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ELECTRO SWITCH

CORP.

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ENGINEERING TEST REPORT

NO. 1981-2

NOVEMBER 20, 1975

REPORT OF

SEISMIC QUALIFICATION TESTS

OF THE SERIES 10, AND SERIES 20 SWITCHES

MANUFACTURED BY

ELECTRO SWITCH CORP.

WEYMOUTH, MASS. 02188

ENGINEERING TEST LABORATORY
ELECTRO SWITCH CORP.

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1.0 PURPOSE

- 1.1 Determine conformance of design with respect to IEEE 344-1975, Recommended Practices for Seismic Qualification of Class IE Electric Equipment for Nuclear Power Generating Stations.

2.0 CONCLUSIONS

- 2.1 The results of seismic vibration, and associated tests performed to determine conformance of design with respect to IEEE 344-1975 of the Series 10, and Series 20 switches indicate an ability to complete the tests with no evidence of loss of functional capability, physical damage, or evidence of switch discontinuity.

3.0 MATERIAL

- 3.1 Eight samples, Series 10K, 10L, 20K, and 20L switches. 45° cam action, 3 position limited (ON1-OFF-ON2), built by the Assembly Dept. of the Electro Switch Corp. using normal production processes and tools.

3.2	Sample Qty.	ELECTRO P/N	No. of Decks	Weight (Oz.)	Notes
	One	10KB-2212C8	12	14	
	One	10LB-2212C8	12	18	4 lights installed
	One	10LB-2206C8	6	12	4 lights installed
	One	20KB-2210C8	10	15	
	One	20LB-2206C8	6	14	4 lights installed

4.0 PROCEDURE

- 4.1 EXAMINATION - Each sample was examined for conformance to ELECTRO requirements for materials, design, construction, dimensions, finish, and workmanship.
- 4.2 OPERATION - Each sample was operated manually, and the switch circuits checked electrically to determine positive action, and making and breaking of the required circuits in all positions and in all decks. Indicator lights of Series 10L, and 20L switches were energized with rated voltage and checked for function.

4.3 SEISMIC VIBRATION

- A. Samples mounted by normal means and subjected to a biaxial resonance survey followed by biaxial seismic vibration with a random input. ELECTRO P/N 10LB2212C8 was rear supported for test.
- B. The closed circuit poles of each sample were wired in series, and the open circuit poles were wired in parallel and monitored for switch closed circuits that open, or switch open circuits that close during test. Indicator lights of Series 10L, and 20L switches were energized with rated voltage and observed for failure during test.
- C. The Required Response Spectrum is included in this report as Enclosure (1), Figure 1.

4.4 OPERATION

4.5 EXAMINATION

5.0 TEST LABORATORIES

- 5.1 (a) In plant, Weymouth, Mass.
(b) Acton Environmental Testing Corp., Acton, Mass.

6.0 TEST PERSONNEL

- 6.1 Electro Switch Corp.
 - (a) J. R. Qualey
 - (b) P. B. Wight
- 6.2 Acton Environmental Testing Corp.
 - (a) R. Gilfoy
 - (b) C. Pilotte
 - (c) D. McLaughlin
 - (d) K. Martini

7.0 RESULTS

7.1 EXAMINATION - Initial

All samples were found to conform to ELECTRO requirements for materials, design, construction, dimensions, finish, and workmanship.

7.2 OPERATION

All samples make and break the required circuits in all positions and in all decks with clean and positive mechanical action before and after the seismic vibration tests. All indicator lights were functional.

7.3 SEISMIC VIBRATION

All samples completed the seismic vibration tests with no evidence of mechanical damage or deterioration, and with no evidence of switch contact chatter during the tests. All indicator lights remained functional during the tests.

A.E.T.C. Report Nos. 11944-A (Series 10K, 12 decks), 11944-B (Series 10L, 12 decks), 11944-C (Series 10, 6 decks), 11944-D (Series 20K, 10 decks), and 11944-E (Series 20L, 6 decks) are included in this report as Enclosure 2.

Visicorder oscillograms of the accelerometer measurements are on file at Electro Switch Corp.

7.4 EXAMINATION - Final

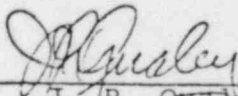
All samples were disassembled and examined at Electro Switch Corp. at the completion of all tests.

Examination of each sample revealed no evidence of failure, cracks, distortion or deformation as a result of the tests.

We certify that this is a true
report of the test conditions
applied and the results obtained.

Respectfully submitted

ELECTRO SWITCH CORP.



