GULF STATES UTILITIES COMPANY

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File No. G9.5, G9.8.6.2

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 Gulf States Utilities Company (GSU) responses to Request for Additional Information identified by the Nuclear Regulatory Commission's Core Performance Branch (CPB). This letter will provide final close out to Confirmatory Items (8) and (9) of Table 1.4 of the Safety Evaluation Report. The enclosures contain changes to the Final Safety Evaluation Report (FSAR) text that will be incorporated in a future amendment.

Sincerely,

William J. Reed Jr.

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

JEB/WJR/~~JEP~~ ewf/je

Enclosures

B001
1/1

3.9.1.4.7B Main Steam and Recirculation Piping

For main steam and recirculation system piping, elastic analysis methods are used for evaluating faulted loading conditions. The equivalent allowable stresses using elastic techniques are obtained from ASME Code, Section III, Appendix F, "Rules for Evaluation of Faulted Conditions," and these are above elastic limits. Additional information on the main steam and recirculation piping is in Tables 3.9B-2d and 3.9B-2e.

3.9.1.4.8B Nuclear Steam Supply System Pumps, Heat Exchanger, and Turbine

The recirculation, ECCS, RCIC, and SLC pumps, RHR heat exchangers and RCIC turbine have been analyzed for the faulted loading conditions identified in Section 3.9.1.1B. In all cases, stresses were within the elastic limits. The analytical methods, stress limits, and allowable stresses are discussed in Sections 3.9.2.2B and 3.9.3.1B.

3.9.1.4.9B Control Rod Drive Housing Supports

Examples of the calculated stresses and the allowable stress limits for faulted conditions for the control rod drive housing supports are shown in Table 3.9B-2z. 9

3.9.1.4.10B Fuel Storage Racks

Examples of the calculated stresses, and stress limits for the faulted conditions for the new fuel storage racks and the containment fuel storage racks are shown in Table 3.9B-2s.

3.9.1.4.11B Fuel ~~Channels~~ Assembly (including channels)

GE BWR fuel ~~channel~~ assembly design bases, analytical methods and evaluation results, including those applicable to the faulted conditions, are contained in References 4 and 5. The acceleration profiles are summerized in Table 3.9B-2aa.

3.9.1.4.12B Refueling Equipment

Refueling and servicing equipment which are important
to safety are classified as essential components per 9
the requirements of 10CFR50, Appendix A. This
equipment and other equipment whose failure would
degrade an essential component is defined in
Section 9.1 and is classified as Seismic Category I. 9
These components are subjected to an elastic dynamic
finite element analysis to generate loadings. This analysis

The maximum stress on the HCU frame was calculated to be below the maximum allowable for the SSE faulted condition. These stresses were obtained by assuming that the HCUs are braced together back-to-back on the "H" beams at the top and bottom of the HCU.

The dynamic analysis of the HCU under faulted condition loads establishes the structural integrity of the HCU.

3.9.2.2.2.5B Fuel ~~Channels~~ Assembly (including channels)

GE BWR fuel ~~channel~~ assembly design bases, analytical methods, and evaluation results, including seismic and hydrodynamic considerations, are contained in References 4 and 5.

3.9.2.2.2.6B Recirculation Pump and Motor Assembly

The recirculation pump, including its appurtenances and supports, individually and as an assembly, is designed to withstand the seismic forces of 4.5g horizontal and 3.0g vertical as follows:

1. The flooded pump motor assembly is analyzed as a free body supported by constant support hangers from the brackets on the motor mounting member, with hydraulic snubbers attached to brackets on the pump case and the top of the motor frame. Natural frequencies are greater than 33 Hz, as determined by analysis; therefore, an equivalent static load method of seismic analysis is used.

2. Primary stresses due to horizontal and vertical seismic forces are considered to act simultaneously and therefore added algebraically. Horizontal and vertical seismic forces are applied to mass centers, and equilibrium reactions are determined for motor and pump brackets.

3. Load, shear, and moment diagrams were constructed to scale, using live loads, dead loads, and calculated snubber reactions. Combined bending, tension, and shear stresses were determined for each major motor flange bolting and pump case.

4. The maximum combined tensile stress in the cover bolting was calculated including tensile stress from design pressure.

3.9B References 1

1. Design and Performance of G.E. BWR Jet Pumps. General Electric Company, Atomic Power Equipment Department, APED-5460, July 1968.

2. Moen, H.H. Testing of Improved Jet Pumps for the BWR/6 Nuclear System. General Electric Company, Atomic Power Equipment Department, NEDO-10602, June 1972.

3. Analytical Model for Loss-of-Coolant Analysis in Accordance with 10CFR50, Appendix K. Proprietary Document, General Electric Company, NEDE-20566.

4. BWR Fuel Channel Mechanical Design and Deflection. NEDE-21354-P, September 1976.

5. BWR/6 Fuel Assembly Evaluation of Combined Safe Shutdown Earthquake (SSE) and Loss-of-Coolant Accident (LOCA) Loadings. NEDE-21175-P, November 1976, and NEDE-21175-3-P, July 1982

6. Boiling Water Reactor Feedwater Nozzle/Sparger Final Report, NEDO-21821, March, 1978. 7

Table 3.9B- 2aa

FUEL ASSEMBLY (INCLUDING CHANNEL) PEAK ACCELERATION

Acceptance Criteria	Loading	Primary Load Type	Calculated Peak Acceleration	Evaluation Basis Acceleration
Acceleration Envelope	Horizontal Direction: 1. Peak Pressure 2. Safe Shutdown Earthquake 3. Annulus Pressurization	Horizontal Acceleration Profile	2.0 G	(1)
	Vertical Direction: 1. Peak Pressure 2. Safe Shutdown Earthquake 3. Annulus Pressurization 4. Scram	Vertical Accelerations	4.9 G (4)	(1)

NOTES:

(1) Evaluation Basis Accelerations and Evaluations are contained in NEDE-21175-3-P-A.

(2) The calculated maximum fuel assembly gap opening for the most limiting load combination is 0.19 (4) inches.

(3) The fatigue analysis indicates that the fuel assembly has adequate fatigue capability to withstand the loadings resulting from multiple SRV actuations and the OBE+SRV event.

(4) These values are determined using methodology contained in NEDE-21175-3-P-A.