



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East  
Welch, Minnesota 55089

Jan / 29, 1999

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

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT**

Docket Nos. 50-282 License Nos. DPR-42  
50-306 DPR-60

**NSPNAD-8102, Revision 7:  
Prairie Island Nuclear Power Plant  
Reload Safety Evaluation Methods for Application to PI Units**

In December of 1994, the Nuclear Regulatory Commission granted approval of Revision 6 to NSPNAD-8102, "Prairie Island Nuclear Power Plant Safety Evaluation Methods for Application to Prairie Island Units". Since then, NSP has developed new methods for determining the minimum required shutdown margin for a dilution accident when the reactor is subcritical. Consistent with the USAR text describing the Chemical and Volume Control System Malfunction analysis, the acceptance criterion used in the attached methodology is selected to ensure that a complete loss of shutdown margin will not occur for at least twenty-four minutes from initiation of the dilution. This criterion is applied for operating modes three through six. Since NSP wishes to obtain approval of these new methods for subcritical shutdown margin calculations, Revision 7 of NSPNAD-8102 describing these new methods in Appendix G has been issued. Attachments 3 and 4 to this letter are proprietary and non-proprietary versions of this revision. We are seeking NRC approval of this revision allowing us to implement this new methodology.

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APP

Since the issuance of Revision 6 of the subject document, sections of text have been found that either contained errors or needed enhancement. Correction of this text does not introduce new information nor represent new methodology requiring approval for implementation. These corrections have been included in Revision 7 only to formally

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capture them on the docket<sup>1</sup>. It is not anticipated that significant review will be required. However, some document reformatting might mask these text changes so they are catalogued in Attachment 2 to facilitate NRC review. A general description of these changes are provided, as well.

The Prairie Island Nuclear Power Plant Reload Safety Evaluations methodologies are considered company confidential and as such, NSP requests Attachment 3, the proprietary version of the document, to be withheld from public disclosure pursuant to 10 CFR 2.790(b)(1). An affidavit to support this request is provided as Attachment 1.

Any questions related to this letter should be directed to Jack Leveille at 612.388.1121, Ext. 4142.



Roger O Anderson  
Director,  
Nuclear Energy Engineering

- c: Regional Administrator - Region III, NRC  
Senior Resident Inspector, NRC  
NRR Project Manager, NRC  
State of Minnesota (without Attachment 3)  
Attn: Kris Sanda  
J E Silberg (without Attachment 3)

Attachments:

1. Affidavit Requesting Withholding of Proprietary Information from Public Disclosure.
2. Description of Corrections Introduced in Revision 7 of NSPNAD-8102.
3. NSPNAD-8192-P, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods For Application to PI Units; January, 1999; Proprietary version.
4. NSPNAD-8192-NP, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods For Application to PI Units; January, 1999; Non-proprietary version.

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<sup>1</sup> Some corrections to Section 3.14, Main Steam Line Break, were disregarded since NSP is anticipating approval of new methodology that would make the text in that section obsolete, anyway.

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT

DOCKET Nos. 50-282  
50-306

REQUEST TO WITHHOLD PROPRIETARY INFORMATION  
FROM PUBLIC DISCLOSURE

Northern States Power Company, a Minnesota corporation, hereby requests that Attachment 3 to the letter entitled, "NSPNAD-8102, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods For Application to PI Units", be withheld from public disclosure due to its proprietary nature. The details of this request are provided in the following affidavit:

AFFIDAVIT

I, Roger O. Anderson, being duly sworn, depose and state as follows:

- (1) I am Director, Nuclear Energy Engineering, Northern States Power Company ("NSP") and have been authorized to apply for withholding the information described in paragraph (2).
- (2) The information sought to be withheld is the Report entitled, "NSPNAD-8102-P, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods For Application to PI Units; January, 1999", proprietary version presented in Attachment 3 to NSP's letter to the NRC entitled, "NSPNAD-8102, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods For Application to PI Units". Attachment 3, which contains 298 pages, has a "-P" following the document number indicating that it is the proprietary version.
- (3) In making this application for withholding of proprietary information of which it is the owner, NSP relies upon the exemption from disclosure set forth in the NRC regulation 10 CFR 2.790(b)(1) for confidential commercial information.
- (4) Justification for the request for withholding from public disclosure is provided by addressing the five considerations identified in 10 CFR 2.790(b)(4).

