



Nebraska Public Power District
Nebraska's Energy Leader

NLS990111
December 6, 1999

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

**Subject: Proposed Changes to Technical Specifications
Safety Limit Minimum Critical Power Ratio
Cooper Nuclear Station, NRC Docket 50-298, DPR-46**

In accordance with the provisions of 10CFR50.4 and 50.90, the Nebraska Public Power District (District) requests that the Cooper Nuclear Station (CNS) Technical Specifications (TS) be revised as specified in Attachment 1. Changes are proposed to TS 2.1.1.2 for the Safety Limit Minimum Critical Power Ratio (SLMCPR). The proposed changes to TS 2.1.1.2 revise the SLMCPR values from 1.06 to 1.08 for two recirculation loop operation, and from 1.07 to 1.09 for single recirculation loop operation.

Attachment 1 contains the proposed changes and their basis, the Significant Hazards Determination, and the Environmental Impact Evaluation. Appendix A contains "Additional Information Regarding the Cycle Specific SLMCPR for Cooper Cycle 20," provided by General Electric Nuclear Energy (GENE), which summarizes the evaluation for determining the new values of SLMCPR. The District has reviewed the results contained in Appendix A and finds the results acceptable for use in supporting this proposed TS change. Some of the information contained in Appendix A is considered GENE proprietary information and should be withheld from public disclosure in accordance with 10CFR9.17(a)(4) and 10CFR2.790(a)(4). An affidavit attesting to this fact is provided in Appendix B. A non-proprietary version of the GENE document is provided in Appendix C. Appendix D contains the current TS page marked up with the proposed changes. Appendix E contains the revised TS page.

The proposed changes have been reviewed by the necessary Safety Review Committees, and incorporate all amendments to the CNS Facility Operating License through Amendment 179 issued July 26, 1999.

Cooper Nuclear Station
P.O. Box 98 / Brownville, NE 68321-0098
Telephone: (402) 825-3811 / Fax: (402) 825-5211
<http://www.nppd.com>

APD1

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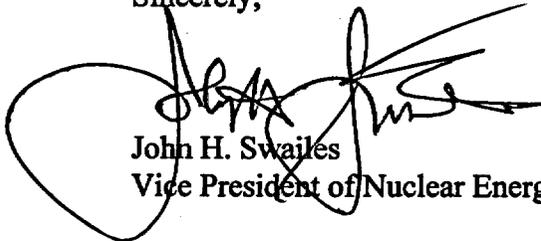
NLS990111
December 6, 1999
Page 2 of 3

Based on the refueling outage, the District requests issuance of the proposed license amendment by March 15, 2000. The revised Technical Specifications are required for startup of Cycle 20, which is currently scheduled for April 3, 2000.

By copy of this letter and its 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 the CNS Resident Inspector are also being provided in accordance with 10CFR50.4(b)(2).

Should you have any questions or require any additional information regarding this submittal, please contact me.

Sincerely,



John H. Swailes
Vice President of Nuclear Energy

/rss
Enclosure

cc: Regional Administrator
USNRC - Region IV

Senior Project Manager w/ attachment
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachment
USNRC

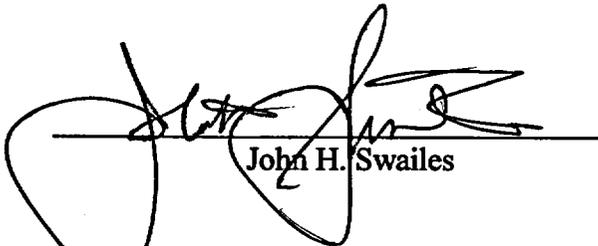
Environmental Health Division - Program Manager w/ attachment
Nebraska Department of Health

NPG Distribution w/o attachment

NLS990111
December 6, 1999
Page 3 of 3

STATE OF NEBRASKA)
)
NEMAHA COUNTY)

John H. Swailes, 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 correspondence on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.

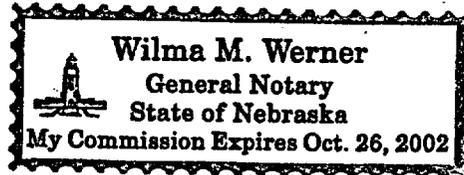


John H. Swailes

Subscribed in my presence and sworn to before me this 6 day of December, 1999.



