GULF STATES UTILITIES COMPANY

RIVER BEND STATION POST OFFICE BOX 220 ST. FRANCISVILLE, LOUISIANA 70775

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July 8, 1985
RBG- 21,461
File No. G9.5

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

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

Enclosed for your review (Enclosure 2) are revisions to the River Bend Station Final Safety Analysis Report (FSAR) Chapter 9. Enclosure 1 provides a discussion of each of these revisions including their effect, if any, on the Safety Evaluation Report and the proposed Technical Specifications. These revisions will be included in a future FSAR amendment.

Sincerely,

J. E. Booker

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Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

JEB/ERG/je

Enclosures (2)

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ENCLOSURE 2

A. Page 9.4-72 has been revised to delete the reference to "preoperational testing" which is performed on safety-related systems. These systems will receive preliminary testing to assure operability, but no "preoperational test", as discussed in Chapter 14 of the FSAR, will be performed. No impact is expected to either the SER or the proposed Technical Specifications.

B. Section 9.5.3.3 has been revised to indicate that failure analysis may be substituted for seismic support of non-safety equipment. No impact is expected to either the SER or the proposed Technical Specifications.

C. Section 9.5.9 and Table 9.5-5 have been supplemented to identify additional gases which will be stored under pressure on-site. No impact to either the SER or the proposed Technical Specifications is expected.

All system ductwork is subjected to leak tests during erection and is balanced in accordance with the procedures of the Associated Air Balance Council[8]. Portable test and monitoring equipment are used to balance the systems when required. Electric heaters are approved by Underwriters' Laboratories. 21|5|

9.4.7.5 Instrumentation Requirements

9.4.7.5.1 Fire Pump House Heating and Ventilating System

Local controls are provided for either automatic or manual operation of each fire pump house roof ventilator fan (FN 3 through FN 7). In the automatic mode, fan startup occurs if the fire pump house compartment temperature exceeds a preset limit. The fire pump house air intake louvers (MOL 101 through MOL 105) are interlocked with their respective ventilator fans so that the louver is open when the fan is running and closed when the fan stops.

Local controls are provided for either automatic or manual operation of each fire pump house unit heater (UH 1 through UH 5). In the automatic mode, the heater is energized when the fire pump house compartment temperature reaches a low level and is deenergized when the temperature returns to normal.

9.4.7.5.2 Normal Switchgear Building HVAC System

Control switches are provided in the auxiliary control room for either automatic or manual operation of the normal switchgear building battery room exhaust fan (FN 21) and the normal switchgear room exhaust fans (FN 19A, B).

In the automatic mode, the battery room exhaust fan (FN 21) operates when the normal switchgear building air-conditioning unit (ACU 2) is running.

In the automatic mode, the normal switchgear room exhaust fan (FN 19A, B) operates when either one of the normal switchgear building air-conditioning units (ACU 3A, B) is running. A low airflow condition at the discharge of an air-operating fan activates an exhaust fan trouble alarm in the auxiliary control room. The exhaust fan and air-conditioning units are interlocked so that the fan stops if both units are not running.

Normal switchgear building room inlet air heaters (CH 2, CH 9, CH 3, and CH 4) and air-conditioning system condensing units

h. Means of egress and building exits.

The main control room and remote shutdown panels are the only areas requiring continuous lighting in excess of 8 hrs, which is provided as described above.

In case of failure of the normal ac lighting system, exit signs and means of egress throughout the station are illuminated by System 3. In the event of failure of the normal ac lighting system and a loss of offsite power, portable lighting (battery-powered lanterns) is available for all areas of the plant.

9.5.3.3 Safety Evaluation

In Seismic Category I structures, the lighting fixtures and conduits are supported using support designs referenced on Category I seismic support drawings. The fixtures and conduits in these areas have either been supported by the referenced seismic supports, or have been evaluated to demonstrate that seismic failure of the fixture or conduit will not adversely affect safety-related systems or equipment in the area. In the main control room, they are seismically supported in accordance with structural requirements for control room design: lighting over the main control and computer areas is supplied from a louvre. All ceiling lighting and fixtures are the fluorescent strip type and are securely mounted above and independent of the louvres. The remaining areas are illuminated by recessed fluorescent fixtures in an acoustical suspended ceiling. The fixtures are double suspended, i.e., from the suspended ceiling and from the structure.

All battery packs are a sealed type and are seismically supported. These battery packs are designed to give sustained illumination for 8 hr following a loss of normal power.

The remote shutdown panel rooms and 20 percent of the main control room fixtures are connected to a Class 1E bus. Special design considerations have been made for the control room lighting system. From the Class 1E bus to the power receptacle, the circuit is designed as Class 1E with two independent overcurrent protection devices installed in the circuit to ensure protection of the Class 1E portion of the circuits. The Class 1E portion of the lighting circuit is installed, as are other Class 1E circuits, using Class 1E cables installed in seismically-supported conduit. Under any DBE condition, the Class 1E power supply will remain operable. The non-Class 1E portions, such as the

receptacles, cables, and raceways, are also seismically supported to remain in place and available after a DBE. The light fixtures are seismically installed and utilize lamp clips to ensure their availability under DBE conditions. The lighting transformer and lighting panelboard are seismically qualified and will therefore remain available to furnish Class 1E power to this portion of the main control room lighting system under DBE conditions. From and including the receptacle and plug, it is treated as a non-Class 1E system, with additional safety protection as follows: 15

1. The transformer load is limited to 75 percent of its maximum rating.

2. The circuit breaker installed on secondary windings of the transformer trips at 100 percent of the transformer rating.

