for removal of gaseous activity (principally iodines)~~, and~~, **and** second HEPA filter. The moisture separator removes any entrained water. The prefilter removes any large particles in the air to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each makeup filter unit for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and charcoal adsorbers.

The VC System operation ~~in maintaining~~**maintains** the control room temperature within limits and habitable ~~is~~ **as** discussed in UFSAR, Section 6.4 (Ref. 1) and Section 9.4 (Ref. 2). The VC System (with the exception of the comfort heating coils and humidifier) is designed in accordance with Seismic Category I requirements. The VC System is an emergency system of which parts operate during normal operation. Normally, the supply and return fans of one train are in service with the recirculation charcoal adsorber bypassed. The makeup air filter unit and fan are not in service.

The filtration system portion of the VC System (VC Filtration System) provides a protected environment from which ~~operators~~ **operators** can control the unit following an uncontrolled release of radioactivity, **hazardous chemicals, or smoke. The VC Filtration System recirculates and filters the air in the control room envelope (CRE). The CRE boundary 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 other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

BASES

BACKGROUND (continued)

Actuation of the VC Filtration System places the system in the emergency mode of operation. Actuation of the system to the emergency mode of operation; starts the makeup fan, opens the turbine building intake damper, isolates the normal intake from outside dampers, isolates the purge dampers (if open), opens the recirculation charcoal adsorber dampers, and closes the recirculation charcoal adsorber bypass dampers. The operating supply and return fans continue to operate. Interlocks are provided such that the makeup fan will not start unless the associated supply fan is in operation. Outside air is filtered and then mixed with the air being recirculated through the ~~control room~~**CRE**. Pressurization of the ~~control room~~**CRE** minimizes infiltration of unfiltered air **through the CRE boundary** from **all** the areas adjacent to the ~~control room envelope~~**CRE boundary**.

The air entering the ~~control room~~**CRE** is continuously monitored by radiation detectors. One outside air intake detector output above the alarm setpoint will cause actuation of the emergency mode of operation and trip the Control Room Offices HVAC (VV) System.

The VC Filtration System will not automatically realign to the Turbine Building makeup air intake upon receipt of a high radiation or Safety Injection (SI) signal when a VC Filtration System Emergency Makeup Filter unit is in operation and aligned to the outside air intake.

~~One~~ **A single** VC Filtration System train ~~can~~ **operating at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm will** pressurize the ~~control room to ≥ 0.125 inches water gauge,~~**CRE** relative to **external** areas adjacent to the ~~control room envelope~~**CRE boundary**.

The control room and the ~~control room envelope~~**CRE** are defined in UFSAR Section 6.4 (Ref. 1). The control room is contained within the ~~control room envelope~~**CRE**. The areas within the ~~control room envelope~~**CRE**, external to the control room, are maintained at a positive pressure ~~as described in the Control Room Envelope Integrity Program~~.

Redundant filter trains are provided such that if an excessive pressure drop develops across one filter train, the other train is available to provide the required filtration.

BASES

BACKGROUND (continued)

The normally open intake isolation dampers are arranged in a series so that the failure of one damper to shut will not result in a breach of isolation. The VC Filtration System is designed in accordance with Seismic Category I requirements.

The VC Filtration System is designed to maintain ~~the control room~~ **a habitable** environment **in the CRE** for 30 days after a Design Basis Accident (DBA) without exceeding the **total effective** dose **equivalent (TEDE)** limits of 10 CFR 50.67 (Ref. 7), (i.e., 5 rem TEDE).

APPLICABLE SAFETY ANALYSES

The VC System components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the ~~control room envelope~~**CRE** ensures an adequate supply of filtered air to all areas requiring access. The VC Filtration System provides airborne radiological protection for the ~~control room operators~~**CRE occupants**, as demonstrated by the ~~control room accident~~**CRE occupant** dose analyses for the most limiting design basis ~~Loss of Coolant A~~accident~~,~~ fission product release presented in the UFSAR, Chapter 15 (Ref. 3). The safety analyses assume a 95% filter efficiency for the makeup charcoal adsorber and a 90% filter efficiency for the recirculation charcoal adsorber. For design basis accident radiological dose assessments, the VC Filtration System is assumed to be initiated within 30 minutes.

~~As described in UFSAR Section 6.4 (Ref. 1) and Section 2.2 (Ref. 4), there are no potential toxic releases that could pose a risk to the control room operators.~~**The VC Filtration System provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 4). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the operators to control the reactor either from the control room or from the remote shutdown panels (Ref. 2).**

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

The VC Filtration System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

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

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

a. Makeup air fan is OPERABLE;

b. Supply fan is OPERABLE;

c. Return air fan is OPERABLE;

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

e. Makeup filter unit heater, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

~~The control room boundary must be maintained within the assumptions of the design analysis and in accordance with the Control Room Envelope Integrity Program.~~**In order for the VC Filtration System trains to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke.**

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening

who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE integrity is required.

APPLICABILITY

In MODES 1, 2, 3, 4, 5, and 6, and ~~at all times~~ during movement of irradiated fuel assemblies ~~in the fuel handling building or containment~~, the VC Filtration System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA~~, including the release from a fuel handling accident~~.

In MODE 5 or 6, the VC Filtration System provides protection from significant radioactive releases.

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

BASES

ACTIONS

A.1

When one VC Filtration System 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 VC Filtration System train is adequate to perform the ~~control room~~ CRE occupant protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE VC Filtration System train could result in loss of VC Filtration System function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 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.

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, 3, or 4, if the inoperable VC Filtration System train **or the CRE boundary** cannot be restored to OPERABLE status within the required 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 6 hours, and in MODE 5 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 ~~plant~~ **unit** systems.

BASES

ACTIONS (continued)

~~C~~D.1.1, ~~C~~D.1.2, ~~C~~D.2.1, and ~~C~~D.2.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, if the inoperable VC Filtration System train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE VC Filtration System 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. Action ~~C~~D.1.2 requires the VC Filtration System train placed in operation be capable of being powered by an OPERABLE emergency power source. This action assures availability of electric power in the unlikely event of a loss of offsite power. This power source can be either from Unit 1 or Unit 2, via OPERABLE crosstie breakers.

An alternative to Required Action ~~C~~D.1.1 and ~~C~~D.1.2 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the ~~control room~~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.

~~D~~E.1 and ~~D~~E.2

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

~~E~~F.1

If both VC Filtration System trains are inoperable in MODE 1, 2, 3, or 4, **for reasons other than an inoperable CRE boundary (i.e., Condition B),** the VC Filtration System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The makeup air filter unit includes heaters. Therefore, the subsystem must be initiated from the control room and operated for ≥ 10 continuous hours with the heaters energized. The recirculation subsystem filters do not contain heaters and need only be operated for ≥ 15 minutes to demonstrate the function of the system. For purposes of satisfying this SR, the recirculation subsystem may be run concurrently with the makeup subsystem. The 31 day Frequency is based on the reliability of the equipment and the two train redundancy ~~availability~~.

SR 3.7.10.2

This SR verifies that the required VC Filtration System testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VC Filtration System filter tests are in general conformance with Regulatory Guide 1.52 (Ref. 5). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, system flow rates, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP. The acceptance criteria stated in the VFTP, ensure that the filter efficiencies assumed in the safety analyses are met.

SR 3.7.10.3

This SR verifies that each VC Filtration System train aligns, starts, and operates on an actual or simulated actuation signal. The Frequency of 18 months is ~~specified in Regulatory Guide 1.52 (Ref. 5)~~**based on industry operating experience and is consistent with the typical refueling cycle.**

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.4

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. 9) 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 Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). 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. ~~This SR verifies the capability of the VC Filtration System to pressurize the control room. The control room positive pressure, with respect to potentially contaminated areas adjacent to the control room envelope, is periodically tested to verify the function of the VC Filtration System. During the emergency mode of operation, the VC Filtration System is designed to pressurize the control room to ≥ 0.125 inches water gauge, relative to areas adjacent to the control room envelope in order to minimize unfiltered inleakage. The VC Filtration System is designed to maintain this positive pressure with one train at a makeup flow rate ≥ 5400 cfm and ≤ 6600 cfm. The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800 (Ref. 6).~~

REFERENCES

1. UFSAR, Section 6.4.

2. UFSAR, Section 9.4.

3. UFSAR, Chapter 15.

4. UFSAR, Section 2.2.

5. Regulatory Guide 1.52, Rev. 2.

6. ~~NUREG-0800, Section 6.4, Rev. 2, July 1981.~~NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001

7. ~~7.~~ 10 CFR 50.67

8. 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).

9. Regulatory Guide 1.196

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

b. Air lock testing acceptance criteria are:

1. Overall air lock leakage rate is ≤ 0.05 L_a when tested at ≥ P_a; and

2. For each door, seal leakage rate is:

i. < 0.0024 L_a, when pressurized to ≥ 3 psig, and

ii. < 0.01 L_a, when pressurized to ≥ 10 psig.

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

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

5.5.17 Battery Monitoring and Maintenance Program

This program provides for restoration and maintenance, based on the recommendations of IEEE Standard 450, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead - Acid Batteries For Stationary Applications," or of the battery manufacturer of the following:

A. Actions to restore battery cells with float voltage < 2.13 V, and

B. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 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 Ventilation (VC) Filtration System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the VC Filtration System, operating at the flow rate required by the VFTP, at a Frequency of 18 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 18 month assessment of the CRE boundary.

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

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

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-37

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
119	The licensee shall implement modifications as discussed in Section 5.11.9 of the Safety Evaluation to maintain the stability of the Byron transmission grid. The modifications include a reduction in the existing local breaker backup time settings and a revision of the unit trip schemes.	Prior to implementation of full power uprate conditions
119	The licensee shall submit to the NRC a confirmatory analysis using a model acceptable to the NRC justifying the value of 8.5 hours for the time of switchover to hot leg injection following a loss-of-coolant accident (Safety Evaluation Section 3.1.3); or recalculate the switchover time using the currently accepted methodology.	Submit by June 1, 2002
119	The licensee shall make the instrumentation changes as described in Section 4.15.2 of the Safety Evaluation.	Prior to implementation of full power uprate conditions
127	The safety limit equation specified in TS 2.1.1.3 regarding fuel centerline melt temperature (i.e., less than 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU burnup as described in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995) is valid for uranium oxide fuel without the presence of poisons mixed homogeneously into the fuel pellets. If fuel pellets incorporating homogeneous poisons are used, the topical report documenting the fuel centerline melt temperature basis must be reviewed and approved by the NRC and referenced in this license condition. TS 2.1.1.3 must be modified to also include the fuel centerline melt temperature limit for the fuel with homogeneous poison.	With implementation of the amendment

Insert new License Condition

INSERT TO BYRON UNIT 1 FACILITY OPERATING LICENSE
APPENDIX C

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-37

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
xxx	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 3.7.10.4, in accordance with TS 5.5.18.c.(i), the assessment of CRE habitability as required by Specification 5.5.18.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.18.d, shall be considered met. Following implementation: (a) The first performance of SR 3.7.10.4, in accordance with Specification 5.5.18.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 1, 2004, the date of the most recent successful tracer gas test, as stated in the January 31, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years. (b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.18.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 1, 2004, the date of the most recent successful tracer gas test, as stated in the January 31, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years. (c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.18.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.	With implementation of the amendment

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-66

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
119	The licensee shall implement modifications as discussed in Section 5.11.9 of the Safety Evaluation to maintain the stability of the Byron transmission grid. The modifications include a reduction in the existing local breaker backup time settings, a revision of the unit trip schemes, and the installation of a power system stabilizer.	Prior to implementation of full power uprate conditions
119	The licensee shall submit to the NRC a confirmatory analysis using a model acceptable to the NRC justifying the value of 8.5 hours for the time of switchover to hot leg injection following a loss-of-coolant accident (Safety Evaluation Section 3.1.3); or recalculate the switchover time using the currently accepted methodology.	Submit by June 1, 2002
119	The licensee shall make the instrumentation changes as described in Section 4.15.2 of the Safety Evaluation.	Prior to implementation of full power uprate conditions
127	The safety limit equation specified in TS 2.1.1.3 regarding fuel centerline melt temperature (i.e., less than 5080 °F, decreasing by 58 °F per 10,000 MWD/MTU burnup as described in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995) is valid for uranium oxide fuel without the presence of poisons mixed homogeneously into the fuel pellets. If fuel pellets incorporating homogeneous poisons are used, the topical report documenting the fuel centerline melt temperature basis must be reviewed and approved by the NRC and referenced in this license condition. TS 2.1.1.3 must be modified to also include the fuel centerline melt temperature limit for the fuel with homogeneous poison.	With implementation of the amendment

Insert new License Condition

INSERT TO BYRON UNIT 2 FACILITY OPERATING LICENSE
APPENDIX C

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-66

The licensee shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Condition	Implementation Date
xxx	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 3.7.10.4, in accordance with TS 5.5.18.c.(i), the assessment of CRE habitability as required by Specification 5.5.18.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.18.d, shall be considered met. Following implementation: (a) The first performance of SR 3.7.10.4, in accordance with Specification 5.5.18.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 1, 2004, the date of the most recent successful tracer gas test, as stated in the January 31, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years. (b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.18.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 1, 2004, the date of the most recent successful tracer gas test, as stated in the January 31, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years. (c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.18.d, shall be within 18 months, plus the 138 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 138 days if not performed previously.	With implementation of the amendment

TECHNICAL SPECIFICATION PAGES (Mark-ups)

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(19) The appropriate section of the decommissioning trust agreement shall reflect that the trustee, investment advisor, or anyone else directing the investments made in the trust shall adhere to a "prudent investor" standard, as specified in 18 CFR 35.32(a)(3) of the Federal Energy Regulatory Commission's regulations.

(20) AmerGen Energy Company, LLC shall take all necessary steps to ensure that the decommissioning trust is maintained in accordance with the application for approval of the transfer of the Clinton license to it and the requirements of the Order approving the transfer, and consistent with the safety evaluation supporting the Order.

(21) AmerGen Energy Company, LLC shall take no action to cause Exelon Generation Company, LLC, (or successors or assigns of Exelon Generation Company, LLC approved by the NRC) to void, cancel; or diminish the $200 million contingency commitment from Exelon Generation Company, LLC, (or successors or assigns of Exelon Generation Company, LLC approved by the NRC) dated December 22, 2003, or cause it to fail to perform or impair its performance under the commitment, or remove or interfere with AmerGen's ability to draw upon the commitment. Also, AmerGen Energy Company, LLC shall inform the NRC in writing at any time that it draws upon the $200 million commitment.

Insert new License Condition →

D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70. These include: (a) an exemption from the requirements of 10 CFR 70.24 for the criticality alarm monitors around the fuel storage area; (b) an exemption from the requirement of 10 CFR Part 50, Appendix J – Option B, paragraph III.B, exempting the measured leakage rates from the main steam isolation valves from inclusion in the combined leak rate for local leak rate tests (Section 6.2.6 of SSER 6); and (c) an exemption from the requirements of paragraph III.B of Option B of 10 CFR Part 50, Appendix J, exempting leakage from the valve packing and the body-to-bonnet seal of valve 1E51-F374 associated with containment penetration 1MC-44 from inclusion in the combined leakage rate for penetrations and valves subject to Type B and C tests (SER supporting Amendment 62 to Facility Operating License No. NPF-62). The special circumstances regarding each exemption, except for item (a) above, are identified in the referenced section of the safety evaluation report and the supplements thereto.

An exemption was previously granted pursuant to 10 CFR 70.24. The exemption was granted with NRC Material License No. SNM-1886, issued November 27, 1985, and relieved the licensee from the requirement of having a criticality alarm system. AmerGen Energy Company, LLC is hereby exempted from the criticality alarm system provision of 10 CFR 70.24 so far as this section applies to the storage of fuel assemblies held under this license.

