

SHOREHAM SQRT FORMS
FOR EQUIPMENT QUALIFICATION
REVIEW AT SITE

March 13, 1981

Long Island Lighting Company
Stone and Webster - AE
General Electric - NSSS

8108170173

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

FOREWORD

In accordance with the NRC letter dated January 28, 1981 from Mr. K.L. Tedesco, submitted herewith are the Qualification Summary of Equipment (SQRT) forms completed for the equipment items selected by the NRC. Reference 5, referred to in Section II .10 of the SQRT forms for selected NSSS equipment items 1-4, is given in the following page.

Shoreham equipment lists at qualification level were submitted via SNRC-531 dated January 30, 1981. For items in the NSSS scope (items 1-12), the qualification report cited in the equipment list is generally the summary report based on the more detailed qualification report referenced in the SQRT form.

In a few cases, information provided in the equipment list may have been revised. Therefore, where discrepancies, if any, occur, the information on these summary forms supercedes that in the equipment list. As stated in submittal SNRC-535 dated March 5, 1981, a revised equipment list will be submitted prior to the audit.

REFERENCE 5 FOR SELECTED ITEMS 1-4

<u>Panels</u>	<u>Equipment Device List</u>	<u>Assembly Drawing</u>
C61-P001	368X179TF	865E266TF
H11-P601	238X750TF	807E115TF
H11-P602	238X751TF	807E131TF
H11-P603	238X905TF	807E251TF
H11-P608	PL791E507TU	791E597BB
H11-P609	238X757TF	807E102TF
H11-P611	238X759TF	807E103TF
H11-P612	238X912TF	828E184TF
H11-P613	238X913TF	115D6065TF
H11-P616	238X762TF	807E121TF
H11-P617	238X240TF	807E451TF
H11-P618	238X767TF	791E574TF
H11-P620	238X769TF	115D6224TF
H11-P621	238X765TF	115D6199TF
H11-P622	238X770TF	115D5272TF
H11-P623	238X771TF	115D6273TF
H11-P626	368X248TF	115D6186TF
H11-P627	368X249TF	115D6187TF
H11-P628	238X763TF	115D6178TF
H11-P631	368X253TF	133D9797TF
H11-P635	328X232TF	828E480TF
H11-P636	328X292TF	828E481TF
H11-P654	368X416TF	914E104
H11-P655	368X417TF	866E475

EQUIPMENT ITEMS SELECTED FOR AUDIT BY
MRC SORT AT SHOREHAM NUCLEAR POWER STATION

<u>Item</u> <u>No.</u>	<u>Stone & Webster</u> <u>Identification No.</u>	<u>General Electric Master</u> <u>Parts List (MPL) No.</u>
1	1H11*PNL-613	H11 P613
2	1H11*PNL-618	H11 P618
3	1H11*PNL-628	H11 P628
4	1H11*PNL-635	H11 P635
5	1H21*PNL-10	H21 P010
6	1H21*PNL-22	H21 P022
7	1H21*PNL-36	H21 P036
8	1C61*PT 006	C61 N006
9	1E32*PDT035	E32 N059
10	1B31*MOV031	B31 F023
11	1C41*P-024	C41 C001
12	1C41*EV 010	C41 F004
13	1R24*MCC1123	
14	1R24*PNL-G1	
15	1T48*RC-002	
16	1T48*PNL-68	
17	1T46*L/U059	
18	1E11*RO 158	
19	1E21*RO 095	
20	1R43*G-102	
21	1R23*T-102	
22	1M50*PNL-04	
23	1H11*PNL-SMP	
24	1R35*T-201	
25	1M50*LS 002	
26	1R24*MCC1110	

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SORT Audit Items

Item 1

Mark No. 1H11*PAL-613

GE No. H11P613

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.: _____

1. Utility: LILCO Type: PWR

2. NSSS: GE 3. A/E: Stone & Webster BWR: 4 MK II

II. Component Name

Control Room Panels 36" Wide

1. Scope: ☒ NSSS ☐ BOP

2. Model Number: H11-P613, H11-P620, H11-P623, Quantity: 9

H11-P626, H11-P627, H11-P628, H11-P631

3. Vendor: General Electric Company

4. If the component is a cabinet or panel, name and model no. of the devices included: _____

As per attached device list

5. Physical Description a. Appearance: Vertical/Bench Boards

b. Dimensions: As per attached device list

c. Weight: _____

6. Location: Building: Control Room, Relay Room

Elevation: 63 ft, 44 ft.

7. Field Mounting Conditions ☒ Bolt (No. all, Size 5/8)
☐ Weld (Length _____)
☐ _____

8. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

S/S: 14 Hz F/B: >33 Hz V: >33 Hz

9. a. Functional Description: As on attached device list for each panel

b. Is the equipment required for ☒ Hot Standby ☐ Cold Shutdown
☐ Both _____

10. Pertinent Reference Design Specifications: Reference 5

III. Is Equipment Available for Inspection in the Plant: ☒ Yes

☐ No

IV. Equipment Qualification Method: Test: Similarity to tested Clinton H22-P028 panel

Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by General Electric Company, SAI QA 29-80-PA
(Name of Company or Laboratory and Report No.)

V. Vibration Input:

1. Loads considered: 1. ☒ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only 4. ☐ Other (Specify) _____ 5. ☐ Combination of _____
6. Method of combining RRS: ☐ Absolute Sum ☐ SRSS ☒ Not Applicable
(Other, specify) _____
2. Required Response Spectra (attach the graphs): As attached in Section 2.0
3. Required Acceleration in Each Direction:
S/S = 0.5g F/B = 0.5g V = 0.5g

VI. Qualification by Test, then Complete:

☒ random

1. ☐ Single Frequency ☒ Multi-Frequency: ☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. Number of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)
4. Frequency Range: 1 - 33 Hz
5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graphs)
☐ No
6. Input g-level Test at S/S = 4 F/B = 4 V = 4
7. Laboratory Mounting:
 1. ☐ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☒ clamped
8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
9. Test Results including modifications made: The tested panel successfully retained its structural integrity during the test.
10. Other tests performed (such as fragility test, including results): Some instruments were independently tested to determine their individual seismic capability.

