March 30, 2004

NRC 2004-0031
10 CFR 50.55a(a)(3)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555

Point Beach Nuclear Plant, Unit 1
Docket 50-266
License No. DPR-24
NRC Order EA-03-009 Relaxation Request

Reference: 1) NRC Order EA-03-009, "Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 20, 2004

Nuclear Management Company, LLC (NMC), requests a review for approval of relaxation from certain requirements of Nuclear Regulatory Commission (NRC) Order EA-03-009 (reference 1), for the Point Beach Nuclear Plant, Unit 1. Enclosure I contains the basis for relaxation, which states that the proposed alternative for inspection of specific nozzles provides an acceptable level of quality and safety. NMC proposes an alternative to the requirements specified in Order EA-03-009, in accordance with paragraph IV.F.(1), pursuant to 10 CFR 50.55a(a)(3). This relaxation may become necessary in the event that inspection of each reactor vessel head penetration in accordance with paragraph IV.C.(5)(b) is not possible during the upcoming inspection.

As discussed during a meeting between NMC representatives and NRC staff on February 19, 2004, there is a possibility that inspection of certain nozzles in accordance with the requirements of the Order may by unduly difficult. However, if the inspection were successful, no relaxation from the Order would be required. This relaxation would only be needed if physical limitations preclude full compliance with paragraph IV.C.(5)(b) of Order EA-03-009 during the April 2004 refueling outage of Point Beach Unit 1. Should such a condition arise, NMC would provide NRC staff with detailed information regarding the extent of inspection coverage to confirm that it is bounded by the analysis provided in Enclosure I. To allow for advance staff review of this analysis, supporting calculations are provided in Enclosure II. The justification for the analysis is based, in part, on information contained in WCAP-14000, "Structural Integrity Evaluation of Reactor Vessel Head Penetrations to Support Continued Operation: Point Beach

A101

Units 1 & 2". Proprietary and non-proprietary versions of WCAP-14000 were transmitted to the NRC by Westinghouse Electric Company on September 27, 2002.

This letter contains no new commitments and no revisions to existing commitments.

Gary D. Van Middlesworth
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosures:

I Justification for Relaxation
II Structural Integrity Associates Report SIR-04-032, Revision 0

cc: Regional Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, NRR, USNRC
NRC Resident Inspector - Point Beach Nuclear Plant
PSCW

ENCLOSURE I

NRC ORDER EA-03-009 RELAXATION REQUEST

JUSTIFICATION FOR RELAXATION

POINT BEACH NUCLEAR PLANT, UNIT 1

INTRODUCTION

Nuclear Management Company, LLC (NMC) requests a review for approval of relaxation from certain requirements of Nuclear Regulatory Commission (NRC) Order EA-03-009, for the Point Beach Nuclear Plant, Unit 1. NMC proposes an alternative to the requirements specified in Order EA-03-009, in accordance with section IV.F.(1), pursuant to 10 CFR 50.55a(a)(3). This alternative would include use of structural integrity evaluations and probabilistic models to demonstrate the acceptability of limited non-destructive examinations (NDE).

In addition to a bare-metal visual exam, NMC will attempt a 100% ultrasonic testing (UT) examination of the CRDM nozzles during the upcoming Point Beach Unit 1 refueling outage (U1R28). However, during the previous Point Beach Unit 1 refueling outage, some limitations in inspection coverage were experienced. The steep curvature of the reactor pressure vessel (RPV) at the outer row of control rod drive mechanism (CRDM) nozzles resulted in an inability to obtain complete coverage with the existing NDE equipment. Circumferential coverage limitations were found on several nozzles. Additionally, NMC was unable to scan one (1) inch below the CRDM J-groove weld of several of the nozzles. In some of these nozzles, thermal sleeves were removed to allow full access for material inspection with a rotating UT probe instead of a blade UT probe. This process of thermal sleeve removal and reattachment expended a large amount of personnel dose (approximately 3 rem/nozzle).

Following the previous Unit 1 inspection in 2002, NDE equipment has been modified and full coverage was achieved on a subsequent inspection of the Point Beach Unit 2 CRDM nozzles. Although full inspection coverage on Unit 1 during its upcoming refueling outage will be attempted, it may not be achieved due to unit-specific differences that were not accounted for in the modification of the NDE equipment.