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(22) 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 3.7.3.5, in accordance with TS 5.5.15.c.(i), the assessment of CRE habitability as required by Specification 5.5.15.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.15.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.3.5, in accordance with Specification 5.5.15.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from November 16, 2004, the date of the most recent successful tracer gas test, as stated in the February 8, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.15.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from November 16, 2004, the date of the most recent successful tracer gas test, as stated in the February 8, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.15.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

3.7 PLANT SYSTEM

3.7.3 Control Room Ventilation System

LCO 3.7.3 Two Control Room Ventilation 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 irradiated fuel assemblies in the primary or secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Control Room Ventilation subsystem inoperable **for reasons other than Condition B.**	A.1 Restore Control Room Ventilation subsystem to OPERABLE status.	7 days
B. One or more Control Room Ventilation subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	**B.1 Initiate action to implement mitigating actions.** **AND** **B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.** **AND** **B.3 Restore CRE boundary to OPERABLE status.**	**Immediately** **24 hours** **90 days**

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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**
~~C~~**D.** Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~C~~**D.1** ——Place OPERABLE Control Room Ventilation subsystem in high radiation mode. OR ~~C~~**D.2.1** Suspend movement of irradiated fuel assemblies in the primary and secondary containment. AND ~~C~~**D.2.2** Suspend CORE ALTERATIONS. AND ~~C~~**D.2.3** Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately Immediately
~~D~~**E.** Two Control Room Ventilation subsystems inoperable in MODE 1, 2, or 3 **for reasons other than Condition B.**	~~D~~**E.1** Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E~~**F**. Two Control Room Ventilation subsystems inoperable during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs.	~~E~~**F**.1 Suspend movement of irradiated fuel assemblies in the primary and secondary containment.	Immediately
	AND	
	~~E~~**F**.2 Suspend CORE ALTERATIONS.	Immediately
OR	AND	
One or more Control Room Ventilation subsystems inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs	~~E~~**F**.3 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each Control Room Ventilation subsystem with flow through the makeup filter for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.3.2	Operate each Control Room Ventilation subsystem with flow through the recirculation filter for ≥ 15 minutes.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.3.3	Perform required Control Room Ventilation filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.3.4	Verify each Control Room Ventilation subsystem actuates on an actual or simulated initiation signal.	24 months
~~SR 3.7.3.5~~	~~Verify the air inleakage rate of the negative pressure portions of the Control Room Ventilation System is ≤ 650 cfm.~~	~~24 months~~
SR 3.7.3.~~65~~	~~Verify each Control Room Ventilation subsystem can maintain a positive pressure of ≥ 1/8 inch water gauge relative to adjacent areas during the high radiation mode of operation at a flow rate of ≤ 3000 cfm~~**Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.**	~~24 months on a STAGGERED TEST BASIS~~**In accordance with the Control Room Envelope Habitability Program**

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Ventilation System

BASES

BACKGROUND

The Control Room Ventilation 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 Control Room Ventilation System used to control radiation exposure consists of two independent and redundant high efficiency air filtration subsystems for treatment of recirculated air or outside supply air **and a CRE boundary that limits the inleakage of unfiltered air.** Each subsystem contains a makeup air filter and a recirculation adsorber, a fan, and the associated ductwork, ~~and~~ dampers**, doors, barriers, and instrumentation.** The makeup filter consists of a demister, an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, and a second HEPA filter. The recirculation adsorber consists of a prefilter and an activated charcoal adsorber section. Demisters remove water droplets from the airstream. Prefilters and HEPA filters remove particulate matter that may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay. For filter train test performed in accordance with ASME/ANSI N510-1980 flow rates are measured with respect to design flow. For the Control Room Ventilation System, the design flows are in scfm.

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 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 assumed in the licensing basis analysis of Design basis accident (DBA) consequences to the CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

In addition to the safety related standby emergency filtration function, parts of the Control Room Ventilation System are operated to maintain the ~~control room~~

~~environment~~**CRE environment** during normal operation. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to ~~control room personnel~~**CRE occupants**), the Control Room Ventilation System automatically switches to the high radiation mode of operation to ~~prevent~~ **minimize** infiltration of contaminated air into the ~~control room~~**CRE** (outside makeup air is routed through the makeup air filters, the recirculation adsorber is placed in service, and the locker room exhaust is isolated.)

The Control Room Ventilation System is designed to maintain ~~the control room environment~~**a habitable environment in the CRE** for a 30 day continuous occupancy after a DBA, **without exceeding 5 rem total effective dose equivalent (TEDE)** ~~per the requirements of GDC 19~~. Control Room Ventilation System operation in maintaining the ~~control room~~**CRE** habitability is discussed in the USAR, Sections 6.5.1 and 9.4.1 (Refs. 1 and 2, respectively).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The ability of the Control Room Ventilation System to maintain the habitability of the ~~control room~~**CRE** is an explicit assumption for the safety analyses presented in the USAR, Chapters 6 and 15 (Refs. 3 and 4, respectively). The high radiation mode of the Control Room Ventilation System is assumed to operate following a ~~loss of coolant accident, main steam line break, fuel handling accident, and control rod drop accident~~**DBA**. The radiological doses to ~~control room personnel~~**CRE occupants** as a result of the various DBAs are summarized in Reference 4. No single active or passive failure will cause the loss of outside or recirculated air from the ~~control room~~**CRE**.

The Control Room Ventilation System provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 5). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panels (Ref. 6).

The Control Room Ventilation System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two redundant subsystems of the Control Room Ventilation System are required to be OPERABLE to ensure that at least

one is available, ~~assuming~~ **if** a single **active** failure disables the other subsystem. Total **Control Room Ventilation** ~~system~~ **System** failure, **such as from a loss of both ventilation subsystems or from an inoperable CRE boundary,** could result in ~~a failure to meet the dose requirements of GDC 19~~ **exceeding a dose of 5 rem TEDE to the CRE boundary occupants** in the event of a DBA.

~~The~~ **Each** Control Room Ventilation ~~System~~ **subsystem** is considered OPERABLE when the individual components necessary to ~~control operator~~**limit CRE occupant** exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber 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 addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and at least one door in each control room access.~~**In order for the Control Room Ventilation 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 consequences analysis 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.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, the Control Room Ventilation System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA, since the DBA could lead to a fission product release.

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 Control Room Ventilation 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 operations with a potential for draining the reactor vessel (OPDRVs);

b. During CORE ALTERATIONS; and

c. During movement of irradiated fuel assemblies in the primary or secondary containment.

ACTIONS

A.1

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

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a

challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA 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 the 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.

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, or 3, if the inoperable Control Room Ventilation subsystem **or CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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

(continued)

ACTIONS

~~B~~C.1 and ~~B~~C.2 (continued)

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.

~~C~~D.1, ~~C~~D.2.1, ~~C~~D.2.2, and ~~C~~D.2.3

The Required Actions of Condition ~~C~~ **D** are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable Control Room Ventilation subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE Control Room Ventilation subsystem may be placed in the high radiation 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 ~~C~~D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require ~~isolation of~~ the ~~control room~~**Control Room Ventilation subsystem to be in the high radiation mode of operation**. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the primary and secondary containment 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.

(continued)

ACTIONS (continued)

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

If both Control Room Ventilation subsystems are inoperable in MODE 1, 2, or 3 **for reasons other than an inoperable CRE boundary (i.e., Condition B)**, the Control Room Ventilation 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.

~~E~~**F**.1, ~~E~~**F**.2, and ~~E~~**F**.3

During movement of irradiated fuel assemblies in the primary or secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two Control Room Ventilation subsystems inoperable **or with one or more Control Room Ventilation subsystems inoperable due to an inoperable CRE boundary**, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require treatment of the control room air. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the primary and secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. 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 and SR 3.7.3.2

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The Makeup Filter System must be operated from the main control room for ≥ 10 continuous hours with the heaters energized. The Recirculation Filter System (without heaters) need only be operated for ≥ 15 minutes to demonstrate the function of the system. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1 and SR 3.7.3.2 (continued)

With regard to subsystem operation time values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. ~~87~~, ~~98~~).

SR 3.7.3.3

This SR verifies that the required Control Room Ventilation System testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber bypass leakage and efficiency, minimum system flow rate (scfm), combined HEPA filter and charcoal adsorber pressure drop, and heater dissipation **in accordance with Regulatory Guide 1.52 (Ref. 9). The frequencies for performing the Control Room Ventilation System filter tests are also in accordance with Regulatory Guide 1.52 (Ref. 9).** ~~The frequencies for performing the Control Room Ventilation System filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4) and include testing initially, after 720 hours of system operation, once per 24 months, and following painting, fire, or chemical release in any ventilation zone communicating with the system. The laboratory test results will be verified to be within limits within 31 days of removal of the sample from the system. A~~**Specific test frequencies and** additional information ~~is~~ **are** discussed in detail in the VFTP.

~~With regard to filter testing parameter values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Refs. 10, 11).~~

SR 3.7.3.4

This SR verifies that each Control Room Ventilation subsystem starts and operates on an actual or simulated high radiation initiation signal. While this Surveillance can be performed with the reactor at power, operating experience has shown these components usually pass the Surveillance, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

~~SR 3.7.3.5~~

~~This SR verifies the integrity of the negative pressure portions of the Control Room Ventilation System ductwork located outside the main control room habitability boundary between fan OVC04CA(B) and isolation dampers OVC03YA(B) inclusive and fire dampers OVC042YA(E), OVC042YB(F), OVC042YC(G), and OVC042YD(H). In addition, the integrity of the recirculation filter housing flexible connection to fan OVC03A(B) must be verified. This testing ensures that the inleakage through the negative pressure portion of the Control Room Ventilation System remains within the design basis accident analysis basis. This inleakage would be filtered by the Control Room Ventilation System recirculation filters. An additional allowance of 144 cfm of unfiltered inleakage is also considered in the design basis accident analysis. Operating experience has shown that these components usually pass the SR. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.~~

~~With regard to inleakage values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is not considered to be a nominal value with respect to instrument uncertainties. This requires additional margin to be added to the limit to compensate for instrument uncertainties, for implementation in the associated plant procedures (Ref. 12).~~

SR 3.7.3.~~6~~5

This SR verifies the ~~integrity~~ **OPERABILITY** of the ~~control room enclosure and the assumed inleakage rates of potentially contaminated air~~**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 control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the Control Room Ventilation System. During the high radiation mode of operation, the Control Room Ventilation System is designed to slightly pressurize the control room to ≥ 1/8 inches water gauge positive pressure with respect to adjacent areas to prevent unfiltered inleakage. The Control Room Ventilation System is designed to maintain this positive pressure at a flow rate of ≤ 3000 scfm to the control room in the high radiation mode. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with the refueling cycle and other filtration system SRs.~~

~~With regard to control room positive pressure values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is not considered to be a nominal value with respect to instrument uncertainties. This requires additional margin to be added to the limit to compensate for instrument uncertainties, (Ref. 13).~~**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. 10) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 11). 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. 12). 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.

(continued)

BASES

REFERENCES

1. USAR, Section 6.5.1.
2. USAR, Section 9.4.1.
3. USAR, Chapter 6.
4. USAR, Chapter 15.
5. USAR, **Section 6.4**~~Appendix A~~.
6. **USAR, Section 9.5.**
7. **Calculation IP-0-0096.**
8. **Calculation IP-0-0097.**
9. **Regulatory Guide 1.52, Revision 2, March 1978.**
10. **Regulatory Guide 1.196.**
11. **NEI 99-03, "Control Room Habitability Assessment," June 2001.**
12. **Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 10, 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).**

5.5 Program and Manuals (continued)

5.5.14 Battery Monitoring and Maintenance Program

This program provides for battery restoration and maintenance, based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Stationary Applications," including the following:

a. Actions to restore battery cells with float voltage < 2.13 V,

and

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.15 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 Ventilation System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

(continued)

5.6 Program and Manuals

5.5.15 Control Room Envelope Habitability Program (continued)

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

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

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

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Dresden Nuclear Power Station, Units 2 and 3

Facility Operating License

Dresden Unit 2 Page 6
Dresden Unit 3 Page 8

Technical Specification
Pages

3.7.4-1
3.7.4-2
3.7.4-3
B 3.7.4-1
B 3.7.4-2
B 3.7.4-3
B 3.7.4-4
B 3.7.4-5
B 3.7.4-6
B 3.7.4-7
B 3.7.4-8
B 3.7.4-9
B 3.7.4-10
B 3.7.4-11
5.5-13
5.5-14

(15) The schedule for performing Surveillance Requirements (SRs) that are new or revised in Amendment No. 185 shall be as follows:

For SRs that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of Amendment No. 185.

For SRs that existed prior to this amendment whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 185.

For SRs that existed prior to this amendment that have modified acceptance criteria, the first performance is due at the end of the first surveillance interval that began on the date the surveillance was last performed prior to the implementation of Amendment No. 185.

For SRs that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to implementation of Amendment No. 185.

(16) Following implementation of Amendment No. 185, the reactor protection system trip setpoint for main steam isolation valve closure shall be maintained at the previous setpoint (less than or equal to 10% closed) until startup after the first outage of sufficient duration to change the setpoint.

(17) The license is amended to authorize changing the UFSAR to allow credit for containment overpressure as detailed below, to assure adequate Net Positive Suction Head is available for low pressure Emergency Core Cooling System pumps following a design-basis accident.

From (sec)	To (sec)	Credit (psig)
Accident start	290	9.5
290	5,000	4.8
5,000	30,000	6.6
30,000	40,000	6.0
40,000	45,500	5.4
45,500	52,500	4.9
52,500	60,500	4.4
60,500	70,000	3.8
70,000	84,000	3.2
84,000	104,000	2.5
104,000	136,000	1.8
136,000	Accident end	1.1

Insert new License Condition

D. The facility has been granted certain exemptions from the requirements of Section III.G of Appendix R to 10 CFR Part 50, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979." This section relates to fire protection features for ensuring the systems and associated circuits used

INSERT TO DRESDEN UNIT 2 FACILITY OPERATING LICENSE PAGE 6

(18) 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 3.7.4.4, in accordance with TS 5.5.14.c.(i), the assessment of CRE habitability as required by Specification 5.5.14.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.14.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.4.4, 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 January 1997, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.14.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from January 1997, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.14.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

X. The license is amended to authorize changing the UFSAR to allow credit for containment over pressure as detailed below, to assure adequate Net Positive Suction Head is available for low pressure Emergency Core Cooling System pumps following a design-basis accident.

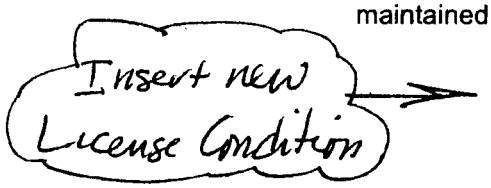
From (sec)	To (sec)	Credit (psig)
Accident start	290	9.5
290	5,000	4.8
5,000	30,000	6.6
30,000	40,000	6.0
40,000	45,500	5.4
45,500	52,500	4.9
52,500	60,500	4.4
60,500	70,000	3.8
70,000	84,000	3.2
84,000	104,000	2.5
104,000	136,000	1.8
136,000	Accident end	1.1

Y. Updated Final Safety Analysis Report

The Exelon Generation Company, LLC Updated Final Safety Analysis Report supplement, submitted pursuant to 10 CFR 54.21(d), describes certain future activities to be completed prior to the period of extended operation. The Exelon Generation Company, LLC shall complete these activities no later than January 12, 2011, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement, as revised, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4) following issuance of this renewed license. Until that update is complete, Exelon Generation Company, LLC may make changes to the programs and activities described in the supplement without prior Commission approval, provided that Exelon Generation Company, LLC evaluates such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

Z. All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion.



INSERT TO DRESDEN UNIT 3 FACILITY OPERATING LICENSE PAGE 8

(AA) 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 3.7.4.4, in accordance with TS 5.5.14.c.(i), the assessment of CRE habitability as required by Specification 5.5.14.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.14.d, shall be considered met. Following implementation:

(1) The first performance of SR 3.7.4.4, 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 January 1997, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(2) 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 January 1997, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(3) The first performance of the periodic measurement of CRE pressure, Specification 5.5.14.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

3.7 PLANT SYSTEMS

3.7.4 Control Room Emergency Ventilation (CREV) System

LCO 3.7.4 The CREV System shall be OPERABLE.

----------NOTE----------
The main 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 secondary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CREV System inoperable in MODE 1, 2, or 3 **for reasons other than Condition B.**	A.1	Restore CREV System to OPERABLE status.	7 days
B. CREV system inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	**B.1**	**Initiate action to implement mitigating actions.**	**Immediately**
	AND		
	B.2	**Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.**	**24 hours**
	AND		
	B.3	**Restore CRE boundary to OPERABLE status.**	**90 days**
~~B~~C. Required Action and	~~B~~C.1	Be in MODE 3.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	AND ~~B~~C.2 Be in MODE 4.	36 hours
~~C~~D. CREV System inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs. OR **CREV System inoperable due to an inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.**	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~C~~D.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. AND ~~C~~D.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate the CREV System for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.4.2	Perform required CREV filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify the CREV System actuates on a manual initiation signal.	24 months
SR 3.7.4.4	~~Verify the CREV System can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the adjacent areas during the isolation/pressurization mode of operation at a flow rate of ≤ 2000 scfm~~**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**

B 3.7 PLANT SYSTEMS

B 3.7.4 Control Room Emergency Ventilation (CREV) System

BASES

BACKGROUND

~~The CREV System provides a radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA). The control room emergency zone served by the CREV System consists of the main control room and the Train B Heating Ventilation and Air Conditioning (HVAC) equipment room.~~**The CREV System provides a 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 CREV System consists of a single high efficiency air filtration train for emergency treatment of outside supply air **and a CRE boundary that limits the inleakage of unfiltered air.** The filter train consists of an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, two 100% capacity booster fans in parallel, the Train B air handling unit (excluding the refrigeration condensing unit), and the associated ductwork ~~and dampers~~, **valves or dampers, doors, barriers and instrumentation.** The electric heater is used to limit the relative humidity of the air entering the filter train. Prefilters and HEPA filters remove particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay.

