Nebraska Public Power District
Nebraska's Energy Leader

NLS2000027
March 17, 2000

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

Subject: Response to Request for Additional Information
Proposed Changes to Technical Specifications
Safety Limit Minimum Critical Power Ratio
Cooper Nuclear Station, NRC Docket No. 50-298, DPR-46

Reference: Letter NLS990111 to U. S. NRC Document Control Desk from J. H. Swailes dated December 6, 1999, "Proposed Changes to Technical Specifications Safety Limit Minimum Critical Power Ratio"

Gentlemen:

On December 6, 1999, the Nebraska Public Power District (District) requested an amendment to change the Cooper Nuclear Station Technical Specifications (TS) (Reference). This proposed change would revise the TS for the Safety Limit Minimum Critical Power Ratio values from 1.06 to 1.08 for two recirculation operation, and from 1.07 to 1.09 for single recirculation loop operation.

On March 7, 2000, the NRC verbally requested the District to provide additional information regarding the proposed TS change. Attachment A provides a proprietary version of the requested additional information prepared by Global Nuclear Fuel (GNF). The District has reviewed the information contained in Attachment A and finds it acceptable for responding to the questions from the NRC. Some of the information contained in Attachment A is considered GNF proprietary information and should be withheld from public disclosure in accordance with 10CFR9.17(a)(4) and 10CFR2.790(a)(4). An affidavit to this fact is provided in Attachment B. A non-proprietary version of the GNF document is provided in Attachment C.

As the information contained in Attachment A does not change the description or intent of the proposed TS change, the District believes that the previously (Reference) submitted no Significant Hazards Determination still applies.

A P01

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Should you have any questions regarding this matter, please contact Sharon Mahler at (402) 825-5236.

Sincerely,

John H. Swailes
Vice President of Nuclear Energy

/rss
Attachments

cc: Regional Administrator w/attachment
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

ATTACHMENT B

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

GLOBAL NUCLEAR FUEL 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, Global Nuclear Fuel – Americas, L.L.C. ("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 the attachment, *Response to NRC Request for Additional Information – Cooper Cycle 20*, dated March 14, 2000. The proprietary text has been enclosed by double brackets.

(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 2.790(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 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 cost or price information, production capacities, budget levels, or commercial strategies of GNF-A, its customers, or its suppliers;

d. Information which reveals aspects of past, present, or future GNF-A customer–funded development plans and programs, of potential commercial value to GNF-A;

e. 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) 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. 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 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.

(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 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 GNF-A or its licensor.

(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 fuel design and licensing methodology 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 or its licensor.

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.

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.

Affidavit

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 14th day of March, 2000

Glen A. Watford
Global Nuclear Fuel – Americas, LLC

Subscribed and sworn before me this 14th day of March, 2000

Joan M Anderson
Notary Public, State of North Carolina

My Commission Expires 10/08/2001

ATTACHMENT C

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

GLOBAL NUCLEAR FUEL DOCUMENT ENTITLED "RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION-COOPER CYCLE 20-MARCH 14, 2000"

(GNF NON-PROPRIETARY VERSION)

Response to NRC Request for Additional Information – Cooper Cycle 20 – March 14, 2000

1. Provide the fuel types and numbers of assemblies used in Cooper Cycle 20 operation and identify if they are fresh or irradiated fuel (once or twice burned, etc.). Also, provide the fuel loading pattern for Cycle 20 and identify its difference from Cycle 19 and the impact on the SLMCPR calculation.

Response:
The requested core loading information is available in the Supplemental Reload Licensing Report (SRLR) for Cycle 20 (J11-03650-10, Rev. 0, Supplemental Reload Licensing Report for Cooper Nuclear Station Reload 19 Cycle 20) and provided as Attachment 1. Equivalent information is supplied in the SRLR for Cycle 19 (J11-03354-10, Rev. 0, Supplemental Reload Licensing Report for Cooper Nuclear Station Reload 18 Cycle 19) provided as Attachment 2. The impact of the fuel loading pattern differences on the calculated SLMCPR is correlated to the values of MIP (MCPR Importance Parameter) and RIP (R factor Importance Parameter). The [[ ]] values for both cycles are provided in Appendix A, Table 1 of the December 6, 1999 submittal (Update to Appendix A, Table 1 of the December 6, 1999 submittal is Attachment 3).

