



Monticello Nuclear Generating Plant  
2807 W County Road 75  
Monticello, MN 55362

May 20, 2011

L-MT-11-018  
10 CFR 50.54(f)

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

Monticello Nuclear Generating Plant  
Docket 50-263  
Renewed Facility Operating License No. DPR-22

Response to Request for Additional Information Related to Generic Letter 2008-01

- References:
- 1) U.S. NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008.
  - 2) NMC to NRC, "Generic Letter 2008-01: Three Month Response to Generic Letter 2008-01," (L-MT-08-026) dated April 11, 2008.
  - 3) NRC to NMC, "Monticello Nuclear Generating Plant (MNGP) - Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," Proposed Alternative Course of Action (TAC No. MD7847)," dated September 9, 2008.
  - 4) NMC to NRC, "Nine-Month Response to NRC Generic Letter 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (TAC No. MD7847)," (L-MT-08-063) dated October 14, 2008.
  - 5) NSPM to NRC, "Monticello Nuclear Generating Plant Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01," (L-MT-09-079) dated August 14, 2009.
  - 6) E-mail from P. Tam (NRC) to R. Loeffler (NSPM), "Monticello – Draft RAI on response to Generic Letter 2008-01 re. gas accumulation in ECCS etc. (TAC MD7847)." (Accession No. ML103060207)

On January 11, 2008, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2008-01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," (Reference 1). Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy has

provided responses to GL 2008-01 in a series of letters listed above. The responses to the NRC e-mail request for additional information (RAI) (Reference 6) are provided in Enclosure 1.

If you have any questions or require additional information, please contact Mr. Richard Loeffler at (763) 295-1247.

Summary of Commitments

This letter proposes no new commitments and does not revise any existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.  
Executed on May 20, 2011,



Timothy J. O'Connor  
Site Vice President, Monticello Nuclear Generating Plant  
Northern States Power Company – Minnesota

Enclosure

cc: Regional Administrator, Region III, USNRC  
Project Manager, Monticello Nuclear Generating Plant, USNRC  
Resident Inspector, Monticello Nuclear Generating Plant, USNRC  
Minnesota Department of Commerce

**ENCLOSURE 1**

**MONTICELLO NUCLEAR GENERATING PLANT**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
RELATED TO GENERIC LETTER 2008-01**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
RELATED TO GENERIC LETTER 2008-01**

The U.S. Nuclear Regulatory Commission (NRC) requested in (Reference 1) additional information to complete their review of the Monticello Nuclear Generating Plant (MNGP) response to Generic Letter 2008-01.

**By letters dated April 11, 2008 (Accession No. ML081020695) [Reference 2], October 14, 2008 (Accession No. ML082880602) [Reference 3], and August 14, 2009, (Accession No. ML92290180) [Reference 4], the licensee submitted information in response to Generic Letter 2008-01 "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," (Reference 5), for Monticello Nuclear Generating Plant (MNGP). On the basis of the provided information, the NRC staff has concluded that additional information is needed to determine that the licensee has acceptably demonstrated "that the subject systems are in compliance with the current licensing and design bases and applicable regulatory requirements, and that suitable design, operational, and testing control measures are in place for maintaining this compliance" as stated in Generic Letter (GL) 2008-01.**

- 1. In the Licensing Basis evaluation section, the licensee stated that Technical Specification [TS] Surveillance Requirement [SR] 3.5.1.1 does not address emergency core cooling system (ECCS) suction piping, high pressure ECCS piping, decay heat removal, or containment spray piping. What actions are being taken to ensure that the areas not addressed in the TS SR are operable?**

Surveillance Requirements (SR) 3.5.1.1 and SR 3.5.2.2 require verifying every 31 days for each ECCS injection / spray subsystem<sup>(1)</sup> that the piping is filled with water from the pump discharge valve to the injection valve. As discussed in the nine-month MNGP Generic Letter 2008-01 response,<sup>(2)</sup> however, system design features together with other TS surveillance requirements and fill and vent procedures provide assurance that portions of piping not addressed by the "filled with water" criteria of surveillance requirements SR 3.5.1.1 or SR 3.5.2.2 are operable. A summary discussion is provided below:

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1. The low pressure ECCS consists of the Core Spray system and Residual Heat Removal (RHR) system operating in the Low Pressure Coolant Injection (LPCI) mode. RHR has several operational modes and performs the decay heat removal (shutdown cooling), suppression pool cooling, and containment spray functions in addition to ECCS operation in the LPCI mode.
  2. See the "Summary of Design Review" and "New Applicable Gas Volume Acceptance Criteria" sections of the NSPM nine-month GL response for the MNGP (Reference 3).

