3.0 LIMITING CONDITIONS FOR OPERATION

2. The control rod drive housing support system shall be in place during reactor power operation and when the reactor coolant system is pressurized above atmospheric pressure with fuel in the reactor vessel, unless all operable control rods are fully inserted and Specification 3.3.A.1 is met.

3. (a) ~~Control rod patterns shall be established so that the maximum worth of any operable control rod prior to withdrawal shall be less than 2.5 per cent Δk.~~

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% Δk SUPERCRITAL.

4.0 SURVEILLANCE REQUIREMENTS

(b) when the rod is withdrawn the first time subsequent to each refueling outage, observe discernible response of the nuclear instrumentation. However, for initial rods when response is not discernible, subsequent exercising of these rods after the reactor is critical shall be performed to observe nuclear instrumentation response.

2. The control rod drive housing support system shall be inspected after reassembly and the results of the inspection recorded.

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.

~~3. Prior to startup the rod worth minimizer shall be verified as operable or the presence of a second licensed operator or qualified technical station employee to verify the following of the rod program shall be verified.~~

(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 BEYONT THE BLOCK POINT.

3.0 LIMITING CONDITIONS FOR OPERATION

3. (b) Whenever the reactor is in the startup or run mode below 10% rated thermal power, ~~the rod worth minimizer shall be operable or a second licensed operator or qualified technical station employee shall verify~~ that the operator at the reactor console is following the control rod program.

NO CONTROL RODS SHALL BE MOVED UNLESS THE ROD WORTH MINIMIZER IS OPERABLE OR A SECOND INDEPENDENT OPERATOR OR ENGINEER VERIFIES

4. Control rods shall not be withdrawn for startup or refueling unless at least two source range channels have an observed count rate equal to or greater than three counts per second.

5. Whenever the Engineer, Nuclear, determines that a limiting control rod pattern exists, withdrawal of designated control rods shall be permitted only when the RBM system is operable.

4.0 SURVEILLANCE REQUIREMENTS

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 WITHDRAWAL OF EACH ROD GROUP.

4. Prior to control rod withdrawal for startup or during refueling verify that at least two source range channels have an observed count rate of at least three counts per second.

5. Whenever the Engineer, Nuclear, determines that a limiting control rod pattern exists, an instrument functional test of the RBM shall be performed prior to withdrawal of the designated rod(s) and daily thereafter.

Bases Continued 3.3 and 4.3

Section 6.5.3. This support is not required if the reactor coolant system is at atmospheric pressure since there would then be no driving force to rapidly eject a drive housing. Additionally, the support is not required if all control rods are fully inserted since the reactor would remain subcritical even in the event of complete ejection of the strongest control rod.

(REPLACE THIS SECTION WITH THE FOLLOWING PAGE.)

3. ~~The Rod Worth Minimizer restricts withdrawals and insertions of control rods to those listed in pre-specified control rod sequences which are established to assure that the maximum individual control rod worth prior to withdrawal shall be less than 2.5% Δk. These sequences are developed prior to initial operation of the unit 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. Ref. Sections 7.9.2, 14.6.2, and 14.8.1. FSAR. 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 specified sequences are characterized by homogeneous, scattered patterns of control rod withdrawal. The maximum rod worths encountered in these patterns are presented in Figure 3-3-4 & 3-3-5 of the FSAR. When the core is at rated temperature and greater than about 1% of rated power, there are no possible rod worths which, if dropped at the design rate of the velocity limiter, 5 feet/sec, could result in a peak fuel enthalpy of 280 cal/gm. Thus, requiring operation of the RWM below 10% rated power is conservative.~~

~~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 a back-up to procedural control of control rod worth. In the event that the Rod Worth Minimizer is out of service, when required, a licensed operator or other qualified technical employee can manually fulfill the control rod pattern conformance functions of the Rod Worth Minimizer. In this case, the normal procedural controls are backed up by independent procedural controls to assure conformance.~~

4. The Source Range Monitor (SRM) system performs no automatic safety system function; i. e., it has no scram function. It does provide the operator with a visual indication of neutron level. This is needed for knowledgeable and efficient reactor startup at low neutron levels. The

Replace the deleted portion of the previous page (page 84) with the following words:

"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% Δk 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."

Bases Continued 3.3 and 4.3:

A. Reactivity Limitations

1. Reactivity margin - core loading

The core reactivity limitation is a restriction to be applied principally to the design of new fuel which may be loaded in the core or into a particular refueling pattern. Satisfaction of the limitation can only be demonstrated at the time of loading and must be such that it will apply to the entire subsequent fuel cycle. The generalized form is that the reactivity of the core loading will be limited so the core can be made subcritical by at least R + 0.25% Δ k in the most reactive condition during the operating cycle, with the strongest control rod fully withdrawn and all others fully inserted. The value of R in % Δ k is the amount by which the core reactivity, at any time in the operating cycle, is calculated to be greater than at the time of the check; i.e., the initial loading. R must be a positive quantity or zero. A core which contains temporary control or other burnable neutron absorbers may have a reactivity characteristic which increases with core lifetime, goes through a maximum and then decreases thereafter. See Figure 3.3.2 of the FSAR for such a curve.

