

March 18, 1993

Docket No. 50-458

Gulf States Utilities  
ATTN: Mr. Philip D. Graham  
Vice President (RBNG)  
Post Office Box 220  
St. Francisville, Louisiana 70775

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Dear Mr. Graham:

SUBJECT: RIVER BEND STATION, UNIT 1 - AMENDMENT NO. 66 TO FACILITY OPERATING LICENSE NO. NPF-47 (TAC NO. M85283)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 66 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 December 22, 1992 (RBG-37939).

The amendment corrects minor non-conservative errors in acceptance criteria for technical application surveillance requirements for emergency core cooling system pumps. The amendment increases the acceptance criteria for pump differential pressure for high pressure core spray, low pressure core spray, and low pressure coolant injection pumps to be consistent with the Bases for Technical Specification 4.5.1.

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

Sincerely,

Original Signed By

Edward T. Baker, Senior Project Manager  
Project Directorate IV-2  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 66 to NPF-47
2. Safety Evaluation

cc w/enclosures:  
See next page

OFFICE	PDIV-2/LA	PDIV-2/PM	OGC <i>Handwritten initials</i>	SRXB <i>Handwritten initials</i>	PDIV-2/D
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DATE	2/9/93	2/11/93	2/24/93	3/2/93	3/5/93

Document Name: Amend/SE M85283.EB  
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Mr. Philip D. Graham

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March 18, 1993

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

GULF STATES UTILITIES COMPANY

DOCKET NO. 50-458

RIVER BEND STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 66  
License No. NPF-47

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Gulf States Utilities Company (the licensee) dated December 22, 1992, 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
  - 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.

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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. 66 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. GSU 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne C. Black, Director  
Project Directorate IV-2  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: March 18, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 66

FACILITY OPERATING LICENSE NO. NPF-47

DOCKET NO. 50-458

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains a vertical line indicating the area of change. The overleaf page is provided to maintain document completeness.

REMOVE

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INSERT

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## EMERGENCY CORE COOLING SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

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#### ACTION: (Continued)

- d. For ECCS divisions I and II, provided that ECCS division III is OPERABLE:
  - 1. With LPCI subsystem "A" and either LPCI subsystem "B" or "C" inoperable, restore at least the inoperable LPCI subsystem "A" or inoperable LPCI subsystem "B" or "C" to OPERABLE status within 72 hours.
  - 2. With the LPCS system inoperable and either LPCI subsystem "B" or "C" inoperable, restore at least the inoperable LPCS system or inoperable LPCI subsystem "B" or "C" to OPERABLE status within 72 hours.
  - 3. Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours\*.
  
- e. For ECCS divisions I and II, provided that ECCS division III is OPERABLE and divisions I and II are otherwise OPERABLE:
  - 1. With one of the above required ADS valves inoperable, restore the inoperable ADS valve to OPERABLE status within 14 days or be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to  $\leq 100$  psig within the next 24 hours.
  - 2. With two or more of the above required ADS valves inoperable, be in at least HOT SHUTDOWN within 12 hours and reduce reactor steam dome pressure to  $\leq 100$  psig within the next 24 hours.
  
- f. With an ECCS discharge line "keep filled" pressure alarm instrumentation channel inoperable, perform Surveillance Requirement 4.5.1.a.1 at least once per 24 hours.
  
- g. In the event an ECCS system is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted within 90 days to the Commission, pursuant to Specification 6.9.2, describing the circumstances of the actuation and the total accumulated actuation cycles to date. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

\*Whenever two or more RHR subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

## EMERGENCY CORE COOLING SYSTEMS

### SURVEILLANCE REQUIREMENTS

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4.5.1 ECCS division I, II and III shall be demonstrated OPERABLE by:

- a. At least once per 31 days for the LPCS, LPCI and HPCS systems:
  1. Verifying by venting at the high point vents that the system piping from the pump discharge valve to the system isolation valve is filled with water.
  2. Verifying that each valve (manual, power operated or automatic), in the flow path, that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. Verifying that, when tested pursuant to Specification 4.0.5, each:
  1. LPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 282 psid.
  2. LPCI pump develops a flow of at least 5050 gpm with a pump differential pressure greater than or equal to 102 psid.
  3. HPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 415 psid.
- c. At least once per 18 months, for the LPCS\*\*, LPCI\*\* and HPCS systems, performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded from this test.
- d. At least once per 18 months, for the HPCS system, verifying that the suction is automatically transferred from the condensate storage tank to the suppression pool on a condensate storage tank low water level signal and on a suppression pool high water level signal, and verifying that the HPCS system will automatically restart on Reactor Vessel Water Level - Low Low Level 2.

