

February 29, 2000

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
P. O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 (NMP2) -- RELIEFS FOR
THE SECOND 10-YEAR INSERVICE INSPECTION (TAC NO. MA2151)

Dear Mr. Mueller:

By letter dated June 16, 1998, you requested a number of reliefs from Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code and applicable addenda. By letter dated February 17, 1999, we granted Relief GVRR-01 and thus completed TAC No. MA2148. We are now addressing the disposition of the balance of the relief requests in your June 16, 1998, letter.

With technical assistance provided by the Idaho National Engineering and Environmental Laboratory (INEEL), we have completed review of the balance of your relief requests. Details of our review may be found in the enclosed safety evaluation with INEEL's Technical Letter Report attached. The disposition of your requests for relief are as follows:

Requests for Relief CMS-PTRR-1 and HCS-PTRR-1 -- The Code requirements would result in undue hardship without a compensating increase in the level of quality and safety. Your proposed alternatives provide reasonable assurance of structural integrity of the subject welds and are thus authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

Request for Relief GPTRR-3 -- Your proposed alternative provides an acceptable level of quality and safety and is authorized pursuant to 10 CFR 50.55a(g)(4)(iv).

Request for Relief GPTRR-2 -- The use of Code Case N-522 is acceptable for use at NMP2 with the conditions specified in Regulatory Guide 1.147, Revision 12. For the penetrations exempted from Appendix J testing, the alternative to rely on systems walkdown is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

For Request for Relief GPTRR-1 -- The use of Code Case N-498-2 does not provide an acceptable level of quality and safety and is not authorized. However, if you have specific systems where you are unable to meet the 4-hour hold time, we will review your request for relief on a case-by-case basis.

J. Mueller

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This completes all our actions on your June 16, 1998, letter. Please contact the project manager Mr. Peter Tam (301-415-1451, electronic mail at pst@nrc.gov) if you have any questions.

Sincerely,

/RA/

Marsha Gamberoni, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosure: Safety Evaluation
w/attachment

cc w/encl: See next page

J. Mueller

-2-

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Marsha Gamberoni, Acting Chief, Section 1
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Enclosure: Safety Evaluation
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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PLAN

REQUESTS FOR RELIEF

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) 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 in part 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 difficulty 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 pre-service 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 10-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. For Nine Mile Point, Unit 2, (NMP2) the applicable edition of Section XI of the ASME Code for the second 10-year ISI interval is the 1989 Edition.

2.0 EVALUATION

The NRC staff contracted with the Idaho National Engineering and Environmental Laboratory (INEEL) to provide assistance in this review. INEEL's Technical Letter Report (TLR) of the subject request for relief is attached. Based on the results of the review, the staff adopts INEEL's conclusions and recommendations presented in the TLR attached.

The basis of the staff's disposition of the licensee's request for relief from Code requirements is documented below.

Request for Relief No. GPTRR-1

ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P, Table IWC-2500-1, Examination Category C-H, and Table IWD-2500-1, Examination Categories D-A, D-B, and D-C, require system hydrostatic testing of pressure-retaining components in accordance with IWA-5000 once each 10-year interval. Paragraph IWA-5212(d) requires a 4-hour hold time at test pressure and temperature for insulated systems and a 10-minute hold time for uninsulated systems during system hydrostatic testing.

The licensee proposed to use Code Case N-498-2, *Alternate Requirements for 10-Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems, Section XI, Division 1*.

The primary difference between Code Case N-498-2 and Code Case N-498-1, *Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems*, is the elimination of hold time requirements. Code Case N-498-1, which has been approved for general use by incorporation into Regulatory Guide (RG) 1.147, *Inservice Inspection Code Case Acceptability*, Revision 12, (May 1999), allowed the 10-year hydrostatic test to be performed at the nominal operating pressure and temperature, but required a 4-hour hold time for insulated components and a 10-minute hold time for uninsulated components. Code Case 498-2 eliminates the hold time requirements and would reduce the potential for detecting leakage because the leakage may not have time to penetrate insulation. The licensee's proposed alternative to use Code Case 498-2 is not authorized. However, if the licensee has specific systems where it is unable to meet the 4-hour hold time, the staff will review the licensee's request for relief on a case-by-case basis.