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. The CRE consists of the main control room and the Train B Heating Ventilation and Air Conditioning (HVAC) equipment room. 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 the CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

The CREV System is a standby system, parts of which also operate during normal unit operations to maintain the ~~control room emergency zone~~**CRE** environment. Upon receipt of a reactor building ventilation system high-high radiation alarm (indicative of conditions that could result in radiation exposure to ~~control room emergency zone personnel~~**CRE occupants**), operator action is required within 40 minutes to switch to the isolation/pressurization mode of operation and close the kitchen and locker room exhaust fan dampers to minimize infiltration of contaminated air into the ~~control room emergency zone~~**CRE**. A system of dampers isolates the ~~control room emergency zone~~**CRE**, and the air is recirculated. Outside air is taken in at the emergency outside air ventilation intake and is mixed with the recirculated air after the outside air has passed through the air filtration unit (AFU) for removal of airborne radioactive particles.

(continued)

BASES

BACKGROUND (continued)

The CREV System is designed to maintain a ~~the control room~~ **habitable environment in the CRE**~~emergency zone environment~~ for a 30 day continuous occupancy after a DBA without exceeding 5 rem **total effective dose equivalent** (TEDE)~~dose~~. The CREV System **operating at a flow rate of approximately 2000 cfm** will pressurize the ~~control room emergency zone~~**CRE** to about 0.125 inches water gauge **relative to external areas adjacent to the CRE boundary** to minimize infiltration of air from ~~adjacent zones~~**all surrounding areas adjacent to the CRE boundary**. CREV System operation in maintaining ~~control room~~**CRE** habitability is discussed in the UFSAR, Sections 6.4, 9.4, and 15.6.5 (Refs. 1, 2, and 3, respectively).

Movement of a spent fuel cask containing spent nuclear fuel in a sealed multi-purpose canister (MPC) and using a single failure-proof crane is not considered to be "movement of recently irradiated fuel assemblies in secondary containment" (Refs. 6 and 7).

APPLICABLE SAFETY ANALYSES

The ability of the CREV System to maintain the habitability of the ~~control room emergency zone~~**CRE** is an explicit assumption for the safety analyses presented in the UFSAR, Sections 6.4 and 15.6.5 (Refs. 1 and 3, respectively). The isolation/ pressurization mode of the CREV System is assumed to operate following a DBA ~~loss of coolant accident and main steam line break~~**as discussed in the UFSAR, Section 6.4 (Ref. 1)**. The radiological doses to ~~control room personnel~~**the CRE occupants** as a result of the DBA loss of coolant accident are summarized in Reference 3.

The CREV System provides protection from smoke and hazardous chemicals to the CRE occupants. The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor from the control room (Ref. 6). The analysis of hazardous chemicals transported, stored, and processed adjacent to Dresden and the performance of an analysis based Probabilistic Risk Assessment (PRA) provides the necessary justification for not installing a toxic gas monitoring automatic isolation system.

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

LCO

The CREV System is required to be OPERABLE. Total system failure **or an inoperable CRE boundary** could result in

exceeding a dose of 5 rem TEDE **(TEDE)** to the ~~control room operators~~**CRE occupants** in the event of a DBA.

The CREV System is considered OPERABLE when the individual components necessary to ~~control operator~~**limit CRE occupant** exposure are OPERABLE. The system is considered OPERABLE when its associated:

a. AFU is OPERABLE,

b. Train B air handling unit (fan portion only) is OPERABLE, including the ductwork, to maintain air circulation to and from the ~~control room emergency zone~~**CRE**; and

c. Emergency outside air ventilation intake is OPERABLE.

(continued)

BASES

LCO (continued)

The AFU is considered OPERABLE when a booster fan is OPERABLE; HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions; and heater, ductwork, valves, and dampers are OPERABLE, and air circulation through the filter train can be maintained.

~~In addition, the control room emergency zone boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors, such that the pressurization limit of SR 3.7.4.4 can be met. However, it is acceptable for access doors to be open for normal control room emergency zone entry and exit and not consider it to be a failure to meet the LCO.~~**In order for the CREV system 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.

APPLICABILITY

In MODES 1, 2, and 3, the CREV System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREV 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 secondary containment; and

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

Due to radioactive decay, the CREV System is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours).

ACTIONS

A.1

With the CREV System inoperable **for reasons other than an inoperable CRE boundary,** in MODE 1, 2, or 3, the inoperable CREV System must be restored to OPERABLE status within 7 days. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period.

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and the CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within

analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

(continued)

BASES

ACTIONS (continued)

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, or 3, if the inoperable CREV System **or the CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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.

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

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since recently irradiated fuel movement can occur in MODE 1, 2, or 3, the Required Actions of Condition ~~C~~**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. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of recently irradiated fuel assemblies. The NOTE to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of recently irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

With the CREV System inoperable **or with the CREV System inoperable due to an inoperable CRE boundary,** during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require the CREV System to be placed in the isolation/pressurization mode of operation. This places the unit in a condition that minimizes **the accident** risk.

If applicable, movement of recently irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of this activity shall not preclude completion of movement of a component to a safe position. Also, if applicable, action must be initiated

(continued)

BASES

ACTIONS

~~C~~D.1 and ~~C~~D.2 (continued)

immediately to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that the CREV System in a standby mode starts from the control room and continues to operate. This SR includes initiating flow through the HEPA filters and charcoal adsorbers. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing the system once every month provides an adequate check on this system. Monthly heater operation for ≥ 10 continuous hours, during system operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. Furthermore, the 31 day Frequency is based on the known reliability of the equipment.

SR 3.7.4.2

This SR verifies that the required CREV testing is performed in accordance with Specification 5.5.7, "Ventilation Filter Testing Program (VFTP)." The CREV filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test ~~frequencies~~ **Frequencies** and additional information are discussed in detail in the VFTP.

SR 3.7.4.3

This SR verifies that on a manual initiation from the control room, the CREV System filter train starts and the isolation dampers close. Operating experience has shown that these components normally pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was found to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.4.4

~~This SR verifies the integrity of the control room emergency zone and the assumed inleakage rates of potentially contaminated air. The control room emergency zone positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the CREV System. During the emergency isolation/ pressurization mode of operation, the CREV System is designed to slightly pressurize the control room emergency zone ≥ 0.125 inches water gauge positive pressure with respect to the adjacent areas to minimize unfiltered inleakage. The CREV System is designed to maintain this positive pressure at a flow rate of ≤ 2000 scfm to the control room emergency zone in the isolation/pressurization mode. The Frequency of 24 months is consistent with industry practice and other filtration systems SRs.~~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 the 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. 4) 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 Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). Opotions 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. UFSAR, Section 6.4.

2. UFSAR, Section 9.4.

3. UFSAR, Section 15.6.5.

4. ~~4.~~ Regulatory Guide 1.52, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants," Revision 2, March 1978.

5. Regulatory Guide 1.196.

6. UFSAR, Section 9.1.4.3.2.

7. NEI 99-03, "Control Room Habitability Assessment," June 2001.

8. NRC Safety Evaluation Report for the Holtec International HI-Storm 100 Storage System (Docket Number 72-1014, Certificate Number 1014, Amendment 2).

9. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).

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 Ventilation (CREV) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

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

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

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered

inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

TECHNICAL SPECIFICATION PAGES (Mark-ups)

LaSalle County Station, Units 1 and 2

Facility Operating License

LaSalle Unit 1 Page 16a1a
LaSalle Unit 2 Page 9c

Technical Specification
Pages

3.7.4-1
3.7.4-2
3.7.4-3
3.7.4-4
3.7.4-5
B 3.7.4-1
B 3.7.4-2
B 3.7.4-3
B 3.7.4-4
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B 3.7.4-12
B 3.7.4-13
B 3.7.4-14
5.5-14
5.5-15

Am. 147
03/30/01

(42) EGC shall relocate certain Technical Specification requirements to EGC-controlled documents upon implementation of Amendment No. 147. The items and appropriate documents are as described in Table LA, "Removal of Details Matrix," and Table R, "Relocated Specifications," that are attached to the NRC's Safety Evaluation enclosed with Amendment No. 147.

Am. 147
03/30/01

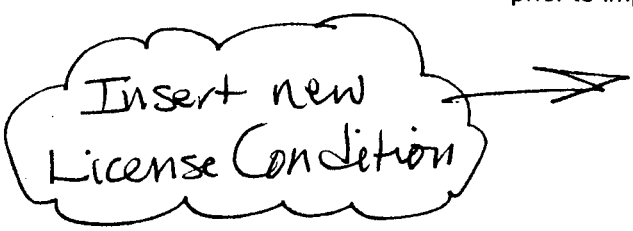
(43) The schedule for performing Surveillance Requirements (SRs) that are new or revised in Amendment No. 147 shall be as follows:

For SRs that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of Amendment No. 147.

For SRs that existed prior to this amendment whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 147.

For SRs that existed prior to this amendment that have modified acceptance criteria, the first performance is due at the end of the first surveillance interval that began on the date the surveillance was last performed prior to the implementation of Amendment No. 147.

For SRs that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to implementation of Amendment No. 147.



INSERT TO LASALLE UNIT 1 FACILITY OPERATING LICENSE PAGE 16a1a

(44) 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 3.7.4.5, in accordance with TS 5.5.15.c.(i), the assessment of CRE habitability as required by Specification 5.5.15.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.15.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.4.5, in accordance with Specification 5.5.15.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from 1998, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.15.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from 1998, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.15.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

Am. 133 03/30/01 (26) EGC shall relocate certain Technical Specification requirements to EGC-controlled documents upon implementation of Amendment No. 133. The items and appropriate documents are as described in Table LA, "Removal of Details Matrix," and Table R, "Relocated Specifications," that are attached to the NRC's Safety Evaluation enclosed with Amendment No. 133.

Am. 133 03/30/01 (27) The schedule for performing Surveillance Requirements (SRs) that are new or revised in Amendment No. 133 shall be as follows:

For SRs that are new in this amendment, the first performance is due at the end of the first surveillance interval that begins on the date of implementation of Amendment No. 133.

For SRs that existed prior to this amendment whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 133.

For SRs that existed prior to this amendment that have modified acceptance criteria, the first performance is due at the end of the first surveillance interval that began on the date the surveillance was last performed prior to the implementation of Amendment No. 133.

For SRs that existed prior to this amendment whose intervals of performance are being extended, the first extended surveillance interval begins upon completion of the last surveillance performed prior to implementation of Amendment No. 133.

INSERT TO LASALLE UNIT 2 FACILITY OPERATING LICENSE PAGE 9c

(28) 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 3.7.4.5, in accordance with TS 5.5.15.c.(i), the assessment of CRE habitability as required by Specification 5.5.15.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.15.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.4.5, in accordance with Specification 5.5.15.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from 1998, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.15.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from 1998, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.15.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

3.7 PLANT SYSTEMS

3.7.4 Control Room Area Filtration (CRAF) System

LCO 3.7.4 Two CRAF 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 irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CRAF subsystem inoperable for reasons other than Condition B.	A.1	Restore CRAF subsystem to OPERABLE status.	7 days
B. One or more CRAF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. Required Action and Associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ----------	
	~~C~~D.1 Place OPERABLE CRAF subsystem in pressurization mode.	Immediately
	OR	
	~~C~~D.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	~~C~~D.2.2 Suspend CORE ALTERATIONS.	Immediately
	AND	
	~~C~~D.2.3 Initiate action to suspend OPDRVs.	Immediately
~~D~~E. Two CRAF subsystems inoperable in MODE 1, 2, or 3 **for reasons other than Condition B.**	~~D~~E.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E~~F. Two CRAF subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs. OR **One or more CRAF subsystems inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.**	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~E~~F.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND ~~E~~F.2 Suspend CORE ALTERATIONS. AND ~~E~~F.3 Initiate action to suspend OPDRVs.	Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate each CRAF subsystem for ≥ 10 continuous hours with the heaters operating.	31 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.2	Manually initiate flow through the CRAF recirculation filters for ≥ 10 hours.	31 days
SR 3.7.4.3	Perform required CRAF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.4	Verify each CRAF subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.4.5	~~Verify each CRAF subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to adjacent areas during the pressurization mode of operation at a flow rate of ≤ 4000 cfm.~~**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**

B 3.7 PLANT SYSTEMS

B 3.7.4 Control Room Area Filtration (CRAF) System

BASES

BACKGROUND

~~The CRAF System provides a radiologically controlled environment (control room and auxiliary electric equipment room) from which the unit can be safely operated following a Design Basis Accident (DBA).~~**The CRAF System provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals or smoke.** The Control Room Area Heating Ventilation and Air Conditioning (HVAC) System is comprised of the Control Room HVAC System and the Auxiliary Electric Equipment Room (AEER) HVAC System. The Control Room HVAC System is common to both units and serves the control room, main security control center, and the control room habitability storage room (toilet room). The AEER HVAC System is common to both units and services the auxiliary electrical equipment rooms. The control room area is comprised of the areas covered by the Control Room and AEER HVAC Systems.

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

The safety related function of the CRAF System used to control radiation exposure consists of two independent and redundant high efficiency air filtration subsystems (i.e., the emergency makeup air filter units (EMUs) for treatment of outside supply air). Recirculation filters are also provided for treatment of recirculated air. Each EMU subsystem consists of a demister, an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter,

an activated charcoal adsorber section, a second HEPA filter, a fan, and the associated ductwork, dampers, **doors, barriers,** and instrumentation and controls. Demisters remove water droplets from the airstream. The electric heater reduces the relative humidity of the air entering the EMUs. Prefilters and HEPA filters remove particulate matter that may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay. Each Control Room and AEER Ventilation System has a charcoal recirculation filter in the supply of the system that is normally bypassed. In addition, the OPERABILITY of the CRAF System is dependent upon portions of the Control Room Area HVAC System, including the control room and auxiliary electric equipment room outside air intakes, supply fans, ducts, dampers, etc.

(continued)

BASES

BACKGROUND (continued)

In addition to the safety related standby emergency filtration function, parts of the CRAF System that are shared with the Control Room Area HVAC System are operated to maintain the ~~control room area~~**CRE** environment during normal operation. Upon receipt of a high radiation signal from the outside air intake (indicative of conditions that could result in radiation exposure to ~~control room personnel~~**CRE occupants**), the CRAF System automatically isolates the normal outside air supply to the Control Room Area HVAC System, and diverts the minimum outside air requirement through the EMUs before delivering it to the ~~control room area~~**CRE**. The recirculation filters for the control room and AEER must be manually placed in service within 4 hours of receipt of any control room high radiation alarm.

The CRAF System is designed to maintain ~~the control room area environment~~ **a habitable environment in the CRE** for a 30 day continuous occupancy after a DBA, without exceeding a 5 rem whole body dose or its equivalent to any part of the body. CRAF System operation in maintaining the ~~control room area~~ **CRE** habitability is discussed in the UFSAR, Sections 6.4, 6.5.1, and 9.4.1 (Refs. 1, 2, and 3, respectively).

APPLICABLE SAFETY ANALYSES

The ability of the CRAF System to maintain the habitability of the ~~control room area~~**CRE** is an explicit assumption for the safety analyses presented in the UFSAR, Chapters 6 and 15 (Refs. 4 and 5, respectively). The pressurization mode of the CRAF System is assumed to operate following a ~~loss of coolant accident, main steam line break, fuel handling accident, and control rod drop accident~~**DBA**. The radiological doses to ~~control room personnel~~**CRE occupants** as a result of the various DBAs are summarized in Reference 5. No single active failure will cause the loss of outside or recirculated air from the ~~control room area~~**CRE**.

The CRAF System provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 1). 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. 3).

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

LCO

Two redundant subsystems of the CRAF System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ **if** a single **active** failure disables the other subsystem. Total **CRAF** ~~system~~ **System** failure, **such as from a loss of both ventilation subsystems or from an inoperable CRE boundary,** could result in exceeding a dose of 5 rem **whole body or its equivalent to any part of the body** to the ~~control room operators~~**CRE occupants** in the event of a DBA.

(continued)

BASES

LCO (continued)

~~The~~ **Each** CRAF ~~System~~ **subsystem** is considered OPERABLE when the individual components necessary to ~~control operator~~**limit CRE occupant** exposure are OPERABLE~~ in both subsystems~~. A subsystem is considered OPERABLE when its associated EMU is OPERABLE and the associated charcoal recirculation filters for the control room and AEER are OPERABLE. An EMU is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorber 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 through the EMU can be maintained.

Additionally, the portions of the Control Room Area HVAC System that supply the outside air to the EMUs are required to be OPERABLE. This includes the outside air intakes, associated dampers and ductwork.

~~In addition, the control room area boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors, such that the pressurization limit of SR 3.7.4.5 can be met. However, it is acceptable for access doors to be open for normal control room area entry and exit and not consider it to be a failure to meet the LCO.~~ **In order for the CRAF 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 analysis 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 the CRAF System to be in the pressurization mode of operation is indicated.

APPLICABILITY

In MODES 1, 2, and 3, the CRAF System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA, since the DBA could lead to a fission product release.

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 CRAF 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 irradiated fuel assemblies in the secondary containment;

(continued)

BASES

APPLICABILITY (continued)

b. During CORE ALTERATIONS; and

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

ACTIONS

A.1

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

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour completion time is reasonable based on the low

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

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, or 3, if the inoperable CRAF subsystem **or the CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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.