NOTARY PUBLIC



ATTACHMENT 1

COOPER NUCLEAR STATION, NRC DOCKET 50-298, DPR-46

PROPOSED TECHNICAL SPECIFICATION CHANGES

SAFETY LIMIT MINIMUM CRITICAL POWER RATIO

PROPOSED TECHNICAL SPECIFICATION CHANGES

Safety Limit Minimum Critical Power Ratio

Revised Page

2.0-1

I. INTRODUCTION

The Nebraska Public Power District (District) requests that the Nuclear Regulatory Commission (NRC) approve the proposed changes to the Cooper Nuclear Station (CNS) Technical Specifications (TS) as proposed herein. The proposed changes revise TS Section 2.1.1.2 for Safety Limit Minimum Critical Power Ratio (SLMCPR). The proposed changes revise the values of SLMCPR from 1.06 to 1.08 for two recirculation loop operation, and from 1.07 to 1.09 for single recirculation loop operation.

II. PROPOSED CHANGES

In TS Section 2.1.1.2 on page 2.0-1, change "1.06" to "1.08" for two recirculation loop operation, and change "1.07" to "1.09" for single recirculation loop operation.

III. DISCUSSION

For Boiling Water Reactors using General Electric (GE) fuel, the SLMCPR is established in accordance with the design criteria documented in GE's fuel licensing document, GESTAR II (General Electric Standard Application for Reactor Fuel, NEDE-24011-P-A-13). GE calculates the SLMCPR using conservative inputs, approved by the NRC and defined by GESTAR II. The SLMCPR defines the minimum allowable critical power ratio at which at least 99.9 percent of all fuel rods in the core avoid transition boiling if the limit is not violated.

For CNS Cycle 20, which is currently scheduled to begin in April 2000, GE evaluation determined that the SLMCPR values are 1.08 for two recirculation loop operation, and 1.09 for single recirculation loop operation. Appendix A includes the comparison of the SLMCPR values for Cycle 19 and Cycle 20. As summarized in Appendix A, the higher and more restrictive values of SLMCPR for Cycle 20 are a result of more peaked core M CPR distribution and slightly flatter in-bundle power distributions than was used for Cycle 19 SLMCPR evaluation. GE concluded that, for Cycle 20 core utilizing GE14 fuel design, the calculated SLMCPR values of 1.08 for two loop operation, and 1.09 for single loop operation are appropriate.

The proposed changes will revise TS Section 2.1.1.2 to reflect the change in the SLMCPRs due to CNS Cycle 20 evaluation performed by GE. The new values of SLMCPR are calculated by GE using NRC approved methods and uncertainties (Letter, Frank Akstulewicz (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Reports NEDC-32601P, Methodology and Uncertainties for Safety Limit MCPR Evaluations; NEDC-32694P, Power Distribution Uncertainties for Safety Limit MCPR Evaluation; and Amendment 25 to NEDE-24011-P-A on Cycle Specific Safety Limit MCPR," (TAC Nos. M97490, M99069 and M97491) March 11, 1999). Some of these methods have been used in similar SLMCPR analyses reviewed by the NRC (Docket Nos. 50-278, 50-416). The SLMCPRs are set high enough to ensure that at least 99.9 percent of all fuel rods in the core avoid transition boiling if the limit is not violated. The SLMCPRs incorporate margin of uncertainties which are dependent on fuel type, including fuel bundle nuclear characteristics, critical power correlation, and manufacturing tolerances. The new SLMCPRs at CNS are proposed to be 1.08 for two loop operation, and 1.09 for single loop operation.

IV. SIGNIFICANT HAZARDS DETERMINATION

10CFR50.91(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 10CFR50.92(c). The following analysis meets these requirements.

Evaluation of this Amendment with Respect to 10CFR50.92

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

Evaluation

The basis for the Safety Limit Minimum Critical Power Ratio (SLMCPR) is to ensure that at least 99.9% of all fuel rods in the core avoid transition boiling if the SLMCPR limit is not violated. The revised SLMCPR values preserve the existing margin to transition boiling and thus the probability for fuel damage is not increased. The determination of a revised SLMCPR Technical Specification value does not affect the assumptions of accidents previously evaluated; or initiate, or affect initiators, of accidents previously evaluated. The proposed revisions to SLMCPR are based on the use of methodology previously accepted by the NRC for calculating SLMCPR and do not change the definition of SLMCPR. Thus, the probability of an accident previously evaluated is not increased.

The revised SLMCPR values do not affect the design or operation of any system, structure, or component in the facility. No new or different type of equipment is installed by this change. The proposed revision does not change or alter the design assumptions for systems, structures, or components used to mitigate the consequences of an accident. Thus, the dose consequences of an accident previously evaluated are not increased.

