

October 3, 2001

Mr. Randall K. Edington
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - ISSUANCE OF AMENDMENT RE: A
CHANGE TO THE MINIMUM CRITICAL POWER RATIO SAFETY LIMIT
(SLMCPR) AND CHANGES TO THE REFERENCES FOR THE ANALYTICAL
METHODS USED TO DETERMINE THE CORE OPERATING LIMITS
(TAC NO. MB2044)

Dear Mr. Edington:

The Commission has issued the enclosed Amendment No. 122 to Facility Operating License No. NPF-47 for the River Bend Station, Unit 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated May 23, 2001, as supplemented by letters dated July 23, 2001, and August 23, 2001.

The amendment changes the minimum critical power ratio safety limit (SLMCPR) for Cycle 11 and the references for the analytical methods used to determine the core operating limits. Cycle 11 will be the first cycle of operation with a mixed core of General Electric (GE) GE11 and Framatome ANP Richland, Inc. ATRIUM-10 reload fuel.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely, /RA/

Robert E. Moody, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosures: 1. Amendment No. 122 to NPF-47
2. Safety Evaluation

cc w/encls: See next page

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DISTRIBUTION:

PUBLIC

PDIV-1 Reading

RidsNrrDripRtsb (WBeckner)

RidsNrrDlpmPdiv (SRichards)

RidsOgcRp

RidsAcrsAcnwMailCenter

G.Hill(2) **PKG.: ML012770215**

BWN: ML012690517

Accession No.: ML012690490

TS: ML012770058

****See previous concurrence**

RidsNrrDlpmPdivLpdiv1 (RGramm)

RidsNrrPMRMoody

RidsNrrLADJohnson

THuang (TLH1)

RidsRgn4MailCenter (KBrockman)

L.Hurley, RIV

D. Bujol, RIV

*No significant change from original SE input

OFFICE	PDIV-1/PM	PDIV-1/LA	SRXB/SC	OGC	PDIV-1/SC
NAME	RMoody**	DJohnson**	RCaruso*	DCummings**	RGramm
DATE	9/27/01	9/27/01	9/25/01	9/28	10/3/01

OFFICIAL RECORD COPY

River Bend Station

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April 2001

ENTERGY GULF STATES, INC. **

AND

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-458

RIVER BEND STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 122
License No. NPF-47

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Gulf States, Inc.* (the licensee) dated May 23, 2001, as supplemented by letters dated July 23, 2001, and August 23, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

* Entergy Operations, Inc. is authorized to act as agent for Entergy Gulf States, Inc., and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

**Entergy Gulf States, Inc., has merged with a wholly owned subsidiary of Entergy Corporation. Entergy Gulf States, Inc., was the surviving company in the merger.

- E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
- 2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-47 is hereby amended to read as follows:
 - (2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 122 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. EOI shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
- 3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: October 3, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 122

FACILITY OPERATING LICENSE NO. NPF-47

DOCKET NO. 50-458

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by Amendment number and contain marginal lines indicating the areas of change.

Remove

2.0-1
5.0-18
5.0-19

Insert

2.0-1
5.0-18, 18a, and 18b
5.0-19

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-47

ENTERGY OPERATIONS, INC.

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-458

1.0 INTRODUCTION

By application dated May 23, 2001, as supplemented by letters dated July 23, 2001, and August 23, 2001, Entergy Operations, Inc. (the licensee) requested changes to the Technical Specifications (TSs) (Appendix A to Facility Operating License No. NPF-47) for the River Bend Station (RBS). The licensee proposed the following changes: (1) changing the value of the safety limit minimum critical power ratio (SLMCPR) in TS 2.1.1.2, (2) adding an editorial clarification to TS 5.6.5.a.5) to include the applicable reactor protection system (RPS) instrumentation function, and (3) updating the list of the approved methodologies in TS 5.6.5.b. and the associated Bases and References.

The supplemental letters dated July 23, 2001, and August 23, 2001, provided additional information that did not expand the scope of the application or change the staff's initial proposed no significant hazards consideration determination (66 FR 34281, published June 27, 2001).

2.0 BACKGROUND

Cycle 11 will be the first cycle of operation with a mixed core of General Electric (GE) GE11 and Framatome ANP Richland, Inc. ATRIUM-10 reload fuel. Cycle 11 is a mixed core of 624 fuel assemblies, of which there are 200 fresh ATRIUM-10 bundles, 208 once burned GE11 bundles, and 216 twice burned GE11 bundles. The RBS Cycle 11 core loading continues to use a scatter loading strategy in which the central portion of the core is loaded with fresh and once burned fuel in a checkerboard configuration. The periphery region is loaded with low-reactivity, twice burned fuel. This fuel management strategy maintains power and reactivity limits while maximizing cycle length.