J. R. Qualey
Test Engineer

ENCLOSURE (1)

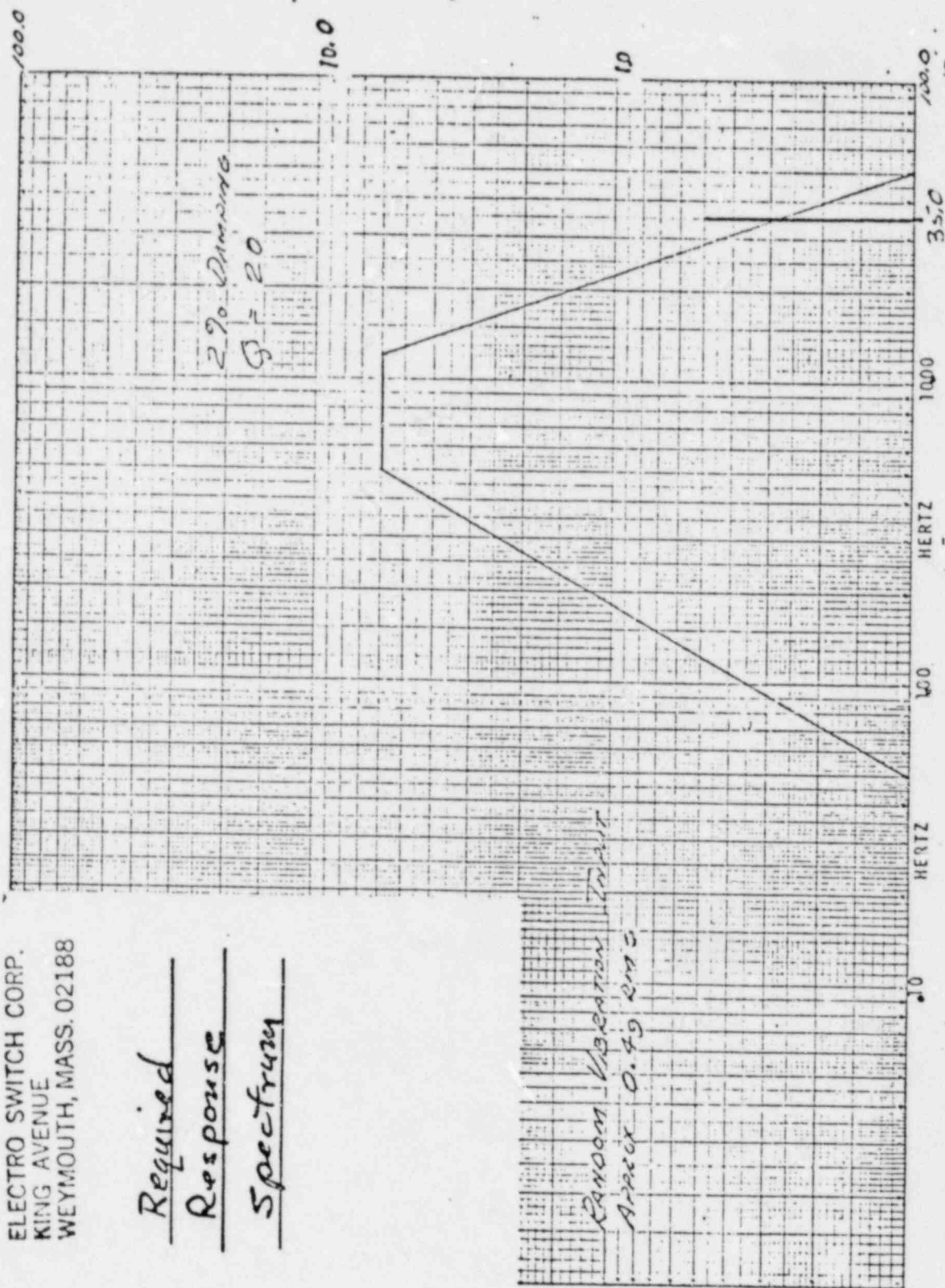
REQUIRED RESPONSE SPECTRUM

ELECTRO TEST REPORT NO. 1981-2

ELECTRO SWITCH CORP.
KING AVENUE
WEYMOUTH, MASS. 02188

Required Response Spectrum

ACCELERATION (g's)



1981-2
ELECTRO P.D. No. 71400

Figure 1

ENCLOSURE (2)

SEISMIC VIBRATION TEST REPORTS

ACTON ENVIRONMENTAL TESTING CORP.

REPORT NOS. 11944-A, 11944-B, 11944-C,
11944-D, and 11944-E

ELECTRO TEST REPORT NO. 1981-2