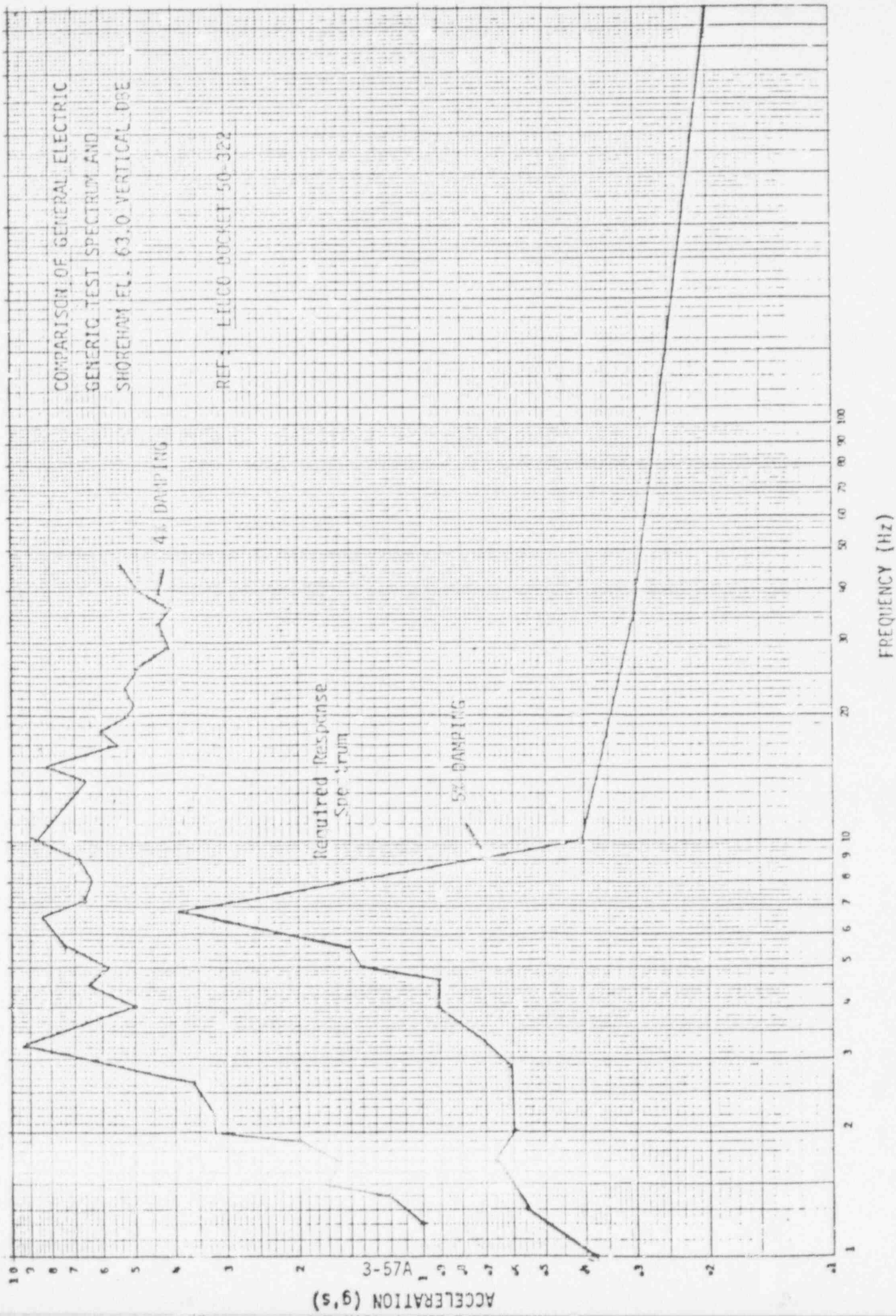
CONTROL ROOM PANELS CLASS IE EQUIPMENT

System: Nuclear Steam Supply Shutoff
Process Instrument Panel

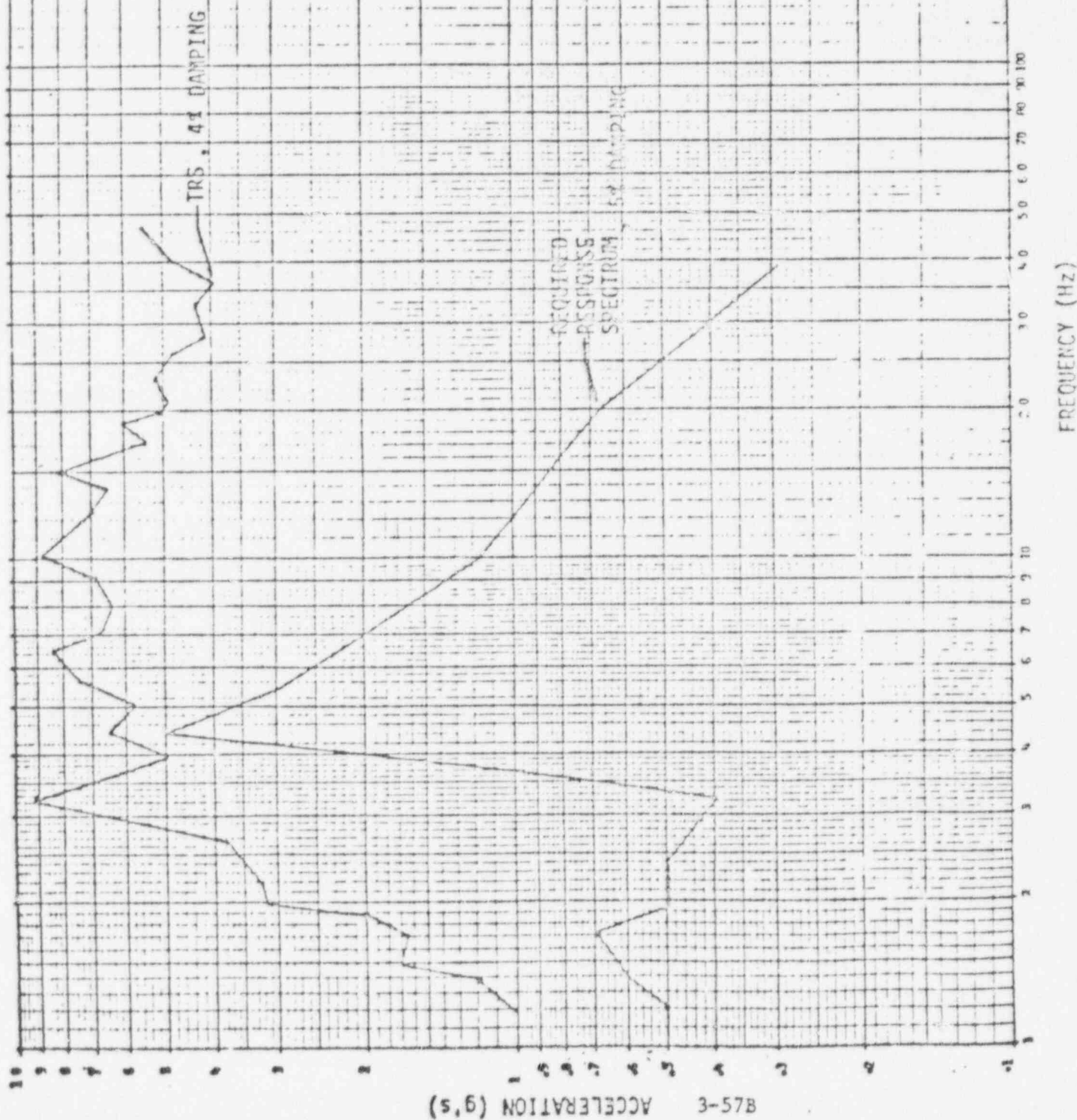
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COMPARISON OF GENERAL ELECTRIC
GENERIC TEST SPECTRUM AND
SHOREHAM EL. 63.0 VERTICAL DSE

