



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO TOPICAL REPORT NSPNAD-8102, REVISION 7

RELOAD SAFETY EVALUATION METHODS FOR APPLICATION TO PI UNITS

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1 AND 2

1.0 INTRODUCTION

In a letter of January 29, 1999 (Ref. 1), supplemented by letter dated June 23, 1999 (Ref. 2), Northern States Power Company (NSP) requested approval of Revision 7 to topical report NSPNAD-8102, "Reload Safety Evaluation Methods for Application to PI Units." The revision contains a description of the new methods developed by NSP for determining the minimum required shutdown margin for an inadvertent boron dilution event initiated from subcritical conditions (operating modes 3 through 6). In addition, Revision 7 incorporates corrections to sections of the text that either contained errors or needed enhancement.

2.0 EVALUATION

Appendix G to Revision 7 of NSPNAD-8102 describes the methodology for determining the minimum required shutdown margin (SDM) for an inadvertent boron dilution event for various system configurations and dilution flow rates with the reactor subcritical. Termination of the unplanned dilution relies on operator action to stop the event before a complete loss of shutdown margin occurs. The length of time the operators have to recognize the event and terminate the dilution is dependent on the mass of the reactor coolant system (RCS) being diluted, the dilution flow rate, and the initial shutdown margin.

Two approaches are described in Appendix G that may be utilized to determine the required SDM for a given system configuration and injection flow rate. Both of these approaches are used to show that a complete loss of SDM will not occur for at least 24 minutes from initiation of the inadvertent dilution. This acceptance criterion is applicable for operating modes 3 through 6 and is consistent with the Prairie Island licensing basis.

Based on our review, we find the new methods for determining the minimum required SDM for an inadvertent boron dilution event when the reactor is subcritical (Modes 3 through 6) as presented in Appendix G to NSPNAD-8102, Revision 7, are acceptable. Boron dilution events with the reactor critical (operating modes 1 and 2) will continue to be analyzed using the

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methodology described in Section 3 of the topical report. In addition, the corrections to sections of the text in the previous approved version, Revision 6, that either contained errors or needed enhancement, are editorial in nature and are acceptable.

3.0 CONCLUSION

We have reviewed the proposed changes to topical report NSPNAD-8102 submitted in Revision 7 and find them acceptable. Therefore, NSPNAD-8102, Revision 7, is acceptable for referencing in Prairie Island licensing actions.

4.0 REFERENCES

1. R.O. Anderson (NSP), letter to U.S. Nuclear Regulatory Commission, NSPNAD-8102, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods for Application to PI Units, January 29, 1999.
2. R.O. Anderson (NSP), letter to U.S. Nuclear Regulatory Commission, NSPNAD-8102, Revision 7: Prairie Island Nuclear Power Plant Reload Safety Evaluation Methods for Application to PI Units, June 23, 1999.

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