September 22, 2004

Mr. Thomas Coutu
Site Vice President
Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC
N490 Highway 42
Kewaunee, WI 54216-9511

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - ISSUANCE OF AMENDMENT RE: ROD POSITION INDICATION (TAC NO. MC3278)

Dear Mr. Coutu:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 176 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment revises the Technical Specifications (TSs) in response to your application dated May 25, 2004, as supplemented August 6, 2004.

The amendment revises TS 3.10.f.2 to add an allowed outage time for the individual rod position indication (IRPI) system of 24 hours with more than one IRPI group inoperable and adds the definition of “immediately” to TS Section 1.0.

Your application also proposed additional changes to add the demand step counters to the TSs and to add a note to allow for a soak time subsequent to substantial rod motion for the rods that exceed their position limits before invoking the TS requirements. NRC review of the proposed additional changes will be documented via separate correspondence.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

/RA/

Carl F. Lyon, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Amendment No. 176 to License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

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OFFICIAL RECORD COPY

Kewaunee Nuclear Power Plant

cc:

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NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 176
License No. DPR-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (NMC), dated May 25, 2004, as supplemented August 6, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-43 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 176, are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 22, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 176

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
TS i	TS i
TS 1.0-6	TS 1.0-6
TS 3.10-5	TS 3.10-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-43

NUCLEAR MANAGEMENT COMPANY, LLC

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

1.0 INTRODUCTION

By application to the Nuclear Regulatory Commission (NRC, Commission) dated May 25, 2004, as supplemented August 6, 2004, the Nuclear Management Company, LLC (NMC, or the licensee), proposed amendments to the Technical Specifications (TSs) for Kewaunee Nuclear Power Plant. The proposed changes revise TS 3.10.f.2 to add an allowed outage time for the individual rod position indication (IRPI) system of 24 hours with more than one IRPI group inoperable and add the definition of "immediately" to TS Section 1.0.

The supplement, dated August 6, 2004, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on July 6, 2004 (69 FR 40675).

Specifically, TS 3.10.f.2 currently requires that,

> Not more than one rod position indicator channel per group nor two rod position indicator channels per bank shall be permitted to be inoperable at any time.

The licensee proposes to revise TS 3.10.f.2 to require that,

> If more than one individual rod position indicator channel per group are inoperable, then:
>
> A. Immediately place the control rods in manual, and
> B. Once per 1 hour, monitor and record RCS [reactor coolant system] T_{avg}, and
> C. Verify the position of the rod by movable incore detectors each 8 hours, and
> D. Within 24 hours restore the inoperable individual rod position indicators to OPERABLE status such that a maximum of one IRPI per group is inoperable or place the plant in HOT SHUTDOWN within the following 6 hours.

The licensee also proposes to add the following definition to TS Section 1.0, “Definitions.”

s. IMMEDIATELY

When “Immediately” is used as a completion time in a LCO [limiting condition for operation], the required action should be pursued without delay and in a controlled manner.

The licensee’s application also proposed additional changes to add the demand step counters to the TSs and to add a note to allow for a soak time subsequent to substantial rod motion for the rods that exceed their position limits before invoking the TS requirements. NRC review of the proposed additional changes will be documented via separate correspondence.

2.0 REGULATORY EVALUATION

Control and shutdown rod position accuracy is essential during power operation. Power peaking, ejected rod worth, or shutdown margin limits may be violated in the event of a design-basis accident. Therefore, the acceptance criteria for rod position indication is that rod positions must be known with sufficient accuracy in order to verify the core is operating within the group sequence, overlap, design peaking limits, ejected rod worth, and with minimum shutdown margin. The rod positions must also be known in order to verify the alignment limits are preserved. Control rod positions are continuously monitored to provide operators with information that ensures the plant is operating within the bounds of accident analysis assumptions.

The regulatory requirement on which the staff based its acceptance of this TS change is Criterion 2 of 10 CFR 50.36(c)(2)(ii), “A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.” The control rod position indication systems for Kewaunee are described in Section 7.3.2 of the Updated Safety Analysis Report (USAR).

3.0 TECHNICAL EVALUATION

3.1 Background

Separate digital and analog systems are provided at Kewaunee to sense and display control rod position, as described in Section 7.3.2 of the USAR.

The analog system (i.e., IRPI) is a linear position transmitter that produces an analog signal of actual position for each control rod. An electrical coil stack linear variable differential transformer is placed above the stepping mechanisms of the control rod magnetic jacks external to the rod/reactor coolant system pressure housing. When the associated control rod is at the bottom of the core, the magnetic coupling between primary and secondary windings is small and there is a small voltage induced in the secondary. As the magnetic jacks raise the control rod, the relatively high permeability of the lift rod causes an increase in magnetic coupling. Thus, an analog signal proportional to rod position is derived.

