



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 17, 2009

Mr. Timothy J. O'Connor  
Site Vice President  
Monticello Nuclear Generating Plant  
Northern States Power Company  
2807 West County Road 75  
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - ISSUANCE OF  
AMENDMENT REGARDING CONTROL ROOM ENVELOPE HABITABILITY  
(TAC NO. MD8433)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 160 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated April 3, 2008, as supplemented on February 23, 2009, for implementation of the Technical Specification Task Force (TSTF) Change Traveler TSTF-448, Revision 3, "Control Room Habitability."

The amendment adopts the proposed requirements regarding control room envelope habitability set forth in TSTF-448, Revision 3. Specifically, the amendment revises the requirements in TS Section 3.7.4, "Control Room Emergency Filtration (CREF) System," adds a new TS Section 5.5.13, "Control Room Envelope Habitability Program," and adds a license condition to the operating license to implement the TS changes.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Peter S. Tam".

Peter S. Tam, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures:

1. Amendment No. 160 to DPR-22
2. Safety Evaluation

cc w/encls: Distribution via ListServ

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

NORTHERN STATES POWER COMPANY\*

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 160  
License No. DPR-22

1. The U. S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Nuclear Management Company, LLC\* (the licensee), dated April 3, 2008, as supplemented on February 23, 2009, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.2 of Renewed Facility Operating License No. DPR-22 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 160, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.

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\*On September 22, 2008, Nuclear Management Company, LLC, transferred its operating authority to its parent, Northern States Power Company, a Minnesota corporation (NSPM). By letter dated September 3, 2008 (Accession No. ML082470648), NSPM stated that it accepts responsibility for all actions before the NRC staff which were previously initiated or addressed by Nuclear Management Company.

3. Further, Renewed Facility Operating License No. DPR-22 will be amended to add the following license condition 2.J, to read as follows:

Upon implementation of Amendment No. 160 adopting TSTF-448, Revision 3, the determination of control room envelope (CRE) unfiltered air leakage 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 Specifications 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 June 4, 2004, the date of the most recent successful tracer gas test, as stated in the letter (L-MT-04-049, dated November 18, 2004) in 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, Specifications 5.5.13 c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from June 4, 2004, the date of the most recent successful tracer gas test, as stated in the letter (L-MT-04-049, dated November 18, 2004) in 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 184 days allowed by SR 3.0.2, as measured from October 17, 2008, the date of the most recent pressure measurement test, or within 184 days if not performed previously.
4. This license amendment is effective as of its date of issuance and shall be implemented by November 1, 2009.

FOR THE NUCLEAR REGULATORY COMMISSION



Lois M. James, Chief  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to Renewed Facility Operating License  
and Technical Specifications

Date of Issuance: March 17, 2009

ATTACHMENT TO LICENSE AMENDMENT NO. 160

RENEWED FACILITY OPERATING LICENSE NO. DPR-22

DOCKET NO. 50-263

Replace the following pages of Renewed Facility Operating License DPR-22 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

3  
7

3  
7

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

REMOVE

INSERT

3.7.4-1  
3.7.4-2  
3.7.4-3  
5.5-11  
5.5-12

3.7.4-1  
3.7.4-2  
3.7.4-3  
5.5-11  
5.5-12

2. Pursuant to the Act and 10 CFR Part 70, NSPM to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operations, as described in the Final Safety Analysis Report, as supplemented and amended, and the licensee's filings dated August 16, 1974 (those portions dealing with handling of reactor fuel) and August 17, 1977 (those portions dealing with fuel assembly storage capacity);
  3. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  4. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  5. Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to possess, but not separate, such byproduct and special nuclear material as may be produced by operation of the facility.
- C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission, now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
1. Maximum Power Level  
NSPM is authorized to operate the facility at steady state reactor core power levels not in excess of 1775 megawatts (thermal).
  2. Technical Specifications  
The Technical Specifications contained in Appendix A, as revised through Amendment No. 160, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.
  3. Physical Protection  
NSPM shall implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search

- I. All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of the most recent NRC-approved version of the Boiling Water Reactor Vessels and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) appropriate for the configuration of the specimens in the capsule. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.
  
