



GULF STATES UTILITIES COMPANY

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July 8, 1985
RBG- 21444
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 are revisions to the River Bend Station Final Safety Analysis Report (FSAR) Section 2.2.3.1. These revisions are provided as a result of confirmation of parameters used in the original analysis. No revisions are expected to be necessary for either the Safety Evaluation Report or the proposed Technical Specifications. These revisions will be included in a future FSAR amendment.

Sincerely,

J. E. Booker
Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

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Enclosures

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2.2.2.3 Projections of Industrial Growth

There are no plans for major expansion foreseen in transportation, storage, or industrial facilities in the vicinity of the plant. Although the Mississippi River is expected to continue its growth as a chemical center, industrial growth in the vicinity of River Bend Station is expected to be limited by the size and skills of the civilian labor force, the lack of infrastructure, and the appreciation of the surrounding communities for the scenic and historic character of the area⁽¹³⁾.

2.2.3 Evaluation of Potential Accidents

The consideration of a variety of potential accidents, and their effects on the plant or plant operation, is included in this section. Types of accidents considered include explosions, flammable vapor clouds, toxic chemicals, fires, collisions with intake structures, and liquid spills.

2.2.3.1 Determination of Design Basis Events

2.2.3.1.1 Explosions

The nearest highway on which explosive materials may be transported is US Highway 61, which is a minimum distance of 5,200 ft from the center of the Unit 1 reactor. This separation meets the criteria in Regulatory Guide 1.91. Therefore, explosions on highways need not be considered design basis events. | 21

The nearest rail route, the Illinois Central Gulf Railroad, is a minimum distance of 2,400 ft from the center of the Unit 1 reactor. No explosive materials are shipped along this route. The criteria in Regulatory Guide 1.91 is met. Therefore, explosions on a railroad need not be considered design basis events. | 21

The Mississippi River is the nearest waterway to the plant, with its eastern bank lying approximately 2 mi from safety-related structures. Because of this distance, there should be no damage resulting from potential accidents since the criterion for a 5,000-ton river vessel explosion given in Regulatory Guide 1.91 is met. This analysis shows that waterborne explosions need not be considered design basis events.

2.2.3.1.2 Flammable Vapor Clouds (Delayed Ignition)

The nearest storage tank farm of flammable liquids is 4.3 mi southeast of the plant site, where gasoline and fuel oil are stored (Section 2.2.2). The TNT equivalent of accidental explosions of individual tanks is estimated to be well below the limits of Regulatory Guide 1.91. Due to the separation distance, there would be no damage to the facility from an explosion at the tank farm.

21 | The nearest pipeline, a 36-in diameter natural gas transmission pipeline, passes about 1.7 mi from the plant site. This pipeline and others farther from the site are shown on Fig. 2.2-2. The pipelines may carry natural gas or petroleum products such as gasoline, oil, or kerosene. The pipeline owners anticipate no change in the content of the pipelines during the facility lifetime.

21 | The largest potential effect might occur from a postulated natural gas leak and explosion. Natural gas is mostly methane with usually 3 percent or less propane and other heavier gases. At one atmosphere, the specific gravity of methane gas at 60°F is about 0.5, and a methane plume would rise very rapidly. The effects of an explosion can be conservatively estimated based on a volume of 876,368 cu ft calculated using the method given in Reference 27, a density of 3.203 lb/cu ft, and a 2.4 multiplier, resulting in an equivalent TNT mass of 6.74×10^6 lbm. The escaped gas from a pipeline leak is conservatively assumed to gather into the large volume after a period of time. The resultant 1 psi overpressure wave would extend about 8,500 ft using the methodology presented in Regulatory Guide 1.91. A pipeline explosion is not considered a design basis event due to the separation distance from safety-related structures. Missiles are not considered credible. For the same reasons, gas wells, described in Section 2.2.2, which are 3.4 mi and 4.5 mi from the safety-related structures are not a hazard to the plant.

2.2.3.1.3 Toxic Chemicals

Potential accidental releases of toxic chemicals are considered to evaluate main control room habitability. Accidental releases of onsite chemicals stored in quantities greater than 100 lb and offsite sources within 5 mi are postulated using the assumptions in Regulatory Guide 1.78. Transportation sources of hazardous chemicals passing within 5 mi of the main control room are evaluated if they are frequent. Frequent shipments are defined as exceeding 10 per yr for truck shipments, 30 per yr for rail shipments, and 50 per yr for barge shipments.

RBS FSAR

20. Hydrologic and Quality Characteristics of the Lower Mississippi River. Technical Report No. 5, United States Geological Survey and Louisiana Department of Public Works, 1971.
21. Documentation of Threshold Limit Values, Fourth Edition 1980. American Conference of Governmental Industrial Hygienists, Cincinnati, OH 1980.
22. Telecon between C. S. Ellis, Stone and Webster Engineering Corporation, Boston, MA and C. Cooper, PPG Industries, Pittsburgh, PA, February 9, 1982.
23. Letter, C. R. Cooper, PPG Industries, Pittsburgh, PA, to F. P. Maiuri, Stone and Webster Engineering Corporation, Cherry Hill, NJ, February 12, 1982.
24. Telecon between F. Maiuri, Stone and Webster Engineering Corporation, Cherry Hill, NJ and G. Shaw, Diamond-Shamrock Co., Dallas, TX, July 9, 1982.
25. Letter, J. E. Booker, Gulf States Utilities Company, Beaumont, TX, to A. Schwencer, Nuclear Regulatory Commission, Bethesda, MD, October 17, 1983 (GSU Letter No. RBG-16179).
26. Letter, J. E. Booker, Gulf States Utilities Company, Beaumont, TX, to H. R. Denton, Nuclear Regulatory Commission, Bethesda, MD, December 20, 1983 (GSU Letter No. RBG-16621).
27. Gagan, K. Unconfined Vapor Cloud Explosions. Gulf Publishing Company, Houston, TX, 1978.