May 13, 2004

Mr. Thomas Coutu
Site Vice President
Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC
N490 State Highway 42
Kewaunee, WI 54216

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - CLARIFICATION TO ISSUANCE OF AMENDMENT NO. 172, STRETCH POWER UPRATE (TAC NO. MB9031)

Dear Mr. Coutu:

On February 27, 2004, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 172 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (KNPP).

Amendment No. 172 approved the KNPP 6.0-percent stretch power uprate and revised the Operating License and Technical Specifications (ADAMS Accession No. ML040430633).

One clarification is warranted on the safety evaluation (SE) for Amendment No. 172.

In Section 3.8.2.1.2.1, “Long-Term [Loss-of-Coolant-Accident] LOCA Mass and Energy Release,” one clarification is warranted on page 88 of the SE. Enclosure 1 contains the clarification to the SE. Please remove page 88 and replace with pages 88 and 88a between the first and second paragraphs in Section 3.8.2.1.2.1. This clarification does not affect the NRC staff’s conclusion of Section 3.8.2.1.2.1.

If there are any comments or questions concerning this letter, please contact me at (301) 415-1446.

Sincerely,

/RA/

John G. Lamb, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Insertion to SE page 88
2. KNPP Corrective Action Program No. 020538

cc: See next page

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Kewaunee Nuclear Power Plant

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3.8.2.1.2 Loss-of-Coolant Accident Containment Analyses

The licensee divides the analysis of the response of the containment to a LOCA into a short-term response and a long-term response. The short-term analyses are also called subcompartment analyses. SRP Section 6.2.1.2 defines a subcompartment as any fully or partially enclosed volume within the primary containment that houses high-energy piping and would limit the flow of fluid to the main containment volume in the event of a rupture of the high-energy piping within the volume. These analyses are performed in order to demonstrate that the walls of subcompartments within the containment will maintain their structural integrity when exposed to the large pressure difference which arises due to rapid pressurization of the fully or partially enclosed volume. The analyses are typically analyzed for a very short time period; the KNPP calculations are done for a time period of 3 seconds following the postulated piping break. The long-term analyses are termed containment integrity analyses and must demonstrate that the design temperature and pressure limits of the containment are not exceeded.

Both the short-term and the long-term containment analyses consist of a calculation of the amount of mass and energy resulting from the pipe break entering the enclosure (subcompartment or containment) and the response of the enclosure to this release of mass and energy.

Due to the 6.0-percent stretch power uprate, the mass and energy release rates and the effect on the containment must be re-evaluated.

3.8.2.1.2.1 Long-Term LOCA Mass and Energy Release

The licensee has calculated the long-term LOCA mass and energy releases to containment using the NRC-approved Westinghouse March 1979 model[1]. Although the licensee has revised the long-term LOCA analyses in accordance with the findings of the NRC's review of the GOTHIC 7.0 containment computer code (see Section 3.8.2.1.1 of this SER input), the mass and energy calculations reported in WCAP 16040-P remain unaffected.

WCAP-10325-P-A, "Westinghouse LOCA Mass and Energy Release Model for Containment Design-March 1979 Version," is not directly applicable to pressurized-water reactors (PWRs) with upper plenum injection such as Kewaunee Nuclear Power Plant (KNPP). However, the licensee previously determined, under the provisions of Title 10 *Code of Federal Regulations* Section 50.59 (10 CFR 50.59), that the application of WCAP-10325-P-A, was acceptable without prior NRC review and approval. WCAP-10325-P-A is referenced in Revision 17 to the KNPP Updated Safety Analysis Report. The NRC staff has previously approved the use of WCAP-10325-P-A for another Westinghouse-designed two-loop upper plenum injection plant.

During the implementation of the power uprate amendment, the licensee revisited this question in the KNPP Corrective Action Process (CAP) 020538 (see Enclosure 2) in response to questions raised at another Nuclear Management Company, LLC site. The licensee concluded that there was no non-conforming condition.

ENCLOSURE 1

[1] WCAP-10325-P-A (Proprietary), WCAP 10326-A (Non-Proprietary), Westinghouse LOCA Mass and Energy Release Model for Containment Design-March 1979 Version, May 1983.

CAP020538 further provides a technical basis for the use of WCAP 10325-P-A. Both the cold-leg injection design and the upper plenum injection design reflood from the bottom of the core. Since there is a greater amount of condensation in the upper plenum injection design, the mass and energy released to the containment will be less than the cold-leg injection design. The NRC staff therefore agrees with the licensee's conclusion that the application of WCAP 10325-P-A is conservative and acceptable for the KNPP containment mass and energy release calculations.

The calculations considered two break locations: the hot-leg and the cold-leg pump suction. WCAP 16040-P states that the double ended hot-leg (DEHL) break has been shown to result in the highest mass and energy release rates during blowdown. This break also results in the fastest reflood rate which increases the rate of release of energy to the containment. However, for the DEHL break, the energy transferred from the steam generators is minimal which results in a reduction in the energy released after blowdown in comparison with the cold-leg break or the pump suction break. The pump suction break includes a relatively high core flooding rate with the transfer of significant heat from the steam generators. Thus, both break locations, the hot-leg and the pump suction, must be considered.

The calculations also consider cases of maximum and minimum safeguards. These are defined in WCAP 16040-P. The minimum safeguards case is the result of an assumed failure of one EDG which results in the loss of one train of safeguards equipment. The maximum