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Gentlemen:

DOCKETS 50-266 AND 50-301
COST BENEFICIAL LICENSING ACTION
TECHNICAL SPECIFICATIONS CHANGE REQUEST 165
BORIC ACID CONCENTRATION REDUCTION
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

In accordance with the requirements of 10 CFR 50.4 and 50.90, Wisconsin Electric Power Company (Licensee) hereby requests amendments to Facility Operating Licenses DPR-24 and DPR-27 for Point Beach Nuclear Plant (PBNP), Units 1 and 2, respectively, to incorporate changes to the plant Technical Specifications. The proposed changes modify Technical Specifications Section 15.3.2, "Chemical and Volume Control System," by eliminating the necessity of high concentration boric acid and removing the operability requirements for the associated heat tracing. The basis for Section 15.3.2 and applicable surveillances in Table 15.4.1-2 are also being revised to support the above changes. The proposed specifications are similar to those of Turkey Point Nuclear Plant (Amendments 144/139 dated July 16, 1991) and R. E. Ginna Nuclear Power Plant (Amendment 57 dated December 7, 1993). Marked-up Technical Specifications pages, a safety evaluation, and a no significant hazards consideration are enclosed.

The proposed changes will provide cost savings of at least $1.2 million through the end of the current operating licenses of both units due to reduced boric acid heat tracing power consumption and maintenance. Because these cost savings will be achieved without a reduction in plant safety, we are submitting this change as a high priority Cost-Beneficial Licensing Action (CBLA).

A001

DESCRIPTION OF CURRENT LICENSE CONDITION

The PBNP concentrated boric acid (11.5-12.5 weight percent) system consists of three 5000 gallon boric acid storage tanks (BASTs) and four boric acid transfer pumps (two per unit), along with their associated piping, valves, and heat tracing circuitry. One BAST is normally aligned to each unit and the third BAST may be used as a swing tank and aligned to either unit. Concentrated boric acid may be injected into the reactor coolant system with the charging pumps through either the emergency, manual, or boric acid blender flow paths, or with the safety injection (SI) pumps. One 275,000 gallon refueling water storage tank (RWST) per unit is also available as a source of 2000 ppm boric acid.

Technical Specifications Section 15.3.2, "Chemical and Volume Control System," defines the conditions of the chemical and volume control system (CVCS) necessary to insure safe reactor operation. Section 15.3.2 presently requires a minimum of 2000 gallons of ≥11.5 weight percent boric acid solution to be available in the aligned BAST for each operating unit. This quantity ensures sufficient boric acid is available to bring the unit to cold shutdown. In order to prevent boric acid precipitation at that concentration, the solution must be maintained at a minimum temperature of 145°F.

Table 15.4.1-2, "Minimum Frequencies For Equipment and Sampling Tests," describes the surveillances and tests to be performed on various equipment throughout the plant.

The proposed changes to the Technical Specifications requirements for the CVCS do not affect the Technical Specifications requirements for the emergency core cooling system (ECCS). The original design of the high head (SI) system used the BASTs as its initial suction source. Analyses and evaluations performed by Westinghouse and Wisconsin Electric support our 10 CFR 50.59 Safety Evaluation justifying the design change to use the RWST as the initial suction source of SI fluid rather than the BAST.

DESCRIPTION OF PROPOSED CHANGES

1. Existing Specifications 15.3.2.B, C, and D are revised to specify boron injection flow path operability for reactor criticality as follows:

15.3.2

B. A reactor shall not be taken critical unless the following chemical and volume control system conditions are met:

1. A minimum of two charging pumps for that reactor shall be operable.

2. System piping and valves shall be operable to the extent of establishing two flow paths from the boric acid tank(s) and/or the refueling water storage tank to the reactor coolant system.

3. If the boric acid tank(s) is required to comply with Specification B.2 above:

a. One boric acid transfer pump shall be operable per flow path from the boric acid tank(s) with one of the BAST flow paths lined up to supply boric acid to the applicable reactor, and

b. The boric acid concentration, minimum volume, and solution temperature shall satisfy the requirements of Table 15.3.2-1.

