

Nebraska Public Power District

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NLS960113
June 6, 1996

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

Gentlemen:

Subject: Proposed Change to Technical Specifications
Safety Limit Minimum Critical Power Ratio
Cooper Nuclear Station, NRC Docket No. 50-298, NPR-46

- References:
1. Letter from M. A. Smith (GE) to NRC dated May 24, 1996, "10CFR Part 21, Reportable Condition, Safety Limit MCPR Evaluations."
 2. NEDE-24011-P-A-11, GESTAR II: *General Electric Standard Application for Reactor Fuel*, November 17, 1995.

In accordance with the applicable provisions specified in 10 CFR 50, the Nebraska Public Power District (District) requests that the Cooper Nuclear Station (CNS) Technical Specifications be revised as specified in the attachment. This proposed change revises CNS Technical Specification Safety Limit Minimum Critical Power Ratio (SLMCPR) from 1.06 to 1.07 for dual recirculation loop operation and from 1.07 to 1.08 for single recirculation loop operation, based on a cycle-specific analysis performed for the remainder of the current cycle following startup from the current outage. This requested change stems from the recent discovery by General Electric (GE), discussed in their May 24, 1996 10 CFR Part 21 notification (Reference 1), that some core designs may not be bounded by the GESTAR II (Reference 2) generic calculated SLMCPR.

The District is currently in an outage to identify and replace a leaking fuel assembly. As discussed with the CNS NRC Project Manager on June 3, 1996, the District will, prior to startup from the current outage, implement the new operating limits corresponding with the revised SLMCPR values. This involves revision of the CNS Core Operating Limits Report, and revision of the inputs to the plant process computer in accordance with the operating limits specified in Revision 3 to the CNS Supplemental Reload Licensing Report for CNS Reload 16, Cycle 17 (Attachment 2). These actions will ensure that the revised SLMCPR values will be maintained. The District will transmit the revised Core Operating Limits Report to the NRC prior to startup from the current outage.

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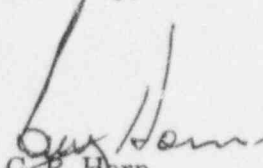
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The attachment contains a description of the proposed change and summary of its basis, the attendant 10CFR50.92 evaluation, and the applicable revised Technical Specifications pages. This proposed change has been reviewed by the necessary Safety Review Committees and incorporates all amendments to the CNS Facility Operating License through Amendment 175 issued April 29, 1996.

By copy of this letter and attachment the appropriate State of Nebraska official is being notified in accordance with 10CFR50.91(b)(1). Copies to the NRC Region IV Office and CNS NRC Resident Inspector are also being sent in accordance with 10CFR50.4(b)(2).

Please contact me if you require any additional information concerning this request.

Sincerely,



G. R. Horn
Senior Vice-President, Energy Supply

Attachments

cc: Regional Administrator
USNRC - Region IV

Senior Project Manager
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector
USNRC - Cooper Nuclear Station

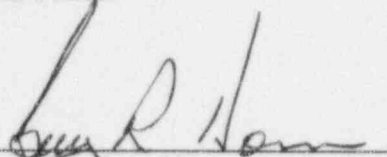
Director, Department of Health
State of Nebraska

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STATE OF NEBRASKA)
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PLATTE COUNTY)

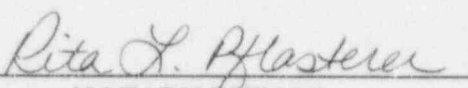
G. R. Horn, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this request on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.




G. R. Horn

Subscribed in my presence and sworn to before me this

6th day of June, 1996.