The information contained in this relaxation request is submitted for advance staff review as a contingency in case the need for relaxation actually arises. NMC understands that relaxation of NRC Order EA-03-09 by the NRC will not be approved without submittal of as-found inspection results and its specific analyses. If inspection limitations are found during the outage and NMC believes that an alternative to the requirements of the order is appropriate, detailed examination results and supporting calculations will be submitted to the NRC staff. Specific relaxation of the requirements of NRC Order EA-03-09 would then be sought. If no such limitations were encountered, NMC would inform the staff that no relaxation from the Order need be provided.

COMPONENT IDENTIFICATION

The affected components are the Point Beach Nuclear Plant Unit 1 reactor pressure vessel (RPV) head penetration nozzles.

APPLICABLE DOCUMENT

The applicable document is Order EA-03-009, "Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 20, 2004.

APPLICABLE REQUIREMENT

Order EA-03-009 established interim inspection requirements for RPV head penetration nozzles, depending on their susceptibility to primary stress corrosion cracking. The Point Beach Unit 1 RPV head is currently in the high susceptibility category.

Order EA-03-009 specifies the requirements governing inspection of RPV heads in the high susceptibility categories in section IV.C.(1), using the techniques of paragraphs IV.C.(5)(a) and IV.C.(5)(b). If ultrasonic testing is selected as the method of nondestructive examination (NDE), the following is required for each penetration.

> Ultrasonic testing of the RPV head penetration nozzle volume (i.e., nozzle base material) from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches); **OR** from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater. In addition, an assessment shall be made to determine if leakage has occurred into the annulus between the RPV head penetration nozzle and the RPV head low-alloy steel.

BASIS FOR RELAXATION REQUEST

During performance of the spring 2004 Unit 1 refueling outage, NMC may require relaxation from paragraph IV.C.(5)(b) of Order EA-03-009, from the requirement to perform nonvisual NDE on the entire prescribed region of each of the RPV head penetration nozzles at Point Beach Unit 1. The justification for this relaxation request is based on the methodologies contained in Enclosure II and WCAP-14000 "Structural Integrity Evaluation of Reactor Vessel Head Penetrations to Support Continued Operation: Point Beach Units 1 & 2". The information contained in this submittal is

provided for advance review by the NRC staff as a contingency, should the need for relaxation arise.

The final basis for relaxation, which will only become available during the RPV head inspection, is the analyses of as-found inspection results using the methodologies contained in Enclosure II and WCAP-14000.

If a UT examination cannot be performed two (2) inches below the lowest point at the toe of the J-groove weld, the above evaluations will be supplemented by calculations demonstrating that the unexamined area has an operating stress level (including all residual and normal operation stresses) of 20 ksi tension or less.

PROPOSED ALTERNATE EXAMINATION

If relaxation from the Order is found to be required, NMC would propose that the extent of ultrasonic testing conducted of each RPV head penetration nozzle, in accordance with paragraph IV.C.(5)(b)(i) of Order EA-03-009, be modified based on the analyses of as-found inspection results.

CONCLUSION

In summary, NMC is submitting the methodologies on which to base relaxation from paragraph IV.C.(5)(b) of Order EA-03-009, from the requirement to perform nonvisual NDE on the entire prescribed region of each of the RPV head penetration nozzles at Point Beach Unit 1. If inspection limitations are found during the outage, and NMC believes that an alternative to the requirements of the Order is appropriate, detailed examination results and supporting calculations would be submitted to the NRC staff. Based on the information presented, and pursuant to 10 CFR 50.55a(a)(3)(i), NMC would then request approval of the relaxation on the basis that the proposed alternative provides an acceptable level of quality and safety.

PERIOD FOR WHICH RELIEF IS REQUESTED

The proposed alternative will apply only to the Point Beach Unit 1 inspections required by Order EA-03-009 for the spring 2004 refueling outage (U1R28).

ENCLOSURE II

NRC ORDER EA-03-009 RELAXATION REQUEST

STRUCTURAL INTEGRITY ASSOCIATES REPORT SIR-04-032, REVISION 0

PROBABILISITIC FRACTURE MECHANICS ANALYSIS OF CRDM INSPECTION ALTERNATIVES AT POINT BEACH UNIT 1