ENTERGY

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Grand Gulf Nuclear Station

December 5, 1991

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Cycle 6 Reload
Proposed Amendment to the Operating License (PCOL-91/23)

GNRO-91/00186

Gentlemen:

Entergy Operations, Inc. is submitting by this letter a proposed amendment to the Grand Gulf Nuclear Station (GGNS) Operating License.

The proposed amendment requests changes to those Technical Specifications (TS) required to support the Cycle 6 reload for Grand Gulf Nuclear Station, Unit 1. Like the Cycle 5 reload, the fresh fuel to be inserted in this cycle is a Siemens Nuclear Power (SNP) 9x9-5 fuel type. This fuel has been shown to be compatible with the 8x8 and 9x9-5 fuel types that will be resident in the core during Cycle 6.

Attachment 4, Cycle 5 Reload Summary Report, summarizes the analyses supporting the Cycle 6 reload and provides an overview of vendor supplied submittals (Attachments 6-10). Attachment 5 describes the proposed startup physics tests for Cycle 6.

Siemens report ANF-88-183(P) is submitted as Attachment 10 to support the proposed TS changes. Siemens Nuclear Power Corporation considers the information contained in ANF-88-183(P), "Grand Gulf Unit 1 XN-1.3, Cycle 4 Mechanical Design Report, Supplement 1," to be proprietary. In accordance with the requirements to 10 CFR 2.790(b), an affidavit is enclosed to support the withholding of the information contained in this report from public disclosure. A non-proprietary version of this report, EMF-88-183(NP), is included as Attachment 9.

In accordance with the provisions of 10CFR50.4, the signed original of the requested amendment is enclosed. Attachment 2 provides the discussion and justification to support the requested amendment. This amendment request has been reviewed and accepted by the Plant Safety Review Committee and the Safety Review Committee.

cc: J9111141/SNLICFLE - 1

LTR Encl.
Change NRC PDR 1 INP
NSIC 1 INP

Based on the guidelines in 10CFR50.92, Entergy Operations has concluded that this proposed amendment involves no significant hazards considerations. Attachment 2 details the basis for this determination.

Entergy Operations request NRC approval and issuance of Technical Specifications changes by May 11, 1992 to allow related work activities to be implemented.

Yours truly,

WTC/WEL/ams
attachments: 1. Affirmation per 10CFR50.30
2. GGNS PCOL-91/23
3. Mark-up of Affected Technical Specification Pages
4. Cycle 6 Reload Summary Report
5. Cycle 6 Proposed Startup Physics Tests
6. EMF-91-169, Grand Gulf Cycle 6 Reload Analysis
7. EMF-91-168, Grand Gulf Cycle 6 Transient Analysis
8. EMF-91-172, LOCA Analysis for Single Loop Operation
9. EMF-88-183(NP), Reload XN-1.3, Cycle 4 Mechanical Design Report, Supplement 1 (Non-Proprietary)
10. ANF-88-183(P), Reload XN-1.3, Cycle 4 Mechanical Design Report, Supplement 1 (Proprietary)

cc: Mr. D. C. Hintz (w/a)
Mr. J. L. Mathis (w/a)
Mr. R. B. McGehee (w/a)
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AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

I, R. A. Copeland being duly sworn, hereby say and depose:

1. I am Manager, Reload Licensing, for Siemens Nuclear Power Corporation, ("SNP"), and as such I am authorized to execute this Affidavit.

2. I am familiar with SNP's detailed document control system and policies which govern the protection and control of information.

3. I am familiar with the topical report ANF-88-183(P), Supplement 1, entitled "Grand Gulf Unit 1 XN-1.3, Cycle 4 Mechanical Design Report," referred to as "Document." Information contained in this Document has been classified by SNP as proprietary in accordance with the control system and policies established by SNP for the control and protection of information.

4. The Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by SNP and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in the Document as proprietary and confidential.

5. The Document has been made available to the U.S. Nuclear Regulatory Commission in confidence, with the request that the information contained in the Document will not be disclosed or divulged.

6. The Document contains information which is vital to a competitive advantage of SNP and would be helpful to competitors of SNP when competing with SNP.

7. The information contained in the Document is considered to be proprietary by SNP because it reveals certain distinguishing aspects of SNP mechanical design methodology which secure competitive advantage to SNP for fuel design optimization and marketability, and includes information utilized by SNP in its business which affords SNP an opportunity to obtain a competitive advantage over its competitors who do not or may not know or use the information contained in the Document.

