

GULF STATES UTILITIES COMPANY



RIVER BEND STATION

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U. S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Gentlemen:

River Bend Station - Unit 1
Docket No. 50-458

Gulf States Utilities Company (GSU) hereby files an application to amend the River Bend Station - Unit 1 Technical Specifications, Appendix A to Facility Operating License NPF-47, pursuant to 10CFR50.90. This application is filed to change Technical Specification 3/4.5.1, Emergency Core Cooling Systems - Operating. The Attachments to this letter provide the justifications, significant hazards consideration and proposed revisions to the Technical Specifications.

Should you have any questions, please contact Mr. L. L. Dietrich of my staff at (504)381-4866.

Sincerely,

W. H. Odell
Manager- Oversight
River Bend Nuclear Group

LAE/IR/LLD/MSF

Attachment

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ADD 1/1

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Mr. Glenn Miller
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Attachment 1

PROPOSED

GULF STATES UTILITIES COMPANY RIVER BEND STATION DOCKET 50-458/LICENSE NO. NPF-47

(Emergency Core Cooling Systems - Operating)

LICENSING DOCUMENT INVOLVED:

TECHNICAL SPECIFICATIONS

ITEMS:

4.5.1.f

REASON FOR REQUEST:

In accordance with 10CFR50.90, Gulf States Utilities Company (GSU) is requesting a change to River Bend Station (RBS) Technical Specification (TS) 4.5.1 to clarify the Automatic Depressurization System (ADS) operability by the addition of the minimum ADS accumulator air supply header pressure during normal plant operations. GSU also believes this change will eliminate possible confusion with the Penetration Valve Leakage Control System (PVLCS) operability requirements. Additionally, this request fulfills the commitment made to the staff during an enforcement conference in the staff's Region IV office on January 31, 1991, and reiterated in the supplement to Inspection Report 91-04 dated February 7, 1991. Changes to applicable bases are also submitted for the staff's consideration.

DISCUSSION:

GSU proposes changes to the RBS Technical Specifications and associated Bases. A new surveillance requirement is proposed for Emergency Core Cooling Systems Section 3/4.5.1, "ECCS-Operating," and additional discussion is provided for the associated bases. The proposed surveillance requirement states that the ADS accumulator air supply header pressure be verified once every 12 hours to be greater than or equal to 131 psig. An explanation of the basis for this required minimum pressure and the relationship of the two air supply systems is added to the associated Bases section.

The ADS is an emergency system used to relieve pressure in the reactor primary system to permit operation of the low pressure core spray and residual heat removal systems to replace loss of reactor inventory under loss-of-coolant accident (LOCA) conditions. As discussed in the RBS Updated Safety Analysis Report (USAR) Section 6.3.1.2.4, the ADS utilizes 7 of 16 safety relief valves to reduce reactor pressure following small breaks in the event of HPCS failure. When the vessel pressure is reduced to within the capacity of the low pressure systems, they provide inventory makeup to maintain acceptable post-accident temperatures.

RBS USAR Section 5.2.2.4.1 states that the ADS utilizes selected SRVs for depressurization of the reactor as described above. Each of the SRVs is equipped with an air accumulator and check valve arrangement. The accumulators on the SRVs utilized for automatic depressurization assure that the valves can be held open following failure of the air supply to the accumulators.

The accumulators are designed to provide two ADS actuations at 70 percent of drywell design pressure, which is equivalent to 4 to 5 actuations at atmospheric pressure. One ADS actuation at 70 percent of drywell design pressure is sufficient to depressurize the reactor and allow inventory makeup by the low pressure ECC systems. However, for conservatism, the accumulators are sized to allow 2 actuations at 70 percent of drywell design pressure.

The RBS design utilizes nominal 60-gallon accumulators, with an actual volume of approximately 65 gallons, and an air charging system. The air supply system includes two ASME III Division I, Class 2 air compressors and two non-nuclear safety (NNS) compressors which feed two separate charging systems for the accumulators. Both ASME III compressors are powered from the preferred ac power supply systems and can be powered by on-site power. Each charging system consists of an air dryer and associated piping and valves necessary to provide air to each of the two divisional sets of accumulators. Each charging system has physical separation in order to protect them from postulated pipe breaks.

The air supply to the ADS valves has been designed such that the failure of any one component does not result in the loss of air supply to more than one nuclear safety-related division of ADS valves. The loss of air supply to one division of ADS valves does not prevent the safe shutdown of the unit.

