

SAFETY EVALUATION REPORT
MONTICELLO NUCLEAR GENERATING PLANT
DOCKET NO. 50-263

1.0

Introduction

Northern States Power Company (NSP) requested by letter dated December 1, 1975, proposed changes to the Monticello Technical Specifications with respect to (1) decreasing the main steamline low pressure set point from 850 psig to 825 psig and (2) decreasing the operating minimum critical power ratio (MCPR) limits from 1.41 to 1.38 and from 1.33 to 1.29 for 8x8 and 7x7 fuel assemblies respectively. Northern States Power Company provided supplemental information on the above proposed changes by letter dated February 27, 1976. Our evaluation of NSPs proposed changes are discussed below.

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Main Steamline Pressure Set Point Reduction

Installation of the main steamline low pressure sensors was required to provide reactor isolation in the event of an abnormal transient associated with the failures of the initial turbine pressure regulator in the open direction. No credit was taken for these low pressures sensors in any of other postulated abnormal operating transients or accidents. The current isolation setpoint is 850 psig; the proposed setpoint is 825 psig.

NSP referenced the Hatch I analysis dated October 9, 1975 which performed a bounding analysis for a reduction in the main steamline low pressure setpoint from 880 psig to 825 psig. We have reviewed the Hatch I analysis in regard to its applicability to NSPs proposed changes and conclude that changing the pressure setpoint from 850 psig to 825 psig had insignificant effects on previously analysed transients and is acceptable.

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Reduction in Operating Minimum Critical Power Ratio Limits

The operating limit MCPR is based on the most limiting transient, a turbine trip without bypass from 100% power and 100% flow condition. The calculated decrease in MCPR during this transient, which assumed the fuel was operating at MCPR limits of 1.38 for 8x8 fuel and 1.29 for 7x7 fuel, is 0.23 for 7x7 fuel and 0.32 for 8x8 fuel. The proposed operating MCPR limit of 1.29 for 7x7 fuel and 1.38 for 8x8 fuel therefore would not violate the MCPR Technical Specification limit of 1.06 in the event of the occurrence of the most limiting transient.

The required operating limit MCPR is a function of the magnitude and location of the axial and rod-to-rod power peaking. In determining the required MCPR, axial and local peaking representative of beginning of-cycle were assumed. That is, R-factors of 1.10 for 7x7 fuel and 1.102 for 8x8 fuel and an axial peaking factor of 1.40 at a mid core point was assumed. The transient analyses included the input data which is the worst consistent set of local and axial peaking factors. During the cycle the local peaking and therefore the R-factor is reduced while the peak in the axial shape moves toward the bottom of the core. Although the operating limit MCPR would be increased by approximately 1% by the reduced end-of-cycle R-factor, this is offset by the reduction in MCPR resulting from the relocation of the axial peak to below the midplane. We conclude that the above proposed Technical Specification changes are acceptable.

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Conclusions

Based on our evaluation of NSPs proposed change we conclude that decreasing the main steamline low pressure isolation setpoint from 850 psig to 825 psig and reducing the operating MCPR limits from 1.41 to 1.38 and from 1.33 to 1.29 for 8x8 and 7x7 fuel assemblies respectively are acceptable.