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

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION OF THE THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN AND ASSOCIATED REQUESTS FOR RELIEF

FOR

COMMONWEALTH EDISON COMPANY

MIDAMERICAN ENERGY COMPANY

QUAD CITIES STATION, UNITS 1 AND 2

DOCKET NOS. 50-254 AND 50-265

## 1.0 INTRODUCTION

The Technical Specifications (TS) for Quad Cities Nuclear Power Station, Units 1 and 2, state that the inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Quad Cities Station, Units 1 and 2, third ten-year ISI interval is the 1989 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

ENCLOSURE

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed. In a letter dated January 7, 1993, Commonwealth Edison Company (ComEd, the licensee) submitted to the NRC its third ten-year interval ISI program plan and associated requests for relief for the Quad Cities Station, Units 1 and 2. Additional information was provided by the licensee in its letter dated October 26, 1994.

## 2.0 BACKGROUND

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee, except Relief Request CR-09 for snubbers, in support of its third ten-year interval ISI program plan and associated requests for relief for the Quad Cities Station, Units 1 and 2. Relief Request CR-09 is discussed in Section 2.2.

### 2.1 Evaluation and Conclusions for Pumps and Valves

Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the Technical Evaluation Report attached. No deviations from regulatory requirements or commitments were identified in the "Quad Cities Stations, Units 1 and 2, Third Ten-Year Interval Inservice Inspection Program," with the exception of Request for Relief No. CR-05.

Request for Relief No. CR-05 is denied, because the licensee did not provide sufficient technical information to support the determination that the Code requirement is impractical, or that requiring the licensee to comply with the Code requirement would result in a hardship.

Based on the information provided by the licensee, the proposed alternatives contained in Requests for Relief Nos. CR-02, CR-07 (Parts 1 and 2), CR-10 (Parts 1 and 2), CR-11, CR-12, and CR-14, will provide acceptable level of quality and safety and are authorized pursuant to 10 CFR 50.55a(a)(3)(i) as requested.

In the response to the NRC Request for Additional Information (RAI) dated May 12, 1994, the licensee submitted a new Request for Relief No. PR-09, which addresses alternative pressure tests for Class 1, 2, and 3 systems following repair, replacements, and modifications. As a result, Request for Relief No.

PR-07 is also contained in PR-09 and is evaluated as one request in Request for Relief No. PR-09.

Compliance of the Code requirements regarding Requests for Relief Nos. CR-04, CR-08, PR-01, and PR-09 (addresses PR-07) would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The alternatives contained in the subject requests for relief will provide a reasonable assurance of operational readiness of systems involved in the reliefs. Therefore, the licensee's proposed alternatives contained in Requests for Relief Nos. CR-04, PR-01, and PR-09 (addresses PR-07) are authorized pursuant to 10 CFR 50.55a(a)(3)(ii) with provisions for Requests for Relief Nos. CR-04, CR-08, and PR-09 (addresses PR-07) as indicated below.

Request for Relief No. CR-04 is authorized provided the material velocities and attenuation of the calibration block and material being examined are compared and documented. CR-08 is authorized provided that the requirements of Appendix VII were implemented as committed by the licensee at the end of December 1994, and Request for Relief No. PR-09 (addresses PR-07) is authorized provided that additional surface examinations are performed on the root pass layer of butt and socket welds on the pressure-retaining boundary during repair and replacement of Class 3 components.

In the case of Requests for Relief Nos. CR-01, CR-03 (Parts 1 and 2), CR-13, PR-02, PR-04, and PR-06 the licensee has demonstrated that specific Code requirements are impractical and that granting relief will not endanger life, property, or the common defense and security and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Therefore, relief is granted for Requests for Relief Nos. CR-01, CR-03 (Parts 1 and 2), CR-13, PR-02, PR-04, and PR-06 pursuant to 10 CFR 50.55a(g)(6)(i) as requested.

Requests for Relief Nos. PR-05 and PR-08 were withdrawn by the licensee and in the case of Requests for Relief Nos. CR-06 and PR-03, relief is not required.

2.2 Evaluation of Relief Request CR-09

Currently, the Quad Cities ISI program is required to be performed, per ASME Code, Section XI, Article IWF-5300, in accordance with the first addenda to ASME/ANSI OM-1987 Edition, Part 4, published in 1988 (OMa-1988, Part 4). The licensee requested that the TS visual examination program for snubbers be used in lieu of the OMa-1988, Part 4, program required by ASME Code, Section XI.

