December 13, 2001

Mr. Mark Reddemann
Site Vice President
Kewaunee and Point Beach Nuclear Plants
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - ASME CODE, SECTION XI, RELIEF REQUESTS: PTP-3-10 FOR UNITS 1 AND 2, AND RR-2-32 FOR UNIT 2 (TAC NOS. MB1017 AND MB1023)

Dear Mr. Reddemann:

By letter dated January 8, 2001, Nuclear Management Company, LLC (the licensee), submitted Requests for Relief, PTP-3-10 for Point Beach Nuclear Plant (PBNP), Units 1 and 2, and RR-2-32 for PBNP Unit 2.

Relief Request PTP-3-10, which was submitted pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3)(ii)*, proposes to use, as an alternative to the requirements in the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel* (Code), Section XI, Subsection IWA-5242(a), the requirements of ASME Code Case N-533-1, "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections".

The Nuclear Regulatory Commission (NRC) staff has reviewed the proposed alternative, and has concluded that the use of ASME Code Case N-533-1 for Class 1, 2, and 3, systems is acceptable because it provides an acceptable level of quality and safety for the examination of insulated joints. Therefore, use of the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third inservice inspection (ISI) interval at PBNP Units 1 and 2, or until such time that ASME Code Case N-533-1 is published in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement ASME Code Case N-533-1, the licensee must follow all the provisions in ASME Code Case N-533-1 with the limitations issued in RG 1.147, if any.

Relief Request RR-2-32, which was submitted pursuant to 10 CFR 50.55a(a)(3)(i), proposes to use, as an alternative to the surface examination requirement for reactor pressure vessel (RPV) nuts in ASME Code, Section XI, Table IWB-2500-1, Code Category B-G-1, Item B6.10, the requirements of ASME Code Case N-627, "Visual Examination in Lieu of Surface Examination for RPV Closure Nuts Section XI, Division 1".

* The licensee's cover letter cited 10 CFR 50.55a(a)(3)(ii), but their justification was based upon the provisions of 10 CFR 50.55a(a)(3)(i). Therefore, it is assumed that the licensee's cover letter citation was a typo.

The NRC staff has reviewed the proposed alternative, and has concluded that the use of ASME Code Case N-627, with the VT-1 examination requirements of the 1995 Edition of ASME Code, Section XI, Paragraph IWA-3517, provides an acceptable level of quality and safety for examination of the RPV closure head nuts. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third ISI interval at PBNP Unit 2.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation (SE). If you have any questions regarding this issue or SE, please contact Beth Wetzel, the Senior Project Manager, at 301-415-1355.

Sincerely,

/RA/

William D. Reckley, Acting Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure: Safety Evaluation

cc w/encl: See next page

The NRC staff has reviewed the proposed alternative, and has concluded that the use of ASME Code Case N-627, with the VT-1 examination requirements of the 1995 Edition of ASME Code, Section XI, Paragraph IWA-3517, provides an acceptable level of quality and safety for examination of the RPV closure head nuts. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third ISI interval at PBNP Unit 2.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation (SE). If you have any questions regarding this issue or SE, please contact Beth Wetzel, the Senior Project Manager, at 301-415-1355.

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Docket Nos. 50-266 and 50-301

Enclosure: Safety Evaluation

cc w/encl: See next page

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Point Beach Nuclear Plant, Units 1 and 2

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE THIRD INSERVICE INSPECTION INTERVAL

RELIEF REQUESTS PTP-3-10 AND RR-2-32

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

Inservice inspection (ISI) is to be performed in accordance with the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, Subsection IWA-5242(a), Class 1, 2, and 3 components, and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(6)(g)(i). It is stated in 10 CFR 50.55a(a)(3) that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if the licensee demonstrates that (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 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 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 Point Beach Nuclear Plant (PBNP), Units 1 and 2, the applicable edition of Section XI of the ASME Code for the third 10-year ISI interval is the 1986 Edition.

By letter dated January 8, 2001, Nuclear Management Company, LLC (the licensee), submitted a request for relief from certain ASME Code, Section XI, requirements for the ISI. The information provided by the licensee in support of the request for relief from Code requirements has been evaluated and the basis for disposition is documented below.

ENCLOSURE

2.0 EVALUATION

2.1 Relief Request PTP-3-10, PBNP Units 1 and 2

2.1.1 Components for Which Relief is Requested

Class 1, 2, and 3, pressure retaining bolted connections for systems borated for the purpose of controlling reactivity.

2.1.2 Code Requirement from Which Relief is Requested

ASME Code, Section XI, 1986 Edition.