8. The disclosure of the proprietary information contained in the Document to a competitor would permit the competitor to reduce its expenditure of money and manpower and to improve its competitive position by giving it valuable insights into SNP mechanical design methodology and would result in substantial harm to the competitive position of SNP.

9. The Document contains proprietary information which is held in confidence by SNP and is not available in public sources.

10. In accordance with SNP's policies governing the protection and control of information, proprietary information contained in the Document has been made available, on a limited basis, to others outside SNP only as required and under suitable agreement providing for nondisclosure and limited use of the information.

11. SNP policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

12. Information in this Document provides insight into SNP mechanical design methodology developed by SNP. SNP has invested significant resources in

developing the methodology as well as the strategy for this application. Assuming a competitor had available the same background data and incentives as SNP, the competitor might, at a minimum, develop the information for the same expenditure of manpower and money as SNP.

THAT the statements made hereinabove are, to the best of my knowledge, information, and belief, truthful and complete.

FURTHER AFFIANT SAYETH NOT.

SUBSCRIBED before me this 19th

day of November, 1991.

Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/10/92

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-29

DOCKET NO. 50-416

IN THE MATTER OF

MISSISSIPPI POWER & LIGHT COMPANY
and
SYSTEM ENERGY RESOURCES, INC.
and
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION
and
ENTERGY OPERATIONS, INC.

AFFIRMATION

I, W. T. Cottle, being duly sworn, state that I am Vice President, Operations GGNS of Entergy Operations, Inc.; that on behalf of Entergy Operations, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this application for amendment of the Operating License of the Grand Gulf Nuclear Station; that I signed this application as Vice President, Operations GGNS of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

W. T. Cottle

W. T. Cottle

STATE OF MISSISSIPPI
COUNTY OF CLAIBORNE

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 5 day of December, 1991.

(SEAL)

Patricia Vaughan

Notary Public

My commission expires:

My Commission Expires July 7, 1993

GGNS PCOL-91/23

SUBJECT: NL 91/23 Cycle 6 Reload

Technical Specifications 2.1.2 and 3/4.2.1.

Figures 3.2.1-1, 3.2.3-1, 3.2.3-2, 3.2.3-3, 3.2.4-1, 3.2.4-2, and 3.2.4-3.

Bases 2.1.1, 2.1.2, 3/4.2.1.

Affected Pages: 2-1, B 2-1, B 2-1a, B 2-2, 3/4 2-1, 3/4 2-2, 3/4 2-5, 3/4 2-6, 3/4 2-6a, 3/4 2-7a, 3/4 2-7b, 3/4 2-7c, and B 3/4 2-1.

DESCRIPTION OF CHANGES:

1. Specification 2.1.2: Change the Safety Limit MCPR for Two Loop Operation and single loop operation to 1.06 and 1.07, respectively.

2. Bases 2.1.1: (Administrative) Change "Advanced Nuclear Fuels" to "Siemens Nuclear Power". Change "ANF" to "SNP" in three places.

3. Bases 2.1.2: (Administrative) Change "ANF" to "SNP", "XN-NF-524(P)" to "ANF-524(P)(A)", and "Supplement 1" to "Supplements".

4. Specification 3/4.2.1: Change the Single Loop Operation (SLO) MAPLHGR multiplier to 0.86.

5. Figure 3.2.1-1: (Administrative) Delete "FOR ANF FUEL" in the title.

6. Figure 3.2.3-1: Revise the flow-dependent MCPR ($MCPR_f$) curve.

7. Figure 3.2.3-2: Revise the power-dependent MCPR ($MCPR_p$) curve.

8. Figure 3.2.3-3: Revise the exposure-dependent MCPR operating limit ($MCPR_e$) curve

9. Figure 3.2.4-1: Revise the 8x8 LHGR limit for average planar exposures beyond 40,000 MWd/MTU. (Administrative) Delete "FOR ANF FUEL" in the title.

10. Figure 3.2.4-2: Revise the flow-dependent LHGR multiplier ($LHGRFAC_f$) curve to incorporate fuel type-specific multipliers based on SNP analyses.

11. Figure 3.2.4-3: Revise the power-dependent LHGR multiplier ($LHGRFAC_p$) curve to incorporate fuel type-specific multipliers, applicable for all core flows, based on SNP analyses.