2. The approved methodologies used include NEDC-32694P, NEDC-32601P, Amendment 25 to NEDE-24011P-A, and NEDC-32505P, Revision 1. However, Table 1 in the Appendix A of the December 6, 1999 submittal indicates that same power distribution uncertainty in GETAB is used for both Cycle 19 and 20. Please identify which power distribution uncertainties and SLMCPR uncertainties for SLMCPR are used to support this amendment request.

Response:
The GETAB (NEDO-10958-A) power distribution uncertainties are used for both Cycle 19 and 20. GETAB is invoked by reference from NEDE-24011P-A. The GETAB power distribution uncertainties are also reported in column 2 of Table 2.1 of NEDC-32601P. For the GETAB methodology, only the "TIP Reading and Bundle Power" and the "TIP Reading Random Uncertainty" values are classified as power distribution uncertainties. The GETAB values for these two quantities given in column 2 of Table 2.1 of NEDC-32601P are the ones that were used for this submittal. The NRC staff has taken the position in their SER dated March 11, 1999 that the non-power distribution uncertainties reported in NEDC-32601P are "revisions" or "updates" to the GETAB values. GE (GNF) has accepted this position so that the revised non-power distribution uncertainties are used for all SLMCPR calculations performed after June 1999 regardless of which approved methodology is used for the power distribution uncertainties. A line has been added to Table 1 in Appendix A of the December 6, 1999 submittal (See Attachment 3) to indicate that the revised non-power distribution uncertainties from NEDC-32601P Table 4.1 were used for Cooper, Cycle 20.

3. Provide the details for R-Factor calculation for GE14 fuel and provide the data bases to justify that the approach is conservative with respect to the approved method stated in NEDC-32505P, Revision 1.

Response:
Calculation of GE14 R-factors follows the approved methodology of NEDC-32505P Rev. 1. The R-factor calculations consist of three essential components: [[

]].
The GE14 bundle is similar to the GE12 bundle. It is a 10x10 design with 78 full length rods, 14 part length rods and 2 large central water rods. The location of the part length rods and the water rods are identical. [[
]]. The additive constants are derived from the test data along with the GEXL coefficients. [[
]]. The process used for GE14 is the same as the approved methodology in NEDC-32505PA Rev. 1 and the recommendations in the SER.

4. Provide the details for GEXL14 correlation including its development and verification process, and data bases, and justify that the GEXL14 correlation is conservative.

Response:
GEXL14 correlation is developed based on the full scale ATLAS test data. The full scale test data were used to generate the GEXL coefficients as well as the additive constants for R-factor calculations to accurately predict the data points over the application range. The report "GE14 Compliance with Amendment 22 of NEDE-24011-P-A (GESTAR II)" documents the GEXL14 data and verification base. The database used to develop the GEXL14 correlation consists of [[
]].
The GEXL14 correlation is valid for GE14 fuel over the following range of state points: [[

]]
[[

]]

The GEXL14 correlation like previous GEXL correlations is derived as a best fit to the ATLAS critical power data. The GEXL correlation is not intended to be conservative. The GEXL correlation is derived following the process described in GESTAR II (NEDE-24011-P-A-14) Section 1.1.7.C.iv "Correlation fit to data shall be best fit". The bias and uncertainty in the correlation is determined as specified in GESTAR Section 1.1.7. The overall GEXL14 uncertainty is [[ ]]. This uncertainty is an explicit input to the approved SLMCPR methodology.

5. The staff approved those methodologies cited in Question 2 with one condition that the 3D-MONICORE bundle power calculational uncertainty should be verified when applied to fuel and core designs not included in the benchmark comparisons in Tables 3.1 and 3.2 of NEDC-32694P, and three actions should be taken for application of NEDC-32601P for a new fuel. GE14 is considered a new fuel at the time the staff approved those licensing topical reports, therefore, provide the details of the actions taken and verification done by District for Cooper Cycle 20 operation.