Direct, continuous readout of every control rod position is presented to the operator by

individual control board meter indications, without need for operator selection or switching to determine rod position. The rod position is also displayed on the plant process computer system. Another means of detecting individual rod position is by directly reading the voltage produced by the detection circuits conditioning module. Rod position in steps withdrawn is determined by use of a table correlating the conditioning module output voltage to rod steps. Lights are provided for rod bottom positions for each rod. Bistable devices operate the lights in the analog system.

The digital system (i.e., Demand Position) counts pulses generated in the rod drive control system. One counter is associated with each group of control rods. Readout of the digital system is in the form of add-subtract counters reading the number of steps of rod withdrawal with one display for each group. These readouts are mounted on the control panel.

The digital and analog systems are separate systems; each serves as backup for the other. Operating procedures require the reactor operator to compare the digital and analog readings upon receiving a rod deviation alarm. Therefore, a single-failure in rod position indication does not in itself lead the operator to take erroneous action in the operation of the reactor.

3.2 Evaluation

The Westinghouse Owners Group, through the industry's TS Task Force (TSTF), proposed a generic change to the Standard TSs (STSs) for Westinghouse plants (NUREG-1431). This proposed generic TS change, identified as TSTF-234, revised the TSs to allow 24 hours to restore operability of more than one rod position indication channel in a group. The NRC approved TSTF-234, Revision 1, by letter from W. Beckner (NRC) to J. Davis (Nuclear Energy Institute) dated January 13, 1999.

The proposed change is consistent with TSTF-234, which allows verification of core peaking factors and shutdown margin to satisfy the action requirements, providing the non-indicating rods have not been moved. The additional time to restore an inoperable IRPI is appropriate because the proposed action would require that the control rods be under manual control, that reactor coolant system average temperature (RCS T_{AVG}) be monitored and recorded hourly, and that rod position be verified indirectly every 8 hours thereafter, thereby assuring that the rod alignment and rod insertion LCOs are met. Therefore, the required shutdown margin will be maintained. Given the alternate position monitoring requirement, and other indirect means of monitoring changes in rod position (e.g., alarms on average versus reference temperature deviation), a 24-hour completion time to restore all but one IRPI per group provides sufficient time to restore operability while minimizing shutdown transients during the time that the position indication system is degraded.

The licensee clarified that rod position verification will be performed every 8 hours, which is consistent with TSTF-234, which also allows verification of core peaking factors and shutdown margin to satisfy the action requirements, provided the non-indicating rods have not been moved. Additionally, consistent with TSTF-234, the technical specifications will require that the control rods be placed under manual control, the RCS T_{AVG} be monitored and recorded hourly, and the rod position to be verified indirectly every 8 hours thereafter. The proposed change requires the use of the movable incore detectors as an indirect means of monitoring changes in rod position in order to assure that the rod alignment and rod insertion LCOs are met, consistent with TSTF-234.

The licensee proposes in TS 3.10.f.2.D that, “Within 24 hours restore the inoperable individual rod position indicators to OPERABLE status such that a maximum of one IRPI per group is inoperable or place the plant in HOT SHUTDOWN within the following 6 hours.” However, TSTF-234 requires that the plant be placed on Mode 3 (Hot Standby). Hot Shutdown, as defined in Kewaunee TS 1.0.j, “Modes,” is similar to Mode 3 (Hot Standby) of STSs. Therefore, the proposed change is consistent with TSTF-234.

TSTF-234 allows for more than one IRPI to be inoperable for a maximum of 24 hours, given that an alternate rod position monitoring system and other indirect means of monitoring changes in rod position are available. This provides sufficient time to restore operability while minimizing shutdown transients during the time that the position indication is degraded.

Since the control rod position indication systems for Kewaunee are consistent with those referenced in STSs, the proposed change is consistent with the NRC-approved TSTF-234, and the proposed change satisfies 10 CFR 50.36, the proposed change is acceptable to the staff.

The licensee proposes to add a definition of “immediately” to TS Section 1.0, “Definitions.” The proposed definition clarifies the action required by proposed TS 3.10.f.2.A. The urgency of completing the action is communicated while emphasizing safe operation. The proposed definition is consistent with STSs and is acceptable to the staff.

The licensee proposes changes to the TS table of contents to reflect the addition of the definition of “immediately” in TS Section 1.0. The proposed change to the table of contents is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (69 FR 40675). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the

Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: A. Munoz
G. Armstrong
F. Lyon

Dated: September 22, 2004