Request for Relief No. GPTRR-2

ASME Code, Section XI, Table IWC-2500-1, Examination Category C-H, requires a VT-2 visual examination during system pressure testing for all Class 2 pressure-retaining components.

Pursuant to 10 CFR 50.55a(g)(5), the licensee proposed to use Code Case N-522, *Pressure Testing Containment Penetration Piping*, for the examination of Class 2 piping that penetrates containment.

The staff has reviewed Code Case N-522 and has found the code case acceptable for general use, with specific conditions, in RG 1.147, *Inservice Inspection Code Case Acceptability*, Revision 12, (May 1999). The use of Code Case N-522 with the conditions specified in RG 1.147, Revision 12 is acceptable for use at NMP2. For those penetrations previously exempted from the requirements of Appendix J, the previous exemptions remain valid. The staff finds the system performance and system walkdowns during normal system operation for the exempted penetrations provide an acceptable level of quality and safety since the walkdowns will be performed more frequently than required by the Code and they are performed, in part, to identify leakage similar to what the Code requires during system pressure testing.

Request for Relief No. GPTRR-3

ASME Code, Section XI, Paragraph IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

The licensee proposed to use Paragraph IWA-5250(a)(2) of the 1992 Edition of ASME Section XI.

As stated in the September 22, 1999, Federal Register, Code editions and addenda from the 1989 Addenda, through the 1996 Addenda, including the 1992 Edition of ASME Section XI are approved for general use, effective November 22, 1999. Since the licensee has proposed to perform corrective actions in accordance with IWA-5250(a)(2) of the 1992 Edition, a Code edition approved by the staff, the proposed alternative provides an acceptable level of quality and safety. The licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(g)(4)(iv). However, because there are no acceptance criteria in the 1992 Code for a VT-3 visual exam of bolting, the staff recommends that the licensee use VT-1 visual exam and corresponding acceptance criteria for bolting in lieu of the VT-3 visual exam.

Request for Relief No. CMS-PTRR-1

ASME Code Section XI, IWA-5240, Visual Examination, requires a VT-2 visual examination for leakage during system pressure testing.

The licensee proposed to perform leak testing in accordance with Appendix J for Class 2 components, outside containment, of the Containment Monitoring System (CMS).

To perform the Code-required visual examination, the heat tracing and insulation would have to be removed from the CMS to apply leak detection fluid. The leak detection fluid, wipes used in fluid removal, and damaged insulation and heat tracing will create a significant amount of radioactive waste. In addition, the performance of these activities is estimated to result in approximately 78 man-rem over the life of the plant and would result in a significant burden on the licensee without a compensating increase in the level of quality and safety.

The licensee proposed to test the system in accordance with Appendix J. If leakage exceeds the Appendix J acceptance criteria, and the leakage cannot be reduced to acceptable levels, the licensee will perform the Code-required visual examination in accordance with IWA-5240. The function of the subject system is only to monitor air space atmospheres for hydrogen and oxygen in the drywell and suppression pool. Pressure testing in accordance with Appendix J is appropriate and provides reasonable assurance of the structural integrity of the CMS. The licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii), as it will cause a burden without a compensating increase in the level of quality and safety.

Request for Relief No. HCS-PTRR-1

ASME Code, Section XI, IWA-5240, *Visual Examination*, requires a VT-2 visual examination for leakage during system pressure testing.

The licensee proposed to perform leak testing in accordance with Appendix J for Class 2 components, outside containment, for the Hydrogen Recombiner System (HCS).

To perform the Code-required visual examination, the insulation would have to be removed from portions of the HCS to apply leak detection fluid. The leak detection fluid, wipes used in fluid removal, and damaged insulation will create a significant amount of radioactive waste. In addition, the performance of these activities is estimated to result in approximately 6.5 man-rem over the life of the plant.

