



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

December 30, 2014

L-MT-14-101  
10 CFR 50.46(a)(3)(ii)

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

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

2014 Annual Report of Changes in Emergency Core Cooling System Evaluation Models Pursuant to 10 CFR 50.46

- Reference: 1) NRC to NSPM, "Monticello Nuclear Generating Plant—Issuance of Amendment No. 176 to Renewed Facility Operating License Regarding Extended Power Uprate (TAC No. MD9990)," dated December 9, 2013.
- 2) NRC to NSPM, "Monticello Nuclear Generating Plant—Issuance of Amendment No. 180 to Renewed Facility Operating License Regarding Maximum Extended Load Line Limit Analysis Plus (TAC No. ME3145)," dated March 28, 2014.
- 3) NSPM to NRC, "June 2014, Thirty-Day Report of Changes in Emergency Core Cooling System Evaluation Models Pursuant to 10 CFR 50.46," (L-MT-14-054) dated June 17, 2014.
- 4) NSPM to NRC, "Report of Changes in Emergency Core Cooling System Evaluation Models," (L-MT-14-004) dated January 10, 2014.

Pursuant to 10 CFR 50.46(a)(3)(ii), the Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, is providing this annual report concerning changes/errors identified in the Emergency Core Cooling System (ECCS) evaluation models for the Monticello Nuclear Generating Plant (MNGP). The MNGP Loss of Coolant Accident (LOCA) analyses of record (AOR) are contained in the General Electric Hitachi (GEH) reports submitted for the MNGP Extended Power Uprate and the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) license amendments (Reference 1 and 2).

A 30-day report was completed in June 2014 due to the issuance of several GEH Nuclear Energy 10 CFR 50.46 Notification Letters (Reference 3). The changes/errors discussed within those notification letters resulted in a cumulative increase in Peak Cladding Temperature (PCT) that exceeds the 50°F reporting threshold of 10 CFR 50.46(a)(3)(i), and hence, were reported in accordance with the regulation. There are

no new notifications of changes or errors from GEH since submittal of the 30-day report sent in June of 2014. The nature of these changes/errors and their effect on PCT is summarized in Table 1 of Enclosure 1. These changes result in an adjusted PCT increase from the previously reported 2150°F (Reference 4) to 2170°F.

As prescribed by the regulation a proposed reanalysis schedule or an evaluation is needed to demonstrate the facility remains in compliance with 10 CFR 50.46 requirements. In accordance with 10 CFR 50.46(a)(3)(ii) the following evaluation is provided. The adjusted PCT is 30°F below the 2200°F acceptance criterion of 10 CFR 50.46(b)(1). This provides sufficient margin to justify taking no further actions. No further reanalysis or other actions are planned.

Enclosure 1 provided additional information on the nature of the changes and their effect on the MNGP LOCA analysis. This information is being submitted in accordance with the requirement of 10 CFR 50.46(a)(3)(ii) for the MNGP.

If you have any question regarding this request, please contact Mr. Stephen Sollom at (763) 295-1611.

#### Summary of Commitments

This letter makes no new commitments or changes any existing commitments.



