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NMC
Committed to Nuclear Excellence

Kewaunee / Point Beach Nuclear
Operated by Nuclear Management Company, LLC

NRC 2002-0071

10 CFR 50.90

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

Dockets 50-266 and 50-301
Point Beach Nuclear Plant, Units 1 and 2
Response to Request for Additional Information
License Amendment Request 223
Technical Specification LCO 3.6.4, Containment Pressure

By submittal dated January 11, 2002, Nuclear Management Company, LLC (NMC) requested an amendment to the Technical Specifications (TS) for Point Beach Nuclear Plant, Units 1 and 2. The proposed amendment would revise TS 3.6.4, Containment Pressure, to reduce the maximum allowable pressure from three psig to two psig.

During a conference call between NMC representatives and NRC staff on July 24, 2002, NRC staff requested additional information regarding certain aspects of the submittal. Attachment 1 of this letter provides the NMC response to the staff's questions. The information provided does not require any changes to the proposed Technical Specifications nor their Bases.

We have determined that this additional information for the proposed amendments does not involve a significant hazards consideration, authorize a significant change in the types or total amounts of effluent release, or result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, we conclude that the proposed amendments meet the categorical exclusion requirements of 10 CFR 51.22(c)(9) and that an environmental impact appraisal need not be prepared.

NMC requests approval of the proposed License Amendment by October 2002, with the amendment being implemented within 45 days. This proposed amendment supports implementation of proposed License Amendment 226, Calorimetric Power Uprate.

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

To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects, these statements are not based entirely on my personal knowledge, but on information furnished by cognizant NMC employees and consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

A001

I declare under penalty of perjury that the foregoing is true and correct.
Executed on August 19, 2002.

Fred Cayia
Acting Site Vice President

JG/kmd

Attachment: 1 - Response to Request for Additional Information

cc: NRC Regional Administrator
NRC Resident Inspector
NRC Project Manager
PSCW

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST 223

TECHNICAL SPECIFICATION LCO 3.6.4, CONTAINMENT PRESSURE

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

The following information is provided in response to the Nuclear Regulatory Commission staff's request for additional information (RAI) on NMC's January 11, 2002 License Amendment Request (LAR), as discussed during a telephone conference between NRC and NMC staff on July 24, 2002. The LAR proposes to modify Technical Specification (TS) 3.6.4, Containment Pressure, to reduce the maximum allowable pressure from three psig to two psig.

The NRC staff's questions are restated below, with the NMC response following.

<u>NRC Question:</u>

1. The January 11, 2002 submittal states that the secondary side of the steam generator is modeled as a homogeneous saturated mixture.

    (a) Please provide a reference for this approach.

    (b) What is the basis for this assumption?

    (c) How do results for the postulated steam line break using this model compare with those from a more detailed model of the steam generator in terms of heat transfer from the reactor coolant to the secondary side fluid and critical break flow?

<u>Response:</u>

This approach is described in WCAP 7907-P-A, "LOFTRAN Code Description", dated April 1984. This modeling approach is also discussed in WCAP 8822-S1-P-A. The basis for the assumption is provided in these WCAPs.

In the original issue of WCAP 8822, the MARVEL code was used to model the full plant system. The results from the more detailed steam generator model in the TRANFLO code for the break flow effluent quality were used as input to MARVEL. As part of that study, the results of the MARVEL and TRANFLO codes were compared to confirm that MARVEL was conservatively predicting break flow parameters. Upon transfer from the MARVEL code to the use of LOFTRAN, a similar comparative study was performed between MARVEL and LOFTRAN to ensure that the LOFTRAN results were consistent with the MARVEL results. This study is documented in WCAP 8822-S1-P-A. LOFTRAN provides results that compares very well with the MARVEL code (and therefore the TRANFLO code).

<u>NRC Question:</u>

2. Are the pump head curves used for the mass and energy release analyses applicable to Point Beach?

<u>Response:</u>

Yes. The calculated safety injection flows as a function of RCS pressure used Point Beach pump head curves and system loss values. They correspond to a single train of ECCS with an applied 10% pump head degradation.

NRC Question:

3. Page 7/11 of the submittal: Modeling the effect of containment pressure as a function of time on mass and energy release from the steam line break appears to be a new approach in licensing calculations.

   (a) How is the containment pressure vs. time determined, including the effect of containment pressure on the mass and energy release from the faulted steam generator?

   (b) Is there feedback between the containment pressure and the calculated mass and energy release? How is this feedback accomplished?

   (c) What conservative assumptions are used in determining the containment pressure as a function of time by this approach?

Response:

In the LOFTRAN steamline break analyses, the containment pressure as a function of time is input as a data array. Iterations were manually performed with the containment response analysis (COCO) to determine the appropriate containment pressure input. The final containment pressure input array was compared to the COCO output to confirm that it is properly bounded by the COCO result.

The feedback between the calculated containment pressure and the break flow is accomplished through the iterative procedure described above. Prior to the transition from critical to non-choked flow, the change in containment pressure has no effect on the break flow. An elevated containment backpressure causes the transition from critical to non-choked break flow to occur earlier in the transient, reducing the break flow rate after the transition has occurred. Although no formal analysis case was performed with an atmospheric backpressure, it is estimated that the benefit to the peak containment pressure is approximately 1.5 psig.

The containment pressure input into LOFTRAN is confirmed to be conservative by verifying that the input is bounded by the results produced by COCO. It is further noted that modeling the containment backpressure makes the interface between the steamline break analysis and the containment response analysis physically consistent and realistic. By modeling an atmospheric containment backpressure, the faulted steam generator pressure will actually decrease below that of the containment, which is not physically realistic.

NRC Question:

4. Describe how the containment spray flow as a function of containment pressure is calculated?

Response:

The containment spray flow rate versus containment pressure is calculated by Westinghouse based on the Point Beach pump head curves and system flow resistances. The pump head curve is also degraded by 10%. The resulting curve is input into COCO as a data array.

NRC Question:

5. Please explain why measurement uncertainties are not included in the 2.0 psig limit.

Response:

It was decided to set the analytical limit for this input at 2.0 psig. The surveillance performed for the containment pressure accounts for instrument errors.

NRC Question:

6. What are the operational consequences of lowering the containment pressure limit from 3 psig to 2 psig? For example, what is the expected difference in frequency of venting the containment?

Response:

The principle operational consequence of lowering the maximum normal containment pressure is an increase in the frequency of forced venting. An informal review of forced vent frequency shows that they have increased from approximately two per month per unit to four per month per unit. The activity vented to the atmosphere during these forced vents is insignificant with respect to allowable release limits.