The licensee proposed to test the system in accordance with Appendix J. If leakage exceeds the Appendix J acceptance criteria, and the leakage cannot be reduced to acceptable levels, the licensee will perform the Code-required visual examination in accordance with IWA-5240. In addition, a walkdown of accessible portions of the system will be performed every 40 months for visible and audible evidence of leakage. The HCS is a gas fill system, the proposed system walkdown and pressure testing in accordance with Appendix J is appropriate and provides reasonable assurance of the structural integrity of the HCS. Furthermore, the imposition of the Code requirements would result in a significant burden without a compensating increase in the level of quality and safety. The licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

3.0 CONCLUSION

For Requests for Relief CMS-PTRR-1 and HCS-PTRR-1, the staff concludes that the Code requirements would result in undue hardship without a compensating increase in the level of quality and safety. The licensee's proposed alternatives provide reasonable assurance of structural integrity of the subject welds. The licensee's alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

For Request for Relief GPTRR-3, the proposed alternative provides an acceptable level of quality and safety and is authorized pursuant to 10 CFR 50.55a(g)(4)(iv).

For Request for Relief GPTRR-2, the staff concludes that the use of Code Case N-522 is acceptable for use at NMP2 with the conditions specified in RG 1.147, Revision 12. For the penetrations exempted from Appendix J testing, the alternative to rely on systems walkdown is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

For Request for Relief GPTRR-1, the staff concludes that the use of Code Case N-498-2 does not provide an acceptable level of quality and safety and is not authorized. However, if the licensee has specific systems where they are unable to meet the 4-hour hold time, the staff will review the licensee's request for relief on a case-by-case basis.

Attachment: TLR provided by INEEL

Principal Contributors: Thomas K. McLellan, with technical assistance provided by INEEL

Date: February 29, 2000

TECHNICAL LETTER REPORT
ON SECOND 10-YEAR INTERVAL INSERVICE INSPECTION
REQUESTS FOR RELIEF
FOR
NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
DOCKET NUMBER: 50-410

1. INTRODUCTION

By letter dated June 16, 1998, the licensee, Niagara Mohawk, submitted the inservice pressure testing program plan, including requests for relief from the requirements of the ASME Code, Section XI, for the Nine Mile Point, Unit 2 (NMP2), second 10-year inservice inspection (ISI) interval. The Idaho National Engineering and Environmental Laboratory (INEEL) staff's evaluation of the subject requests for relief is in the following section.

B. EVALUATION

The information provided by Niagara Mohawk in support of the requests for relief from Code requirements has been evaluated and the bases for disposition are documented below. The Code of record for the NMP2, second 10-year ISI interval, which began April 5, 1998, is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

2.1 Request for Relief No. GPTRR-1, Use of Code Case N-498-2, Alternative Requirements for 10 Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems, Section XI, Division 1

Code Requirement: Table IWB-2500-1, Examination Category B-P, Table IWC-2500-1, Examination Category C-H, and Table IWD-2500-1, Examination Categories D-A, D-B, and D-C, require system hydrostatic testing of pressure-retaining components in accordance with IWA-5000 once each 10-year interval. Paragraph IWA-5212(d) requires a 4-hour hold time at test pressure and temperature for insulated systems and a 10-minute hold time for uninsulated systems during system hydrostatic testing.

Licensee's Proposed Alternative: The licensee proposed to use Code Case N-498-2, *Alternate Requirements for 10-Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems, Section XI, Division 1*. The licensee stated:

“In lieu of ASME Section XI, Table IWB-2500-1, Category B-P (Class 1), Table IWC-2500-1, Category C-H (Class 2), and Table IWD-2500-1, Categories D-A, D-B, and D-C (Class 3), ASME Code Case N-498-2 **shall** be used. This Code Case requires visual examination (VT-2) in conjunction with system leakage test at nominal operating pressure and temperature.”

Licensee's Basis for Proposed Alternative (as stated):

“Relief is requested from ASME Section XI, Table IWB-2500-1, Category C-H (Class 2), and Table IWD-2500-1, Categories D-A, D-B, and D-C (Class 3), as allowed by 10 CFR 50.55a(g)(5). Performance of a hydrostatic test once per 10 year interval does not provide an increase in the level of quality and safety because system integrity can be determined by performance of a system leakage test. Performance of a hydrostatic test would require significant setup time, resources, and radiation dose since the hydrostatic pressure is higher than the nominal system operating pressure. In addition, special equipment would be required such as test pumps and gauges and special test lineups. The performance of hydrostatic testing is estimated at over \$250,000 per ten-

year interval. Thus, this relief request also meets the requirements of 10 CFR 50.55a(a)(3)(ii) in that hydrostatic testing of Class 1, 2, and 3 systems would result in an economic hardship without a compensating increase in quality and safety.

