September 7, 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: LOW POWER SETPOINT LIMIT (TAC NO. MB1115)

Dear Mr. Edington:

The Commission has issued the enclosed Amendment No. 118 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 January 24, 2001, as supplemented by letter dated March 22, 2001.

The amendment changes the limit on the Low Power Setpoint, from 20 percent to 10 percent power, as specified in TS 3.1.3, "Control Rod OPERABILITY," TS 3.1.6 "Control Rod Pattern," and TS 3.3.2.1, "Control Rod Block Instrumentation."

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. 118 to NPF-47
2. Safety Evaluation

cc w/encls: See next page

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L.Hurley, RIV
D. Bujol, RIV

** No legal objection
*No significant change from original SE input

Accession No.: ML012400340

OFFICE	PDIV-1/PM	PDIV-1/LA	SRXB/SC	OGC/NLO**	PDIV-1/SC
NAME	RMoody	DJohnson	RCaruso*	RHoefling	RGramm
DATE	08/30/01	08/29/01	8/2/01	09/06/01	09/07/01

OFFICIAL RECORD COPY

ENTERGY GULF STATES, INC. **

AND

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-458

RIVER BEND STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 118
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 January 24, 2001, as supplemented by letter dated March 22, 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. 118 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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: September 7, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 118

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	Insert
3.1-8	3.1-8
3.1-18	3.1-18
3.3-17	3.3-17
3.3-18	3.3-18

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 118 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 January 24, 2001, as supplemented by letter dated March 22, 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, Unit 1 (RBS). The proposed changes would revise the limit on the Low Power Setpoint (LPSP), from 20 percent to 10 percent power, as specified in TS 3.1.3, "Control Rod OPERABILITY," TS 3.1.6, "Control Rod Pattern," and TS 3.3.2.1, "Control Rod Block Instrumentation."

The supplemental letter dated March 22, 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 15921, dated March 21, 2001).

2.0 BACKGROUND

The RBS reactor vessel uses bottom-entry control rods such that a control rod that is “dropped” will fall below the reactor core, resulting in a reactivity addition. During start-up/shutdown and low power operation, the reactor will have a substantial number of control rods in the inserted position. Under these conditions, control rod patterns may be achieved such that, should a control rod drop accident (CRDA) occur, fuel design limits may be exceeded due to the high reactivity significance (referred to as high control rod “worth”) of individual control rods in these “dense” control rod patterns.

The CRDA analyses performed by the General Electric Company (GE) demonstrated the need for mitigating systems and procedures to limit the incremental worth of control rods during startup/shutdown and the associated consequences of a postulated CRDA. For RBS, the rod pattern control (RPC) system provides a control rod monitoring function that enforces adherence to established startup/shutdown and low power level control rod movement sequences. These sequences are designed to limit incremental control rod worths. The RPC system prevents the operator from establishing control rod patterns that are inconsistent with the predetermined Banked Position Withdrawal Sequence (BPWS) by initiating rod select, rod withdrawal, and rod block signals as required. Operation of the RPC system is intended from the 100 percent control rod density (all control rods inserted) to the control rod pattern associated with the LPSP.

GE has performed generic CRDA analyses as documented in GE Topical Report NEDO-10527, "Rod Drop Accident Analysis for Large Boiling Water Reactors," March 1972. These analyses demonstrated that, with adherence to preselected control rod patterns, the effect of the worst case CRDA would meet the acceptance criterion. The acceptance criterion established for Reactivity Insertion Accidents such as a CRDA is that the peak fuel enthalpy deposition remain at or below 280 cal/gm. These analyses also demonstrated that the use of mitigative systems was unnecessary once the reactor power was above 10 percent. GE has also evaluated the impact on RBS, of the reduction in the LPSP from 20 percent to 10 percent power, as documented in GE Topical Report GE-NE-A71-00019-01, "Reduction of Low Power Setpoint for River Bend Station Rod Pattern Control System," March 1997.

The licensee has proposed the following changes to the RBS TSs Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs):

TS LCO 3.1.3.D — Out of sequence control rods may increase the potential reactivity worth of a dropped control rod during a CRDA. At power levels below the LPSP, the BPWS enforces the adherence to certain constraints applied to rod movement between 100 percent control rod density and the LPSP in order to limit incremental control rod worth. Therefore, if two or more inoperable control rods are not in compliance with BPWS and not separated by at least two operable control rods, this LCO must be entered to restore compliance with the BPWS. The proposed change revises the LPSP from 20 percent to 10 percent rated power. It does not affect the required operator action or the completion time of such action. GE evaluation demonstrates that because of existing intrinsic analytical conservatisms, the LPSP can be established at 10 percent of rated power while maintaining adequate safety margin. Below the proposed new LPSP, the RPC system will continue to enforce the BPWS.

