September 20, 2007

Mr. Dennis Koehl
Site Vice President
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT UNITS 1 & 2: FOURTH 10-YEAR INTERVAL INSERVICE INSPECTION REQUEST FOR RELIEF NO. 15, ALTERNATE METHODS FOR PRESSURE TESTING OF BURIED COMPONENTS (TAC NOS. MD3678 AND MD3679)

Dear Mr. Koehl:

By letter dated November 20, 2006, Nuclear Management Company, LLC (NMC) resubmitted Relief Request (RR) No. 15, for the fourth 10-year interval inservice inspection (ISI) program concerning the pressure testing of non-isolable buried components at Point Beach Nuclear Plant (PBNP), Units 1 & 2. NMC proposed relief from performing the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) required pressure test of the buried portion of service water piping by measuring rate of pressure loss or change in flow between the ends of the buried components. Alternatively, NMC proposed a test that will confirm that flow during operation is not impaired.

Based on information provided in RR No. 15, the NRC staff concluded in the enclosed safety evaluation (SE) that NMC's proposed alternative provides reasonable assurance of structural integrity and that compliance with the ASME 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* 50.55a(a)(3)(ii), the NRC staff authorizes the ISI program alternative proposed in RR No. 15 for the fourth 10-year ISI interval at PBNP. The RR is authorized for the fourth 10-year interval which ends on June 30, 2012. A copy of the SE is enclosed.

Sincerely,

/RA PST for/

Travis L. Tate, Acting Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301
Enclosure: Safety Evaluation
cc w/encl: See next page

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Division of Operating Reactor Licensing
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Docket Nos. 50-266 and 50-301

Enclosure: As Stated

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OFFICIAL RECORD COPY

Point Beach Nuclear Plant, Units 1 and 2

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. 15 FOURTH 10-YEAR ISI PROGRAM

ALTERNATIVE EXAMINATION TECHNIQUES ON BURIED COMPONENTS

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

By letter dated November 20, 2006, Nuclear Management Company, LLC (NMC) resubmitted Relief Request (RR) No. 15, related to the fourth 10-year interval inservice inspection (ISI) program for the Point Beach Nuclear Plant (PBNP), Units 1 & 2. In RR No. 15, NMC requested relief from performing the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) required pressure test of the buried portion of service water piping by measuring rate of pressure loss or change in flow between the ends of the buried components.

NMC has stated that the isolation valves utilized for measuring rate of pressure loss are not suitable for performing a pressure isolation function and there is no flow instrumentation upstream of the buried piping. Alternatively, the licensee proposed a test that will confirm that flow during operation is not impaired. The integrity of the buried piping will be verified during quarterly pump testing under inservice testing program for pumps and valves. The Nuclear Regulatory Commission (NRC) staff has reviewed NMC's proposed alternative pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.55a(a)(3)(ii) since compliance to the ASME Code requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

RR No. 15 was previously submitted, supplemented, and subsequently withdrawn. However, subsequent to the withdrawal, NMC concluded that relief from the requirements of ASME Code, Section XI, IWA-5244 is appropriate. Accordingly, this RR No. 15 was resubmitted for the fourth 10-year interval, which ends June 30, 2012. The result of the NRC staff's review of RR No. 15 for PBNP is provided in the following safety evaluation (SE).

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) must 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 In-service Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. Pursuant to 10 CFR 50.55a(a)(3), alternatives to requirements may be authorized by the NRC if the applicant demonstrates that: (i) the proposed alternatives 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. The regulations require that in-service 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) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein.

NMC resubmitted RR No. 15, pursuant to 10 CFR 50.55a(a)(3)(ii), which proposes an alternative to the requirements of the ASME Code, Section XI, IWA-5244(b)(1). NMC's alternative is based on the requirements of the ASME Code, Section XI, IWA-5244(b)(2) to perform a system pressure test for non-isolable buried components by confirming that flow during operation is not impaired.

3.0 PROPOSED RELIEF REQUEST

3.1 Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," Paragraph(a)(3)(ii), relief is requested from the requirements of ASME Code, Section XI, IWA-5244(b)(1), on the bases that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The buried piping consists of about 90 feet of 30-inch diameter carbon steel (CS) piping located between the circulating water pumphouse (CWP) and the turbine building (TB). The piping sections are buried approximately seven feet underground with a road built over the piping. There is no access to this buried piping other than by excavation. No annulus was provided during original construction that would allow for testing or examination of these buried sections of piping. Therefore, it is not possible to perform a direct VT-2 examination when performing a system leakage test.

For a pressure loss test, it would be necessary to close six large butterfly valves to isolate the buried piping, three per piping section. These valves are not expected to provide an adequate pressure test boundary. System modification or extensive valve seat maintenance on the six butterfly valves would be required to perform an adequate pressure loss test.

The PBNP service water system for both units is configured with a ring header such that both sides (e.g., north and south headers) of the system are supplying both units. Isolation for a pressure decay test of the buried piping would isolate one service water header. This action requires entry into dual unit technical specification action condition (TSAC) TS AC 3.7.8. PBNP

TS 3.7.8 requires, "SW [service water] ring header continuous flow path not interrupted," for SW system operability. If the SW ring header continuous flow path is interrupted, the ability of the system to provide required cooling water flow to required equipment must be verified within one hour in accordance with TSAC 3.7.8.C, Required Action C.1 and the SW ring header continuous flow path must be restored within seven days in accordance with TSAC 3.7.8.C, Required Action C.2. TSAC entries are minimized to ensure full capability of the system if ever challenged by a design basis event. IWA-5244(b)(1) also allows determining the change in flow between the ends of the buried components. Flow instrumentation is installed on the downstream side of the buried piping, however, no flow instrumentation is installed on the upstream side of the buried piping. There is not a sufficient run of straight pipe upstream of the buried piping, therefore, accurate flow measurements using temporary ultrasonic flow meters are not possible. The installation of permanent flow instruments would require system modification.