~~C~~D.1, ~~C~~D.2.1, ~~C~~D.2.2, and ~~C~~D.2.3

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition ~~C~~D are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The

(continued)

BASES

ACTIONS

~~C~~D.1, ~~C~~D.2.1, ~~C~~D.2.2, and ~~C~~D.2.3 (continued)

Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable CRAF subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CRAF subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action ~~C~~D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require ~~isolation of the control room area~~**the CRAF System to be in the pressurization mode of operation**. This places the unit in a condition that minimizes **the accident** risk.

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

~~D~~E.1

If both CRAF subsystems are inoperable in MODE 1, 2, or 3 **for reasons other than an inoperable CRE boundary (i.e., Condition B)**, the CRAF 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)

BASES

ACTIONS (continued)

~~E~~F.1, ~~E~~F.2, and ~~E~~F.3

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition ~~E~~F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two CRAF subsystems inoperable **or with one or more CRAF subsystems inoperable due to an inoperable CRE boundary**, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require ~~isolation of the control room~~**the CRAF System to be in the pressurization mode of operation**. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Monthly heater operation for

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1 (continued)

≥ 10 continuous hours during system operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.4.2

This SR verifies that flow can be manually realigned through the CRAF System recirculation filters and maintained for ≥ 10 hours. Standby systems should be checked periodically to ensure that they function. Monthly operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and two subsystem redundancy available.

SR 3.7.4.3

This SR verifies that the required CRAF testing is performed in accordance with Specification 5.5.8, "Ventilation Filter Testing Program (VFTP)." The CRAF filter tests are in accordance with ANSI/ASME N510-1989 (Ref. ~~56~~). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test ~~frequencies~~ **Frequencies** and additional information are discussed in detail in the VFTP.

SR 3.7.4.4

This SR verifies that each CRAF subsystem automatically switches to the pressurization mode of operation on an actual or simulated air intake radiation monitors initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 overlaps this SR to provide complete testing of the safety function. Operating experience has shown that these components normally pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was found to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.4.5

This SR verifies the ~~integrity~~ **OPERABILITY** of the ~~control room area and the assumed inleakage rates of potentially contaminated air. The control room area positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the CRAF System. During the pressurization mode of operation, the CRAF System is designed to slightly pressurize the control room area to ≥ 0.125 inches water gauge positive pressure with respect to adjacent areas to prevent unfiltered inleakage. The CRAF System is designed to maintain this positive pressure at a flow rate of ≤ 4000 cfm to the control room area in the pressurization mode. This test also requires manual initiation of flow through the control room and AEER recirculation filters line when the CRAF System is in the pressurization mode of operation. The Frequency of 24 months is consistent with industry practice and other filtration system SRs.~~CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

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

the CRE boundary has been restored to OPERABLE status.

REFERENCES

1. UFSAR, Section 6.4.

2. UFSAR, Section 6.5.1.

3. UFSAR, Section 9.4.1.

4. UFSAR, Chapter 6.

5. UFSAR, Chapter 15.

6. ~~6. ANSI/ASME N510-1989~~ANSI/ASME N510-1989.

7. Regulatory Guide 1.196.

8. NEI 99-03, "Control Room Habitability Assessment," June 2001.

9. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability," (ADAMS Accession No. ML040300694).

5.5 Programs and Manuals

5.5.14 Battery Monitoring and Maintenance Program

This Program provides for restoration and maintenance, which includes the following:

a. Actions to restore battery cells with float voltage < 2.13 V; and

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

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

5.5.15 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 Area Filtration (CRAF) 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 whole body or its equivalent to any part of the body. The program shall include the following elements:

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

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

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

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of

the CRAF System, operating at the flow rate required by the VFTP, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

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

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

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Limerick Generating Station, Unit 1

Facility Operating License

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Technical Specification
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from the trust shall be made if the trustee receives prior written notice of objection from the NRC.

(d) The decommissioning trust agreement must provide that the agreement can not be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

(e) The appropriate section of the decommissioning trust agreement shall state that the trustee, investment advisor, or anyone else directing the investments made in the trust shall adhere to a "prudent investor" standard, as specified in 18 CFR 35.32(a)(3) of the Federal Energy Regulatory Commission's regulations.

(20) Exelon Generation Company shall take all necessary steps to ensure that the decommissioning trust is maintained in accordance with the application for approval of the transfer of Limerick, Unit 1, license and the requirements of the Order approving the transfer, and consistent with the safety evaluation supporting the Order.

INSERT → (21)

D. The facility requires exemptions from certain requirements of 10 CFR Part 50. These include (a) exemption from the requirement of Appendix J, the testing of containment air locks at times when the containment integrity is not required (Section 6.2.6.1 of the SER and SSER-3), (b) exemption from the requirements of Appendix J, the leak rate testing of the Main Steam Isolation Valves (MSIVs) at the peak calculated containment pressure, Pa, and exemption from the requirements of Appendix J that the measured MSIV leak rates be included in the summation for the local leak rate test (Section 6.2.6 of SSER-3), (c) exemption from the requirement of Appendix J, the local leak rate testing of the Traversing Incore Probe Shear Valves (Section 6.2.6 of the SER and SSER-3).

INSERT TO LIMERICK - UNIT 1 FACILITY OPERATING LICENSE PAGE 7a

(21) 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 4.7.2.2.a, in accordance with TS 6.16.c.(i), the assessment of CRE habitability as required by Specification 6.16.c.(ii), and the measurement of CRE pressure as required by Specification 6.16.d, shall be considered met. Following implementation:

(a) The first performance of SR 4.7.2.2.a, in accordance with Specification 6.16.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful tracer gas test, as stated in the December 10, 2004 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 6.16.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful tracer gas test, as stated in the December 10, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 6.16.d, shall be within 24 months, plus the 180 days allowed by SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

PLANT SYSTEMS

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.2 Two independent control room emergency fresh air supply system subsystems shall be OPERABLE.

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

APPLICABILITY: All OPERATIONAL CONDITIONS and when RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3,

1. ~~In OPERATIONAL CONDITION 1, 2, or 3~~ With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition a.2, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT 1 → 2.

b. In OPERATIONAL CONDITION 4, 5, or when RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel:

1. With one ~~control room~~ emergency fresh air supply subsystems for reasons other than Condition b.3 inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or initiate and maintain operation of the OPERABLE subsystem in the radiation isolation mode of operation.

2. With both ~~control room~~ emergency fresh air supply subsystems for reasons other than Condition b.3 inoperable, immediately suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

INSERT 2 → 3.

SURVEILLANCE REQUIREMENTS

4.7.2.1 Each control room emergency fresh air supply subsystem shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying the control room air temperature to be less than or equal to 85°F effective temperature.

b. In accordance with the Surveillance Frequency Control Program on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates with the heaters OPERABLE.

c. In accordance with the Surveillance Frequency Control Program or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the subsystem by:

1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions 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 3000 cfm ± 10%.

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, shows the methyl iodide penetration of less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

3. Verifying a subsystem flow rate of 3000 cfm ± 10% during subsystem operation when tested in accordance with ANSI N510-1980.

d. 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, shows the methyl iodide penetration of less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

e. In accordance with the Surveillance Frequency Control Program by:

1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the subsystem at a flow rate of 3000 cfm ± 10%; verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.

2. Verifying that on each of the below chlorine isolation mode actuation test signals, the subsystem automatically switches to the chlorine isolation mode of operation and the isolation valves close within 5 seconds:

a) Outside air intake high chlorine, and

b) Manual initiation from the control room.

3. Verifying that on each of the below radiation isolation mode actuation test signals, the subsystem automatically switches to the radiation isolation mode of operation~~and the control room is maintained at a positive pressure of at least 1/8 inch water gauge relative to the turbine enclosure and auxiliary equipment room and outside atmosphere during subsystem operation with an outdoor air flow rate less than or equal to 525 cfm~~. DELETED

a) Outside air intake high radiation, and

b) Manual initiation from control room.

SURVEILLANCE REQUIREMENTS (Continued)

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of 3000 cfm ± 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and bypass 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 3000 cfm ± 10%.

INSERT 3 → 4.7.2.2

an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

The OPERABILITY of the control room emergency fresh air supply system ensures that the control room will remain habitable for ~~operations personnel~~ occupants during and following ~~all design basis accident conditions~~. Constant purge of the system at 1 cfm 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 rem or less Total Effective Dose Equivalent. This limitation is consistent with the requirements of 10 CFR Part 50.67, Accident Source Term.

Since the Control Room Emergency Fresh Air Supply System is not credited for filtration in OPERATIONAL CONDITIONS 4 and 5, applicability to 4 and 5 is only required to support the Chlorine and Toxic Gas design basis isolation requirements.

INSERT 4

3/4.7.3 REACTOR CORE ISOLATION COOLING SYSTEM

The reactor core isolation cooling (RCIC) system is provided to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel without requiring actuation of any of the emergency core cooling system equipment. The RCIC system is conservatively required to be OPERABLE whenever reactor pressure exceeds 150 psig. This pressure is substantially below that for which low pressure core cooling systems can provide adequate core cooling.

The RCIC system specifications are applicable during OPERATIONAL CONDITIONS 1, 2, and 3 when reactor vessel pressure exceeds 150 psig because RCIC is the primary non-ECCS source of emergency core cooling when the reactor is pressurized.

With the RCIC system inoperable, adequate core cooling is assured by the OPERABILITY of the HPCI system and justifies the specified 14 day out-of-service period. A Note prohibits the application of Specification 3.0.4.b to an inoperable RCIC system. There is an increased risk associated with entering an OPERATIONAL CONDITION or other specified condition in the Applicability with an inoperable RCIC subsystem and the provisions of Specification 3.0.4.b, which allow entry into an OPERATIONAL CONDITION or other specified condition in the Applicability with the Limiting Condition for Operation not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

The surveillance requirements provide adequate assurance that RCIC will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to start cooling at the earliest possible moment.

PROCESS CONTROL PROGRAM (Continued)

2. A determination that the change did not reduce the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.

b. Shall become effective upon review and acceptance by the PORC and approval of the Plant Manager.

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 Changes to the ODCM:

a. Shall be documented with the following information:

1. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the change(s) and

2. A determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.106, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR Part 50 and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.

b. Shall become effective upon review and acceptance by the PORC and the approval of the Plant Manager.

c. Shall be submitted to the Commission in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Annual Radioactive Effluent Release Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (e.g., month/year) the change was implemented.

6.15 (Deleted) - INFORMATION FROM THIS SECTION RELOCATED TO THE ODCM.

INSERT 5 → 6.16

Limerick Unit 1

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

Insert 1

2. With one or more control room emergency fresh air supply subsystems inoperable due to an inoperable CRE boundary,

   a. Initiate action to implement mitigating actions immediately or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours; and

   b. Within 24 hours, verify mitigating actions ensure CRE occupant exposures to radiological and chemical hazards will not exceed limits and actions to mitigate exposure to smoke hazards are taken or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours; and

   c. Restore CRE boundary to operable status within 90 days or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.

Insert 2

3. With one or more control room emergency fresh air subsystems inoperable due to an inoperable CRE boundary, immediately suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

Insert 3

4.7.2.2 The control room envelope boundary shall be demonstrated OPERABLE:

a. At a frequency in accordance with the Control Room Envelope Habitability Program by performance of control room envelope unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

Insert 4

The Control Room Envelope (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 other noncritical areas including adjacent support offices, toilet and utility rooms. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, ceiling, ducting, valves, 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.

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

In order for the CREFAS 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.

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

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

implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

SR 4.7.2.2 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 Total Effective Dose Equivalent and the CRE occupants are protected from hazardous chemicals and smoke. SR 4.7.2.2 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, Required Action 3.7.2.a.2 must be entered. Required Action 3.7.2.a.2.c 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. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). These compensatory measures may also be used as mitigating actions as required by Required Action 3.7.2.a.2.b. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 5). 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. UFSAR Section 6.4

2. UFSAR Section 9.5

3. Regulatory Guide 1.196

4. NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001.

5. 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).

Insert 5

6.16 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 Fresh Air Supply (CREFAS) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREFAS, operating at the flow rate required by SR 4.7.2.1.c.1, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses 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 Specification 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 c and d, respectively.

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Limerick Generating Station, Unit 2

Facility Operating License

Page 4a

Technical Specification
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(c) The decommissioning trust agreement for Limerick, Unit 2, must provide that no disbursements or payments from the trust shall be made by the trustee unless the trustee has first given the Director of the Office of Nuclear Reactor Regulation 30 days prior written notice of payment. The decommissioning trust agreement shall further contain a provision that no disbursements or payments from the trust shall be made if the trustee receives prior written notice of objection from the NRC.

(d) The decommissioning trust agreement must provide that the agreement can not be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

(e) The appropriate section of the decommissioning trust agreement shall state that the trustee, investment advisor, or anyone else directing the investments made in the trust shall adhere to a "prudent investor" standard, as specified in 18 CFR 35.32(a)(3) of the Federal Energy Regulatory Commission's regulations.

(8) Exelon Generation Company shall take all necessary steps to ensure that the decommissioning trust is maintained in accordance with the application for approval of the transfer of Limerick, Unit 2, license and the requirements of the Order approving the transfer, and consistent with the safety evaluation supporting the Order.

INSERT → (9)

D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70. These include (a) exemption from the requirement of Appendix J, the testing of containment air locks at times when the containment integrity is not required (Section 6.2.6.1 of the SER and SSER-3), (b) exemption from the requirements of Appendix J, the leak rate testing of the Main Steam Isolation Valves (MSIVs) at the peak calculated containment pressure, Pa, and exemption from the requirements of Appendix J that the measured MSIV leak rates be included in the summation for the local leak rate test (Section 6.2.6.1 of SSER-3), (c) exemption from the requirement of Appendix J,

INSERT TO LIMERICK - UNIT 2 FACILITY OPERATING LICENSE PAGE 4a

(9) 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 4.7.2.2.a, in accordance with TS 6.16.c.(i), the assessment of CRE habitability as required by Specification 6.16.c.(ii), and the measurement of CRE pressure as required by Specification 6.16.d, shall be considered met. Following implementation:

(a) The first performance of SR 4.7.2.2.a, in accordance with Specification 6.16.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful tracer gas test, as stated in the December 10, 2004 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 6.16.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful tracer gas test, as stated in the December 10, 2004 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 6.16.d, shall be within 24 months, plus the 180 days allowed by SR 4.0.2, as measured from September 16, 2004, the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.2 Two independent control room emergency fresh air supply system subsystems shall be OPERABLE.

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

APPLICABILITY: All OPERATIONAL CONDITIONS and when RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3:

1. With the Unit 1 diesel generator for one control room emergency fresh air supply subsystem inoperable for more than 30 days, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

2. With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition a.5, restore the inoperable subsystem to OPERABLE status within 7 days, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3. With one control room emergency fresh air supply subsystem inoperable and the other control room emergency fresh air supply subsystem with an inoperable Unit 1 diesel generator, restore the inoperable subsystem to OPERABLE status or restore the Unit 1 diesel generator to OPERABLE status within 72 hours, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4. With the Unit 1 diesel generators for both control room emergency fresh air supply subsystems inoperable for more than 72 hours, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

INSERT 1 → 5.

b. In OPERATIONAL CONDITION 4, 5 or when RECENTLY IRRADIATED FUEL is being handled in the secondary containment, or during operations with a potential for draining the reactor vessel:

1. With one control room emergency fresh air supply subsystem inoperable for reasons other than Condition b.3, restore the inoperable subsystem to OPERABLE status within 7 days, or initiate and maintain operation of the OPERABLE subsystem in the radiation isolation mode of operation.

2. With both control room emergency fresh air supply subsystem inoperable, immediately suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

INSERT 2 → 3.

SURVEILLANCE REQUIREMENTS

4.7.2.1 Each control room emergency fresh air supply subsystem shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying the control room air temperature to be less than or equal to 85°F effective temperature.

b. In accordance with the Surveillance Frequency Control Program on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates with the heaters OPERABLE.

c. In accordance with the Surveillance Frequency Control Program or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the subsystem by:

1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions 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 3000 cfm ± 10%.

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, shows the methyl iodide penetration of less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

3. Verifying a subsystem flow rate of 3000 cfm ± 10% during subsystem operation when tested in accordance with ANSI N510-1980.

d. 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, shows the methyl iodide penetration of less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

e. In accordance with the Surveillance Frequency Control Program by:

1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the subsystem at a flow rate of 3000 cfm ± 10%; verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.

2. Verifying that on each of the below chlorine isolation mode actuation test signals, the subsystem automatically switches to the chlorine isolation mode of operation and the isolation valves close within 5 seconds:

a) Outside air intake high chlorine, and

b) Manual initiation from the control room.

3. Verifying that on each of the below radiation isolation mode actuation test signals, the subsystem automatically switches to the radiation isolation mode of operation; and the control room is maintained at a positive pressure of at least 1/8 inch water gauge relative to the turbine enclosure and auxiliary equipment room and outside atmosphere during subsystem operation with an outdoor air flow rate less than or equal to 525 cfm:

DELETE

a) Outside air intake high radiation, and

b) Manual initiation from control room.

SURVEILLANCE REQUIREMENTS (Continued)

f. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and bypass leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of 3000 cfm ± 10%.

g. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and bypass 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 3000 cfm ± 10%.

