



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF FROM ASME CODE REPAIR REQUIREMENTS

FOR ASME CODE CLASS 3 PIPING

WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

Title 10 of the Code of Federal Regulations, Section 50.55a(g) requires nuclear power facility piping and components to meet the applicable requirements of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (hereafter referred to as the Code). Section XI of the Code specifies Code-acceptable repair methods for flaws that exceed Code acceptance limits in piping that is in-service. A Code repair is required to restore the structural integrity of flawed Code piping, independent of the operational mode of the plant when the flaw is detected. Those repairs not in compliance with Section XI of the Code are non-Code repairs. However, the implementation of required Code (weld) repairs to ASME Code Class 1, 2 or 3 systems is often impractical for nuclear licensees since the repairs normally require an isolation of the system requiring the repair, and often a shutdown of the nuclear power plant.

Alternatives to Code requirements may be used by nuclear licensees when authorized by the Director of the Office of Nuclear Reactor Regulation if the proposed alternatives to the requirements are such that they are shown to provide an acceptable level of quality and safety in lieu of the Code requirements [10 CFR 50.55a(a)(3)(i)], or if compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety [10 CFR 50.55a(a)(3)(ii)].

A licensee may also submit requests for relief from certain Code requirements when a licensee has determined that conformance with certain Code requirements is impractical for its facility [10 CFR 50.55a(g)(5)(iii)]. Pursuant to 10 CFR 50.55a(g)(6)(i), the Commission will evaluate determinations of impracticality and may grant relief and may impose alternative requirements as it determines is authorized by law.

Generic Letter (GL) 90-05, entitled "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2 and 3 Piping," and dated June 15, 1990, provides guidance for the staff in evaluating relief requests submitted by

licensees for temporary non-Code repairs of Code Class 3 piping. The staff uses the guidance in GL 90-05 as its criteria for making its safety evaluation of relief requests for temporary non-Code repairs of Code Class 3 piping.

2.0 BACKGROUND

During routine system inspections, members of the Wisconsin Electric Power Company (the licensee) staff discovered a 4-gallon per minute leak in a branch connection off the west header of the Service Water System (SWS) at the Point Beach Nuclear Power Plant. The leak is located approximately 18 inches off the west header on an elbow which is a part of 6-inch carbon steel piping that supplies service water to the decontamination area. By letter dated July 19, 1996, the licensee requested relief from the ASME Code Section XI repair or replacement requirements under impracticality provisions of 10 CFR 50.55(a). The licensee based its request for relief on the results of a flaw evaluation that was performed by the licensee in accordance with the guidelines and acceptance criteria contained in GL 90-05.

3.0 LICENSEE'S RELIEF REQUEST

3.1 Components for Which Relief is Requested

ASME Code Class 3 service water system piping (six inch elbow).

3.2 Section XI Edition for Point Beach, Unit 1 and 2

1986 Edition of the ASME Code, Section XI.

3.3 ASME Section XI Code Requirement

The ASME Code Section XI requires that repairs or replacements of ASME Code Class components be performed in accordance with rules found in Articles IWA-4000 or IWA-7000, respectively. The intent of these rules is to provide an acceptable means of restoring the structural integrity of a degraded Code Class system back to the original design requirements.

3.4 Content of the Relief Request

Relief is sought from performing a repair or replacement of the leaking six inch elbow per the requirements of Article IWA-4000 or IWA-7000, respectively. Relief is being sought until the next Point Beach Unit 2 scheduled outage which is scheduled to begin in October, 1996. At that time the licensee will perform a Code repair to return the system to compliance with the Code.

3.5 Basis for Relief

Request for relief has been submitted under the provisions of 10 CFR 50.55a(a)(3)(ii) because compliance with the Code requirements by the licensee in this case would result in hardship. The provisions of 10 CFR 50.55a(a)(3)(ii) allow licensees to propose alternatives to Code requirements if "compliance with the . . . requirements . . . would result in hardship or unusual difficulty without a compensating increase in the level of quality and

safety." The licensee has completed a temporary repair using elastomer patch (1/8 inch block rubber) with a plastic backing plate (1/8 inch Teflon) held onto the piping by 3/4 inch wide stainless steel straps. This temporary patch has effectively stopped the leak and there is no effect on system operability. Also because the leak has been stopped there is no adverse effect on any safety-related equipment in the surrounding area.

