

**ENCLOSURES 5 and 7 CONTAIN PROPRIETARY INFORMATION  
WITHHOLD FROM PUBLIC DISCLOSURE IN ACCORDANCE WITH 10 CFR 2.390**



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

August 26, 2015

L-MT-15-057  
10 CFR 50.90

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

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

License Amendment Request for AREVA Extended Flow Window  
Supplement to Respond to NRC Staff Questions (TAC No. MF5002)

- References:
- 1) Letter from Karen D. Fili (NSPM), to Document Control Desk (NRC), "License Amendment Request for AREVA Extended Flow Window," L-MT-14-044, dated October 3, 2014. (ADAMS Accession No. ML14283A125)
  - 2) Email T. Beltz (NRC) to G. Adams (NSPM), "Monticello Nuclear Generating Plant – DRAFT Requests for Additional Information (SCVB) re: AREVA Extended Flow Window License Amendment Request (TAC No. MF5002)," dated June 17, 2015.
  - 3) Email T. Beltz (NRC) to G. Adams (NSPM), "Monticello Nuclear Generating Plant – DRAFT Requests for Additional Information (EICB) re: AREVA Extended Flow Window License Amendment Request (TAC No. MF5002)," dated June 30, 2015.
  - 4) Email T. Beltz (NRC) to G. Adams (NSPM), "Monticello Nuclear Generating Plant – Requests for Additional Information (SRXB/SNPB) re: AREVA Extended Flow Window License Amendment Request (TAC No. MF5002)," dated August 5, 2015.

In Reference 1, Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, requested approval of an amendment to the Monticello Nuclear Generating Plant (MNGP) Renewed Operating License (OL) and Technical Specifications (TS). The proposed change would revise TS and would approve certain analytical methods that together would support operation in the expanded power-flow operating domain described as the Extended Flow Window (EFW). The purpose of the requested amendment is to transition from the General Electric methodology called

Maximum Extended Load Line Limit Analysis Plus (MELLLA+) to the AREVA methodology called EFW.

In Reference 2, NRC Containment and Ventilation Branch (SCVB) Staff requested additional information to support their review. SCVB and NSPM participated in a teleconference on July 21, 2015 to clarify NRC Staff questions and expectations. Replies to all SCVB RAI questions are provided in Enclosure 5.

In Reference 3, NRC Instrument and Controls Branch (EICB) Staff requested additional information to support their review. EICB and NSPM participated in a teleconference on July 21, 2015 to clarify NRC Staff questions and expectations. Replies to EICB RAI questions EICB-1 and EICB-4 are provided in Enclosure 1. As mutually agreed, the remainder of EICB RAI replies are deferred to NSPM's planned September 30, 2015 submittal.

In Reference 4, NRC Reactor Systems Branch and Codes and Performance Branch (SRXB/SNPB) Staff requested additional information to support their review. SRXB/SNPB and NSPM participated in a public meeting on July 7, 2015 and a teleconference on July 21, 2015 to clarify NRC Staff questions and expectations. Replies to all but four SRXB/SNPB RAI questions are provided in Enclosure 7. Reply to RAI-2 is provided in Enclosure 1. As mutually agreed, the replies to RAI-3, 8, and 32 are deferred to NSPM's planned September 30, 2015 submittal.

Enclosure 1 provides a response to RAI EICB-1 and -4, and SRXB/SNPB RAI-2.

Enclosure 2 provides a copy of General Electric Hitachi (GEH) Calculation NEDC-33859P, Revision 0, which is responsive to RAI EICB-1.

Enclosure 3 provides a non-proprietary version of GEH Calculation NEDC-33859P, Revision 0. The nonproprietary report is being provided based on the NRC's expectation that the submitter of the proprietary information should provide, if possible, a nonproprietary version of the document with brackets showing where the proprietary information has been deleted.