REF: LILCO BOOKLET 50-322



COMPARISON OF GENERAL ELECTRIC
 CENTRIC TEST SPECTRUM AND
 SHOREMAN EL. 63.0° HORIZONTAL DBE
 (Ref: LILCO Deck # 50-322)



QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: LILCO

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR 4 MK II

II. Component Name

Control Room Panels 60" wide and 72" wide

1. Scope: ☒ NSSS ☐ BOP

2. Model Number: H11-P612, H11-P617, H11-P618,

Quantity: 4

H11-P654

3. Vendor: General Electric Company

4. If the component is a cabinet or panel, name and model no. of the devices included:

As per attached device list for each panel

5. Physical Description a. Appearance Vertical/Bench Boards

b. Dimensions As per attached device list for each panel

c. Weight

6. Location: Building: Control Room, Relay Room

Elevation: 63 Ft., 44 Ft.

7. Field Mounting Conditions ☒ Bolt (No. all, Size 5/8)

☐ Weld (Length)

☐

8. Natural Frequencies in Each Direction (Side Side, Front Back, Vertical):

S/S: 19 Hz

F/B: 27.4 Hz

V: 33 Hz

9. a. Functional Description: As per attached device list for each panel

b. Is the equipment required for ☒ Hot Standby ☒ Cold Shutdown

☒ Both

10. Pertinent Reference Design Specifications: Reference 5

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: LILCO

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR 4 MK II

II. Component Name

Control Room Panels 60" wide and 72" wide

1. Scope: ☒ NSSS ☐ BOP

2. Model Number: H11-P612, H11-P617, H11-P618,

Quantity: 4

H11-P654

3. Vendor: General Electric Company

4. If the component is a cabinet or panel, name and model no. of the devices included:

As per attached device list for each panel

5. Physical Description a. Appearance Vertical/Bench Boards

b. Dimensions As per attached device list for each panel

c. Weight

6. Location: Building: Control Room, Relay Room

Elevation: 63 Ft., 44 Ft.

7. Field Mounting Conditions ☒ Bolt (No. all, Size 5/8)

☐ Weld (Length)

☐

8. Natural Frequencies in Each Direction (Side-Side, Front-Back, Vertical):

S/S: 19 Hz

F/B: 27.4 Hz

V: 33 Hz

9. a. Functional Description: As per attached device list for each panel

b. Is the equipment required for ☐ Hot Standby ☒ Cold Shutdown

☐ Both

10. Pertinent Reference Design Specifications: Reference 5

III. Is Equipment Available for Inspection in the Plant: ☒ Yes

IV. Equipment Qualification Method: Test: Similarity to tested Cofrentes H13-P618 Panel

Analysis: General Electric Company, SAI QA-29-80-PA

Combination of Test and Analysis: _____

Test and/or Analysis by _____
(Name of Company or Laboratory and Report No.)

V. Vibration Input:

1. Loads considered: 1. ☒ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only 4. ☐ Other (Specify) _____ 5. ☐ Combination of _____
6. Method of combining RRS: ☐ Absolute Sum ☐ SRSS ☒ Not Applicable
(Other, specify)

2. Required Response Spectra (attach the graphs): Attached in Section 2.0

3. Required Acceleration in Each Direction:

S/S = 0.5 g F/B = 0.5 g V = 0.5 g

VI. If Qualification by Test, then Complete:

☒ random

1. ☐ Single Frequency ☒ Multi-Frequency: ☐ sine beat

2. ☐ Single Axis ☒ Multi-Axis

3. Number of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)

4. Frequency Range: 1 to 33 Hz

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graphs)
☐ No

6. Input g-level Test at S/S = 4 g F/B = 4 g V = 4.2 g

7. Laboratory Mounting:

1. ☐ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☒ clamped

8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: The Tested Panel Successfully retained its Structural integrity during the test.

10. Other tests performed (such as fragility test, including results): Some Instruments were Independently Tested to Determine their Individual Seismic Capability.