C. A second reactor shall not be taken critical with one reactor already critical unless the following chemical and volume control system conditions are met:

1. A minimum of two charging pumps for that reactor shall be operable.

2. System piping and valves shall be operable to the extent of establishing two flow paths from the boric acid tank(s) and/or the refueling water storage tank(s) to each reactor coolant system.

3. If the boric acid tank(s) is required to comply with Specification C.2 above:

a. One boric acid transfer pump shall be operable per flow path from the boric acid tank(s) with one of the BAST flow paths lined up to supply boric acid to the applicable reactor, and

b. The boric acid concentration, minimum volume, and solution temperature shall satisfy the requirements of Table 15.3.2-1.

D. During power operation, the requirements of 15.3.2.B and C may be modified to allow the following components to be inoperable for a specified time. If the system is not restored to meet the requirements of 15.3.2.B or C within the time period specified, the appropriate reactor(s), except as otherwise noted, shall be placed in the hot shutdown condition within 6 hours and borated to a shutdown margin equivalent of at least 1.0% delta k/k at cold shutdown, no xenon conditions. If the requirements of 15.3.2.B or C are not satisfied within an additional 7 days, the appropriate reactor(s) shall be placed in the cold shutdown condition within the next 30 hours.

1. One of the two operable charging pumps associated with an operating reactor may be removed from service provided a charging pump associated with that reactor is restored to operable status within 72 hours.

2. One of the two boron injection flow paths specified in B.2 or C.2 may be out of service provided two boron injection flow paths are restored to operable status within 72 hours.

3. One of the boric acid transfer pumps designated in B.3 or C.3 may be out of service provided a boric acid transfer pump is restored to operable status within 72 hours.

2. To support the above changes, the basis for Section 15.3.2 is being replaced with the following description:

The chemical and volume control system provides control of the reactor coolant system boron inventory. This is normally accomplished by using one or more charging pumps in series with one of the two boric acid transfer pumps. Above cold shutdown conditions, a minimum of two boron injection flow paths are required per unit to insure functional capability in the event that an assumed single active failure renders one of the flow paths inoperable. The boration volume available through any flow path is sufficient to provide the required shutdown margin at cold shutdown, xenon-free conditions from any expected normal operating condition. The maximum volume requirement is associated with boration from just critical, hot zero or full power, peak xenon with control rods at the insertion limit, to xenon-free, cold shutdown with the highest worth control rod assembly fully withdrawn. This requires approximately 24,100 gallons of 2000 ppm borated water from the refueling water storage tank (RWST) or the concentrations and volumes of borated water specified in Table 15.3.2-1 from the boric acid storage tanks (BASTs).

Available flow paths from the borated water sources to the charging pumps include, but are not limited to, the following:

1) BASTs via one boric acid transfer pump through the normal makeup flow path to the suction of the charging pumps.

2) BASTs via one boric acid transfer pump through the emergency boration flow path to the suction of the charging pumps.

3) RWST via gravity feed through the motor-operated valve to the suction of the charging pumps.

4) RWST via gravity feed through the manual valve to the suction of the charging pumps."

Available flow paths from the charging pumps to the reactor coolant system include, but are not limited to, the following:

1) Charging flow path to the RCS Loop A cold leg.

2) Charging flow path to the RCS Loop B cold leg.

3) Seal injection flow path to the reactor coolant pumps.

Boration of the RCS may also be accomplished via the two boric acid flow paths from the RWST and BASTs through the safety injection (SI) system. Use of these flow paths requires the RCS to be initially depressurized below the SI pump shutoff head.

The amount of boric acid injection must be sufficient to compensate for the addition of positive reactivity from the decay of xenon after a reactor trip from full power in order to maintain the required shutdown margin. This can be accomplished through the operation of one charging pump at minimum speed taking suction from the RWST. Also, the time required for boric acid injection allows for the local alignment of manual valves to provide the necessary flow paths.

The quantity of boric acid specified in Table 15.3.2-1 for each concentration is the quantity necessary per reactor relying on the BAST(s) as a borated water source to borate the reactor coolant to the required cold shutdown concentration at any time in core life. The volume requirements listed in Table 15.3.2-1 are based on the lower concentration in each range. The temperature limits specified in Table 15.3.2-1 are required to maintain solution solubility at the upper concentration in each range. Heat tracing may be used to maintain solution temperature at or above the limits in Table 15.3.2-1. If the solution temperature of either the flow path or the BAST(s) is not maintained at or above the minimum temperature specified, the affected flow path must be declared inoperable and the appropriate actions in Specification 15.3.2.D followed.

