



Northern States Power Company

Monticello Nuclear Generating Plant
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January 20, 1997

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Information Concerning Potential Violation of 10 CFR 50.9(a)

During the weeks of November 18th, December 2nd and December 16th, a Safety System Operational Performance Inspection (SSOPI) was conducted by members of the NRC Region III staff at the Monticello Nuclear Generating Plant. During this inspection, the inspectors reviewed, in part, plant documentation supporting the Monticello submittal with subject, "License Amendment Request Dated July 26, 1996 Supporting the Monticello Nuclear Generating Plant Power Rerate Program," (the Monticello Power Rerate submittal). During the inspection exit meeting held on January 8, 1997, the inspection team identified a potential violation of 10 CFR 50.9(a) in that the inspection team's review of the Monticello Power Rerate submittal identified the following four instances of inaccurate or incomplete information.

1. The Monticello Power Rerate Submittal provided information concerning the adequacy of the Emergency Core Cooling System (ECCS) pumps Net Positive Suction Head (NPSH); however, contrary to these statements information available to Monticello may indicate an apparent reduction in ECCS pump NPSH margin. While a GE analysis does support the Power Rerate Submittal statements regarding ECCS pump NPSH, an additional calculation performed by Monticello provides information contrary to this determination.
2. The GE task report which supported the basis of the statement of the Power Rerate Submittal regarding ECCS pump NPSH Margin was not approved by Monticello at the time of the submittal.
3. Information contained in the Power Rerate Submittal did not accurately reflect the impact of the power rerate on the RHR room heatup following a post accident condition in that the efficiency of RHR motors used in this analysis was incorrect.
4. The Power Rerate Submittal failed to identify that the GOTHIC computer methodology was used for the power rerate analysis of the effects of High Energy

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Line Breaks (HELBs). The method differs from that used for the current analysis of record.

Monticello has strived to fully satisfy our obligations under the regulations of the Commission and the conditions of the Monticello Facility Operating License to provide complete and accurate information in compliance with 10 CFR 50.9(a). The Monticello Power Rerate program is a joint project between Northern States Power Company (NSP) and the General Electric Company (GE). The Monticello Power Rerate program consists of numerous detailed engineering evaluations and analyses to assess the capability of the Monticello facility to operate safely at a proposed licensed thermal power 6.3% greater than the thermal power authorized by the current Facility Operating License.

The topical areas to be evaluated to support the proposed power rerate were divided into two groups 1) a group of topics for which NSP engineering has the primary scope of evaluation, and 2) a group of topics for which GE engineering has the primary scope of evaluation. For the topical areas for which the engineering organization is assigned the primary scope of evaluation, the engineering organizations are responsible to perform the requisite evaluations, analyses, and detailed calculations to assess the capability of the facility to support the proposed action. The evaluations, analyses and calculations performed by the respective groups are performed in accordance with the quality assurance program of the group with primary responsibility for the topical area. The evaluations, analyses and detailed calculations for a topical area under review are summarized into a task report by the engineering organization with primary responsibility for the topical area. These task reports receive independent reviews and approvals per the quality assurance program of the engineering organization with primary responsibility for the task report.

Above and beyond the review requirements of the quality assurance programs of the respective organizations, the task reports receive cross-organizational review to provide additional assurance of completeness of the evaluation and appropriate integration of information. All task reports prepared by GE engineering as having primary area responsibility are reviewed by NSP. Selected task reports prepared by NSP engineering, are reviewed by GE engineering. To support this cross-organizational review within the NSP organization, the task reports were reviewed by a Monticello Power Rerate Technical Review Team: a group of multi-disciplined, senior, Monticello managers and staff members. The membership of the Monticello Power Rerate Technical Review Team also included individuals from the plant on-site review committee, the Operations Committee. In addition to performing the cross-organizational review of GE prepared task reports, the Technical Review Team also performed a review of all NSP prepared task reports.