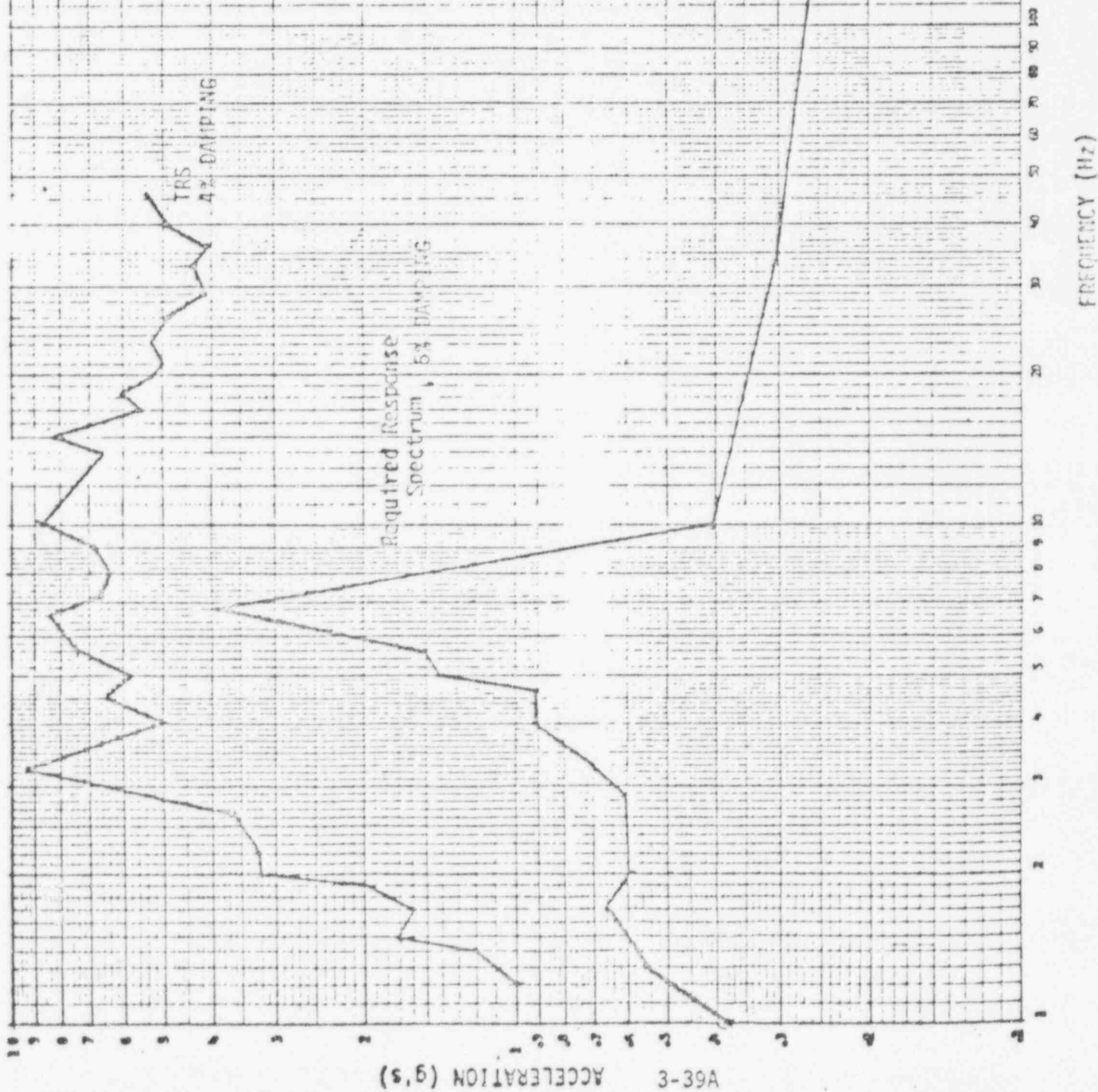
CONTROL ROOM PANELS CLASS IE EQUIPMENT

System: Div 2 Residual Heat Removal System Relay
Vertical Board

Location, Elevation: CB-44

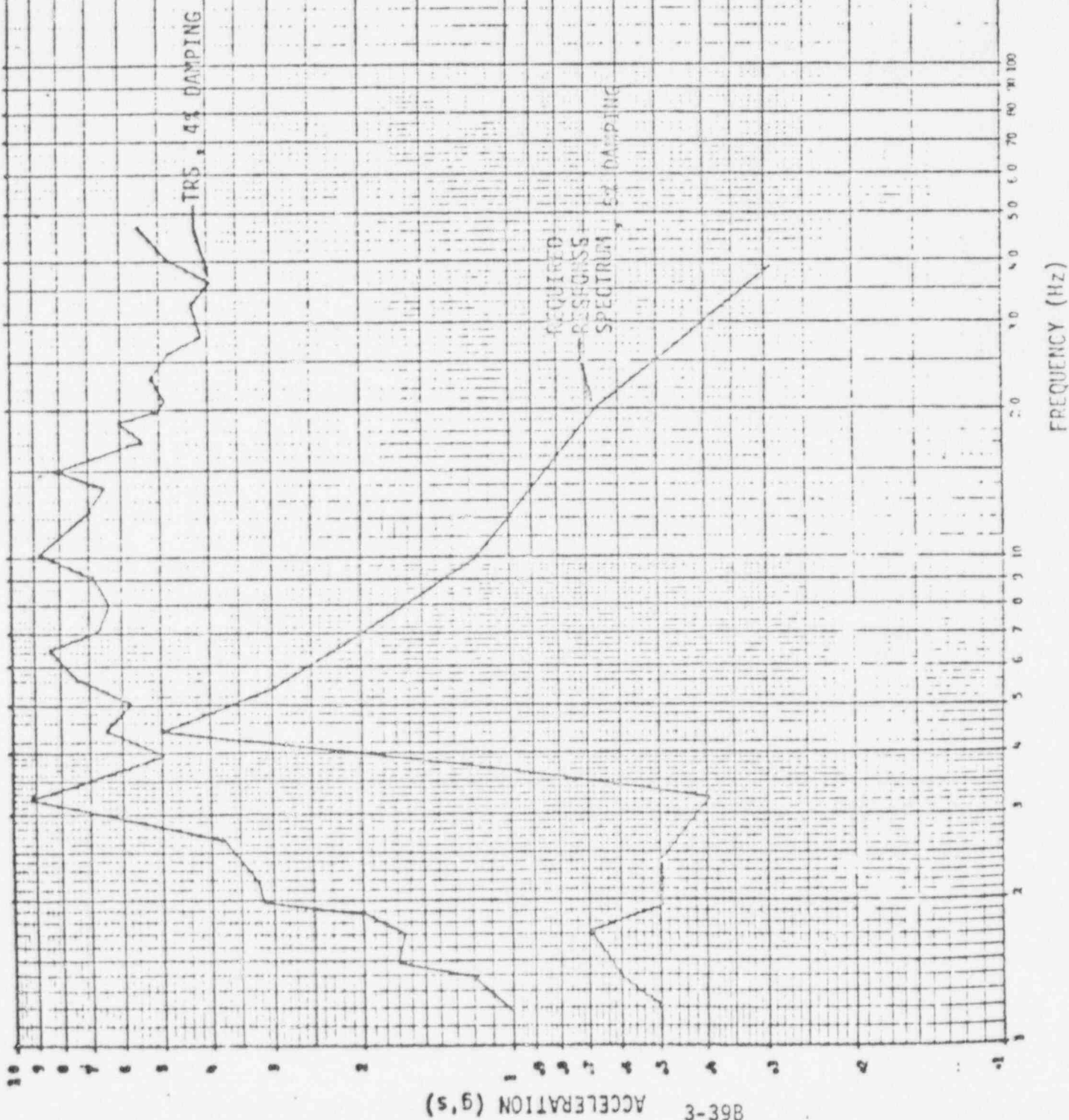
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COMPARISON OF GENERAL ELECTRIC
GENERIC TEST SPECTRUM AND
SHOREHAM EL 53.0 VERTICAL USE
(Ref: LILCO Docket # 50-322)