INSERT 3 → 4.7.2.2

BASES

3/4.7.1 SERVICE WATER SYSTEMS - COMMON SYSTEMS

The OPERABILITY of the service water systems ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of these systems, assuming a single failure, is consistent with the assumptions used in the accident conditions within acceptable limits.

The RHRSW and ESW systems are common to Units 1 and 2 and consist of two independent subsystems each with two pumps. One pump per subsystem (loop) is powered from a Unit 1 safeguard bus and the other pump is powered from a Unit 2 safeguard bus. In order to ensure adequate onsite power sources to the systems during a loss of offsite power event, the inoperability of these supplies are restricted in system ACTION statements.

RHRSW is a manually operated system used for core and containment heat removal. Each of two RHRSW subsystems has one heat exchanger per unit. Each RHRSW pump provides adequate cooling for one RHR heat exchanger. By limiting operation with less than three OPERABLE RHRSW pumps with OPERABLE Diesel Generators, each unit is ensured adequate heat removal capability for the design scenario of LOCA/LOOP on one unit and simultaneous safe shutdown of the other unit.

Each ESW pump provides adequate flow to the cooling loads in its associated loop. With only two divisions of power required for LOCA mitigation of one unit and one division of power required for safe shutdown of the other unit, one ESW pump provides sufficient capacity to fulfill design requirements. ESW pumps are automatically started upon start of the associated Diesel Generators. Therefore, the allowable out of service times for OPERABLE ESW pumps and their associated Diesel Generators is limited to ensure adequate cooling during a loss of offsite power event.

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

The OPERABILITY of the control room emergency fresh air supply system ensures that the control room will remain habitable for ~~operations personnel~~ occupants during and following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. ~~all design basis accident conditions.~~ Constant purge of the system at 1 cfm 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 rem or less Total Effective Dose Equivalent. This limitation is consistent with the requirements of 10 CFR Part 50.67, Accident Source Term.

Since the Control Room Emergency Fresh Air Supply System is not credited for filtration in OPERATIONAL CONDITIONS 4 and 5, applicability to 4 and 5 is only required to support the Chlorine and Toxic Gas design basis isolation requirements.

The CREFAS is common to Units 1 and 2 and consists of two independent subsystems. The power supplies for the system are from Unit 1 Safeguard busses, therefore, the inoperability of these Unit 1 supplies are addressed in the CREFAS ACTION statements in order to ensure adequate onsite power sources to CREFAS during a loss of offsite power event. The allowable out of service

INSERT 4

CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM (Continued)

times are consistent with those in the Unit 1 Technical Specifications for CREFAS and AC electrical power supply out of service condition combinations.

3/4.7.3 REACTOR CORE ISOLATION COOLING SYSTEM

The reactor core isolation cooling (RCIC) system is provided to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel without requiring actuation of any of the emergency core cooling system equipment. The RCIC system is conservatively required to be OPERABLE whenever reactor pressure exceeds 150 psig. This pressure is substantially below that for which low pressure core cooling systems can provide adequate core cooling.

The RCIC system specifications are applicable during OPERATIONAL CONDITIONS 1, 2, and 3 when reactor vessel pressure exceeds 150 psig because RCIC is the primary non-ECCS source of emergency core cooling when the reactor is pressurized.

With the RCIC system inoperable, adequate core cooling is assured by the OPERABILITY of the HPCI system and justifies the specified 14 day out-of-service period. A Note prohibits the application of Specification 3.0.4.b to an inoperable RCIC system. There is an increased risk associated with entering an OPERATIONAL CONDITION or other specified condition in the Applicability with an inoperable RCIC subsystem and the provisions of Specification 3.0.4.b, which allow entry into an OPERATIONAL CONDITION or other specified condition in the Applicability with the Limiting Condition for Operation not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

The surveillance requirements provide adequate assurance that RCIC will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to start cooling at the earliest possible moment.

PROCESS CONTROL PROGRAM (Continued)

2. A determination that the change did not reduce the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.

b. Shall become effective upon review and acceptance by the PORC and approval of the Plant Manager.

6.14 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.14.1 Changes to the ODCM:

a. Shall be documented with the following information:

1. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the change(s) and

2. A determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.106, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR Part 50 and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.

b. Shall become effective upon review and acceptance by the PORC and the approval of the Plant Manager.

c. Shall be submitted to the Commission in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Annual Radioactive Effluent Release Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (e.g., month/year) the change was implemented.

6.15 (Deleted) - INFORMATION FROM THIS SECTION RELOCATED TO THE ODCM.

INSERT 5 6.16

Limerick Unit 2

3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEM

Insert 1

5. With one or more control room emergency fresh air supply subsystems inoperable due to an inoperable CRE boundary,

   a. Initiate action to implement mitigating actions immediately or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours; and

   b. Within 24 hours, verify mitigating actions ensure CRE occupant exposures to radiological and chemical hazards will not exceed limits and actions to mitigate exposure to smoke hazards are taken or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours; and

   c. Restore CRE boundary to operable status within 90 days or be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours.

Insert 2

3. With one or more control room emergency fresh air subsystems inoperable due to an inoperable CRE boundary, immediately suspend handling of RECENTLY IRRADIATED FUEL in the secondary containment and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

Insert 3

4.7.2.2 The control room envelope boundary shall be demonstrated OPERABLE:

a. At a frequency in accordance with the Control Room Envelope Habitability Program by performance of control room envelope unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

Insert 4

The Control Room Envelope (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 other noncritical areas including adjacent support offices, toilet and utility rooms. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, ceiling, ducting, valves, 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.

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

In order for the CREFAS 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.

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

During the period that the CRE boundary is considered inoperable, action must be initiated immediately to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time

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

SR 4.7.2.2 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 Total Effective Dose Equivalent and the CRE occupants are protected from hazardous chemicals and smoke. SR 4.7.2.2 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, Required Action 3.7.2.a.2 must be entered. Required Action 3.7.2.a.2.c 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. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). These compensatory measures may also be used as mitigating actions as required by Required Action 3.7.2.a.2.b. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 5). 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. UFSAR Section 6.4

2. UFSAR Section 9.5

3. Regulatory Guide 1.196

4. NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001.

5. 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).

Insert 5

6.16 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 Fresh Air Supply (CREFAS) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREFAS, operating at the flow rate required by SR 4.7.2.1.c.1, at a Frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses 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 Specification 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 c and d, respectively.

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The licensee 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.

(4) AmerGen Energy Company, LLC, 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 combined set of plans[1], which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "Oyster Creek Nuclear Generating Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 0," submitted by letter dated October 21, 2004.

(5) Inspections of core spray spargers, piping and associated components will be performed in accordance with BWRVIP-18, "BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines," as approved by NRC staff's Final Safety Evaluation Report dated December 2, 1999.

(6) Long Range Planning Program - Deleted

(7) Reactor Vessel Integrated Surveillance Program

AmerGen Energy Company, LLC, is authorized to revise the Updated Final Safety Analysis Report (UFSAR) to allow implementation of the Boiling Water Reactor Vessel and Internals Project reactor pressure vessel Integrated Surveillance Program as the basis for demonstrating compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50, "Reactor Vessel Material Surveillance Program Requirements," as set forth in the licensee's application dated December 20, 2002, and as supplemented on May 30, September 10, and November 3, 2003.

INSERT → (8)

[1] The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

INSERT TO OYSTER CREEK FACILITY OPERATING LICENSE PAGE 4

(8) Upon implementation of Amendment No. XXX adopting TSTF-448, Revision 3, the assessment of CRE habitability as required by Specification 6.22.c.(ii), and the measurement of CRE pressure as required by Specification 6.22.d, shall be considered met. Following implementation:

(a) Not applicable since tracer gas testing for determining the unfiltered air inleakage past the control room envelope (CRE) boundary into the CRE is not required, as stated in the December 9, 2003 letter response to Generic Letter 2003-01.

(b) The first performance of the periodic assessment of CRE habitability, Specification 6.22.c.(ii), shall be within 3 years, plus the 9-month allowance of Specification 1.24, as measured from the date of implementation of Amendment No. XXX adopting TSTF-448, Revision 3.

(c) The first performance of the periodic measurement of CRE pressure, Specification 6.22.d, shall be within 24 months, plus the 180 days allowed by Specification 1.24, as measured from the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

3.17 Control Room Heating, Ventilating, and Air-Conditioning System

Applicability: Applies to the operability of the control room heating, ventilating, and air conditioning (HVAC) system and Control Room Envelope (CRE) boundary.

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

Objective: To assure the capability of the control room HVAC system to minimize the amount of radioactivity from entering the control room in the event of an accident.

Specifications:

A. The control room HVAC system shall be operable during all modes of plant operation.

B. With one control room HVAC system determined inoperable for reasons other than specification D:

1. Verify once per 24 hours the partial recirculation mode of operation for the operable system, or place the operable system in the partial recirculation mode; and

2. Restore the inoperable system within 7 days, or prepare and submit a special report to the Commission in lieu of any other report required by Section 6.9, within the next 14 days, outlining the action taken, the cause of the inoperability and the plans/schedule for restoring the HVAC system to operable status.

C. With both control room HVAC systems determined inoperable for reasons other than specification D:

1. During Power Operation: place the reactor in the cold shutdown condition within 30 hours

2. During Refueling:

(a) Cease irradiated fuel handling operations; and

(b) Cease all work on the reactor or its connected systems in the reactor building which could result in inadvertent releases of radioactive materials.

D. When one or both control room HVAC systems are determined inoperable due to an inoperable CRE boundary:

1. During Power Operation: actions to implement mitigating actions shall be performed immediately, verification that the mitigating actions are in place shall be performed within 24 hours, and the CRE boundary shall be restored to operable status within 90 days.

2. During Refueling:

(a) Immediately suspend movement of irradated fuel assemblies in the containment; and

(b) Immediately initiate action to suspend operations with the potential to drain the reactor vessel.

Basis:

The operability of the control room HVAC system ensures that the control room will remain habitable for operations personnel during a postulated design basis accident. 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 protect the CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

Since control room HVAC systems A and B do not have HEPA filters or charcoal absorbers, the supply fan and dampers for each system minimize the beta and gamma doses to the operators by providing positive pressurization and limiting the makeup and infiltration air into the control room envelope. For the supply of 100% outside unfiltered air to the control room envelope, the radiation exposure to personnel occupying the control room is limited to less than a 30-day integrated gamma dose of 5 rem, and a 30-day integrated beta dose of 30 rem.

The control room HVAC system with the use of Self Contained Breathing Apparatus (SCBA) provides protection from smoke and hazardous chemicals for the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 1). 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. 2).

A periodic offsite chemical survey, and procedures for controlling onsite chemicals, are essential elements of CRE protection against hazardous chemicals. The system design is based on low probability of offsite sources of toxic gas, based on a chemical survey of the surrounding areas. The offsite chemical survey is conducted periodically to determine any change of condition that may need to be addressed. The onsite chemicals are controlled procedurally such that they do not affect CRE habitability adversely.

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

In order for the Control Room HVAC System 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 the CRE occupants are protected from hazardous chemicals and smoke.

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 a 30-day integrated gamma dose of 5 rem, and a 30-day integrated beta dose of 30 rem), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. Actions must be taken to restore an INOPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24-hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 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.

REFERENCES:

(1) UFSAR Section 6.4
(2) UFSAR Section 9.5

6.20 MAJOR CHANGES TO RADIOACTIVE WASTE TREATMENT SYSTEMS

DELETED.

6.21 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may take changes to Bases without prior NRC approval provided the changes do not require either of the following:

1. A change in the TS incorporated in the licese or

2. A change to the updated FSAR (UFSAR) or Bases that requires NRC appoval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.

d. Proposed changes that meet the criteria of Specification 6.21.b.1 or 6.21.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

6.22 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 HVAC 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 a 30-day integrated gamma dose of 5 rem, and a 30-day integrated beta dose of 30 rem. The program shall include the following elements:

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

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

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 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 of Regulatory Guide 1.197, Revision 0.

The following are exceptions to Sections C.1 of Regulatory Guide 1.197, Revision 0:

The Oyster Creek CRE boundary operability is not dependent on a measured unfiltered air inleakage value (Reference Oyster Creek letter to NRC dated November 17, 2005, Letter No. 2130-05-20218). No inleakage testing for determining the unfiltered air inleakage past the CRE boundary into the CRE is required at the Oyster Creek site.

d. Measurement, at designated locations, of the CRE pressure relative to areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem (train) of the Control Room Ventilation System operating at the design flow rate, at a Frequency of 24 months. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. 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 Section 1.24 are applicable to the frequencies for assessing CRE habitability measuring CRE pressure and assessing the CRE boundary as required by paragraphs d and c, respectively.

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(10) Additional Conditions of the Renewed License

(a) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement, as revised on January 31, 2003, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4) following the issuance of this renewed license. Until that update is complete, the Exelon Generation Company may make changes to the programs described in the supplement without prior Commission approval, provided that the Exelon Generation Company evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(b) Future Inspection Activities

The Exelon Generation Company Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on January 31, 2003, describes certain future inspection activities to be completed before the period of extended operation. The Exelon Generation Company shall complete these activities no later than August 8, 2013, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

(c) Integrated Surveillance Program

The Exelon Generation Company shall implement an NRC staff-approved reactor vessel integrated surveillance program for the extended period of operation which satisfies the requirements of 10 CFR Part 54. Such a program will be implemented through a staff-approved Boiling Water Reactor Vessel and Internals Project program or through a staff-approved plant-specific program. Before August 8, 2013, the licensee will notify the NRC of its decision to implement the integrated surveillance program or a plant-specific program, and provide the appropriate revisions to the Updated Final Safety Analysis Report Supplement summary descriptions of the vessel surveillance material testing program.

(d) Core Shroud Inspection and Evaluation Guidelines Program

The Exelon Generation Company shall implement an NRC staff-approved core shroud inspection and evaluation guidelines program for the extended period of operation which satisfies the requirements of 10 CFR Part 54. Such a program will be implemented through a staff-approved Boiling Water Reactor Vessel and Internals Project program or through a staff-approved plant-specific program. Before August 8, 2013, the licensee will notify the NRC of its decision to implement the core shroud inspection and evaluation guidelines program or a plant-specific program, and provide the appropriate revisions to the Updated Final Safety Analysis Report Supplement summary descriptions of the core shroud inspection and evaluation guidelines program.

INSERT
→ (11)

INSERT into PBAPS Operating Licenses for Unit 2

(11) 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 3.7.4.4, in accordance with TS 5.5.13.c(i), the assessment of CRE habitability as required by Specification 5.5.13.c(ii), and the measurement of CRE pressure as required by Specification 5.5.13.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.4.4, in accordance with Specification 5.5.13.c(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from October 25, 2004, the date of the most recent successful tracer gas test, as stated in the January 21, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.13.c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from October 25, 2004, the date of the most recent successful tracer gas test, as stated in the January 21, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.13.d, shall be within 24 months, plus the 180 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

3.7 PLANT SYSTEMS

3.7.4 Main Control Room Emergency Ventilation (MCREV) System

LCO 3.7.4 Two MCREV subsystems shall be OPERABLE.

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

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One MCREV subsystem inoperable for reasons other than Condition B.~~.~~	A.1	Restore MCREV subsystem to OPERABLE status.	7 days
B. One or more MCREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2 or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological~~,~~ / chemical~~, and smoke~~ hazards will not exceed limits~~.~~ and mitigating actions for smoke hazards are taken as required.	24 hours
	AND		90 days
	B.3	Restore CRE boundary	

CONDITION	REQUIRED ACTION	COMPLETION TIME
	to OPERABLE status.	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~B. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	~~C~~B.1 Be in MODE 3. AND ~~C~~B.2 Be in MODE 4.	12 hours 36 hours
~~D~~C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~D~~C.1 Place OPERABLE MCREV subsystem in operation. OR ~~D~~C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND ~~D~~C.2.2 Suspend CORE ALTERATIONS. AND ~~D~~C.2.3 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately
~~E~~D. Two MCREV subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	~~E~~D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~F~~E. Two MCREV subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs. OR One or more MCREV subsystems inoperable due to an inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~F~~E.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND ~~E~~F.2 Suspend CORE ALTERATIONS. AND ~~E~~F.3 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.4.1	Operate each MCREV subsystem for ≥ 15 minutes.	31 days
SR 3.7.4.2	Perform required MCREV filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify each MCREV subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.4.4	**Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.** ~~Verify each MCREV subsystem can maintain a positive pressure of ≥ 0.1 inches water gauge relative to the turbine building during operation at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm.~~	**In accordance with the Control Room Envelope Habitability Program.** ~~24 months on a STAGGERED TEST BASIS~~

B 3.7 PLANT SYSTEMS

B 3.7.4 Main Control Room Emergency Ventilation (MCREV) System

BASES

BACKGROUND

The MCREV System ~~limits the maximum temperature of the Main Control Room and~~ provides a **protected environment from which occupants can control -the unit following an uncontrolled release of radioactivity.** ~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of **the** MCREV System includes two independent and redundant high efficiency air filtration subsystems and two 100% capacity emergency ventilation supply fans which supply and provide emergency treatment of outside supply air **and a CRE boundary that limits the inleakage of unfiltered air**. Each filtration subsystem consists of a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, and the associated **-ductwork, valves or dampers, doors, barriers and instrumentation** ~~ductwork and dampers~~. Either emergency ventilation supply fan can operate in conjunction with either filtration subsystem. ~~Each filtration subsystem receives outside air through the normal ventilation prefilter and air handling unit. Prefilters and~~ HEPA filters remove particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay. A dry gas purge is provided to each MCREV subsystem during idle periods to prevent moisture accumulation in the filters.