- J. Upon implementation of Amendment No. 160 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 Specifications 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 June 4, 2004, the date of the most recent successful tracer gas test, as stated in the letter (L-MT-04-049, dated November 18, 2004) in 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, Specifications 5.5.13.c(ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from June 4, 2004, the date of the most recent successful tracer gas test, as stated in the letter (L-MT-04-049, dated November 18, 2004) in 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 184 days allowed by SR 3.0.2, as measured from October 17, 2008, the date of the most recent pressure measurement test, or within 184 days if not performed previously.
  
- K. This renewed operating license is effective as of the date of issuance and shall expire at midnight, September 8, 2030.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA/**

J. E. Dyer, Director

Office of Nuclear Reactor Regulation

Attachments: 1. Appendix A - Technical Specifications  
2. Appendix B - (Deleted per Amendment 15, 12/17/82)  
3. Appendix C - Additional Conditions

Date of Issuance: November 08, 2006

Amendment No. 160

3.7 PLANT SYSTEMS

3.7.4 Control Room Emergency Filtration (CREF) System

LCO 3.7.4 Two CREF subsystems shall be OPERABLE.

-----NOTE-----  
The control room envelope (CRE) boundary may be opened intermittently under administrative control.  
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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. One CREF subsystem inoperable for reasons other than Condition B.	A.1 Restore CREF subsystem to OPERABLE status.	7 days
B. One or more CREF 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

ACTIONS (continued)

<p>C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.</p>	<p>C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.</p>	<p>12 hours  36 hours</p>
<p>D. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. ----- D.1 Place OPERABLE CREF subsystem in pressurization mode. <u>OR</u> D.2.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment. <u>AND</u> D.2.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately  Immediately  Immediately</p>
<p>E. Two CREF subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.</p>	<p>E.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Two CREF subsystems inoperable during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.</p> <p>OR</p> <p>One or more CREF subsystems inoperable due to an inoperable CRE boundary during movement of recently irradiated fuel assemblies in the secondary containment or during OPDRVs.</p>	<p>-----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>F.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment.</p> <p><u>AND</u></p> <p>F.2 Initiate action to suspend OPDRVs.</p>	<p>Immediately</p> <p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.4.1 Operate each CREF subsystem for <math>\geq 10</math> continuous hours with the heaters operating.</p>	<p>31 days</p>
<p>SR 3.7.4.2 Perform required CREF filter testing in accordance with the Ventilation Filter Testing Program (VFTP).</p>	<p>In accordance with the VFTP</p>
<p>SR 3.7.4.3 Verify each CREF subsystem actuates on an actual or simulated initiation signal.</p>	<p>24 months</p>
<p>SR 3.7.4.4 Perform required CRE unfiltered air in-leakage testing in accordance with the Control Room Envelope Habitability Program.</p>	<p>In accordance with the Control Room Envelope Habitability Program</p>

## 5.5 Programs and Manuals

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### 5.5.11 Primary Containment Leakage Rate Testing Program (continued)

- d. Leakage rate acceptance criteria are:
  - 1. Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $< 0.60 L_a$  for the Type B and C tests and  $\leq 0.75 L_a$  for Type A tests.
  - 2. Air lock testing acceptance criteria are:
    - a) Overall air lock leakage rate is  $\leq 0.05 L_a$  when tested at  $\geq P_a$ .
    - b) For each door, leakage rate is  $\leq 0.007 L_a$  when pressurized to  $\geq 10$  psig.
- e. The resilient seals of each 18 inch primary containment purge and vent valve shall be replaced at least once every 9 years. The provisions of SR 3.0.2 are applicable to this requirement. If a common mode failure attributable to the resilient seals is identified based on the results of SR 3.6.1.3.11, the resilient seals of all 18 inch primary containment purge and vent valves shall be replaced.
- f. The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

### 5.5.12 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," 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.

