



Nebraska Public Power District

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NLS2012099
October 3, 2012

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

Subject: Response to Nuclear Regulatory Commission Request for Additional Information
RE: License Amendment Request To Revise Technical Specifications - Safety
Limit Minimum Critical Power Ratio (TAC NO. ME8853)
Cooper Nuclear Station, Docket No. 50-298, DPR-46

- References:**
1. Letter from Lynnea E. Wilkins, U. S. Nuclear Regulatory Commission, to Brian J. O'Grady, Nebraska Public Power District, dated September 5, 2012, "Cooper Nuclear Station - Request for Additional Information, RE: License Amendment Request To Revise Technical Specifications - Safety Limit Minimum Critical Power Ratio (TAC NO. ME8853)"
 2. Letter from Brian J. O'Grady, Nebraska Public Power District, to the U.S. Nuclear Regulatory Commission, dated May 30, 2012, "License Amendment Request to Revise Technical Specifications - Safety Limit Minimum Critical Power Ratio"

Dear Sir or Madam:

The purpose of this letter is for Nebraska Public Power District (NPPD) to submit a response to requests for additional information (RAI) from the Nuclear Regulatory Commission (NRC) (Reference 1). The RAI requested information in support of NRC's review of a license amendment request for the Cooper Nuclear Station (CNS) facility operating license and technical specifications to revise two recirculation loop and single recirculation loop Safety Limit Minimum Critical Power Ratio values to reflect results of a cycle specific calculation (Reference 2).

Responses to the specific RAI questions are provided in the Attachment and Enclosures 1 and 2. No regulatory commitments are made in this submittal.

The enclosed RAI responses provided in Enclosure 1 contain proprietary information as defined by 10 CFR 2.390. Global Nuclear Fuel (GNF), as owner of the proprietary information, has executed the affidavit in Enclosure 3, which identifies that the proprietary information has been

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handled and classified as proprietary, is customarily held in confidence, and should be withheld from public disclosure. The proprietary information was provided to NPPD in a GNF transmittal that is referenced by the affidavit. The proprietary information has been faithfully reproduced in the enclosed RAI responses such that the affidavit remains applicable. NPPD hereby requests that Enclosure 1 be withheld from public disclosure in accordance with the provisions of 10 CFR 2.390 and 9.17. A non-proprietary version is provided in Enclosure 2.

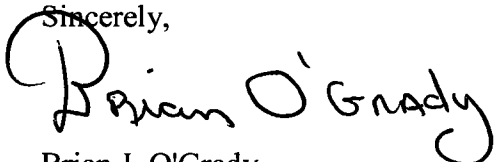
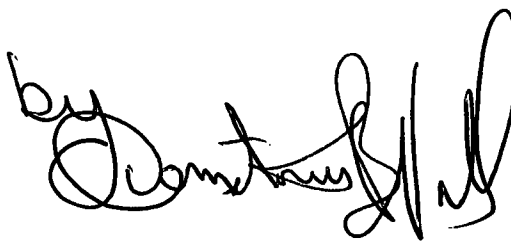
The information submitted by this response to the RAI does not change the conclusions or the basis of the no significant hazards consideration evaluation provided with Reference 2.

If you have any questions concerning this matter, please contact David Van Der Kamp, Licensing Manager, at (402) 825-2904.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/3/2012
(date)

Sincerely,

 by 

Brian J. O'Grady
Vice President – Nuclear and
Chief Nuclear Officer

/em

Attachment: Response to Nuclear Regulatory Commission Request for Additional Information Re: License Amendment Request To Revise Technical Specifications Safety Limit Minimum Critical Power Ratio (TAC NO. ME8853)

- Enclosures:
1. VSP-NPP-HP1-12-087, Response to NRC RAIs for Cooper Cycle 28 SLMCPR Submittal, GNF Proprietary Information - Class III (Confidential)
 2. VSP-NPP-HP1-12-087, Response to NRC RAIs for Cooper Cycle 28 SLMCPR Submittal, Non-Proprietary Information - Class I (Public)
 3. VSP-NPP-HP1-12-087, Affidavit

cc: Regional Administrator w/ attachment and Enclosure 2
USNRC - Region IV

Cooper Project Manager w/ attachment and Enclosure 2
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/ attachment and Enclosure 2
USNRC - CNS

Nebraska Health and Human Services w/ attachment and Enclosure 2
Department of Regulation and Licensure

NPG Distribution w/o attachment and Enclosures

CNS Records w/ attachment and Enclosure 2

Enclosure 3
VSP-NPP-HP1-12-087

Affidavit

Global Nuclear Fuel – Americas
AFFIDAVIT

I, Lukas Trosman, state as follows:

- (1) I am Engineering Manager, Reload Design and Analysis, Global Nuclear Fuel – Americas, LLC (GNF-A), 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 Enclosure 1 of GNF's letter, VSP-NPP-HP1-12-087, V. Perry (GNF-A) to G. Stuchal (Nebraska Public Power District), entitled "GNF Response to NRC RAIs for Cooper Cycle 28 SLMCPR Submittal," dated September 13, 2012. GNF-A proprietary information in Enclosure 1, which is entitled "Response to NRC RAIs for Cooper Cycle 28 SLMCPR Submittal," is identified by a dotted underline inside double square brackets. [[This sentence is an example.⁽³⁾]] In each case, the superscript notation ⁽³⁾ refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A 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 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought 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, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (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 GNF-A's competitors without license from GNF-A 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 aspects of past, present, or future GNF-A customer-funded development plans and programs, resulting in potential products to GNF-A;
 - d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

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

- (5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GNF-A, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GNF-A, 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. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.
- (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, or subject to the terms under which it was licensed to GNF-A. Access to such documents within GNF-A 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 GNF-A 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 GNF-A's fuel design and licensing methodology. The development of this methodology, along with the testing, development and approval was achieved at a significant cost to GNF-A.

The development of the fuel design and licensing methodology along with the interpretation and application of the analytical results is derived from an extensive experience database that constitutes a major GNF-A asset.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GNF-A's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GNF-A'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 GNF-A.

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.

Attachment

**Response to Nuclear Regulatory Commission Request for Additional Information
Re: License Amendment Request to Revise Technical Specifications -
Safety Limit Minimum Critical Power Ratio (TAC NO. ME8853)**

Cooper Nuclear Station, Docket No. 50-298, DPR-46

Nuclear Regulatory Commission's (NRC) Request for Additional Information regarding the subject License Amendment Request (LAR) is shown in italics. Nebraska Public Power District's response to each request is shown in block font.

NRC Request

The staff is requesting additional information to verify that the statistical analysis is based on parameters that are applicable to the proposed CNS [Cooper Nuclear Station] core design. The staff's review includes gathering additional information concerning cycle design changes that may be causing the SLMCPR [Safety Limit Minimum Critical Power Ratio] to change, confirming the applicability of relevant statistical databases to CNS specifically, and obtaining additional information as necessary to confirm that SSP inputs are appropriate in the GEH [General Electric - Hitachi] SLMCPR calculative process.

NRC Question #1

In Section 2.8 of Enclosure 2 to the May 30, 2012 [sic], application letter, it is stated (non-proprietary) that the licensee requested the application of General Electric Thermal Analysis Basis [GETAB] power distribution methodology and uncertainties, and that a separate enclosure provides the basis for application of this methodology and these uncertainties for the GARDEL [Core Thermal Limits Computer Program] core monitoring system. The applicable uncertainty terms, which relate to core monitoring capabilities under various equipment availability scenarios, do not appear to be directly comparable. Please provide information to facilitate a comparison between [Studsvik Scandpower, Inc.] SSP-calculated uncertainty parameters and those provided in Table 5 of the GNF [Global Nuclear Fuels] report.

Response #1

The GARDEL bundle power uncertainties report (Studsvik Scandpower Report SSP-07/405-C, "GARDEL BWR Cooper Nuclear Station Power Distribution Uncertainties," Revision 1, May 11, 2007) included in the LAR letter demonstrates that the GARDEL uncertainties are bounded by the GETAB uncertainties. This is demonstrated by comparing the value of the GARDEL radial bundle power uncertainty (sigma radial from SSP-07/405-C) to the value of the GETAB effective total bundle power uncertainty (NEDO-10958-A) and comparing the value of the GARDEL nodal power uncertainty (sigma nodal from SSP-07/405-C) to the value of the GETAB effective overall quarter segment power uncertainty (NEDO-10958-A).

The GARDEL reported bundle power uncertainty value is 2.3% as compared to the GETAB value of 4.3%, and the GARDEL reported nodal power uncertainty is 4.0% as compared to the GETAB value of 8.7%. Both of these values show lower uncertainty which shows GARDEL uncertainties are bounded by the GETAB values used in the GNF SLMCPR calculations.

NRC Question #2

Please explain the basis for the batch fraction change and how it affects the SLMCPR result.

Response #2

The response to Question #2 is provided by GNF in Enclosure 1.

NRC Question #3

Please provide information or data to confirm that observed channel bow at CNS is within the bounding value assumed in the SLMCPR analysis.

Response #3

The response to Question #3 is provided by GNF in Enclosure 1.

In addition, during cycle 27 operation CNS performed multiple instances of control blade to channel friction interference settle time testing per procedure 15.CRD.506 and no instances of fuel channel to control blade friction or interference were observed.

