Proprietary Information

Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

October 25, 2002

TVA-BFN-TS-420

10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop: OWFN P1-35
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of) Docket No. 50-260
Tennessee Valley Authority)

BROWNS FERRY NUCLEAR PLANT (BFN) - UNIT 2 - TECHNICAL SPECIFICATIONS (TS) CHANGE 420 - SAFETY LIMIT MINIMUM CRITICAL POWER RATIO (SLMCPR) - CYCLE 13 OPERATION

Pursuant to 10 CFR 50.90, the Tennessee Valley Authority (TVA) is submitting a request for a TS change (TS-420) to Operating License DPR-52 for BFN Unit 2. The proposed amendment revises the numeric value of SLMCPR in TS 2.1.1.2 for two recirculation loop operation to incorporate the results of the cycle-specific core reload analysis for Unit 2 Cycle 13 operation.

A non-proprietary version of a letter report prepared by Global Nuclear Fuels (GNF) in support of this proposed TS change is provided in Enclosure 3. Enclosure 4 provides a proprietary version of the same report. GNF has requested that the proprietary report be withheld from public disclosure pursuant to 10 CFR 2.790. In consideration, an affidavit as required by 10 CFR 2.790(b)(1) is also included in Enclosure 4.

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TVA has determined that there are no significant hazards considerations associated with the proposed change and that the TS change qualifies for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Alabama State Department of Public Health.

The TS change is needed for BFN Unit 2 Cycle 13 operation. Therefore, TVA is asking that this TS change be approved by February 1, 2003, and that the implementation of the revised TS be made within 60 days of NRC approval.

There are no regulatory commitments associated with this submittal. This letter is being sent in accordance with NRC Regulatory Issue Summary 2001-05, Guidance on Submitting Documents to the NRC by Electronic Information Exchange or on CD-ROM. If you have any questions about this TS change, please contact me at (256)729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 25, 2002.

Sincerely,

T. E. Abney
Manager of Licensing
and Industry Affairs

cc: See Page 2

Enclosures:
1. TVA Evaluation of Proposed Change
2. Proposed Technical Specifications Changes (mark-up)
3. Non-proprietary Version of GNF Letter
4. Affidavit and Proprietary Version of GNF Letter

cc (Enclosures):
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Enclosure 1

Technical Specifications (TS) Change 420
Safety Limit Minimum Critical Power Ratio (SLMCPR)
Unit 2 Cycle 13 Operation

TVA Evaluation of Proposed Change

1.0 DESCRIPTION

This letter is a request to amend Operating License DPR-52 for Browns Ferry Nuclear Plant (BFN) Unit 2. The proposed change revises the SLMCPR value in TS 2.1.1.2 to incorporate the results of the cycle-specific core reload analysis for BFN Unit 2 Cycle 13 operation, which will start in early 2003.

2.0 PROPOSED CHANGE

The proposed TS change revises the SLMCPR value in Unit 2 TS 2.1.1.2 from 1.07 to 1.08 for two recirculation loop operation. A marked-up TS page is provided in Enclosure 2, which shows the specific TS revision. No changes to the single recirculation loop SLMCPR or TS Bases are required.

3.0 BACKGROUND

Safety Limits (SLs) are limits upon important process variables that are found to be necessary to reasonably protect the integrity of certain physical barriers that guard against the uncontrolled release of radioactivity. One such SL included in BFN TS is the SLMCPR value in TS 2.1.1.2. The SLMCPR limit is established such that at least 99.9% of the fuel rods in the core would not be expected to experience the onset of transition boiling as a result of normal operation and abnormal operational transients, which in turn ensures fuel cladding damage does not occur. A general discussion of the SLMCPR parameter and the methods used to determine SLMCPR values for each fuel cycle is provided in Section 3.7.7.1.1, Fuel Cladding Integrity Safety Limit, of the BFN Updated Final Safety Analysis Report.

As noted above, the SLMCPR limit is established such that fuel design limits are not exceeded during steady state operation, normal operational transients, and abnormal operational transients. As such, fuel damage is calculated

not to occur if the limit is not violated. However, because fuel damage is not directly observable, a stepback approach is used to establish corresponding MCPR Operating Limits. In simple terms, the MCPR Operating Limits are established by summing the cycle-specific core reload transient analyses adders and the calculated SLMCPR values. The MCPR Operating Limits are required to be established and documented in the Core Operating Limits Report (COLR) for each reload cycle by TS 5.6.5, COLR. TS 3.3.2, MCPR, specifies the Limiting Conditions for Operation and Surveillance Requirements for monitoring MCPR against the MCPR Operating Limits documented in the COLR.