Karen D. Fili  
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

ENCLOSURE 1

MONTICELLO NUCLEAR GENERATING PLANT

**TABLE 1 – SUMMARY OF MONTICELLO LOCA CHANGES AND ERRORS  
INVOLVING CHANGES IN PEAK CLADDING TEMPERATURE**

**TABLE 1 – SUMMARY OF MONTICELLO LOCA CHANGES AND ERRORS INVOLVING CHANGES IN PEAK CLADDING TEMPERATURE (PCT)**

Applicable Analysis or Error/Change Description	Ref.	Licensing Basis PCT(°F) GE14
NEDC-33322P, Revision 3, Safety Analysis Report for Monticello Constant Pressure Power Uprate	1 & 2	<2140
<p>PRIME Fuel Properties Implementation for Fuel Rod T/M Performance, replacing GESTR Fuel Properties (10 CFR 50.46 Notification Letter 2012-01, Revision 1)</p> <p>This change is due to the application of an NRC-approved procedure to estimate the change in Peak Clad Temperature (PCT) due to the change in fuel properties from GESTR to PRIME primarily to address inaccuracies in fuel pellet thermal conductivity as a function of exposure.</p>	3	+10
<p>SAFER04A E4-Maintenance Update Changes (10 CFR 50.46 Notification Letter 2014-01)</p> <p>This change is for a new version (E4) of SAFER04A that resolves several accumulated observations that are code maintenance items. Sensitivity calculations show these items have an insignificant effect on calculated PCT.</p>	4	+0
<p>SAFER04A E4-Mass Non-Conservatism (10 CFR 50.46 Notification Letter 2014-02)</p> <p>This change is due to a logic error that occurs when upper plenum liquid mass and core spray flow rate are low. System mass is gradually lost due to core spray being discarded, resulting in marginally less ECCS flow credited as reaching the core.</p>	5	+15
<p>SAFER04A E4-Minimum Core DP Model (10 CFR 50.46 Notification Letter 2014-03)</p> <p>This change is due to the use of a minimum <math>\Delta p</math> that could be non-conservative offering inappropriate steam cooling benefit above the core two-phase level.</p>	6	+20

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Applicable Analysis or Error/Change Description	Ref.	Licensing Basis PCT(°F) GE14
SAFER04A E4-Bundle/Lower Plenum CCFL Head (10 CFR 50.46 Notification Letter 2014-04)  This change is due to the counter current flow limitation (CCFL) calculation representing the pressure head slightly different from that of the calculated water level in the bundle.	7	-15
Sum of absolute value of changes for the current reporting period, which includes all changes since the 10 CFR 50.46 report in Reference 8.		60
Sum of absolute value of changes since last AOR (Reference 1).		60
Algebraic sum of changes for the current reporting period, which includes all changes since the 10 CFR 50.46 report in Reference 8.		+30
Algebraic sum of changes since last AOR (Reference 1).		+30
<b>Current Adjusted Peak Cladding Temperature</b>		<2170

**References**

1. GE Report: NEDC-33322P, Revision 3, "Safety Analysis Report for Monticello Constant Pressure Power Uprate," dated October 2008 (Enclosure 5 of L-MT-08-052, dated November 5, 2008, ADAMS Accession No. ML083230111)
2. NSPM letter to NRC, "Monticello Extended Power Uprate and Maximum Extended Load Line Limit Analysis Plus License Amendment Requests: Supplement for Analytical Methods Used to Address Thermal Conductivity Degradation and Analytical Methods Limitations (TAC Nos. MD9990 and ME3145)," L-MT-13-053 dated July 8, 2013 (ADAMS Accession No. ML13191A568).
3. GEH 10 CFR 50.46 Notification Letter 2012-01, Revision 1, "PRIME Fuel Properties Implementation for Fuel Rod T/M Performance, replacing GESTR Fuel Properties," dated July 30, 2013.
4. GEH 10 CFR 50.46 Notification Letter 2014-01, "SAFER04A E4-Maintenance Update Changes," dated May 21, 2014.
5. GEH 10 CFR 50.46 Notification Letter 2014-02, "SAFER04A E4-Mass Non-Conservatism," dated May 21, 2014.
6. GEH 10 CFR 50.46 Notification Letter 2014-03, "SAFER04A E4-Minimum Core DP Model," dated May 21, 2014.

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INVOLVING CHANGES IN PEAK CLADDING TEMPERATURE (PCT)**

7. GEH 10 CFR 50.46 Notification Letter 2014-04, "SAFER04A E4-Bundle/ Lower Plenum CCFL Head," dated May 21, 2014.
8. L-MT-14-004, letter from K. Fili (NSPM) to NRC "Report of Changes in Emergency Core Cooling System Evaluation Models" dated January 10, 2014