12. Bases 3/4.2.1: Change the SLO MAPLHGR multiplier to 0.86.

DISCUSSION:

Reasons for Changes

The proposed Technical Specification changes result from:

- Insertion of second reload of SNP 9x9-5 fuel for Cycle 6 operations.
- Removal of the second batch of GE channels associated with the discharged 8x8 fuel and their replacement by CarTech channels.
- Safety analysis results that are consistent with a predominantly SNP 9x9-5 fueled core and allow for reduced operational restrictions.

Discussion of Changes

The changes listed in the DESCRIPTION OF CHANGES Section are grouped into seven subjects in order to avoid repeating the discussion and justification for changes with common bases.

a) MCPR Safety Limits: Specification 2.1.2 is changed to state the revised MCPR Safety Limit values established for Two Loop Operation and for SLO. This change is primarily due to the Cycle 6 core consisting predominantly of SNP 9x9-5 fuel and CarTech channels. The CPR performance of the SNP 9x9-5 fuel, improved local power distribution, and improved channel bow performance of the CarTech channels result in lower MCPR Safety Limit

values. This change is necessary to support the changes to the MCPR operating limits consistent with the Cycle 6 operating plan.

b) MAPLHGR Multiplier: The SLO MAPLHGR multiplier stated in Specification 3.2.1, which is applicable to both the 8x8 and 9x9-5 fuel types, is changed. The multiplier was determined for Cycle 5 based on a conservative assessment. For Cycle 6, the multiplier is determined based on SNP's detailed LOCA analysis for SLO.

c) Flow-Dependent MCPR Limits: Figure 3.2.3-1, which shows the flow-dependent MCPR limit curve ($MCPR_f$), is revised. The lower $MCPR_f$ limits result from a lower MCPR safety limit and smaller delta-CPRs for the slow flow runout event for the Cycle 6 core. The smaller delta-CPRs are due to the improved transient response of the 9X9-5 fuel, which is the dominant fuel type in the Cycle 6 core. This change will simplify operations during startup and routine core maneuvering activities.

d) Power-Dependent MCPR Limits: Figure 3.2.3-2, which shows the power-dependent MCPR limit curve ($MCPR_p$), is revised for the range between 40% and 70% rated power. This change is made to provide common $MCPR_p$ limits that are applicable to both Two Loop Operation and SLO.

e) Exposure-Dependent MCPR Limits: Figure 3.2.3-3, which shows the exposure-dependent MCPR limit curve ($MCPR_e$), is revised. As was the case for Cycle 5, the $MCPR_e$ operating limits are an integral part of the Cycle 6 operating plan and are determined based on the severity of the limiting transients and the available operational MCPR margin during Cycle 6. These changes are due to the revision of the MCPR safety limit and the improved transient response of the Cycle 6 core. The $MCPR_e$ limit curve is simplified in that the $MCPR_e$ limits are calculated for two exposure ranges instead of the three ranges used for Cycle 5. The limit is unchanged from the Cycle 5 value for the early part of the cycle and is lower than the Cycle 5 values for the latter part of the cycle.

f) LHGR Limits: Figure 3.2.4-1 is revised to increase the LHGR limits for 8x8 fuel types for average planar exposures greater than 40,000 MWd/MTU. This is necessary to bound the expected LHGR performance for 8x8 fuel near the end of Cycle 6.

g) Off-Rated Mechanical Limits: Figures 3.2.4-2 and 3.2.4-3, which show the flow-dependent and power-dependent LHGR multiplier curves, respectively, are revised to incorporate fuel type-specific multipliers. The revised power-dependent LHGR multipliers are based on SNP analyses and are applicable to all core flows. The flow-dependent and power-dependent multipliers are applied to the LHGR limit and protect against fuel melting and 1% clad strain during Anticipated Operational Occurrences from off-rated conditions. This change reflects the effects of a predominantly 9X9-5 fueled core and the higher transient LHGR limit for the 9X9-5 SNP fuel. This change will simplify operations during startup and routine core maneuvering activities.

The affected bases were revised to reflect the Technical Specifications changes that are stated above and to provide the corresponding justification.

JUSTIFICATION:

The insertion of 272 SNP 9x9-5 assemblies into the core for Cycle 6 is the second Grand Gulf Unit 1 reload of this fuel type. The assemblies are of a design that has been shown to be mechanically, neutronically, and thermal-hydraulically compatible with the SNP 8x8 and 9x9-5 fuel inserted in the core during previous reloads.