“Piping components are designed for a number of loadings that would be postulated to occur under various modes of plant operation. Hydrostatic testing only subjects the piping components to a small increase in pressure over the design pressure and therefore does not significantly challenge the pressure boundary integrity. Hydrostatic pressure is primarily a means to enhance leak detection during the examination of components under pressure, rather than as a method to determine the structural integrity of the components. Industry experience indicates that leaks are not being discovered as a result of hydrostatic test pressures. Leaks, in most cases, are found when the system is at normal operating pressure and are often identified during system walkdowns by plant operators.”

Evaluation: The Code requires a system hydrostatic test once per interval in accordance with the requirements of IWA-5000 for Class 3 pressure-retaining systems. In lieu of the Code-required hydrostatic testing, the licensee has requested authorization to use Code Case N-498-2, *Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems*, dated June 9, 1995. The licensee's basis for this proposed alternative includes various implementation problems that increase the burden associated with performing system hydrostatic testing.

The primary difference between Code Case N-498-2 and Code Case N-498-1, *Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems*, is the elimination of hold time requirements. Code Case N-498-1, which has been approved for general use by incorporation into Regulatory Guide 1.147, *Inservice Inspection Code Case Acceptability*, Revision 12, (May 1999), allowed the 10-year hydrostatic test to be performed at operating pressure and temperature, but required a 4-hour hold time for insulated components and a 10-minute hold time for uninsulated components. Revision 1 of this Code Case eliminates the burden of performing testing at elevated temperatures and addresses the licensee's basis for requesting relief. Implementation of Revision 2 would eliminate the hold time requirements. The INEEL staff believes this would reduce the potential for detecting leakage because the fluid may not have time to penetrate insulation, therefore, Code Case N-498-2 is not acceptable. Requests associated with reducing hold time requirements for a specific plant system may be submitted and shall be evaluated on a case-by-case basis. The INEEL staff recommends that the proposed alternative not be authorized.

2.2 Request for Relief No. GPTRR-2, Use of Code Case N-522, Pressure Testing Containment Penetration Piping

Code Requirement: Table IWC-2500-1, Examination Category C-H, requires a VT-2 visual examination during system pressure testing for all Class 2 pressure-retaining components.

Licensee's Proposed Alternative: Pursuant to 10 CFR 50.55a(g)(5), the licensee proposed to use Code Case N-522, *Pressure Testing Containment Penetration Piping*, for the examination of Class 2 piping that penetrates containment. The licensee stated:

“In lieu of ASME Section XI, Table IWC-2500-1, Category C-H (Class 2) for piping that penetrates the containment, when the piping and isolation valves are class 2 but the remainder of the system is outside the scope of Section XI, ASME Code Case N-522 **shall** be used. This Code Case requires Appendix J Type C testing of the containment isolation. For those penetrations that have an approved exemption from Appendix J requirements, system performance and system walkdowns during normal system operation will be used to identify leakage.”

Licensee's Basis for Proposed Alternative (as stated):

“Relief is requested from ASME Section XI, Table IWC-2500-1, Category C-H (Class 2) as allowed by 10 CFR 50.55a(g)(5) for piping that penetrates the containment vessel, when the piping and isolation valves that are part of the containment system are Class 2 but the balance of the piping system is outside the scope of Section XI. Performance of the required visual examinations and pressure testing does not increase the level of quality and safety because the system integrity is demonstrated during the 10 CFR 50 Appendix J testing. In addition, relief is also requested for those penetrations that have approved exemptions from Appendix J Type C testing when normal system operating pressure is in excess of the containment design basis accident pressure. For example, the Reactor Recirculation Hydraulic Flow Control lines penetrating containment are ASME Class 2 but the remainder of the system is non-ASME. NMP2 has an approved exemption from the testing requirements of 10 CFR Appendix J since the lines are in service at approximately 1015 psig. Leakage would be evident through indication on the hydraulic control units and erratic performance.”