3. No load other than the lighting fixtures is connected to this circuit.

4. Wiring for this system is run in separate conduits.

Light fixtures installed in the two remote shutdown rooms are seismically supported, as are the raceway systems connected to these fixtures. 21

9.5.9 Storage of Gases Under Pressure

The storage of gases under pressure is required for routine operation of the power plant.

9.5.9.1 Design Bases

The storage of gases under pressure is designed in accordance with the following criteria:

1. Storage conditions and relief valve capacities are designed as required by ASME Section VIII for fixed containers, Department of Transportation regulations for portable cylinders, and NFPA codes for flammable gases.

2. The containers are designed not to create damaging missiles through the use of restraints.

3. The containers are well separated from main control room and diesel generator air intakes.

4. The storage of gases is designed to Occupational Safety and Health Administration requirements.

5. All cylinders, except for the MSIV accumulators and the hydrogen analyzer system calibration gas and reagent gas bottles are equipped with safety relief devices set below or at the vessel design pressure. The MSIV accumulators are designed for 150 psig and 340°F. Since unloaders mounted on the instrument air compressor

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(the air supply source) are set for 120 psig, individual tank relief valves are not required.

21 The hydrogen analyzers calibration and reagent gases are stored at pressures below the design pressure of the cylinders, therefore, individual tank relief valves are not required.

6. The plant storage facilities for various gases and air are designed to provide sufficient capacity for, and to be capable of positive action in, the systems with which they are associated.

9.5.9.2 System Description

Table 9.5-5 lists the storage facilities for air and other gases and their characteristics. These include the storage of:

1. Carbon dioxide for fire protection and generator purge.

2. Hydrogen for generator rotor cooling.

3. Air for instruments and services; air in accumulators for the operation of MSIVs and controls; air in air receivers for starting the diesel generator for the high-pressure core spray (HPCS) system; air in air receivers for starting the standby diesel generators.

4. 17 Nitrogen cylinders for nitrogen blanketing of the closed loop cooling water surge tanks and auxiliary boiler, and for supplying nitrogen to the reactor plant sampling system and the total organic carbon analyzer in the radwaste system.

5. Halon 1301 for fire protection.

6. 21 Hydrogen (in nitrogen) for hydrogen analyzer calibration gas.

7. Oxygen for hydrogen analyzer reagent gas.

In addition to those listed above, gases such as oxygen, hydrogen, argon, helium, and nitrogen are required from time to time for repair and maintenance processes (e.g., welding), and are used throughout the plant and stored in the shop area. Small quantities of compressed gases used in radiation counters are stored in the health physics laboratory area.

9.5.9.3 Safety Evaluation

The accidental release of gases stored under pressure has been analyzed for the following cases:

1. Carbon dioxide for fire protection (Section 9.5.1).

2. Hydrogen for generator rotor cooling and carbon dioxide for generator purge.

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3. Air for instruments, service, and controls (Section 9.3.1)

4. Air for standby and HPCS diesel generators which provide onsite emergency power (Section 9.5.6)

5. Halon 1301 for fire protection (Section 9.5.1)

6. 10 percent hydrogen in 90 percent nitrogen for hydrogen analyzer calibration gas

7. Oxygen for hydrogen analyzer reagent gas.

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The setting of pressure relief valves at a value below design pressure prevents the possibility of pressure buildup as a result of temperature increases. The quantity of gas discharged due to relief valve lifting does not cause any hazardous conditions.

The locations of tanks and cylinders relative to equipment essential for initiating and maintaining a safe shutdown are such that the possibility of interaction between them in the event of an accident is precluded, with two exceptions:

1. The air tanks for the standby diesel generators (200 psig operating pressure) are designed to ASME Code Section III, Class 3 standards. The tanks are secured in such a way that a rupture of a tank has a minimal adverse effect upon the related diesel generator or controls. Each diesel generator is separated from the others by a 2-ft concrete wall (Fig. 1.2-28). Therefore, a rupture of any of the air tanks in a given diesel generator room does not affect the adjacent diesel generator units.

2. The accumulators for the inboard main steam isolation valves and the safety relief valves of the nuclear boiler system are located in the drywell. The arrangement of the air accumulators and associated piping and the support/restraint system is such that an accumulator or piping failure does not affect adjacent equipment. Outboard main steam isolation valve air accumulators are similarly arranged to preclude damage to adjacent equipment. The nuclear boiler pressure relief system is discussed in Section 5.2.2. Main steam isolation valves are discussed in Section 5.4.5.

