

September 20, 2001

Mr. Mark Reddemann  
Site Vice President  
Kewaunee and Point Beach Nuclear Plants  
Nuclear Management Company, LLC  
6610 Nuclear Road  
Two Rivers, WI 54241

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - ISSUANCE OF AMENDMENT  
(TAC NO. MB2047)

Dear Mr. Reddemann:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 158 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (KNPP). This amendment revises the Technical Specifications (TSs) in response to your application dated May 25, 2001 as supplemented August 17, 2001.

The amendment revises TS 4.2 to revise the surveillance requirements and bases for TS 4.2.b, "Steam Generator Tubes," to account for changes associated with replacement of the original steam generators. Specifically, the proposed changes would delete inspection requirements associated with steam generator tube sleeving and repair limits and revise the phrasing of text within the TS to enhance clarity.

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/**

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. Amendment No. 158 to License No. DPR-43  
2. Safety Evaluation

cc w/encls: See next page

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\*See memo T. Sullivan to C. Craig

Accession No. **ML012470175**

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NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 158  
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 or the licensee) dated May 25, 2001, as supplemented August 17, 2001, 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. 158, 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 the date of its issuance, and is to be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Claudia M. Craig, 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 20, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 158

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 contains a marginal line indicating the area of change.

REMOVE

TS ii  
TS v  
TS vi  
TS 4.2-1 through TS 4.2-12  
TS B 4.2-1 through TS B 4.2-8  
Table TS 4.2-2  
Table TS 4.2-3  
Figure TS 4.2-1

INSERT

TS ii  
TS v  
TS vi  
TS 4.2-1 through TS 4.2-6  
TS B 4.2-1 through TS B 4.2-3  
Table TS 4.2-2  
Table TS 4.2-3  
Figure TS 4.2-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATING TO AMENDMENT NO. 158 TO FACILITY OPERATING LICENSE NO. DPR-43  
NUCLEAR MANAGEMENT COMPANY, LLC  
KEWAUNEE NUCLEAR POWER PLANT  
DOCKET NO. 50-305

## 1.0 INTRODUCTION

By application dated May 25, 2001, as supplemented August 17, 2001, the Nuclear Management Company, LLC (NMC or the licensee) requested an amendment to the technical specifications (TSs) for the Kewaunee Nuclear Power Plant (KNPP). The proposed amendment would revise the surveillance requirements and Bases for TS 4.2.b, "Steam Generator Tubes," to account for changes associated with replacement of the original steam generators. Specifically, the proposed changes would delete inspection requirements associated with steam generator tube sleeving and repair limits and revise the phrasing of text within the TS to enhance clarity.

The supplemental information contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original *Federal Register* notice.

## 2.0 BACKGROUND

KNPP currently uses two Westinghouse model 51 recirculating steam generators with mill-annealed Inconel Alloy 600 tubing that is rolled along part of the tube sheet. The current steam generator tubes are made of mill-annealed Inconel Alloy 600 and the tube support plates are made of carbon steel. Use of these materials contributed, in part, to the existing steam generator tube degradation. As degradation occurred, the licensee amended KNPP TS with various tube repair criteria which the Nuclear Regulatory Commission (NRC) staff subsequently reviewed and approved.

The licensee is scheduled to replace the KNPP steam generators during an upcoming refueling outage in the fall of 2001. The replacement steam generators are Westinghouse model 54F. The replacement steam generators incorporate a number of design and material improvements. These improvements include (1) the material selection of the tubing; (2) tube support design; and (3) material treatment for the straight leg and U-bend sections.

The replacement steam generators contain tubes fabricated from thermally treated Inconel Alloy 600 tube material as well as stainless steel tube support plates and anti-vibration bars. The thermally treated Alloy 600 tubing material is more resistant to stress corrosion cracking

than mill-annealed Alloy 600 tubing material. The stainless steel tube support plates are resistant to magnetite formation and would not be expected to exhibit the tube denting experienced in steam generators with carbon steel tube support plates. Licensees that have used these materials in their replacement steam generators have reported significantly less tube degradation.