Evaluation: The Code requires that a VT-2 visual examination be performed during system pressure testing for all Class 2 pressure-retaining piping, including those segments that penetrate primary containment. As an alternative, the licensee proposed to implement the requirements of Code Case N-522, *Pressure Testing of Containment Penetration Piping*. Code Case N-522 specifies that 10 CFR 50, Appendix J testing may be used as an alternative to Section XI pressure tests, for certain containment penetration piping.

The NRC staff has reviewed Code Case N-522 and has found the Code Case acceptable for *general use as evidenced by incorporation into Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability, Revision 12, (May 1999)*. Therefore, it is recommended that the use of this Code Case with the conditions specified in the Regulatory Guide be considered acceptable for use at NMP2. The implementation of Code Case N-522 should not affect those penetrations previously exempted from the requirements of Appendix J, therefore, the previous exemption should remain valid.

2.3 Request for Relief No. GPTRR-3, Paragraph IWA-5250(a)(2), Corrective Measures for Bolted Connections

Code Requirement: *Section XI, Paragraph IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.*

Licensee's Proposed Alternative: The licensee has proposed to use *Paragraph IWA-5250(a)(2) of the 1992 Edition of ASME Section XI*. The licensee stated:

“In lieu of ASME Section XI, IWA-5250(a)(2), the 1992 Edition of ASME Section XI, IWA-5250(a)(2) shall be used. Thus, if leakage occurs at a bolted connection, the bolt closest to the source of the leakage shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. If the removed bolt has evidence of degradation, all remaining bolts shall be removed, VT-3 examined and evaluated in accordance with IWA-3100.

Licensee’s Basis for Proposed Alternative (as stated):

“Relief is request from ASME Section XI, IWA-5250(a)(2), as allowed by 10 CFR 50.55a(g)(5). Removal of all bolting when leakage occurs at a bolted connection does not provide an increase in the level of quality and safety because evidence of degradation can be determined by removing the one bolt closest to the source of leakage. If the removed bolt has evidence of degradation, then all remaining bolts would be removed, VT-3 examined, and evaluated in accordance with IWA-3100. Immediate removal of all bolting would require significant additional time, resources and radiation dose.

“The NRC's Safety Evaluation of Code Case N-416-1 states that, 'The corrective actions with respect to removal of bolts from leaking bolted connections has been relaxed in the 1992 Edition of ASME Section XI, but (nevertheless) use of this change has been accepted by the staff in previous Safety Evaluations.’”

Evaluation: *In accordance with the 1989 Code, if leakage occurs at a bolted connection, all bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100. In lieu of this requirement, the licensee has proposed to perform corrective actions in accordance with IWA-5250(a)(2) of the 1992 Edition of ASME Section XI, which requires the removal of one bolt closest to the source of the leakage and VT-3 visual examination for evidence of degradation.*

As published in the September 22, 1999, Federal Register, Code editions and addenda from the 1989 Addenda, through the 1996 Addenda, including the 1992 Edition of ASME Section XI, are approved for general use, effective November 22, 1999. Since the licensee has proposed *to perform corrective actions in accordance with IWA-5250(a)(2) of the 1992 Edition*, a Code Edition approved by the NRC staff, the proposed alternative provides an acceptable level of quality and safety. Therefore, it is recommended that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i). However, it should be noted that the 1992 Code does not include acceptance criteria for VT-3 examinations of bolting, whereas, acceptance criteria for VT-1 visual examination of bolting is provided. Therefore, the INEEL staff recommends the use of the acceptance criteria established by the Code for VT-1 examination of bolts to enhance the existing Code requirements.

2.4 Request for Relief No. CMS-PTRR-1, Paragraph IWA-5240, Visual Examination of the Containment Monitoring System (CMS)

Code Requirement: IWA-5240, Visual Examination, requires a VT-2 visual examination for leakage during system pressure testing.

