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

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION OF THE THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN NORTHEAST NUCLEAR ENERGY COMPANY MILLSTONE NUCLEAR POWER STATION, UNIT 1 DOCKET NO. 50-245

## 1.0 INTRODUCTION

Technical Specifications for Millstone Nuclear Power Station, Unit 1, state that inservice inspection (ISI) and testing (IST) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel 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). The Code of Federal Regulations in 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized if (1) the proposed alternatives would provide an acceptable level of quality and safety, or (2) 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 each ten-year interval 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) on the date 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. 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.

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.

The licensee, Northeast Nuclear Energy Company (NNECO), has prepared the Millstone Nuclear Power Station, Unit 1, Third Ten-Year Interval ISI Program Plan to meet the requirements of the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code, except that the extent of examination for Class 1, Examination Category B-J welds has been determined by the requirements of the 1974 Edition, through Summer 1975 Addenda, as permitted by 10 CFR 50.55a(b). The NRC staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the Millstone Nuclear Power Station, Unit 1, Third Ten-Year Interval ISI Program Plan, additional information related to the Program Plan, and the requests for relief from certain ASME Code requirements determined to be impractical for Millstone Nuclear Power Station, Unit 1, during the third inspection interval.

## 2.0 EVALUATION

The ISI Program Plan has been evaluated for (a) application of the correct Section XI Code edition and addenda, (b) compliance with examination and test requirements of Section XI, (c) acceptability of the examination sample, (d) compliance with prior ISI commitments made by the licensee, (e) correctness of the application of system or component examination exclusion criteria, and (f) adequate information in support of requests for relief from certain Section XI Code requirements deemed impractical by the licensee.

The information provided by NNECO in support of the requests for relief from certain Section XI requirements has been evaluated and the bases for granting relief from those requirements documented in INEL Technical Evaluation Report EGG-MS-10306. We concur with the findings and recommendations contained in the subject report except for the recommendation that the Program Plan be found unacceptable because of the licensee not addressing the issues described in Standard Review Plan Section 3.6.2 and Branch Technical Position MEB 3-1. Table 1 presents a summary of the reliefs requested and the status of the requests as determined by the staff.

## 3.0 CONCLUSION

The staff concludes that the Millstone Nuclear Power Station, Unit 1, Third Ten-Year Interval ISI Program Plan, with the additional information provided and the specific written relief, is in compliance with 10 CFR 50.55a(g), and is therefore acceptable.

For Requests for Relief B-A-1 (Rev. 1), B-G-1-1, B-G-2-1, C-C-1 (Rev. 1), and IWC-1, it is concluded that NNECO has not provided adequate information to support the determination that the Code requirement is impractical and that requiring NNECO to comply with the Code requirement would not result in hardship. Therefore, relief is denied.

For Requests for Relief B-P-1, C-H-1, and C-H-2, it is concluded that relief is not required. Requests for Relief D-B-2, D-B-3, D-B-4, and D-C-1 were withdrawn by NNECO and deleted from the ISI Program Plan.

Pursuant to 10 CFR 50.55a(a)(3)(i), it is concluded that for Requests for Relief IWA-1, IWC-2, and IWF-1, NNECO's proposed alternatives provide an acceptable level of quality and safety in lieu of the Code-required examination. In those cases, it is recommended that the proposed alternative be authorized. In the case of Request for Relief IWB-1 and D-B-1 (Rev. 1) it is concluded that the proposed alternative is authorized with the conditions stated in the INEL Technical Evaluation Report, pursuant to 10 CFR 50.55a(a)(3)(i).

For all other relief requests evaluated in this document and the associated Technical Evaluation Report, it is concluded that, pursuant to 10 CFR 50.55a(g)(6)(i), relief is granted as requested, except for Requests for Relief B-J-1, B-L-2-1, and B-M-2-1, where relief is granted with the conditions stated in the INEL Technical Evaluation Report. The staff has determined that certain Section XI required inservice inspections cannot be performed to the full extent required by Section XI. The NRC staff has determined that granting relief, pursuant to 10 CFR 50.55a(a)(3)(i) and (g)(6)(i), is authorized by law and 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 NNECO that could result if the ASME Code requirements were imposed on the facility.