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 other frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protect~~ed during normal operation, natural events, and accidents conditions. The CRE boundary is the combination of walls, floor, roof, ducting, dampers, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be ~~m~~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 MCREV System is a standby system that is common to both Unit 2 and Unit 3. The two MCREV subsystems must be OPERABLE if conditions requiring MCREV System OPERABILITY exist in either Unit 2 or Unit 3. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to **-CRE occupants** ~~control room personnel~~), the MCREV System automatically starts and pressurizes the **CRE** ~~control room~~ to **minimize** ~~prevent~~ infiltration of contaminated air into the **CRE** ~~control room~~. A system of dampers isolates the **CRE** ~~control room~~, and outside air, taken in at the normal ventilation intake, is passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles. During normal control room ventilation system

restoration following operation of the MCREV system, the automatic initiation function of MCREV will briefly be satisfied by operator actions and controlled procedural steps.

~~The MCREV System is designed to limit the maximum space temperature of the CRE Control Room to 114°F dry bulb with ventilation flow, but without air conditioning during a loss of offsite power (LOOP).~~ If all normal ventilation and air conditioning were lost, the control room operator would –

~~(continued)~~

(continued)

BASES

BACKGROUND (continued) ~~(continued)~~

initiate an emergency shutdown of non-essential equipment **and lighting to reduce the** ~~and lighting to reduce~~ the heat generation to a minimum. Heat removal would be accomplished by conduction through the floors, ceilings, and walls to adjacent rooms and to the environment. Additionally, the MCREV System is designed to maintain **a habitable environment in the CRE** ~~the control room environment~~ for a 30 day continuous occupancy after a DBA without exceeding 5 rem whole body dose **or its equivalent to any part of the body.** ~~.~~ A single MCREV subsystem ~~operating at a rate ≥ 2700 cfm and ≤ 3300 cfm~~ will pressurize the **CRE** ~~control room to about ≥ 0.1 inches water gauge~~ **relative to the** ~~turbine building~~**external areas adjacent to the CRE boundary** ~~to minimize~~ ~~prevent~~ infiltration of air from **all surrounding areas adjacent to the CRE boundary** ~~surrounding buildings~~. MCREV System operation in maintaining **CRE** ~~control room~~ habitability is discussed in the UFSAR, Chapters 7, 10, and 12, (Refs. 1, 2, and 3, respectively).

APPLICABLE SAFETY ANALYSES

The ability of the MCREV System to maintain the **habitability of the CRE is an explicit** ~~habitability of the CRE control room is an explicit~~ assumption for the safety analyses presented in the UFSAR, Chapters 10 and 12 (Refs. 2 and 3, respectively). The MCREV System is assumed to operate following a **DBA** ~~loss of coolant accident, fuel handling accident, main steam line break, and control rod drop accident~~, as discussed in the UFSAR, Section 14.9.1.5 (Ref. 4). The radiological doses to **the CRE occupants** ~~control room personnel~~ as a result of the various DBAs are summarized in Reference 4. No single active or passive **electrical** failure will cause the loss of outside or recirculated air from the ~~**CRE**control room~~.

A periodic offsite chemical survey, and procedures for controlling onsite chemicals, are essential elements of CRE protection against hazardous chemicals. The system design is based on low probability of offsite sources of toxic gas, based on a chemical survey of the surrounding areas. The offsite chemical survey is conducted periodically to determine any change of condition that may need to be addressed. The onsite chemicals are controlled procedurally such that they do not affect CRE habitability adversely.

Although the MCREV system does not have a toxic gas mode, evaluations have been performed to assess the impact of toxic gas on control room habitability. ~~**In addition to normal spill response planning administrative controls, a modification has been performed to replace the use of chlorine gas with sodium hypochlorite at the water treatment plant.**~~ **The evaluations have concluded that based on the low probability of hazardous chemical events occurring, additional protection from offsite hazardous chemicals is not required. Only new chemicals identified as part of the chemical survey will be analyzed further for control room habitability**

purposes. ~~However, only new chemicals identified as part of the Chemical survey will be further analyzed for control room habitability purposes using the guidance of Reg. Guide 1.78.~~

~~Reg Guide 1.196 hazardous chemical surveys are performed at a frequency controlled by administrative procedures. These surveys will be performed using the methodology of Reg Guide 1.78 (Ref. 8).~~

~~Similarly, the MCREV system is not specifically designed for smoke events. However, for fire / smoke events affecting the Main Control Room, alternate shutdown capability exists outside of the control room. This capability is procedurally controlled. For external fires, the control room ventilation could be placed in the recirculation mode, limiting the intrusion of outside smoke. If conditions necessitated, Self-contained Breather Apparatus (SCBAs) could be donned.~~

The MCREV System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two redundant subsystems of the MCREV System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ **if** a single **active** failure disables the other subsystem. Total **MCREV S**~~s~~ystem failure**, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary** ~~could~~**, could** result in exceeding a dose of 5 rem **whole body or its equivalent to any part of the body to the CRE occupants** ~~to the control room operators~~ in the event of a DBA.

~~The~~ **Each** MCREV **subsystem** ~~System~~ is considered OPERABLE when the individual components necessary to **limit CRE occupant** ~~control operator~~ exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when ~~its~~**it's** ~~associated~~:

(continued)~~a. Fan is OPERABLE;~~

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

BASES

LCO
(continued)

~~(continued)~~

a. **One Fan is OPERABLE;**

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

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

A subsystem may be considered operable using either the A or B fan combined with either the A or B Filter bank. ~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, and ductwork. Temporary seals may be used to maintain the boundary.~~

In order for the MCREV subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from the 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.~~.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, and ductwork. Temporary seals may be used to maintain the boundary. In addition, ~~an access door may be opened~~the CRE may be breached provided the ability to pressurize the control room is maintained and the capability exists to close the affected ~~door~~breach in an expeditious manner.

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.

~~In addition, an access door may be opened provided the ability to pressurize the control room is maintained and the capability exists to close the affected door in an expeditious manner.~~

APPLICABILITY

In MODES 1, 2, and 3, the MCREV System must be OPERABLE to **ensure that the CRE will remain habitable** ~~control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the MCREV 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 operations with potential for draining the reactor vessel (OPDRVs);

b. During CORE ALTERATIONS; and

c. During movement of irradiated fuel assemblies in the secondary containment.

(continued)

BASES

ACTIONS

A.1

With one MCREV subsystem inoperable, **for reasons other than an inoperable CRE boundary,** the inoperable MCREV subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE MCREV subsystem is adequate to maintain control room temperature and to perform **the CRE occupant protection function** ~~control room radiation protection~~. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE subsystem could

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

~~BASES~~

~~ACTIONS~~ ~~A.1 (continued)~~

~~result~~ in **loss of the** ~~reduced~~ MCREV System **function** ~~capability~~. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

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

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem whole body dose or its equivalent to any part of the body), or inadequate protection of CRE occupants from hazardous chemicals or smoke that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur, 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 that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. 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 that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the ~~use~~initiation 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.

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

C.1 **and C.2**~~, C.2.1, C.2.2, and C.2.3~~

In MODE 1, 2, or 3, if the inoperable MCREV subsystem **or the CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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)~~required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

~~The Required Actions of Condition C are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

~~During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable MCREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE MCREV subsystem may be placed in operation. 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 C.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.~~

~~(continued)~~

~~PBAPS UNIT 2 B 3.7-18 Revision No. 0~~

~~MCREV System~~
~~B 3.7.4~~

BASES

~~ACTIONS C.1, C.2.1, C.2.2, and C.2.3 (continued)~~

~~If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment 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 the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.~~

ACTIONS (continued)

D.1, **D.2.1, D.2.2 and D.2.3**

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

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable MCREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE MCREV subsystem may be placed in operation. 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 radioactivity that might require isolation of the **CRE** ~~control room~~. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment 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 the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

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

E.1~~, E.2, and E.3~~

If both MCREV subsystems are inoperable in MODE 1, 2, or 3~~,~~ **for reasons other than an inoperable CRE boundary (i.e., Condition B),** the MCREV 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.

~~The Required Actions of Condition E are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

~~During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two MCREV subsystems inoperable, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.~~

~~If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, actions must be initiated~~

~~(continued)~~

~~PBAPS UNIT 2 B 3.7-19 Revision No. 0~~

~~MCREV System~~
~~B 3.7.4~~

~~BASES~~

~~ACTIONS~~ ~~E.1, E.2, and E.3 (continued)~~

~~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.~~

~~F.1 and F.2~~

The Required Actions of Condition ~~F~~**E** are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

(continued)

ACTIONS (continued)

F.1 and F.2, continued

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two MCREV subsystems inoperable **or with one or more MCREV subsystems inoperable due to an inoperable CRE boundary**, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the **CRE** ~~control room~~. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. 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 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate for ≥~~1~~ 15 minutes. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.4.2

This SR verifies that the required MCREV testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.4.3

This SR verifies that on an actual or simulated initiation signal, each MCREV subsystem starts and operates. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 overlaps this SR to provide complete testing of the safety function. **The Frequency of 24 months is based on industry operating experience and is consistent with the typical refueling cycle.** ~~Operating experience has shown that these components will usually pass the SR when performed at the 24 month Frequency. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.~~

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

BASES

SURVEILLANCE REQUIREMENTS - (continued)

SR 3.7.4.4

~~This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas (the turbine building), is periodically tested to verify proper function of the MCREV System. During operation, the MCREV System is designed to slightly pressurize the control room □ 0.1 inches water gauge positive pressure with respect to the turbine building to prevent unfiltered inleakage. The MCREV System is designed to provide this positive pressure at a flow rate of □ 2700 cfm and □ 3300 cfm to the control room when in operation. Manual adjustment of the MCREV System may be required to establish the flow rate of □ 2700 cfm and □ 3300 cfm during SR performance. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with other filtration systems SRs.~~

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

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem whole body dose or its equivalent to any part of the body and the CRE occupants are protected from hazardous chemicals and smoke that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. 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 measure~~Mitigating actionss 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~~mitigating actions 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. 84). 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. UFSAR, Section 7.19.

2. UFSAR, Section 10.13.

3. UFSAR, Section 12.3.4.

~~4.~~ UFSAR, Section 14.9.1.5.

5. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors", May 2003.

6. NEI 99-03, "Control Room Habitability Assessment", ~~March 2003~~ June 2001.

7. TSTF-448, Rev. 3, "Control Room Habitability" dated 8/8/06 and "Corrected Pages for TSTF-448, Rev. 3, Control Room Habitability", dated 12/29/06.

8. ~~Regulatory Guide 1.78, "Evaluating the Habitability of the Nuclear Power Plant Control Room During a postulated Hazardous Chemical Release", December 2001~~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.".

5.5 Programs and Manuals

5.5.13 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 Main Control Room Emergency Ventilation (MCREV) 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 as applicable, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem whole body dose or its equivalent to any part of the body for the duration of the accident. The program shall include the following elements:

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

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

c. Requirements of (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 Section 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 Section C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

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

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

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

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Peach Bottom Atomic Power Station, Unit 3

Facility Operating License

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plant-specific program. Before July 2, 2014, the licensee will notify the NRC of its decision to implement the core shroud inspection and evaluation guidelines program or a plant-specific program, and provide the appropriate revisions to the Updated Final Safety Analysis Report Supplement summary descriptions of the core shroud inspection and evaluation guidelines program.

INSERT → (11)

3. This renewed license is subject to the following conditions for the protection of the environment:

A. To the extent matters related to thermal discharges are treated therein, operation of Peach Bottom Atomic Power Station, Unit No. 3, will be governed by NPDES Permit No. PA 0009733, as now in effect and as hereafter amended. Questions pertaining to conformance thereto shall be referred to and shall be determined by the NPDES Permit issuing or enforcement authority, as appropriate.

B. In the event of any modification of the NPDES Permit related to thermal discharges or the establishment (or amendment) of alternative effluent limitations established pursuant to Section 316 of the Federal Water Pollution Control Act, the Exelon Generation Company shall inform the NRC and analyze any associated changes in or to the Station, its components, its operation or in the discharge of effluents therefrom. If such change would entail any modification to this license, or any Technical Specifications which are part of this license, or require NRC approval pursuant to 10 CFR 50.59 or involve an environmental impact different than analyzed in the Final Environmental Statement, the Exelon Generation Company shall file with the NRC, as applicable, an appropriate analysis of any such change on facility safety, and/or an analysis of any such change on the environmental impacts and on the overall cost-benefit balance for facility operation set forth in the Final Environmental Statement and a request for an amendment to the operating license, if required by the Commission's regulations. As used in this Condition 3.B, Final Environmental Statement (FES) means the NRC Staff Final Environmental Statement related to Operation of Peach Bottom Atomic Power Station, Units Nos. 2 and 3, dated April 1973, as modified by (1) the Initial Decision of the Atomic Safety and Licensing Board dated September 14, 1973, (2) the Supplemental Initial Decision of the Atomic Safety and Licensing Board dated June 14, 1974, (3) the Decision of the Atomic Safety and Licensing Appeal Board dated July 5, 1974, (4) the Memorandum and Order of the Commission dated August 8, 1974, (5) any further modification resulting from further review by the Appeal Board and by the Commission, if any, and (6) any Environmental Impact Appraisal which has been or may be issued by the NRC since the FES was published in April 1973.

INSERT into PBAPS Operating Licenses for Unit 3

(11) 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 3.7.4.4, in accordance with TS 5.5.13.c(i), the assessment of CRE habitability as required by Specification 5.5.13.c(ii), and the measurement of CRE pressure as required by Specification 5.5.13.d, shall be considered met. Following implementation:

(a) The first performance of SR 3.7.4.4, in accordance with Specification 5.5.13.c(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from October 25, 2004, the date of the most recent successful tracer gas test, as stated in the January 21, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.13.c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from October 25, 2004, the date of the most recent successful tracer gas test, as stated in the January 21, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 5.5.13.d, shall be within 24 months, plus the 180 days allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

3.7 PLANT SYSTEMS

3.7.4 Main Control Room Emergency Ventilation (MCREV) System

LCO 3.7.4 Two MCREV subsystems shall be OPERABLE.

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

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One MCREV subsystem inoperable for reasons other than Condition B.~~.~~	A.1	Restore MCREV subsystem to OPERABLE status.	7 days
B. One or more MCREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2 or 3.	B.1	Initiate action to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological~~,~~ / chemical~~, and smoke~~ hazards will not exceed limits~~.~~ and mitigating actions for smoke hazards are taken as required.	24 hours
	AND		90 days
	B.3	Restore CRE boundary	

CONDITION	REQUIRED ACTION	COMPLETION TIME
	to OPERABLE status.	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C~~B. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	~~C~~B.1 Be in MODE 3. AND ~~C~~B.2 Be in MODE 4.	12 hours 36 hours
~~D~~C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~D~~C.1 Place OPERABLE MCREV subsystem in operation. OR ~~D~~C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND ~~D~~C.2.2 Suspend CORE ALTERATIONS. AND ~~D~~C.2.3 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately Immediately
~~E~~D. Two MCREV subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	~~E~~D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~F~~E. Two MCREV subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs. OR One or more MCREV subsystems inoperable due to an inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS or during OPDRVs.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~F~~E.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND ~~E~~F.2 Suspend CORE ALTERATIONS. AND ~~E~~F.3 Initiate action to suspend OPDRVs.	 Immediately Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.4.1	Operate each MCREV subsystem for ≥ 15 minutes.	31 days
SR 3.7.4.2	Perform required MCREV filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify each MCREV subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.4.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program. ~~Verify each MCREV subsystem can maintain a positive pressure of ≥ 0.1 inches water gauge relative to the turbine building during operation at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm.~~	In accordance with the Control Room Envelope Habitability Program. ~~24 months on a STAGGERED TEST BASIS~~

B 3.7 PLANT SYSTEMS

B 3.7.4 Main Control Room Emergency Ventilation (MCREV) System

BASES

BACKGROUND

The MCREV System ~~limits the maximum temperature of the Main Control Room and~~ provides a **protected environment from which occupants can control -the unit following an uncontrolled release of radioactivity.**~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of **the** MCREV System includes two independent and redundant high efficiency air filtration subsystems and two 100% capacity emergency ventilation supply fans which supply and provide emergency treatment of outside supply air **and a CRE boundary that limits the inleakage of unfiltered air**. Each filtration subsystem consists of a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, and the associated **-ductwork, valves or dampers, doors, barriers and instrumentation**~~ductwork and dampers~~. Either emergency ventilation supply fan can operate in conjunction with either filtration subsystem. ~~Each filtration subsystem receives outside air through the normal ventilation prefilter and air handling unit. Prefilters and~~ HEPA filters remove particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay. A dry gas purge is provided to each MCREV subsystem during idle periods to prevent moisture accumulation in the filters.

