December 22, 2004

L-MT-04-074
10 CFR Part 50
Section 50.46(a)(3)

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

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

2004 Report of Changes and Errors in ECCS Evaluation Models

References: 1) GE Report: NEDC-32514P, Revision 1, "Monticello SAFER/GESTR LOCA Loss of Coolant Accident Analysis," dated October 1997. (Exhibit G to LAR, Revision 1, Dated July 26, 1996, Supporting Monticello Nuclear Generating Plant Power Rerate Request Program.)

2) GE Report: GE-NE-J1103878-09-02P, "Monticello ECCS-LOCA Evaluation for GE14," GE Proprietary Information, dated August 2001.

3) 10 CFR 50.46 Notification Letter 2003-05, "Impact of Postulated Hydrogen-Oxygen Recombination," GE Proprietary Information, dated May 13, 2004.

Pursuant to 10 CFR 50.46(a)(3), Nuclear Management Company, LLC (NMC) is providing an annual report of changes or errors identified in the Emergency Core Cooling System (ECCS) evaluation models or application for the period of July 2003 through July 2004 for the Monticello Nuclear Generating Plant (MNGP).

The MNGP Loss of Coolant Accident (LOCA) analyses of record (AOR) are contained in General Electric (GE) reports submitted in support of the MNGP rerate (Reference 1) and the LOCA analysis for the GE14 fuel type (Reference 2). One notification of a change or error in these analyses was received for this reporting period (Reference 3) resulting in no change to the Peak Cladding Temperature (PCT) previously reported. The current adjusted licensing basis PCT for the MNGP fuel types are:

| Fuel Type | Licensing Basis PCT (°F) |
|---|---|
| GE11 | 2137 |
| GE14 | 1945 |

Enclosure 1 provides a discussion of the licensing basis PCT and a summary table of applicable changes and errors in the LOCA analyses from when the last AOR was performed.

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

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Nuclear Management Company, LLC

Enclosure

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

**ENCLOSURE 1**

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

| Applicable Analysis or Error Description | Ref. | Licensing Basis PCT (ºF) | |
|---|---|---|---|
| | | GE11 | GE14 |
| Monticello Loss of Coolant Accident (LOCA) Analyses of Record (AOR): | | | |
| NEDC-32514P, Rev. 1, Monticello SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis | 1 | 2087 | ---- |
| GE-NE-J1103878-09-02P, Monticello ECCS-LOCA Evaluation for GE14 | 2 | ---- | <1960 |
| Impact of SAFER Time Step Size on the PCT for Jet Pump Plant Analyses (Notification Letter 2000-04)<br>The time step size used in the SAFER-LOCA code was determined inappropriate to achieve good numerical convergence for an accurate PCT. | 3 | - 5 | N/A |
| Impact of SAFER Pressure Rate Inconsistency Error on PCT (Notification Letter 2001-02)<br>An inconsistent core exit steam flow was used in the SAFER pressure equation, resulting in premature termination of ECCS condensation, and an increase in the second peak PCT. | 4 | + 10 | N/A |
| SAFER Core Spray Injection Elevation Error (Notification Letter 2002-01)<br>An error in the automation code that prepared input for SAFER resulted in the core spray sparger elevation being specified lower than actual. | 5 | + 60 | N/A |
| Impact of SAFER Level/Volume Table Error on PCT (Notification Letter 2003-01)<br>Level and volume tables used by SAFER were not updated when a revised initial water level was implemented. | 6 | - 15 | - 15 |
| Sum of absolute value of changes since last AOR. | | 90 | 15 |
| Algebraic sum of changes since last AOR. | | 50 | - 15 |
| **Current Adjusted Peak Cladding Temperature** | | 2137 | <1945 |

**Notification Letter 2002-01, Core Spray Elevation Error (+60°F)**

On July 9, 2002, Nuclear Management Company (NMC) submitted a 30-day report concerning a significant error in the SAFER analysis (Reference 7). Applying the correct core spray elevation for the Monticello Nuclear Generating Plant (MNGP) resulted in an increase in PCT of 60°F for the GE11 fuel type. GE14 fuel was unaffected by this change.

## CONSIDERATION OF THE ERRORS/CHANGES IN COMBINATION

For each of the errors, as discussed in detail in each GE 10 CFR 50.46 notification letter (see references), GE performed a reanalysis for comparable plant types with the SAFER code to estimate the effect of each change or error. In three cases the PCT change was small (less than 15°F) and, in two of these cases, resulted in increased PCT margin. For the significant error involving the core spray elevation, a conservative, bounding increase in PCT of 60°F was determined for the GE11 fuel type. GE14 fuel was unaffected. As discussed in the 10 CFR 50.46 notification letters, GE uses the NRC approved LOCA analysis codes with inputs chosen to be representative or bound the population of plants affected by the change or error. Therefore, the accuracy of the estimates determined are consistent with the accuracy of the current NRC approved GE analysis methodologies.

The sum of the absolute value of these errors is 90°F for the GE11 fuel type. If this value was added to the AOR licensing basis PCT of 2087°F, the resulting value would be a PCT of 2177°F, demonstrating margin to the 10 CFR 50.46 limit. The combined algebraic effect of these errors is an increase in PCT of 50°F for the GE11 fuel type, resulting in the current PCT of 2137°F. The 50°F delta is smaller than the remaining margin to the limit of 63°F. Therefore, even if there is some inaccuracy in the assessments of the combined effects, it will not result in the PCT for the GE11 fuel encroaching on the 10 CFR 50.46 PCT limit of 2200°F. Hence, the safety significance of these changes or errors is low.

Because the accuracy of the estimates is in accordance with the NRC approved GE LOCA analysis methodologies, there is adequate margin to the 10 CFR 50.46 PCT limit, and the safety significance is low, NMC does not plan to reanalyze for the GE11 fuel at this time.

Additionally, after the refueling outage in early 2005, the only GE11 fuel remaining in the MNGP core will be thrice-burnt low powered peripheral assemblies. Because of the burnup, the GE11 fuel is operating well below the initial Maximum Average Planar Linear Heat Generation Rate assumed in the LOCA analyses. This remaining GE11 fuel is scheduled for discharge at the end of the next cycle, in early 2007.

## References

1. GE Report: NEDC-32514P, Revision 1, “Monticello SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis,” dated October 1997. (This report is Exhibit G of Revision 1 to License Amendment Request Dated July 26, 1996, Supporting Monticello Nuclear Generating Plant Power Rerate Request Program.)

2. GE Report: GE-NE-J1103878-09-02P, “Monticello ECCS-LOCA Evaluation for GE14,” GE Proprietary Information, dated August 2001.

3. 10 CFR 50.46 Notification Letter 2000-04, “Impact of SAFER Time Step Size on the Peak Clad Temperature (PCT) for Jet Pump Plant Analyses,” dated November 8, 2000.

4. 10 CFR 50.46 Notification Letter 2001-02, “Impact of SAFER Pressure Rate Inconsistency Error on the Peak Clad Temperature (PCT).

5. 10 CFR 50.46 Notification Letter 2002-01, “SAFER Core Spray Injection Elevation Error,” GE Proprietary Information, dated June 13, 2002.

6. 10 CFR 50.46 Notification Letter 2003-01, “Impact of SAFER Level/Volume Table Error on the Peak Cladding Temperature (PCT),” GE Proprietary Information, dated May 6, 2003.

7. Letter from Nuclear Management Company, LLC to Document Control Desk, “Report of Error in Emergency Core Cooling System (ECCS) Evaluation Model,” dated July 9, 2002.