Article IWA-5242(a): "For systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2."

2.1.3 Content of the Relief Request

Relief is requested from performing VT-2 examinations on bolted connections on systems borated for controlling reactivity during the system pressure tests as required by the 1986 Edition of ASME Code, Section XI, Article IWA-5242(a).

2.1.4 Basis for Requesting Relief and Justification for Granting Relief

The licensee states that the use of ASME Code Case N-533-1, for VT-2 visual examination without the removal of insulation, reduces exposure of personnel to heat stress considerations by not exposing personnel to the replacement of insulation and removal of scaffolding while the system is at normal operating pressure and temperature. Examination of the bolting with the insulation removed earlier in the outage with the system at ambient pressure and temperature would identify the presence of leakage without the adverse impact on personnel.

The licensee also stated that the insulation will be removed from Class 1 bolted connections each outage and from Class 2 and 3 bolted connections each inspection period, and the bolted connections will also be examined at those times.

The licensee states that the justification for granting relief is the fact that ASME Code Case N-533-1 was approved for use by the ASME Code on February 26, 1999, as an alternative to the ASME Code requirements of IWA-5242(a). Performing the VT-2 examinations during the time when the system is at ambient temperature enhances personnel safety. Use of this ASME Code Case provides an acceptable level of quality and safety by the use of an alternate method of performing VT-2 examinations.

2.1.5 Proposed Alternative Examination

PBNP Units 1 and 2 will use the alternative requirements of ASME Code Case N-533-1, "Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections." The alternative examinations will be conducted each refueling outage for Class 1 systems and once a period for Class 2 and 3 systems.

During the system pressure test, if leakage is identified either by discovery of active leakage or evidence of boric acid crystals, the insulation will be removed and the bolted connection will be reexamined. If necessary, the bolted connection will be evaluated in accordance with the corrective measures of subarticle IWA-5250.

2.1.6 Staff's Evaluation

The ASME Code requires the removal of all insulation from pressure-retaining bolted connections in systems borated for the purpose of controlling reactivity when performing VT-2 visual examinations. The ASME Code requires this examination to be performed each refueling outage for Class 1 systems, and each inspection period for Class 2 and 3 systems. The licensee has requested relief from the ASME Code requirements to use ASME Code Case N-533-1. This Code case was approved by ASME on February 26, 1999, but has not yet been approved for general use by the NRC. The Code case does not include the requirement to hold the system at operating pressure and temperature for a minimum of 4 hours for insulated systems and 10 minutes for non-insulated systems before conducting the system pressure test. However, Section XI, Paragraph IWA-5213(d), requires a 4-hour hold time after reaching system pressure and temperature.

The NRC staff finds for Class 1, 2, and 3, systems, the alternative in ASME Code Case N-533-1 provides an acceptable approach to ensuring the leak-tight integrity of systems borated for the purpose of controlling reactivity. The approach includes a system pressure test and VT-2 visual examination which will be performed each period for Class 2 and 3 systems and each outage for Class 1 systems. However, for the staff to find the use of this code case acceptable, the system pressure test will have to utilize a minimum 4-hour hold time for insulated systems and 10 minutes for noninsulated systems. The 4-hour hold time will allow any leakage to penetrate the insulation, thus, providing a means of detecting any significant leakage with the insulation in place. By removing the insulation each outage for Class 1 systems and each inspection period for Class 2 and 3 systems, the licensee will be able to detect minor leakage indicated by the presence of boric acid crystals or residue. The staff finds this two-step approach will provide an acceptable level of quality and safety for bolted connections in borated systems.

2.1.7 Staff's Conclusion

Based on the above evaluation, the NRC staff concludes that the use of ASME Code Case N-533-1 for Class 1, 2, and 3, systems is acceptable because it provides an acceptable level of quality and safety for the examination of insulated joints. The safety evaluation allows the licensees to perform the VT-2 visual examination with the insulation in place during a system pressure test following a minimum 4-hour hold time, and requires the insulation be removed for direct visual examination for any evidence of leakage each outage for Class 1 bolted connections. Under the licensee's proposal for Class 2 and 3 systems, the Code case rules would be the same except that the inspection frequency would be the ASME Code-required frequency of every inspection period as stated in ASME Code Case N-533-1. Therefore, use of the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third ISI interval at PBNP Units 1 and 2, or until such time that ASME Code Case N-533-1 is published in a future revision of Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement ASME Code Case N-533-1, the licensee must follow all the provisions in ASME Code Case N-533-1 with the limitations issued in RG 1.147, if any.