Enclosure 4 provides an affidavit executed to support withholding Enclosure 2 from public disclosure. This Enclosure contains proprietary information as defined by 10 CFR 2.390. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in 10 CFR 2.390(b)(4). Accordingly, NSPM respectfully requests that the GEH proprietary information in Enclosure 2 be withheld from public disclosure in accordance with 10 CFR 2.390(a)4, as authorized by 10 CFR 9.17(a)4. Correspondence with respect to the copyright or proprietary aspects of GEH information or the supporting GEH affidavit in Enclosure 4 should be addressed to Peter M. Yandow, Manager, Regulatory Compliance, GE-Hitachi Nuclear Energy Americas LLC, 3901 Castle Hayne Road, Wilmington, NC 28401.

Enclosure 5 provides AREVA Report ANP-3424P, Revision 0, which replies to the SCVB RAI questions provided in Reference 2. Enclosure 5 is proprietary to AREVA. Enclosure 6 provides the non-proprietary AREVA Report ANP-3424NP, Revision 0.

Enclosure 7 provides AREVA Report ANP-3434P, Revision 1, which replies to certain SRXB/SNPB RAI questions provided in Reference 4. Included in Enclosure 7 are two compact discs (CDs) containing AREVA-proprietary computer files to support RAI-6 and RAI-12. Enclosure 7 is proprietary to AREVA. Enclosure 8 provides the non-proprietary AREVA Report ANP-3434NP, Revision 1. Included in Enclosure 8 is one CD containing non-proprietary copies of documents that support RAI-11.

Enclosure 9 provides affidavits executed to support withholding Enclosures 5 and 7 from public disclosure. These Enclosures contain proprietary information as defined by 10 CFR 2.390. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in 10 CFR 2.390(b)(4). Accordingly, NSPM respectfully requests that the AREVA proprietary information in Enclosures 5 and 7 be withheld from public disclosure in accordance with 10 CFR 2.390(a)4, as authorized by 10 CFR 9.17(a)4. Correspondence with respect to the copyright or proprietary aspects of the AREVA information in Enclosures 5 and 7 or the supporting AREVA affidavits in Enclosure 9 should be addressed to Mr. Alan Meginnis, Manager – Product Licensing, AREVA Inc., 2101 Horn Rapids Road, Richland, Washington 99354.

The information offered herein does not affect the conclusions of the Significant Hazards Consideration and the Environmental Consideration evaluations provided in the Reference 1 LAR.

In accordance with 10 CFR 50.91(b), a copy of this application supplement is being provided to the designated Minnesota Official without enclosures.

If there are any questions or if additional information is needed, please contact Glenn Adams at 612-330-6777.

#### Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: August 26, 2015



Peter A. Gardner  
Site Vice President  
Monticello Nuclear Generating Plant  
Northern States Power Company-Minnesota

Enclosures (9)

cc: Administrator, Region III, USNRC (w/o CDs of Enclosures 7 and 8)  
Project Manager, Monticello Nuclear Generating Plant, USNRC  
Resident Inspector, Monticello Nuclear Generating Plant, USNRC (w/o CDs of  
Enclosure 7 and 8)  
Minnesota Department of Commerce (w/o enclosures)

**Response to  
Requests for Additional Information**

**Instrumentation and Control Systems Branch  
EICB-1, 4**

**Reactor Systems Branch / Nuclear Performance and Code Review Branch  
SRXB/SNPB RAI-2**

This enclosure provides responses from the Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, to three requests for additional information (RAIs) provided by the Nuclear Regulatory Commission (NRC) on June 30, 2015 (EICB-1 and 4) and August 5, 2015 (SRXB-2).

The NRC questions are provided below in *italic font* and the NSPM responses are provided in normal font.

EICB-1

*The NRC staff requests information to demonstrate the Allowable Value (AV) setpoints associated with the new EFWS Trip function will not be exceeded.*

*Please provide setpoint calculations showing components of instrument uncertainty considered in determining EFWS setpoint values.*

NSPM Response

Enclosure 2 to this letter provides the requested setpoint calculations.

