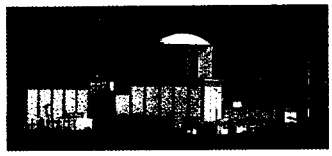
NRC-01-070

NMC
Committed to Nuclear Excellence

Kewaunee Nuclear Power Plant
N490, State Highway 42
Kewaunee, WI 54216-9511
920-388-2560

Operated by
Nuclear Management Company, LLC



June 13, 2001

10 CFR § 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

DOCKET 50-305
OPERATING LICENSE DPR-43
KEWAUNEE NUCLEAR POWER PLANT
PROPOSED AMENDMENT 178 TO KEWAUNEE NUCLEAR POWER PLANT
TECHNICAL SPECIFICATION 5.3

References: 1) Telephone conference of May 28, 1991, between Mr. Allen Hansen and Shih-Liang Wu of the Nuclear Regulatory Commission, and Mr. R. P. Pulec and Mr. S. F. Wozniak of Wisconsin Public Service Corporation

2) Wisconsin Public Service Corporation letter, "Core Reloads of Advanced Design Fuel Assemblies," from K. H. Evers to the Nuclear Regulatory Corporation Document Control Desk, dated June 19, 1991

Pursuant to 10 CFR § 50.90, Nuclear Management Company, LLC, (NMC) proposes to amend Kewaunee Nuclear Power Plant (KNPP) Facility Operating License DRP-43 by incorporating the attached changes into KNPP Technical Specifications (TS).

NMC intends to include four "lead-test-assemblies" in the Cycle 25 core load, in accordance with provisions of KNPP TS 5.3, "Reactor Core." Lead-test-assemblies will be loaded in conformance with guidelines established in conference with the NRC (References 1 and 2). These lead-test-assemblies will be Westinghouse "VANTAGE+" fuel assemblies, which the NRC has approved for use in similar reactors. VANTAGE+ fuel has a zirconium-based fuel rod cladding and guide thimble tube alloy, known as "ZIRLO."

Presently, TS 5.3 names "zircaloy" as an acceptable clad material, but does not name ZIRLO as an acceptable clad material. This proposed change clarifies TS 5.3 to permit lead-test-assemblies to be used, regardless of clad material, as long as the NRC has generically approved the fuel assembly design for use in pressurized water reactors.

A001

In accordance with 10 CFR § 50.90, this letter seeks Nuclear Regulatory Commission (NRC) permission to make the foregoing changes to KNPP TS. NMC respectfully requests that the NRC grant approval for this change by November 9, 2001, for implementation before core reload.

Nothing in this letter should be construed to constitute a commitment or redefine a margin of safety unless specifically so stated in separate correspondence or in a safety analysis of record.

In accordance with 10 CFR § 50.30(b), the original copy of this request is signed under oath or affirmation by an officer of NMC. Additionally, NMC has transmitted a copy of this license amendment request to the State of Wisconsin as required by 10 CFR § 50.91(b)(1).

If there are questions regarding this amendment, please contact either Mr. Thomas J. Webb at (920) 388-8537 or me at (920) 755-7627.

Sincerely,

FOR Mark E. Reddemann
Site Vice President

Subscribed and Sworn to
Before Me This 13th Day
of June 2001

Notary Public, State of Wisconsin

My Commission Expires:
December 2, 2001

MTVN

Attachments:
1. Description of Change, Safety Evaluation, Significant Hazards Determination, and Statement of Environmental Considerations
2. Strike-Out Pages for Technical Specification 5.3
3. Revised Pages for Technical Specification 5.3

cc - US NRC Region III
US NRC Senior Resident Inspector
Electric Division, PSCW

ATTACHMENT 1

Letter from M. E. Reddemann (NMC)

To

Document Control Desk (NRC)

Dated

June 13, 2001

Proposed Amendment 178

Description of Proposed Changes

Safety Evaluation

Significant Hazards Determination

Environmental Consideration

Introduction

Nuclear Management Company, LLC (NMC) intends to replace Kewaunee Nuclear Power Plant's (KNPP) Westinghouse Model 51 original steam generators (OSG) with Westinghouse Model 54F replacement steam generators (RSG) commencing in the fall of 2001.