The detailed justification for the specific changes follows. Additional justification is provided in the references cited.

a) MCPR Safety Limits: As appropriate, the MCPR Safety Limit values have been established for Two Loop Operation and for Single Loop Operation (SLO) (Reference II, Section 3, and Reference II, Appendix A) for all fuel types that will be resident in the core during Cycle 6. The SNP safety limit methodology used is unchanged from Cycle 5. The use of CarTech channels, with their improved channel bow performance, for two 9x9-5 reload batches is explicitly taken into account in SNP's safety limit analyses. Additionally, the Cycle 6 fuel was designed with improved local power distributions in order to enhance MCPR performance.

b) MAPLHGR Multiplier: The MAPLHGR limit for SLO is the MAPLHGR limit for Two Loop Operation times the MAPLHGR multiplier. The MAPLHGR multiplier has been determined based on SNP's analysis and ensures compliance with the 10CFR50.46 requirements (Reference I, Section 6). The MAPLHGR multiplier has been selected such that the peak clad temperature (PCT) during SLO is bounded by the PCT during Two Loop Operation.

c) Flow-Dependent MCPR Limits: The flow-dependent MCPR limits ($MCPR_f$) are revised based on SNP analyses for Cycle 6. The maximum delta-CPR resulting from slow flow runout is calculated for a range of initial recirculation loop flows in order to determine the $MCPR_f$ limits. The revised limits are determined such that the slow flow runout of one recirculation loop will not result in the safety limit being exceeded.

d) Power-Dependent MCPR Limits: The power-dependent MCPR operating limits ($MCPR_p$) are revised between 40% and 70% rated power. This provides for $MCPR_p$ limits that are common to both Two Loop Operation and SLO. This ensures that operation at the $MCPR_p$ limit will not result in the safety limit being exceeded during Two Loop Operation or SLO.

e) Exposure-Dependent MCPR Limits: The exposure-dependent MCPR operating limits ($MCPR_e$) are established for Cycle 6 by analyzing the most limiting local events and core-wide transients for two exposure intervals during the cycle (Reference II, Section 3). The $MCPR_e$ operating limits thus established ensure that the safety limit will not be exceeded during the most limiting event.

f) LHGR Limits: The LHGR limits for 8x8 fuel are increased for average planar exposures beyond 40,000 MWd/MTU, to bound the expected LHGR performance near the end of Cycle 6. These limits are based on SNP analyses and ensure that the fuel mechanical design criteria are satisfied (Reference I, Section 2).

g) Off-Rated Mechanical Limits: Revised flow-dependent and power-dependent LHGR multipliers ($LHGRFAC_f$ and $LHGRFAC_p$) are established for the 8x8 and 9x9-5 SNP fuel types, using SNP analysis methods (Reference I, Section 5). The analysis demonstrates that the transient LHGR limits are not exceeded during off-rated operating conditions for both the 8x8 and the 9x9-5 fuel designs (Reference I, Section 2).

NO SIGNIFICANT HAZARDS CONSIDERATIONS:

The Commission has provided standards for determining whether a no significant hazards consideration exists as stated in 10CFR50.92(c). A proposed amendment to an operating license involves a no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The licensee has evaluated the no significant hazards considerations in its request for a license amendment. In accordance with 10CFR50.91(a), the licensee is providing the analysis of the proposed amendment against the three standards in 10CFR50.92(c).

The proposed Technical Specification changes address the following:

a) Revision of the Safety Limit MCPR values for Two Loop Operation and Single Loop Operation (SLO).

b) Revision of the SLO MAPLHGR multiplier.

c) Revision of the flow-dependent MCPR operating limits.

d) Revision of the power-dependent MCPR operating limits.

e) Revision of the exposure-dependent MCPR operating limits.

f) Revision of LHGR limits for 8x8 fuel types for average planar exposures beyond 40,000 MWd/MTU.

g) Revision of the flow-dependent and power-dependent LHGR multipliers.

A description of the no significant hazards considerations determination follows:

1. No significant increase in the probability or consequences of an accident previously evaluated results from these changes.

   a) This change consists of a revision to the Safety Limit MCPR values for Two Loop Operation and for SLO. The revised limits are determined using the SNP Safety Limit methodology, which accounts for the effects of channel bow. This change only redefines the safety limits and does not affect the precursors to any event evaluated previously. Therefore, the change to the MCPR safety limits does not involve a significant increase in the probability of any event previously evaluated.