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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 Filtration (CREF) 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 in-leakage 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 subsystem of the CREF 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 in-leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air in-leakage measured by the testing described in paragraph c. The unfiltered air in-leakage limit for radiological challenges is the in-leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air in-leakage 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 in-leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 160 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY\*

MONTICELLO NUCLEAR GENERATING PLANT (MNGP)

DOCKET NO. 50-263

1.0 INTRODUCTION

By letter dated April 3, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080950329), as supplemented on February 23, 2009 (Accession No. ML090560645), Nuclear Management Company (the then licensee) submitted an application for amendment. The proposed amendment would change the MNGP technical specifications (TS) related to control room envelope (CRE) habitability in Section 3.7.4, "Control Room Emergency Filtration (CREF) System," and would add new Section 5.5.13, "Control Room Envelope Habitability Program," to be consistent with Nuclear Regulatory Commission (NRC)-approved Technical Specification Task Force (TSTF) change traveler TSTF-448, Revision 3, "Control Room Habitability." The amendment would also add a license condition to specify the implementation schedule of the various new requirements.

On August 8, 2006, the commercial nuclear electrical power generation industry owners group TSTF submitted a proposed change, TSTF-448, Revision 3, to the improved Standard Technical Specifications (STS) (NUREGs 1430-1434) on behalf of the industry (TSTF-448, Revisions 0, 1, and 2 were prior draft iterations). TSTF-448, Revision 3, is a proposal to establish more effective and appropriate action, surveillance, and administrative STS requirements related to ensuring the habitability of the CRE. On January 17, 2007 (72 FR 2022), the NRC staff published a model safety evaluation to be used for plant-specific amendments following TSTF-448, Rev. 3.

In NRC Generic Letter 2003-01 (Reference 1), licensees were alerted to findings at facilities that existing TS surveillance requirements for the control room envelope emergency ventilation system may not be adequate. Specifically, the results of ASTM E741 (Reference 2) tracer gas tests to measure CRE unfiltered inleakage at facilities indicated that the differential pressure surveillance is not a reliable method for demonstrating CRE boundary operability. Licensees were requested to address existing TS as follows:

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\*On September 22, 2008, Nuclear Management Company, LLC, transferred its operating authority to its parent, Northern States Power Company, a Minnesota corporation (NSPM). By letter dated September 3, 2008 (Accession No. ML082470648), NSPM stated that it accepts responsibility for all actions before the NRC staff which were previously initiated or addressed by Nuclear Management Company.

*Provide confirmation that your technical specifications verify the integrity [i.e., operability] of the CRE [boundary], and the assumed [unfiltered] leakage rates of potentially contaminated air. If you currently have a differential pressure surveillance requirement to demonstrate CRE [boundary] integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your differential pressure surveillance requirement is no longer adequate, provide a schedule for: 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E741), and 2) making any necessary modifications to your CRE [boundary] so that compliance with your new surveillance requirement can be demonstrated.*

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

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

Consistent with the change traveler as incorporated into NUREG-1433, the licensee proposed to revise action and surveillance requirements in Specification 3.7.4, "Control Room Emergency Filtration System (CREF)," and adding a new administrative controls program as Specification 5.5.13, "Control Room Envelope Habitability Program." The purpose of the changes is to ensure that CRE boundary operability is maintained and verified through effective surveillance and programmatic requirements, and that appropriate remedial actions are taken in the event of an inoperable CRE boundary.

The following NRC staff evaluation is based on the model safety evaluation of January 17, 2007. Some editorial and plant-specific changes were incorporated, resulting in minor deviations from the model safety evaluation.

The licensee's February 23, 2009, supplement provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 6, 2008 (73 FR 25043).

## 2.0 REGULATORY EVALUATION

### 2.1 Control Room and Control Room Envelope

NRC Regulatory Guide 1.196, "Control Room Habitability at Light-water Nuclear Power Reactors," Revision 0, May 2003 (Reference 4), uses the term "control room envelope" in addition to the term "control room" and defines each term as follows:

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

*Control Room Envelope: The plant area, defined in the facility licensing basis, that in the event of an emergency, can be isolated from the plant areas and the environment external to the CRE. This area is served by an emergency ventilation system, with the intent of maintaining the habitability of the control room. This area encompasses the control room, and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident.*

NRC Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity At Nuclear Power Reactors," Revision 0, May 2003 (Reference 5), also contains these definitions, but uses the term CRE to mean both. This is because the protected environment provided for operators varies with the nuclear power facility. At some facilities this environment is limited to the control room; at others, it is the CRE. In this safety evaluation, consistent with the proposed changes to the STS, the CRE will be used to designate both. For consistency, facilities should use the term CRE with an appropriate facility-specific definition derived from the above CRE definition.