Principal Contributor: David Smith

Date: January 5, 1993

Millstone Nuclear Power Station, Unit 1
Third 10-Year ISI Interval



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 |
|---|---|---|---|---|---|---|---|
| B-A-1 Rev. 1 | Reactor Pressure Vessel | B-A | B1.30 | Shell-to-flange Weld VFAC | Volumetric exam | Examination of entire weld will be performed during third inspection period. | Denied |
| B-D-1 Rev. 1 | Reactor Pressure Vessel | B-D | B3.90 | Nozzle-to-vessel Welds RRAD-1, RRBD-1, RRCD-1, RRDD-1, RRED-1, RRFD-1, RRGD-1, RRHD-1, RRJD-1, RRKD-1, RCAD-1, RCBD-1, CSAD-1, CSBD-1, FWAD-1 & 2, FWBD 1 & 2, JPAD-1, JPBD-1, CRDD-1, MSAD-1, MSBD-1, MSCD-1, MSDD-1, ICAD-1, ICBD-1, HSAD-1, HIAD-1, and HIBD-1 | Volumetric exam | None. The Code-required exam will be performed to the extent practical. | Granted |
| B-G-1-1 | Reactor Pressure Vessel | B-G-1 | B6.10 | RPV closure head nuts | Surface exam | VT-1 visual exam | Denied |
| B-G-2-1 Rev. 1 | Class 1 Piping and Valves | B-G-2 | B7.50 B7.70 | Insulted bolted connections in high radiation areas | VT-1 visual exam | None. The Code-required VT-1 visual exam will be performed when components disassembled for maintenance | Denied |

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|---|---|---|---|---|---|---|---|
| B-J-1 | Class 1 Piping | B-J | B9.11 | Containment penetrations in the following systems:<br><br>System — Weld Number<br>CORE.SPR — (A)X-16A & (B)X-16B<br>FEED.WTR — (A)X-9A & (B)X-9A<br>ISOC.RET — (B)X-11B & (A)X-10A<br>LPCI — (A)X-43 & (B)X-45<br>MAIN.STM — (A)X-7A, (B)X-7B, (C)X-7C, (D)X-7D, & (E)X-8<br>RWCU.SUP — (B)X-15 & (A)X-14<br>SHUTCOOL — (A)X-12 | Surface and volumetric exams | None. The Code-required surface exam will be performed if the weld is made accessible due to repair or replacement. The VT-2 visual exam will be performed each interval. | Granted with conditions stated in TER |
| B-J-2 | Class 1 Piping | B-J | B9.31 | Branch connection welds:<br><br>MSAJ-RV1 thru -RV7<br>MSBJ-RV1 thru -RV3<br>MSCJ-RV1 thru -RV3<br>MSDJ-RV1 thru -RV6<br>RCAJ-PB1 thru -PB2<br>RCBJ-PB1 thru -PB2<br>SCAJ-CU1 | Surface and volumetric exam | None. The Code-required volumetric exam will be performed to the maximum extent practical and along with a 100% surface exam | Granted |
| B-L-2-1 | Reactor Coolant Recirculation Pumps | B-L-2 | B12.20 | Pump casing internal surfaces | VT-3 visual exam | None. The Code-required visual exam will be performed if a pump is disassembled for maintenance | Granted with conditions stated in TER |

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|---|---|---|---|---|---|---|---|
| B-M-2-1 | Class 1 Valves | B-M-2 | B12.50 | Valve body internal surfaces:<br>1-FW-9A & B<br>1-FW-10A & B<br>1-LP-11A & B<br>1-CS-6A & B<br>1-CU-29<br>1-RR-1A & B<br>1-LP-10A & B<br>1-IC-1 & 2<br>1-SD-1 & 5<br>1-CS-7A & B<br>1-CS-5A & B<br>1-IC-3 & 4<br>1-RR-2A & B<br>1-RR-4A & B<br>1-LP-12A & B<br>1-FW-11A & B<br>1-SD-2A & B<br>1-MS-1A, B, C, & D<br>1-MS-2A, B, C, & D<br>1-MS-3A, B, C, D, E, & F<br>1-CU-1, 2, 3, 5, 28 & 30 | VT-3 visual exam | None. The Code-required visual exam will be performed when a valve is disassembled for maintenance | Granted with conditions stated in TER |
| B-P-1 Rev. 1 | RPV, Class 1 Piping, Pumps and Valves | B-P | B15.11<br>B15.51<br>B15.61<br>B15.71 | Reactor vessel and closure head, head spray and vent, reactor recirculation, main steam, feedwater, standby liquid control, low pressure coolant injection, core spray, isolation condenser, reactor shutdown cooling, reactor water clean-up, control rod drive, and reactor pressure instrumentation systems. | Hydrostatic test per IWB-5222 | System leakage test in accordance with ASME Code Case N-498 | Relief not required |
| IWB-1 | Class 1 Systems | | | Additional examination requirements for all Class 1 components | IWB-2430 | Additional exams of equal number of similar components within inspection item number | Authorized with conditions stated in TER |