The absolute value of SLMCPR tends to vary cycle-to-cycle, typically due to the introduction of improved fuel bundle types and changes in core loading. Following the determination of the cycle-specific SLMCPR values, the MCPR Operating Limits are derived. The MCPR Operating Limits are maintained by the Licensee in the COLR in accordance with TS 5.6.5.a(3). However, the SLMCPR numeric values are listed in TS 2.1.1.2 and must be revised using the License Amendment process, if the value changes.

At present, BFN uses only Global Nuclear Fuel (GNF) fuel assemblies and the overall procedures for determining cycle-specific SLMCPRs are provided in Amendment 25 to GESTAR II, NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (Reference 1) as referenced in TS 5.6.5.b. Amendment 25 was approved by NRC in a March 11, 1999, safety evaluation report (SER) (Reference 2). The cycle-specific calculations for Unit 2 Cycle 13 core design have been recently completed and a change to the TS 2.1.1.2 SLMCPR value for two recirculation loop operation is needed for Unit 2 Cycle 13 operation. Therefore, this proposed TS change is requesting that the SLMCPR value in TS 2.1.1.2 be revised to reflect the results of the cycle-specific reload analysis.

This TS change is needed for BFN Unit 2 Cycle 13 operation, which will begin following the scheduled refueling outage in early 2003. Therefore, TVA is asking that this TS change be approved by February 1, 2003, and that the implementation of the revised TS be made within 60 days of NRC approval.

4.0 TECHNICAL ANALYSIS

The SLMCPR values have been determined by Global Nuclear Fuels (GNF) for TVA for Unit 2 Cycle 13 operations using plant- and cycle-specific fuel and core parameters. This determination was based on the cycle-specific procedures and

analytical methodologies referenced in GNF licensing document, Amendment 25 to GESTAR II, NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel", June 2000 (Reference 1), and Licensing Topical Reports NEDC-32601P-A, "Methodology and Uncertainties for Safety Limit MCPR Evaluations" (Reference 3), NEDE-32505P-A, Revision 1, "R-Factor Calculation Method For GE-11, GE-12, and GE-13 Fuel" (Reference 4), and NEDC-32694P-A, "Power Distribution Uncertainties for Safety Limit MCPR Evaluation" (Reference 5). This same methodology was used for the current Unit 2 Cycle 12 operating cycle as was reviewed by NRC in the SER dated March 13, 2001, (Reference 6) for the associated SLMCPR (TS-396) change for Cycle 12 operation.

The reactor core for BFN Unit 2 Cycle 13 will contain 764 fuel assemblies including 372 fresh GE14 fuel assemblies, 280 previously irradiated GE13 fuel assemblies, and 112 previously irradiated GE11 fuel assemblies. GE14 fuel was previously introduced at BFN for the current Unit 3 operating cycle (Cycle 11) and is being used in a number of domestic Boiling Water Reactors. A SLMCPR TS change was required for Unit 3 Cycle 11 operation and was reviewed by NRC in the staff's SER for TS-416 dated March 29, 2002 (Reference 7).

A non-proprietary version of a letter report prepared by GNF in support of this proposed TS change is provided in Enclosure 3. Enclosure 4 provides a proprietary version of the same report. The letter report provides the results of additional analyses performed to address an NRC audit issue related to GNF's GEXL correlation identified during the review of Duane Arnold's power uprate application in March 2001.

In summary, the revised SLMCPR value for two recirculation loop operation for Unit 2 Cycle 13 has been calculated using NRC-approved methodologies and is, therefore, acceptable.

5.0 REGULATORY SAFETY ANALYSIS

The Tennessee Valley Authority (TVA) is submitting an amendment request to Operating License DPR-52 for the Browns Ferry Nuclear Plant Unit 2 Technical Specifications (TS). The proposed amendment will revise TS 2.1.1.2 for two recirculation loop operation to reflect the Safety Limit Minimum Critical Power Ratio (SLMCPR) for Unit 2 Cycle 13 operations.