TS LCO 3.1.6 — The BPWS enforces the adherence to a predetermined rod movement pattern, ensuring that it is consistent with the CRDA methodology. The RPC provides control rod blocks to enforce the required control rod sequence and is required to be operating at the LPSP. As a requirement for this LCO, the control rod pattern is verified to be in compliance with the BPWS at a 24 hour frequency, ensuring the assumptions of the CRDA analyses are met. The proposed change revises the setpoint from 20 percent of rated power to 10 percent of rated power because 1) of the inherent conservatism in the current analysis methodology, and 2) substantial margins will still exist after the reduction of the LPSP. The GE evaluation demonstrates that the intrinsic analytical conservatism can be established at 10 percent of rated power while maintaining adequate safety margin. There is no change in the required action and completion time for this LCO action. Therefore, the function and performance of the LCO are not affected by this change.

TS Table 3.3.2.1-1 — The proposed change revises the LPSP from 20 percent to 10 percent of rated power. The LPSP is set so that the resultant peak fuel enthalpy due to the postulated CRDA is equal to or less than 280 cal/gm, ensuring compliance with 10 CFR Part 100 offsite dose criteria. The change in

LPSP does not affect the intended function of the RPC system and the required BPWS sequences, and therefore, the RPC system will continue to ensure the site compliance with 10 CFR Part 100.

TS SR 3.3.2.1.4 This SR is required to be performed to verify the proper operation of the RPC. This SR is not required to be performed until 1 hour after thermal power is less than 20 percent rated power. The proposed change revises the setpoint from 20 percent to 10 percent rated power. It does not affect the surveillance frequency or the reliability of the RPC. The GE evaluation demonstrates that the revised LPSP is acceptable at a value of 10 percent because the conservatism inherent in the current analysis methodology provides the technical and safety margin justifications for this change.

TS SR 3.3.2.1.5 The LPSP is the point at which the RPC system switches between the RPC system and rod withdrawal limiter function. Periodic verification that it is within the allowable value is required every 92 days. The proposed change affects only the minimum allowable value. Specifically, it is changed from 20 percent to 10 percent. However, it does not affect the allowable upper limit, which still remains at 35 percent of rated power, nor does it affect the surveillance frequency. The GE evaluation demonstrates that the analytical LPSP can be established at a minimum of 10 percent of rated power while maintaining adequate safety margin. Therefore, the proposed change does not affect the function and reliability of the RPC.

3.0 EVALUATION

CRDA analyses performed by GE demonstrated the need for systems to mitigate the effect of these accidents. Systems or procedures were developed and implemented into operating reactor TS. The generic analyses performed (NEDO-10527, and NEDO-10527 Addendum No. 1, "Multiple Enrichment Cores with Axial Gadolinium," Supplement 1, July 1972) demonstrated that, with the use of the proposed systems or functions, the effect of the worst case rod drop accident would meet the acceptance criterion. The acceptance criterion established for Reactivity Insertion Accidents such as a rod drop is that the peak fuel enthalpy deposition remain at or below 280 cal/gm. These analyses also demonstrated that the use of mitigative systems was unnecessary once the reactor power was above 10 percent. In accepting the proposal to not require cycle specific reactivity-initiated accident analysis for boiling water reactors (BWRs), the staff required that the LPSP be conservatively set at 20 percent power.

When evaluating the proposal to change the RBS LPSP from 20 percent to 10 percent power, the Nuclear Regulatory Commission (NRC or the Commission) staff considered the GE analyses which demonstrate that changing the LPSP will have no impact on plant safety in that all applicable fuel limits will continue to be met. Furthermore, in consideration of the inherent conservatism in the original GE analyses (NEDO-10527 and NEDO-10527, Supplement 1), the NRC staff concludes that substantial margin to the fuel design limits will remain. More recent analyses (GE-NE-A71-00019-01) demonstrate that the original methods used by GE conservatively over-predicted the reactor power; therefore, for the proposed changes to the TS,

fuel design limits will continue to be maintained and substantial margin will still exist to these limits. Accordingly, the proposed changes to the TSs are acceptable.

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 15921, dated March 21, 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.

Principal Contributors: A. Ulses
D. Jaffe

Date: September 7, 2001

cc:

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