



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 39 TO PROVISIONAL OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

Introduction

By letter⁽¹⁾ dated December 1, 1978 and revised by letter⁽²⁾ dated December 7, 1978, the Northern States Power Company (the licensee) requested amendment to the Technical Specifications appended to Operating License No. DPR-22 for Monticello Nuclear Generating Plant. The proposed change involves a modification to the Low Pressure Coolant Injection (LPCI) subsystem pump performance requirements. The reason for the change stems from the results of recent tests performed to determine actual piping losses of the Monticello LPCI subsystem, for the case of three LPCI pumps running simultaneously. Up until these tests, piping losses for three pumps running were based on calculations. The test results indicated that actual piping losses were higher than previously thought. When using the new actual losses to determine LPCI pump delivery capability as required by the Technical Specifications, it was found by the licensee that little or no margin existed between actual pump performance and the minimum pump performance required by the current Technical Specifications. Accordingly, the licensee has proposed to change the Technical Specifications by effectively reducing the minimum required delivery capability for each pump by 10%. This change would provide the licensee with reasonable margin to accommodate any degradation in pump performance, although the change itself would not result in any actual reduction in flow capability from that associated with the as-built system.

Evaluation

The pumps of the Residual Heat Removal (RHR) system are sized on the basis of the flow required during the Low Pressure Coolant Injection mode of operation, which is the mode requiring the maximum flow rate. This mode of RHR is provided to restore and maintain the reactor vessel coolant inventory following a loss of coolant accident so that the core is adequately cooled thereby preventing excessive fuel clad temperatures. The present Monticello Technical Specifications require that each of the pumps in the LPCI subsystem be capable of delivering at least 4000 gpm against a reactor system pressure of 20 psi. The present test procedures also involve testing each pump separately, while accounting

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for LPCI system piping losses associated with three pumps running to determine pump delivery capability for design basis LPCI mode (three pumps running) conditions. The proposed specification would require that each LPCI subsystem pump be capable of delivering at least 3600 gpm against a system head corresponding to three pumps delivering 12,000 gpm against a reactor pressure 20 psi above suppression chamber pressure. The proposed specifications therefore would allow for as much as a 10% (or 400 gpm) reduction in the minimum required delivery capability of each pump.

The licensee has considered the effects of the decrease in LPCI performance on the limiting large break Loss of Coolant Accident (LOCA) analysis for Monticello as well as the most severe small break LOCA. For Monticello, a BWR/3 with LPCI loop selection logic, the worst single failure for the large break DBA-LOCA is failure of the LPCI injection valve. This failure leaves no LPCI available to mitigate the accident. When viewed from this limiting perspective, any reduction in LPCI pump flow capability will not effect previously accepted LOCA analyses. Thus, although the proposed technical specification could allow a reduction in LPCI pump flow capability and hence a somewhat worse LOCA consequences (higher PCT) for the expected case (LPCI injection valve does not fail), the limiting licensing basis event remains unaffected. For small breaks, the licensee states that the worst single failure is the direct current (DC) power source failure.⁽³⁾ For this failure two of the four LPCI pumps are available together with one core spray train and the Automatic Depressurization System.⁽⁴⁾ The results of the reanalysis of the small break, over a break spectrum from 0 to 0.3 ft² showed that the maximum PCT remains well below 2200°. This analysis modeled the two available LPCI pumps with 10% reduction in LPCI flow. Thus the worst small break case remains non-limiting relative to the DBA.

The effects of a DC power source failure on the small and large breaks are also being generically reviewed by the staff. Although we have not completed our review, based on the stated systems available with a DC power source failure, we believe that there will not be changes to the generic or plant-specific small break results that will make the small break results become more limiting than the large break. Thus we conclude that Monticello Nuclear Generating Plant will be in conformance with all of the requirements of 10 CFR 50.46 and Appendix K to 10 CFR 50 when operating in accordance with the proposed Technical Specifications.

Conclusions

We have determined that the license amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an

action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR Section 51.5(d)(4) that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 15, 1979

References

1. Northern States Power Company letter (L. Mayer) to USNRC, dated December 1, 1978.
2. Northern States Power Company letter (L. Mayer) to USNRC, dated December 7, 1978.
3. General Electric letter (R. Engle) to USNRC (P. Check) dated November 1, 1978.
4. Northern States Power Company letter (L. Mayer) to USNRC, dated April 24, 1979.