5.1 No Significant Hazards Consideration

TVA has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No

The proposed amendment establishes a revised SLMCPR value for two recirculation loop operation. The probability of an evaluated accident is derived from the probabilities of the individual precursors to that accident. The proposed SLMCPR preserves the existing margin to transition boiling and the probability of fuel damage is not increased. Since the change does not require any physical plant modifications or physically affect any plant components, no individual precursors of an accident are affected and the probability of an evaluated accident is not increased by revising the SLMCPR value.

The consequences of an evaluated accident are determined by the operability of plant systems designed to mitigate those consequences. The revised SLMCPR has been determined using NRC-approved methods and procedures. The basis of the MCPR Safety Limit is to ensure no mechanistic fuel damage is calculated to occur if the limit is not violated. These calculations do not change the method of operating the plant and have no effect on the consequences of an evaluated accident. Therefore, the proposed TS change does not involve an increase in the probability or consequences of an accident previously evaluated.

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

Response: No

The proposed license amendment involves a revision of the SLMCPR for two recirculation loop operation based on the results of an analysis of the Cycle 13 core. Creation of the possibility of a new or different kind

of accident would require the creation of one or more new precursors of that accident. New accident precursors may be created by modifications of the plant configuration, including changes in the allowable methods of operating the facility. This proposed license amendment does not involve any modifications of the plant configuration or changes in the allowable methods of operation. Therefore, the proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3.0 Does the proposed amendment involve a significant reduction in a margin of safety.

Response: No

The margin of safety as defined in the TS bases will remain the same. The new SLMCPR was calculated using NRC-approved methods and procedures, which are in accordance with the current fuel design and licensing criteria. The SLMCPR remains high enough to ensure that greater than 99.9 percent of all fuel rods in the core are expected to avoid transition boiling if the limit is not violated, thereby preserving the fuel cladding integrity. Therefore, the proposed TS change does not involve a reduction in the margin of safety.

Based on the above, TVA concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

The SLMCPR value included in this TS submittal has been determined in accordance with the NRC-approved methodology described in General Electric Standard Application for Reactor Fuel (GESTAR-II), NEDE-24011-P-A, Revision 14 (Amendment 25) dated June 2000 and related Licensing Topical Reports. Accordingly, applicable regulatory requirements and criteria are met.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. General Electric Standard Application for Reactor Fuel (GESTAR-II), NEDE-24011-P-A-14, and the US Supplement, NEDE-24011-P-A-14-US, June 2000.
2. Letter from F. Akstulewicz (NRC) to G. A. Watford (GE) dated March 11, 1999, 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).
3. Methodology and Uncertainties for Safety Limit MCPR Evaluations, NEDC-32601P-A, August 1999.
4. NEDE-32505P-A, Revision 1, "R-Factor Calculation Method For GE-11, GE-12, and GE-13 Fuel", July 1999.
5. Power Distribution Uncertainties for Safety Limit MCPR Evaluation, NEDC-32694P-A, August 1999.
6. NRC Letter to TVA dated March 13, 2001, Browns Ferry Nuclear Plant, Unit 2 - Issuance of Amendment Regarding Safety Limit Minimum Critical Power Ratio (TAC No. MB0436).
7. NRC Letter to TVA dated March 20, 2002, Browns Ferry Nuclear Plant, Unit 3 - Issuance of Amendment Regarding Safety Limit Minimum Critical Power Ratio (TAC No. MB0485)(TS-416).

Enclosure 2

Technical Specifications (TS) Change 420
Safety Limit Minimum Critical Power Ratio (SLMCPR)
Unit 2 Cycle 13 Operation

Proposed Technical Specifications Changes (mark-up)

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 ≤ 25% RTP.

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

MCPR shall be ≥ ~~1.07~~ 1.08 for two recirculation loop operation or ≥ 1.10 for single 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 ≤ 1325 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.

Enclosure 3

Technical Specifications (TS) Change 420
Safety Limit Minimum Critical Power Ratio (SLMCPR)
Unit 2 Cycle 13 Operation

Non-proprietary Version of GNF Letter

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 Nos. M99070 and M95081), January 11, 1999.

[3] *General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application*, NEDO-10958-A, January 1977.

