

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
WISCONSIN ELECTRIC POWER COMPANY	)	Docket Nos. 50-266 and 50-301
	)	
(Point Beach Nuclear Plant,	)	
Unit Nos. 1 and 2)	)	

EXEMPTION

I.

Wisconsin Electric Power Company (the licensee) is the holder of Facility Operating License Nos. DRP-24 and DRP-27, which authorize operation of the Point Beach Nuclear Plant, Units 1 and 2, respectively. The licenses provide, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The facility consists of two pressurized-water reactors located at the licensee's site in Manitowoc County, Wisconsin.

II.

In its letter dated July 1, 1996, as supplemented November 18, 1996, the licensee requested an exemption from the Commission's regulations. Title 10 of the Code of Federal Regulations, Part 50, Section 60 (10 CFR 50.60), "Acceptance Criteria for Fracture Prevention Measures for Lightwater Nuclear Power Reactors for Normal Operation," states that all lightwater nuclear power reactors must meet the fracture toughness and material surveillance program requirements for the reactor coolant pressure boundary as set forth in Appendices G and H to 10 CFR Part 50. Appendix G to 10 CFR Part 50 defines

pressure/temperature (P/T) limits during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests to which the pressure boundary may be subjected over its service lifetime. It is specified in 10 CFR 50.60(b) that alternatives to the described requirements in Appendices G and H to 10 CFR Part 50 may be used when an exemption is granted by the Commission under 10 CFR 50.12.

To prevent low-temperature overpressure transients that would produce pressure excursions exceeding the P/T limits of Appendix G to 10 CFR Part 50 while the reactor is operating at low temperatures, the licensee installed a low-temperature overpressure protection (LTOP) system. The system includes pressure-relieving devices called power-operated relief valves (PORVs). The PORVs are set at a pressure low enough so that if an LTOP transient occurred, the mitigation system would prevent the pressure in the reactor vessel from exceeding the P/T limits of Appendix G to 10 CFR Part 50. To prevent the PORVs from lifting as a result of normal operating pressure surges (e.g., reactor coolant pumps starting or stopping) with the reactor coolant system in a water solid condition, the operating pressure must be maintained below the PORV setpoint. The maximum LTOP setpoint of 425 psig was approved May 20, 1980, with the issuance of Amendments 45 (DPR-24) and 60 (DPR-27) to the Point Beach operating licenses. This LTOP system received pressure input from the sensing taps located in the reactor coolant system hot leg and at the pressurizer. Subsequent evaluation determined that the methodology used to determine the LTOP system setpoint did not account for the differential pressure across the core during reactor coolant pump operation. A recent Westinghouse calculation (NSAL 93-005) indicated that with both reactor coolant pumps operating, the pressure at core midplane may be as much as 63

psig higher than at the pressure sensing points. To account for this differential pressure, which could cause the reactor vessel midplane pressure to exceed the ASME Section XI, Appendix G limits, the licensee implemented an administrative requirement in 1993 allowing only one reactor coolant pump in operation when reactor coolant temperature is below 160 °F. Plant operation with this restriction places an unnecessary burden on plant operators to ensure safety limits are maintained.

The licensee has requested the use of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Case N-514, "Low Temperature Overpressure Protection," which allows exceeding the pressure of the P/T limits of 10 CFR Part 50, Appendix G, by 10 percent. ASME Code Case N-514, the proposed alternate methodology, 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. ASME Code Case N-514 has been approved by the ASME Code Committee. 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.

### III.

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security and (2) when special circumstances are

present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

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 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, Section XI.

Appendix G of Section XI of the ASME Code requires that the P/T limits be calculated (a) using a safety factor of 2 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 6 times its depth, and (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.

In determining the setpoint for LTOP events, the licensee proposed to use safety margins based on an alternate 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 vessel would not exceed 110 percent of the P/T limits of the existing ASME Code,

Section XI, Appendix G. This approach results in a safety factor of 1.8 on pressure. All other factors, including assumed flaw size and fracture toughness, remain the same. Although this methodology would reduce the safety factor on pressure, it was demonstrated in the Bases of the ASME Code Case N-514 that due to the isothermal nature of LTOP events, the margin with respect to toughness for LTOP transients is within the range provided by ASME, Section XI, Appendix G for normal heatup and cooldown in the low temperature range. Thus, applying Code Case N-514 will satisfy the underlying purpose of 10 CFR 50.60 for fracture toughness requirements. Further, by relieving the operational restrictions, the potential for undesirable lifting of the PORV would be reduced, thereby improving plant safety.

#### IV.

For the foregoing reasons, the NRC staff has concluded that the licensee's proposed use of the alternate methodology in determining the acceptable setpoint for LTOP events will not present an undue risk to public health and safety and is consistent with the common defense and security. The NRC staff has determined that there are special circumstances present, as specified in 10 CFR 50.12(a)(2)(ii), in that application of 10 CFR 50.60 is not necessary in order to achieve the underlying purpose of this regulation.

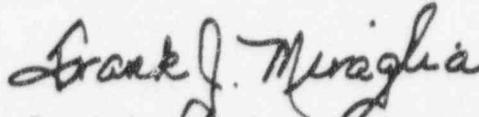
Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), an exemption is authorized by law, will not endanger life or property or common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants an exemption from the requirements of 10 CFR 50.60 such that in determining the setpoint for LTOP

events, the Appendix G curves for P/T limits are not exceeded by more than 10 percent. This exemption is applicable only to LTOP conditions during normal operation.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (61 FR 66062).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Frank J. Miraglia".

Frank J. Miraglia, Acting Director  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,  
this 27th day of January 1997

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 LGundrum

January 27, 1997

MEMORANDUM TO: Rules Review and Directives Branch  
 Division of Freedom of Information and Publications Services  
 Office of Administration

FROM: Office of Nuclear Reactor Regulation

SUBJECT: WISCONSIN ELECTRIC POWER COMPANY  
 (Point Beach Nuclear Plant, Unit Nos. 1 and 2)

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DOCKET NO. 50-266/50-301

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