Response:
The referenced requirement for 3D-MONICORE and the three actions pertaining to NEDC-32601P correspond to the four items listed as the NRC's Technical Position in Enclosure 2 accompanying their SER dated March 11, 1999 approving NEDC-32601P and NEDC-32694P. The NRC positions are quoted here together with the actions taken to satisfy each item. Item (a) is the specific requirement from NEDC-32694P that pertains to 3D-MONICORE. Items (b), (c) and (d) are the three actions pertaining to NEDC-32601P referred to in the question.

Item (a): Since changes in the fuel and core design can have a significant effect on the calculation accuracy, the 3D-MONICORE bundle power calculational uncertainty should be verified when applied to fuel and core designs not included in the benchmark comparisons of Tables-3.1 and 3.2 of NEDC-32694P.

This item pertains only to the application of the reduced power distribution uncertainties and methodology given in NEDC-32694P. This item or part of the question is not applicable when the original GETAB methodology and uncertainties are used. The original GETAB methodology and uncertainties have been demonstrated to be sufficiently conservative to be generically applicable to all GE fuel designs. Note that the original GETAB methodology and uncertainties produce SLMCPR values that are on the order of [[

]].

Item (b): Since changes in fuel design can have a significant effect on the calculation accuracy, the TGBLA fuel rod power calculational uncertainty should be verified when applied to fuel designs not included in the benchmark comparisons of Table 3.1 of NEDC-32601P, since changes in fuel design can have a significant effect on calculation accuracy.

The fidelity of the TGBLA lattice physics calculations for fuel rod powers depend on the lattice designs. The key considerations are the lattice geometry, the location of the water rods, the location of the gadded rods and for vanished-rod lattices the location of the part-length rods. All these characteristics are identical for GE12 and GE14. See the response to question (3) above. [[

]]. Table 3.1 of NEDC-32601P explicitly includes several 10x10 lattices. The values given in Table 3.1 for GE12 are directly applicable to GE14, thus there is no impact.

Item (c): The effect of the correlation of rod power calculation uncertainties should be reevaluated to insure the accuracy of R-Factor uncertainty when the methodology is applied to a new fuel lattice.

The R-factor uncertainty is dominated by the same factors that influence the rod powers as described above for item (b). The uncertainty is the same for GE12 and GE14. The derivation of the uncertainty value is presented for GE 10x10 lattices (i.e., GE12 and GE14) in Appendix C of NEDC-32601P-A.

Item (d): In view of the importance of MIP criterion and its potential sensitivity to changes in fuel bundle designs, core loading and operating strategies, the MIP criterion should be reviewed periodically as part of the procedural review process to insure that the specific value recommended in NEDC-32601 P is applicable to future designs and operating strategies.

The calculated value of MIP depends only on two things: [[

]]. The MCPR distribution depends mainly on the power distribution, flow distribution and the GEXL correlation. The GEXL correlation for GE14 was provided in the Amendment 22 submittal for GE14 together with the uncertainty [[ ]] that is needed for the SLMCPR analyses and the calculation of MIP. See also the response to question (4) above. GE (GNF) continues to monitor MIP and periodically assess it as part of their procedural review process. Specific scoping analyses preformed for cores partially and fully-loaded with GE14 fuel have given no indication that suggests that the MIP values from these calculations are statistically distinct from historical data. The applicability of correlating the calculated SLMCPR

