NMC
Committed to Nuclear Excellence

Point Beach Nuclear Plant
Operated by Nuclear Management Company, LLC

June 23, 2005

NRC 2005-0081
10 CFR 50.90

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

Point Beach Nuclear Plant Unit 2
Docket 50-301
License Nos. DPR-24 and DPR-27

Supplement 5 to Request for Exigent Review of Heavy Load Analysis

Enclosed for Nuclear Regulatory Commission (NRC) review and approval are revised pages from the Point Beach Nuclear Plant (PBNP) finite element analysis (FEA) of the postulated reactor vessel head (RVH) drop scenario for PBNP Unit 2. The FEA, prepared by Sargent & Lundy, is entitled, "Analysis of Postulated Reactor Head Drop Onto the Reactor Vessel Flange," Revision 2, dated June 23, 2005. The revised FEA provides analysis results of the stresses on the reactor vessel nozzles as discussed during telephone conferences held with representatives of the NRC on June 22 and 23, 2005. In accordance with discussions held on June 23, 2005, an abridged version highlighting revisions to the FEA is being submitted for review.

As requested in the June 23, 2005, teleconference, NMC consulted with its vendors and reevaluated calculational assumptions and application of engineering judgment. NMC concludes that a reasoned and informed basis exists for attributes of the analyses supporting the conclusion that reactor coolant hot leg and cold leg piping remain capable of delivering coolant after the displacements from the RVH drop event have been applied.

Additionally, NMC has evaluated its previous submittals in aggregate and identified an opportunity to clarify previously unstated assumptions. The attached piping to the reactor coolant system (RCS) was not modeled or specifically analyzed for deflection and stress values as a result of the vessel deflection from a RVH drop. Based on the ability to analyze and demonstrate the RCS piping acceptability for a bounding deflection of 4 inches, it was determined that the attached piping would also be acceptable. This conclusion was based upon the fact that all connections to the RCS piping are outside of the biological shield wall; thus, the deflection would be much less than the total deflection of the RCS piping. In addition, the attached piping is of smaller diameter and is more flexible. The main connections to the RCS, credited for maintaining core cooling and makeup following a RVH drop, are the residual heat removal (RHR) lines, cold leg safety injection (SI) injection lines and charging. The RHR suction and return lines are 10-inch lines; the cold leg SI flow path are through the 10-inch SI accumulator injection line connected to the RCS. Charging and

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auxiliary charging are connected through a 3-inch and 2-inch line to the RCS. The 10-inch connections are the closest connections of concern to the reactor vessel and would therefore experience the greatest relative deflection. Looking at the ratio of the distance from the reactor vessel to the steam generators or reactor coolant pumps would yield a deflection of approximately 25 percent, or less, of the total vessel deflection. For a vessel deflection of 3.2 inches, the deflection at the connection would be approximately 0.8 inches.

The shortest horizontal piping run from the 10-inch connections at the cold legs to the first vertical support (which is a spring hanger), is greater than 6 feet. The shortest vertical run is 12 feet (on the opposite cold leg). Both connections have horizontal offsets that decrease their stiffness in the vertical direction. The shortest horizontal run to an anchor is greater than 17 feet with an intervening vertical loop.

The RHR return line connects to the SI accumulator injection line over 23 linear feet from the B loop cold leg connection.

The condition is very similar for the RHR suction line connection to the A hot leg. The distance to the closest anchor is greater than 8 feet with an intervening vertical loop containing an additional 30 feet of piping.

In each case, the total linear distance between anchors for the attached piping is greater than the worst RCS piping case, and that case was shown to be acceptable for a deflection of 4 inches. Based on this fact, the added flexibility of smaller diameter piping and an equivalent deflection of approximately 0.8 inches, it was judged that a detailed analysis of the connected piping was not necessary. A structural engineer performed a walk down of the piping and supports to enhance the judgment and conclusions presented above.

Additionally, the integrity of the two 6-inch core deluge lines was evaluated based on comparing the section properties and applicable pipe spans to the RCS piping. This comparison, coupled with the fact that the core deluge lines are more flexible than the RCS piping, leads to the conclusion that the integrity of the core deluge lines are bounded by the assessment for the RCS piping.

Summary of Commitments:

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

In accordance with 10 CFR 50.91, a copy of this submittal, with attachments, is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 23, 2005.

Dennis L. Koehl
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosure

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