The licensee stated in the October 26, 1994 submittal, that the current Quad Cities Station TS include a comprehensive program for visual examination for all safety-related hydraulic and mechanical snubbers. The program scope encompasses all Code Class 1, 2 and 3 snubbers, since a good portion of the safety-related snubbers at Quad Cities Station are also Code Class. Of the approximate total of 130 safety-related snubbers per unit, about 60 are Code Class. The licensee stated that the overlap of the visual examination program per ASME Code, Section XI, and TS for the Code Class snubbers presents an

unnecessary redundancy without a compensating increase in the level of quality and safety.

The TS snubber visual examination program requires a sample size of 100 percent of all safety-related snubbers and incorporates the alternate snubber visual examination schedule delineated in Generic Letter (GL) 90-09. This alternate schedule maintains the same confidence level of quality and safety as that of OMa-1988, Part 4.

The GL 90-09 alternate schedule is based on the number of unacceptable snubbers found during the previous examination and on the sizes of the various snubber populations or categories. The alternate examination interval is based on a fuel cycle of up to 24 months and may be as long as two fuel cycles, depending on the number of unacceptable snubbers found during the previous visual examination.

The licensee stated in the submittal that visual examiners, who are qualified to the applicable rules of ASME Code, Section XI, Article IWA-2000, will perform the examinations for Code Class snubbers. Visual examination results of Code Class snubbers will be recorded and reported in accordance with the applicable rules of the ASME Code, Section XI, Article IWA-6000.

The staff has reviewed the licensee's submittal and determined that Quad Cities TS requirements of snubber visual examination meet the intent of the program required by OMa-1988, Part 4. The staff, therefore, finds that requiring the use of both the OMa-1988, Part 4, and Quad Cities TS for visual examination of Code Class 1, 2, and 3 snubbers would result in a hardship without a compensatory increase in the level of quality or safety. No plant safety benefits will be realized by imposing both programs on the Code Class 1, 2, and 3 snubbers at Quad Cities Station, Units 1 and 2.

Based on the information provided, the staff has determined that the licensee has presented an adequate justification for its relief request from the requirements of ASME Code, 1989 Edition, Section XI, Article IWF (which references OMa-1988, Part 4), with regard to visual examination of snubbers. The staff, therefore, concludes that the proposed alternative use of the TSs for the Code Class snubbers is authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

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Date: September 15, 1995

TABLE 1
SUMMARY OF RELIEF REQUESTS

| Relief Request Number | System or Component | Exam Category | Item No. | Volume or Area to be Examined | Required Method | Licensee Proposed Alternative | Relief Request Status |
|---|---|---|---|---|---|---|---|
| CR-01 | Reactor Pressure Vessel | B-D | B3.110 | Standby Liquid Control Nozzle Inner Radius | Volumetric | VT-2 Visual Examination Each Refueling Outage | Granted |
| CR-02 | Class 1 Piping | B-J | B9.11<br>B9.12<br>B9.21<br>B9.31<br>B9.32<br>B9.40 | Selection of Class 1 Piping Welds | NA | Select Class 1 Welds Based on the Selection Criteria of Table IWB-2500 | Authorized |
| CR-03 (Part 1 of 2) | Class 1 Branch Connections | B-J | B9.31<br>B9.32 | Class 1 Branch Connection Welds With Reinforcement Saddles | Volumetric and/or Surface as Applicable | Surface examination of both the saddle to main pipe weld and the saddle to branch pipe weld. VT-2 visual examination. | Granted |
| CR-03 (Part 2 of 2) | Class 2 Branch Connections | C-F-1<br>C-F-2 | C5.41<br>C5.81 | Class 2 Branch Connection Welds With Reinforcement Saddles | Surface | Surface examination of both the saddle to main pipe weld and the saddle to branch pipe weld. VT-2 visual examination. | Granted |
| CR-04 | Calibration Blocks | Appendix III, Para III-3411 | NA | Calibration Block Material Specification Requirements | NA | Use existing calibration blocks | Authorized Conditionally |
| CR-05 | Class 1, Class 2, and Class 3 Components and Piping | IWA-4000 | NA | Exemption of Piping , Valves and Fittings NPS 1 and Smaller, and Their Associated Supports | NA | Document and perform repairs on components 1" NPS and less in accordance with inhouse specifications, codes, and procedures | Denied |
| CR-06 | Component Supports | F-A | F1.10-F1.70 | Component Support Examination Requirements | Examination Requirements of the 1989 Edition of Section XI | Perform examinations of component supports in accordance with Code Case N-491 | Relief Not Required |