2.2 Relief Request RR-2-32 for PBNP Unit 2

2.2.1 Components for Which Relief is Requested

Class 1 reactor pressure vessel closure head nuts.

2.2.2 ASME Code Requirement from Which Relief is Requested

ASME Code, Section XI, 1986 Edition, "Rules for Inservice Inspection of Nuclear Plant Components," Table IWB-2500-1, Examination Category B-G-1, Reactor Vessel, Item No. B6.10, closure head nuts, requires a surface examination of all closure head nuts each interval.

2.2.3 Content of the Relief Request

Relief is requested to conduct a VT-1 visual inspection in lieu of the surface examinations of reactor pressure vessel (RPV) closure head nuts as required by the 1986 Edition of ASME Code, Section XI, Table IWB-2500-1, Code Category B-G-1, Item No. B6.10.

2.2.4 Basis for Requesting Relief and Justification for Granting Relief

The licensee states that only the outside surface of the RPV closure head nuts is readily available for surface examination. The inside of the nuts is difficult to clean for either liquid penetrant or magnetic particle examination. It is also possible that pooling of the liquid penetrant or magnetic particles can occur because the nut must be placed on its side for examination. The pooling interferes with the surface examination. The licensee also stated that damage could occur to the nuts during handling due to the weight of the nuts and the difficulty of moving them.

The 1986 Edition of ASME Code, Section XI, does not provide acceptance criteria for Examination Category B-G-1 surface flaws found during the examinations. PBNP Unit 2 uses engineering evaluations on indications to determine if a nut is acceptable for continued service. This results in additional handling of the nuts and potentially more damage as the engineers determine whether an indication is acceptable.

Beginning with the 1989 Addenda of ASME Code, Section XI, the examination requirement for RPV closure head nuts was changed from a surface examination to a visual VT-1 examination. In addition, the acceptance standards of IWB-3517 were adopted, which is the same standard for B-G-02 bolting. This examination technique and acceptance standard has not been changed in later editions of the Code.

The licensee stated that ASME-approved Code Case N-627 for use on May 7, 1999, as an alternative to the requirements of Table IWB-2500-1, Code Category B-G-1, Item No. B6.10.

The 1995 Edition of ASME Code, Section XI, with Addenda through 1996 includes a requirement to perform a VT-1 on RPV nuts instead of a surface examination. This Code edition and addenda have been approved for use in the latest revision to 10 CFR 50.55a.

The licensee stated that the VT-1 visual examination provides a better assessment of the condition of the closure head nut when compared to a surface examination.

2.2.5 Proposed Alternative Examination

PBNP Unit 2 proposes to use the alternative requirements of ASME Code Case N-627, "Visual Examination in Lieu of Surface Examination for RPV Closure Head Nuts, Section XI, Division 1."

The acceptance criteria of the 1995 Edition with Addenda through 1996, IWB-3517, will be used for the evaluation of the indications noted during examinations.

2.2.6 Staff's Evaluation

The examination requirement for RPV closure head nuts was changed from a surface examination to a VT-1 examination in the 1989 Addenda of ASME Code, Section XI. This change to the Code has been retained in later editions of the Code. There were two major reasons for making this change. The first reason is that the closure head nuts were susceptible to damage as a result of handling during the surface examination. The second reason was that due to the way that nuts are loaded (the threads are in compression), they are not susceptible to primary water stress corrosion cracking (PWSCC). The purpose of the surface examination is to identify evidence of PWSCC. The NRC staff is not aware of any occurrences of PWSCC in any kind of nuts. Therefore, performance of a VT-1 visual examination in lieu of a surface examination will provide adequate assurance of structural integrity of the RPV closure head nuts, while at the same time, eliminate the likelihood of damage associated with handling during a surface examination.

2.2.7 Staff's Conclusion

Based on the above evaluation, the NRC staff concludes that the use of ASME Code Case N-627 with the VT-1 examination requirements of the 1995 Edition of ASME Code, Section XI, Paragraph IWA-3517, provides an acceptable level of quality and safety for examination of the RPV closure head nuts. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the third ISI interval at PBNP Unit 2.

3.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that there is reasonable assurance that the health and safety of the public will not be endangered by implementation of the proposed alternatives, and that such activities will be conducted in compliance with the Commission's regulations, therefore, Relief Requests PTP-3-10 (for PBNP Units 1 and 2) and RR-2-32 (for PBNP Unit 2) are authorized.

Principal Contributor: J. Davis

Date: December 13, 2001