To the best of my knowledge and belief:

- a. This information is considered company confidential and has been held in confidence by NSP.
- b. This information is of the type customarily held in confidence by NSP and the rationale basis is that it would provide an unfair advantage to competitors if it were disclosed.

- c. This information is transmitted in confidence to the NRC and the purpose of this request is to maintain its confidentiality.
- d. This methodology for the Prairie Island two-loop Westinghouse nuclear plant is not available from public sources.
- e. Public disclosure of the information sought to be withheld is likely to cause harm to NSP's competitive position; NSP expended substantial resources in developing this methodology; failure to withhold this information would allow others to benefit from it without commensurate expenditures.

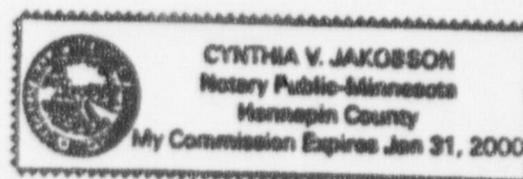
This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By Roger O. Anderson  
Roger O. Anderson  
Director  
Nuclear Energy Engineering

On this 1<sup>st</sup> day of February, 1999 before me a notary public in and for said County, personally appeared, Roger O. Anderson, Director, Nuclear Energy Engineering, and being first duly sworn acknowledged that he is authorized to execute this document of 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 it is not interposed for delay.

Cynthia V. Jakobson



**Attachment 2 (Page 1 of 5): Description of Corrections Introduced in Revision 7 to NSPNAD 8102.**

<u>Rev. 6 Page Number(s)</u>	<u>Rev. 7 Page Number(s)</u>	<u>Description of Change</u>
1	1*	Revision number and date of the report were changed. The '-A' was dropped from the report number (indicating this revision has not yet received NRC approval).
2, 3	2*, 3*	Margins were adjusted to use full page.
4	4 - 7*	Added List of Tables, List of Figures, and Appendices G and H to Table of Contents. Also added subheadings for Section 3 X analyses and the other appendices.
5	8*	Made titles for Tables 3.17-1, C-1, -2 and -3 consistent with text.
6	9*	Changed titles for Figures 3.1-6, 3.2-8.
7	10*	Corrected title for Figure 3.7-1.
9	10*	Corrected titles for Figures 3.11-1 through -8.
11	11*, 12*	Changed titles for Figures 3.17-X.
12	12*	Change 'vs' to 'vs.' for title of Figure C-4.
13	13*	Fourth paragraph, first sentence, nineteenth word: 'is' was changed to 'are' for subject/verb agreement.  Fifth paragraph, third sentence: comma was eliminated following '(NSP)'.  Sixth paragraph: first comma changed to period to correct typographical error.
21	22*, 23*	Page 22, last paragraph, ninth word: 'anyone' was changed to 'any one' to correct typographical error.  Page 23, paragraph under Section 3.1.1, sixth word from the end: spelling of 'excursions' was corrected.
22	23*	Second paragraph under Section 3.1.2, last sentence, ninth word: 'are' was changed to 'is' for subject/verb agreement.
23	24*	Third paragraph under Section 3.1.3, seventh word from end: 'compares' was changed to 'compare' for subject/verb agreement.