Performing the specified examinations or testing would require either excavating the buried piping, entering multiple TS action statements, or performing major modifications to system piping. Therefore, compliance with the specified requirements is a hardship without a compensating increase in the level of quality and safety.

3.2 System/Components for which the Relief is Requested

Approximately 90 feet of Class 3, 30-inch diameter CS SW piping for both units is buried between the CWP and the TB. These sections of piping are not accessible for pressure testing.

3.3 ASME Code Requirements

Examination Category D-B, Item No. D2.10 of ASME Code, Section XI requires a system leak test and visual examination of the service water piping. For buried components where a visual examination (VT-2) cannot be performed, the examination is satisfied by IWA-5244(b).

IWA-5244, Buried Components:

(b) For buried components where a VT-2 examination cannot be performed, the examination requirement is satisfied by the following:

1) The system pressure test for buried components that are isolable by means of valves shall consist of a test that determines the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components. The acceptable rate of pressure loss or flow shall be established by the Owner.

2) The system pressure test for non-isolable buried components shall consist of a test to confirm that flow during operation is not impaired.

3) Test personnel need not be qualified for VT-2 examination.

3.3.1 Applicable Code Edition and Addenda

The ISI program Code of Record (COR) is based on the ASME Code, Section XI, 1998 Edition with 2000 Addenda.

3.4 Proposed Alternative and Basis

In lieu of performing a test in accordance with the requirements specified in IWA-5244(b)(1), NMC proposes to use the requirements of IWA-5244(b)(2).

IWA-5244, Buried Components:

IWA-5244(b)(2): The system pressure test for non-isolable buried components shall consist of a test to confirm that flow during operation is not impaired. The integrity of the buried piping will be verified during quarterly service water pump testing. Trending of the pressure drop across each pump will indicate leakage through the buried piping assuming no degradation of the pump. Should the pump test results fall in the required action range of the ASME Code, additional testing and evaluations will be performed to determine whether the unsatisfactory test results are due to degraded pump performance, pump test valve leakage, or through-wall leakage. If pump acceptance criteria is not met, the affected pump(s) will be declared inoperable. The appropriate TSAC will be entered and an action request will be written for the affected equipment. An engineering evaluation will be performed to assess the change in the performance of the pump, including the potential for piping leakage.

NMC requests approval of the proposed alternative to test the buried portion of SW piping in conjunction with the quarterly testing of the SW pumps as it will detect significant through-wall leakage if present and would provide reasonable assurance of operational readiness.

3.5 Duration of the Proposed Request

The duration of the proposed alternative is for the fourth inservice interval, which began on July 1, 2002, and is scheduled to end on June 30, 2012.

4.0 TECHNICAL EVALUATION

The specified COR for ISI requires a system leak test by visual examination (VT-2) on buried sections of the CS SW piping which is located between the CWP and the TB at PBNP, both units. NMC cannot perform the required VT-2 examination because no annulus was provided at original construction. Therefore, no access to the buried piping can be gained by means other than excavation. ASME Code, Section XI, IWA-5244 allows alternate methods of examination for buried components in situations where a VT-2 examination cannot be performed.

One method is by performing a system pressure test isolable by way of valves to determine a rate of pressure loss or to determine a change in flow between the ends of the buried piping. The buried SW piping at PBNP utilizes butterfly valves which were not designed for pressure isolation, therefore, these valves are unsuitable to determine a meaningful rate of pressure loss. In addition, the upstream end of the buried SW piping is not installed with instrumentation for flow measurement. As a result, this ASME Code required test cannot be performed.

The ASME Code, however, also allows for a system pressure test for non-isolable buried components designed to confirm that flow during operation is not impaired. NMC proposed to verify the integrity of the non-isolable buried piping by measuring the pressure drop across the SW pumps during quarterly testing.

The NRC staff agrees with NMC's approach to perform a system pressure test by which flow through the buried piping can be qualitatively assessed during quarterly SW pump testing. Utilizing existing downstream flow instruments, a reference flow would correspond to a target pump head. As the pump degrades, the developed head decreases at the referenced flow. However, a decrease in pump head may also indicate increase in flow due to any through-wall leakage in the buried piping, side-stream leakage into the isolated non-critical headers or degradation of the SW pump itself. An assessment can be made regarding the integrity of buried piping, from drifting of head loss (i.e., pressure drop) during a quarterly SW pump test at the reference flow. NMC stated that should the pump test results fall in the required action range of the Code, additional testing and evaluations shall be performed to determine whether the unsatisfactory test results are due to side-stream leakage past butterfly isolation valves, degraded pump performance, or through-wall leakage in the buried portion of piping.

The NRC staff has determined that NMC's proposed alternative to test the buried portion of SW piping in conjunction with quarterly testing of SW pumps would detect significant through-wall leakage if present in the subject buried line and would provide reasonable assurance of structural integrity. Compliance with the original or first alternate ASME Code requirement would require excavation or valve modification or installation of an additional flow measuring device at the inlet end of the buried SW piping which would result in hardship without a compensating increase in the level of quality and safety.

5.0 CONCLUSION

The NRC staff concludes that for the buried portion of SW piping, compliance with the ASME Code requirement to perform a test that determines the rate of pressure loss or the change in flow would result in hardship or unusual difficulty to NMC without a compensating increase in the level of quality and safety. NMC's proposed alternative provides reasonable assurance of structural integrity. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the proposed alternative in RR No. 15 is authorized for the fourth 10-year ISI interval of PBNP both units. All other requirements of the ASME Code Section XI for which relief has not been specifically requested remain applicable, including a third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: D. Tarantino, NRR