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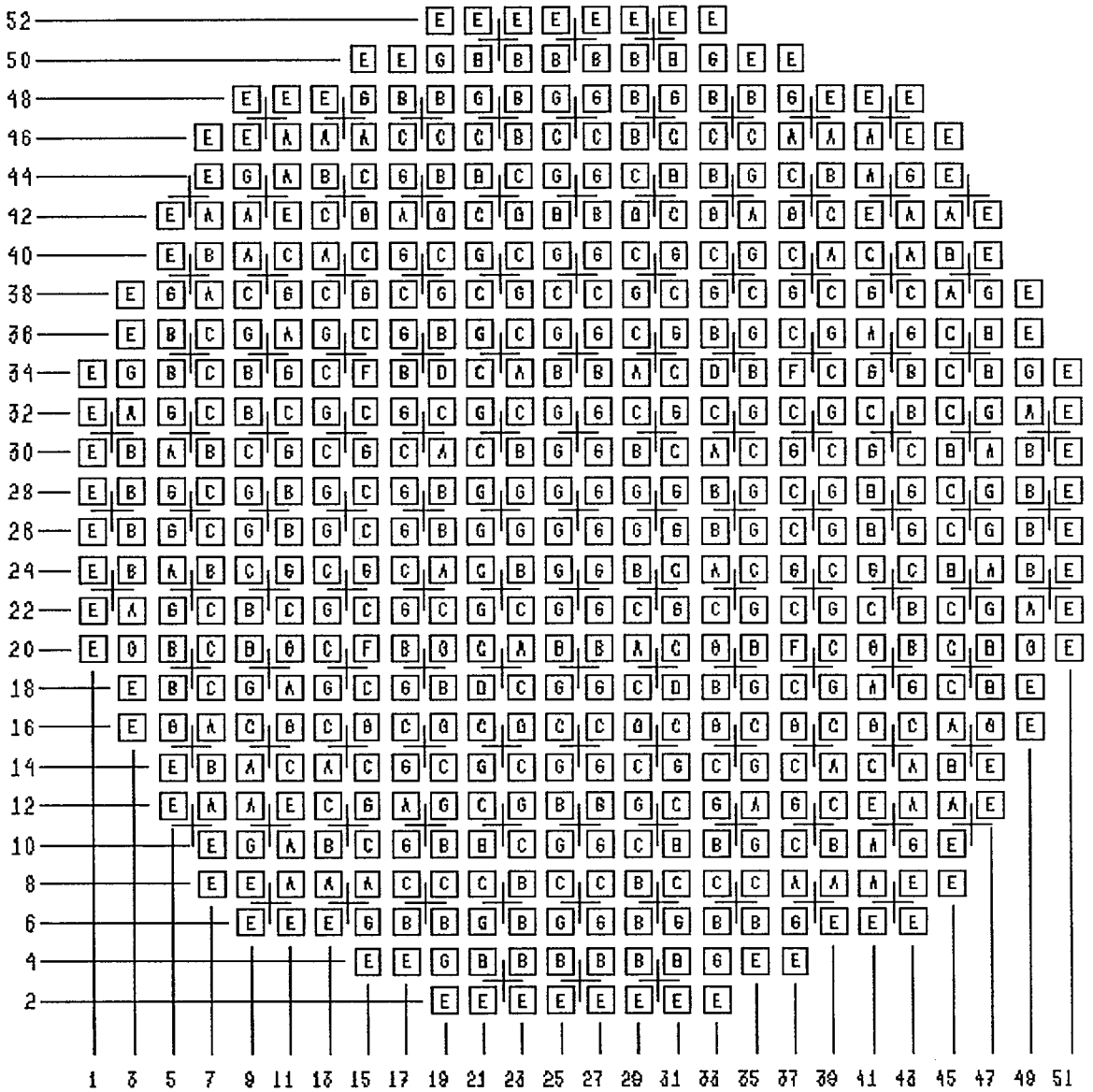
Attachment 1

From J11-03650-10, Rev. 0, Supplemental Reload Licensing Report for Cooper Nuclear Station Reload 19 Cycle 20