      As a result of this change, a decrease from the Cycle 5 values is observed. The revised limits take account of the uncertainties associated with safety limit determination and the effects of channel bow. Compliance with the applicable criterion for incipient boiling transition continues to be ensured. Therefore, the revision of the MCPR safety limits does not involve a significant increase in the consequences of any event previously evaluated.

   b) This change consists of a revision to the MAPLHGR multiplier for SLO during Cycle 6. This change only redefines the MAPLHGR multiplier for the 8x8 and 9x9-5 fuel types that will be resident in the core for Cycle 6; it does not affect the precursors to any event previously evaluated. Therefore, the revision of the MAPLHGR limits does not involve a significant increase in the probability of any event previously evaluated.

      Use of the revised MAPLHGR multiplier for SLO ensures that the PCT for SLO continues to be bounded by the PCT for Two Loop Operation. For both Two Loop Operation and SLO, the calculated PCTs for both the 8X8 and 9x9-5 fuel types are well below the 10CFR50.46 limit of 2200 degrees F. Therefore, the revision of the MAPLHGR limits does not involve a significant increase in the consequences of any event previously evaluated.

   c) This change revises the flow-dependent MCPR operating limits ($MCPR_f$) for Cycle 6. This change only redefines the $MCPR_f$ operating limits and does not affect the precursors to any event previously evaluated. Therefore, the

revision of the $MCPR_f$ operating limits does not involve a significant increase in the probability of any event previously evaluated.

The Cycle 6 analyses have demonstrated that the slow flow runout will not result in the safety limit being exceeded. Therefore, the revision of the $MCPR_f$ operating limits does not involve a significant increase in the consequences of any event previously evaluated.

d) This change revises the power-dependent MCPR operating limits ($MCPR_p$) for Cycle 6. This change only redefines the $MCPR_p$ operating limits and does not affect the precursors to any event previously evaluated. Therefore, the revision of the $MCPR_p$ operating limits does not involve a significant increase in the probability of any event previously evaluated.

The Cycle 6 analyses have demonstrated that the limiting events will result in a minimum CPR at or above the MCPR safety limit with the plant initially at the $MCPR_p$ limit. Therefore, the revision of the $MCPR_p$ operating limits does not involve a significant increase in the consequences of any event previously evaluated.

e) This change revises the exposure-dependent MCPR operating limits ($MCPR_e$) for Cycle 6. This change only redefines the $MCPR_e$ operating limits and does not affect the precursors to any event previously evaluated. Therefore, the revision of the $MCPR_e$ operating limits does not involve a significant increase in the probability of any event previously evaluated.

The Cycle 6 analyses have demonstrated that the limiting events will result in a minimum CPR at or above the MCPR safety limit with the plant initially at the $MCPR_e$ limit. Therefore, the revision of the $MCPR_e$ operating limits does not involve a significant increase in the consequences of any event previously evaluated.

f) This change increases the LHGR limit for 8x8 fuel types for average planar exposures beyond 40,000 MWd/MTU. This change only redefines the LHGR limit for all 8x8 fuel types that will be resident in the core for Cycle 6; it does not affect the precursors to any event evaluated previously. Therefore, the increase of the LHGR limits for 8x8 fuel types does not involve a significant increase in the probability of any event previously evaluated.

The revised LHGR limits for the 8x8 fuel types that will be resident in the core for Cycle 6 satisfy the applicable fuel mechanical design criteria. Therefore, the revision of the LHGR limits for 8x8 fuel types does not involve a significant increase in the consequences of any event previously evaluated.

g) This change addresses the revision of the flow-dependent and power-dependent LHGR multiplier curves to incorporate fuel type-specific multipliers. This change does not affect the precursors to any event previously evaluated. Therefore, the revision of the LHGR multipliers does not involve a significant increase in the probability of any event previously evaluated.

The LHGR multipliers ensure that the transient LHGR limits are not exceeded during operation at off-rated conditions. Therefore, the revision of the LHGR multipliers does not involve a significant increase in the consequences of any event previously evaluated.

Overall, the proposed changes define parameters determined conservatively and consistent with the fuel that will be resident in the core during Cycle 6. They do not affect the precursors to any accident previously evaluated or challenge any acceptance criteria previously evaluated. These changes, therefore, do not involve a significant increase in the probability or consequence of any accident previously evaluated.