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\*\*May be extended to the completion of the first refueling outage, scheduled to begin 9-15-87.

## EMERGENCY CORE COOLING SYSTEMS

### SURVEILLANCE REQUIREMENTS

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4.5.1 ECCS division I, II and III shall be demonstrated OPERABLE by:

- a. At least once per 31 days for the LPCS, LPCI and HPCS systems:
  1. Verifying by venting at the high point vents that the system piping from the pump discharge valve to the system isolation valve is filled with water.
  2. Verifying that each valve (manual, power operated or automatic), in the flow path, that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. Verifying that, when tested pursuant to Specification 4.0.5, each:
  1. LPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 282 psid.
  2. LPCI pump develops a flow of at least 5050 gpm with a pump differential pressure greater than or equal to 102 psid.
  3. HPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 415 psid.
- c. At least once per 18 months, for the LPCS\*\*, LPCI\*\* and HPCS systems, performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded from this test.
- d. At least once per 18 months, for the HPCS system, verifying that the suction is automatically transferred from the condensate storage tank to the suppression pool on a condensate storage tank low water level signal and on a suppression pool high water level signal, and verifying that the HPCS system will automatically restart on Reactor Vessel Water Level - Low Low Level 2.

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\*\*May be extended to the completion of the first refueling outage, scheduled to begin 9-15-87.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 66 TO FACILITY OPERATING LICENSE NO. NPF-47  
GULF STATES UTILITIES COMPANY  
RIVER BEND STATION, UNIT 1  
DOCKET NO. 50-458

1.0 INTRODUCTION

By letter dated December 22, 1992, Gulf States Utilities Company (GSU) (the licensee) requested an amendment to Facility Operating License No. NPF-47 for the River Bend Station, Unit 1. The proposed amendment would revise Technical Specification (TS) 4.5.1.b to incorporate pump operability limits (pump differential pressure and flow rate) that are consistent with the Bases for the surveillance.

The emergency core cooling system (ECCS) is designed to provide makeup water to the reactor vessel over the full range of operating pressures. The high pressure core spray system (HPCS) is required to provide 467 gpm at a reactor differential pressure (dp) of 1177 psid, 1400 gpm at a reactor dp of 1147 psid, and 5010 gpm at a reactor dp of 200 psid. The low pressure core spray (LPCS) system is required to provide a minimum of 5010 gpm to the reactor with a reactor dp of 119 psid. Each of the three residual heat removal (RHR) pumps are required to provide a minimum of 5050 gpm to the reactor with a reactor dp of 24 psid.

In order to ensure that each ECCS pump can deliver its required flow rate at the required reactor dp, TS 4.5.1.b provides the operability limits on pump flow and pump dp. This TS requires that each:

1. LPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 281 psid.
2. LPCI pump develops a flow of at least 5050 gpm with pump differential pressure greater than or equal to 100 psid.
3. HPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 399 psid.

These surveillances are performed quarterly by running the HPCS pump in the condensate storage tank (CST) to CST test mode and the LPCS and RHR pumps in the suppression pool to suppression pool test mode. Test valves in the test return lines are throttled to obtain a flow rate approximately 0.5 percent

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higher than the minimum flow rate in the TS. Pump differential pressure is measured at the above flow and verified to be greater than the TS minimum pump dp.

During performance of the HPCS Safety System Functional Inspection, the assessment team questioned the basis of the 399 psid required of the HPCS pump. Using the calculated system resistance from the HPCS design calculation, the design pressure drop through the HPCS discharge orifice, the required flow rate and pump dp from the TS, the assessment team calculated the reactor dp to be 150 psid. The design specification for the system and the HPCS process diagram require the HPCS pump to deliver the design flow rate of 5010 gpm to the reactor at a reactor dp of 200 psid. Based on the calculation performed, it was concluded that the pump dp specified in the TSSR would not ensure operability of the pump.

GSU Design Engineering repeated the calculation of the assessment team, however, rather than using the calculated resistances, system resistances measured during the performance of the HPCS preoperational test were used. Based upon the GSU calculation and actual system resistances, it was determined that with a pump dp of 399 psid, the HPCS system would deliver 5010 gpm to the reactor with a reactor dp of  $\approx$  184 psid, which is less than the design reactor dp of 200 psid. Thus, GSU Design Engineering's conclusions agreed with the conclusion reached by the assessment team. Design Engineering has calculated the pump dp required to ensure pump operability to be 415 psid.

