September 10, 2004

Mr. Thomas Coutu
Site Vice President
Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC
N490 Highway 42
Kewaunee, WI 54216-9511

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - INSERVICE INSPECTION PROGRAM RELIEF REQUEST NO. RR-MC-2 FOR CLASS MC (TAC NO. MC1791)

Dear Mr. Coutu:

By letter dated January 16, 2004, as supplemented August 5, 2004, Nuclear Management Company, LLC (the licensee) submitted a request for relief from certain requirements of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (Code), Section XI, Subsection IWE, for the first 10-year interval inservice inspection (ISI) program at Kewaunee Nuclear Power Plant. The relief request is associated with requirements for performing visual, VT-3 examinations of 100 percent of seals and gaskets on airlocks, hatches, and other devices once each interval.

Based on the information provided in the relief request, relief request RR-MC-2 may be granted on the basis that the proposed alternative provides reasonable assurance of structural integrity and that compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section, 50.55a(a)(3)(ii), the U.S. Nuclear Regulatory Commission staff authorizes the ISI program alternative proposed in relief request RR-MC-2 for the first 10-year containment ISI interval, which is scheduled to conclude on September 9, 2006.

The detailed results of the staff's review are provided in the enclosed safety evaluation. If you have any questions concerning this matter, please call Mr. F. Lyon of my staff at (301) 415-2296.

Sincerely,

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION PROGRAM, FIRST 10-YEAR INTERVAL

NUCLEAR MANAGEMENT COMPANY, LLC

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

1.0 INTRODUCTION

By letter dated January 16, 2004 (Ref. 5.1), Nuclear Management Company, LLC (NMC), the licensee for the Kewaunee Nuclear Power Plant, submitted relief request RR-MC-2 for use in its first containment inservice inspection (ISI) interval.

This evaluation addresses relief request RR-MC-2, which is related to an alternative to the examination of containment penetration seals and gaskets required by IWE-2500 of the 1992 Edition and the 1992 Addenda of Subsection IWE of Section XI of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code). The licensee plans to use the approved relief request during the first (ongoing) 10-year interval of the containment ISI program, which ends on September 9, 2006.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Section, 50.55a(g)(4) requires licensees to update their ISI program plan every 10 years using the latest Edition and Addenda of the ASME Code, Section XI, for ISI of Class 1, Class 2, Class 3, Class MC, and Class CC components (Ref. 5.2). During the implementation of its first containment ISI plan, NMC recognized that it needed relief from the requirements of Subsection IWE of the 1992 Edition and 1992 Addenda of Section XI of the ASME Code as incorporated by reference in 10 CFR 50.55a (Ref. 5.3). The relief is requested pursuant to 10 CFR 50.55a(a)(3)(ii).

3.0 TECHNICAL EVALUATION

3.1 Code Requirement

IWE-2500, Table IWE-2500-1, requires seals and gaskets on air-locks, hatches, and other devices to be visually examined (VT-3), once each interval to ensure containment leak-tight integrity.

The licensee requested relief from the examination requirements for seals and gaskets of (1) Electrical Penetration No. C-10, (2) Electrical Penetration No. F-8, and (3) Containment Vacuum Breaker Valve VB-10A at Penetration No. 41S/S.

3.2 Proposed Alternative

The leak-tightness of seals and gaskets for Electrical Penetrations No. C-10 and No. F-8 and Vacuum Breaker Valve VB-10A at Penetration No. 41S/S will be tested in accordance with the Type B test of 10 CFR Part 50, Appendix J. No additional alternatives to the VT-3 visual examination of the seals and gaskets will be performed unless the Flange Connections for Electrical Penetrations No. C-10 and No. F-8 and Vacuum Breaker Valve VB-10A at Penetration No. 41S/S are disassembled for maintenance. At that time, a VT-3 visual examination, as required by ASME Code, Section XI, 1992 Edition and 1992 Addenda, will be performed.

3.3 Basis for Relief Request

The licensee provided the following information:

"10 CFR 50.55a was amended in the Federal Register (61 FR 41303) to require the use of the 1992 Edition, 1992 Addenda, of Section XI when performing containment examinations. Seals and gaskets receive a 10 CFR 50 Appendix J Test. As noted in 10 CFR 50 Appendix J, the purpose is to measure leakage of containment or penetrations whose design incorporates resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. Although not required by Code, practical examination considerations of seals and gaskets require the joints, which are proven adequate through Appendix J testing be disassembled. For electrical penetrations No. C-10 and No. F-8 and Containment Vacuum Breaker Valve VB-10A, at Penetration No. 41S/S this would involve a pre-maintenance Appendix J test, determination of cables at electrical penetrations if enough cable slack is not available, disassembly of the joint, removal and examination of the seals and gaskets, reassembly of the joint, re-termination of the cables if necessary, post-maintenance testing of the cables, and a post-maintenance Appendix J test of the penetration. This imposes the risk that the equipment could be damaged. The 1992 Edition, 1993 Addenda, of Section XI recognizes that the disassembly of joints to perform these examinations is not warranted. Note 1 in the Examination Category E-D was modified in the 1995 Edition of Section XI to state that sealed or gasket connections need not be disassembled solely for performance of examinations. However without disassembly, most of the surface of the seals and gaskets would be inaccessible.

