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Northern States Power Company
Prairie Island Nuclear Generating Plant
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Welch, Minnesota 55089

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U S Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Technical Specification Bases Changes
Quadrant Power Tilt Limits below 50% Power
and Pressurizer Heater Capacity Requirements

In accordance with the Prairie Island Bases Control Program we have changed the following Technical Specification Bases pages which are attached for your use:

B.3.10-8, NSP Revision 149 dated 12/30/99
B.3.1-2, NSP Revision 150 dated 1/19/00

In this letter we have made no new Nuclear Regulatory Commission commitments.

Please contact Jeff Kivi (651-388-1121) if you have any questions related to this letter.

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Plant Manager
Prairie Island Nuclear Generating Plant

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Attachments

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
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3.1 REACTOR COOLANT SYSTEM

Bases continued

A. Operational Components (continued)

Reactor coolant pump start is restricted to RCS conditions where there is pressurizer level indication or low differential temperature across the SG tubes to reduce the probability of positive pressure surges causing overpressurization.

The pressurizer is needed to maintain acceptable system pressure during normal plant operation, including surges that may result following anticipated transients. Each of the pressurizer safety valves is designed to relieve 325,000 lbs per hour of saturated steam at the valve set point. These valves are considered OPERABLE at ± 3% of their setpoint of 2485 psig. Following testing the valve lift settings are restored within a nominal ± 1% of their setpoint. Below 350°F and 450 psig in the reactor coolant system, the residual heat removal system can remove decay heat and thereby control system temperature and pressure. If no residual heat were removed by any of the means available, the amount of steam which could be generated at safety valve relief pressure would be less than half the valves' capacity. One valve therefore provides adequate defense against over-pressurization of the reactor coolant system for reactor coolant temperatures less than 350°F. The combined capacity of both safety valves is greater than the maximum surge rate resulting from complete loss of load (Reference 1).

The requirement that two groups of pressurizer heaters be OPERABLE provides assurance that at least one group will be available during a loss of offsite power to maintain natural circulation. A pressurizer heater group must have at least 100 kw of capacity to be OPERABLE. Backup heater group "A" is normally supplied by one safeguards bus. Backup heater group "B" can be manually transferred within minutes to the redundant safeguards bus.

The pressurizer power operated relief valves (PORVs) operate to relieve reactor coolant system pressure below the setting of the pressurizer code safety valves. These relief valves have remotely operated block valves to provide a positive shutoff capability should a relief valve become inoperable. The PORVs are pneumatic valves operated by instrument air. They fail closed on loss of air or loss of power to their DC solenoid valves. The PORV block valves are motor operated valves supplied by the 480 volt safeguards buses.

The OPERABILITY of the PORVs and block valves is determined on the basis of their being capable of performing the following functions:

a. Manual control of PORVs to control reactor coolant pressure. This is a function that is used for the steam generator tube rupture accident and for plant shutdown.

3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Bases continued

C. QUADRANT POWER TILT RATIO (continued)

The upper limit on the QUADRANT POWER TILT RATIO at which hot shutdown is required has been set so as to provide protection against excessive linear heat generation rate. The ratio of overpower to normal operation is approximately 1.15. Since the x-y component of F_Q^N is bounded by the above described relation with indicated quadrant tilt, the overpower linear heat generation rate can be avoided if the indicated QUADRANT POWER TILT RATIO is restricted below 1.07.

TS.3.10.C is not applicable at power levels less than 50%. Below 50% reactor THERMAL POWER there is either insufficient stored energy in the fuel or insufficient energy being transferred to the reactor coolant to require any limitations on QUADRANT POWER TILT RATIO.

D. Rod Insertion Limits

Rod insertion limits are used to assure adequate trip reactivity, to assure meeting power distribution limits, and to limit the consequences of a hypothetical rod ejection accident. The available control rod reactivity (or excess beyond needs) decreases with decreasing boron concentration. The negative reactivity required to reduce the core power level from full power to zero power is largest when the boron concentration is low since the power defect increases with core burnup.

The intent of the test to measure control rod worth and shutdown margin (Specification 3.10 D.) is to measure the worth of all rods less the worth of the the most reactive rod. The measurement would be anticipated as part of the initial startup program and infrequently over the life of the plant, to be associated primarily with determinations of special interest such as end of life cooldown, or startup of fuel cycles which deviate from normal equilibrium conditions in terms of fuel loading patterns and anticipated control bank worths. These measurements will augment the normal fuel cycle design calculations and place the knowledge of shutdown capability on a firm experimental as well as analytical basis.

An evaluation has been made of anticipated transients and postulated accidents, assuming that they occur during the portion of this test when the reactor is critical with all but one full-length control rod fully inserted. Further, the withdrawn full-length rod is assumed not to trip. As a result of this evaluation, it has been determined that for a steam line break upstream of the flow restrictor, the possibility of core DNB exists. However, even if core damage does result, any core fission product release would be low because of the low fission product inventory during initial startup PHYSICS TESTING; and further, would be contained within the reactor coolant system.

Thus, for the initial startup PHYSICS TESTS, this test will not endanger the health and safety of the public even in the event of highly improbable accidents coupled with the failure of the withdrawn control rod to trip. To perform this test later in life is equally valuable,