## 2.2 Control Room Emergency Filtration System

The CREF system at MNGP provides a protected environment from which operators can control the unit, during airborne challenges from radioactivity, hazardous chemicals, and fire byproducts, such as fire suppression agents and smoke, during both normal and accident conditions.

The CREF system is designed to maintain a habitable environment in the control room envelope for 30 days of continuous occupancy after a design-basis accident (DBA) without exceeding a 5 rem total effective dose equivalent (TEDE).

The CREF system consists of two redundant subsystems, each capable of maintaining the habitability of the CRE. The CREF system is considered operable when the individual components necessary to limit operator exposure are operable in both subsystems. A CREF system subsystem is considered operable when the associated:

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

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

### 2.3 Regulations Applicable to Control Room Habitability

In Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities, "General Design Criteria (GDC) 1, 2, 3, 4, 5, and 19 apply to CRE habitability. A summary of these GDCs follows. MNGP was not licensed under the GDC from 10 CFR Part 50, but the MNGP Update Safety Analysis Report, Appendix E, Section E.2, indicates that criteria similar to the following GDCs were used in the MNGP CRE design:

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

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

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

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

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

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

- NUREG-1433, TS 3.7.4, "Main Control Room Environmental Control (MCREC) System;" and
- NUREG-1434, TS 3.7.3, "Control Room Fresh Air (CRFA) System."

In these specifications, the surveillance requirement associated with demonstrating the operability of the CRE boundary requires verifying that one CREF subsystem can maintain a positive pressure relative to the areas adjacent to the CRE during the pressurization mode of operation at a makeup flow rate. Facilities that pressurize the CRE during the emergency mode of operation of the CREF have similar surveillance requirements. Other facilities that do not pressurize the CRE have only a system flow rate criterion for the emergency mode of operation. Regardless, the results of ASTM E741 (Reference 2) tracer gas tests to measure CRE unfiltered inleakage at facilities indicated that the differential pressure surveillance (or the alternative surveillance at non-pressurization facilities) is not a reliable method for demonstrating CRE boundary operability. That is, licensees were able to obtain differential pressure and flow measurements satisfying the SR limits even though unfiltered inleakage was determined to exceed the value assumed in the safety analyses.

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

NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety" (AL 98-10), states that "the discovery of an improper or inadequate TS value or required action is considered a degraded or nonconforming condition," which is defined in NRC Inspection Manual Chapter 9900; see latest guidance in RIS 2005-20 (Reference 3). "Imposing administrative controls in response to an improper or inadequate TS is considered an acceptable short-term corrective action. The NRC staff expects that, following the imposition of administrative controls, an amendment to the inadequate TS, with appropriate justification and schedule, will be submitted in a timely fashion."

Licensees that have found unfiltered inleakage in excess of the limit assumed in the safety analyses and have yet to either reduce the inleakage below the limit or establish a higher bounding limit through re-analysis, have implemented compensatory actions to ensure the safety of CRE occupants, pending final resolution of the condition, consistent with RIS 2005-20. However, based on GL 2003-01 and AL 98-10, the NRC staff expects each licensee to propose TS changes that include a surveillance to periodically measure CRE unfiltered inleakage in order to satisfy 10 CFR 50.36(c)(3), which requires a facility's TS to include SRs, which it defines as "requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and *that limiting conditions for operation will be met.*" (Emphasis added.)

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



## 2.4 Adoption of TSTF-448, Revision 3, by MNGP

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

The changes made by TSTF-448 to the STS requirements for the CREF system and the CRE boundary conform to 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3). Their adoption will better assure that MNGP's CRE will remain habitable during normal operation and DBA conditions. These changes are, therefore, acceptable from a regulatory standpoint.

## 3.0 TECHNICAL EVALUATION

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

### 3.1 Proposed Changes

The proposed amendment would strengthen CRE habitability TS requirements by changing TS 3.7.4 and adding a new TS administrative controls program on CRE habitability. Accompanying the proposed TS changes are appropriate conforming technical changes to the TS Bases. The proposed revision to the Bases also includes editorial and administrative changes to reflect applicable changes to the corresponding STS Bases, which were made to improve clarity, conform with the latest information and references, correct factual errors, and achieve more consistency among the STS NUREGs. Except for plant specific differences, all of these changes are consistent with STS as revised by TSTF-448, Revision 3.

