



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 WASHINGTON, D. C. 20555-0001  
 March 9, 1994

Docket No. 50-266

Mr. Robert E. Link, Vice President  
 Nuclear Power Department  
 Wisconsin Electric Power Company  
 231 West Michigan Street, Room P379  
 Milwaukee, Wisconsin 53201

Dear Mr. Link:

SUBJECT: ACCEPTANCE CRITERIA FOR CONTROL ROD DRIVE MECHANISM PENETRATION  
 INSPECTIONS AT POINT BEACH NUCLEAR PLANT, UNIT 1

On July 30, 1993, the Nuclear Management and Resources Council (NUMARC) submitted proposed acceptance criteria for flaws detected during control rod drive mechanism (CRDM) penetration inspections to the NRC staff for review and concurrence. These proposed acceptance criteria are based on extensive safety assessments conducted by the Babcock & Wilcox Owners Group (B&WOG), the Combustion Engineering Owners Group (CEOG), and the Westinghouse Owners Group (WOG). The proposed acceptance criteria were separated into criteria for axial flaws and for circumferential flaws by location (above or below the J-Groove weld on the CRDM penetration). The proposal for axial flaws was to allow through-wall axial flaws of any length below the J-Groove weld and axial flaws 75 percent through-wall of any length at or above the J-Groove weld. These criteria conform to the American Society of Mechanical Engineers (ASME) Section XI criteria for flaws in piping. Therefore, the staff has found them acceptable.

The NUMARC proposal for circumferential flaws was through-wall and 75 percent around the circumference below the J-Groove weld, and 75 percent through-wall and 50 percent around the circumference at or above the J-Groove weld. Based on the information submitted by the owners groups that circumferential flaws should not initiate and grow, and the more serious consequences of circumferential flaws, the staff has not accepted the proposed criteria for circumferential flaws. The staff has further stated that acceptance criteria for circumferential flaws would not be pre-approved and that any circumferential flaws would be reviewed on a case-by-case basis.

On January 31, 1994, NUMARC submitted supplemental safety assessments developed by the owners groups. These supplemental assessments provided a more detailed evaluation of the stress states in the nozzles and discussed the circumferential flaws observed at Ringhals and Bugey 3. The Ringhals circumferential flaws were attributed to fabrication flaws and were not related to primary water stress corrosion cracking (PWSCC). The Bugey 3 circumferential flaw initiated at the external surface of the CRDM penetration above the J-Groove weld, and propagated at an angle 30° from horizontal. All three owners groups submitted assessments that included finite element

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analyses that indicated that short, circumferential cracks are possible, although these flaws would not be expected to propagate through-wall due to compressive stresses below the flaws.

Based on its review of the owners groups supplemental evaluations, the staff has concluded that short, partial through-wall circumferential flaws are possible in the CRDM penetrations. Based on the stress analyses presented in the owners groups reports and the length of time that the Point Beach plant has been in operation, a shallow circumferential flaw 10 percent of the circumference of the penetration could exist. Therefore, the staff has concluded that circumferential flaws whose length, including postulated crack growth during the next operating cycle, does not exceed 10 percent of the circumference, are less than 75 percent through-wall, and are in a location consistent with the finite element analysis (outside diameter flaws), are acceptable. These flaws would have to be reinspected in subsequent examinations consistent with the reinspection approach of IWB-2420 of ASME Section XI.

You will not be required to obtain NRC approval to continue operation if short circumferential flaws are identified. However, you will be required to report to the NRC the location, length, and depth of these flaws and any other flaws identified during the inspection. If the depths of the flaws are not determined, you may assume that the depth is one half of the length of the flaw.

Any flaws found during the inspections that are not resulting from PWSCC should be evaluated in a manner consistent with the approach for flaw evaluation in ASME Section XI using the assumptions in the proposed acceptance criteria submitted by NUMARC to NRC on July 30, 1993. Examples of these flaws would be short, shallow fabrication defects or manufacturing defects in locations not predicted by the finite element stress analyses. Should you choose to disposition any flaws (which exceed ASME Section XI criteria) by analysis, the staff will require that your evaluations be reviewed and approved prior to unit startup.

If you have any questions regarding this issue, please contact me at (301) 504-1390.

Sincerely,  
ORIGINAL SIGNED BY  
Allen G. Hansen, Project Manager  
Project Directorate III-3  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

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Mr. Robert E. Link  
Wisconsin Electric Power Company

Point Beach Nuclear Plant  
Unit Nos. 1 and 2

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