After steam generator replacement (SGR), NMC will load the fuel-cycle 25 reactor core. As part of the cycle 25 core, NMC intends to load four "lead-test-assemblies" in accordance with provisions of KNPP Technical Specification (TS) 5.3, "Reactor Core." These lead-test-assemblies will be Westinghouse "VANTAGE+" fuel, which the Nuclear Regulatory Commission (NRC) has generically approved for use in pressurized water reactors. VANTAGE+ fuel uses a zirconium alloy fuel rod cladding and guide thimble tube material, which Westinghouse has named "ZIRLO."

It is not unusual for lead-test-assemblies to use cladding material that is different in some respect from that used for the remainder of the fuel. However, KNPP TS 5.3 does not specifically allow this. Presently, TS 5.3 names zircaloy, but does not name ZIRLO, as an acceptable clad material for use in the reactor core. Although TS 5.3 allows "a limited number of lead-test-assemblies... to be placed in non-limiting core regions," it does not stipulate a clad material for these lead-test-assemblies. The purpose of this amendment is to make it clear that limited use of lead-test-assemblies at KNPP is allowed by TS, regardless of cladding alloy designation, provided the design is NRC approved.

NMC respectfully requests that the NRC approve this TS amendment by November 9, 2001, for implementation after shutdown to replace steam generators and before restart from the outage.

Description of Change to TS 5.3, "Reactor Core"

The proposed amendment adds the following text at the end of paragraph 5.3.a., "Fuel Assemblies" under the "SPECIFICATION" section:

> Lead-test-assemblies shall be of designs approved by the NRC for use in pressurized water reactors and their clad materials shall be the materials approved as part of those designs.

TS markup pages and amended pages in Attachments 2 and 3, respectively, show change detail.

Safety Evaluation for Proposed Change to TS 5.3, "Reactor Core"

10 CFR §§ 50.46, 50.44, and Part 50 Appendix K are applicable to fuel with ZIRLO cladding. The material properties of zircaloy and ZIRLO are similar. NRC staff safety evaluations (SE) of WCAP-12610-P-A, regarding the analyses and methodologies applicable to VANTAGE+ (ZIRLO) fuel assemblies and the large and small break loss-of-coolant (LOCA) analyses for ZIRLO fuel, approve the analyses and use of ZIRLO fuel in pressurized water reactor plants. NMC intends to include four VANTAGE+ fuel assemblies as lead-test-assemblies for the coming fuel-cycle 25, which is to be loaded after the KNPP steam generator replacement. The steam generator replacement outage is currently scheduled to commence in September of 2001. In conjunction with the cycle 25 core, a reload safety analysis will be performed that will analyze use and placement of the VANTAGE+ fuel assemblies. This use and placement will conform to the terms of understanding between KNPP and the NRC (References 3 and 4).

The purpose of these lead-test-assemblies is to gather empirical evidence regarding performance of an approved fuel design prior to use as standard fuel in the KNPP reactor core. NMC is not presently requesting NRC approval of VANTAGE+ fuel for use by KNPP. However, assuming that VANTAGE+ fuel assemblies perform as expected in their capacity as lead-test-assemblies, NMC may later request approval. NMC will include results of appropriate analyses of limiting design basis accidents and transients with this later request.

The NRC safety evaluation process for new fuel designs, including the cladding material, ensures that a design chosen as a lead-test-assembly was evaluated for its effect on reactor operation and is safe. This evaluation incorporates the effect of the element as a whole, including its cladding. Thus, cladding approved by the NRC as part of a new fuel element design is safe for use as part of a lead-test-assembly, regardless of the clad alloy trade name. This amendment affects only fuel assemblies designated as lead-test-assemblies.

Restricted use and placement in the reactor core of NRC approved lead-test-assemblies with various clad alloys creates sufficient margin to ensure that use of these lead-test-assemblies remains within existing design basis and operating limits. Accordingly, the peak-clad temperature (PCT) will remain below the 10 CFR § 50.46(b)(1) criterion of 2200°F.

Thus, inclusion in the KNPP reactor core of lead-test-assemblies of a design approved by the NRC is consistent with existing design basis accident and transient assumptions, preserves effectiveness of accident mitigation systems, preserves currently licensed dose consequence and, hence, does not involve an unreviewed safety question.