The required reviews for submittals to the NRC such as the Monticello Power Rerate Submittal are governed by the plant Technical Specifications. Sections 6.2.B.4.d and 6.2.A.5.c of the Plant Technical Specifications require review of such submittals by the plant on-site review group, the Operations Committee; and review by or report to the plant off-site review group, the Safety Audit Committee. In accordance with the plant Technical Specifications, the Monticello

Power Rerate Submittal was reviewed by these two review bodies prior to transmittal of the submittal to the NRC.

The Monticello Power Rerate submittal review process included review of open items associated with the Monticello Power Rerate Program. At the time the submittal was transmitted to the NRC some documentation supporting the Power Rerate submittal, to be retained by NSP, was not in a final form and some cross-organizational reviews of the task reports were not complete. All task reports had been reviewed by the Monticello Power Rerate Technical Review Team prior to transmittal of the Power Rerate submittal to the NRC. These open items are tracked as part of the Power Rerate Program to assure appropriate resolution and closure.

These open items were reviewed by the plant Operations Committee and Safety Audit Committee. These review bodies recommended that open issues which supported implementation of the power rerate which were not complete at the time of the submittal be properly characterized in the Power Rerate submittal. In addition, these open items were reviewed by the Monticello Power Rerate Technical Review Team prior to transmittal of the Monticello Power Rerate submittal. Review of these open items by the Monticello Power Rerate Technical Review Team determined that the open items did not alter the evaluation results as presented in the Monticello Power Rerate submittal and identified those items to be completed to support implementation of the proposed power rerate.

The Monticello Power Rerate submittal was prepared and reviewed based upon the results of the engineering evaluations, analyses and calculations performed by the respective engineering organizations. Monticello feels that the information provided in the power rerate submittal reflects the engineering evaluations which were accurate at the time of the submittal and were sufficiently complete to support the information provided in the submittal. It was and remains the engineering judgment of those knowledgeable in the analyses, that the open items provide confirmatory information for the evaluations completed, or the open items had been sufficiently complete and reviewed to support the Power Rerate submittal.

These open items have largely been completed, providing further confirmation as to the feasibility of the proposed power rerate without adverse effect on the integrity of nuclear reactor safety. Those open items which remain are in a tracking system to assure that required items, which ultimately support implementation of the proposed power rerate, are completed. We remain confident in the results of our engineering evaluations as stated in the power rerate submittal. Attachment A to this letter provides a listing of those open task reports and calculations which have yet to be completed.

Concerning the specific examples identified by the SSOP Team as potential violations of 10 CFR 50.9(a), the following information is provided.

Regarding the apparent reduction of the Emergency Core Cooling System (ECCS) pump Net Positive Suction Head (NPSH) which is contrary to the statements made in the Monticello Power Rerate submittal that the proposed power rerate has no adverse effect on the ECCS pump

NPSH, Monticello maintains that the statements concerning ECCS Pump NPSH provided in section 4.1.1.1 and 4.2 of Exhibit E of the Monticello Power Rerate submittal are accurate.

The evaluation discussed in the Power Rerate submittal concerning ECCS pump NPSH is a sensitivity analysis performed by GE to assess the effect of the proposed power rerate on the ECCS pump NPSH available for the design basis accident conditions associated with the current licensed power level and for a power rerate analysis power level of 1880 MWt. The sensitivity analysis of ECCS pump NPSH available at the two respective power levels was performed using consistent methodology as described in the Power Rerate submittal. This analysis of the ECCS pump NPSH available credited suppression pool pressurization as discussed in the Power Rerate submittal in a conservative manner. This analysis determined that the ECCS pump NPSH is not adversely effected by the power rerate due to the increase in suppression pool pressure compensating for the increase in suppression pool temperature. The ECCS pump performance requirements are not changed for the proposed power rerate, thus ECCS pump flow rates and system resistance remain constant and thus the ECCS pump NPSH required remains constant. The ECCS pump NPSH available slightly increases due to the power rerate conditions, the ECCS pump NPSH required remains constant for the proposed power rerate, thus the proposed action does not have an adverse effect on ECCS pump NPSH.