During normal plant operation, SRV and ADS accumulators are supplied with air from the non-nuclear safety main steam system air compressors (SVV), C4A and C4B. These compressors together provide approximately 17 SCFM at 175 psig. Post-LOCA air requirements are supplied from the penetration valve leakage control system (PVLCS).

The Standard Review Plan (SRP), NUREG-0800, for the aforementioned USAR sections provides general guidelines and acceptance criteria. SRP Section 6.3, "Emergency Core Cooling System," requires that "For a boiling water reactor (BWR), the reactor coolant automatic depressurization system is reviewed to confirm the capability to satisfy LOCA pressure relief functions, including consideration of a single failure." However, none of the SRP sections for the USAR sections listed above establish specific requirements for ADS accumulator size or pressure.

Of the USAR sections cited above, only Section 5.2.2.4.1 provides significant discussion about the ADS accumulator capacity and its design basis. The original version of the RBS FSAR described this as follows: "The accumulator capacity is sufficient for each ADS valve to provide two actuations against 70 percent of the drywell design pressure." During review of the FSAR, the staff requested additional information to address NUREG-0737, "TMI Action Plan," Item II.K.3.28 about "the need to assure that air or nitrogen accumulators for the ADS valves are

provided with sufficient capacity to cycle the valves open sufficient times at design pressures," (FSAR question 440.10, Section 5.2.2). After review and evaluation, this section of the FSAR was revised (Amendment 3) to read: "The accumulators are designed to provide two actuations at 70 percent of drywell design pressure, which is equivalent to 4 to 5 actuations at atmospheric pressure."

In its evaluation of this additional information (NUREG-0989, "Safety Evaluation Report, Supplement 3," Section 3.10.2.7.4), the staff stated: "The accumulator on each ADS valve has a 60-gallon capacity which is designed for two actuations at 70 percent of drywell design pressure. This capability is equivalent to four to five actuations at atmospheric pressure. The staff concludes that the applicant has demonstrated the long- and short-term capability of the automatic depressurization system and it is, therefore, acceptable." Thus, the criteria of 2 actuations at 70 percent of drywell design pressure or 4 to 5 actuations at atmospheric pressure may be considered as a regulatory basis as well as a design basis for establishing the minimum required ADS accumulator pressure during normal plant operations.

The ADS is discussed in several of the events in Sections 15.2 and 15.6 of the RPS USAR. Specifically, these sections of the USAR concern those accidents which cause an increase in reactor pressure (i.e., failure of RHR shutdown cooling) or cause an increase in reactor coolant inventory (i.e., steam system piping break outside containment).

GE design specifications for the Nuclear Boiler System list those specific design requirements related to ADS accumulator size and air supply pressure as follows:

1. GE specification 22A6489, "Plant Air," (GSU file #0224.300-000-006D) lists the minimum operating pressure for ADS Safety/Relief Valve air supply as 150 psig.
2. GE specification 22A4622, "Nuclear Boiler System - Design Specifications," (GSU file #0222.260-000-008I):
 - a) Paragraph 4.3.3.8, "Each safety/relief valve shall be provided with a pneumatic accumulator which is sized to provide sufficient capacity to insure adequate supply pressure to the valve actuator."
 - b) Paragraph 4.3.3.9, "Each safety/relief valve used for ADS function shall be provided with additional accumulator volume which is sized to provide sufficient air to perform the ADS function."

3. GE specification 22A4622AT, "Nuclear Boiler System - Data Sheet," (GSU file #7222.260-000-001B):
 - a) Paragraph 3.1.8.1, "The minimum pneumatic supply pressure used as the basis for determining the accumulator sizes specified below is defined in the Plant Air Requirement document (A62-4180)," (A62-4180 is item 1 above).
 - b) Paragraph 3.1.8.2.4 "For the ADS function, 50 gallons of accumulator volume for each ADS valve is required to provide two actuations with the drywell at 70 percent of drywell design pressure."

Since the SVV compressors are not safety-related and are assumed to be unavailable at the start of an accident and the PVLCS compressors are not loaded onto the divisional safety-related power supply buses until 10 to 20 minutes after the start of an accident, the ADS accumulator air volume must be sufficient to satisfy the regulatory and design basis requirements without makeup air during the first 20 minutes of an accident. The regulatory and design basis requirements can be satisfied with various combinations of accumulator pressure and volume. Given that the accumulator volume is fixed, an alternate minimum pressure can be calculated which satisfies these requirements.