EICB-4

*The setpoints for EFW Stability High function included in the TRM Table 3.3.2.1-1 (Page 2 of 2), and TS Table 3.3.1.1-1, refers to the Core Operating Limits Report for AVs. Since the EFWS allowable values may change depending on the core load design, it seems possible these two sets of AVs could become conflicting.*

*Please explain how these values will be maintained consistently between refueling intervals.*

### NSPM Response

The EFWS setpoints provided in the proposed TS Table 3.3.1.1-1 and the proposed COLR are the allowable values (AVs) for the trip. The EFWS setpoints, as referenced in proposed Technical Requirements Manual (TRM) Table 3.3.1.2-1 are the AVs for the rod block. Because the TRM is under licensee control, the TRM will programmatically be updated along with the COLR per Xcel Energy's modification control process when new setpoints are developed.

### SRXB/SNPB RAI-2, TIP UNCERTAINTY UPDATE PROCESS

*Monticello is expected to collect TIP data in the EFW domain.*

- a) *Provide a short description of the TIP calibration process and how it is reflected in the Safety Limit Minimum Critical Power Ratio (SLMCPR) uncertainty calculations.*
- b) *Provide a description of the process that would be used to reflect the higher uncertainty in the SLMCPR analyses if higher uncertainties are measured during EFW operation.*

### NSPM Response

- a) Description of Traversing Incore Probe (TIP) Calibration Process

At MNGP, Traversing Incore Probe (TIP) surveillances are performed at a frequency determined by plant procedure and can serve two purposes. One purpose is to calibrate Local Power Range Monitors (LPRMs) to compensate for changes in sensitivity due to detector burnup. The second purpose is to provide data to the GARDEL core monitoring software. GARDEL uses TIP and LPRM readings to calculate "adaptive" thermal margins that take account of the power shapes as measured by nuclear instrumentation. MNGP has three TIP machines, each of which accesses about 1/3 of the core. All three TIP machines also access a common central core location. The measurements made by TIPs and LPRMs are in relative units. Data processing apportions absolute power based on these relative powers and the total core thermal output.

In summary, the measured TIP output is compared to the predicted output, and the Local Power Range Monitor (LPRM) adapted power shape is then recalibrated to the TIP results for use in the MNGP core monitor system (GARDEL).

The methodology for determining the power uncertainty is described in Studsvik report "Monticello NPP Power Distribution Uncertainties", SSP-09/444-C, July 2009 (Reference NRC ADAMS Accession No. ML110450403 for non-proprietary version). Summarizing the methodology:

- The measured and predicted TIP differences are collected.
- Symmetric TIP measurements are used to determine the measurement component of the total uncertainty.
- The effects on the power uncertainties due to the uncertainty in the inputs to the core monitor with and without one TIP machine being out of service are determined.
- The change in the adapted power shape from the TIP recalibrations are used to determine the power uncertainty versus the intervals between TIP measurements.

The report shows the calculation of the radial and nodal power uncertainties. Taking into account the LPRM surveillance interval allowed by Technical Specifications, the report has been used to calculate the radial and nodal power uncertainties used in the AREVA Safety Limit Critical Power Ratio (CPR) calculation described in Enclosure 11 to the EFW LAR.

b) Process for Higher Uncertainty in SLMCPR Analyses with EFW

As part of the MNGP core follow monitoring procedure, the nodal and radial TIP measured-to-calculated differences are monitored. Procedures would prompt initiation of a Corrective Action Program (CAP) action if an adverse trend is noticed. Whereas Xcel Energy has no modern experience with an adverse trend, the Nuclear Analysis and Design (NAD) group expects that corrective action would include the following:

- The TIP database would be updated and compared to the data used in the Studsvik report.
- Large TIP deviations could also be caused by equipment failures, model errors, etc., so these would have to be investigated and ruled out.
- If trending indicated that the power uncertainties would be greater than those used in the safety analysis before end of cycle then the statistics would have to be examined in detail to determine if the power uncertainties have to be recalculated.

Ultimately, if the new power uncertainties are greater than those in the safety analysis, Xcel Energy would notify the vendor and an appropriate CPR penalty would be determined.