Therefore, the proposed license amendment does not involve a significant 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

The SLMCPR ensures that at least 99.9% of all fuel rods in the core avoid transition boiling if the SLMCPR limit is not violated. The revised SLMCPR values preserve the existing margin to transition boiling. The proposed revisions to SLMCPR are based on the use of methodology previously accepted by the NRC for calculating SLMCPR and do not change the definition of SLMCPR. The proposed revision does not change the design or operation of any system, structure, or component. No new or different type of plant equipment is installed by this change. The proposed revision does not involve a change to plant operation or allowable plant operating modes. The calculational methodology used to determine a revised SLMCPR Technical Specification value cannot initiate or create a new or different type of accident.

Therefore, the proposed license amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Evaluation

The SLMCPR ensures that at least 99.9% of all fuel rods in the core avoid transition boiling if the SLMCPR limit is not violated. The revised SLMCPR values were calculated using a methodology previously accepted by the NRC, and preserve the existing margin to transition boiling and thus the margin of safety to fuel failure. The proposed change does not involve a relaxation of the criteria or basis used to establish safety limits, or a relaxation in the criteria or bases for the

limiting conditions for operation. The assumptions and methodologies used in the plant accident analysis remain unchanged. Therefore, the proposed change does not create a significant reduction in the margin of safety.

V. ENVIRONMENTAL IMPACT EVALUATION

10CFR51.22(c)(9) provides criteria for licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. Based on the following evaluation, the District concludes that the proposed license amendment meets the criteria provided in 10CFR51.22(c)(9) for categorical exclusion from the requirements for an Environmental Impact or an Environmental Assessment.

1. The proposed license amendment does not involve significant hazards as described previously in the Significant Hazards Determination.
2. The proposed license amendment to change SLMCPR values from 1.06 to 1.08 for two loop operation, and from 1.07 to 1.09 for single loop operation does not result in a significant increase in radiological doses for any design basis accident. The proposed license amendment does not result in a significant change in the amounts of any effluents that may be released off-site. The proposed license amendment does not introduce any new equipment, nor does it require any existing equipment or systems to perform a different type of function than they are presently designed to perform. Therefore, it is concluded that there will not be a significant change in the types, or significant increase in the amount of any effluents that may be released off-site, and these changes do not involve irreversible environmental consequences beyond those already associated with normal operation.
3. The proposed license amendment does not introduce any new equipment or processes; nor does it require any existing systems or equipment to perform a different type of function than they are presently designed to perform. Therefore, the proposed license amendment to change SLMCPR values from 1.06 to 1.08 for two loop operation, and from 1.07 to 1.09 for single loop operation does not increase individual or cumulative occupational radiation exposure beyond that already associated with normal operation.

VI. CONCLUSION

The Nebraska Public Power District (District) has evaluated the proposed Technical Specification change described above against the criteria of 10CFR50.92(c) in accordance with the requirements of 10CFR50.91(a)(1). This evaluation has determined that the

Attachment 1
NLS990111
Page 5 of 5

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 of a new or different kind of accident from any accident previously evaluated; 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 by March 15, 2000.

APPENDIX B

COOPER NUCLEAR STATION, NRC DOCKET 50-298, DPR-46

**GENERAL ELECTRIC NUCLEAR ENERGY AFFIDAVIT
REGARDING WITHHOLDING FROM PUBLIC DISCLOSURE**



Affidavit

I, Glen A. Watford, being duly sworn, depose and state as follows:

- (1) I am Manager, Nuclear Fuel Engineering, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.**
- (2) The information sought to be withheld is contained in the letter, J. Swailes (NPPD) to USNRC, *Proposed Changes to Technical Specifications Safety Limit Minimum Critical Power Ratio Cooper Nuclear Station NRC Docket 50-298 DPR-46*, Transmittal Reference Number NLS990111.**
- (3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4) and 2.790(a)(4) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential commercial information," and some portions also qualify under the narrower definition of "trade secret," within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).**
- (4) Some examples of categories of information which fit into the definition of proprietary information are:**
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;**
 - b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;**
 - c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of General Electric, its customers, or its suppliers;**
 - d. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, of potential commercial value to General Electric;**
 - e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.**

Affidavit

The information sought to be withheld is considered to be proprietary for the reasons set forth in both paragraphs (4)a. and (4)b., above.

- (5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in (6) and (7) following. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it contains details of GE's fuel design and licensing methodology.