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 other frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protectted during normal operation, natural events, and accidents conditions. The CRE boundary is the combination of walls, floor, roof, ducting, dampers, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be ~~m~~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 MCREV System is a standby system that is common to both Unit 2 and Unit 3. The two MCREV subsystems must be OPERABLE if conditions requiring MCREV System OPERABILITY exist in either Unit 2 or Unit 3. Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to **-CRE occupants**~~control room personnel~~), the MCREV System automatically starts and pressurizes the **CRE** ~~control room~~ to **minimize** ~~prevent~~ infiltration of contaminated air into the **CRE** ~~control room~~. A system of dampers isolates the **CRE** ~~control room~~, and outside air, taken in at the normal ventilation intake, is passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles. During normal control room ventilation system

restoration following operation of the MCREV system, the automatic initiation function of MCREV will briefly be satisfied by operator actions and controlled procedural steps.

~~The MCREV System is designed to limit the maximum space temperature of the CRE Control Room to 114°F dry-bulb with ventilation flow, but without air conditioning during a loss of offsite power (LOOP).~~ If all normal ventilation and air conditioning were lost, the control room operator would –

~~(continued)~~

(continued)

BASES

BACKGROUND (**continued**) ~~(continued)~~

initiate an emergency shutdown of non-essential equipment **and lighting to reduce the** ~~and lighting to reduce~~ the heat generation to a minimum. Heat removal would be accomplished by conduction through the floors, ceilings, and walls to adjacent rooms and to the environment. Additionally, the MCREV System is designed to maintain **a habitable environment in the CRE** ~~the control room environment~~ for a 30 day continuous occupancy after a DBA without exceeding 5 rem whole body dose **or its equivalent to any part of the body.** ~~.~~ A single MCREV subsystem ~~**operating at a rate ≥ 2700 cfm and ≤ 3300 cfm**~~ will pressurize the **CRE** ~~control room to about ≥ 0.1 inches water gauge~~ **relative to the** ~~turbine building~~**external areas adjacent to the CRE boundary** ~~to minimize~~ ~~prevent~~ infiltration of air from **all surrounding areas adjacent to the CRE boundary** ~~surrounding buildings~~. MCREV System operation in maintaining **CRE** ~~control room~~ habitability is discussed in the UFSAR, Chapters 7, 10, and 12, (Refs. 1, 2, and 3, respectively).

APPLICABLE SAFETY ANALYSES

The ability of the MCREV System to maintain the **habitability of the CRE is an explicit** ~~habitability of the **CRE** control room is an explicit~~ assumption for the safety analyses presented in the UFSAR, Chapters 10 and 12 (Refs. 2 and 3, respectively). The MCREV System is assumed to operate following a **DBA** ~~loss of coolant accident, fuel handling accident, main steam line break, and control rod drop accident~~, as discussed in the UFSAR, Section 14.9.1.5 (Ref. 4). The radiological doses to **the CRE occupants** ~~control room personnel~~ as a result of the various DBAs are summarized in Reference 4. No single active or passive **electrical** failure will cause the loss of outside or recirculated air from the ~~**CRE**control room~~.

A periodic offsite chemical survey, and procedures for controlling onsite chemicals, are essential elements of CRE protection against hazardous chemicals. The system design is based on low probability of offsite sources of toxic gas, based on a chemical survey of the surrounding areas. The offsite chemical survey is conducted periodically to determine any change of condition that may need to be addressed. The onsite chemicals are controlled procedurally such that they do not affect CRE habitability adversely.

Although the MCREV system does not have a toxic gas mode, evaluations have been performed to assess the impact of toxic gas on control room habitability. ~~**In addition to normal spill response planning administrative controls, a modification has been performed to replace the use of chlorine gas with sodium hypochlorite at the water treatment plant.**~~ **The evaluations have concluded that based on the low probability of hazardous chemical events occurring, additional protection from offsite hazardous chemicals is not required. Only new chemicals identified as part of the chemical survey will be analyzed further for control room habitability**

purposes. ~~However, only new chemicals identified as part of the Chemical survey will be further analyzed for control room habitability purposes using the guidance of Reg. Guide 1.78.~~

~~Reg Guide 1.196 hazardous chemical surveys are performed at a frequency controlled by administrative procedures. These surveys will be performed using the methodology of Reg Guide 1.78 (Ref. 8).~~

~~Similarly, the MCREV system is not specifically designed for smoke events. However, for fire / smoke events affecting the Main Control Room, alternate shutdown capability exists outside of the control room. This capability is procedurally controlled. For external fires, the control room ventilation could be placed in the recirculation mode, limiting the intrusion of outside smoke. If conditions necessitated, Self-contained Breather Apparatus (SCBAs) could be donned.~~

The MCREV System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two redundant subsystems of the MCREV System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ **if** a single **active** failure disables the other subsystem. Total **MCREV S**~~s~~ystem failure**, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary** ~~could~~**, could** result in exceeding a dose of 5 rem **whole body or its equivalent to any part of the body to the CRE occupants** ~~to the control room operators~~ in the event of a DBA.

~~The~~ **Each** MCREV **subsystem** ~~System~~ is considered OPERABLE when the individual components necessary to **limit CRE occupant** ~~control operator~~ exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when ~~it~~**it's** ~~associated~~:

(continued)~~a. Fan is OPERABLE;~~

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

BASES

LCO
(continued)

~~(continued)~~

a. **One Fan is OPERABLE;**

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

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

A subsystem may be considered operable using either the A or B fan combined with either the A or B Filter bank. ~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, and ductwork. Temporary seals may be used to maintain the boundary.~~

In order for the MCREV subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from the 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.~~.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, and ductwork. Temporary seals may be used to maintain the boundary. In addition, ~~an access door may be opened~~the CRE may be breached provided the ability to pressurize the control room is maintained and the capability exists to close the affected ~~door~~breach in an expeditious manner.

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.

~~In addition, an access door may be opened provided the ability to pressurize the control room is maintained and the capability exists to close the affected door in an expeditious manner.~~

APPLICABILITY

In MODES 1, 2, and 3, the MCREV System must be OPERABLE to **ensure that the CRE will remain habitable** ~~control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the MCREV 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 operations with potential for draining the reactor vessel (OPDRVs);

b. During CORE ALTERATIONS; and

c. During movement of irradiated fuel assemblies in the secondary containment.

(continued)

BASES

ACTIONS

A.1

With one MCREV subsystem inoperable, **for reasons other than an inoperable CRE boundary,** the inoperable MCREV subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE MCREV subsystem is adequate to maintain control room temperature and to perform **the CRE occupant protection function** ~~control room radiation protection~~. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE subsystem could

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

~~BASES~~

~~ACTIONS~~ ~~A.1 (continued)~~

~~result in~~ **loss of the** ~~reduced~~ MCREV System **function** ~~capability~~. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

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

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem whole body dose or its equivalent to any part of the body), or inadequate protection of CRE occupants from hazardous chemicals or smoke that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur, 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 that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. 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 that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the ~~use~~initiation 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.

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

C.1 **and C.2**~~, C.2.1, C.2.2, and C.2.3~~

In MODE 1, 2, or 3, if the inoperable MCREV subsystem **or the CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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)~~required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

~~The Required Actions of Condition C are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

~~During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable MCREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE MCREV subsystem may be placed in operation. 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 C.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.~~

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

BASES

~~ACTIONS C.1, C.2.1, C.2.2, and C.2.3 (continued)~~

~~If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment 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 the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.~~

ACTIONS (continued)

D.1, **D.2.1, D.2.2 and D.2.3**

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

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, if the inoperable MCREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE MCREV subsystem may be placed in operation. 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 radioactivity that might require isolation of the **CRE** ~~control room~~. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment 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 the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

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

E.1~~, E.2, and E.3~~

If both MCREV subsystems are inoperable in MODE 1, 2, or 3~~,~~ **for reasons other than an inoperable CRE boundary (i.e., Condition B),** the MCREV 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.

~~The Required Actions of Condition E are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

~~During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two MCREV subsystems inoperable, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.~~

~~If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable, actions must be initiated~~

~~(continued)~~

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~~MCREV System~~
~~B 3.7.4~~

~~BASES~~

ACTIONS ~~E.1, E.2, and E.3 (continued)~~

~~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.~~

~~F.1 and F.2~~

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

(continued)

ACTIONS (continued)

F.1 and F.2, continued

During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs, with two MCREV subsystems inoperable **or with one or more MCREV subsystems inoperable due to an inoperable CRE boundary**, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the **CRE** ~~control room~~. This places the unit in a condition that minimizes **the accident** risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. 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 3.7.4.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate for ≥ ~~10~~ 15 minutes. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.4.2

This SR verifies that the required MCREV testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.4.3

This SR verifies that on an actual or simulated initiation signal, each MCREV subsystem starts and operates. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 overlaps this SR to provide complete testing of the safety function. **The Frequency of 24 months is based on industry operating experience and is consistent with the typical refueling cycle.** ~~Operating experience has shown that these components will usually pass the SR when performed at the 24 month Frequency. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.~~

~~(continued)~~

~~MCREV System~~
~~B 3.7.4~~

BASES

SURVEILLANCE REQUIREMENTS - (continued)

SR 3.7.4.4

~~This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas (the turbine building), is periodically tested to verify proper function of the MCREV System. During operation, the MCREV System is designed to slightly pressurize the control room □ 0.1 inches water gauge positive pressure with respect to the turbine building to prevent unfiltered inleakage. The MCREV System is designed to provide this positive pressure at a flow rate of □ 2700 cfm and □ 3300 cfm to the control room when in operation. Manual adjustment of the MCREV System may be required to establish the flow rate of □ 2700 cfm and □ 3300 cfm during SR performance. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with other filtration systems SRs.~~

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

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem whole body dose or its equivalent to any part of the body and the CRE occupants are protected from hazardous chemicals and smoke that hasve been ~~evaluated to be credible or otherwise~~ licensed to occur. 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 measure~~Mitigating actionss 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~~mitigating actions 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. 84). 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. UFSAR, Section 7.19.

2. UFSAR, Section 10.13.

3. UFSAR, Section 12.3.4.

~~4.~~ UFSAR, Section 14.9.1.5.

5. Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors", May 2003.

6. NEI 99-03, "Control Room Habitability Assessment", ~~March 2003~~ June 2001.

7. TSTF-448, Rev. 3, "Control Room Habitability" dated 8/8/06 and "Corrected Pages for TSTF-448, Rev. 3, Control Room Habitability", dated 12/29/06.

8. ~~Regulatory Guide 1.78, "Evaluating the Habitability of the Nuclear Power Plant Control Room During a postulated Hazardous Chemical Release", December 2001~~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.".

5.5 Programs and Manuals

5.5.13 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 Main Control Room Emergency Ventilation (MCREV) 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 as applicable, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem whole body dose or its equivalent to any part of the body for the duration of the accident. The program shall include the following elements:

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

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

c. Requirements of (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 Section 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 Section C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

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

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

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

TECHNICAL SPECIFICATION PAGES (Mark-ups)

Quad Cities Nuclear Power Station, Units 1 and 2

Facility Operating License

Quad Cities Unit 1 Page 7
Quad Cities Unit 2 Page 7

Technical Specification
Pages

3.7.4-1
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5.5-12
5.5-13

by 10 CFR 50.71(e)(4) following issuance of this renewed license. Until that update is complete, Exelon Generation Company, LLC may make changes to the programs and activities described in the supplement without prior Commission approval, provided that Exelon Generation Company, LLC evaluates such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

X. All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion.

Insert new License Condition →

4. This renewed operating license is effective as of the date of issuance and shall expire at midnight on December 14, 2032.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Attachments:
1. Appendix A – Technical Specifications
2. Appendix B – Environmental Protection Plan

Date of Issuance: October 28, 2004

INSERT TO QUAD CITIES UNIT 1 FACILITY OPERATING LICENSE PAGE 7

(Y) 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 3.7.4.4, in accordance with TS 5.5.13.c.(i), the assessment of CRE habitability as required by Specification 5.5.13.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.13.d, shall be considered met. Following implementation:

(1) The first performance of SR 3.7.4.4, in accordance with Specification 5.5.13.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from September 21, 2006, 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.

(2) The first performance of the periodic assessment of CRE habitability, Specification 5.5.13.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from September 21, 2006, 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.

(3) The first performance of the periodic measurement of CRE pressure, Specification 5.5.13.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

December 14, 2012, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement, as revised, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4) following issuance of this renewed license. Until that update is complete, Exelon Generation Company, LLC may make changes to the programs and activities described in the supplement without prior Commission approval, provided that Exelon Generation Company, LLC evaluates such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

W. All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of ASTM E 185-82 to the extent practicable for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion.

Insert new License Condition →

4. This renewed operating license is effective as of the date of issuance and shall expire at midnight on December 14, 2032.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

J. E. Dyer, Director
Office of Nuclear Reactor Regulation

Attachments:
1. Appendix A – Technical Specifications
2. Appendix B – Environmental Protection Plan

Date of Issuance: October 28, 2004

INSERT TO QUAD CITIES UNIT 2 FACILITY OPERATING LICENSE PAGE 7

(X) 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 3.7.4.4, in accordance with TS 5.5.13.c.(i), the assessment of CRE habitability as required by Specification 5.5.13.c.(ii), and the measurement of CRE pressure as required by Specification 5.5.13.d, shall be considered met. Following implementation:

(1) The first performance of SR 3.7.4.4, in accordance with Specification 5.5.13.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from September 21, 2006, 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.

(2) The first performance of the periodic assessment of CRE habitability, Specification 5.5.13.c.(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from September 21, 2006, 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.

(3) The first performance of the periodic measurement of CRE pressure, Specification 5.5.13.d, shall be within 24 months, plus the 6 months allowed by SR 3.0.2, as measured from the date of the most recent successful pressure measurement test, or within 6 months if not performed previously.

3.7 PLANT SYSTEMS

3.7.4 Control Room Emergency Ventilation (CREV) System

LCO 3.7.4 The CREV System shall be OPERABLE.

----------NOTE----------
The main 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 secondary containment,
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CREV System inoperable in MODE 1, 2, or 3 **for reasons other than Condition B.**	A.1	Restore CREV System to OPERABLE status.	7 days
B. **CREV system inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.**	B.1	**Initiate action to implement mitigating actions.**	**Immediately**
	AND		
	B.2	**Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.**	**24 hours**
	AND		
	B.3	**Restore CRE boundary to OPERABLE status.**	90 days
~~B~~C. Required Action and	~~B~~C.1	Be in MODE 3.	12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	AND ~~B~~C.2 Be in MODE 4.	36 hours
~~C~~D. CREV System inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs. OR **CREV System inoperable due to an inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.**	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- ~~C~~D.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. AND ~~C~~D.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate the CREV System for ≥ 10 continuous hours with the heaters operating.	31 days
SR 3.7.4.2	Perform required CREV filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.4.3	Verify the CREV System isolation dampers close on an actual or simulated initiation signal.	24 months
SR 3.7.4.4	**Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.**~~Verify the CREV System can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the adjacent areas during the pressurization mode of operation at a flow rate of ≤ 2000 scfm.~~	**In accordance with the Control Room Envelope Habitability Program**~~24 months~~

B 3.7 PLANT SYSTEMS

B 3.7.4 Control Room Emergency Ventilation (CREV) System

BASES

BACKGROUND

The CREV System provides a ~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA). The control room emergency zone served by the CREV System consists of the main control room, cable spreading room, auxiliary electric equipment room, computer room, and the Train B Heating Ventilation and Air Conditioning (HVAC) equipment enclosure.~~**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 CREV System consists of a single high efficiency air filtration train for emergency treatment of outside supply air **and a control room envelope (CRE) boundary that limits the inleakage of unfiltered air.** The filter train consists of an electric heater, a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section, a second HEPA filter, two 100% capacity –booster fans in parallel, the Train B air handling unit (excluding the refrigeration condensing unit), and the associated ductwork, **valves or dampers, doors, barriers** and ~~dampers~~**instrumentation.** The electric heater is used to limit the relative humidity of the air entering the filter train. Prefilters and HEPA filters remove particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay.

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. The CRE consists of the main control room, cable spreading room, auxiliary electric room, computer room, and the Train B Heating Ventilation and Air Conditioning (HVAC) equipment enclosure. 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 the CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

The CREV System is a standby system, parts of which also operate during normal unit operations to maintain the ~~control room emergency zone~~**CRE** environment. Upon receipt of an isolation signal (indicative of conditions that could result in radiation exposure to ~~control room emergency zone personnel~~**CRE occupants**), the ~~control room emergency zone~~**CRE** is automatically isolated to minimize infiltration of contaminated air into the ~~control room emergency zone~~**CRE**. A system of dampers isolates the ~~control room emergency zone~~**CRE**, and the air is recirculated. Operator action is required within one hour after an accident to verify isolation and activate the air filtration unit (AFU) of the CREV System to pressurize the ~~control room emergency zone~~**CRE**. Outside air is taken in at the outside air ventilation intake through the AFU for removal of airborne radioactive particles and is mixed with the recirculated air.