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|---|---|---|---|---|---|---|---|
| CR-07 (Part 1 of 2) | Class 1 Welds subject to Expansion Criteria for Welds | IWB-2430 | NA | Weld examinations governed by generic letter 88-01 and NUREG-0313, Rev. 2 | Surface and Volumetric | Perform expansions as required by Generic Letter 88-01 and NUREG-0313, Rev. 2 | Authorized |
| CR-07 (Part 2 of 2) | Class 2 Welds subject to Expansion Criteria for Welds | IWC-2430 | NA | Weld examinations governed by generic letter 88-01 and NUREG-0313, Rev. 2 | Surface and Volumetric | Perform expansions as required by Generic Letter 88-01 and NUREG-0313, Rev. 2 | Authorized |
| CR-08 | Personnel Qualification | Appendix VII | NA | Qualification requirements for ultrasonic examination personnel | NA | Establish qualification program by December 31, 1994 | Authorized Conditionally |
| CR-09 | Snubbers | NA | NA | Examin snubber for damage, impaired operability, functional attachments and festeners | Visual | Perform examination as required by Technical Specifications | Authorized |
| CR-10 (Part 1 of 2) | Class 1 Piping | B-F<br>B-J | B5.10<br>B5.130<br>B9.11<br>B9.12 | Weld Overlay Repaired Weld Joints | Surface and Volumetric | Examine overlays in accordance with Generic Letter 88-01 | Authorized |
| CR-10 (Part 2 of 2) | Class 2 Piping | C-F-1 | C5.11<br>C5.12 | Weld Overlay Repaired Weld Joints | Surface and Volumetric | Examine overlays in accordance with Generic Letter 88-01 | Authorized |
| CR-11 | Reactor Pressure Vessel | B-G-1 | B6.10 | Closure Head Nuts | Surface | VT-1 visual examination | Authorized |
| CR-12 | Reactor Pressure Vessel | B-G-1 | B6.20<br>B6.30 | Reactor Vessel Closure Stud Examinations | Volumetric and/or Surface as Applicable | Enhanced end shot ultrasonic examination | Authorized Conditionally |

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|---|---|---|---|---|---|---|---|
| CR-13 | Class 1 Piping | B-J | B9.11<br>B9.12 | Cast Stainless Steel Elbow-to-Pump Welds | Surface and Volumetric | VT-2 visual examination each refueling outage | Granted |
| CR-14 | Class 1 Piping | B-J | B9.12<br>B9.22 | Class 1 Longitudinal Welds | Surface and Volumetric | Examine portion of longitudinal welds that fall within the examination boundaries of associated circumferential welds | Authorized |
| PR-01 | Class 1 System | IWB-5221(a) | NA | System Leakage Test Pressure Following the disassembly and Reassembly of Class 1 Mechanical Connections | System Leakage Test | Perform the pressure test at 920 psig | Authorized |
| PR-02 | Reactor Pressure Vessel | C-H | NA | Pressure Test of the RPV Head Flange Seal Leak Detection System | VT-2 | VT-2 visual examination during refueling outage flood up | Granted |
| PR-03 | Class 3 Systems | IWD-5223(a) | NA | Hydrostatic Testing Of Residual Heat Removal Service Water, Diesel Generator Cooling Water and Control Room HVAC Service Water Piping | Hydrostatic Test Pressure | Hydrostatically tested in accordance with Code requirements | Relief Not Required |
| PR-04 | Residual Heat Exchanger | NA | NA | Pressure test of the Residual Heat Exchanger tubes | VT-2 | VT-2 visual examination when made accessible during maintenance outages, monitor for radiation across pressure boundary | Granted |
| PR-05 | Main Steam System | D-B | D2.10 | Functional and Hydrostatic Pressure Testing for the Main Steam Relief Valve Discharge Lines | NA | NA | Withdrawn |

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|---|---|---|---|---|---|---|---|
| PR-06 | High Pressure Coolant Injection | IWC-5222(a) | NA | Alternate Testing for High Pressure Coolant Injection (HPCI) Turbine and Connected Steam Inlet and Discharge Piping | NA | System Functional Test | Granted |
| PR-07 | Class 1 and 2 Repair and Replacements | IWA-4700(a) | NA | NA | NA | NA | See PR-09 |
| PR-08 | Definition | NA | NA | Pressure Retaining Boundary for System Leakage Tests | NA | NA | Withdrawn |
| PR-09 | Class 1, 2, and 3 Repairs and Replacements | IWA-4700(a) and (b) | NA | Alternate Pressure Test Requirements for Repair, Replacements and Modifications for Class 1, Class 2, and Class 3 Systems | NA | Use Code Case N-416-1 | Authorized Conditionally |