**Attachment 2 (Page 2 of 5): Description of Corrections Introduced in Revision 7 to NSPNAD 8102.**

<u>Rev. 6 Page Number(s)</u>	<u>Rev. 7 Page Number(s)</u>	<u>Description of Change</u>
24	23*	Paragraph e under Section 3.1.4, second and third sentences: these sentences were combined to improve clarity and grammar. No change to substance was made.  Paragraph e under Section 3.1.4, last sentence: 'is' was changed to 'are' for subject/verb agreement.
33	35*	Paragraph d, second word: spelling of 'ENTHALPY' was corrected.
44	46*	Second paragraph under 3.3.4, third word: spelling of 'enthalpy' was corrected.
47	49	Text was changed to indicate that we use VIPRE instead of COBRA since receiving the SER allowing us to do that in Revision 3.
50	52	Typographical error in the equation for Moderator Temperature Coefficient was corrected. The application of the constant for bias in the NSP methodology had never changed. However, the information presented in the topical was not consistent with NSP documents. (Note: this merely corrected a typographical error in an equation by changing the subtraction of a constant to addition. The sign of the constant could have been just as easily been changed to make the old equation correct. This was just to establish consistency with existing documentation.)  The inequality for the excore tilt was changed from ' $\geq$ ' to ' $\leq$ '. The correct inequality in Revision 5 (' $\leq$ ') was inadvertently changed in Revision 6 (' $\geq$ '). This had not been identified as a change in that revision nor had it been intended to be one. This restores the correct inequality.
66	69*	Paragraph 3.5.1, next to last sentence: correct symbol for delta was used.
67	70*	First paragraph under Section 3.5.3, last sentence: correct symbol for delta was used.  Paragraph 3.5.4, first sentence: spelling of 'e.g.' was corrected.
74	78*	Paragraph 3.6.4, first sentence: spelling of 'e.g.' was corrected.
83	87*	Paragraph 3.7.4, first sentence: spelling of 'e.g.' was corrected.  Paragraph 3.7.4, last sentence: period was added after 'etc'.

Attachment 2 (Page 3 of 5): Description of Corrections Introduced in Revision 7 to NSPNAD 8102.

Rev. 6 Page Number(s)	Rev. 7 Page Number(s)	Description of Change
84	88	A potential sensitivity to a most negative value was added to the application of the Doppler Reactivity Coefficient. This only adds information to the topical. No methodology described in Revision 6 was eliminated. This is consistent with existing NSP methodology. This was merely an enhancement to information already existing in the topical.
96	100*	Paragraph 3.8.4, first sentence: spelling of 'e.g.' was corrected.
97	101	A potential sensitivity to a most negative value was added to the application of the Doppler Reactivity Coefficient. This only adds information to the topical. No methodology described in Revision 6 was eliminated. This is consistent with existing NSP methodology. This was merely an enhancement to information already existing in the topical.
99	103*	Paragraph 3.9.4, first sentence: spelling of 'e.g.' was corrected.
131	136	Fourth paragraph in Section 3.11.3: descriptions for Figures 3.11-1 and -5 identify the incorrect number of pumps tripped for each analysis (the cases are swapped). This error was corrected.
132	137*	Paragraph 3.11.4, first sentence: spelling of 'e.g.' was corrected.
132	138	Paragraph 3.11.4: An item, Shutdown Margin (Paragraph e), was added under Cycle Specific Physics Calculations with a sentence describing it. It had always been a part of the NSP methodology but just had not been identified here, previously. This was merely an enhancement of information already existing in the topical.
133	138	<p>A potential sensitivity to a least negative value was added to the application of the Doppler Reactivity Coefficient. This accounts for circumstances where the Moderator Temperature Coefficient may be positive. This merely adds additional information to the topical. It maintains the concept that a bounding value for Doppler will be assigned based on the circumstances. This is consistent with existing NSP methodology. This was merely an enhancement to information already existing in the topical.</p> <p>A sensitivity to shutdown margin has been added. This had always been a part of the NSP methodology but just had not been identified here, previously. This was merely an enhancement of information already existing in the topical.</p>