COMPARISON OF GENERAL ELECTRIC
GENERIC TEST SPECTRUM NO
SHOREHAM EL 63.0° HORIZONTAL DBE

(Ref: LILCO Docket # 50-322)



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 3

Mark No. 1H11*PNL-628

GE No. H11P628

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: LILCO

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR 4 MK II

II. Component Name

Control Room Panels 35" Wide

1. Scope: ☒ NSSS

☐ BOP

2. Model Number: H11-P613, H11-P620, H11-P623,

Quantity: 9

H11-P626, H11-P627, H11-P628, H11-P631

3. Vendor: General Electric Company

4. If the component is a cabinet or panel, name and model no. of the devices included:

As per attached device list

5. Physical Description

a. Appearance: Vertical/Bench Boards

b. Dimensions: As per attached device list

c. Weight:

6. Location: Building: Control Room, Relay Room

Elevation: 63 ft, 44 ft.

7. Field Mounting Conditions ☒ Bolt (No. all, Size 5/8)

☐ Weld (Length)

☐

8. Natural Frequencies in Each Direction (Side:Side, Front:Back, Vertical):

S/S: 14 Hz

F/B: >33 Hz

V: >33 Hz

9. a. Functional Description: As on attached device list for each panel

b. Is the equipment required for ☒ Hot Standby ☐ Cold Shutdown

☐ Both

10. Pertinent Reference Design Specifications: Reference 5

III. Is Equipment Available for Inspection in the Plant: [X] Yes

IV. Equipment Qualification Method: Test: Similarity to tested Clinton H22-P028 panel

Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by General Electric Company, SAI QA 29-80-PA
(Name of Company or Laboratory and Report No.)

V. Vibration Input:

1. Loads considered: 1. [X] Seismic only 2. [] Hydrodynamic only 3. [] Explosive only 4. [] Other (Specify) _____ 5. [] Combination of _____
6. Method of combining RRS: [] Absolute Sum [] SRSS [X] Not Applicable
(Other, specify)

2. Required Response Spectra (attach the graphs): As attached in Section 2.0

3. Required Acceleration in Each Direction:

S/S = 0.5g F/B = 0.5g V = 0.5g

VI. If Qualification by Test, then Complete:

[X] random

1. [] Single Frequency [X] Multi-Frequency: [] sine beat

2. [] Single Axis [X] Multi-Axis

3. Number of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)

4. Frequency Range: 1 - 33 Hz

5. TRS enveloping RRS using Multi-Frequency Test [X] Yes (Plot TRS on RRS graphs)
[] No

6. Input g-level Test at S/S = 4 F/B = 4 V = 4

7. Laboratory Mounting:

1. [] Bolt (No. _____, Size _____) [] Weld (Length _____) [X] clamped

8. Functional operability verified: [X] Yes [] No [] Not Applicable

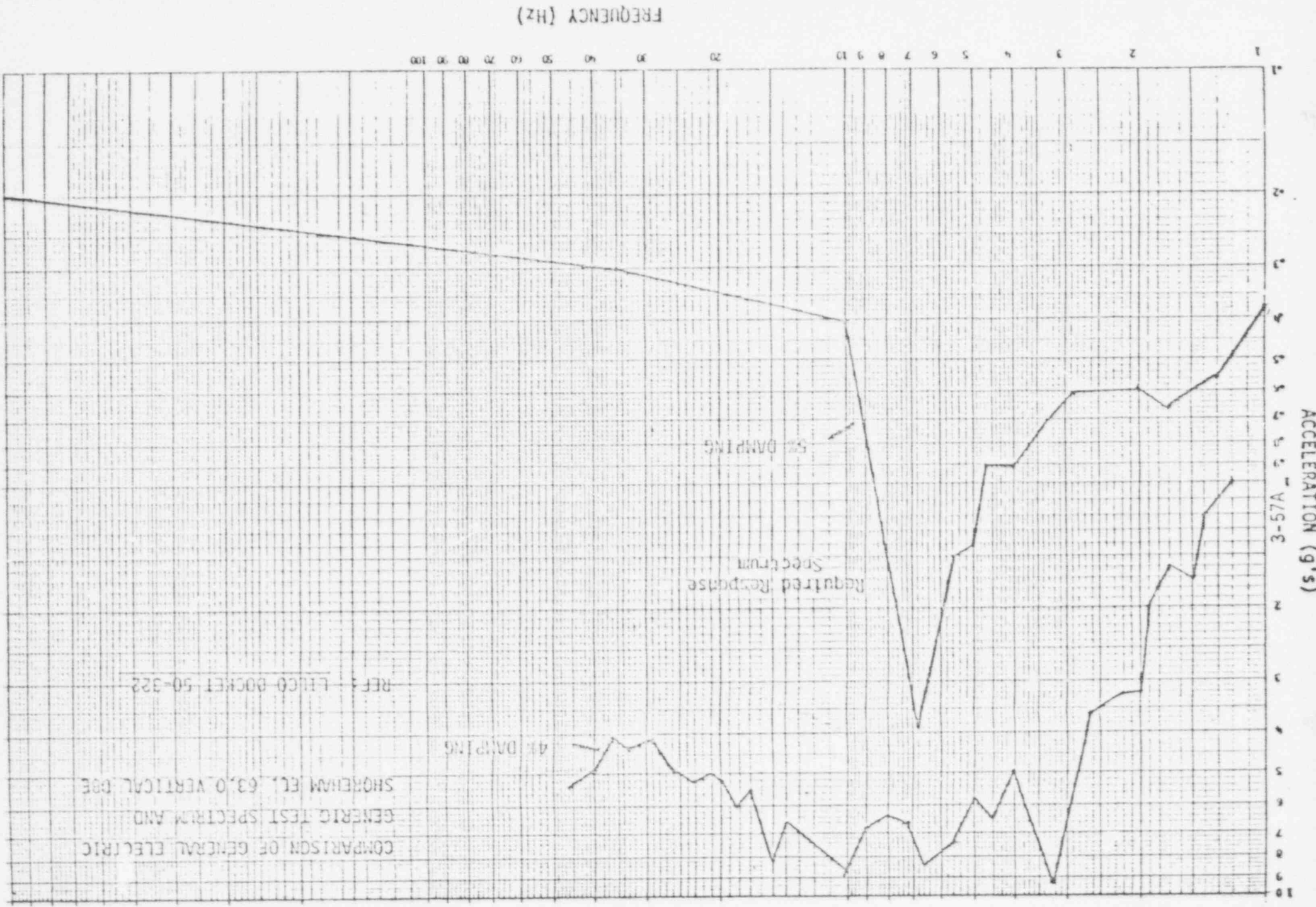
9. Test Results including modifications made: The tested panel successfully retained its structural integrity during the test.

