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the southern electric system

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Docket Nos. 50-348
50-364

Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. S. A. Varga

Joseph M. Farley Nuclear Plant - Units 1 and 2
I.E. Bulletin 80-11 Masonry Walls

Gentlemen:

Based upon a telephone conference August 6, 1982 between Alabama Power Company, and members of the Nuclear Regulatory Commission staff, Franklin Research Institute, and Bechtel Power Corporation, the attached information is sumbitted as additional clarification of our April 22, 1982 and July 8, 1982 responses to your letter of March 9, 1982 on I. E. Bulletin 80-11. License condition 2.C.(16) for Alabama Power Company's Farley Unit 2 requires Alabama Power Company to complete any modifications needed to assure the structural integrity of the safety-related masonry walls. Alabama Power Company believes the supplemental information supplied with this letter, the above referenced letters, and our original submittals of May 12, 1981 (Unit 2) and May 22, 1981 (Unit 1) fully document the structural integrity of all masonry walls at the Farley Nuclear Plant, and that the requirements of the Unit 2 license condition 2.C.(16) have been satisified.

If you have any questions, please advise.

Yours very truly,

F. L. Clayton, Jr.

FLCJr/CLB:jc-D27
Attachment
cc: Mr. R. A. Thomas
Mr. G. F. Trowbridge
Mr. J. P. O'Reilly
Mr. E. A. Reeves

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ATTACHMENT

The first step performed in the energy balance technique is to calculate the moment capacity of the beam model based on convential ultimate strength design theory. When the moment capacity of the beam model is governed by the tension capacity of the reinforcing steel, this conventional elastic analysis may be used to compute moment capacity. The moment capacity of the beam is assumed to be that which causes reinforcing steel stress equal to the yield strength of the steel.

If the applied moment of the beam model, due to externally applied loads and the seismic inertia forces, does not exceed the capacity of the beam based on conventional ultimate strength analysis, the so-called energy balance reduces to this conventional analysis. Therefore, the additional load capacity of the section after the steel yields need not be relied on to demonstrate the adequacy of the beam. Table A. below summarizes the calculated stress in the reinforcing steel due to the above defined applied moment. According to certified mill test reports the actual yield strength of the reinforcing steel exceeds 64.5 KSI. Based on the actual yield, maximum reinforcing steel stresses in the nine walls most highly stressed do not exceed 93 percent of the yield strength. Note: All of the walls at Farley in both units are non-structural elements.

TABLE A

Stresses in Farley Nuclear Plant Masonry Wall Steel

Wall Number	Seismic		Tension Steel Stress (KSI)	Percent of Yield Strength
	OBE	SSE		
2CBW-8		X	60	93
2CBW-9		X	35	54
2CBW-10		X	40	62
2CBW-11		X	35	54
2CBW-12		X	13	20
2CBW-13		X	16	25
2CBW-14		X	19	29
2CBW-15	X		41	64
2CBW-16	X		41	64

Stresses in Farley Nuclear Plant Masonry Wall Steel

Wall Number	Seismic		Tension Steel Stress (KSI)	Percent of Yield Strength
	OBE	SSE		
2CBW-17	X		41	64
2CBW-18		X	31	48
2CBW-19		X	41	64
2CBW-21	X		46	71
2CBW-23		X	31	48
2CBW-24		X	32	50
2CBW-25		X	26	40
2CBW-26*	X	X	30	47
2CBW-27		X	22	34
2CBW-28		X	60	93
2CBW-30*	X	X	26	40
2CBW-34*	X	X	60	93
1CBW-9		X	60	93
1CBW-12		X	19	29
1CBW-13		X	20	31
1CBW-14		X	20	31
1CBW-15	X		19	29
1CBW-16	X		19	29
1CBW-19		X	60	93
1CBW-21	X		49	76
1CBW-23	X		46	71
1CBW-25		X	60	93

* See Note 5

Stresses in Farley Nuclear Plant Masonry Wall Steel

Wall Number	Seismic		Tension Steel Stress (KSI)	Percent of Yield Strength
	OBE	SSE		
1CBW-26	X		27	42
1CBW-28	X		60	93
1CBW-32		X	39	60
1CBW-33	X		21	33
1CBW-34	X		60	93
1CBW-62	X		60	93
1CBW-69	X		60	93

Notes:

1. All stresses listed result from dead load plus attachment load (if any) plus seismic loading. Seismic loading based on 7% damping.

2. Only the walls analyzed using ultimate strength theory are included in this table. The remainder of the 75 walls have been analyzed using working stress theory. Stresses in these walls do not exceed working stress allowables.

3. For seismic loading in the north-south direction OBE accelerations are used (N-S OBE accelerations are greater than N-S SSE accelerations for equal damping).

4. For seismic loading in the east-west direction SSE accelerations are used. (E-W SSE accelerations are greater than E-W OBE accelerations for equal damping).

5. Walls analyzed for both OBE and SSE are "L" shaped in plan view. At least one beam strip with a north-south orientation and at least one beam strip with a east-west orientation have been analyzed.