To provide confirmatory information that the ECCS pump NPSH available is greater than the ECCS pump NPSH required, Monticello performed an independent calculation which quantified the ECCS pump NPSH required and the ECCS pump NPSH available at the design basis accident conditions for a power rerate analysis power level of 1880 MWt. This calculation used inputs consistent with the proposed power rerate. The calculation used the results of the power rerate containment response analysis for the design basis accident conditions, which was performed specifically for the ECCS pump NPSH evaluation using input assumptions to minimize containment pressure, to determine a conservative containment pressure condition for input to the ECCS pump NPSH available calculation. This calculation provided confirmatory information that the ECCS pump NPSH available is greater than the ECCS pump NPSH required. This calculation was not intended to perform a comparison between current plant conditions and power rerate conditions and did not perform such comparison, as the GE analysis discussed above performed a valid evaluation of changes effecting the ECCS pump NPSH due to the proposed power rerate. The goal of this calculation, as stated in the purpose section of the calculation, was to determine if the ECCS pump NPSH available was greater than the NPSH required for the power rerate conditions.

The Monticello staff's understanding of the SSOPI team's concern, is not that the GE ECCS pump NPSH analysis is inaccurate, but rather that additional information available to the Monticello staff was not used and that use of this information would indicate results contrary to the GE analysis. Specifically, if a comparison was made between the results from the Monticello confirmatory Power Rerate NPSH calculation and a 1987 core spray pump NPSH calculation for current licensed power conditions, then a conclusion could be drawn that the proposed power rerate would have an adverse effect on ECCS pump NPSH. However, comparison of this information is not valid. These two sets of calculations were performed based on differing input assumptions; whereas, the GE analysis discussed in the power rerate submittal is based upon

consistent methodology to assess the ECCS NPSH at the current licensed power and the proposed power rerate conditions.

The 1987 core spray pump NPSH calculation also credited suppression pool pressurization; however, the containment response to the design basis accident conditions used for input to the 1987 calculation was analyzed using a different computer code and decay heat correlation than that used in the power rerate analyses. In addition, the two calculations used different conservative assumptions for inputting the positive contribution that containment pressurization has on ECCS NPSH available. The following table provides additional information on these differences.

Input Assumption	1987 NPSH Calculation	Power Rerate Calculation
Containment Response Analysis Computer code	HXSIZ	SHEX
Decay Heat Correlation	May-Witt	ANS 5.1
Suppression Pool Temp.	137°F in short term 179°F in long term	191°F for duration of event
Suppression Pool Press. Short Term ($t \leq 600$ seconds post accident)	50% of DBA peak containment pressure ($8.2/2 = 4.1$ psig)	Obtained from DBA containment analysis performed with inputs to minimize containment pressure (23 psig)
Suppression Pool Press. Long Term ($t > 600$ seconds post accident)	50% of DBA peak containment pressure ($16/2 = 8$ psig)	Obtained from DBA containment analysis performed with inputs to minimize containment pressure (6 psig)
Containment Spray Initiated	No	Yes

For these reasons Monticello asserts that a direct comparison between the 1987 core spray pump NPSH calculation and the Power Rerate confirmatory calculation is not valid. Significant alterations to the input assumptions would be required to establish a direct comparison; however this action is not warranted as the GE analysis provides a valid evaluation of the ECCS pump NPSH available at the current power level as compared to ECCS pump NPSH available at the proposed power rerate analysis conditions. As such, our appraisal of this issue is that the information provided to the Commission concerning the ECCS pump NPSH is complete and accurate and does not constitute a violation of 10 CFR 50.9(a).

Monticello recognizes that the SSOPI team has identified errors in the Monticello confirmatory Power Rerate ECCS NPSH calculation; however, the statements made in the Power Rerate submittal were accurate as known to Monticello at the time of the submittal. Monticello is aware that the NRC staff is evaluating the identified errors for potential enforcement action. Monticello is also further evaluating this issue, and while the issue may reflect a violation of NRC regulations, in our appraisal, the calculation errors do not reflect a violation of 10 CFR 50.9(a).