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| Relief Request Number | System or Component | Exam Category | Item No. | Volume or Area to be Examined | Required Method | Licensee Proposed Alternative | Relief Request Status |
|---|---|---|---|---|---|---|---|
| C-A-1 Rev. 2 | Low Pressure Coolant Injection (LPCI) Heat Exchanger | C-A | C1.30 | Tubesheet-to-shell welds on the following LPCI heat exchangers:<br>CCAC-A-1 CCAC-A-2<br>CCBC-A-1 CCBC-A-2 | Volumetric exam | 1 1/2 Vee path scan from one side to extent practical and 100% surface exam of welds | Granted |
| C-B-1 | Isolation Condenser | C-B | C2.21 | Nozzle-to-shell (or head) Welds ICAC-B-1, ICAC-B-2, ICBC-B-3, and ICBC-B-4 | Surface and volumetric exams | None. The Code-required volumetric exam will be performed to extent practical and 100% surface exam | Granted |
| C-B-2 | Shutdown Cooling Heat Exchanger | C-B | C2.21 | Nozzle-to-shell Welds SDAC-B-1, SDBC-B-1, SDAC-B-2 and SDBC-B-2 | Surface and volumetric exams | None. Code-required volumetric exam will be performed to extent practical and 100% surface exam | Granted |
| C-C-1 | Class 2 Integrally Welded Attachments | C-C | C3.20 | Integrally welded attachments to piping | Surface exam | Alternate selection criteria | Denied |
| C-H-1 Rev. 1 | Class 2 Pressure Retaining Components | C-H | C7.20<br>C7.40<br>C7.60<br>C7.80 | Pressure vessels, pumps, valves, and piping in the main steam, condensate, condensate booster feedwater, emergency condensate transfer, standby liquid control, LPCI, core spray, isolation condenser, reactor shutdown cooling and scram systems | Hydrostatic test per IWC-5222 | System leakage test per ASME Code Case N-498 | Relief not required |

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|---|---|---|---|---|---|---|---|
| C-H-2 | Class 2 Piping | C-H | C7.40 | Primary containment piping penetrations:<br><br>Station Air Supply to the drywell;<br>Drywell floor and equipment drain sumps;<br>Drywell Demineralized Water Supply;<br>Transversing Incore Probe and Nitrogen Purge Tubing;<br>Torus Pressure and Water Level Instrumentation; and<br>Drywell Nitrogen Compressor Suction and Discharge. | Hydrostatic test per IWC-5222 | System leakage test per ASME Code Case N-498 | Relief not required |
| IWC-1 | Class 2 Feedwater Coolant Injection (FWCI) System | C-A<br>C-B<br>C-C<br>C-F-2 | | Pressure vessels, nozzle-to-vessel welds, integral attachments and welds in carbon or low alloy steel piping | Surface and/or volumetric exam | None. Paragraph IWC-1220(c) exemption criteria of 74S75 Code. | Denied |
| IWC-2 | Class 2 Systems | | | Additional examinations for all Class 2 components | IWC-2430 | Additional exams of similar components equal in number to 20% of welds scheduled in Interval for inspection Item Number | Authorized |
| D-B-1 Rev. 1 | Class 3 Integral Attachments | D-B | D2.20<br>D2.40 | Integral attachments of component supports, restraints, and spring type supports | VT-3 visual exam | VT-3 visual exam of 10% of integral attachments | Authorized with conditions stated in TER |

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|---|---|---|---|---|---|---|---|
| D-B-2 | Emergency Service Water System | D-B | D2.10 | | | | Withdrawn in 11/5/91 letter |
| D-B-3 | Reactor Building Closed Cooling Water | D-B | D2.10 | | | | Withdrawn in 11/5/91 letter |
| D-B-4 | Turbine Building Secondary Closed Cooling Water | D-B | D2.10 | | | | Withdrawn in 11/5/91 letter |
| D-B-5 | Main Steam APR/SRV Discharge Piping | D-B | | Automatic Pressure/Steam Relief Valve (APR/SRV) discharge piping into torus/suppression chamber | Pneumatic test per IWD-5223(f) | Remote/manual actuation of APR/SRV valve to confirm open flow path | Granted |
| D-B-6 | Standby Gas Treatment System | D-B | D2.10 | Pressure retaining components | Hydro test per IWD-5223; functional test per IWD-5222 | System flow test per Millstone, Unit 1 Technical Specification 4.7.B.1.A and secondary containment tightness test | Granted |
| D-C-1 | Fuel Pool Cooling System | D-C | D3.10 | Pressure retaining components | | | Withdrawn in 11/5/91 Letter |

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|---|---|---|---|---|---|---|---|
| IWA-1 | | | | Qualifications of nondestructive testing personnel | IWA-2300(e) | Near-distance vision test requirements of ASME Code Case N-490 | Authorized |
| IWF-1 | Class 1, 2, and 3 Component Supports | F-A<br>F-B<br>F-C | F1.10 thru F3.50 | Component supports | VT-3 visual exam | VT-3 visual exam in accordance with ASME Code Case N-491 | Authorized |
| IWF-2 | Mechanical and Hydraulic Snubbers | | | Inservice Testing Functional | IWF-5400 | | Not evaluated in this report |