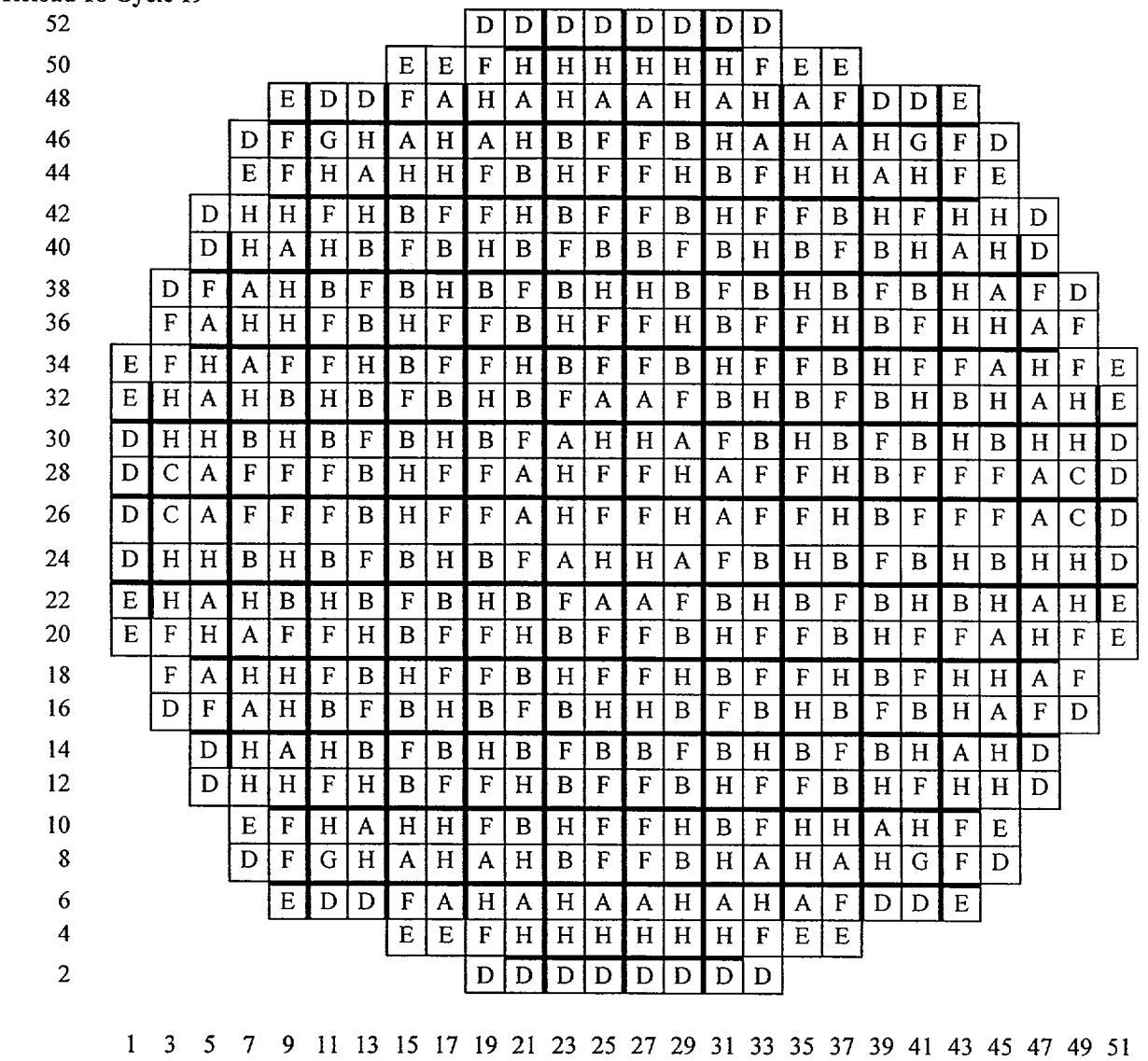


Fuel Type			
A=GE9B-P8DWB350-10GZ-80U-150-T	(Cycle 19)	E=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 17)
B=GE9B-P8DWB350-10GZ1-80U-150-T	(Cycle 19)	F=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 18)
C=GE14-P10HNAB385-14GZ-100T-148-T	(Cycle 20)	G=GE9B-P8DWB350-10GZ-80U-150-T	(Cycle 18)
D=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 17)		

Figure 1 Reference Core Loading Pattern

Attachment 2

From J11-03354-10, Rev. 0 Supplemental Reload Licensing Report for Cooper Nuclear Station Reload 18 Cycle 19



Fuel Type			
A=GE9B-P8DWB350-10GZ-80U-150-T	(Cycle 19)	E=GE9B-P8DWB348-12GZ-80M-150-T	(Cycle 16)
B=GE9B-P8DWB350-10GZ1-80U-150-T	(Cycle 19)	F=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 17)
C=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 17)	G=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 18)
D=GE9B-P8DWB348-11GZ-80M-150-T	(Cycle 16)	H=GE9B-P8DWB350-10GZ-80U-150-T	(Cycle 18)

Figure 1 Reference Core Loading Pattern

Response to NRC Request for Additional Information – Cooper Cycle 20 – March 14, 2000

Attachment 3

Updated Appendix A, Table 1 of the December 6, 1999 Submittal

Table 1
Comparison of the Cooper Cycle 20 and Cycle 19 SLMCPR

[[

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Correspondence No: NLS2000027

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the NL&S Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
None	None