Licensee's Proposed Alternative: The licensee proposed to perform leak testing in accordance with Appendix J for Class 2 components, outside containment, of the CMS. The licensee stated:

- A. “The integrity of traced and insulated components outside containment shall be determined and monitored by performing

leakage rate testing in accordance with the Nine Mile Point Unit 2 Appendix J Testing Program. Leakage which exceeds the Appendix J acceptance criteria and cannot be reduced to acceptable levels will be assumed to be pressure boundary leakage and a visual examination per IWA-5240 will be performed.

- B. The integrity of the subject penetrations shall be determined by performing leakage rate testing in accordance with the Nine Mile Point Unit 2 Appendix J Testing Program.”

Licensee's Basis for Proposed Alternative (as stated):

“Relief is requested from ASME Section XI, IWA-5240, as allowed by 10 CFR 50.55a(g)(5). Performance of the required visual examinations does not provide an increase in the level of quality or safety because system integrity will be determined by performance of leakage rate testing to Appendix “J” requirements in lieu of ASME Section XI examinations. The components monitoring the hydrogen and oxygen concentration, including approximately 1000 ft. of piping, are heat traced and insulated. Performance of the required visual examinations entails removing the insulation and heat tracing for every functional and pneumatic test and the application and removal of leak detection fluid. Disposal of the fluid, the wipes used in fluid removal, and damaged insulation and heat tracing is a significant radwaste impact.

“The activities associated with these examinations would result in plant life exposure to personnel of approximately 78 man-rem. This constitutes a hardship in terms of radwaste disposal, resources commitment, and in maintaining personnel doses ALARA.

“Relief is requested from ASME Section XI, IWA-5240, as allowed by 10 CFR 50.55a(g)(5). Performance of the required visual examination does not provide an increase in the level of safety or quality because containment penetration integrity will be determined by performance of leakage rate testing to Appendix J (Type C) requirements in lieu of ASME Section XI examinations.

“The subject containment penetrations were built to ASME Code Class 2 rules as required by ASME III Sub NE-1110(c). The primary Containment structure was also designed, fabricated, and examined to these rules, and is tested to Appendix J (Type A) requirements. Testing of the subject penetrations consistent with the testing requirements of the Containment structure assures that the overall Containment integrity is maintained commensurate with the appropriate level of safety and quality.”

Evaluation: The Code requires a VT-2 visual examination for leakage when system pressure testing is performed. For the CMS, VT-2 examination is required during system functional and pneumatic testing. To perform the Code-required visual examination, the heat tracing and insulation would have to be removed from the CMS to apply leak detection fluid. The leak detection fluid, wipes used in fluid removal, and damaged insulation and heat tracing will create a significant amount of radwaste. In addition, the performance of these activities is estimated to result in approximately 78 man-rem over the life of the plant. Therefore, it is concluded that imposition of the Code requirements would result in a considerable burden on the licensee.

As an alternative to the Code requirements, the licensee has proposed to test the system in accordance with Appendix J. If leakage exceeds the Appendix J acceptance criteria, and the leakage cannot be reduced to acceptable levels, the licensee will perform the Code-required visual examination in accordance with IWA-

5240. Considering that the function of the subject system is only to monitor air space atmospheres for hydrogen and oxygen in the drywell and suppression pool, pressure testing in accordance with Appendix J is appropriate and provides reasonable assurance of the operational readiness of the CMS. Furthermore, the INEEL staff concludes that imposition of the Code requirements would result in a burden without a compensating increase in the level of quality and safety. Therefore, it is recommended that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

2.5 Request for Relief No. HCS-PTRR-1, Paragraph IWA-5240, Visual Examination of Insulated Components

Code Requirement: IWA-5240, *Visual Examination*, requires a VT-2 visual examination for leakage during system pressure testing.

Licensee's Proposed Alternative: The licensee proposed to perform leak testing in accordance with Appendix J for Class 2 components, outside containment, for the Hydrogen Recombiner System (HCS). The licensee stated:

- A. "The structural integrity of HCS components outside containment shall be determined and monitored in accordance with Appendix J test method. Leakage which exceeds the Appendix J acceptance criteria and cannot be reduced to acceptable levels will be assumed to be pressure boundary leakage and a visual examination per IWA-5240 will be performed.
- B. "The structural integrity of the subject penetrations shall be determined by performing leakage rate testing in accordance with Appendix J requirements.
- C. "In addition to the proposed alternate examination above, the Class 2 components of the Hydrogen Recombiner System (HCS) shall be subject to an inspection under pressure at least every 40 months. The inspection will consist of a walkdown of the accessible portions of the HCS outside the primary containment to determine by visual and audible observation the structural integrity and condition of the system. Accessible portions of the HCS are defined as those portions of the system which do not require the erection of scaffolding, do not require the removal of insulation, nor constitute a hardship in maintaining radiological doses as low as reasonably achievable (ALARA) to perform an inspection."

