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UNITED STATES ATOMIC ENERGY COMMISSION

NORTHERN STATES POWER COMPANY

Monticello Nuclear Generating Plant Docket No. 50-263

REQUEST FOR AUTHORIZATION OF
A CHANGE IN TECHNICAL SPECIFICATIONS
OF APPENDIX A

PROVISIONAL OPERATING LICENSE NO. DPR-22

(Supplement No. 1 to Change Request No. 3)

Northern States Power Company, a Minnesota corporation, requests authorization for changes to the Technical Specifications as shown on the attachments labeled Exhibit A and Exhibit B. Exhibit A describes the proposed changes along with reasons for change. Exhibit B is a copy of the Technical Specifications marked up to indicate the proposed changes.

This request contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By Wade Larkin

Wade Larkin
Group Vice President - Power Supply

On this 21 day of September, 1972, before me a notary public in and for said County, personally appeared Wade Larkin, Group Vice President - Power Supply, and being first duly sworn acknowledged that he is authorized to execute this document in behalf of Northern States Power Company, that he has read it and knows the contents thereof, 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.

John J Smith

John J Smith
Notary Public, Hennepin County, Minnesota

JOHN J. SMITH
Notary Public, Hennepin County, Minnesota
My Commission Expires March 3, 1976

EXHIBIT A

MONTICELLO NUCLEAR GENERATING PLANT
DOCKET NO. 50-263

SUPPLEMENT NO. 1 TO CHANGE REQUEST NO. 3
PROPOSED CHANGES TO THE TECHNICAL SPECIFICATIONS
APPENDIX A OF PROVISIONAL OPERATING
LICENSE NO. DPR-22

1. <u>Control Rod Worth and Rod Worth Minimizer</u>

Pages 77 & 78, Items 3.3.B.3 and 4.3.B.3, Change to read:

3.3.B.3 (a) Control rod withdrawal sequences shall be established so that the maximum calculated reactivity that could be added by dropout of any increment of any one control blade will not make the core more than 1.5% Δ k supercritical.

3.3.B.3 (b) Whenever the reactor is in the Startup or Run mode below 10% rated thermal power, no control rods shall be moved unless the rod worth minimizer is operable or a second independent operator or engineer verifies that the operator at the reactor console is following the control rod program.

4.3.B.3 (a) To consider the Rod Worth Minimizer operable, the following steps must be performed:

(i) The control rod withdrawal sequence for the Rod Worth Minimizer computer shall be verified as correct.

(ii) The Rod Worth Minimizer computer on-line diagnostic test shall be successfully completed.

(iii) Proper annunciation of the selection error of at least one out-of-sequence control rod in each fully inserted group shall be verified.

(iv) The rod block function of the Rod Worth Minimizer shall be verified by attempting to withdraw an out-of-sequence control rod beyond the block point.

4.3.B.3 (b) If the Rod Worth Minimizer is inoperable while the reactor is in the Startup or Run mode below 10% rated thermal power, the second independent operator or engineer shall verify that all rod positions are correct prior to commencing the withdrawal of each rod group.

Page 84, Bases, Change Section 3 to read:

3. The Rod Worth Minimizer restricts withdrawals and insertions of control rods to those listed in prespecified control rod sequences which are established such that the maximum calculated worth of any control rod increment prior to withdrawal will not make the core more than 1.5% Δ k supercritical. These sequences are developed to limit the reactivity worths of control rods in the core and together with the integral rod velocity limiters limit potential reactivity insertion such that the results of a control rod drop accident will not exceed a maximum fuel energy content of 280 calories/gram. The peak fuel energy content of 280 cal/gm is below the energy content at which rapid fuel dispersal and primary system damage are assumed to occur. The philosophy of developing a control rod withdrawal sequence, the associated rod worths, and the consequences of a control rod drop accident for such a rod pattern are discussed in General Electric Topical Report NEDO-10527, "Rod Drop Accident Analysis for Large Boiling Water Reactors," March, 1972

The Rod Worth Minimizer provides automatic supervision to assure that out-of-sequence control rods will not be withdrawn or inserted, i.e., it limits operator deviations from planned withdrawal sequences. Ref. Section 7.9 FSAR. It serves as an independent backup of the normal withdrawal procedure followed by the operator. In the event that the RWM is out of service, when required, a second independent operator or engineer can manually fulfill the operator-follower control rod pattern conformance function of the RWM. In this case, an extra measure of procedural control is exercised in that all control rod positions are verified after the withdrawal of each group, prior to proceeding to the next group.