**Attachment 2 (Page 4 of 5): Description of Corrections Introduced in Revision 7 to NSPNAD 8102.**

<u>Rev. 6 Page Number(s)</u>	<u>Rev. 7 Page Number(s)</u>	<u>Description of Change</u>
143	148*	Third paragraph under Section 3.12.3, first sentence: a space replaced a comma to separate the words 'respectively' and 'for'.
144	149*	Paragraph 3.12.4, first sentence: spelling of 'e.g.' was corrected.
145	150	<p>Paragraph 3.12.4: An item, Shutdown Margin (Paragraph f), was added under Cycle Specific Physics Calculations with a sentence describing it. It had always been a part of the NSP methodology but just had not been identified here, previously. This was merely an enhancement of information already existing in the topical.</p> <p>A potential sensitivity to a least negative value was added to the application of the Doppler Reactivity Coefficient. This accounts for circumstances where the Moderator Temperature Coefficient may be positive. This merely adds additional information to the topical. It maintains the concept that a bounding value for Doppler will be assigned based on the circumstances. This is consistent with existing NSP methodology. This was merely an enhancement to information already existing in the topical.</p> <p>A sensitivity to shutdown margin has been added. It had always been a part of the NSP methodology but just had not been identified here, previously. This was merely an enhancement of information already existing in the topical.</p>
155	160	Correct typo on pressure at which steamline break occurs.
157	163	Pressure under (e) is corrected.
186	192*	Paragraph 3.15.4, first sentence: spelling of 'e.g.' was corrected.
188	194	<p>A typographical error in the equation for <math>\beta_{eff}</math> was corrected. Specifically, we subtract the constant for reliability factor rather than add it. The application of this constant in the NSP methodology has not changed. However, the information presented in the topical was not correctly reflecting the NSP methods. These text changes make the topical consistent with NSP's methodology.</p> <p>A typographical error in the equation for <math>\Delta\rho_{EJECT}</math> was corrected. Specifically, an extraneous asterisk was eliminated.</p>
199	205*	Paragraph 3.16.4, first sentence: spelling of 'e.g.' was corrected.

Attachment 2 (Page 5 of 5): Description of Corrections Introduced in Revision 7 to NSPNAD 8102.

Rev. 6 Page Number(s)	Rev. 7 Page Number(s)	Description of Change
200	206	A typographical error on this page for the equation for Boron Reactivity Coefficient was corrected. In Revision 6, the structure of the equation for $\alpha_B$ on this page conflicted with the description of its application in Section 3.0. Since the information in Section 3.0 was correct (hence, the information on this page wrong), it was necessary to correct this page to make it consistent. It was not done to reflect any change in the NSP methodology for the application of the constant for bias or reliability factor.
231	238*	Paragraph beginning with "The core-wide...", second and third sentences: spelling of "modeled" was corrected.  Next paragraph: spelling of 'modeling' was corrected.  First paragraph under section entitled, <b>Radial Power Distribution</b> , last sentence: spelling of 'modeling' was corrected.
236	243*	Last paragraph, next to last sentence: added a space to separate words, 'would,' and 'however'.
257	264*	Under heat sinks: corrected the spelling of 'containment' for Vessel Shell Cylinder and Vessel Shell Dome in the first two rows.  Corrected the units for Conductivity and Capacity.
262	270*	First paragraph in Section F.2.4, last sentence: deleted redundant 'axial' in parentheses.
263	270*	Second paragraph in Section F.2.4, last sentence: changed 'Overtemperature $\Delta$ Trip' and 'f( $\Delta$ )' to 'Overtemperature $\Delta T$ Trip' and 'f( $\Delta T$ )'  Next paragraph: changed 'f( $\Delta$ )' to 'f( $\Delta T$ )'
265	273*	First paragraph under <b>Turbulent Mixing</b> , last sentence: spelling of "modeled" was corrected.
NA	298	Added Appendix H to give a brief description of these changes made to Revision 7 of this report.

\* No revision bars are provided in the document for spelling and grammar corrections or text format changes.