The NRC staff compared the proposed TS changes to the STS and the STS markups and evaluations in TSTF-448. The NRC staff verified that differences from the STS were adequately justified on the basis of plant-specific design or retention of current licensing basis. The NRC staff also reviewed the proposed changes to the TS Bases for consistency with the STS Bases and the plant-specific design and licensing bases, although approval of the Bases is not a condition for accepting the proposed amendment. However, the new TS 5.5.9, "Technical Specifications (TS) Bases Control Program," provides assurance that the licensee has established and will maintain the adequacy of the Bases. The proposed Bases for TS 3.7.4 refer to specific guidance in NEI 99-03, "Control Room Habitability Assessment Guidance," Revision 0, dated June 2001 (Reference 6), which the NRC staff has formally endorsed, with exceptions, through Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," dated May 2003 (Reference 4).

### 3.2 TS 3.7.4, "Control Room Emergency Filtration (CREF) System"

The licensee proposed to revise the action requirements of TS 3.7.4 to acknowledge that an inoperable CRE boundary, depending upon the location of the associated degradation, could cause just one, instead of both CREF subsystems to be inoperable. This is accomplished by revising Condition A to exclude Condition B, and revising Condition B to address one or more CREF subsystems, as follows:

- Condition A One CREF subsystem inoperable for reasons other than Condition B.
- Condition B One or more CREF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.

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

The licensee proposed to replace existing Required Action B.1, "Restore control room boundary to OPERABLE status," which has a 24-hour Completion Time, with Required Action B.1, to immediately initiate action to implement mitigating actions; Required Action B.2, to verify, within 24 hours, that in the event of a DBA, CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke; and Required Action B.3, to restore CRE boundary to operable status within 90 days.

The 24-hour Completion Time of new Required Action B.2 is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions as directed by Required Action B.1. The 90-day Completion Time of new Required Action B.3 is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. The 90-day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most anticipated problems with the CRE boundary. Therefore, proposed Actions B.1, B.2, and B.3 are acceptable.

The proposed CRE leakage measurement SR 3.7.4.4 states, "Perform required CRE unfiltered air leakage testing in accordance with the Control Room Envelope Habitability Program." The CRE Habitability Program TS, proposed TS 5.5.13, Item c, requires that the program include "Requirements for (i) determining the unfiltered air leakage 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 [Reference 5]..." This guidance references ASTM E741 (Reference 2) as an acceptable method for ascertaining the unfiltered leakage into the CRE. Therefore, the proposed CRE leakage measurement SR is acceptable.

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### 3.3 TS 5.5.13, "Control Room Envelope Habitability Program"

The licensee's proposed administrative controls program TS is consistent with the model program TS in TSTF-448, Revision 3. In combination with SR 3.7.4.4, this program is intended to ensure the operability of the CRE boundary, which as part of an operable CREF system, will ensure that CRE habitability is maintained such that CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under DBA conditions without personnel receiving radiation exposures in excess of 5 rem TEDE for the duration of the accident.

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

#### Definitions of CRE and CRE boundary

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

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

This element is intended to ensure the CRE boundary is maintained in its design condition. Guidance for implementing this element is contained in Regulatory Guide 1.196 (Reference 4), which endorsed, with exceptions, NEI 99-03 (Reference 6). Maintaining the CRE boundary in its design condition provides assurance that its leak-tightness will not significantly degrade between CRE inleakage determinations.

#### Editorial Change on Page 5.5-11

As a result of the addition of the new TS 5.5-13, the section "Programs and Manuals" no longer ends at Section 5.5-12. Thus, the double line (indicating end of section) at the bottom of page 5.5-11 is no longer valid. The NRC staff is issuing a retyped page 5.5-11 with a single line to indicate that "Programs and Manuals" continues on the next page, where the new TS 5.5-13 is located. This change is purely editorial.