Reason for change:
The wording of the present Specification 3.3.B.3 (a) is more restrictive than intended. A strict, verbal interpretation of the present wording 1) prohibits withdrawal of the first rod during startups, and 2) interferes with testing required elsewhere in the Specifications. The proposed wording allows for these situations while being within the original intent of the Specifications. The maximum allowable worth of a control rod is presented differently based on the improved evaluation of the Rod Drop Accident. The specific number associated with the Specification was derived by referring to Figure 3-9 in the referenced topical report. This shows dotted curves of constant accident consequences as a function of rod worths vs. moderator density and power level. Limiting the reactivity by which the core can be made supercritical by dropout of any increment of any one rod to 1.5% Δ k provides sufficient margin to the design limit of 280 cal/gm.

Specifications 3.3.B.3 (b) and 4.3.B.3 increase the requirements for the surveillance of the rod worth minimizer and for the substituted independent procedural controls during an outage of the RWM. The second person verifying the rod pattern will perform a manual verification of

all control rod positions after completing the withdrawal of each group. The order of withdrawal of rods within a group is not restricted and therefore a more frequent verification is not required. As many as 50 rod groups may be withdrawn before reaching 10% of rated power; therefore, the rod pattern may be verified as many as 50 times during startup. This method of surveillance is to be contrasted to the RWM method which performs a single control rod scan when initiated and thereafter runs in an operator follower mode. The reduced possibility of human error in light of the increased frequency of full core scans must be weighed against the probability that an extremely intermittent mechanical problem might cause the RWM to ignore an erroneous rod movement and not be corrected by a subsequent scan. The reliability of the Monticello RWM has shown that there is no need to excessively turn to the second, independent person to verify rod movements. However, to require RWM availability for reactor startups places an unreasonable demand on the reliability of a piece of non-redundant equipment.

2. Reactivity Margin - Core Loading

Page 82, Item 3.3.A.1 (basis), Change the second paragraph to read:

The value of R is the difference between the calculated core reactivity at the beginning of the operating cycle and the calculated value of core reactivity any time later in the cycle where it would be greater than at the beginning. For the first fuel cycle, R was calculated to be .012 Δk. A new value of R must be determined for each fuel cycle.

Reason for change:
Recent calculations, as reported in our February 3, 1972 letter to Dr. Peter A Morris, indicate that the value of R for the first cycle is .012 rather than -.003 Δk as is currently stated in the Technical Specifications.

3. Suppression Chamber Inspection

Page 139, Item 4.7.A.1, Change to read:

The suppression chamber water level and temperature shall be checked once per day. An inspection of the interior of the pressure suppression chamber shall be conducted during each refueling outage. This inspection shall consist of a visual examination of mechanical and structural integrity of hangers, piping and structural members, and a visual examination of painted surfaces.

Reason for change:
The proposed wording defines what the suppression chamber inspection is to include.

4. Airborne Effluent Measurement

Page 169, Item 4.8.A.1, Change the last sentence to read:

Gaseous releese of tritium shall be calculated on a monthly basis from measured stack samples obtained quarterly.

Reason for change:

The change replaces the word "data" with the words "stack samples obtained quarterly." This more explicity defines how the surveillance will be conducted.

5. Liquid Effluents

Page 171, Item 3.8.C.2, Change to read:

The concentration of gross beta and gamma activity ....

Reason for change:
The Specification is presently worded to include only beta activity. It should correctly include both beta and gamma activity.