3. The BAST boron concentration surveillance in Table 15.4.1-2 is being revised to add an additional surveillance after each BAST concentration change when the BASTs are being relied upon as a source of borated water. In addition, BAST and boric acid system piping temperatures will be checked daily when the BASTs are being relied upon as a source of borated water to ensure their temperatures are greater than or equal to the temperature required in proposed Table 15.3.2-1. The boric acid heat tracing operability surveillance is being deleted.

BASIS AND JUSTIFICATION

On March 31, 1992, the level indication on the "B" BAST became inoperable due to boric acid precipitation. A corrective action resulting from this condition was to evaluate the possibility of reducing the boric acid concentration to prevent similar operational problems. The results of our evaluation indicated that a redefinition of the boration paths in Technical Specifications Section 15.3.2 and a boric acid concentration reduction is possible without adding additional storage capacity or other major modifications. The justification for the additions included in the "Description of Proposed Changes" section of this letter is located in the attached safety evaluation.

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. We therefore 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.

As part of our diesel generator addition project, it is necessary to remove the boric acid heat tracing loads from the Unit 1 "B" train busses for loading concerns. The new diesel generators will be tied into these busses during the spring 1995 Unit 1 refueling outage. Therefore, we request that this Technical Specifications Change Request be approved by March 3, 1995.

Please contact us if you have any questions.

Sincerely,

Bob Link
Vice President
Nuclear Power

Enclosures

Copies to NRC Regional Administrator
NRC Resident Inspector
Public Service Commission of Wisconsin

Subscribed and sworn to before me
this 30th day of March, 1994.

Notary Public, State of Wisconsin

My Commission expires 7/20/97.

TECHNICAL SPECIFICATIONS CHANGE REQUEST 165
SAFETY EVALUATION

INTRODUCTION

Wisconsin Electric Power Company (Licensee) is applying for amendments to Facility Operating Licenses DPR-24 and DPR-27 for Point Beach Nuclear Plant, Units 1 and 2. The proposed changes modify Technical Specifications Section 15.3.2, "Chemical and Volume Control System," by decreasing the boric acid storage tank (BAST) boric acid concentration and providing a more detailed description of the boric acid injection paths which allows deleting the operability requirements for the boric acid system heat tracing. The basis for Section 15.3.2 and applicable surveillances in Table 15.4.1-2 are also being revised to support the above changes.

EVALUATION

Point Beach Nuclear Plant (PBNP) has historically experienced operational challenges with its boric acid injection system due to boric acid "freeze-ups" caused by failures of our maintenance intensive heat tracing circuits. The results of our evaluation indicate that boric acid concentration can be reduced to a level where heat tracing is not required to maintain the boric acid solubility.

The applicable general design criteria (GDC) as defined in the PBNP Final Safety Analysis Report (FSAR) are GDCs 28, 29, and 30. Criterion 28 requires the reactivity control system to be capable of making and holding the core subcritical from any hot standby or hot operating condition. Criterion 29 requires one of the reactivity control systems to be capable of making the core subcritical under any anticipated operating condition sufficiently fast to prevent exceeding acceptable fuel damage limits with shutdown margin to assure subcriticality with the most reactive control rod fully withdrawn. Criterion 30 requires the reactivity control system to be capable of making the core subcritical under credible accident conditions with appropriate margins for contingencies and limiting any subsequent return to power such that there will be no undue risk to the health and safety of the public. We have determined that these GDCs remain satisfied with the proposed changes.