2. These changes do not create the possibility of a new or different kind of accident from any previously evaluated.

This response addresses items a) through g).

The Cycle 6 reload fuel has been shown to be of a design compatible with the fuel loaded for previous cycles. It has been determined that the Cycle 6 reload fuel will not create the possibility of a new or different kind of accident. The proposed changes do not involve any new modes of operation, any changes to setpoints, or any plant modifications. They introduce revised limits that have been shown to be acceptable for Cycle 6 operation. Therefore, the proposed changes do not result in the creation of any new precursors to an accident.

Therefore, the proposed changes do not create the possibility of a new or different type of accident from any accident previously evaluated.

3. These changes do not involve a significant reduction in the margin of safety.

   a) This change consists of a revision to the Safety Limit MCPR values for Two Loop Operation and for SLO. The revised limits are based on SNP methodology, which takes account of channel bow effects. The CPR performance of the SNP 9x9-5 fuel, improved performance for Cycle 6 due to CarTech channels being used for two reload batches and improved local power distributions, result in a change in the safety limit from 1.09 to 1.06 for Two Loop Operation and from 1.09 to 1.07 for SLO. The margin to the point of incipient boiling transition is not changed significantly. Therefore, the revision of the MCPR safety limits does not involve a significant reduction in the margin of safety.

   b) A revised MAPLHGR multiplier is provided for Single Loop Operation (SLO). The MAPLHGR multiplier ensures that the PCTs for SLO are bounded by the PCTs for Two Loop Operation. For SLO, the PCTs for the 8x8 and 9x9-5 fuel types are 1631 degrees F and 1609 degrees F, respectively. The PCTs for SLO are approximately 100 degrees F below the corresponding values for Two Loop Operation. The PCTs for both SLO and Two Loop Operation are well below the 10CFR50.46 limit of 2200 degrees F. Therefore, the revision of the SLO MAPLHGR multiplier does not involve a significant reduction in the margin of safety.

   c) This change revises the flow-dependent MCPR operating limits ($MCPR_f$) for Cycle 6. This change only redefines the $MCPR_f$ operating limits established previously. The Cycle 6 analyses have demonstrated that the slow flow runout will not result in the safety limit being exceeded. Therefore, the revision of the $MCPR_f$ operating limits does not involve a significant reduction in the margin of safety.

   d) This change revises the power-dependent MCPR operating limits for Cycle 6. This change only redefines the $MCPR_p$ operating limits established previously. The Cycle 6 analyses have demonstrated that the limiting events will result in a minimum CPR which is at or above the MCPR safety limit. Therefore, the

revision of the $MCPR_p$ operating limits does not involve a significant reduction in the margin of safety.

e) This change revises the exposure-dependent MCPR operating limits for Cycle 6. This change only redefines the $MCPR_e$ operating limits established previously. The Cycle 6 analyses have demonstrated that the limiting events will result in a minimum CPR which is at or above the MCPR safety limit. Therefore, the revision of the $MCPR_e$ operating limits does not involve a significant reduction in the margin of safety.

f) This change increases the LHGR limits for 8x8 fuel types for average planar exposures beyond 40,000 MWd/MTU. The Cycle 6 analyses have shown that the mechanical design criteria continue to be satisfied. Therefore, the revision of the LHGR limits for 8x8 fuel types does not involve a significant reduction in the margin of safety.

g) This change addresses the revision of the flow-dependent and power-dependent LHGR multiplier curves to incorporate fuel type-specific multipliers. The Cycle 6 analyses have shown that the transient LHGR limits are not exceeded at off-rated conditions, protecting against both fuel centerline melting and 1% clad strain during anticipated operational occurrences. Therefore, the revision of the LHGR multiplier curves does not involve a significant reduction in the margin of safety.

Overall, the proposed changes define parameters determined conservatively and consistent with the fuel that will be resident in the core during Cycle 6. They do not impact any of the acceptance criteria established previously. Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

REFERENCES:

I) EMF-91-169, "Grand Gulf Unit 1 Cycle 6 Reload Analysis," Siemens Nuclear Power Corporation, October 1991.

II) EMF-91-168, "Grand Gulf Unit 1 Cycle 6 Plant Transient Analysis," Siemens Nuclear Power Corporation, October 1991.

Attachment 3 to GNRO-91/00186