#### Assessment of CRE habitability at the frequencies stated in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0 (Reference 5), and measurement of unfiltered air leakage into the CRE in accordance with the testing methods and at the frequencies stated in Sections C.1 and C.2 of Regulatory Guide 1.197

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

ascertaining CRE boundary operability. Determination of CRE leakage at the NRC-accepted frequencies provides assurance that significant degradation of the CRE boundary will not occur between CRE leakage determinations.

Measurement of CRE pressure with respect to all areas adjacent to the CRE boundary at designated locations for use in assessing the CRE boundary at a frequency of 24 months on a staggered test basis (with respect to the CREF subsystems)

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

Quantitative limits on unfiltered leakage

This element is intended to establish the CRE leakage limit as the CRE unfiltered infiltration rate assumed in the CRE occupant radiological consequence analyses of DBAs. Having an unambiguous criterion for the CRE boundary to be considered operable in order to meet LCO 3.7.4, will ensure that associated action requirements will be consistently applied in the event of CRE degradation resulting in leakage exceeding the limit.

Application of the provisions of SR 3.0.2

Consistent with TSTF-448, Revision 3, the program states that the provisions of SR 3.0.2 are applicable to the program frequencies for performing the activities required by program paragraph number c, parts (i) and (ii) (assessment of CRE habitability and measurement of CRE leakage), and paragraph number d (measurement of CRE differential pressure). This statement is needed to avoid confusion. SR 3.0.2 is applicable to the surveillance that references the testing in the CRE Habitability Program. However, SR 3.0.2 is not applicable to Administrative Controls unless specifically invoked. Providing this statement in the program eliminates any confusion regarding whether SR 3.0.2 is applicable, and is acceptable.

Consistent with TSTF-448, Revision 3, proposed TS 5.5.13 states that (1) a CRE Habitability Program shall be established and implemented, (2) the program shall include all of the NRC-staff required elements, as described above, and (3) the provisions of SR 3.0.2 shall apply to program frequencies. Therefore, TS 5.5.13, which is consistent with the model program TS approved by the NRC staff in TSTF-448, Revision 3, is acceptable.

3.4 Implementation of New Surveillance and Assessment Requirements by the Licensee

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

4.0 STATE CONSULTATION

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

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no-significant-hazards considerations, and there has been no public comment on the finding (73 FR 25043). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The NRC staff has concluded, on the basis of the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

## 7.0 REFERENCES

- (1) NRC Generic Letter 2003-01, "Control Room Habitability," dated June 12, 2003, (GL 2003-01).
- (2) ASTM E 741 - 00, "Standard Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution," 2000, (ASTM E741).
- (3) NRC Regulatory Issue Summary 2005-20: Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability," dated September 26, 2005 (RIS 2005-20).
- (4) Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," Revision 0, dated May 2003.
- (5) Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003.
- (6) NEI 99-03, "Control Room Habitability Assessment Guidance," Revision 0, dated June 2001.

Principal Contributor: Ravinder Grover

Dated: March 17, 2009

Mr. Timothy J. O'Connor  
Site Vice President  
Monticello Nuclear Generating Plant  
Northern States Power Company  
2807 West County Road 75  
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March 17, 2009

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - ISSUANCE OF AMENDMENT REGARDING CONTROL ROOM ENVELOPE HABITABILITY (TAC NO. MD8433)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 160 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated April 3, 2008, as supplemented on February 23, 2009, for implementation of the Technical Specification Task Force (TSTF) Change Traveler TSTF-448, Revision 3, "Control Room Habitability."

The amendment adopts the proposed requirements regarding control room envelope habitability set forth in TSTF-448, Revision 3. Specifically, the amendment revises the requirements in TS Section 3.7.4, "Control Room Emergency Filtration (CREF) System," adds a new TS Section 5.5.13, "Control Room Envelope Habitability Program," and adds a license condition to the operating license to implement the TS changes.

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

Sincerely,

**/RA/**

Peter S. Tam, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosures:

1. Amendment No. 160 to DPR-22
2. Safety Evaluation

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OFFICE	LPLIII-1/PM	LPLIII-1/LA	ITSB/BC	OGC*	LPLIII-1/BC
NAME	PTam	THarris	RElliott	*	LJames
DATE	2/6/09	2/6/09	2/25/09	*	3/17/09

\*ITSB has listed TSTF-448 amendments as no longer requiring OGC review and concurrence.

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