Wisconsin Electric
POWER COMPANY

231 W. Michigan, P.O. Box 2046, Milwaukee, WI 53201-2046 (414) 221-2345

VPNPD-97-006

January 13, 1997

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

Dear Sir/Madame:

DOCKETS 50-266 AND 50-301
SUPPLEMENT TO TECHNICAL SPECIFICATION CHANGE REQUEST 194
LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

In a letter dated September 19, 1996, Wisconsin Electric requested Technical Specifications Change Request (TSCR) 194, which proposed changes to the Point Beach Nuclear Plant Units 1 and 2 Technical Specifications Section 15.3.15, "Overpressure Mitigating System" and Section 15.3.1, "Reactor Coolant System." The Basis for Section 15.3.15 was also revised consistent with the subject amendments. In addition, changes were proposed to the Technical Specifications nomenclature to rename the "Overpressure Mitigating System" as the "Low Temperature Overpressure Protection System (LTOP)," to be consistent with the current nomenclature in use at Point Beach and in use by the NRC staff.

In a letter dated November 1, 1996, the NRC requested additional information on TSCR 194. Wisconsin Electric provided its response in a letter dated November 18, 1996.

In a letter dated July 1, 1996, Wisconsin Electric requested an exemption from the requirements of 10CFR50.60 to use ASME Section XI Code Case N-514 in the determination of LTOP setpoints and limits for Point Beach Units 1 and 2. This exemption request is presently being reviewed by the NRC. This supplement to TSCR 194 is being issued to incorporate use of Code Case N-514 into the proposed Point Beach Technical Specifications and to address questions from the NRC's November 1 letter. The proposed changes to the Point Beach Technical Specifications included in the attachment to this letter supersede the proposed changes included in our September 19 submittal.

Marked-up Technical Specifications pages, and reviews of the previously submitted safety evaluation and no significant hazards consideration are enclosed. Also enclosed is our response to questions from a November 24, 1996 conference call with the NRC staff and our Calculation No. 96-0273, which determined the acceptable LTOP setpoint and limits for Point Beach using ASME Code Case N-514.

This supplement proposes to modify the proposed Technical Specifications changes as follows:

1. Technical Specifications Section 15.3.15 is being revised to require both pressurizer power operated relief valves operable at a setpoint of ≤440 psig when the LTOP system is required to be operable. Application of Code Case N-514 for determination of the LTOP setpoint maintains an acceptable margin of safety while maintaining operational margins at low temperatures and pressures. Setpoints established in accordance with N-514 will also minimize unnecessary actuation of protection system pressure relieving devices.

A001

2. Proposed Technical Specifications Section 15.3.15.B.3 which added a limiting condition for operation restricting operations with more than one reactor coolant pump running has been withdrawn. Use of ASME Code Case N-514 in determining the LTOP setpoint eliminates the need to impose this additional LCO in order to maintain acceptable margins of safety.

3. Editorial changes to Technical Specifications Table 15.4.1-1 and Section 15.6.9.2 are being made to change the nomenclature to rename the "Overpressure Mitigating System" as the "Low Temperature Overpressure Protection System." Changes to these sections were not included in our previous submittal because of an oversight by our staff.

We have determined that the proposed amendments do not involve a significant hazards consideration, authorize a significant change in the types or total amounts of any effluent release, or result in any significant increase in individual or cumulative occupational exposure. Therefore, we conclude that the proposed amendments meet the requirements of 10 CFR 51.22 (c) (9) and that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared.

Please contact us if you have any questions regarding this submittal.

Sincerely,

G M Krieser

G. M. Krieser
Manager
Strategic Issues

PRF/cms

Attachments

cc: NRC Regional Administrator, Region III
NRC Resident Inspector
Public Service Commission of Wisconsin

Subscribed and sworn before me on
this 13 day of January, 1997.

Patricia Brzozowski
Notary Public, State of Wisconsin

My commission expires May 14, 2000.

SUPPLEMENT TO TECHNICAL SPECIFICATIONS CHANGE REQUEST 194

REVIEW OF SAFETY EVALUATION

PROPOSED CHANGES 1 and 2

Determination of the LTOP setpoint using ASME Code Case N-514 results in a change in Technical Specifications Section 15.3.15.A.1.a, such that both pressurizer power operated relief valves are required to be operable at a setpoint of ≤440 psig when the LTOP system is required to be operable. It also results in a change in the proposed Technical Specifications such that an acceptable LTOP setpoint is established without a temperature restriction on reactor coolant pump operation.

ASME Code Case N-514 is consistent with guidelines developed by the ASME Working Group on Operating Plant Criteria to define pressure limits during LTOP events that avoid certain unnecessary operational restrictions, provide adequate margins against failure of the reactor pressure vessel, and reduce the potential for unnecessary activation of pressure-relieving devices used for LTOP. The content of this code case has been incorporated into Appendix G of Section XI of the ASME Code and published in the 1993 Addenda to Section XI. However, 10 CFR 50.55a, "Codes and Standards," only authorizes addenda through the 1988 Addenda.

