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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING REQUEST FOR RELIEF FROM ASME CODE REPAIR REQUIREMENTS

FOR ASME CODE CLASS 3 PIPING

TOLEDO EDISON COMPANY

CENTERIOR SERVICE COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-346

1. BACKGROUND

Temporary Non-Code Repairs

10 CFR 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 called the Code). Section XI of the Code specifies 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 required Code repair may be impractical for a flaw detected during plant operation unless the facility is shut down. 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. Generic Letter 90-05, entitled "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," 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 Commission may grant relief based on a staff evaluation considering the guidance in Generic Letter 90-05.

Licensee's Relief Request

By letter dated July 20, 1992, the Toledo Edison Company (the licensee) requested relief from code repair requirements of a Code Class 3 service water (SW) piping system at the Davis-Besse Nuclear Power Station (DBNPS). A through-wall leak was discovered in the SW system during a walkdown inspection. The leak was in a 4-inch diameter, moderate-energy pipe located in the Decay Heat (DH) cooler room. The piping was manufactured to an ASME SA 53 Grade B, carbon steel, schedule 40 specification. The defect is characterized

as microbiologically influenced corrosion (MIC). The licensee had determined that conformance with Code repair requirements was impractical. Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee submitted a relief request to the Commission. The licensee proposed a temporary non-Code repair based on a nonwelded repair. The nonwelded repair will be inspected weekly for degradation.

II. EVALUATION OF RELIEF REQUEST

Code Requirement

The piping was designed and constructed to the 1971 Edition of ASME Code Section III. The current code for Inservice Inspection (ISI) is 1986 Edition of ASME Code Section XI.

Article IWA-5250(a)(3) of Code Section XI specifies corrective measures:

(a) The source of leakages detected during the conduct of a system pressure test shall be located and evaluated by the Owner for corrective measures as follows:

(3) repairs or replacements of components shall be performed in accordance with IWA-4000 or IWA-7000, respectively.

Code Relief Request

Relief is requested from performing a Code repair for the flaw detected during plant operation in code Class 3 piping.

Basis for Relief

Service water modifications implemented during the seventh refueling outage (7RFO) in 1991 permit taking the affected section of piping out of service during plant operation for a maximum of 30 days. SW flow is isolated from one of the two train 2 emergency core cooling system (ECCS) room coolers, the DH cooler room cooler and the train 2 hydrogen dilution blower. The 30-day hydrogen dilution blower action statement is limiting. The one train 2 ECCS room cooler with SW flow is sufficient to maintain ECCS operability provided SW temperature remains less than 78.5°F. Two ECCS room coolers are required for ECCS operability when the SW temperature exceeds 78.5°F. From the Technical Specification, the 72-hour ECCS Action Statement would be immediately invoked if the SW temperature were to exceed 78.5°F, while the flawed section of piping was isolated using the blind flanges.

In previous summers, SW temperature has reached approximately 84°F. Should the temperature exceed 8.5°F while the flawed piping was being replaced, SW f'ow could not be restored to the second train 2 ECCS room cooler within the 72- our ECCS action statement and a plant shutdown would be required. Because of the potential of SW temperature increasing above 78.5°F, Toledo Edison determined that it was impractical to immediately perform a Code repair to the flawed piping.

Proposed Alternative

The licensee proposed to use the guidance in Generic Letter 90-05 to perform a temporary non-code repair.

Staff Evaluation and Conclusions

DBNPS has submitted two previous requests for non-Code repair of leaks in this section of the SW system during the past 2 years. These leaks have subsequently been Code repaired. The increased frequency of leaks in this section of the SW system has prompted DBNPS to schedule a complete replacement of the section, consisting of approximately 120 feet of 4 inch diameter piping. Barring any new leaks, DBNPS has scheduled repair for February 1993 that may run into the 8RFO. The 8RFO is scheduled for March 1993. If a second leak were to appear in this section before the planned repair, a move up of the repair date would be appropriate.

The licensee's submittal shows that the temporary repair is in conformance with Generic Letter 90-05 as follows:

1. The system is a Class 3 moderate energy piping system within the scope of Generic Letter 90-05.

2. The flaw was detected during operation and a code repair determined to be impractical within the limiting condition of operating (LCO) allowable outage time.

3. The leakage was stopped and so the system is fully able to perform its function.

4. The root cause was determined to be most likely MIC corrosion.

5. The flaw was evaluated by the through-wall analysis. The bounding flaw of 2a equal 1.0 inch and K value of 32.6 Ksi$(in)^{0.5}$ was acceptable.

6. System interactions were evaluated. Any further leakage would be detected by level alarms associated with the sump pumps and the control room operators would be alerted in enough time to prevent equipment degradation.

7. The temporary repair will be monitored at least every 7 days. If the leakage resumes, the licensee will reassess the integrity of the repair. An assessment of the integrity of the non-Code repair will be made at least quarterly using ultrasonic or radiographic testing.

8. Augmented inspections were performed at five other SW locations with similar geometry and flow characteristics, using a 1/2 inch by 1/2 inch grid spacing. No wall thinning below the Code required minimum wall thickness was found.

The staff has determined that the Code repair requirements in this case would be impractical, as defined in Generic Letter 90-05. Its basis for this determination is that the time to repair the pipe in conformance with the Code requirements could result in a plant shutdown as discussed above. The staff finds the flawed piping to have adequate structural integrity. Its basis for this finding is that the flaws meet the acceptance criteria for flaws evaluated according to the through wall approach specified in Generic Letter 90-05.

Furthermore, the licensee has committed to the guidance provided in Generic Letter 90-05 which will reasonably assure structural integrity and protect public health and safety. Accordingly, the staff concludes that granting relief where code requirements are impractical and imposing alternative requirements are authorized by law and will not endanger life or property or the common defense and security and are 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(g)(6)(i) and consistent with the guidance in Generic Letter 90-05, relief is granted until the startup from the 8RFO. The flawed pipe must then be repaired or replaced in accordance with the Code.

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Date: October 13, 1992