15| Fig. 9.5-10 shows the general arrangement of the bulk
hydrogen and carbon dioxide storage facility. The generator
17| hydrogen and carbon dioxide storage facility consists of

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concrete pad. The storage area is open to prevent the accumulation of hydrogen. A tractor-trailer bed with DOT-coded hydrogen storage bottles is left while the hydrogen is consumed (approximately 1 month), then exchanged for a filled trailer. Separate skid-mounted, bulk hydrogen storage bottles are located behind the normal supply trailer to provide hydrogen in the event of unexpected generator repairs or irregularities in hydrogen deliveries to the site. The carbon dioxide gas used for generator purge is stored as a liquid in a low-pressure cryogenic storage unit next to the hydrogen trailer. Table 9.5-5 gives tank volumes and operating pressures.

Each storage bottle is mounted in supporting frames, restrained from movement. Shutoff valves, bursting disc assembly, and vent are provided for each storage bottle.

The facility is located in the yard, approximately 90 ft from the nearest building (Fig. 1.2-2). It is completely fenced in and provided with posted "No Smoking" signs. Access by unauthorized personnel is controlled by permanent warning placards and a locked gate. The nearest safety-related structures are the auxiliary building and the control building. These buildings are located approximately 400 ft away from the hydrogen storage facility and separated from it by the turbine building and normal switchgear-transformer area, respectively.

Bulk hydrogen storage units and the carbon dioxide tank use pressure regulators to reduce the bottle pressure to 85 psig. Safety relief valves protect the downstream piping and valves against failure of the pressure regulators. Hydrogen and carbon dioxide piping is routed underground from the gas storage facility to the turbine building. Inside the turbine building piping is routed through ventilated areas and located to minimize the possibility of physical damage. A vent line piped to the atmosphere through the turbine building roof is provided for generator purge and safety relief valve discharges.

The hydrogen analyzer calibration and reagent gases are stored in permanently attached supporting frames, restrained from movement. Pressure regulators on the bottles and pressure control valves in the hydrogen analyzer panels maintain the gas pressure at 25 psig. These two devices protect the downstream piping and instruments against gas overpressure.

TABLE 9.5-5 (Cont)

Gas	Container Design (psig)	Operating Pressure (psig)	Maximum Pressure[1] (psig)	Est. No. Tanks	Est. Tank Vol. (cu ft) Ea.	Max. Energy Released[2] if Ruptured (ft-lb x 10^6) One Tank	All Tanks	Location	
Isolation Valve Accumulators	150	120	135	8	5.5	0.3	2.4	Auxiliary and Reactor Bldg	
ADS Accumulators	250	150	250	7	8.8	1	7	Reactor Bldg	
Safety Relief Valve Accumulators	250	150	250	9	1.7	0.2	1.8	Reactor Bldg	
HPCS Diesel Generator Receiver	275	200	275	2	64	8	16	Diesel Generator Bldg	5
Standby Diesel Generator Receiver	275	200	275	8	76	9.5	76	Diesel Generator Bldg	
Halon									
Fire Protection	3,000	360	360	27	0.2	0.5	13.5	Main Control Room	
Fire Protection	3,000	360	360	2	2.9	6.7	13.4	Aux Cont Bldg, el 123'-6"	
Fire Protection	3,000	360	360	2	0.3	6.9	13.8	Norm Swgr Bldg, el 123'-6"	
Fire Protection	3,000	360	360	2	0.2	0.5	1.0	PAP Bldg	
Fire Protection	3,000	360	360	2	2.0	4.6	9.2	Services Bldg, Rm 305	17
Fire Protection	3,000	360	360	2	2.0	4.6	9.2	Services Bldg, Rm 353	
Fire Protection	3,000	360	360	2	0.5	1.2	2.4	Services Bldg, Rm 302	
Fire Protection	3,000	360	360	2	1.0	2.3	4.6	Services Bldg, Rm 205	
Fire Protection	3,000	360	360	2	2.5	5.8	11.6	Services Bldg, Rm 206	
Hydrogen in Nitrogen									
Hydrogen Analyzer Calibration Gas Bottle	(later)	25	25[6]	2	170	(later)	(later)	Auxiliary Bldg	21

TABLE 9.5-5 (Cont)

Gas	Container Design (psig)	Operating Pressure (psig)	Maximum Pressure(1) (psig)	Est. No. Tanks	Est. Tank Vol. (cu ft) Ea.	Max. Energy Release (2) if Ruptured (ft-lb x10⁶) One Tank	All Tanks	Location	
Oxygen									
Hydrogen Analyzer Reagent Gas Bottle	(later)	25	25(6)	4	210	(later)	(later)	Auxiliary Bldg	21

(1)Safety valve or cylinder rupture disk set point
(2)Conservatively assumed to be isothermal expansion from design pressure
(3)Stored as liquified gas
(4)Maximum working pressure
(5)Liquid carbon dioxide in a low-pressure cryogenic storage unit.
(6)Bottle pressure regulator and pressure control valve set pressures.

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