Regarding the GE task report, which supported the basis of the statement of the Power Rerate Submittal regarding ECCS pump NPSH, lacking Monticello approvals at the time of the Power Rerate submittal; as discussed above the information provided in the power rerate submittal reflects the engineering evaluations which to the best of our knowledge and belief were accurate at the time of the submittal and were sufficiently complete to support the information provided in the submittal. The information contained in the Monticello Power Rerate submittal was reviewed in accordance with the requirements of the Monticello Plant Technical Specifications. The GE task report which supports the basis for the statements of the Power Rerate submittal was reviewed and approved in accordance with the GE quality assurance program at the time of the submittal. In addition, the GE task report which supports the basis for the statements of the Power Rerate submittal had been reviewed by the Monticello Power Rerate Technical Review team which constituted a review beyond that required by the applicable quality assurance programs and the Monticello plant Technical Specifications. For those open items which Monticello is resolving with GE concerning this task report it was and remains the engineering judgment of those knowledgeable in the analyses, that based upon all available information, the open items do not adversely effect the statements made in the Monticello Power Rerate submittal. As such, our appraisal of this issue is that the information provided to the Commission concerning the ECCS pump NPSH is complete and accurate and does not constitute a violation of 10 CFR 50.9(a).

Regarding information contained in the Power Rerate Submittal not accurately reflecting the impact of the power rerate on the RHR room heatup following a post accident condition in that the efficiency of RHR motors used in this analysis was incorrect, Monticello concurs that the efficiency of the RHR motors used in the analysis was incorrect. However, this information was new information which Monticello became aware of subsequent to transmittal of the Monticello Power Rerate submittal to the NRC. Monticello is still in the process of evaluating the impact of this new information on the conclusions stated in the submittal. Monticello has identified that some motor efficiencies used as inputs to the RHR maximum room temperature analysis were the motor design efficiencies. The manufacturer guaranteed motor efficiency is a more appropriate input for this analysis and has been subsequently provided by the motor vendor. This is new information which is under evaluation in accordance with our corrective action process. However, the results of this evaluation to date continue to support the statements made in the Monticello Power Rerate submittal. As such, our appraisal of this issue indicates that the example does not represent a violation of 10 CFR 50.9(a).

Regarding failure of the Monticello Power Rerate submittal to identify the use of the GOTHIC computer code for the power rerate analysis of the effects of High Energy Line Breaks (HELBs), it is our understanding that the use of this computer code for this analysis is not specified in the regulations of the Commission nor in the conditions of the Monticello Facility Operating License as requiring NRC staff review or NRC staff approval prior to use. The GOTHIC computer code is an industry developed code. The computer code was developed under a quality assurance program which satisfies the criteria of 10 CFR 50, Appendix B. Prior to use of the GOTHIC program at the Monticello plant, a verification activity was performed to confirm that the GOTHIC computer code provided results consistent with the previous code used for this type of analysis.

Monticello has used the GOTHIC computer code for the evaluation of temperature, pressure and humidity profiles following postulated High Energy Line Breaks.

It is not evident to the Monticello staff that the use of revised methods for this type of analysis is information material to NRC staff review of these issues. As such our appraisal of this issue is that a failure to provide this information in the Monticello Power Rerate submittal does not constitute a violation of 10 CFR 50.9(a). The review of the Monticello Power Rerate submittal is ongoing. Should the NRC staff determine that additional information is material to their review, then Monticello recognizes the need to be responsive to the information needs of the staff and provide information as required to support the NRC staff review.

Monticello remains cognizant of industry issues and our obligation to take into consideration the impact on the proposed power rerate of these issues as well as self identified issues. As stated in section 11.1.2 of Exhibit E of the Monticello Power Rerate submittal, plant-unique items identified after the submittal date of the initial Monticello power rerate license amendment request are to be reviewed prior to implementation of the proposed power rerate. Monticello further recognizes our obligation to notify the NRC should any of these plant unique items have an adverse impact on evaluations performed in support of the proposed power rerate. In addition, we recognize our obligation in accordance with 10 CFR 50.9(b) to notify the NRC of information having a significant implication for public health and safety, as well as reporting requirements addressed by other pertinent NRC regulations.