The original design of the safety injection (SI) system used engineered safety feature control logic to open the valves between the boric acid storage tank (BAST) and the suction of the SI pumps when SI was initiated. This lined up the BAST as the initial suction source of SI fluid. When the BAST low-low level setpoint was reached, the suction line from the BAST to SI isolated and the valves from the refueling water storage tank (RWST) opened automatically. Westinghouse WCAP-12602, "Report For The Reduction of SI System Boron Concentration," and a 10 CFR 50.59 Safety Evaluation Report performed by Wisconsin Electric justifies the design change to use the refueling water storage tank (RWST) as the initial suction source of SI fluid rather than the BAST. The affected FSAR Chapter 14 accident analyses include the Loss of Coolant Accident (LOCA) events and the Steamline Break (SLB) events. The LOCA events are affected with respect to the large-break post-LOCA long-term core cooling subcriticality requirement. The SLB events are affected with respect to core integrity. The events were analyzed assuming the elimination of the logic which automatically opened the valves in the flow path from the BASTs to the SI pumps upon the receipt of a safety injection signal and assuming SI pump suction from the RWST. The results show that we remain within the acceptance criteria of the aforementioned FSAR Chapter 14 accident analyses.

Proposed Specifications 15.3.2.B.2 and C.2 ensure that two flow paths and associated sources of borated water are available to maintain long term subcriticality. The specified volume of boric acid in proposed Table 15.3.2-1 is that amount which is sufficient to bring one unit to cold shutdown from any anticipated operating condition assuming the most reactive control rod to be stuck out. The existing RWST specification continues to meet this requirement. The amount of boric acid required in the BASTs if they are chosen as the borated water source is dependent on the boric acid concentration. Our analysis indicates that 300 lb. of stored boron is sufficient for PBNP's annual fuel cycle. This conclusion has been confirmed by Westinghouse using the BORDER (BORon DEsign Requirements) methodology. The BORDER methodology is utilized during the Westinghouse reload core design process.

The minimum temperature requirement in proposed Table 15.3.2-1 provides protection against boron precipitation. The temperatures specified in proposed Table 15.3.2-1 represent the solubility temperature plus 5°F for boric acid concentrations <5 weight percent and the solubility temperature plus 7.8°F for boric acid concentrations ≥5 weight percent. The 7.8°F margin corresponds to the present margin for 12.5 weight percent boric acid solution in our current Technical Specifications. The lower solubility margin below 5 weight percent boric acid solution was chosen for operational flexibility and due to the proximity of the solubility temperatures to ambient temperature. The smaller difference between the solubility and ambient temperatures reduces the driving force to cause a boric acid solution temperature change. Therefore, boric acid solution temperature will be more easily maintained at concentrations <5 weight percent and the reduced solubility margin is considered acceptable.

We have also verified via Calculation P-93-014 that for a typical fuel cycle (U1R21) and assuming worse-case conditions, the reactor can be maintained subcritical following a reactor trip. Specifically, the amount of negative reactivity that can be inserted by one charging pump borating at minimum speed using the RWST as its suction source is greater than the positive reactivity added from the decay of xenon.

The proposed increase in the allowable outage times (AOTs) from 24 to 72 hours is based on the low probability of a design basis accident occurring during this period of inoperability and is consistent with NUREG-0452, Revision 4, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors." The proposed change to borate to a shutdown margin of at least 1.0% delta k/k with no xenon at cold shutdown conditions compensates for long-term xenon decay and temperature reduction.

The applicable surveillances in Table 15.4.1-2 are being revised to correspond with the elimination of the boric acid heat tracing operability requirements and adds an additional boric acid concentration surveillance after each boric acid concentration change when the BASTs are being relied upon as a source of borated water. Heat tracing will no longer be required because the boric acid system solubility temperature will generally be maintained below ambient temperature. The proposal now specifies the temperature required to maintain boric acid solubility rather than the means of maintaining boric acid solubility. Therefore, we may employ various means (heat tracing, increase ambient temperature, select alternate flow path(s)) to meet the boric acid system solubility/operability requirement. Temperatures will be verified locally through the use of existing boric acid system piping and tank temperature indication. The boric acid system piping low temperature alarm will remain operational in the control room.

CONCLUSIONS

The proposed revisions will ensure and enhance the safe and reliable operation of Point Beach Nuclear Plant.