After verifying that the existing TS pump dp of 399 psid was incorrect and determining that the correct pump dp is 415 psid, Design Engineering reviewed the results of all previous HPCS pump surveillances to ensure that the pump has been operable when required.

A review of the data from the past surveillances concluded that the HPCS pump has always been operable when required.

Based upon the evaluation performed on the HPCS pump, GSU Design Engineering performed a similar review on the LPCS and LPCI pumps. It was concluded that: (1) the operation limit of 281 psid specified for the LPCS pump is correct, and (2) the operational limit of 100 psid specified for the LPCI pumps is incorrect. The correct operational limit for the LPCI pumps is 102 psid.

Although the existing operability limit for LPCS was acceptable using a suppression pool temperature of 170°F, it was decided that a new operability limit for the LPCS system based upon a suppression pool temperature of 185°F should be calculated. Calculating this new limit served two purposes. First the new limit will add conservatism and secondly, the new limit will provide consistency between the bases for the operability limit for all ECCS pumps. The LPCS operability limit assuming 185°F in the suppression pool was established at 282 psid (an increase of 1 psid).

## 2.0 EVALUATION

ECCS division I consists of the low-pressure core spray system (LPCS) and low-pressure coolant injection (LPCI) subsystem "A" of the RHR system and the automatic depressurization system (ADS) as actuated by ADS trip system "A". ECCS division II consists of LPCI subsystems "B" and "C" of the RHR system and the automatic depressurization system as actuated by ADS trip system "B". ECCS division III consists of the high pressure spray system (HPCS).

The LPCS system is provided to assure that the core is adequately cooled following a loss-of-coolant accident and, together with the LPCI system, provides adequate core cooling capacity for all break sizes up to and including the double-ended reactor recirculation line break, and for smaller breaks following depressurization by the ADS.

The LPCI mode of the RHR system is provided to assure that the core is adequately cooled following a loss-of-coolant accident. The LPCI system, together with the LPCS system, provides adequate core flooding for all break sizes up to and including the double-ended reactor recirculation line break, and for small breaks following depressurization by the ADS.

The HPCS system is provided to assure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break in the reactor coolant system and loss of coolant which does not result in rapid depressurization of the reactor vessel. The HPCS system permits the reactor to be shut down while maintaining sufficient reactor vessel water inventory until the vessel is depressurized. The HPCS system operates over a range of 0 to 1177 psi differential pressure between reactor vessel and HPCS suction source.

The Updated Safety Analysis Report (USAR) and the Bases for Technical Specification 3/4.5.1 list the operability criteria for the HPCS system as delivering greater than or equal to 467/1400/5010 gpm at differential pressures of 1177/1147/200 psid, respectively.

Section 6.3.1.11 of the USAR states that the functional requirements for HP/CS, LPCS, and LPCI to satisfy the requirements of 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling System for Light Water Cooled Nuclear Power Reactors," are contained in Table 6.3-2 of the USAR.

Table 6.3-2 of the USAR lists the operability criteria for each of the LPCI pumps as 4,966 gpm at 20 psid reactor dp and the LPCS pump as 4,900 gpm at 113 psid. The system design specifications currently state that the operability criteria for each of the LPCI pumps is 5050 gpm at 119 psid reactor dp and is 5010 gpm at 24 psid reactor dp.

The TS 4.5.1.6 currently lists the operability criteria for the LPCS, LPCI, and HPCS pumps as:

1. LPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 281 psid.

2. LPCI pump develops a flow of at least 5050 gpm with a pump differential pressure greater than or equal to 100 psid.
3. HPCS pump develops a flow of at least 5010 gpm with a pump differential pressure greater than or equal to 399 psid.

Engineering calculations performed by the licensee using actual system resistances determined during operational testing indicate that the technical specification surveillance requirement operability criteria for pump differential pressure for the LPCS, LPCI, and HPCS pumps should be increased to 282 psid, 102 psid, and 415 psid, respectively. This makes the operability criteria consistent with the technical specification bases. Additional conservatism was included in the differential pressure operating criteria by using the maximum expected suppression pool temperature in calculating pump differential pressure.

The staff has reviewed the licensee's submittal and has concluded that the increase in the minimum pump differential pressure for the LPCS, LPCI, and HPCS pump to 282 psid, 102 psid, and 415 psid, respectively, will satisfy the licensing requirements for safe operation. Based on our review, we conclude that the proposed change is acceptable.

### 3.0 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.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. 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 (58 FR 6998). 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.

## 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.

Principal Contributor: Edward T. Baker, NRR/PDIV-2

Date: March 18, 1993