[4] Letter, Glen A. Watford (GNF-A) to U. S. Nuclear Regulatory Commission Document Control Desk with attention to R. Pulsifer (NRC), "Confirmation of 10x10 Fuel Design Applicability to Improved SLMCPR, Power Distribution and R-Factor Methodologies", FLN-2001-016, September 24, 2001.

[5] Letter, Glen A. Watford (GNF-A) to U. S. Nuclear Regulatory Commission Document Control Desk with attention to J. Donoghue (NRC), "Confirmation of the Applicability of the GEXL14 Correlation and Associated R-Factor Methodology for Calculating SLMCPR Values in Cores Containing GE14 Fuel", FLN-2001-017, October 1, 2001

[6] Letter, Glen A. Watford (GNF-A) to U. S. Nuclear Regulatory Commission Document Control Desk with attention to J. Donoghue (NRC), "Final Presentation Material for GEXL Presentation – February 11, 2002", FLN-2002-004, February 12, 2002.

Comparison of Browns Ferry Unit 2 Cycle 13 SLMCPR Value

Table 1 summarizes the relevant input parameters and results of the safety limit MCPR (SLMCPR) determination for the Browns Ferry Unit 2 Cycle 13 and Cycle 12 cores. The SLMCPR evaluations were performed using NRC approved methods and uncertainties[1].

These calculations use the GEXL14 correlation for GE14 fuel. [[ ]]. The details of the evaluation are provided in Table 2. [[ ]] the value at EOC; becoming the limiting SLMCPR for this cycle. [[ ]]. The DLO and SLO SLMCPR values calculated for Cycle 13 of Browns Ferry Unit 2 are shown in Table 1. Other quantities that have been shown to have some impact on the determination of the SLMCPR are also shown in Table 1.

[[ ]]

In comparing the Browns Ferry Unit 2 Cycle 13 and Cycle 12 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.

In general, the calculated safety limit is dominated by two key parameters: (1) flatness of the core bundle-by-bundle MCPR distributions and (2) flatness of the bundle pin-by-pin power/R-factor distributions. Greater flatness in either parameter yields more rods susceptible to boiling transition and thus a higher calculated SLMCPR.

[[ ]]

The uncontrolled bundle pin-by-pin power distributions were compared between the Browns Ferry Unit 2 Cycle 13 bundles and the Cycle 12 bundles. Pin-by-pin power distributions are characterized in terms of R-factors using the NRC approved methodology[2]. For the Browns Ferry Unit 2 Cycle 13 limiting case analyzed at EOC, [[ ]] the Browns Ferry Unit 2 Cycle 12 bundles are flatter than the bundles used for the Cycle 13 SLMCPR analysis.

The net impact of these effect [[ ]] predicts that the Cycle 13 SLMCPR should be 0.016 lower than the SLMCPR calculated for Cycle 12. However, because [[ ]] the Cycle 13 value is 0.005 higher. The reported values in Table 1 show a 0.01 increase due primarily to the rounding down of the Cycle 12 value. As indicated in Table 1, the NRC-approved[1] reduced power distribution uncertainties have been applied for the Browns Ferry Unit 2 Cycle 13 analyses. These reduced power distribution uncertainties were also included in the previous SLMCPR calculation for Browns Ferry Unit 2 Cycle 12 and do not constitute a change for the new operating cycle.

The revised power distribution model and reduced uncertainties associated with 3D Monicore have been justified, reviewed and approved by the NRC (reference NEDC-32601P-A and NEDC-32694P-A). The conservatism that remains even when applying the revised model and reduced uncertainties to calculate a lower SLMCPR was documented as part of the NRC review and approval. It was noted on page A-24 of NEDC-32601P-A [[ ]]

Summary

[[ ]] have been used to compare quantities that impact the calculated SLMCPR value. Based on these comparisons, the conclusion is reached that the Browns Ferry Unit 2 Cycle 12 core/cycle has a flatter core MCPR distribution [[ ]] than what was used to perform the Cycle 13 SLMCPR evaluation; and the Browns Ferry Unit 2 Cycle 12 core/cycle has a flatter in-bundle power distributions [[ ]] than what was used to perform the Cycle 13 SLMCPR evaluation. Both of these characteristics help to mitigate [[ ]] so that a net increase of 0.01 from Cycle 12 is realized.