NOTARY PUBLIC

 GENERAL NOTARY-State of Nebraska
RITA L. PFLASTERER
My Comm. Exp. Dec. 19, 1998

PROPOSED TECHNICAL SPECIFICATIONS CHANGE

Safety Limit Minimum Critical Power Ratio

Revised Pages

6, 11

I. INTRODUCTION

As discussed below, the Nebraska Public Power District (District) requests that the NRC approve this proposed change to the Cooper Nuclear Station (CNS) Technical Specifications as proposed herein. The proposed change revises the CNS Safety Limit Minimum Critical Power Ratio (SLMCPR) from its current value of 1.06 for dual recirculation loop operation to 1.07.^{1/} This change is necessary as a result of General Electric's (GE's) discovery that the generic SLMCPR calculated using the NRC approved methodology may not always yield a conservative result.^{2/}

II. DISCUSSION

The proposed amendment will revise the CNS Technical Specifications Section 1.1, "Fuel Cladding Integrity," Subsection 1.1.A, to specify a new Minimum Critical Power Ratio value of 1.07. For U.S. Boiling Water Reactors using GE fuel, the SLMCPR is established generically for each fuel design (product line) in accordance with commitments documented in GE's base fuel licensing document, GESTAR II.^{3/} This process specifies that the SLMCPR calculation be performed using conservative inputs, approved by the NRC and defined by GESTAR II. Commitments to the NRC provide that the SLMCPR will provide a statistical confidence level such that less than 0.1% of the fuel rods in a core are expected to experience boiling transition during an Anticipated Operational Occurrence (transient). Recent analyses by GE have determined that some bundle and core designs are not bounded by the generic SLMCPR.

Accordingly, GE performed a cycle-specific analysis for CNS. At the time GE performed the cycle-specific analysis, CNS had four control rods inserted to suppress power in a core region determined

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1. For clarity, the following discussion refers to the SLMCPR for normal (dual recirculation loop) operation, except where stated. The single recirculation loop SLMCPR is being changed from 1.07 to 1.08. GE has verified that the 0.01 penalty for the single recirculation loop SLMCPR remains valid.
 2. Letter from M. A. Smith (GE) to NRC dated May 24, 1996, "10 CFR Part 21, Reportable Condition, Safety Limit MCPR Evaluations."
 3. NEDE-24011-P-A-11, GESTAR II: *General Electric Standard Application for Reactor Fuel*, November 17, 1995.

to contain a leaking fuel assembly. While that analysis determined that the CNS licensed SLMCPR of 1.06 was valid, it did not address the re-design of the core and subsequent operation without the control rods inserted following the District's planned shutdown to identify and replace the leaking fuel. Therefore, the District requested GE to re-perform the cycle-specific analyses based on the planned core re-design to determine whether the licensed SLMCPR would remain bounding. That analysis determined that the existing CNS licensed SLMCPR will not bound the re-designed core and planned operation. Since the District shut down CNS on June 1, 1996 to identify and replace the leaking fuel, the District requests that the NRC revise the CNS Technical Specification SLMCPR from 1.06 to 1.07, which has been determined via a cycle-specific analysis to be valid for the remainder of Cooper's existing cycle.

The cycle-specific analysis performed by GE for the remainder of the current cycle was determined using the NRC-approved methodology documented in GESTAR II, using the following cycle-specific inputs agreed to during an NRC/GE meeting held on April 17, 1996:⁴

- Actual core loadings were analyzed
- Projected control blade patterns were used
- Actual exposure dependent rod powers for R-factor distributions were used
- Calculations were made for several points in the cycle

The results of this analysis yield a SLMCPR of 1.07, which is higher than the existing CNS Technical Specification SLMCPR of 1.06; therefore, the CNS Technical Specifications should be changed accordingly.

GE has provided the District with a revised Supplemental Reload Licensing Report for CNS Reload 16, Cycle 17, (Attachment 2 to this letter) to document the revised analysis, and the District will revise its plant process computer inputs and Core Operating Limits Report to set new operating limits which correspond with the new SLMCPR value of 1.07.