10. Other tests performed (such as fragility test, including results): Some instruments were independently tested to determine their individual seismic capability.

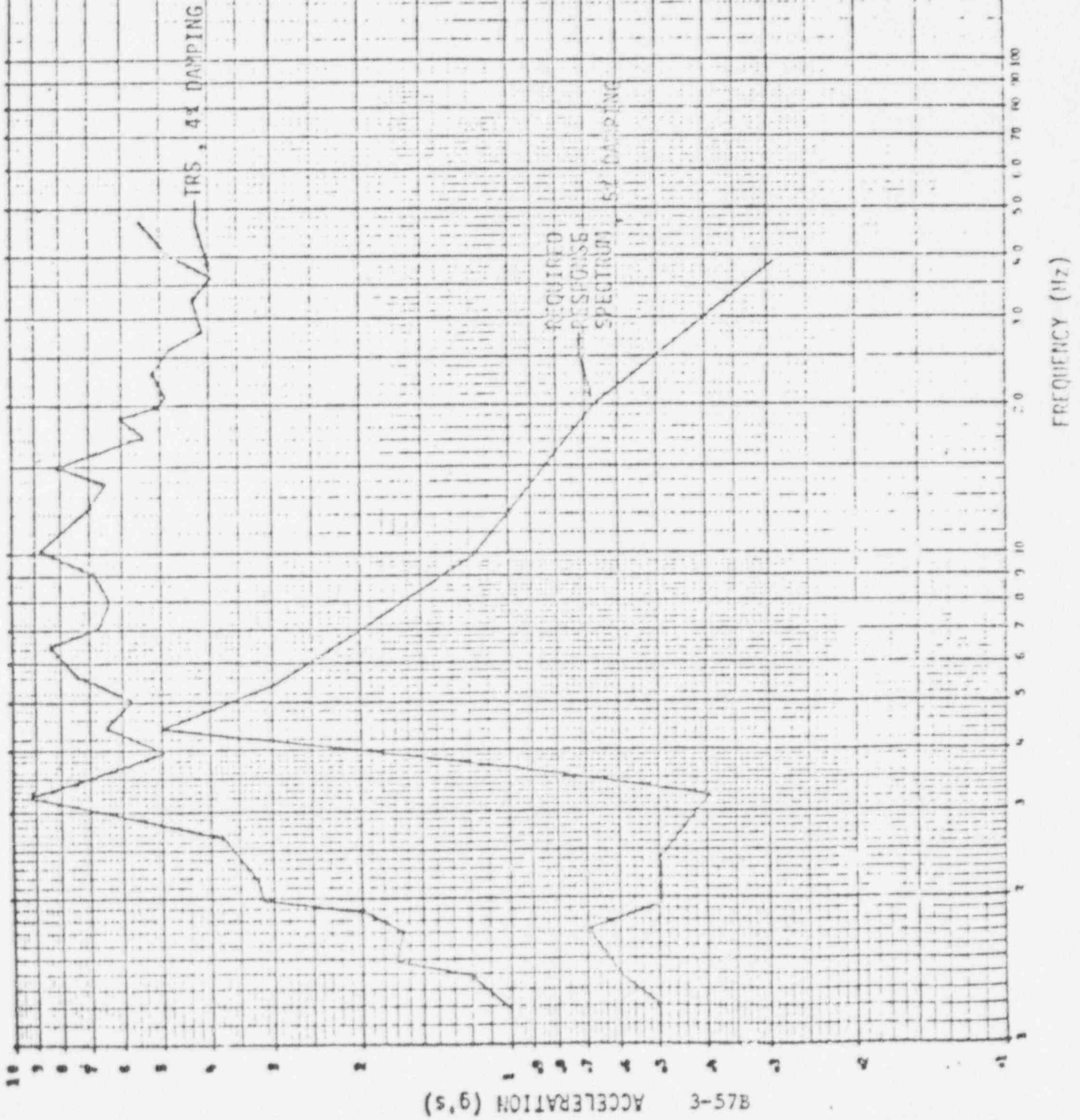
CONTROL ROOM PANELS CLASS IE EQUIPMENT

Location, Elevation: TB-44

3-63



COMPARISON OF GENERAL ELECTRIC
 CENTRIC TEST SPECTRUM AND
 SHOREMAN EL. 63.0° HORIZONTAL DSE
 (Ref: LILCO Docket # 50-372)



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 4

Mark No. 1H11*PNL-635

GE No. H11P635

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: Long Island Lighting Co.

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR 4 Mk II

II. Component Name

Control Room Panels

1. Scope: ☒ NSSS ☐ BOP

2. Model Number: H11-P635; H11-P636

Quantity: _____

3. Vendor: _____

4. If the component is a cabinet or panel, name and model no. of the devices included: _____

As attached

5. Physical Description a. Appearance _____

b. Dimensions As on attached device test for each panel

c. Weight Not available

6. Location: Building: Control Room

Elevation: 63 ft.

7. Field Mounting Conditions ☒ Bolt (No. all Size 5/8)
☐ Weld (Length _____)
☐ _____

8. Natural Frequencies in Each Direction (Side Side, Front:Back, Vertical):

S/S: 21 F/B: > 33 V: > 33

9. a. Functional Description: As on attached device list for each panel.

b. Is the equipment required for ☒ Hot Standby ☒ Cold Shutdown
☐ Both _____

10. Pertinent Reference Design Specifications: Reference 5

III. Is Equipment Available for Inspection in the Plant: ☒ Yes

☐ No

IV. Equipment Qualification Method: Test: By similarity to tested PWR-6 prototype
H-11 P671 panel

Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by General Electric Co. SAI QA-29-80-PA
(Name of Company or Laboratory and Report No.)

