



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NOS. 165 AND 169 TO
FACILITY OPERATING LICENSE NOS. DPR-24 AND DPR-27
WISCONSIN ELECTRIC POWER COMPANY
POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

By letters dated September 13, 1995, and October 19, 1995, and supplemented by letter dated October 25, 1995, Wisconsin Electric Power Company (WEPCo), the licensee, pursuant to 10 CFR 50.90, requested an amendment to Facility Operating Licenses DPR-24 and DPR-27 for the Point Beach Nuclear Plant (PBNP), Units 1 and 2, respectively. The supplemental submission provided clarifying information which did not affect the initial no significant hazards consideration determination.

The amendment proposes revisions to Technical Specification (TS) Section 15.1, "Definitions," TS Section 15.3.1.G, "Operational Limitations" (and basis), and TS Figure 15.2.1-2, "Reactor Core Safety Limits, Point Beach Unit 2." The changes would reduce the reactor coolant system raw measured total flow rate limit and reflect new reactor core safety limits for Unit 2. The requested changes are necessitated by steam generator (SG) tube plugging and sleeving.

2.0 EVALUATION

2.1 Reduced Reactor Coolant System (RCS) Flow Rate

The proposed TS 15.3.1.G change (as described in the September 13, 1995, submittal) allows a reduction of the total measured raw RCS flow rate limit by 4,000 gallons per minute (gpm) from the current flow rate limit of 174,000 gpm for Unit 2. The Unit 1 flow rate would remain unchanged by this amendment.

Since submitting its letter on September 13, 1995, WEPCo has determined that an RCS flow rate limit reduction of 4,500 gpm (instead of 4,000 gpm) will be required to support operation of PBNP Unit 2 with a conservative estimate of 30% steam generator tube plugging. By letter dated October 19, 1995, the licensee provided a revised request, a safety evaluation, and a proposed markup of the TS changes. The proposed changes would allow Unit 2 to operate at a reduced RCS flow rate limit of 169,500 gpm. In a conference call on October 24, 1995, WEPCo and NRC representatives discussed specific plant operating conditions and the Westinghouse evaluation mentioned in the transmittal of October 19, 1995.

In a letter dated October 25, 1995, WEPCo stated that the safety evaluation submitted in the October 19, 1995, letter, assumed that operation at the conditions specified for the 4500 gpm RCS flow rate limit reduction would be limited to two cycles. In NRC Safety Evaluations dated October 27, 1993, and October 28, 1994, the NRC staff accepted the RCS and component evaluation for operation of PBNP Unit 2 at an average RCS temperature (T_{avg}) of 570°F through December 31, 1996. In their October 25, 1995, letter, WEPCo committed to continue to restrict operation of Unit 2 in accordance with the previous NRC safety evaluations.

As part of the justification to support the decrease in the RCS flow rate limit, the licensee's submittal contained an evaluation of the structural integrity of the RCS and its components. The evaluation assumed the plant operation at an RCS pressure of 2000 pounds per square inch absolute (psia), a T_{avg} of 570°F, a steam pressure of 688 psia, and a reduced RCS measured flow rate of 169,500 gpm or a thermal design flow of 166,000 gpm based on an assumed 2.1% measurement uncertainty allowance at Point Beach.

In October 1993, the licensee assessed continued operation of Point Beach Units 1 and 2 at an RCS pressure of 2250 psia, a steam pressure of 785 psia, and a reduced RCS T_{avg} of 570°F. The evaluation considered increased hydraulic forces, increased thermal stresses and fatigue usage on the primary loop, the vessel, reactor internals, fuels, steam generators, the pressurizer, and the reactor coolant pumps as a result of increased subcooling, higher fluid densities, and larger transient temperature and pressure differentials during postulated plant transients. On October 27, 1993, the staff concluded that continued operation of Point Beach Units 1 and 2 at a T_{avg} of 570°F would be acceptable through December 31, 1996, and would not have any adverse effects on the structural integrity of the RCS and its components.

On the basis of our review of the information provided by the licensee, the staff concludes that operational conditions used in the previous evaluation are bounding for the proposed operation under the new conditions and that operation at the proposed thermal design flow of 166,000 gpm has no adverse impact on the original stress and fatigue analyses of the RCS, its components, or their supports.

2.2 Loss of Coolant Accident (LOCA) Analysis

The licensee is proposing to reduce RCS raw measured flow rate to accommodate degradation in the Unit 2 steam generators which are scheduled for replacement in 1996. The reduction in RCS flow can affect the accident analyses for the PBNP.

The licensee indicated that they used staff approved methodologies to verify the effects of the 4500 gpm flow reduction on the LOCA analyses. For the minimum measured flow of 169,500 gpm, the licensee used a corresponding thermal design flow of 166,000 gpm, with the difference being the 2.1% measurement uncertainty. The licensee indicated that the current large break LOCA and small break LOCA peak cladding temperatures (PCT) are 2018°F and 1184°F, respectively, including current penalties. With the reduced RCS flow rate the licensee imposed a +14°F penalty on large break LOCA PCT and a +135°F

penalty on small break LOCA PCT. The new PCT with reduced RCS flow at 100% power are 2032°F for the large break LOCA and 1319°F for the small break LOCA, which is well within the 10 CFR 50.46 limits of 2200°F. The licensee indicated that the evaluation determined that in all cases, the effect of the flow reduction would not result in exceeding any design or regulatory limits for PBNP Unit 2 at full power conditions. The staff concurs in this determination.

2.3 Non-LOCA Analysis

The result of the proposed reduced flow on the non-LOCA transient analysis is that the thermal safety limits become more limiting at all power and pressure levels. Based on this, the licensee submitted a revised Unit 2 TS Figure 15.2.1-2, Reactor Core Safety Limits.