The calculated 1.08 Monte Carlo SLMCPR for Browns Ferry Unit 2 Cycle 13 is consistent with what one would expect [[ ]] the 1.08 SLMCPR value is appropriate when the approved methodology and the reduced uncertainties given in NEDC-32601P-A and NEDC-32694P-A are used.

Based on all of the facts, observations and arguments presented above, it is concluded that the calculated SLMCPR value of 1.08 for the Browns Ferry Unit 2 Cycle 13 core is appropriate.

For single loop operations (SLO) the calculated safety limit MCPR for the limiting case is 1.10 as determined by specific calculations for Browns Ferry Unit 2 Cycle 13. The limiting value for SLO occurs at EOC.

[[ ]]

Supporting Information

The following information is provided in response to NRC questions on similar submittals regarding changes in Technical Specification values of SLMCPR. NRC questions pertaining to how GE14 applications satisfy the conditions of the NRC SER[1] have been addressed in Reference [4]. Other generically applicable questions related to application of the GEXL14 correlation and the applicable range for the R-factor methodology are addressed in Reference [5]. Only those items that require a plant/cycle specific response are presented below since all the others are contained in the references that have already been provided to the NRC.

The core loading information for Browns Ferry Unit 2 Cycle 13 is provided in Figure 1. For comparison the core loading information for Browns Ferry Unit 2 Cycle 12 is provided in Figure 2. The impact of the fuel loading pattern differences on the calculated SLMCPR is correlated to the values of [[ ]]

The SLO value at EOC [[ ]] remains at 1.10 when rounded to two-digits as seen in Table 2. It is typical to see an SLO value that is 0.01 to 0.02 higher than the DLO value.

Prepared by:

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Verified by:

E. W. Gibbs
Technical Program Manager
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Table 1

Comparison of the Browns Ferry Unit 2 Cycle 13 and Cycle 12 SLMCPR

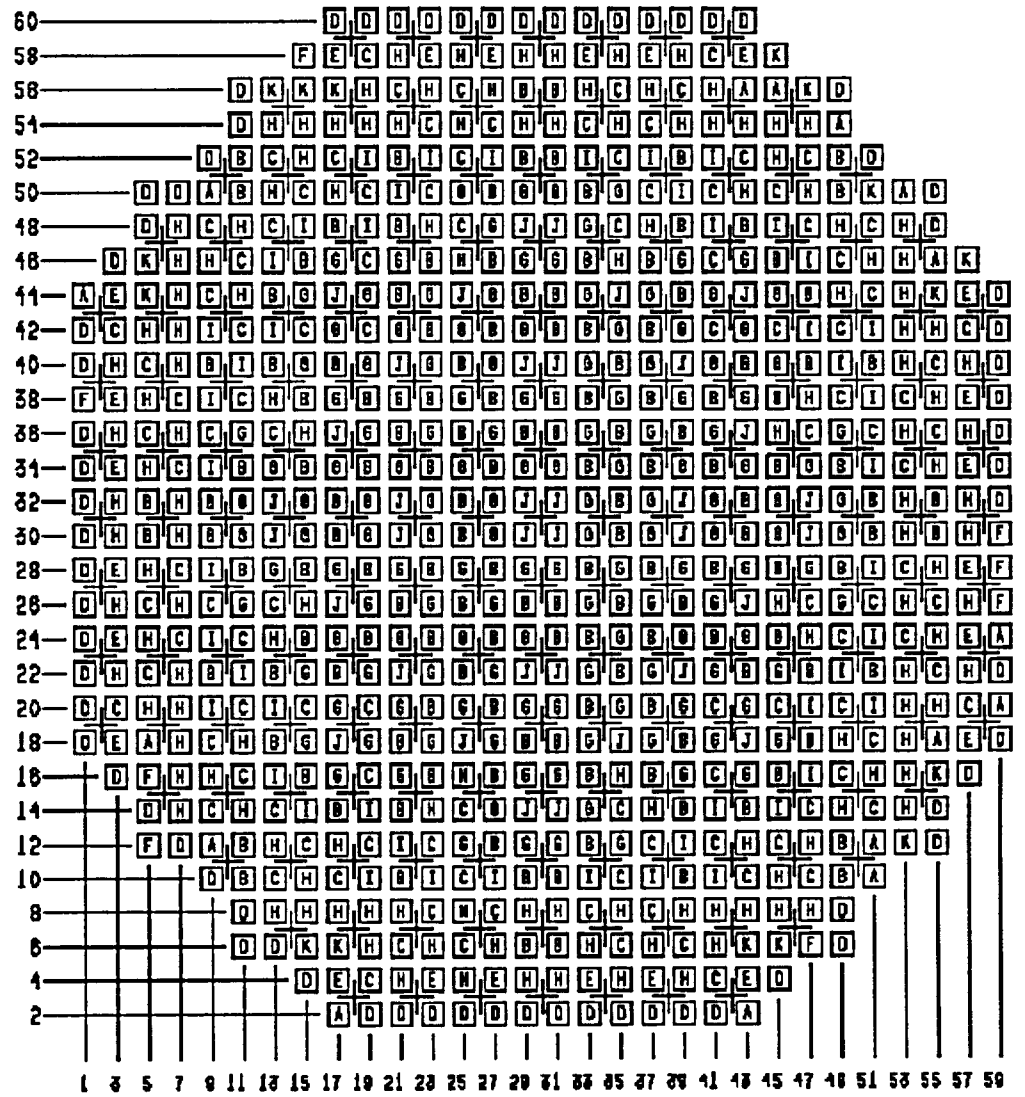
QUANTITY, DESCRIPTION	Browns Ferry Unit 2 Cycle 12	Browns Ferry Unit 2 Cycle 13
Number of Bundles in Core	764	764
Limiting Cycle Exposure Point	EOC	EOC
Cycle Exposure at Limiting Point [MWd/ST]	12,800 (EOC-1250)	14,630 (EOC-1000)
Reload Fuel Type	GE13	GE14
Latest Reload Batch Fraction [%]	33.5%	48.7%
Latest Reload Average Batch Weight % Enrichment	4.00%	3.76%
Batch Fraction for GE14	0.0%	48.7%
Batch Fraction for GE13	100.0	36.6%
Batch Fraction for GE11	0.0%	14.7%
Core Average Weight % Enrichment	3.97%	3.83%
Core MCPR (for limiting rod pattern)	1.37	1.59
[[		]]
[[		]]
[[		]]
Power distribution methodology	Revised NEDC-32601P-A	Revised NEDC-32601P-A
Power distribution uncertainty	Reduced NEDC-32694P-A	Reduced NEDC-32694P-A
Non-power distribution uncertainty	Revised NEDC-32601P-A	Revised NEDC-32601P-A
Calculated Safety Limit MCPR (DLO)	**1.07**	**1.08**
Calculated Safety Limit MCPR (SLO)	**1.10**	**1.10**

