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June 9, 1986

O. D. KINGSLEY, JR.
VICE PRESIDENT NUCLEAR OPERATIONS

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Addendum to MEOD Submittal
AECM-86/0174

Reference: 1) Letter to Harold R. Denton from Oliver D. Kingsley, Jr. Mississippi Power & Light Company, May 2, 1986 (AECM-86/0129)

Mississippi Power & Light Company (MP&L) submitted a proposed amendment to the operating license for Maximum Extended Operating Domain (MEOD) (Reference 1). This letter transmits an addendum to the MEOD submittal. In response to a request from your staff, this addendum contains a Grand Gulf specific response to the Loss of Feedwater Heater (LOFWH) transient which should be used in lieu of the General Electric (GE) generic statistical evaluation results contained in Reference 1.

If you have any questions on this matter please call Yosi Balas at 601-949-9214.

Yours truly,

FOR O.D. KINGSLEY

ODK:lwm
Attachment

cc: (See Next Page)

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cc: Mr. T. H. Cloninger (w/a)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. H. L. Thomas (w/o)
Mr. R. C. Butcher (w/a)

Mr. James M. Taylor, Director (w/a)
Office of Inspection & Enforcement
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ADDENDUM TO THE APPENDIX 15.D
GGNS MAXIMUM EXTENDED OPERATING DOMAIN ANALYSIS

INTRODUCTION

This addendum presents the Grand Gulf Nuclear Station (GGNS) plant specific analysis results of the 100°F loss of feedwater heating (LFWH) transient for Maximum Extended Operating Domain (MEOD) analysis and Feedwater Heater(s) Out-of Service (FWHOS) operation in MEOD. The plant specific analysis results presented in this Addendum replace the generic-statistical-evaluation based LFWH analysis results which are presented in Section 15.D.4.1 for MEOD and in Section 15.D.13.2 for MEOD/FWHOS of the GGNS MEOD analysis report (Reference 1).

ANALYSIS BASES

The GGNS plant specific analysis for the 100°F loss of feedwater heating event was performed using the General Electric three-dimensional BWR Core Simulator (Reference 2) documented in the NRC approved GESTAR Amendment (Reference 3). The analysis was performed for the P8X8R fueled GGNS Cycle 1 core. All the cases analyzed were initiated from the GGNS cycle 1 exposure accounting cases based on actual plant data. The following cases were run at the most limiting exposure point in cycle:

1. 104.2% power/100% core flow with an initial FW temperature corresponding to rated FW temperature of 420°F (1 case).

2. 104.2% power/75% core flow and 104.2% power/108% core flow with an initial FW temperature corresponding to rated FW temperature of 420°F (2 cases).

3. 104.2% power/100% core flow with an initial FW temperature corresponding to rated FW temperature of 370°F (1 case).

ANALYSIS RESULTS

The critical power ratio (CPR) results are summarized in Table 1. This analysis shows the following results:

1. MEOD

   a) The LFWH transient impact on CPR is less severe than the Feedwater Controller Failure (FWCF) transient case. The worst LFWH ΔCPR is 0.07 at rated and increased core

flow conditions (ICF) compared to the FWCF ΔCPR of 0.09 (Table 15.D.4-5 of Reference 1). The MCPR is 1.11, which is above the safety limit MCPR of 1.06.

b) ΔCPR at 75% core flow is slightly larger than the high core flow case. However, a larger CPR margin exists at this low core flow because of the higher OLMCPR required by by the flow dependent MCPR limit. The MCPR is 1.19, which is well above the safety limit MCPR of 1.06.

2. FWHOS in MEOD

a) The 100°F LFWH event has less effect with colder feedwater than with the normal feedwater temperature (Case 2 vs 4 in Table 1). The results confirmed that the LFWH event is less severe when initiated from lower initial feedwater temperature than from the rated feedwater temperature. This trend is not affected by initial core flow. Therefore, the LFWH analysis for FWHOS in MEOD is adequately bounded by the 420°F ΔCPR results.

CONCLUSIONS

Based on the results of this analysis it is concluded that no change in current Tech Spec MCPR limits is required for operation in MEOD or FWHOS operation in MEOD for the range of rated feedwater temperature from 420°F to 370°F. This conclusion is the same as that given in Reference 1.

The plant specific results are bounded by the generic statistical bounding value in Reference 4.

REFERENCES

1. GGNS Maximum Extended Operating Domain Analysis, March 1986, Appendix 15.D

2. J.A. Wooley, "Three-Dimensional BWR Core Simulator," NEDO-20953-A, January 1977.

3. "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-US, Revision 7, August 1985. (GE Proprietary)

4. J.S. Charnley to The USNRC, "Loss of Feedwater Heating Analysis", July 5 1983.

Table 1

Summary of the 100°F LFWH Transient CPR Results

104.2% Power

Case	Core Flow (% NBR)	ICPR	ΔCPR	MCPR	Rated FW Temperature (°F)
1	108.0	1.18	0.07	1.11	420
2	100.0	1.18	0.07	1.11	420
3	75.0	1.27	0.08	1.19	420
4	100.0	1.18	0.06	1.12	370