3.0 EVALUATION

The licensee requested changes to the RBS Facility Operating License in accordance with 10 CFR 50.90. The proposed revisions to the TSs are as follows:

3.1 TS 2.1.1.2

The proposed changes in TS 2.1.1.2 include a change of the SLMCPR values from 1.12 to 1.08 for two recirculation loop operation, and from 1.13 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% rated flow for Cycle 11 operation.

The licensee described the methodologies used to calculate the SLMCPR value for the TSs in the submittal. The Cycle 11 SLMCPR analysis was performed through a technology transfer program (Reference 1) by Entergy Operations, Inc. (EOI) using the plant- and cycle-specific fuel and core parameters, and Nuclear Regulatory Commission (NRC or the Commission) approved methodologies including ANF-524(P)(A) (Reference 2), EMF-2209(P)(A) (Reference 3), and EMF-2245(P)(A) (Reference 4). EOI performed analyses to determine additive constants and additive constant uncertainties for the Global Nuclear Fuel GE11 fuel type for use with the Siemens Power Corporation (SPC) critical power correlation. Reference 2 was used to determine the SLMCPR by a statistical convolution of all the uncertainties (both fuel-related and non-fuel related) associated with the calculation of thermal margin via Monte Carlo procedure.

The NRC staff has reviewed the licensee's justification for the SLMCPR value of 1.08 for two recirculation loop operation and 1.10 for single recirculation loop operation. Based on our review of the submittal, the on-site review of the reload-related supporting information such as the thermal-hydraulic test for the GE11 fuel design and technology transfer program, and the licensee's response to the request for additional information dated August 23, 2001, the NRC staff has found that Cycle 11 SLMCPR analysis for RBS using the plant- and cycle-specific calculation in conjunction with the approved methodologies is acceptable and will ensure that 99.9% fuel rods in the core will not experience the boiling transition to comply with 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants." Therefore, the staff has concluded that the justification for analyzing and determining the SLMCPR of 1.08 for two recirculation loop operation and SLMCPR value of 1.10 for single loop operation for the RBS Cycle 11 is acceptable, since approved methodologies including approved mixed core calculation method were used (References 3 and 4).

3.2 TS 5.6.5.a

The licensee proposed to add an editorial clarification to TS 5.6.5.a.5) to include the applicable RPS instrumentation function. The NRC staff has evaluated the proposed change and finds the addition to be acceptable.

3.3 TS 5.6.5.b

The licensee proposed to remove the analytical methods which are no longer used to determine the core operating limits, and to add references to the analytical methods to be used beginning in Cycle 11.

The NRC staff has reviewed the proposed changes to replace a list of old approved topical reports by a new list of 24 approved topical reports and finds them acceptable since the revision is in accordance with the guidance specified in Generic Letter (GL) 88-16, "Removal of Cycle-

Specific Parameter Limits from Technical Specifications," and the Standard Technical Specifications (STS).

In summary, the NRC staff has reviewed the request by EOI to revise the TSs for RBS Cycle 11 operation. Based on the review, the NRC staff concludes that these revisions are acceptable, since the analysis was based on the approved methodologies for the SLMCPR calculation, and the update of the Core Operating Limits Report references is in accordance with the guidance specified in GL 88-16 and the STS.

4.0 STATE CONSULTATION

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

5.0 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 NRC 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 (66 FR 34281, published June 27, 2001). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 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.

7.0 REFERENCES

1. Letter (GNRO-2000-00024) from Michael A. Krupa, EOI, to NRC, "Entergy Operations, Inc. Implementation of GL 83-11, Supplement 1, for Co-Resident Fuel CPR [Critical Power Ratio] Calculations," August 4, 2000.
2. ANF-524(P)(A) Revision 2 and Supplements 1 and 2, "ANF Critical Power Methodology for Boiling Water Reactors," Advanced Nuclear Fuels Corporation, November 1990.
3. EMF-2209(P)(A), "SPCB Critical Power Correlation," Siemens Power Corporation, Richland, WA.

4. EMF-2245(P)(A), "Application of Siemens Power Corporation's Critical Power Correlations to Co-Resident Fuel," Siemens Power Corporation, Richland, WA.

Principal Contributor: T. Huang

Date: October 3, 2001