3.6 Licensee's Alternative Program

1. Visual inspection of the patch to detect possible leakage will be performed weekly. Operators will be able to identify any significant leakage during normal rounds.
2. The integrity of the piping will be assessed every three months until a permanent repair can be completed. Radiographs will be taken of the degraded area every three months to assess the piping.
3. An engineering evaluation will be performed of the structural integrity of the system based on the results of the visual and radiographic examinations.
4. A Code repair will be completed during the next refueling outage which is scheduled to begin in October 1996.

4.0 STAFF EVALUATION AND CONCLUSIONS

4.1 Operability Determination, Root Cause Analysis and Structural Integrity Evaluation

The licensee determined that the leakage was located in the SWS which is classified as an ASME Code Class 3 system. The leak is located approximately 18 inches off the west header on an elbow which is a part of the 6-inch carbon steel piping that supplies service water to the decontamination area. Upon discovery of the leak, the licensee performed an evaluation of the leak using the guidance provided in Generic Letter 90-05 and found that the leak met the criteria for a non-Code repair. The licensee determined that the operability of the system will not be impaired because the leak has been stopped using an elastomer patch with plastic backing plate held on the piping by 3/4 inch wide stainless steel straps. Because the leak has been stopped there will be no adverse affect on any other safety-related equipment in the surrounding area.

The licensee performed a root cause analysis of the flaw, and determined that the degradation resulted from microbiologically-induced corrosion (MIC). The leaking area was located on an elbow which is a part of six inch carbon steel piping. The flaw was inspected using ultrasonic and radiographic examinations to assess overall degradation of the affected elbow. The examination of the area of leakage indicated that the through-wall defect is localized. An evaluation of the ultrasonic and radiographic examination results and calculation of structural integrity confirmed that the flawed piping satisfies the "through-wall flaw" approach described in the NRC Generic Letter 90-05.

4.2 Augmented Inspection

The leak was located on an elbow located on the SWS. The area of leakage was ultrasonically and radiographically examined to assess the leak. No further areas of degradation were observed and the leak was determined to be localized and caused by MIC. An augmented inspection was performed on five other similar locations on the SWS in accordance with the guidance provided in Generic Letter 90-05. Two of the five augmented inspection locations and inspections of additional locations have been completed. The examination results identified only minimal thinning with no location below the minimum required pipe wall thickness.

4.3 Proposed Temporary Non-Code Repair and Monitoring Provisions

At this time, the licensee is monitoring the leak every week. The licensee has committed to perform radiographic examination of the leakage area every three months to assess the elbow's wall degradation rate. Based on the results of the examinations, an engineering evaluation will be performed to determine if further remedial measures or corrective actions are needed until the Code repair is completed.

4.4 Staff Conclusions

The staff has determined that the licensee's flaw evaluation is consistent with the guidelines and acceptance criteria of GL 90-05. The staff therefore finds the licensee's structural integrity and operability assessments to be acceptable. The licensee has established a periodic inspection program to monitor flaw growth and ensure continued operability. The licensee is also monitoring the leak by visual inspection every week to ascertain that the leak has been stopped using a temporary elastomer patch. The licensee's actions constitute an acceptable temporary alternative to the Code requirements.

Furthermore, the staff finds that performance of an immediate Code repair would constitute an undue burden (create undue hardship) upon the licensee since it would require an isolation of the affected SWS piping. Such an isolation is not in the best interest of plant safety, given the magnitude of the leak and the licensee's alternative program. The staff therefore concludes that the licensee's proposed alternatives to the requirements would provide an acceptable level of quality or safety, is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest, given due consideration to the burden upon the licensee and facility that could result if the Code requirements were imposed on the facility. Pursuant to 10 CFR 50.55a(a)(3)(ii) the alternative is authorized until the next scheduled outage exceeding 30 days, but no later than the next refueling outage. At that time a Code repair will be performed.

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