



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 140 TO FACILITY OPERATING LICENSE NO. NPF-29

ENTERGY OPERATIONS, INC., ET AL.

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

## 1.0 INTRODUCTION

By letter dated May 6, 1999 (Reference 1), Entergy Operations, Inc. (EOI or the licensee) submitted a request for changes to the Grand Gulf Nuclear Station, Unit 1 (GGNS), Technical Specifications (TS) for Cycle 11 operation. The proposed changes would: (1) revise the values and delete the footnote of the minimum critical power ratio safety limit (SLMCPR) in TS 2.1.1.2, (2) delete the footnote of Core Operating Limits Report in TS 5.6.5, and (3) reflect the changes in the associated Bases B 2.1.1.2 and B 3.2.2. Cycle 11 is a mixed core of 800 fuel assemblies, which consist of 228 fresh GE11 bundles, 268 once-burned GE11 bundles, 268 twice-burned GE11 bundles, and 36 thrice-burned Siemens Power Corporation (SPC) 9x9-5 fuel bundles. It utilizes a conventional core design with a checkerboard fresh fuel loading pattern.

## 2.0 EVALUATION

The licensee requested changes to the GGNS Facility Operating License in accordance with 10 CFR Part 50.90. The revised TS were proposed as follows:

### 2.1 Specification 2.1.1.2 Reactor Core Safety Limits

The proposed changes in TS 2.1.1.2 include: (1) revising the SLMCPR values from 1.11 to 1.09 for two recirculation loop operation, and from 1.12 to 1.10 for single recirculation loop operation with the reactor steam dome pressure greater than or equal to 785 psig, and core flow greater than or equal to 10 percent rated core flow; and (2) deleting the cycle specific footnote "MCPR values in T.S. 2.1.1.2 are applicable only for cycle 10 operation."

The licensee described the methodologies used to calculate the SLMCPR value for the TS in the submittal. The Cycle 11 SLMCPR analysis was performed by General Electric Nuclear Energy using the plant- and cycle-specific fuel and core parameters, approved methodologies including General Electric Standard Application for Reactor Fuel (GESTAR-II) NEDE-24011-P-A-13, Sections 1.15 and 1.2.5, a two-step process incorporating a conservatively derived uncertainty value for mixed core analyses (Reference 2), and Amendment 25 to GESTAR-II NEDE-24011-P-A. The cycle-specific parameters include the actual loading, conservative projected control blade patterns, the actual bundle parameters, and the full cycle exposure range.

The staff has reviewed the justification for the SLMCPR value of 1.09 for two recirculation loop operation and 1.10 for single loop operation for Cycle 11 using the procedures stated in Amendment 25 to GESTAR-II NEDE-24011-P-A.

Based on the staff's review of the detailed summary results of the analysis for the Cycle 11 operation in the submittal, the staff has found that the Cycle 11 SLMCPR analysis for GGNS, using the plant- and cycle-specific calculation in conjunction with the approved methodologies, is acceptable and will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition to comply with 10 CFR Part 50, Appendix A, General Design Criterion 10 and Standard Review Plan 4.4, Section II.1.b. The staff has further concluded that the method for analyzing and determining the SLMCPR of 1.09 for two recirculation loop operation and 1.10 for single loop operation for the GGNS Cycle 11 is acceptable, since approved methodologies were used and the SPC bundles contributed no fuel rod subject to boiling transition to the limiting SLMCPR. The proposed removal of the cycle-specific footnote is also acceptable since the analysis is already performed using plant- and cycle-specific parameters in accordance with the procedures specified in Amendment 25 to GESTAR-II NEDE-24011-P-A.

## 2.2 Specification 5.6.5 Core Operating Limits Report (COLR)

The licensee proposed to remove the cycle-specific footnote for References 19 and 20 in TS 5.6.5.

The staff has reviewed this proposed change and found it acceptable. The analysis performed for Cycle 11 operation using plant- and cycle-specific parameters is in accordance with the procedures specified in Amendment 25 to GESTAR-II NEDE-24011-P-A. The cycle-specific footnote in TS 5.6.5 which refers to Cycle 10 operation is no longer applicable.

During the review of this proposed change, the staff noted that the list of references in TS 5.6.5b. includes some documents that are not applicable to the determination of the core operating limits for Cycle 11 operation. While this has no effect on the acceptability of the proposed change, the staff suggests that the COLR would be clarified by updating the list of approved topical reports for the subsequent operating cycle, i.e., Cycle 12, to reflect their applicability to the cycle-specific parameters for the core operating limits of TS 5.6.5a.

## 2.3 Bases 2.1.1.2 and 3.2.2

The proposed Bases changes are acceptable because they delete the cycle-specific references associated with the SLMCPR methodology to reflect the proposed TS changes stated above and are administrative in nature.

Based on this review, the staff concludes that the above described TS changes involving the SLMCPRs for both two loop and single loop operation, and the deletion of the cycle-specific footnote for both References 19 and 20 in the COLR TS, are acceptable.

## 2.4 Conclusions

The staff has reviewed the request by the licensee to revise the TS and its associated Bases for the GGNS, Unit 1 Cycle 11 operation. Based on the review, the staff concludes that these

revisions are acceptable since the analysis was in accordance with the procedures specified in Amendment 25 to GESTAR-II NEDE-24011-P-A.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Mississippi State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (64 FR 46434, published August 25, 1999). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Part 51.22(c)(9). Pursuant to 10 CFR Part 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (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 to the health and safety of the public.

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Date: November 17, 1999

**REFERENCES**

1. Letter (GNRO-99/00037) from William A. Eaton, Entergy Operations, Inc. to U.S. Nuclear Regulatory Commission, Grand Gulf Nuclear Station Cycle 11 Reload, May 6, 1999.
2. Attachment 4 to the License Amendment Request dated July 31, 1996, General Electric Topical Report, J11-02863SLMCP, "GGNS Cycle 9 Safety Limit MCP, Analysis," Revision 1, July 1996.