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### Suction Piping

- The suction piping for the low pressure ECCS,<sup>(1)</sup> is maintained filled by maintaining the suppression pool (SP) water level in accordance with TS surveillance requirements.
- The shutdown cooling (decay heat removal) and containment spray modes of RHR do not have any specified gas accumulation criterion as part of their licensing basis<sup>(3)</sup> but share the common RHR suction piping maintained full by the SP.
- The suction for the high pressure ECCS, i.e., HPCI, is normally aligned to the Condensate Storage Tanks (CSTs). The height of water in the CSTs maintains the suction piping full up to the first closed isolation valve in accordance with the TS SRs. Suction automatically transfers to the SP on low CST water level or high SP water level. When HPCI is aligned to the SP the suction piping is maintained filled by maintaining the SP water level in accordance with TS surveillance requirements.

### Discharge Piping

- The low pressure ECCS contains pressurizing stations supplied by the Condensate Service System (a type of keep-fill) to maintain the piping between the associated pump discharge valve up to the outboard injection valve pressurized.
- Although the shutdown cooling (decay heat removal) and containment spray modes of RHR do not have any specified gas accumulation criterion as part of their licensing basis<sup>(3)</sup> the discharge side of these systems up to the outboard injection valve experience keep-fill pressure due to sharing common RHR system piping.
- At the HPCI injection valve(s)<sup>(4)</sup> steam void formation has occurred due to the high temperature Feedwater on the downstream side of the injection valves. While void formation in the HPCI discharge piping has been analyzed and determined acceptable, a modification applying the Condensate System as a

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3. SR 3.5.1.1 and SR 3.5.2.2 apply only to the Core Spray and LPCI modes of RHR, requiring the piping between the pump discharge and injection valves to be "filled with water."
  4. HPCI injects via the Feedwater system piping. Although the keep-fill feature is not required for HPCI operability, it is normally available and HPCI operability would be evaluated, as needed, upon loss of the keep-fill.

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keep-fill system was installed to maintain the piping between the pump discharge check valve and injection valve filled with water to prevent void formation.

### Piping Downstream of Injection Valves

- A generic analysis<sup>(5)</sup> of the low pressure ECCS and containment spray piping downstream of the normally-closed injection valves was completed and a determination made that the existence of air voids in this piping will have no adverse consequences related to accident conditions. As, previously indicated, HPCI injects via the Feedwater piping.

### Procedures

As discussed in detail under Section III, "Testing and Evaluation" of the nine-month MNGP GL 2008-01 response, the surveillance and fill and vent procedures (which require venting at the high point locations in the respective systems) were reviewed and determined acceptable.

- 2. Industry guidance on acceptable void criteria for suction piping has been updated since submittal of Monticello's 9-month response (see Reference 8). Please provide updated void acceptance criteria, if applicable.**

Since the MNGP nine-month response to Generic Letter 2008-01 was submitted in October 2008, industry guidance on acceptable void criteria for suction piping has continued to develop. NSPM has adopted the most current guidance for void evaluation, entitled, "Industry Guidance for Evaluation of Unexpected Voids or Gas Identified in Plant ECCS and Other Systems," that was provided in a letter from the Nuclear Energy Institute (NEI) to the NRC on June 18, 2009 (Reference 6). This guidance has been added to the Monticello operability assessment process.

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5. Discussed in the MNGP nine-month GL response under the gas volume acceptance criteria section (Reference 3).

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- 3. Training was not identified in the GL but is considered to be a necessary part of applying procedures and other activities when addressing the issues identified in the GL. Please briefly discuss training.**

As noted in the question, the GL did not specifically cover training and thus, this area was not included in our nine-month response. Training on gas intrusion and accumulation was developed based in-part on the recommendations of Institute of Nuclear Power Operations (INPO) SER 2-05, "Gas Intrusion in Safety Systems," together with industry experience.

Training on gas intrusion and accumulation is provided as part of initial training for licensed Operators and as continuing training on a three year cycle. Gas intrusion and accumulation is included in the responsibilities of the Engineer responsible for the Gas Accumulation Program, training was provided on a one-time basis to Engineering personnel.

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**References**

1. E-mail from P. Tam (NRC) to R. Loeffler (NSPM), "Monticello – Draft RAI on response to Generic Letter 2008-01 re. gas accumulation in ECCS etc. (TAC MD7847 )," dated November 1, 2010. (Accession No. ML103060207)
2. NMC to NRC, "Generic Letter 2008-01: Three Month Response to Generic Letter 2008-01," (L-MT-08-026) dated April 11, 2008.
3. NMC to NRC, "Nine-Month Response to NRC Generic Letter 2008 01, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems" (TAC No. MD7847)," (L-MT-08-063) dated October 14, 2008.
4. NSPM to NRC, "Monticello Nuclear Generating Plant Nine-Month Supplemental (Post-Outage) Response to NRC Generic Letter 2008-01," (L-MT-09-079) dated August 14, 2009.
5. U.S. NRC Generic Letter 2008-01 "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems," dated January 11, 2008.
6. NEI (J. Riley) to NRC (W. Ruland), "Subject: Industry Guidance – Evaluation of Unexpected Voids or Gas Identified in Plant ECCS and Other Systems," dated June 18, 2009. (ADAMS Accession Nos. ML091800416 and ML091800418)