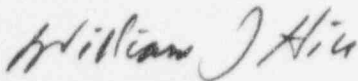
Monticello has been aware of recent issues raised regarding the completeness of engineering evaluations performed in support of power uprate applications at other nuclear facilities. Monticello is highly confident that the engineering evaluations performed in support of the Power Rerate program provides the required justification to support implementation of the proposed power rerate without adverse affect on nuclear safety. However, to evaluate these industry issues, Monticello feels that it would be prudent to have an independent review performed of the Monticello Power Rerate program. Monticello had taken actions to initiate this review prior to the identification of SSOP Team issues. This review would be performed using engineering personnel under contract to NSP with experience in nuclear plant design and without previous involvement in the Monticello Power Rerate program. The initial scope of this independent review is to provide verification that significant inputs used in safety related power rerate engineering evaluations are consistent the Monticello design bases and licensing bases, including the plant Technical Specifications.

In addition, we are aware of the pressing issues which are currently before the NRC staff for resolution. Furthermore, we recognize the need to provide prompt attention and thorough resolution of additional items communicated to the Monticello staff by the NRC SSOP Team. The Monticello submittal with subject "License Amendment Request Dated July 26, 1996 Supporting the Monticello Nuclear Generating Plant Power Rerate Program," requested that the NRC complete review of this proposed action by December 1, 1997. We request that the NRC staff modify its schedule for review of this proposed action such that NRC review is completed by July 31, 1998. We feel that this review schedule will allow the Monticello staff to focus resources on the additional issues identified by the SSOP Team.

This letter contains the following new NRC commitment:

An independent review of the Monticello Power Rerate program is to be performed.

Please contact Marv Engen, Sr Engineer, (612-295-1291), or Steve Hammer, MNGP Power Rerate Program Manager, (612-295-1300), if you require further information.



William J Hill
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III, NRC
NRR Project Manager, NRC
Sr Resident Inspector, NRC
State of Minnesota, Attn: Kris Sanda

Attachments: A) Open Task Reports and Calculations Associated with the Monticello Power Rerate Program

Attachment A
Open Task Reports and Calculations
Associated with the Monticello Power Rerate Program

The following Power Rerate task reports are being tracked as open items with respect to final incorporation of the cross-organizational reviews. Review and approval by the originating organization under their quality assurance program is complete.

1. Task Report 6.0 - Containment Response.
2. Task Report 10.1/10.3 - Balance of Plant Instrument Setpoints.
3. Task Report 41.1 - Primary Containment/Inerting.

The following Power Rerate calculations are being tracked as open items. In the engineering judgment of those knowledgeable in the analyses, the open item was sufficiently complete to support the Monticello Power Rerate submittal and did not adversely effect the statements made in the submittal.

1. Calculation to evaluate revised heatup and HELB analysis effects on Generic Letter 89-10 Motor Operated Valves.
2. Calculation to support increase in the CGCS outlet piping qualification temperature.
3. Calculation to support update of the AC Electrical Load Study for the 2R and 1R Transformers to reflect the 2R and 1R transformer evaluations.
4. Calculation to establish flow coefficient changes for the Feedwater Flow Elements and Main Steam Flow Elements.

The following Power Rerate Calculations provide confirmatory information or are being revised to assess additional information identified subsequent to transmittal of the Power Rerate submittal.

1. Calculation to support evaluation of operability of station blackout coping equipment during power rerate station blackout ambient temperature conditions.
2. Revise evaluation of Power Rerate High Energy Line Break Profiles on the Environmental Qualification of equipment within the scope of 10 CFR 50.49.
3. Calculations to provide new curves for the USAR update for hydrogen and oxygen generation following a DBA-LOCA.
4. Calculation to establish CLP fuse setting for the 2R Transformer.
5. Calculation to support the 125 VDC load study.

6. Calculation to support plant specific containment structural analysis.
7. Calculation to assess RHR room heatup due to changes in motor efficiency.
8. Calculation to Assess ECCS pump NPSH due to Bulletin 96-03 modifications.
9. Calculation to Assess Fuel Pool Heat Removal with revised inputs for RHRSW flow and ultimate heat sink temperature.
10. Calculation to confirm SBT inlet and ambient temperature conditions.