(continued)

BASES

BACKGROUND (continued)

The CREV System is designed to maintain ~~the control room a emergency zone~~ **habitable** environment **in the CRE** for a 30 day continuous occupancy after a DBA without exceeding 5 rem total effective dose equivalent (TEDE) dose. The CREV System **operating at a flow rate of ≤ 2000 cfm** will pressurize the ~~control room emergency zone~~**CRE** to about 0.125 inches water gauge **relative to external areas adjacent to the CRE boundary** to minimize infiltration of air from ~~adjacent zones~~**all surrounding areas adjacent to the CRE boundary**. CREV System operation in maintaining ~~control room~~**CRE** habitability is discussed in the UFSAR, Sections 6.4, 9.4, and 15.6.5 (Refs. 1, 2, and 3, respectively).

Movement of a Spent Fuel Cask containing Spent Nuclear Fuel in a sealed Multi-Purpose Canister (MPC) and using a single failure-proof crane is not considered to be "movement of irradiated fuel assemblies in secondary containment" (Refs. ~~5~~ 7 and ~~6~~8).

APPLICABLE SAFETY ANALYSES

The ability of the CREV System to maintain the habitability of the ~~control room emergency zone~~**CRE** is an explicit assumption for the safety analyses presented in the UFSAR, Sections 6.4 and 15.6.5 (Refs. 1 and 3, respectively). The isolation of the ~~control room emergency zone~~**CRE** is assumed to operate following a ~~loss of coolant accident~~**DBA**, as discussed in the UFSAR, Section 6.4 (Ref. 1). The radiological doses to ~~control room personnel~~**the CRE occupants** as a result of the various DBAs are summarized in Reference 3.

The CREV System provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 1). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor from the control room (Ref. 1).

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

LCO

The CREV System is required to be OPERABLE. Total system failure **or an inoperable CRE boundary,** could result in exceeding a dose of 5 rem TEDE to the ~~control room operators~~**CRE occupants** in the event of a DBA.

The CREV System is considered OPERABLE when the individual components necessary to ~~control operator~~**limit CRE occupant** exposure are OPERABLE. The system is considered OPERABLE when its associated:

a. AFU is OPERABLE,

b. Train B air handling unit (fan portion only) is OPERABLE, including the ductwork, to maintain air circulation to and from the ~~control room emergency~~**CRE** ~~zone~~; and

(continued)

BASES

LCO (continued)

c. Outside air ventilation intake is OPERABLE.

The AFU is considered OPERABLE when a booster fan is OPERABLE; HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions; and heater, ductwork, valves, and dampers are OPERABLE, and air circulation through the filter train can be maintained.

~~In addition, the control room emergency zone boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors, such that the pressurization limit of SR 3.7.4.4 can be met. However, it is acceptable for access doors to be open for normal control room emergency zone entry and exit and not consider it to be a failure to meet the LCO.~~**In order for the CREV System 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 the CRE isolation is indicated.

APPLICABILITY

In MODES 1, 2, and 3, the CREV System must be OPERABLE to ~~control operator exposure~~**ensure that the CRE will remain habitable** during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREV 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 secondary containment; and

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

Due to radioactive decay, the CREV System is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours).

ACTIONS

A.1

With the CREV System inoperable **for reasons other than an inoperable CRE boundary,** in MODE 1, 2, or 3, the inoperable CREV System must be restored to OPERABLE status within 7 days. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period.

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 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.

(continued)

BASES

ACTIONS (continued)

~~B~~C.1 and ~~B~~C.2

In MODE 1, 2, or 3, if the inoperable CREV System **or the CRE boundary** cannot be restored to OPERABLE status within the ~~associated~~ **required** 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.

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

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since recently irradiated fuel movement can occur in MODE 1, 2, or 3, the Required Actions of Condition C 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. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of recently irradiated fuel assemblies. The NOTE to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of recently irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

With the CREV System inoperable, during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs **or with the CREV System inoperable due to an inoperable CRE boundary**, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the ~~control room~~**CRE**. This places the unit in a condition that minimizes **accident** risk.

If applicable, movement of recently irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of this activity shall not preclude completion of movement of a component to a safe position. Also, if applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that the CREV System in a standby mode starts from the control room and continues to operate. This SR includes initiating flow through the HEPA filters and charcoal adsorbers. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing the system once every month provides an adequate check on this system. Monthly heater operation for ≥ 10 continuous hours, during system operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. Furthermore, the 31 day Frequency is based on the known reliability of the equipment.

SR 3.7.4.2

This SR verifies that the required CREV testing is performed in accordance with Specification 5.5.7, "Ventilation Filter Testing Program (VFTP)." The CREV filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.4.3

This SR verifies that on an actual or simulated initiation signal, the CREV System isolation dampers close. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.6 overlaps this SR to provide complete testing of the safety function. Operating experience has shown that these components normally pass the SR when performed at the 24 month Frequency. **The Frequency of 24 months is based on industry operating experience and is consistent with the typical refueling cycle.** Therefore, the Frequency was found to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.4.4

~~This SR verifies the integrity of the control room emergency zone and the assumed inleakage rates of potentially contaminated air. The control room emergency zone positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the CREV System. During the emergency pressurization mode of operation, the CREV System is designed to slightly pressurize the control room emergency zone ≥ 0.125 inches water gauge positive pressure with respect to the adjacent areas to minimize unfiltered inleakage. The CREV System is designed to maintain this positive pressure at a flow rate of ≤ 2000 scfm to the control room emergency zone in the pressurization mode. The Frequency of 24 months is consistent with industry practice and other filtration systems SRs.~~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. 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 Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 9). Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequences 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. UFSAR, Section 6.4.

2. UFSAR, Section 9.4.

3. UFSAR, Section 15.6.5.

4. Regulatory Guide 1.52, Revision 2, March 1978.

5. **Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," May 2003.**

6. **NEI 99-03, "Control Room Habitability Assessment," June 2001.**

~~5.~~**7.** UFSAR, Section 9.1.4.3.2.

~~6.~~**8.** NRC Safety Evaluation Report for the Holtec International HI-STORM 100 Storage System (Docket Number 72-1014, Certificate Number 1014, Amendment 2).

9. **Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).**

5.5 Programs and Manuals

5.5.12 Primary Containment Leakage Rate Testing Program (continued)

2. NEI 94-01 - 1995, Section 9.2.3: The first Unit 2 Type A test performed after the May 17, 1993, Type A test shall be performed no later than May 16, 2008.

b. The peak calculated primary containment internal pressure for the design basis loss of coolant accident, P_a, is 43.9 psig.

c. The maximum allowable primary containment leakage rate, L_a, at P_a, is 3% of primary containment air weight per day.

d. Leakage rate acceptance criteria are:

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

2. Air lock testing acceptance criteria is the overall air lock leakage rate is $\leq$ 0.05 La when tested at $\geq$ Pa.

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

5.5.13 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation (CREV) 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 exposure in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

maintenance.

c. Requirements of (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 Section 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 Section C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

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

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

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

TECHNICAL SPECIFICATION PAGES (Mark-ups)

TMI Unit 1

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(14) AmerGen shall provide decommissioning funding assurance of no less than $303 million, after payment of any taxes, to be held in the decommissioning trust(s) for TMI-1 at the time of the transfer of the TMI-1 license to AmerGen, including any amounts held in any decommissioning trust(s) that may continue to be maintained by GPU Energy for TMI-1 after such license transfer.

(15) AmerGen shall take all necessary steps to ensure that the decommissioning trust is maintained in accordance with the application, the requirements of the Order Approving Transfer of License and Conforming Amendment, dated April 12, 1999, and the related Safety Evaluation dated April 12, 1999.

(16) AmerGen shall take no action to cause Exelon Generation Company, LLC (or successors or assigns of Exelon Generation Company, LLC approved by the NRC) to void, cancel, or diminish the $200 million contingency fund commitment from Exelon Generation Company, LLC, (or successors or assigns of Exelon Generation Company, LLC approved by the NRC) dated December 22, 2003, or cause it to fail to perform or impair its performance under the commitment, or remove or interfere with AmerGen's ability to draw upon the commitment. Further, AmerGen shall inform the Director, Office of Nuclear Reactor Regulation, in writing, at such time that it draws upon the $200 million contingency fund. This provision does not affect the NRC's authority to assure that adequate funds will remain available to fund the transition to safe shutdown, should any question arise regarding availability of funds for such a purpose.

INSERT → (17)

6. This license is effective as of the date of issuance and shall expire at midnight, April 19, 2014.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by A. Giambusso

A. Giambusso, Deputy Director
for Reactor Projects
Director of Licensing

Attachment: Appendix A Technical Specifications

Date of Issuance: April 19, 1974

INSERT TO TMI UNIT 1 FACILITY OPERATING LICENSE PAGE 8

(17) Upon implementation of Amendment No. XXX adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air inleakage as required by Specification 4.12.1.5, in accordance with TS 6.19.c.(i), the assessment of CRE habitability as required by Specification 6.19.c.(ii), and the measurement of CRE pressure as required by Specification 6.19.d, shall be considered met. Following implementation:

(a) The first performance of Specification 4.12.1.5, in accordance with Specification 6.19.c,(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of Specification 1.25, as measured from August 21, 2000, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.

(b) The first performance of the periodic assessment of CRE habitability, Specification 6.19.c.(ii), shall be within 3 years, plus the 9-month allowance of Specification 1.25, as measured from August 21, 2000, the date of the most recent successful tracer gas test, as stated in the December 9, 2003 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.

(c) The first performance of the periodic measurement of CRE pressure, Specification 6.19.d, shall be within 24 months, plus the 180 days allowed by Specification 1.25, as measured from December 9, 2006, the date of the most recent successful pressure measurement test, or within 180 days if not performed previously.

3.15 AIR TREATMENT SYSTEMS

3.15.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the emergency control room air treatment system and its associated filters and to the Control Room Envelope Boundary.

Note

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

Objective

To specify minimum availability and efficiency for the emergency control room air treatment system and its associated filters.

Specifications

3.15.1.1 Except as specified in Specification 3.15.1.3 below, both emergency treatment systems, AH-E18A fan and associated filter AH-F3A and AH-E18B fan and associated filter AH-F3B shall be operable at all times, per the requirements of Specification 3.15.1.2 below; when containment integrity is required and when irradiated fuel handling operations are in progress.

3.15.1.2 a. The results of the in-place DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal absorber banks shall show < 0.05% DOP penetration and < 0.05% halogenated hydrocarbon penetration, except that the DOP test will be conducted with prefilters installed.

b. The results of laboratory carbon sample analysis shall show ≥ 95% radioactive methyl iodide decontamination efficiency when tested in accordance with ASTM D3803-1989 at 30°C, 95% R.H.

c. The fans AH-E18A and B shall each be shown to operate within ± 4000 CFM of design flow (40,000 CFM).

d. The Control Room Envelope boundary shall be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequences analyses for DBA's and that CRE occupants are protected from hazardous chemicals and smoke.

3.15.1.3 From and after the date that one control room air treatment system is made or found to be inoperable for ~~any~~ reason other than 3.15.1.2d, reactor operation or irradiated fuel handling operations are permissible only during the succeeding 7 days provided the redundant system is verified to be OPERABLE.

3.15.1.4 From the date that both control room air treatment systems are made or found to be inoperable for a reason other than 3.15.1.2d, or if the inoperable system of 3.15.1.3 cannot be made operable in 7 days, irradiated fuel handling operations shall be terminated in 2 hours and reactor shutdown shall be initiated and the reactor shall be in cold shutdown within 48 hours.

3.15.1.5 From the date that one or both control room air treatment systems are made or found to be inoperable due to an inoperable Control Room Envelope boundary, actions to implement mitigating actions shall be initiated immediately, verification that the

mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits shall be performed within 24 hours, and the CRE boundary shall be restored to operable status within 90 days. Irradiated fuel handling operations shall be terminated in 2 hours. If the CRE boundary cannot be made operable in 90 days, reactor shutdown shall be initiated and the reactor shall be in cold shutdown within 48 hours.

Bases

The emergency control room air treatment systems AH-E18A and 18B and their associated filters are two independent systems designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. Air is recirculated and filtered in the Control Room Envelope (CRE) and within a CRE boundary that limits the inleakage of unfiltered air. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the systems. The control building is designed to be automatically placed in the recirculation mode upon an RM-A1 high radiation alarm, air tunnel device actuation, ESAS actuation or station blackout condition. The emergency control room air treatment fan and filter AH-E18A or B and AH-F3A or B is designed to be manually started by the operator if a high radiation alarm from RM-A1 is indicated.

Prefilters and high efficiency particulate absolute (HEPA) filters are installed before the charcoal absorbers to prevent clogging of the iodine adsorbers and remove particulate activity. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If one system is found to be inoperable, there is no immediate threat to the control room and reactor operation or refueling may continue for a limited period of time while repairs are being made. If the system cannot be repaired within 7 days, the reactor is shut down and brought to cold shutdown within 48 hours and irradiated fuel handling operations are terminated within 2 hours.

If both systems are found to be inoperable, reactor shutdown shall be initiated and the reactor will be brought to cold shutdown in 48 hours and irradiated fuel handling operations will be stopped within 2 hours.

In-place testing for penetration and system bypass shall be performed in accordance with ANSI N510-1980. Charcoal samples shall be obtained in accordance with ANSI N509-1980. Any HEPA filters found defective shall be replaced with filters qualified according to Regulatory Guide 1.52, Revision 2. Any lot of charcoal adsorber which fails the laboratory test criteria shall be replaced with new adsorbent qualified according to ASTM D3803-1989.

Laboratory testing of charcoal samples will be performed in accordance with the methods prescribed by ASTM D3803-1989. Design basis accident analyses assume the carbon adsorber is 90% efficient in its total radioiodine removal. Therefore, using a Safety Factor of 2 (Ref. 3), the acceptance criteria for the laboratory test of carbon adsorber is set at greater than or equal to 95% [(100 – 90) / 2 = 5% penetration].

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.

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

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

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

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

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 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.

References

(1) FSAR Section 9.8
(2) NRC Generic Letter 99-02, dated June 3, 1999.
(3) FSAR Section 7.4.5

4.12 AIR TREATMENT SYSTEM

4.12.1 EMERGENCY CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the emergency control room air treatment system and associated components.

Objective

To verify that this system and associated components will be able to perform its design functions.

Specification

4.12.1.1 At least every refueling interval, the pressure drop across the combined HEPA filters and charcoal adsorber banks of AH-F3A and 3B shall be demonstrated to be less than 6 inches of water at system design flow rate (±10%).

4.12.1.2 a. The tests and sample analysis required by Specification 3.15.1.2 shall be performed initially and at least once per year for standby service or after every 720 hours of system operation and following significant painting, steam, fire or chemical release in any ventilation zone communicating with the system that could contaminate the HEPA filters or charcoal adsorbers.

b. DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing which could affect the HEPA filter bank bypass leakage.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing which could effect the charcoal adsorber bank bypass leakage.

d. Each AH-E18A and B (AH-F3A and B) fan/filter circuit shall be operating at least 10 hours every month.

4.12.1.3 At least once per refueling interval, automatic initiation of the required Control Building dampers for isolation and recirculation shall be demonstrated as operable.

4.12.1.4 An air distribution test shall be performed on the HEPA filter bank initially, and after any maintenance or testing that could affect the air distribution within the system . The air distribution across the HEPA filter bank shall be uniform within ±20%. The test shall be performed at 40,000 cfm (±10%) flow rate.

4.12.1.5 Control Room Envelope unfiltered air inleakage testing shall be performed in accordance with the Control Room Envelope Habitability Program.

BASES

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per refueling cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Tests of the charcoal adsorbers with halogenated hydrocarbon shall be performed in accordance with approved test procedures. Replacement adsorbent should be qualified according to ASTM D3803-1989. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable all adsorbent in the system shall be replaced. Tests of the HEPA filters with DOP aerosol shall also be performed in accordance with approved test procedures. Any HEPA filters found defective should be replaced with filters qualified according to Regulatory Guide 1.52 March 1978.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, steam, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign materials, the same tests and sample analysis shall be performed as required for operational use. The determination of significance shall be made by the Vice President-TMI Unit 1.

Demonstration of the automatic initiation of the recirculation mode of operation is necessary to assure system performance capability. Dampers required for control building isolation and recirculation are specified in UFSAR Sections 7.4.5 and 9.8.1.

Control Room Envelope unfiltered air inleakage testing 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. Air inleakage testing 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, Section 3.15.1.5 must be entered. The required actions allow 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. 1) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 2). These compensatory measures may also be used as mitigating actions as required by Section 3.15.1.5. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 3). 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. Regulatory Guide 1.196.
2. NEI 99-03, "Control Room Habitability Assessment Guidance", June 2001.
3. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:

1. A change in the TS incorporated in the license or

2. A change to the updated FSAR (UFSAR) or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.

d. Proposed changes that meet the criteria of Specification 6.18.b.1 or 6.18.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71 (e).

→ 6.19 INSERT

Insert to TMI Unit 1 TS Page 6-26

6.19 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 Emergency Control Room Air Treatment System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

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

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

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

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the Control Room Ventilation System, operating at the design flow rate, at a Frequency of 24 months. The results shall be trended and used as part of the 24 month assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses 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 Section 1.25 are applicable to the frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.