V. Vibration Input:

1. Loads considered: 1. ☒ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive
only 4. ☐ Other (Specify) _____ 5. ☐ Combination of _____
6. Method of combining RRS: ☐ Absolute Sum ☐ SRSS ☒ Not Applicable
(Other, specify) _____

2. Required Response Spectra (attach the graphs): Section 2

3. Required Acceleration in Each Direction:

S/S = 0.5g F/B = 0.5g V = 0.5g

VI. If Qualification by Test, then Complete:

☐ random

1. ☐ Single Frequency ☒ Multi-Frequency: ☐ sine beat

2. ☐ Single Axis ☒ Multi-Axis

3. Number of Qualification Tests: OBE 5 SSE 1 Other _____
(specify) _____

4. Frequency Range: 1-35

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graphs)
☐ No

6. Input g-level Test at S/S = 4.0g F/B = 4.0g V = 4.2g

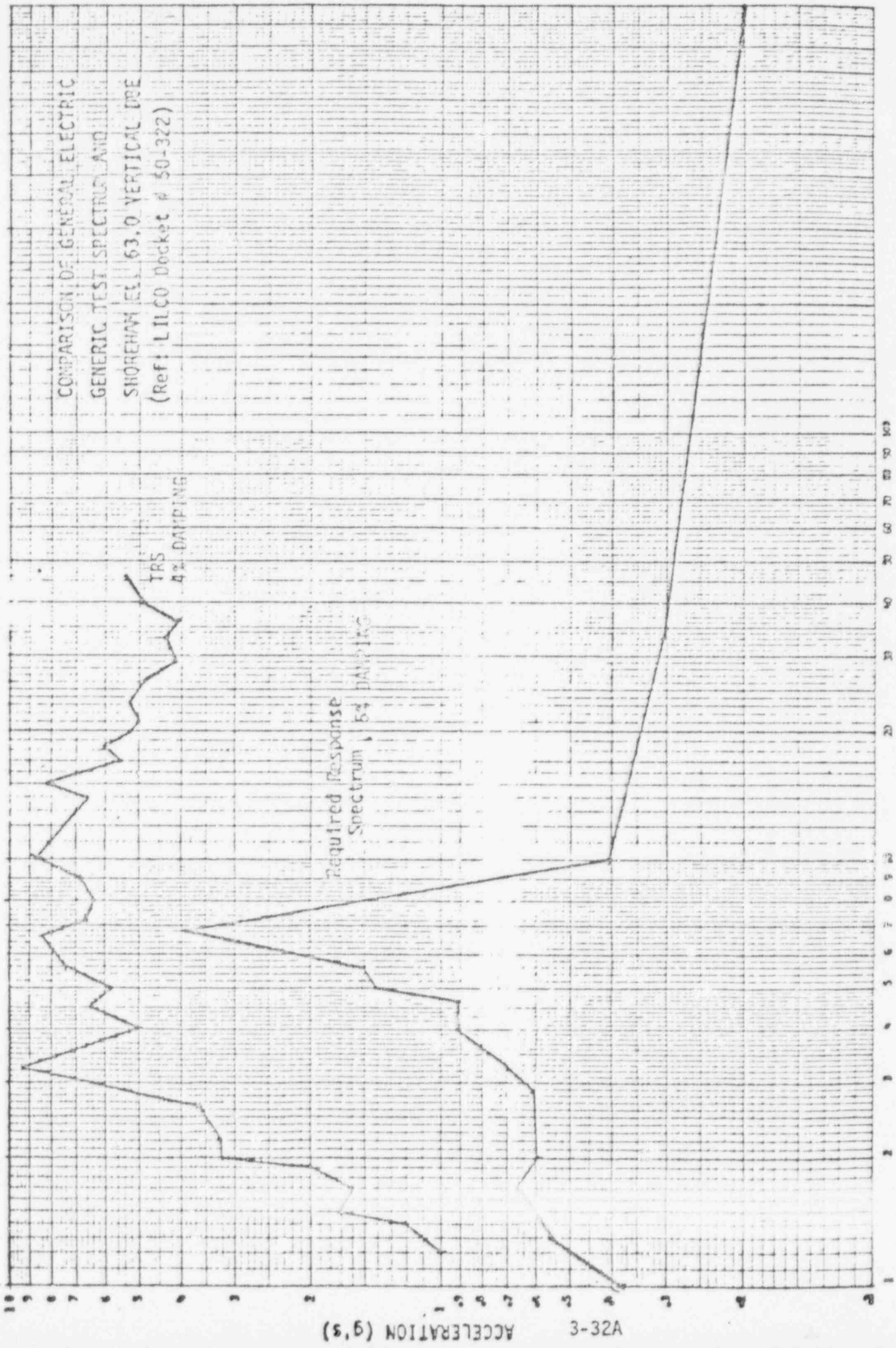
7. Laboratory Mounting:

1. ☐ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☒ clamped

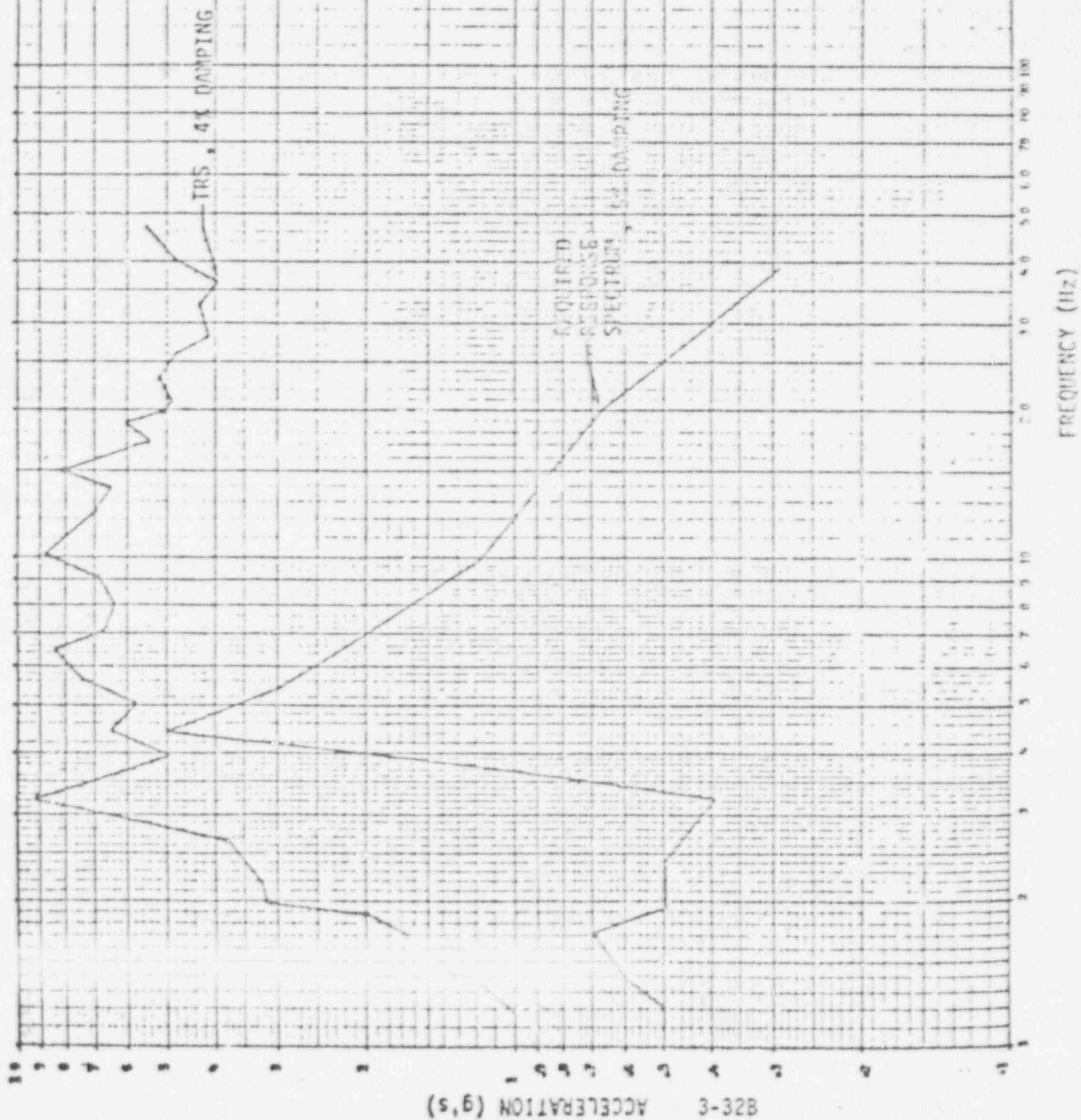
8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: The Tested Panel Successfully maintained its
structural integrity during the test.

