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SUBJECT: Requests exemption from requirements of 10CFR PT50, Section 50.62, "Requirement for reduction of risk from ATWS events for light-water-cooled nuclear power plants.

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**Northern States Power Company**

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August 18, 1987

10 CFR Part 50  
Section 50.12

Director of Nuclear Reactor Regulation  
Attn: Document Control Desk  
Nuclear Regulatory Commission  
Washington, DC 20555

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

Request for Exemption from the Requirements of 10 CFR Part 50,  
Section 50.62, "Requirements for reduction of risk from  
anticipated transients without scram (ATWS) events for  
light-water-cooled nuclear power plants."

- Reference: (a) Letter from D G Eisenhut (NRC) to All Boiling Water Licensees and Applicants dated January 28, 1985 entitled, "Clarification of Equivalent Control Capacity for Standby Liquid Control Systems (Generic Letter 85-03)".
- (b) Letter from G Lainas (NRC) to T A Pickens (BWROG) dated October 21, 1986 entitled, "Acceptance for Referencing of Licensing Topical Report NEDE-31096-P, "Anticipated Transients Without Scram; Response to NRC ATWS Rule, 10 CFR 50.62"".
- (c) Letter from D M Musolf (NSP) to Director of NRR dated June 22, 1987 entitled, "License Amendment Request Dated June 22, 1987, ATWS Rule Requirements".

The purpose of this letter is to request exemption from the requirements of 10 CFR Part 50, Section 50.62, Paragraph (c)(4) which states, in part: "Each boiling water reactor must have a standby liquid control system (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution."

A check in the amount of \$150.00 is enclosed in accordance with 10 CFR Part 170 as the required application fee.

Basis for Request

The requirement for 86 gallons per minute of 13 weight percent sodium pentaborate solution was taken from the General Electric Report NEDE-24222, "Assessment of BWR Mitigation of ATWS, Volumes I and II," December,

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1979. The purpose of the requirement was to ensure that sufficient Boron-10 concentration could be achieved in the reactor vessel within the analyzed time to bring the reactor to the Hot Shutdown condition. It was also recognized in NEDE-24222 that smaller values would be equivalent for plants with smaller reactor vessels. NEDE-24222 states, "The flow rates given here are normalized from a 251-inch-diameter vessel plant to a 218-inch-diameter vessel plant, i.e., the 66 GPM control liquid injection rate in a 218 is equivalent to 86 GPM in a 251. This is done to bound the analysis ...". The ATWS Rule does not explicitly recognize this normalizing process and the NRC Legal Staff has determined that an exemption is required for any plant making use of it.

Reference (a) was provided by the NRC Staff to clarify their intent of the use of the word "equivalent". It provides the same basis as explained above for the rule requirements and further allows for the use of increased flow rate, boron concentration, or boron enrichment in achieving equivalence. Reference (a) also confirmed the underlying purpose of this portion of the ATWS Rule when it stated, "The important parameters to consider in establishing equivalence are vessel boron concentration required to achieve shutdown and the time required to achieve that vessel boron concentration. The minimally acceptable system should show an equivalence in these parameters to the 251 inch diameter vessels studied in NEDE-24222."

Northern States Power participated in the Boiling Water Reactor Owners' Group Committee on ATWS Compliance Alternatives. As part of that Committee's work Licensing Topical Report NEDE-31096-P, "Anticipated Transients Without Scram: Response to NRC ATWS Rule, 10 CFR 50.62" was submitted to the NRC and was approved by Reference (b). The NRC Staff's Safety Evaluation Report included a formula for demonstrating the equivalency requirement:

$$(Q/86) \times (M_{251}/M) \times (C/13) \times (E/19.8) \geq 1$$

where: Q = expected SLCS flow rate (gpm)  
M = mass of water in the reactor vessel and recirculation system at hot rated condition (lbs)  
C = sodium pentaborate solution concentration (weight percent)  
E = B<sup>10</sup> isotope enrichment (19.8 % for natural boron), atom percent  
M<sub>251</sub> = 628,300 lbs (For a BWR/3/4)

This exemption is requested to allow a variation of this formula, as submitted in Reference (c), to be used to demonstrate equivalency to the requirements of the ATWS Rule.

Dir of NRR  
August 18, 1987  
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Northern States Power Company

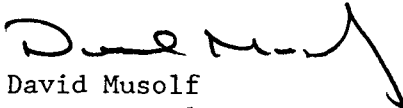
Determination of Special Circumstances

Section 50.12, "Specific Exemptions", of 10 CFR Part 50 allows the Commission to consider granting an exemption only when special circumstances are present. This exemption falls under the special circumstances as provided for in Paragraph 50.12(a)(2)(ii), which states, "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule".

The ATWS Rule does not explicitly recognize normalizing of the 86 GPM flow rate at 13 wt % sodium pentaborate solution from a 251 inch-diameter vessel to a smaller vessel (206 inch-diameter for Monticello). The NRC Staff has however issued guidance which clarified the underlying purpose of the ATWS Rule. The NRC Staff then issued a Safety Evaluation for the BWR Owners' Group Licensing Topical Report which recognizes normalization to smaller vessels as a technically acceptable means of meeting the underlying purpose of the ATWS Rule and the Technical Specifications which have been proposed for Monticello meet the requirements contained therein. Therefore, the modification and Technical Specifications proposed to meet the Standby Liquid Control System portion of the ATWS Rule, meet the underlying purpose and this exemption should be granted.

It is requested that this exemption be reviewed and approved by the NRC Staff prior to October 1, 1987 to permit modifications to the Standby Liquid Control System to be made during the 1987 refueling outage as described in Reference (c).

Please contact us if you have any questions related to our request.

  
David Musolf  
Manager Nuclear Support Services

DMM/TAP

c: Regional Administrator-III, NRC  
NRR Project Manager, NRC  
Resident Inspector, NRC  
MPCA  
Attn: J W Ferman  
G Charnoff

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

REQUEST FOR AMENDMENT TO  
OPERATING LICENSE DPR-22

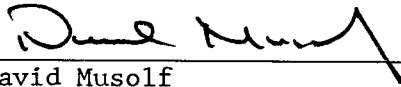
LETTER DATED AUGUST 18, 1987  
EXEMPTION FROM THE REQUIREMENTS OF  
10 CFR PART 50, SECTION 50.62 (c)(4)

Northern States Power Company, a Minnesota corporation, by this letter dated August 18, 1987 submits a request for exemption from the requirements of 10 CFR part 50, Section 50.62(c)(4).

This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By

  
David Musolf

Manager Nuclear Support Services

On this 18 day of August 1987 before me a notary public in and for said County, personally appeared David Musolf, Manager Nuclear Support Services, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made in it are true and that is is not interposed for delay.

