The Light company
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January 25, 1990
ST-HL-AE-3352
File No.: G20.1
10CFR50.12

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Electric Generating Station
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Responses to the
Request for Additional Information by
Sandia National Laboratory

Reference: Letter from Sandia National Laboratory
to the U.S.Nuclear Regulatory Commission
dated January 3,1990

Enclosed is information requested by Sandia National Laboratory (SNL) during the November 28-30, 1989 plant visit. The documentation of the class 1E 125vDC battery chargers which J. Lambright requested for the cabinet anchorage qualification is enclosed as Attachment 1. Attachment 2 contains a response to Question 2 of the list of questions provided by SNL at the meeting. These responses are in addition to those provided during the site visit.

If you should have any questions on this matter, or the attachments, please contact Mr. A. W. Harrison at (512) 972-7298 or myself at (512) 972-8530.

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M. A. McBurnett
Manager
Support Licensing

MAM/SDP

Attachments: (1) Information regarding seismic qualification of the Battery Charger
(2) Response to Question #2 from the SNL Site Visit

Good Drawings
To: Reg Files

cc: w/o attachments

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ATTACHMENT 1

Information Requested on Class 1E Battery Chargers:

Attached is documentation of the seismic qualification testing of and installation drawings for the class 1E Battery Chargers which were observed during the plant walk down.

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SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
MASTER LISTING OF SEISMIC AND DYNAMIC QUALIFICATION SUMMARY AND STATUS OF SAFETY RELATED EQUIPMENT

UTILITY: HOUSTON LIGHTING & POWER CO. DOCKET NO.: 50-498/499
A/E: BECHTEL ENERGY CORPORATION NSSS: WESTINGHOUSE

SAFETY SYSTEM: DJ FUNCTION: SUPPORT FOR OTHER SAFETY SYSTEMS

	TAG NUMBER	EQUIPMENT: TYPE / DESCRIPTION / REMARKS	MANUFACTURER / MODEL NUMBER / PO NUMBER	QUALIFICATION REPORT NO.	LOCATION: BLDG / ELEV (FT-IN)	MTG	LOADS CONSIDERED: SEIS / REQD/OBE / ZPA	OTHER DYNAMIC H/V (G) / SSE H/V (G)	QUAL METHOD: ANALYSIS / TEST FRQ / TEST DIR	LOWEST NAT: F/B (HZ) / S/S (HZ) / V (HZ)	STATUS: QUAL	INST	RRS FIGURE REFERENCES	
1	3E232EBC047A	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		010 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047B	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		010 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047C	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		010 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047D	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		010 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBCC47E	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		035 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047F	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		035 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047G	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		060 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4
1	3E232EBC047H	BATTERY CHGR	PWR CONVERSION	14926-8100-01012-BPO	EAB	CF	X N/A		N/A	14 HZ	A	A	4N1695-39081 4N1695-39087	1
2		125VDC CLASS 1E BATTERY CHARGER	350-130-300		060 00		0.2	/ 0.15	MF	16 HZ			4N1695-39089 4N1695-39082	2
3			8100				0.4	/ 0.25	BB	16 HZ			4N1695-39088 4N1695-39090	3
4		N/A												4

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3.0 TEST PROCEDURES AND RESULTS

3.1 Specimen Mounting and Orientation Procedures

The Circuit Breaker specimens were bolted to a Wyle-furnished vertical mounting fixture and the fixture, in turn, was welded to the Wyle Seismic Simulator Test Table. The Battery Charger specimen's two-channel base was welded to the test table using approximately 4-inch-long fillet welds, two per channel, on one-foot centers, and 1 1/2-inch-long fillet welds on each end of the two-channel base. The mounting of the specimens simulated the actual in-service configuration as closely as practical. The specimens were initially oriented such that their longitudinal axes were colinear with the longitudinal axis of the test table, as shown in Photograph 1. For the second axis of tests, the specimens were rotated 90 degrees in the horizontal plane.

3.2 Resonant Search Procedures

A low-level (approximately 0.2 g horizontally and vertically) biaxial sine sweep was performed to determine resonances in both the side-to-side/vertical and the front-to-back/vertical orientations. The sweep rate was 1 octave per minute from 1 Hz to 60 Hz.

3.2.1 Resonant Search Results

The resonant search tests are described in Table I including test numbers, axes, and input accelerations.

Transmissibility plots of the specimen response accelerometers (divided by the control accelerometers) from the resonant search tests (1 and 14) are presented in Appendix II.

3.3 Random Multifrequency Test Procedures

The specimens were subjected to 30-second duration simultaneous horizontal and vertical phase-incoherent inputs of random motion consisting of frequency bandwidths spaced one-third octave apart over the frequency range of 1 Hz to 40 Hz. The amplitude of each one-third octave frequency was independently adjusted in each axis until the TRS enveloped the RRS. The resulting table motion was analyzed by a spectrum analyzer at a damping of one percent (1%) for Operating Basis Earthquake (OBE) tests and at a damping of two percent (2%) for Safe Shutdown Earthquake (SSE) tests, and plotted at one-third octave frequency intervals over the frequency range of interest. Additional plots of the control accelerometers at dampings of 2 and 5 percent for the OBE tests and 3 and 5 percent for the SSE tests are presented in Appendix III and IV of this report.

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Attachments:
Vendor Drawing # 1A926- A100 -01020 EDO
8100 -01016 EDO Battery Charger (for field placement)
BEC Drawing # 3M11-9-C-34019 Concrete MEAB Eqpt Foundation Details

Question 2:

The support to frontline system dependency matrix (Table 5.3-2) indicates that EAB HVAC is required for both High and Low pressure Injection pumps. However, the FSAR Section 9.4.2.2 states that the ECCS pump rooms are cooled by the FHB HVAC or by supplementary coolers. The PSA system description for SI assumption J.2. (Book 10) states with respect to ECCS pump room cooling "...it is assumed that room cooling is not necessary due to natural convection that will be available." What justification exists for this assumption? Why does Table 5.3-2 indicate that the High and Low Pressure Injection pumps depend on EAB HVAC? (If the intent of Table 5.3-2 is to show that the electrical supply for the ECCS pumps depends on EAB HVAC, this is not necessary because that dependence is already indicated in Table 5.3-1.)

Response:

a. The PRA assumed that room cooling is not necessary due to natural convection that is available. This was an assumption based on a walkdown of the ECCS pump rooms and the surrounding area of the Fuel Handling Building (FHB). In 1989 a decision was made to further investigate this assumption. The results of this investigation are summarized below.

   Two transient heatup analyses were performed to determine time-temperature profiles for an ECCS room in post-accident conditions without the room coolers functioning. The first study assumed that FHB HVAC operation was successful, but did not take credit for natural convection from the ECCS room to the remainder of the FHB. The result of the study was a temperature profile over a seven day period. A calculation has been performed which demonstrates the ability of the ECCS equipment to function in this environment. The calculation is based on seven days operation at an enveloping temperature.

   A second analysis has been performed which does not assume the availability of FHB HVAC. This analysis also did not take credit for natural convection between the ECCS pump room and the remainder of the FHB. In this case, the enveloping temperature was reached in three days.

   These time frames are of sufficient duration to ensure that any needed repairs can be made or alternate methods of cooling made available.

b. The support to frontline table entry is made to ensure consistent treatment of the EAB HVAC failure and it's effect on the electrical distribution system. Failure of this HVAC system does not immediately fail any equipment. For this reason, there is a table note (Note S in Table 5.3-1, Note T in Table 5.3-2) to indicate the assumed failure. The entry is primarily a "consistency" entry to reduce coding errors.

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