### 3.0 EVALUATION

In January 2001, the licensee performed preservice examination of the replacement steam generator tubes after the steam generators had arrived at the plant site. The licensee inspected the full length of each tube in each steam generator using bobbin coil probes. All bobbin indications were examined by rotating pancake (+point) coil probes. The indications included bulges, bending machine geometry, dings, free span differentials, and manufacturing burnish marks. These indications were caused by the tube manufacturing or tube installation process. The licensee did not plug or repair any tubes as a result of the preservice examination.

The licensee has scheduled the first inservice inspection of the replacement steam generators in the spring of 2003. The licensee will examine every tube full length using bobbin coil probes. Any bobbin indications will be re-examined by the rotating pancake coil probes. The licensee will perform a degradation assessment in 2002 that will consider industry experience with similar replacement steam generators. The result of this assessment will determine the final scope of rotating pancake coil examination in the 2003 inspection. The licensee stated that it has no intent to take exception to Electric Power Research Institute Steam Generator Examination Guidelines during inservice inspection of the replacement steam generators. The NRC staff finds that the scope of licensee's preservice and inservice inspections follows the generally accepted industry practice and the TS and, therefore, is acceptable.

The licensee has proposed changing TS 4.2.b.4, "Plugging Limit Criteria," to delete requirements for and associated references to steam generator tube repair by sleeving and the plugging limit of tubes previously repaired by sleeving. Further, the licensee proposed the deletion of Table 4.2-3, "Steam Generator Repaired Tube Inspection," in its entirety and the deletion of the reference to this table. Also, TS 4.2.b.2 will be modified to delete the requirement to select a sample of installed sleeves for inspection.

The current surveillance requirements detail the approved sleeve designs and installation requirements described in Westinghouse and ABB Combustion Engineering topical reports. The licensee states that the referenced reports are no longer appropriate since the replacement steam generators use tubing with a diameter and wall thickness that is different from the original steam generator tubing. Further, the replacement steam generators incorporate metallurgy and fabrication technology that has proven to be very resistant to corrosion related degradation and a sleeving repair is not expected to be required. Thus, the current sleeving requirements are not needed for the replacement steam generators. The NRC staff finds deletion of these requirements acceptable.

The tube plugging limit in TS 4.2.b.4 is derived from calculations that include certain replacement steam generator parameters. The licensee recalculated a structural limit in accordance with Regulatory Guide 1.121. The licensee confirms that a larger structural limit for allowable defect depth bounds the current limit in TS shown in Westinghouse report, WCAP-

15325, "Regulatory Guide 1.121 Analysis for Kewaunee Replacement Steam Generators." The current 50 percent plugging limit for the tubing, therefore, is conservative and will remain in the TS. However, the reference document in the TS bases will be changed from WCAP-7832 "Evaluation of Steam Generator Tube, Tube Sheet, and Divider Plate Under Combined LOCA Plus SSE Conditions" to WCAP-15325.

In addition, the licensee has proposed to change the definitions in TS 4.2.b to delete references on alternate tube repair criteria, such as laser weld repairs, F\* distance, F\* tubes, EF\* distance, and EF\* tubes. The NRC staff finds the deletion of these references acceptable because these repairs would not be valid for the replacement steam generators. Several definitions in this section are rephrased for clarification. The clarifying changes are minor and do not change the technical meaning or basis of the items. Therefore, the NRC staff finds these changes acceptable.

The NRC staff has reviewed the proposed changes to TS Bases Section B4.2.b and finds them consistent with the other changes discussed above. Therefore, the NRC staff has no objection to these changes.

#### 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

This amendment changes 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 staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding (66 FR 31711). Accordingly, this amendment meets 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 this amendment.

#### 6.0 CONCLUSION

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

Principal Contributor: J. Tsao

Date: September 20, 2001