The underlying purpose of 10 CFR 50.60, Appendix G, is to establish fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences, to which the pressure boundary may be subjected over its service lifetime. Section IV.A.2 of this appendix requires that the reactor vessel be operated with pressure-temperature (P/T) limits at least as conservative as those obtained by following the methods of analysis and the required margins of safety of Appendix G of the ASME Code.

Appendix G of the ASME Code requires that P/T limits be calculated: (a) using a safety factor of two on the principal membrane (pressure) stresses; (b) assuming a flaw at the surface with a depth of one-quarter (1/4) of the vessel wall thickness and a length of six (6) times its depth; (c) using a conservative fracture toughness curve that is based on the lower bound of static, dynamic, and crack arrest fracture toughness tests on material similar to the Point Beach reactor vessel material; and (d) applying a 2-sigma margin in the determination the adjusted reference temperature.

In determining the setpoint for LTOP events, the proposed change uses safety margins based on an alternative methodology consistent with the ASME Code Case N-514 guidelines. The ASME Code Case N-514 allows determination of the setpoint for LTOP events such that the maximum pressure in the reactor pressure vessel would not exceed 110 percent of the P/T limits of the existing ASME Appendix G. This results in a safety factor of 1.8 on the principal membrane stresses. All other factors, including the assumed flaw size and fracture toughness, remain the same. Although this methodology would reduce the safety factor on the principal membrane stresses, the proposed criteria will provide adequate margins of safety to the reactor pressure vessel during LTOP transients and, thus, will satisfy the underlying purpose of 10 CFR 50.60 for fracture toughness requirements.

The proposed LTOP setpoint provides acceptable margins of safety for the Point Beach reactor vessels without implementation of restrictions on reactor coolant pump operation. Therefore, the proposed LTOP setpoint in the Technical Specifications Section 15.3.15.A.1.a, provides adequate margins of safety to the reactor pressure vessel during LTOP transients, and the proposed Technical Specifications Section 15.3.15.B.3 which added a limiting condition for operation restricting operations with more than one reactor coolant pump running has been withdrawn.

PROPOSED CHANGE 3

This proposed change is editorial in nature and therefore does not affect the margins of safety in the present Technical Specifications.

RESPONSE TO REQUEST FOR CLARIFICATION OF TSCR 194
LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM

1. *Why is the start of the first RCP the most limiting energy addition transient?*

   RESPONSE: The limiting energy addition transient occurs when the reactor coolant is at a relatively warm water temperature with little or no natural circulation and cold reactor coolant pump seal injection water continues to enter the system. The cooler injection water will settle as a pool in the loop seal below the pump inlet formed by the piping from the steam generator outlet to the pump inlet.

   The energy addition pressure transient is initiated upon starting one reactor coolant pump. As the pump comes up to speed, the coolant flow rate slowly increases in the active loop and the pool of cold water will be drawn up into the pump and discharged out to the cold leg piping and reactor vessel where it mixes with the warmer coolant. Simultaneously, the cold pool of water in the inactive loop will flow backward through the steam generator at a flow rate significantly less than the active loop. As the cold pool of water flows through the steam generator, its temperature will be increased by the heat transferred from the secondary side, and because the coolant cannot expand in the isolated reactor coolant system volume, the coolant pressure will increase. The coolant pressure will continue to increase until the temperatures of the reactor coolant and the steam generator water are equalized or the excess coolant volume due to the added heat is relieved through a relief valve.

   With the starting of the second reactor coolant pump this is not a valid scenario because the back flow of cold water from an idle loop is not possible.

2. *Why is it conservative to analyze the energy addition transient for the temperature range from 100°F to 250°F?*

   RESPONSE: The slope of the ASME Appendix G limit curve with regard to response to the energy addition transient is such that the least margin occurs in this range. The Appendix G curve is an exponential function which has a very small slope at low temperatures and an extremely large slope at high temperatures. The point of closest approach of this curve to the linear response to the transient is where the slopes are equal, which is between 140°F and 180F°F. Therefore, the temperature range of 100°F to 250°F encompasses the point of minimum margin between the Appendix G curve and the pressure response to the energy addition transient.

3. *Why is it conservative to analyze the energy addition transient at 300 psig?*

   RESPONSE: Starting the transient analysis at lower pressures allows the transient to fully develop before PORV actuation and results in a larger pressure overshoot. Because of the minimum delta-P required to be maintained across the RCP seals, 300 psig is assumed in all energy input transient cases analyzed in the LTOP methodology report.

   It should be noted that the mass input transient for Point Beach is more limiting than the energy addition transient for determination of the LTOP setpoint. As such, a bounding assessment was made of the energy addition transient. Several conservatisms in this bounding analysis (e.g., system volume, relief valve setting, and relief valve opening time) provide significant additional margin that was not credited in the Point Beach analysis. Nevertheless, the mass input transient remains more limiting.

4. *Confirm that the SI pump curve used as the design basis for the mass input transient is limiting and is not a degraded curve as would be used in safety analyses.*

   RESPONSE: FSAR Figure 6.2-4 provides two pump curves: 1) a certified test curve; and 2) a reduced performance curve for use in safety analyses. The safety injection pump characteristic used as the design basis for the mass input transient conservatively envelopes the certified test curve provided in FSAR Figure 6.2-4.