



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

August 27, 2012

Mr. Mark A. Schimmel
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota (NSPM)
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT
TO REMOVE AUTOMATIC TRANSFER CAPABILITY OF ESSENTIAL
ELECTRICAL BUSES TO THE 1AR TRANSFORMER DUE TO DEGRADED
VOLTAGE CONDITIONS (TAC NO. ME8763)

Dear Schimmel:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 169 to Renewed Facility Operating License No. DPR-22 for the Monticello Nuclear Generating Plant. The amendment consists of changes to the licensing basis in response to your application dated May 25, 2012.

The amendment revises the Monticello current licensing basis, removing the capability to automatically transfer to the 1AR Transformer as a source of power to the essential buses on degraded voltage and instead directly transfer to the Emergency Diesel Generators.

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 that reads "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. 169 to DPR-22
2. Safety Evaluation

cc w/encls: Distribution via ListServ



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. 169
License No. DPR-22

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northern States Power Company (NSPM, the licensee), dated May 25, 2012, 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, Renewed Facility Operating License DPR-22 is amended by adding a new license condition C.13 to read as follows:

The current licensing basis is revised to remove the capability to automatically transfer to the 1AR Transformer as a source of power to the essential buses on degraded voltage and instead directly transfer to the Emergency Diesel Generators.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance, except the revision of the Updated Safety Analysis Report to reflect the revised licensing basis of the 1AR transformer shall follow the schedule set forth in 10 CFR 50.71(e).

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read 'Istvan Frankl', is written over the typed name.

Istvan Frankl, Acting Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: August 27, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 169

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 contains a marginal line indicating the area of change.

REMOVE

6
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INSERT

6
6A

3. Designated staging areas for equipment and materials
 4. Command and control
 5. Training of response personnel
- (b) Operations to mitigate fuel damage considering the following:
1. Protection and use of personnel assets
 2. Communications
 3. Minimizing fire spread
 4. Procedures for implementing integrated fire response strategy
 5. Identification of readily-available pre-staged equipment
 6. Training on integrated fire response strategy
 7. Spent fuel pool mitigation measures
- (c) Actions to minimize release to include consideration of:
1. Water spray scrubbing
 2. Dose to onsite responders
12. The licensee shall implement and maintain all Actions required by Attachment 2 to NRC Order EA-06-137, issued June 20, 2006, except the last action that requires incorporation of the strategies into the site security plan, contingency plan, emergency plan and/or guard training and qualification plan, as appropriate.
13. The current licensing basis is revised to remove the capability to automatically transfer to the 1AR Transformer as a source of power to the essential buses on degraded voltage and instead directly transfer to the Emergency Diesel Generators.
- D. NSPM shall immediately notify the NRC of any accident at this facility which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission.
- E. NSPM shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- F. NSPM shall observe such standards and requirements for the protection of the environment as are validly imposed pursuant to authority established under Federal and State law and as determined by the Commission to be applicable to the facility covered by this renewed facility operating license.
- G. The Updated Safety Analysis Report supplement, as revised, submitted pursuant to 10 CFR 54.21(d), shall be included in the next scheduled update to the Updated Safety Analysis Report required by 10 CFR 50.71(e)(4) following the issuance of this renewed operating license. Until that update is complete, NSPM may make changes to the programs and activities described in the supplement

without prior Commission approval, provided that NSPM evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

- H. The Updated Safety Analysis Report supplement, as revised, describes certain future activities to be completed prior to the period of extended operation. NSPM shall complete these activities no later than September 8, 2010, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.



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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 169

RENEWED FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By letter dated May 25, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12150A169), Northern States Power Company (the licensee) requested a revision to the Monticello Nuclear Generating Plant (MNGP) updated safety analysis report (USAR). The proposed change would remove the degraded voltage transfer capability to the 1AR Transformer.

The MNGP is currently operating with the 1AR Transformer removed from service, to address an issue identified during the recent 2012 NRC Component Design Basis Inspection. This issue involves the time delay assumed in the safety analyses for the degraded voltage transfer logic associated with the 1AR Transformer, which is governed by technical specification (TS) 3.3.8.1, "Loss of Power (LOP) Instrumentation." Removing the degraded voltage transfer capability to the 1AR Transformer will remedy the TS compliance issue identified by NRC Region III (report of Component Design Bases Inspection (CDBI), July 12, 2012, ADAMS Accession No. ML12195A165) and will allow the 1AR Transformer to be returned to service.

