Docket No. 50-458

JUL 3 1 1985

Mr. William J. Cahill, Jr.
Senior Vice President
River Bend Nuclear Group
Gulf States Utilities Company
P.O. Box 2951
Beaumont, Texas 77704

ATTENTION MR. J. E. BOOKER

Dear Mr. Cahill:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - ULTIMATE CAPACITY OF CONTAINMENT

As a part of the NRC staff's review of your application for an operating license for River Bend Station, the staff has determined the need for additional information in the area of ultimate pressure capacity of the River Bend Station containment. The request for information is included in the enclosure as comments 1 - 3 and questions 1 - 12.

The comments and questions refer to calculations made by the Stone & Webster Engineering Corporation, dated June 22, 1983, and are referenced in the enclosure. Your prompt response is requested as these items will be considered in the staff evaluation of degraded core, which is a topic to be discussed with ACRS.

This topic was the subject of a telephone conference call with your staff in April, 1985, and a subsequent meeting in May, 1985. These calculations were informally submitted to the staff earlier this month.

Please inform NRC Project Manager, Stephen Stern, of your schedule for response and for clarification or further discussion on this topic.

Sincerely,

Walter R. Butler, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure: As stated

cc w/enclosure: See next page

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

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cc w/enclosure: See next page

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Enclosure

COMMENTS AND QUESTIONS

Ultimate Pressure Capacity of River Bend Steel Containment

Reference: "Ultimate Pressure Capacity of Steel Containment Openings and Penetrations", J.O. or W.O. No. 12210, Structural Mechanics Division, Calculation No. 219.710-FAE-1095 Rev. 1, 6/22/83. Stone & Webster Engineering Corperation.

From: Lowell Greimann
Ames Laboratory

COMMENTS

Comment	Page	
1	A-14, B-13	Checking of equilibrium by comparing calculated nodal forces to applied loads does not constitute a verification of the finite element analysis. It is a necessary but not sufficient condition.
2	A-22	This method of calculating nodal stresses is not a standard finite element approach. Usually, stresses at nodes are obtained from element stress values, e.g., POST 1 in ANSYS. This comment applies throughout the calculations.
3	E-2, E-4	I agree that this method gives a lower bound on ultimate pressure if the steel has sufficient ductility and if no instabilities (buckling) occur (Static or Lower Bound Theorem of Structural Plastic Analysis, ASME, Para. NE-3213.22).

QUESTIONS

Question	Page No	
1	A-44	The removal of the stiffener may be acceptable for a general yield analysis but how is this legitimate for an ASME Level C analysis? Is the bending stress in the stiffener (Page A-38) secondary (ASME, Para. NE-3213.9 and NE-3221.4)?
2	B-9	Are there 64 bolts? (Page B-37 says 72 bolts.)

Question	Page No.	
3	B-13, B-17	Why are two nodal forces listed for Elements 112 and 128 for Node 13? (Similar questions occur several places, e.g., ΣFY on page B-16 includes 6 values for 4 elements.)
4	B-16, B-17	Why is 3.5" used for barrel thickness? (Page B-33 shows 4".)
5	B-17	Why is 4.5" used for collar thickness? (Page B-33 shows 5".)
6	B-17	What is the basis for the nodal force summation in the equation for σ_y (membrane) half way down the page? We do not understand this equation.
7	B-17	If we understand the process for determining $\overline{FY}_{13}$ we do not agree. What is the basis for calculating $\overline{FY}_{13}$ at the mid-distance but using the area at Node 13?
8	B-29	The solution for M_α is negative. My intuition says it is positive. Any comments? Reference 5, Art. 131, Fig. 276 shows the peak stress does not occur at the flange/shell juncture. Comments?
9	D1	Was SHELL1 used to analyze the steel portion of the model in Fig. 2? What was the element subdivision? Is the bending stress in the knuckle region secondary (ASME, Para. NE-3213-9 and Table NE-3217-1?
10	D4	Is the "plastic capacity of the section" for the containment computed using the technique on page E-4?
11	E-15	What is the analytical basis for the load path redistribution assumption? How did you decide to distribute over 4 elements? Why not 2 or 8 or entire collar?
12	E-19	Need drawings of CRD Removal Tube Hatch.

NOTE: Questions 4, 5, 6, 7, and 11 are particularly important because this region (top of the equipment hatch collar/barrel) controls the containment strength.