III. DESCRIPTION OF CHANGES

Page 6 - The Safety Limit Minimum Critical Power Ratios in CNS Technical Specification Section 1.1.A are revised from 1.06 to 1.07 for dual recirculation loop operation, and from 1.07 to 1.08 for single recirculation loop operation.

Page 11 - The word "generic" is removed from the Section 1.1 Bases to address the cycle-specific analyses performed.

The revised pages are included as Appendix A of this attachment.

4. Letter from R. J. Reda (GE) to NRC dated April 22, 1996, "NRC/GE Meeting Re: Safety Limit MCPR Calculation."

IV. SIGNIFICANT HAZARDS DETERMINATION:

10 CFR 50.91(a)(1), requires that licensee requests for operating license amendments be accompanied by an evaluation of significant hazards posed by the issuance of the amendment. This evaluation is to be performed with respect to the criteria given in 10 CFR 50.92(c). The following analysis meets these requirements.

Evaluation of this Amendment with Respect to 10 CFR 50.92

This revision to the CNS Technical Specifications is judged to involve no significant hazards based on the following:

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Evaluation

The purpose of the Safety Limit Minimum Critical Power Ratio (SLMCPR) is to provide statistical confidence that less than 0.1% of the fuel rods in a core would experience transition boiling during the most limiting analyzed Anticipated Operational Occurrence (transient). While transition boiling in a BWR does not in and of itself signal the onset of fuel cladding failure, this criterion has been selected as a conservative and convenient parameter for the evaluation of fuel designs. Therefore, while this safety limit does not provide any control over either the probability or consequences of any accident previously evaluated, it does ensure that evaluated transients remain within NRC-approved criteria. Revision of the SLMCPR will establish in the CNS Technical Specifications a valid limit, based on the NRC approved GESTAR II methodology using cycle-specific inputs. This change will result in the input of more restrictive core operating limits into the plant process computer, ensuring that CNS will be operated within the constraints of the new SLMCPR limits of 1.07 for dual recirculation loop operation, and 1.08 for single recirculation loop operation. No plant hardware modifications are associated with this change. Therefore, since this proposed change will not change the physical configuration of the plant, nor result in operational changes which invalidate assumptions used in any CNS accident analysis, this change does not involve an increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed License Amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Evaluation

This change revises the SLMCPR values in the CNS Technical Specifications in accordance with a cycle specific analysis performed for the remainder of the current cycle. The SLMCPR ensures that less than 0.1% of the fuel rods in a core would experience transition boiling during the most limiting Anticipated Operational Occurrence. Increasing the SLMCPR from 1.06 to 1.07 for dual recirculation loop operation and from 1.07 to 1.08 for single recirculation loop operation will ensure that the specified statistical confidence will be met for all analyzed transients. This change

does not involve any plant hardware changes. The only operational changes will be the institution of appropriate thermal restrictions on reactor core operation in accordance with the SLMCPR changes. Therefore, this proposed change will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change create a significant reduction in the margin of safety?

Evaluation

This change will establish in the CNS Technical Specifications, SLMCPR values that ensure the margin of safety to the NRC approved Anticipated Operational Occurrence evaluation acceptance criteria will be met. Increasing the SLMCPR institutes more restrictive thermal limitations on core operation. The change of the SLMCPR from 1.06 to 1.07 for dual recirculation loop operation, and from 1.07 to 1.08 for single loop operation will ensure that the acceptance criteria for evaluated transients will continue to be met, and that the appropriate limit is reflected in the CNS Technical Specifications. Therefore, this proposed change does not create a reduction in the margin of safety.

V. CONCLUSION:

The District has evaluated the proposed changes described above against the criteria of 10 CFR 50.92(c) in accordance with the requirements of 10 CFR 50.91(a)(1). This evaluation has determined this proposed change to the CNS Technical Specifications will not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility for a new or different kind of accident from any accident previously evaluated; or 3) create a significant reduction in the margin of safety. Therefore, the District requests NRC approval of this proposed change to the CNS Technical Specifications.

APPENDIX A