NRC Question #4

Regarding the fuel channeling practices in use at CNS, which require the use of new fuel channels on new fuel assemblies, please confirm or verify that this practice has been employed for all fuel currently in the core, such that all fuel in the core began its first cycle with a fresh fuel channel.

Response #4

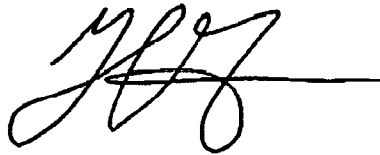
CNS confirms that all fuel currently residing in the core received a fresh channel prior to initial operation in the core. This was verified against the applicable new fuel inspection and channeling procedures, which are signed by certified fuel inspectors.

GNF-A's competitive advantage will be lost if its competitors are able to use the results of the GNF-A 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 GNF-A 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 similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GNF-A of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 13th day of September 2012.

A handwritten signature in black ink, appearing to be 'L. Trosman', with a long horizontal line extending to the right from the end of the signature.

Lukas Trosman
Engineering Manager, Reload Design and Analysis
Global Nuclear Fuel – Americas, LLC

Enclosure 2

VSP-NPP-HP1-12-087

Response to NRC RAIs for Cooper Cycle 28 SLMCPR Submittal

Non-Proprietary Information - Class I (Public)

INFORMATION NOTICE

This is a non-proprietary version of VSP-NPP-HP1-12-087 Enclosure 1, which has the proprietary information removed. Portions of the document that have been removed are indicated by white space inside an open and closed bracket as shown here [[]].

REQUEST FOR ADDITIONAL INFORMATION
NEBRASKA PUBLIC POWER DISTRICT
COOPER NUCLEAR STATION
SAFETY LIMIT MINIMUM CRITICAL POWER RATIO UPDATE
DOCKET NO. 50-298

By letter dated May 30, 2012, (Agencywide Documents Access and Management System Accession No. ML12157A206), Nebraska Public Power District (the licensee), submitted an application for Cooper Nuclear Station (CNS) to revise Technical Specifications Section 2.0. This change would revise the Safety Limits Minimum Critical Power Ratio (SLM CPR) for two recirculation loop from ≥ 1.10 to ≥ 1.11 and single recirculation loop from ≥ 1.12 to ≥ 1.13 . The licensee provided two supporting enclosures, a report by Global Nuclear Fuels America (GNF-A) and a report by Studsvik Scandpower, Inc (SSP).

The NRC staff has reviewed your submittal and has determined that the following information is needed to complete its review.

RAI 1

In Section 2.8 of Enclosure 2 to the May 30, 2012, application letter, it is stated (non-proprietary) that the licensee requested the application of General Electric Thermal Analysis Basis power distribution methodology and uncertainties, and that a separate enclosure provides the basis for application of this methodology and these uncertainties for the GARDEL core monitoring system. The applicable uncertainty terms, which relate to core monitoring capabilities under various equipment availability scenarios, do not appear to be directly comparable. Please provide information to facilitate a comparison between SSP-calculated uncertainty parameters and those provided in Table 5 of the GNF report.

GNF Response

The response to this RAI will be provided by CNS.

RAI 2

Please explain the basis for the batch fraction change and how it affects the SLMCPR result.

GNF Response

The batch fraction was increased (from 0.255 to 0.328) in order to achieve an increase in full power capability at end of rated conditions from 10,885 MWd/ST to 13,711 MWd/ST. Batch fraction does not necessarily correlate directly to SLMCPR, but there is an indirect impact. The safety limit is sensitive to the flatness of the radial power distribution used in the SLMCPR analysis. Changing the batch fraction may change the radial power distribution of the nominal condition. This may in turn impact the rod pattern used in the SLMCPR analysis.

RAI 3

Please provide information or data to confirm that observed channel bow at CNS is within the bounding value assumed in the SLMCPR analysis.

GNF Response

The [[]] R-factor uncertainty that is used in the SLMCPR analysis (documented in Table 5 of Reference 3-1) is based on a standard deviation in the core average bow of [[]]. Predicted results from the 3D simulator (PANACEA) confirm that the reference design complies with this design requirement. This check is routinely performed as part of the reload licensing core design and verification process.

Reference

- 3-1. Global Nuclear Fuel, "GNF Additional Information Regarding the Requested Changes to the Technical Specification SLMCPR Cooper Cycle 28," GNF S-0000-0140-2518-R0-P, April 2012.

RAI 4

Regarding the fuel channeling practices in use at CNS, which require the use of new fuel channels on new fuel assemblies, please confirm or verify that this practice has been employed for all fuel currently in the core, such that all fuel in the core began its first cycle with a fresh fuel channel.

GNF Response

The response to this RAI will be provided by CNS.