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission (NRC) staff used the following regulatory requirements and guidance documents to review the licensee's May 25, 2012, application for amendment.

The NRC's acceptance criteria for offsite power systems are based on Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR), Appendix A, "General Design Criteria," General Design Criterion 17 (GDC-17). However, MNGP was designed largely before the GDCs were promulgated in 1971; instead, MNGP was designed according to principal design criteria currently set forth in the MNGP USAR, Section 1.2, "Principal Design Criteria." In 1967, the Atomic Energy Commission (AEC) published for public comment a revised set of proposed GDC (*Federal Register* 32 FR 10213, July 11, 1967). Although not explicitly licensed to the AEC-proposed GDC published in 1967, the licensee performed a comparative evaluation of the design basis of MNGP with the AEC-proposed GDC of 1967. This evaluation is included in MNGP USAR, Appendix E, "Plant Comparative Evaluation with the Proposed AEC 70 Design Criteria."

USAR principal GDCs criteria 24 and 39 require that alternate power systems shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning required of the engineered safety features. As a minimum, the on-site power system and the off-site power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system. In the event of the loss of all off-site power, sufficient alternate sources of power shall be provided to permit the required functioning of protection systems.

GDC-17, "Electric power systems," requires that:

An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences, and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

Section 36, "Technical specifications," of 10 CFR Section 50 requires that TSs shall be included in the application by applicants for a license authorizing operation of a production or utilization facility. Subsection (c) of Section 36 requires that TS include items in five specific categories related to station operation. These categories are (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operations (LCOs),

(3) surveillance requirements (SRs), (4) design features, and (5) administrative controls. The proposed changes to TSs, discussed in this safety evaluation, are within the LCOs and the SRs categories.

MNGP TSs Table 3.3.8.1-1, "Loss of Power Instrumentation," function 2.b states that 4.16 kV Essential Bus Degraded Voltage, time delay Allowable Value is ≥ 8.8 seconds and ≤ 9.2 seconds.

Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants (NUREG-0800), Branch Technical Position (BTP) 8-6, dated March 2007 (similar to the previous BTP PSB-1, July 1981), "Adequacy of Station Electric Distribution System Voltages," states that the TSs should include LCOs, SRs, trip setpoints, and maximum and minimum allowable values for the first level of undervoltage protection (loss of offsite power) relays and the second level (degraded voltage) protection sensors and associated time delay devices.

The specific review criteria are contained in SRP, Sections 8.2, and 8.3, and BTP PSB-6.

3.0 TECHNICAL EVALUATION

The MNGP offsite power system is designed to provide adequate power to site loads given that the 345 kilo-volt (kV) and 115 kV grid voltages are within the ranges specified by plant procedures. The ranges are derived from plant alternating current (ac) load studies; operation within these ranges provides adequate voltage for operability of safety-related equipment, provides for proper operation of various automatic voltage regulating equipment (e.g., load tap changers), and will result in the avoidance of inadvertent bus transfers of the safety-related buses due to degraded voltage when starting plant equipment. The 2R Transformer (preferred source) and 1R Transformer (alternative source) are designed to carry the full plant loads and supply the 4.16 kV system. Normally, one of the two transformers is in service to supply non-safety plant loads and both essential (safety-related) 4.16 kV Buses 15 and 16. MNGP has an additional off-site source, the 1AR Transformer, sized to supply the two essential buses.

In 1984, the licensee installed a modification that transferred essential buses to 1AR Transformer with a time delay of 5 seconds prior to transferring to the emergency diesel generators (EDGs) under degraded voltage conditions from either the 2R or 1R transformer, resulting in a total 15 second time delay to separate from the offsite power. Specifically, in the event of degraded or loss of voltage to Buses 15 and 16, an Essential Bus Transfer (EBT) separates the essential buses from their normal power supply and automatically switches them preferentially to the 1AR Transformer if there is acceptable voltage on the bus, and if not, to the associated EDG.