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 ~~-0.003%~~ 2.61% Δ k, ~~therefore, R was assumed to be zero~~. A new value of R must be determined for each fuel cycle.

The 0.25% Δ k in the expression R + 0.25% Δ k is provided as a finite, demonstrable, sub-criticality margin. This margin is demonstrated by full withdrawal of the strongest rod and partial withdrawal of an adjacent rod to a position calculated to inset at least R + 0.25% Δ k in reactivity. Observation of sub-criticality in this condition assures sub-criticality with not only the strongest rod fully withdrawn but at least a R + 0.25% Δ k margin beyond this.

2. Reactivity margin - stuck control rods

Specification 3.3.A.2 requires that a rod be taken out of service if it cannot be moved

3.0 LIMITING CONDITIONS FOR OPERATION

3.7 CONTAINMENT SYSTEMS

Applicability:

Applies to the operating status of the primary and secondary containment systems.

Objective:

To assure the integrity of the primary and secondary containment systems.

Specification:

A. Primary Containment.

1. Whenever primary containment is required, the volume and temperature of the water in the suppression chamber shall be maintained within the following limits:

   (a) Maximum Water Temperature during normal operation 90 degree F.

   (b) Maximum Water Temperature during RCIC Operation 130 degree F. Water temperature shall be reduced to $\leq 90^{\circ}$ F within 24 hours after placing the reactor mode switch in the run position.

4.0 SURVEILLANCE REQUIREMENTS

4.7 CONTAINMENT SYSTEMS

Applicability:

Applies to the primary and secondary containment integrity.

Objective:

To verify the integrity of the primary and secondary containment.

Specification:

A. Primary Containment.

1. The suppression chamber water level and temperature shall be checked once per day. ~~The interior painted surfaces above the water line of the pressure suppression chamber shall be inspected at each refueling outage.~~

   AN INSPECTION OF THE INTERIOR OF THE PRESSURE SUPRESSION 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.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS

3.0 LIMITING CONDITIONS FOR OPERATION

1. The annual average release rates of gross beta-gamma activity, except halogens and particulates with half lives longer than eight days, shall not exceed:
Average Annual Rate (Q in curie/sec):

$$\frac{Q1}{0.27} + \frac{QRS}{0.021} \leq 1$$

Any one fifteen minute period per hour (Q in curies/sec):

$$\frac{Q1}{2.7} + \frac{QRS}{0.21} \leq 1$$

4.0 SURVEILLANCE REQUIREMENTS

1. Station records of gross stack release rate of gaseous activity shall be maintained on an hourly basis to assure that the specified rates are not being exceeded, and to yield information concerning general integrity of the fuel cladding. Records of isotopic analysis shall be maintained. The off-gas stack and reactor building monitoring systems shall be functionally tested and calibrated in accordance with Specification 4.2, Table 4.2.1

Within one month of initial commercial service of the unit, an isotopic analysis will be made of the gaseous activity release rate. From this sample a ratio of long-lived and short-lived activity will be established. Weekly samples of off-gas will be taken and gross ratio of long-lived and short-lived activity determined. When the weekly samples indicate a change of greater than 20% from the previous isotopic analysis, a new isotopic analysis will be performed. An isotopic analysis of off-gas will be performed at least quarterly. Gaseous release of tritium shall be calculated on a monthly basis from measured ~~data.~~ STACK SAMPLES OBTAINED QUARTERLY.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS

3.0 LIMITING CONDITIONS FOR OPERATION

C. Liquid Effluents

1. Radioactive liquid released from the facility shall be continuously monitored. To accomplish this, either the radiation monitor on the radwaste discharge line or the discharge canal sampler shall be operable.

2. The concentration of gross beta AND GAMMA activity (above background) in the condenser cooling water discharge canal shall not exceed the limits stated below unless the discharge is controlled on a radionuclide basis in accordance with Appendix B, Table 11, Column 2 of 10CFR20 and Note 1 thereto:

   a. Maximum Instantaneous Concentration (excluding tritium)

   $$\leq 1 \times 10^{-7}\ \mu Ci/ml$$

   b. The annual average - concentration of tritium shall not exceed 3×10^{-4} μ Ci/ml

4.0 SURVEILLANCE REQUIREMENTS

C. Liquid Effluents

1. The radiation monitor shall be calibrated quarterly and functionally tested monthly. The operability of the sampler shall be verified on a daily basis.

2. a. Station records shall be maintained of the radioactive concentration and volume before dilution of each batch of liquid effluent released and of the average dilution flow and length of time over which each discharge occurred.

   b. Each batch of radioactive liquid effluent shall be sampled and analyzed prior to release.

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FILE

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Northern States Power Company Minneapolis, Minn. 55401 L. O. Mayer	11-20-72	12-6-72	X			

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Mr. Giambusso	3 signed			

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	X	37	50-263

DESCRIPTION:
Ltr re our 9-28-72 ltr, trans the following:

ENCLOSURES:
Request for a Change to Tech Specs, Appendix A, notarized 11-20-72, for the Monticello Nuclear Generating Plant.

Do Not Remove

PLANT NAMES: Monticello Nuclear Generating Plant (40 cys of encl rec'd)

ACKNOWLEDGED

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