The ADS accumulators supplied for RB's provide an actual pressurized volume of 66 gallons (including the piping volume between the accumulator and the air valve on the SRV actuator) and therefore, exceeds the suggested minimum volume given in the item 3b above. As a result, the minimum pressure required to satisfy the design and regulatory basis (2 actuations with drywell at 70 percent of drywell design pressure or 4-5 actuations at atmospheric pressure) can be less than 150 psig.

Engineering calculations, G13.18.2.6*20 and G13.18.2.6*22, were prepared to determine the minimum pressure required to satisfy the aforementioned requirements. These calculations show that a minimum ADS accumulator pressure of 126.3 psig is required to complete 2 ADS actuations with the drywell at 70 percent of drywell design pressure and a minimum ADS accumulator pressure of 130.4 psig is required to complete 4 actuations with the drywell at atmospheric pressure. The higher of these two values (rounded upward to 131 psig) serves as the basis for ADS air accumulator minimum pressure limit during normal plant operations.

Main control room indication of the ADS air supply header pressure is provided by safety-related pressure transmitters and alarm trip units 1SVV*PT3A & B and 1SVV*ES3A & B, respectively.

REVISED TECHNICAL SPECIFICATION:

The requested revision is provided in Attachment 3.

SCHEDULE FOR ATTAINING COMPLIANCE:

River Bend Station is currently in compliance with the applicable Technical Specification requirements and requests approval of this change to the Technical Specifications be granted as soon as possible, with implementation to commence 30 days after receipt of the amendment.

NOTIFICATION OF STATE PERSONNEL:

A copy of this amendment request has been provided to the State of Louisiana, Department of Environmental Quality - Radiation Protection Division.

ENVIRONMENTAL IMPACT APPRAISAL:

GSU has reviewed the proposed license amendment against the criteria of 10CFR51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, GSU concludes that the proposed change meets the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

Attachment 2

SIGNIFICANT HAZARDS CONSIDERATION

In accordance with the requirements of 10CFR50.92, the following discussions are provided in support of the determination that no significant hazards are created or increased by the change proposed by this submittal.

The River Bend Station safety analysis related to the ADS air accumulators assumes that they are 60-gallon capacity and sufficiently charged to provide 2 actuations at 70 percent of drywell design pressure or 4 to 5 actuations at atmospheric pressure. The proposed changes to the RBS Technical Specifications involve the addition of a surveillance requirement for verifying ADS accumulator supply header pressure. As such, this proposed amendment does not affect the safety analysis assumptions, the design basis, or the margin of safety. Operation of RBS in accordance with the changes proposed in this amendment request involve no significant hazards based upon the evaluation given below.

- A. An additional surveillance requirement is proposed for Technical Specification 3/4.5.1, "ECCS-Operating," and addition of the required minimum ADS accumulator supply header pressure is proposed. This change will have no effect upon the probability of accidents assumed in the safety analysis report because no plant structures, systems, or components which could affect failure assumptions are to be added or deleted. Thus, no additional single failures which could significantly increase the probability of an accident previously analyzed in the RBS safety analysis report will result from this change. Consequences of any accidents previously analyzed will not be affected because this change will not affect the severity or release paths of any accident described in the safety analysis report. Therefore, no significant increase in the probability or the consequences of an accident previously evaluated results from these proposed Technical Specification changes.
- B. As stated above, no structures, systems, or components are to be added or deleted by this change. Thus, the possibility of additional single failures resulting in a new or different kind of accident is not introduced as a result of this change. This change provides an additional surveillance requirement to confirm ADS operability with respect to the ADS accumulator air supply pressure during normal plant operations. Therefore, this change is an administrative change only and will not create the possibility of a new or different kind of accident from any accident previously evaluated.
- C. As stated in the RBS USAR section 5.2.2.4.1, one ADS actuation at 70 percent of drywell design pressure is sufficient to depressurize the reactor and allow inventory makeup by the low pressure emergency core cooling systems. But for conservatism, the accumulators are sized to provide 2 actuations at 70 percent of drywell design pressure or 4 to 5 actuations at atmospheric pressure. No changes

are made to these bases by the proposed amendment, but this change further defines the minimum ADS accumulator pressure at which these criteria are satisfied. Therefore, these proposed changes will not involve a significant reduction in the margin of safety.

Based on the above, it is determined that the proposed change does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the probability of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety and therefore, does not involve a significant hazard consideration.