The NRC inspectors determined that, during the 2012 CDBI, MNGP was not in compliance with TS 3.3.8.1 time delay for degraded voltage relay Function 2.b to be between 8.8 seconds and 9.2 seconds (see the CDBI report at ADAMS Accession No. ML12194A165). This condition led the licensee to declare both EDGs inoperable and enter into limiting condition for operation (LCO) 3.8.1.E on May 8, 2012. The licensee subsequently reported this event in licensee event report (LER) 2012-001, "Degraded Voltage Transfer Scheme Not in Compliance

with T.S. 3.3.8.1" (ADAMS Accession No. ML12187A774). The LER stated that "[d]uring the development of the 1980's modification that added the 1AR time delay degraded voltage requirements, the TS submittal did not include the total time delay required to disconnect the Essential Buses from all Offsite Sources. The licensee's interim corrective action was to temporarily remove 1AR Transformer from service, thus removing the additional degraded voltage time delay of 5 seconds and restoring TS compliance. The licensee proposed the following changes to Section 8.4.1.3, "Performance Analysis," page 7, of the USAR to be consistent with the time delay specified in T.S. 3.3.8.1.

- Revise the second paragraph to indicate that transfer of the essential buses to the EDGs will occur due to degraded voltage conditions on the essential buses.
- Revise the third paragraph to eliminate reference to degraded voltage values in a sentence referring to the 1AR transformer.
- Add a sentence to the third paragraph to read: "Transfer of the essential buses to the EDG will normally occur on degraded voltage (normally 3920 Vac for 9 seconds) conditions."

The licensee performed a safety significance analysis, which concluded that the total transfer time from offsite power to EDGs, including the additional time to transfer to the 1AR Transformer (i.e., 15 seconds), was within the licensing basis analysis limit for the postulated loss-of-coolant accident (LOCA). The licensee stated that technical analysis performed onsite concludes that the changes associated with the proposed license amendment will continue to assure that the design requirements and acceptance criteria of MNGP emergency core cooling system analysis for the postulated LOCA will continue to be met.

The NRC staff reviewed the licensee's proposed amendment to the licensing basis via changes to the USAR (i.e., removing the capability to automatically transfer to the 1AR Transformer as a source of power to the essential buses on degraded voltage condition, and instead directly transfer to the EDGs), and determined that it is acceptable because the changes would eliminate the additional time delay (5 seconds) needed to transfer to the EDG, thus meeting the current licensing basis for degraded voltage set forth in Amendment No. 147 for TS Section 3.3.8.1. MNGP will still maintain the automatic bus transfer capability to alternate power sources for loss of voltage conditions. The NRC staff also determined that the proposed change will significantly increase plant safety by providing an additional qualified off-site source which is available to power the safety-related essential buses at the plant.

In conclusion, the proposed amendment was evaluated by the NRC staff to determine whether applicable regulations and requirements continue to be met. The NRC staff determined that the proposed amendment does not require any exemption or relief from NRC's regulatory requirements. Applicable regulatory requirements will continue to be met, adequate defense-in-depth will be maintained, and sufficient safety margins will be maintained. Therefore, the proposed amendment is acceptable. The approval of the proposed amendment is conveyed by a new license condition, C.(13), to be added to MNGP's Renewed Facility Operating License DPR-22, to read:

The current licensing basis is revised to remove the capability to automatically transfer to the 1AR Transformer as a source of power to the essential buses on degraded voltage and instead directly transfer to the Emergency Diesel Generators.

This current licensing basis change will need to be incorporated in the USAR. The update should be performed in accordance with the USAF update schedule imposed by 10 CFR 50.71(e).

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 a requirement with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20. 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 consideration and there has been no public comment on such finding (77 FR 38096, dated June 26, 2012). 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 Commission has concluded, based on 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) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Rui Li, NRR

Date of issuance: August 27, 2012

Mr. Mark A. Schimmel
 Site Vice President
 Monticello Nuclear Generating Plant
 Northern States Power Company - Minnesota (NSPM)
 2807 West County Road 75
 Monticello, MN 55362-9637

August 27, 2012

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT TO REMOVE AUTOMATIC TRANSFER CAPABILITY OF ESSENTIAL ELECTRICAL BUSES TO THE 1AR TRANSFORMER DUE TO DEGRADED VOLTAGE CONDITIONS (TAC NO. ME8763)

Dear Mr. Schimmel:

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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

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2. Safety Evaluation

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ADAMS Accession No.: **ML12216A269**

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*Safety evaluation transmitted by memo (Accession No. ML12213A297) of 7/31/2012.

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