

The Light company

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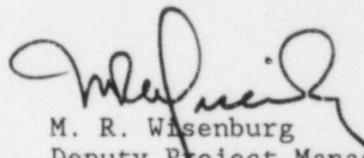
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Additional Information Concerning the QDPS
Noise, Fault, Surge, and
Radio Frequency Interference Test Report

Reference: A. QDPS Noise, Fault, Surge, and Radio Frequency Interference
Test Report, M. R. Wisenburg, HL&P Letter to Vincent S.
Noonan, NRC; dated December 5, 1986; ST-HL-AE-1824

During a conference call with the NRC staff on March 24, 1987, several questions were raised concerning the QDPS Noise, Fault, Surge, and RFI Test Report submitted by Reference A. Responses to those questions are provided in the attachment.

If you should have any questions on this matter, please contact Mr.
M. E. Powell at (713) 993-1328.


M. R. Wisenburg
Deputy Project Manager

THC/yd

Attachment: Responses to Questions Concerning the QDPS Test Report

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Houston Lighting & Power Company

ST-HL-AE-2018
File No.: G9.17, J41.1
Page 2

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South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Responses to Questions Concerning
the QDPS Test Report

1. Question:

Why are the test results in Appendix A which indicate adverse effects not considered problems at STP (particularly Table A7)?

Response:

The results of individual tests were evaluated based on the acceptance criteria of Section 6 and summarized in Section 7. The result was that overall system performance was acceptable. Specific test cases are addressed in Table 1.

2. Question:

Tables A-11 and A-12 indicate that fuses were blown. Table A-12 tests were repeated in Table A-13 with the fuses bypassed; however Table A-11 tests were not repeated. Explain the differences.

Response:

As discussed in Table 1, the display tests (C50, C51, C75A, and C75B) were special, nonrequired tests. The display modules are not used as isolators at STP; isolation is performed at the DPU end of each DPU to display datalink which requires isolation.

3. Question:

The test report indicates that failures occurred during testing. Provide references to demonstrate that the faults did not propagate through the isolation boundary.

Response:

Section 6.1.1 and 6.1.2 discuss the acceptance criteria that only the faulted data channel be affected by the fault. Section 7 states the test results based on the Section 6 acceptance criteria. Tables 7-1 through 7-5 summarize the specific test results. Section 8 (refer to the bottom of page 8-1) specifically indicates that the faults were not propagated through the isolation barrier or picked up wire to wire. This conclusion was reconfirmed through discussions with Westinghouse personnel on March 25, 1987.

4. Question:

Why is 3 V/M an appropriate acceptance criterion?

Response:

SAMA PMC 33.1-1978 Class I acceptance criterion requires satisfactory operation with an RFI field strength of 3 V/M. Class II acceptance criterion requires satisfactory operation with an RFI field strength of 10 V/M. STP uses 5W transceivers in the 450 MHz Band. A field strength of 10 V/M corresponds to a 5W transmitter at 1.5M and a field strength of 3 V/M corresponds to this transmitter at 5M. RFI, at the Class II level, in this band only affected the display unit and this was on a temporary basis. STP has no transmitters in the 50-76 MHz range of susceptibility for the DPU to display datalinks. As discussed in Table 1, the temporary loss of function of a single display unit has no adverse impact on plant safety. Based on the system performance demonstrated by these tests, all anticipated RFI concerns have been satisfactorily addressed. We are confident that should any specific RFI effects be encountered in the future, they can be addressed on an individual basis.

5. Question:

Internally, the QDPS cabinets do not meet the separation criterion of RG 1.75. Provide references to show that the testing was performed in a configuration to justify the acceptability of this deviation.

Response:

Section 3-1 (3rd paragraph) indicates that separation is provided within the cabinets through the use of junction boxes and flexible metallic conduit. The testing was conducted in this configuration for a representative number of cases. Section 5.1.1 (1st paragraph) also discusses the arrangement. No special separation was provided between these flexible conduits or between these conduits and other cables within the cabinet. Performance of the tests in this configuration, with acceptable results (as discussed in Item 4 above) proves that the existing design is adequate and no special separation need be provided for cables entering or within the cabinets.

Table 1
Evaluation of Specific Test Failures

<u>Table</u>	<u>Test</u>	<u>Evaluation</u>
A-3	N 80	Tests on the display units were additional, nonrequired tests with respect to fault isolation capability. These units are not used at STP to provide Class 1E train to train isolation as discussed in RG 1.75 and IEEE 384. The display units provide only signal buffering to limit fault propagation within a single Class 1E train. The application of strong EMI and RFI fields is considered an event of relatively short duration. The loss of function of a single display unit has no adverse impact on plant safety.
A-6	N 93	
A-9	S 46	
A-11	C 50	
A-11	C 75A	
A-11	C 75B	
A-7	RF 11	The DPU to display unit datalinks are susceptible to RFI in the 50-76 MHZ range. The RFI test was based on SAMA standard PMC 33.1-1978. The entire system passed the Class I test (3 V/M field strength). The system passed the Class II test (10 V/M field strength) with the exception of the DPU to display datalinks and display units in the susceptible band. It should be noted that only the high speed DPU to display datalinks operating at 64K baud and the display units were affected. No false operation of the control or protective functions was achieved, even with a Class III field strength of 20 V/M. In addition, STP has no significant sources of RFI in the susceptible band. Radios used at the STP site operate in the 450 MHZ band and the paging system operates in the 175 MHZ band. The potential application of strong RFI fields is considered an event of relatively short duration, and the loss of function of a display unit for this duration has no adverse impact on plant safety.
	RF 21	
	RF 22	
	RF 33	
	RF 34	
	RF 35	
	RF 45	
	RF 54	
	RF 71	
	RF 72	

A-7 RF 77
 RF 79

These tests correspond to keying a transmitter near a display unit. Only a single display unit would be affected, and only while the transmitter was keyed. This temporary disruption has no adverse impact on plant safety.

A-12 All
A-13 All

In most cases, a blown fuse helped to clear the fault, when the fuse was installed in the circuit. These tests were repeated with the fuses shorted to demonstrate that isolation is not dependent upon the fuses. All components damaged were located on the fault side of the isolation boundary. No fault propagated through the isolation boundary; therefore there is no adverse impact on plant safety.