

July 24, 2003

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 - CORRECTION TO ISSUANCE OF  
AMENDMENT 168 (TAC NO. MB7225)

Dear Mr. Coutu:

On July 8, 2003, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 168 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. The amendment approved changes to the Facility Operating License and the Technical Specifications (TSs) to increase the licensed rated power by 1.4 percent from 1650 megawatts thermal (MWt) to 1673 MWt using measurement uncertainty recapture.

There are several administrative errors contained in Amendment No. 168:

- (1) Amendment No. 168 was inadvertently not typed on page 3 of the Facility Operating License 2.C(3), "Technical Specifications,"
- (2) Amendment No. 168 was inadvertently not typed in the lower right hand corner of the following pages: Facility Operating License page 3, TS vi, TS 1.0-4, TS 3.1-6, TS B3.1-6, TS B3.1-7, Figure TS 3.1-1, Figure 3.1-2, TS 6.9-3, TS 6.9-4, and TS 6.9-5,
- (3) Revision 1 was mistakenly typed instead of Revision 0 for WCAP-15591 in the first paragraph on page 9 of the safety evaluation (SE),
- (4) 1772 MWt was inadvertently not typed between of and with in the first sentence of the third paragraph under Section 3.2.2.2.11, "Loss of Alternating Current (AC) Power to the Plant Auxiliaries" on page 16 of the SE, and
- (5) 101.4 percent was mistakenly typed instead of 1.4 percent in the second paragraph on page 36 of the SE.

Enclosed are the corrected pages.

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

Enclosure: As stated

cc: See next page

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ADAMS Accession Nos. Letter: ML032030458

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Kewaunee Nuclear Power Plant

cc:

John Paul Cowan  
Chief Nuclear Officer  
Nuclear Management Company, LLC  
27780 Blue Star Memorial Highway  
Cover, MI 49043

Larry L. Weyers  
Chairman, President and CEO  
Wisconsin Public Service Corporation  
600 North Adams Street  
Greene Bay, WI 54307-9002

Kyle Hoops  
Plant Manager  
Kewaunee Nuclear Power Plant  
N490 Highway 42  
Kewaunee, WI 54216-9511

David Zellner  
Chairman - Town of Carlton  
N2164 County B  
Kewaunee, WI 54216

Gordon P. Arent  
Manager, Regulatory Affairs  
Kewaunee Nuclear Power Plant  
N490 Highway 42  
Kewaunee, WI 54216-9511

Sarah Jenkins  
Electric Division  
Public Service Commission of Wisconsin  
PO Box 7854  
Madison, WI 53707-7854

David Molzahn  
Nuclear Asset Manager  
Wisconsin Public Service Corporation  
600 N. Adams Street  
Green Bay, WI 54307-9002

Thomas Webb  
Nuclear Asset Manager  
Wisconsin Public Service Corporation  
600 N. Adams Street  
Green Bay, WI 54307-9002

Resident Inspectors Office  
U. S. Nuclear Regulatory Commission  
N490 Hwy 42  
Kewaunee, WI 54216-9510

Regional Administrator  
Region III  
U. S. Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, IL 60532-4351

Jonathan Rogoff, Esquire  
General Counsel,  
Nuclear Management Company, LLC  
700 First Street  
Hudson, WI 54016

KNPP power level instrument uncertainty is acceptable. WCAP-15591 Revision 0 was approved by the NRC staff SER for the KNPP 422 VANTAGE + Fuel with PERFORMANCE Features Amendment 167 dated April 4, 2003. The NRC staff finds that WCAP-15591, Revision 0 is an acceptable setpoint methodology with regard to the development of instrument uncertainty.

- (4) The licensee of a plant at which the installed Crossflow UFM was not calibrated to a site-specific piping configuration (flow profile and meter factors not representative of the plant-specific installation) should submit additional justification. This justification should show that the meter installation is either independent of the plant-specific flow profile for the stated accuracy, or that the installation can be shown to be equivalent to known calibration and plant configurations for the specific installation, including the propagation of flow profile effects at higher Reynolds numbers. Additionally, for previously installed and calibrated Crossflow UFM, the licensee should confirm that the plant-specific installation follows the guidelines in the Crossflow UFM topical report.

The KNPP Crossflow UFM was calibrated according to the topical report CENPD-397-P-A, Revision 1 dated May 2000. A UFM in feedwater loop "A" is installed where the flow is fully developed. As such, this UFM does not need calibration. The UFM in feedwater loop "B" is installed where the flow is not fully developed and thus needed a one-time in-situ calibration. For this calibration, a temporary stand-alone UFMD was installed on the full flow feedwater bypass line. The temporary UFM was installed at a location in the bypass line meeting the conditions for fully developed flow and was used for the UFM "B" calibration.

The NRC staff finds that the licensee's response to the plant-specific requirements stated in the NRC's safety evaluation for topical report CENPD-397 were appropriately addressed and are acceptable.

The NRC staff finds that NMC sufficiently addressed requirements and adequately resolved plant-specific issues related to the UFMDs and their use to support the power uprate request. These include maintenance and calibration, installation, hydraulic configuration, and procedures for inoperable UFM or UTMs. NMC used an appropriate methodology which adequately accounted for the uncertainties due to power level instrumentation error.

### 3.1.3 Summary

The NRC staff has reviewed the licensee's proposed plant-specific implementation of the feedwater flow measurement device and the power uncertainty calculations. The NRC staff finds that the licensee's response to the plant-specific requirements stated in the NRC's safety evaluation for topical report CENPD-397 were appropriately addressed and are acceptable and is consistent with the NRC staff's approval of this topical report. The NRC staff also concludes that the licensee has adequately accounted for the uncertainties due to power level instrumentation error in their power level uncertainty calculations and demonstrated that the calculations meet the relevant requirements of 10 CFR Part 50, Appendix K. Therefore, the NRC staff finds the proposed 1.4 percent MUR power uprate acceptable with respect to instrumentation and controls.