Significant Hazards Determination for Proposed Change to TS 5.3

NMC reviewed the proposed change in accordance with provisions of 10 CFR § 50.92 and determined that it creates no significant hazard. The proposed change does not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

   Changing the technical specification within limits of the bounding accident analyses cannot change the probability of an accident previously evaluated, nor will it increase radiological consequence predicted by the analyses of record. Controlling the use of lead-test-assemblies, designs of which were approved by the NRC, according to limitations approved by the NRC constrains fuel performance within limits bounded by existing design basis accident and

transient analyses. Thus, nothing in this proposal will cause an increase in the probability or consequence of an accident previously evaluated.

2) Create the possibility of a new or different kind of accident from any accident previously evaluated.

   Inclusion in the reactor core of lead-test-assemblies according to limitations set by the NRC and of a design approved by the NRC ensures that their effect on core performance remains within existing design limits. Use of NRC approved fuel assemblies as lead-test-assemblies is consistent with current plant design bases, does not adversely affect any fission product barrier, and does not alter the safety function of safety significant systems, structures and components or their roles in accident prevention or mitigation. Currently licensed design basis accident and transient analyses of record bound the effect of lead-test-assemblies. Thus, this proposal does not create the possibility of a new or different kind of accident.

3) Involve a significant reduction in the margin of safety.

   The proposed change does not alter the manner in which Safety Limits, Limiting Safety System Setpoints, or Limiting Conditions for Operation are determined. This clarification of TS 5.3 is bounded by existing limits on reactor operation. It leaves current limitations for use of lead-test-assemblies in place, conforms to plant design bases, is consistent with current safety analyses, and limits actual plant operation within analyzed and licensed boundaries. Thus, changes proposed by this request do not involve a significant reduction in the margin of safety.

Environmental Considerations

This proposed amendment involves a change to the Technical Specifications. NMC has determined that the proposed amendment involves no significant hazards considerations and no significant change in the types of effluents that may be released offsite and that there is no significant increase in the individual or cumulative occupational radiation exposure. This proposed amendment accordingly 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 this proposed amendment.

References

1. Letter from A. C. Thadani (NRC) to S. R. Tritch (Westinghouse), "Acceptance for Referencing of Topical Report WCAP-12610, "VANTAGE+ Fuel Assembly Reference Core Report,"" (TAC NO. 77258), dated July 1, 1991
2. NRC Safety Evaluation Report (SER) and PNL Technical Evaluation Report (TER) on Topical Report WCAP-12610 and Appendices A through E, July 1, 1991
3. Telephone conference of May 28, 1991, between Mr. Allen Hansen and Shih-Liang Wu of the Nuclear Regulatory Commission, and Mr. R. P. Pulec and Mr. S. F. Wozniak of Wisconsin Public Service Corporation
4. Wisconsin Public Service Corporation letter, "Core Reloads of Advanced Design Fuel Assemblies," from K. H. Evers to the Nuclear Regulatory Corporation Document Control Desk, dated June 19, 1991

ATTACHMENT 2

Letter from M. E. Reddemann (NMC)

To

Document Control Desk (NRC)

Dated

June 13, 2001

Proposed Amendment 178

Strike-Out Pages

TS 5.3-1

5.3 REACTOR CORE

APPLICABILITY

Applies to the reactor core.

OBJECTIVE

To define those design features which are essential in providing for safe reactor core operations.

SPECIFICATION

a. Fuel Assemblies

The reactor shall contain 121 fuel assemblies. Each assembly shall consist of a matrix of zircaloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of ~~lead~~ lead ~~test~~ test assemblies that have not completed representative testing may be placed in non-limiting core regions. Lead-test-assemblies shall be of designs approved by the NRC for use in pressurized water reactors and their clad materials shall be the materials approved as part of those designs.

b. Control Rod Assemblies

The reactor core shall contain 29 control rod assemblies. The control material shall be silver indium cadmium.

ATTACHMENT 3

Letter from M. E. Reddemann (NMC)

To

Document Control Desk (NRC)

Dated

June 13, 2001

Proposed Amendment 178

Revised Pages

TS 5.3-1

5.3 REACTOR CORE

APPLICABILITY

Applies to the reactor core.

OBJECTIVE

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SPECIFICATION

a. Fuel Assemblies

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