For those penetrations that are routinely disassembled, a Type B test is required upon final assembly and prior to start-up. Since the Type B test will assure leak-tight integrity of primary containment, the performance of the visual examination would not increase the level of safety or quality. Seals ands gaskets are not part of the containment pressure boundary under current Code rules (NE-1220(b)). When the Electrical and Vacuum Breaker Penetrations containing these materials are tested in accordance with 10 CFR 50, Appendix J, degradation of the seal or gasket material would be revealed by an increase in the leakage rate. Corrective measures would be applied and the component retested. Repair or replacement of seals and gaskets is not subject to Code (1992 Edition, 1992 Addenda) rules in accordance with Paragraph IWA-4111(b)(5) of ASME Section XI."

The licensee stated that the visual examination of seals and gaskets in accordance with IWE-2500, Table IWE-2500-1, is a burden without any compensating increase in the level of safety or quality. The licensee also notes that the requirement is not included in ASME Code, Section XI, 1998 Edition and 2000 Addenda.

The licensee stated that, "Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Testing the seals and gaskets in accordance with 10 CFR 50, Appendix J will provide adequate assurance of the leak-tight integrity of the seals and gaskets."

3.4 Staff Evaluation

After reviewing the licensee's basis for relief, as cited in Section 3.3 above, the staff requested the following additional information (RAI):

RAI-1: "For the performance of leakage rate tests, the licensee is using performance based Option B of Appendix J of 10 CFR Part 50. Based on the performance of the individual components (except equipment hatches and air-locks), the licensee is permitted to extend the Type B leakage rate test interval to as high as 10 years. Such a test interval may not be adequate to ensure the integrity of the associated seals and gaskets. Please provide the (1) Type B leak rate test interval for the three affected components; and (2) justification that the test interval is adequate for the assessment of the integrity of the seals and gaskets associated with these components."

By letter dated August 5, 2004, the licensee provided the following response:

"Kewaunee Nuclear Power Plant has implemented a Containment Leak Rate Test Program that includes an allowance for a Type B or Type C test interval to be extended up to 60 months. With an 18-month operating cycle, this becomes a nominal actual allowed test interval extension of 54 months (4.5 years.) This allowance of 10 CFR Part 50, Appendix J, Option B was first exercised during the 2001 refueling outage. In some cases the initial test interval extension is less than three refueling outages due to balancing of the overall test schedule. The Type B Tests at Kewaunee Nuclear Power Plant have been performed as follows since the start of the 1st 10-year Interval September 9, 1996, through September 9, 2006, for Class MC for the requested penetrations.

- Penetration No. C-10: Performed refueling outages 1998, 2000, and 2003, and is scheduled to be performed every third refueling outage, subsequently (next performance in 2007).
- Penetration No. F-8: Performed refueling outages 1998, 2000, and 2001, and is scheduled to be performed in 2004, and then every third refueling outage, subsequently.
- Penetration No. 41 S/S: Performed refueling outages 1998, 2000, 2001, and 2003, and scheduled to be performed in 2004. Due to other commitments made by the Pumps and Valves IST [inservice testing] Program, this penetration is tested each refueling outage."

Moreover, the licensee provided its programmatic logic and basis to justify that the extended test intervals for performing Type B testing of these penetrations are adequate.

RAI-2: "In the Alternative Method of Examination, the licensee states that it will perform VT-3 examination of the seals and gaskets of these components, if the components are disassembled for maintenance. Since this is the only opportunity available to monitor the aging degradation of the seals and gaskets of these electrical penetrations, please justify why a VT-3 examination is proposed when a component is disassembled, instead of a more detailed VT-1."

In response, the applicant explained that VT-3 examination is required by the ASME Code. In a teleconference dated July 26, 2004, the staff explained that the 1992 Edition and 1992 Addenda of IWE-2500 required VT-3 visual examination, as well as Type B leak rate testing of penetrations at the maximum interval of 24 months (i.e., Option A of 10 CFR Part 50, Appendix J), which in combination ensured the integrity of penetration seals and gaskets. The licensee agreed to perform VT-1 examination of these penetrations when they are disassembled, as documented in Reference 5.4.

The licensee has provided adequate explanation to justify that the seals associated with these penetrations will be monitored during the scheduled Type B testing of the penetrations, and stated that when the penetrations is disassembled for any reason, the licensee will perform a VT-1 examination prior to Type B testing. The staff finds the licensee's alternative acceptable.

4.0 CONCLUSION

On the basis of the information provided by the licensee, the NRC staff concludes that (1) compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, and (2) the proposed alternative to the requirement of IWE-2500 for examination of seals and gaskets provides reasonable assurance of structural integrity. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the staff authorizes the use of relief request RR-MC-2 during the first containment ISI interval, which is scheduled to conclude on September 9, 2006.

5.0 REFERENCES

5.1 Letter from T. Coutu (NMC) to NRC, "Inservice Inspection (ISI) Program Relief Request No. RR-MC-2 For Class MC," dated January 16, 2004 (ADAMS Accession No. ML040280377).
5.2 Section XI of the ASME Code, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1992 Edition and 1992 Addenda.
5.3 10 CFR 50.55a, "Codes and Standards."
5.4 Letter from T. Coutu (NMC) to NRC, "Response to Request for Additional Information Related to Relief Request RR-MC-2," dated August 5, 2004 (ML042300442).

Principal Contributor: H. Ashar

Date: September 10, 2004

Kewaunee Nuclear Power Plant

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