Licensee's Basis for Proposed Alternative (as stated):

"Relief is requested from ASME Section XI, IWA-5240, as allowed by 10 CFR 50.55a(g)(5). The HCS includes several hundred feet of uninsulated piping in potentially contaminated overhead areas and approximately 250 ft. of insulated piping for personnel protection. Performance of the required visual examinations entails the removal of insulation for each functional test and the application and removal of leak detection fluid. Disposal of the fluid, the wipes used in fluid removal, and damaged insulation is a significant radwaste impact.

"The activities associated with these examinations would result in plant life exposure to personnel of approximately 6.5 man-rem. This constitutes a hardship in terms of radwaste disposal, resources commitment, and in maintaining personnel doses ALARA.

“Relief is requested from ASME Section XI, IWA-5240, as allowed by 10 CFR 50.55a(g)(5). Performance of the required visual examination does not provide an increase in the level of safety or quality because containment penetration integrity will be determined by performance of leakage rate testing to Appendix J (Type C) requirements in lieu of ASME Section XI examinations.

“The subject containment penetrations were built to ASME Code Class 2 rules as required by ASME III Sub NE-1110(c). The primary Containment structure was also designed, fabricated, and examined to these rules, and is tested to Appendix J (Type A) requirements. Testing of the subject penetrations consistent with the testing requirements of the Containment structure assures that the overall Containment integrity is maintained commensurate with the appropriate level of safety and quality.”

Evaluation: The Code requires a VT-2 visual examination for leakage when system pressure testing is performed. For the HCS, VT-2 is required during system functional testing. To perform the Code-required visual examination, the insulation would have to be removed from portions of the HCS to apply leak detection fluid. The leak detection fluid, wipes used in fluid removal, and damaged insulation will create a significant amount of radwaste. In addition, the performance of these activities is estimated to result in approximately 6.5 man-rem over the life of the plant. Therefore, it is concluded that imposition of the Code requirements would result in a burden on the licensee.

As an alternative to the Code requirements, the licensee has proposed to test the system in accordance with Appendix J. If leakage exceeds the Appendix J acceptance criteria, and the leakage cannot be reduced to acceptable levels, the licensee will perform the Code-required visual examination in accordance with IWA-5240. In addition, a walkdown of accessible portions of the system will be performed every 40 months for visible and audible evidence of leakage. Considering the burden associated with meeting the Code requirements and the fact that the HCS is a gas-filled system, the proposed system walkdown and pressure testing in accordance with Appendix J is appropriate and provides reasonable assurance of the operational readiness of the HCS. Furthermore, the INEEL staff concludes that imposition of the Code requirements would result in a burden without a compensating increase in the level of quality and safety. Therefore, it is recommended that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

C. CONCLUSION

The INEEL has staff evaluated the licensee’s submittal and concluded that certain inservice examinations cannot be performed to the extent required by the Code at NMP2. For Requests for Relief CMS-PTRR-1 and HCS-PTRR-1, it is concluded that the Code requirements would result in undue hardship without a compensating increase in the level of quality and safety, and therefore, the proposed alternatives should be authorized pursuant to 10 CFR 50.55a(a)(3)(ii). For Request for Relief GPTRR-3, the proposed alternative provides an acceptable level of quality and safety, and therefore, should be authorized pursuant to 10 CFR 50.55a(a)(3)(i). For Request for Relief GPTRR-2, it is concluded that the use of Code Case N-522 is acceptable for use at NMP2 with the conditions specified in Regulatory Guide 1.147, Revision 12. For Request for Relief GPTRR-1, it is concluded that the use of Code Case N-498-2 does not provide an acceptable level of quality and safety, and therefore, should not be authorized.

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