The development of the methods used in these analyses, along with the testing, development and approval of the supporting methodology was achieved at a significant cost, on the order of several million dollars, to GE.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The fuel design and licensing methodology is part of GE's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a

Affidavit

similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

State of North Carolina)
County of New Hanover) SS:

Glen A. Watford, being duly sworn, deposes and says:

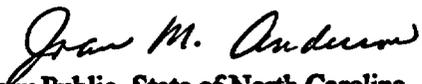
That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 2nd day of December, 1999



Glen A. Watford
General Electric Company

Subscribed and sworn before me this 2nd day of December, 1999



Notary Public, State of North Carolina

My Commission Expires 10/68/2001

APPENDIX C

COOPER NUCLEAR STATION, NRC DOCKET 50-298, DPR-46

**GENERAL ELECTRIC NUCLEAR ENERGY DOCUMENT ENTITLED
“ADDITIONAL INFORMATION REGARDING THE CYCLE SPECIFIC
SLMCPR FOR COOPER CYCLE 20”**

(GENE NON-PROPRIETARY VERSION)

References

- [1] Letter, Frank Akstulewicz (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Reports NEDC-32601P, *Methodology and Uncertainties for Safety Limit MCPR Evaluations*; NEDC-32694P, *Power Distribution Uncertainties for Safety Limit MCPR Evaluation*; and Amendment 25 to NEDE-24011-P-A on Cycle Specific Safety Limit MCPR," (TAC Nos. M97490, M99069 and M97491), March 11, 1999.
- [2] Letter, Thomas H. Essig (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Report NEDC-32505P, Revision 1, *R-Factor Calculation Method for GE11, GE12 and GE13 Fuel*," (TAC No. M99070 and M95081), January 11, 1999.
- [3] *General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application*, NEDO-10958-A, January 1977.

Comparison of Cooper Cycle 20 and Cycle 19 SLMCPR Values

Table 1 summarizes the relevant input parameters and results of the SLMCPR determination for the Cooper Cycle 20 and Cycle 19 cores. The SLMCPR evaluations were performed using NRC approved methods and uncertainties[1]. These evaluations yield different calculated SLMCPR values because different inputs were used. The quantities that have been shown to have some impact on the determination of the safety limit MCPR (SLMCPR) are provided.

In comparing the Cooper Cycle 20 and Cycle 19 SLMCPR values it is important to note the impact of the differences in the core and bundle designs. These differences are summarized in Table 1.

[[]].

[[]].

The uncontrolled bundle pin-by-pin power distributions were compared between the Cooper Cycle 20 bundles and the Cycle 19 bundles. Pin-by-pin power distributions are characterized in terms of R-factors using the NRC approved methodology[2]. [[]]

Summary

[[]] have been used to compare quantities that impact the calculated SLMCPR value. Based on these comparisons, the conclusion is reached that the Cooper Cycle 20 core/cycle has a more peaked core MCPR distribution [[]] and slightly flatter in-bundle power distributions [[]] than what was used to perform the Cycle 19 SLMCPR evaluation.

The calculated 1.08 Monte Carlo SLMCPR for Cooper Cycle 20 is consistent with what one would expect [[]] the 1.08 SLMCPR value is appropriate.

Based on all of the facts, observations and arguments presented above, it is concluded that the calculated SLMCPR value of 1.08 for the Cooper Cycle 20 core is appropriate. It is reasonable that this value is 0.02 higher than the 1.06 value calculated for the previous cycle.

For single loop operations (SLO) the calculated safety limit MCPR for the limiting case is 1.09 [[]]

Prepared by:



S. B. Shelton
Technical Project Manager
Cooper Project

Verified by:



G. N. Marrotte
Nuclear Fuel Engineering

Attachment

**Additional Information Regarding the
Cycle Specific SLMCPR for Cooper Cycle 20
Non-Proprietary
Table 1**

October 20, 1999

Comparison of the Cooper Cycle 20 and Cycle 19 SLMCPR

[[]]

APPENDIX D

COOPER NUCLEAR STATION, NRC DOCKET 50-298, DPR-46

PROPOSED TECHNICAL SPECIFICATION MARKED UP PAGES

INCLUDED PAGE(S):

2.0-1

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be \leq 25% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10% rated core flow:

1.08

MCPR shall be \geq ~~1.06~~ for two recirculation loop operation or \geq ~~1.07~~ for single recirculation loop operation.

1.09

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1337 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

APPENDIX E

**COOPER NUCLEAR STATION, NRC DOCKET 50-298, DPR-46
PROPOSED TECHNICAL SPECIFICATION REVISED PAGES**

INCLUDED PAGE(S):

2.0-1

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be \leq 25% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10% rated core flow:

MCPR shall be \geq 1.08 for two recirculation loop operation or \geq 1.09 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1337 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.