TECHNICAL SPECIFICATIONS CHANGE REQUEST 165
"NO SIGNIFICANT HAZARDS CONSIDERATION"

In accordance with the requirements of 10 CFR 50.91(a), Wisconsin Electric Power Company (Licensee) has evaluated the proposed changes against the standards of 10 CFR 50.92 and has determined that the operation of Point Beach Nuclear Plant, Units 1 and 2, in accordance with the proposed amendments, does not present a significant hazards consideration. The analysis of the requirements of 10 CFR 50.92 and the basis for this conclusion are as follows:

1. Operation of this facility under the proposed Technical Specifications change will not create a significant increase in the probability or consequences of an accident previously evaluated.

   Reduced boron concentration in the boric acid storage tank (BAST) i offset by increasing the volume of boric acid solution that must be contained in the tanks. The heat tracing requirements are used to ensure that the dissolved boric acid is maintained in solution and available for injection into the RCS to adjust core reactivity throughout core life and to meet GDC requirements. Chemical analyses of boron concentrations of ≤4.0 weight percent have shown that the boric acid does not crystallize at temperatures above 57°F. Ambient temperatures in the areas of the primary auxiliary building where these components are located will normally remain above this temperature. Hence, heat tracing will no longer be needed for boric acid concentrations with corresponding solubility temperatures less than ambient temperatures. The proposed Technical Specifications requirements for boron concentration, volume, and temperature of the BASTs and boration paths ensure that the capability to inject boric acid is maintained. Since the components (and their function) necessary to achieve a safe shutdown have not been changed or modified, this change does not significantly increase the probability or consequences of any accident previously evaluated.

   The proposed changes to the boric acid system Technical Specifications requirements for the chemical and volume control system (CVCS) do not affect the requirements for the emergency core cooling system (ECCS). The original design of the high head safety injection (SI) system used the BASTs as its initial suction source. Westinghouse WCAP-12602, "Report For The Reduction of SI System Boron Concentration," and a 10 CFR 50.59 Safety Evaluation Report performed by Wisconsin Electric justifies the design change to use the refueling water storage tank (RWST) as the initial suction source of SI fluid rather than the BAST. The affected FSAR Chapter 14 accident analyses include the Loss of Coolant Accident (LOCA) events and the Steamline Break (SLB) events. The LOCA events are affected with respect to the large-break post-LOCA long-term core cooling subcriticality requirement. The SLB events are affected with respect to core integrity. The events were analyzed assuming the elimination of the logic which automatically opened the valves in the flow path from the BASTs to the SI pumps upon the receipt of a safety injection signal. The results show that we remain within the acceptance criteria of the aforementioned FSAR Chapter 14 accident analyses. Therefore, the proposed changes will not create a significant increase in the probability or consequences of an accident previously evaluated.

2. Operation of this facility under the proposed Technical Specifications change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The reactivity control function of the boron in the CVCS and SI systems is not being changed. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Operation of this facility under the proposed Technical Specifications change will not create a significant reduction in a margin of safety.

   The intent of the proposed Technical Specifications is to ensure that two independent flow paths from the borated water source(s) (BASTs and/or RWST) to the reactor coolant system are maintained whenever a unit is taken critical. This requires that sufficient quantities of boric acid be stored in the tanks, and that this borated water can be delivered to the reactor coolant system when required. Although we presently require diverse sources of borated water (BAST <u>and</u> RWST), the proposed reduction in diversity will be offset by the significant increase in reliability of the boric acid system due to operation with lower boric acid concentrations and, hence, a much lower probability of boron precipitation and system "freeze-up." Reducing the boric acid concentration in the BASTs has been compensated for by increasing the required volume of boric acid.

   The proposed Technical Specifications requirements for boric acid concentration and volume include the additional specification of minimum temperature that must be maintained to assure boric acid solubility. The minimum temperature requirement is more appropriate than the requirement for heat tracing because it is a more precise means of verifying and assuring solubility. Therefore, the proposed boric acid concentration table, which includes the volume and temperature requirements, is an appropriate substitute for the heat tracing requirements. Although the heat tracing requirement is being eliminated, the boric acid heat tracing system will be available during our transition to the lower boric acid concentration to assist in maintaining boric acid system temperature if necessary. Since our analyses have shown that the existing FSAR Chapter 14 accident analyses remain bounded under the proposed specifications, the margin of safety for the plant is not significantly reduced.