The proposed reduced flow rate causes a penalty to the departure from nucleate boiling ratio (DNBR). The current Revised Thermal Design Procedure DNBR limit of 1.33 remains valid for the reduced flow conditions. The licensee indicated that they analyzed the most DNB-limiting non-LOCA accidents and determined that the current limit remains valid for the proposed reduced flow.

The licensee obtained unacceptable results for the underfrequency event at 100% power, 1518.5 megawatts thermal (Mwt). The licensee indicated that they did a complete and separate analysis of the underfrequency event with the proposed flow reduction at 98% of rated power and obtained acceptable results. Therefore, the licensee is proposing the TS limitation that Unit 2 operation be limited to 98% of the rated power when the RCS raw measured flow is less than 174,000 gpm but greater than 169,500 gpm.

Based on the reanalyses, the licensee determined that the conclusions of PBNP Final Safety Analysis Report (FSAR) Chapter 14, with respect to the DNB acceptance criterion for non-LOCA accidents, remain valid for a reduction of the raw measured flow below 174,000 gpm down to 169,500 gpm, provided the rated power remains at or below 98% of 1518.5 Mwt. The non-LOCA transients with non-DNB acceptance criteria were also reanalyzed and found to meet the acceptance criteria with the reduced flow. The staff agrees with the licensee's proposal to limit Unit 2 to 98% of rated power while the RCS flow is reduced.

2.4 Steam Generator (SG) Tube Rupture Analysis

The scope of the licensee's evaluation assessed the potential SG tube rupture consequences in view of the specified set of operational parameters (RCS and secondary pressures, temperatures, primary flow and percentage of tubes plugged). The licensee's evaluation estimated offsite radiation doses will increase slightly, but will remain well within 10 CFR Part 100 limits.

LOCA, non-LOCA and SG tube rupture transient analyses were performed with NRC approved methods. The staff agrees with the licensee that the results justify the proposed TS and bases changes.

2.5 Conclusion

On the basis of its review, the staff concludes that operation of Point Beach Unit 2 at a 4500 gpm reduction in the RCS total flow rate limits is acceptable through December 31, 1996, and will have no adverse effects on the structural integrity of the RCS, its components, or their supports. The staff finds that the licensee's analyses support operation of PBNP Unit 2 with a 30% SG tube plugging level under the following conditions:

- the plant is restricted to operation at less than or equal to 98% reactor power when RCS raw measured total flow is <174,000 gpm but ≥169,500 gpm;
- operation under the conditions defined for 30% SG tube plugging does not exceed two fuel cycles; and
- the plant is operated at a nominal RCS pressure of 2000 psia.

The staff has also reviewed the TS Section 15.3.1.G basis change, and agrees with the licensee that the change is consistent with the proposed TS changes.

3.0 EXIGENT CIRCUMSTANCES

The Commission's regulations, 10 CFR 50.91, contain provisions for issuance of amendments when the usual 30-day public notice period cannot be met. One type of special exception is an exigency. An exigency is a case where the staff and licensee need to act quickly. The exigency case usually represents an amendment involving a safety enhancement to the plant.

Under such circumstances, the Commission notifies the public in one of two ways: by issuing a Federal Register notice providing an opportunity for hearing and allowing at least two weeks for prior public comments, or by issuing a press release discussing the proposed changes, using the local media. In this case, the Commission used the first approach.

The licensee submitted the request for amendment on September 13, 1995, as supplemented October 19, 1995. It was noticed in the Federal Register on October 24, 1995 (60 FR 54527), at which time the staff proposed a no significant hazards consideration determination. The licensee originally requested that the amendment be issued prior to November 7, 1995, at which time PBNP Unit 2 was scheduled to restart following its annual maintenance and refueling outage. Due to SG repairs, this date has now been estimated as November 23, 1995. The proposed TS change could be needed to support full power operation of PBNP Unit 2 following startup. Therefore, the staff is issuing the amendment under exigent circumstances. The licensee did not request emergency treatment of the amended application; the staff does not believe that an emergency situation exists. However, the staff does believe that the amendment should be issued promptly.

There were no public comments in response to the notice published in the Federal Register.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

Operation of the facility in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated. The staff has reviewed the licensee's submittals and agrees with the evaluations performed by the licensee and Westinghouse which show that all safety analysis and regulatory requirements are still met at the reduced flow rate limit without exceeding acceptable limits. A reduction of the RCS flow limit does not affect any parameters that could affect the probability of an accident. Thus, the staff concludes that the proposed change to reduce the RCS flow rate will not involve a significant increase in the probability or consequences of an accident previously evaluated.

Operation of the facility in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. Evaluations performed by the licensee and Westinghouse have determined that the safety analysis requirements are still met at the reduced RCS flow rate. There is no physical change to the facility, its systems, or its operation. Thus, the staff finds there is no new or different kind of accident created as a result of this amendment.

Operation of the facility in accordance with the amendment will not involve a significant reduction in a margin of safety. Evaluations performed by both the licensee and Westinghouse have concluded that the accident analysis and regulatory requirements are still met at the reduced RCS flow rate limit. The current Revised Thermal Design Procedure DNBR limit of 1.33 remains valid for the reduced flow conditions. The licensee reanalyzed the most DNB-limiting, non-LOCA accidents to demonstrate this limit remains satisfied for the reduction in RCS flow. The modifications to power level and core safety limits figure for PNPB Unit 2 prevent the possibility of exceeding the core safety limits. Thus, the staff finds there is no reduction in the margin of safety.

Based upon the above considerations, the staff concludes that the amendment meets the three criteria of 10 CFR 50.92. Therefore, the staff has made a final determination that the proposed amendment does not involve a significant hazards consideration.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission made a final no significant hazards consideration finding with respect to this amendment. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR §51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

7.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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