Table 2

Net Adjustment to SLMCPR to Account for Top-Peaked Power Shapes

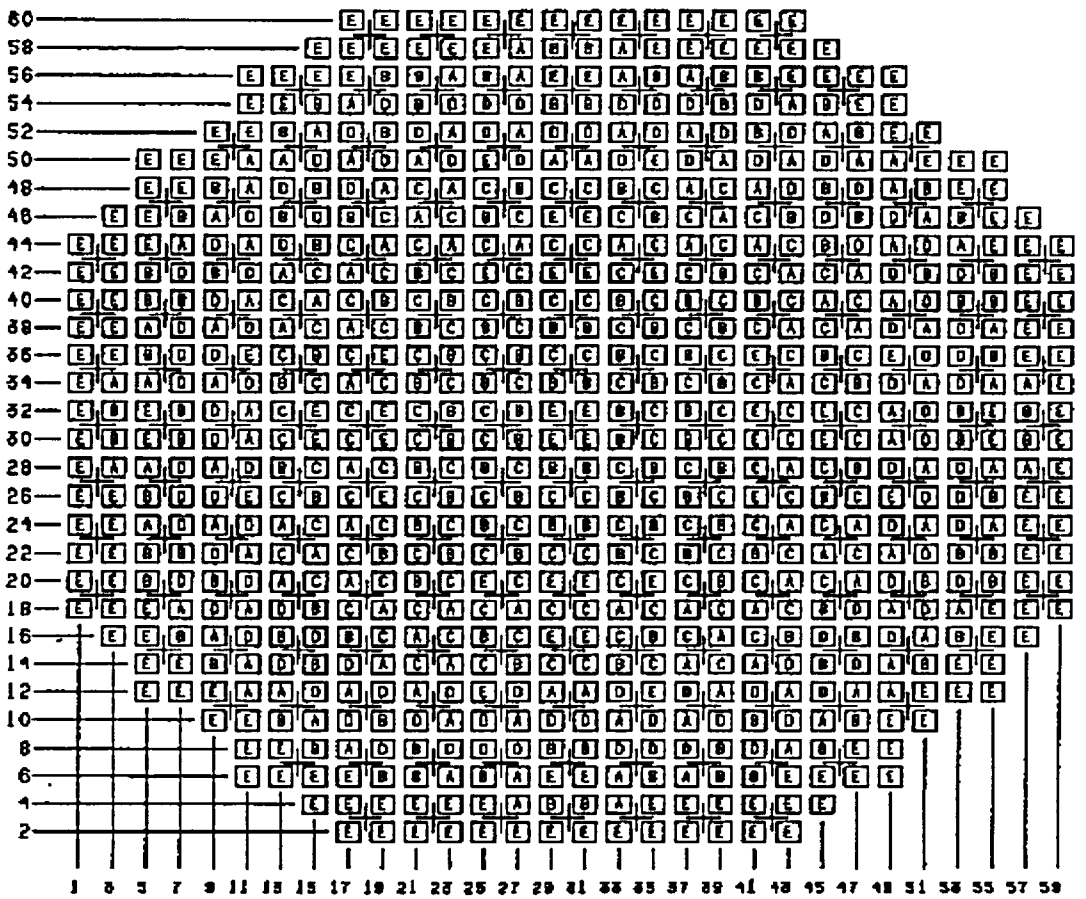
Step		Dual Loop Ops.			Single Loop Ops.	
		BOC	MOC	EOC	MOC	EOC
	Calculated M/C SLMCPR	[[				]]
2,3	[[					]]
4	Credit for Reduced Uncertainties	[[				]]
	[[					]]
	Adjusted SLMCPR with rounding	1.00565	1.07783	1.08102	1.09478	1.09538
	SLMCPR for Tech Spec Submittal	DLO 1.08			SLO 1.10	
Step 5 credit applies only for OLMCPR and is not relevant for Tech Specs under review						

Figure 1 Reference Core Loading Pattern – Cycle 13



Bundle Name	Fuel type	Cycle Loaded	# in Core	Bundle Name	Fuel type	Cycle Loaded	# in Core
GE11-P9HUB366-12G4 0-100T-146-T	A	9	16	GE14-P10DNAB367-14GZ-100T-150-T-2602	G	13	144
GE13-P9DTB391-13GZ-100T-146-T-2430	B	12	144	GE14-P10DNAB416-16GZ-100T-150-T-2601	H	13	144
GE13-P9DTB412-2G7 0/11G5 0-100T-146-T-2431	C	12	112	GE14-P10DNAB416-16GZ-100T-150-T-2600	I	13	48
GE11-P9HUB366-12G4 0-100T-146-T	D	9	72	GE14-P10DNAB200-3GZ-100T-150-T-2603	J	13	36
GE13-P9HTB384-12G4 0-100T-146-T	E	10	24	GE11-P9HUB367-14GZ-100T-146-T	K	9	16
GE11-P9HUB367-14GZ-100T-146-T	F	9	8				

Figure 2 Reference Core Loading Pattern – Cycle 12



Fuel Identifier	Cycle Loaded	Quantity	Bundle Description
A	11	140	GE13-P9DTB406-13GZ-100T-146
B	11	160	GE13-P9DTB401-14GZ-100T-146
C	12	144	GE13-P9DTB391-13GZ-100T-146
D	12	112	GE13-P9DTB412-2G7.0/11G5.0-100T-146
E	10	208	GE13-P9HTB384-12G4.0-100T-146

Affidavit

I, Jens G. Andersen, state as follows:

(1) I am Fellow and project manager, TRACG Development, 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, "Additional Information Regarding the Cycle Specific SLMCPR for Browns Ferry Unit 2 Cycle 13," October 15, 2002.

(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.

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 at Wilmington, North Carolina, this 15 day of October, 2002.

Jens G Andersen

Jens G. Andersen
Global Nuclear Fuel – Americas, LLC