Since the licensee performed the analyses based upon a core power level of 1772 MWt with a 2 percent uncertainty (1807 MWt), using an approved methodology, the NRC staff finds that it bounds the requested core power level of 1673 MWt. Therefore, the analyses are acceptable for the 1.4 percent MUR power uprate.

#### 3.2.2.2.10 Loss of Electrical Load (Overpressure and DNB)

A loss of external electrical load event occurs when an electrical disturbance causes the loss of a significant portion of the generator load. KNPP is analyzed to accept a large load rejection at 50 percent of plant-rated power without a reactor trip. Currently, there is a discrepancy between the 2002 update of the KNPP Updated Safety Analysis Report (USAR) and the MUR power uprate submittal. The USAR states the following: "The Reactor Coolant System can accept a complete loss of external load from full power without a reactor trip." The licensee states that the reason for the discrepancy is that the USAR change has not been processed. The licensee stated that the changes will be made in the next planned KNPP USAR revision that will occur approximately November 2003.

The licensee submitted their analyses for this transient to the NRC by letter dated July 26, 2002. By letter dated April 4, 2003, the NRC staff found that the licensee performed the analyses assuming a reactor core power level of 1772 MWt for the DNB case and 1772 MWt with a 2 percent uncertainty (1807 MWt) for the overpressure case. The results indicate that the SRP acceptance criteria continue to be met, i.e., the minimum DNBR remains above the limit value, and the RCS pressure and the main steam system pressure remains below 110 percent of the design values.

Since the licensee performed the analyses based upon a core power level of 1772 MWt and 1807 MWt, using an approved methodology, the NRC staff finds that it bounds the requested core power level of 1673 MWt. Therefore, the NRC staff finds the analyses acceptable for the 1.4 percent MUR power uprate.

#### 3.2.2.2.11 Loss of Alternating Current (AC) Power to the Plant Auxiliaries

The loss of all AC power to the station auxiliaries transient results in a loss of all power to auxiliary systems including the RCPs, condensate pumps, etc. Upon the loss of power, core cooling and removal of residual heat is accomplished by natural circulation in the reactor coolant loops, aided by auxiliary feedwater and safety valves on the secondary side.

The licensee submitted their analysis for this transient to the NRC by letter dated July 26, 2002. By letter dated April 4, 2003, the NRC staff found that the licensee performed the analysis assuming a reactor core power level of 1772 MWt with a 2 percent uncertainty (1807 MWt). The results indicate that the SRP acceptance criteria continue to be met, i.e., the minimum DNBR remains above the limit value and the RCS and main steam system pressures remain below 110 percent of their design values.

Since the licensee performed the analysis based upon a core power level of 1772 MWt with a 2 percent uncertainty (1807 MWt), using an approved methodology, the NRC staff finds that it bounds the requested core power level of 1673 MWt. Therefore, the NRC staff finds the analysis acceptable for the 1.4 percent MUR power uprate.

does not change as a result of the 1.4 percent power uprate. Therefore, the licensee concluded that the safety related MOVs at KNPP will continue to be capable of performing their intended functions at the uprated power condition.

The licensee reviewed the evaluation of generic letter (GL) 95-07 associated with the pressure locking and thermal binding for safety related gate valves. The licensee found that the existing analysis used pressure conditions that would not be affected by the 1.4 percent power uprate. The licensee reviewed the evaluation of the NMC GL 96-06 program regarding the over-pressurization of isolated piping segments. The licensee concluded that the existing evaluation for GL 96-06 was based on the containment integrity analysis performed at 102 percent of the current rated power and is therefore bounding, for the proposed power uprate of 1.4 percent rated power level. On the basis of the above review, the NRC staff concurs with the licensee's conclusions that the power uprate will have no adverse effects on the safety-related valves and that conclusions of the NMC GL 95-07, and GL 96-06, as well as GL 89-10 programs, remain valid, and are therefore, acceptable for the proposed 1.4 percent MUR power uprate.

As a result of the above evaluation, the NRC staff concludes that the BOP piping, pipe supports, equipment nozzles and valves, remain acceptable and continue to satisfy the design-basis requirements for the proposed power uprate and are therefore, acceptable for the proposed 1.4 percent MUR power uprate.

### 3.4.3 Summary

The NRC staff has reviewed the licensee's evaluation of the impact of the proposed MUR power uprate on NSSS and BOP systems and components with regard to stresses, CUFs, flow induced vibration, HELB locations, jet impingement and thrust forces, and safety-related valve programs and concludes that these areas will continue to be acceptable following implementation of the proposed MUR power uprate. Therefore, the NRC staff finds the proposed 1.4 percent MUR power uprate acceptable with respect to the areas of civil and mechanical engineering.

## 3.5 Dose Consequences Analysis

### 3.5.1 Regulatory Evaluation

The NRC staff review covers the impact of the proposed MUR power uprate on the results of dose consequence analyses (NRC RIS 2002-03, Attachment 1, Sections II and III). The review is conducted to verify that the results of the licensee's dose consequence analyses continue to meet the acceptance criteria in 10 CFR Part 100, 10 CFR 50.67, and/or 10 CFR Part 50, Appendix A, GDC-19, as applicable, following implementation of the proposed MUR power uprate.

### 3.5.2 Technical Evaluation

The NRC staff reviewed the impact of the proposed 1.4 percent MUR power uprate on DBA radiological analyses.

In March 2002, the licensee requested revisions to the radiological consequence analyses for DBAs in the Kewaunee Updated Final Safety Analysis Report. The proposed revisions