10. Other tests performed (such as fragility test, including results): _____



COMPARISON OF GENERAL TIEDRIG
 GENERAL TEST SPECIFICATIONS
 SHOREHAM EL. 63.0' HORIZONTAL DIE
 (Ref: LILCO Docket # 50-342)



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 5

Mark No. 1H21*PNL-10

GE No. H21P010

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: Long Island Lighting Co.

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR 4 MK II

II. Component Name

48" Wide Local Panels

1. Scope: ☒ NSSS ☐ BOP

(H21-) P001, P006, P009, P010,

Quantity: 8

2. Model Number:

P019, P025, P026, P041

General Electric Company

3. Vendor:

4. If the component is a cabinet or panel, name and model no. of the devices included:

As Attached

5. Physical Description

a. Appearance: Open Rack

b. Dimensions: 48" x 84" x 30"

c. Weight: 900 Pounds

6. Location: Building: Secondary Containment

Elevation: 8 ft. thru 78 ft.

7. Field Mounting Conditions ☐ Bolt (No. _____, Size _____)

☒ Weld (Length 1"-12")

☐

8. Natural Frequencies in Each Direction (Side-Side, Front-Back, Vertical):

S/S: 10.6, 18.3, 41.3, 15.1, 22.6, 38.4, V: 15.1, 28.5, 46.9, 59.8
44.2, 55.1

9. a. Functional Description: As on panel device list attached for each panel.

b. Is the equipment required for ☒ Hot Standby ☐ Cold Shutdown
☐ Both

10. Pertinent Reference Design Specifications: 22A4016

111. Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

Equipment Qualification Method: Test: By similarity Analysis to tested Zimmer/
LaSalle Plant(s) Local Panel
Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by SAI Report No. SAI-029-QA-80-PA
(name of Company or Laboratory & Report No

Y. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only
4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 and 2

6. Method of combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

2. Required Response Spectra (attach the graphs): Attached

3. Required Acceleration in Each Direction:

S/S = 0.5g F/B = 0.5g Y = 0.4g

Y. If Qualification by Test, then Complete:

1. ☐ Single Frequency ☒ Multi-Frequency: ☒ random ☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis ☐ _____

3. No. of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)

4. Frequency Range: 1 - 62 Hz

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graph)
☐ No

6. Input g-level Test at S/S = 3.2g F/B = 3.2g Y = 4g

7. Laboratory Mounting:

1. ☒ Bolt (No. 12, Size 5/8) ☐ Weld (Length _____) ☐ _____

8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: The tested panel successfully maintained
its integrity during the test.

0. Other tests performed (such as fragility test, including results): The class
1E devices were tested separately for determining seismic capability.

SEISMIC QUALIFICATION REEVALUATION
48" WIDE LOCAL PANEL CLASS 1E EQUIPMENT

Panel MPL Ref: H21-P010

System: Jet Pump Local Panel B

Panel Dimensions: 48" Wide x 84" High x 30" Deep
 (96)

Location, Elevation: RB-78

SEISMIC EVALUATION SUMMARY	EQUIPMENT MPL NO.	DESCRIPTION	PURCHASE PART DWG.	ESSENTIAL CODE	MALFUNCTION LIMIT			REMARKS
					f-b	s-s	vert.	
1.0 NATURAL FREQUENCIES	B21-N0210	Differential Pressure Switch	145C3009P005	A	5	10	10	
f-b: 15.1, 22.6, 33.4, 44.2	B21-N032	Differential Pr. Transmitter	163C1560P641203	A	4.5-6.0	4.5-6.0	3	
s-s: 10.6, 18.3, 41.3	B21-N0330	Differential Pr. Transmitter	163C1560P641203	A	4.5-6.0	4.5-6.0	3	
v: 15.1, 28.5, 46.9, 59	B21-N0340 P.F.N.K.M. 15.5-17.0	Differential Pr. Transmitter	163C1560P641203	A	4.5-6.0	4.5-6.0	3	
	B21-N0378	Level Indicator Transmitter Switch	159C4303P003	A	17	5	2	
2.0 MAX TRANSMISSIBILITY (TR)	B31-N0160	Differential Pressure Switch	145C3009P002	A	5	10	10	
f-b: 6.0								
s-s: 9.0								
v: 4.70								
3.0 ZPA FROM RRS AT 203 ELEVATION								
f-b: 0.5g								
s-s: 0.5g								
v: 0.3g								
4.0 MAXIMUM EXPECTED PEAK ACCELERATION								
f-b: 3.0g								
s-s: 4.5g								
v: 1.41g								

407400

Acceleration (g's)

1000 100 10 1 0.1

Ref: L100 Docket # 50-322

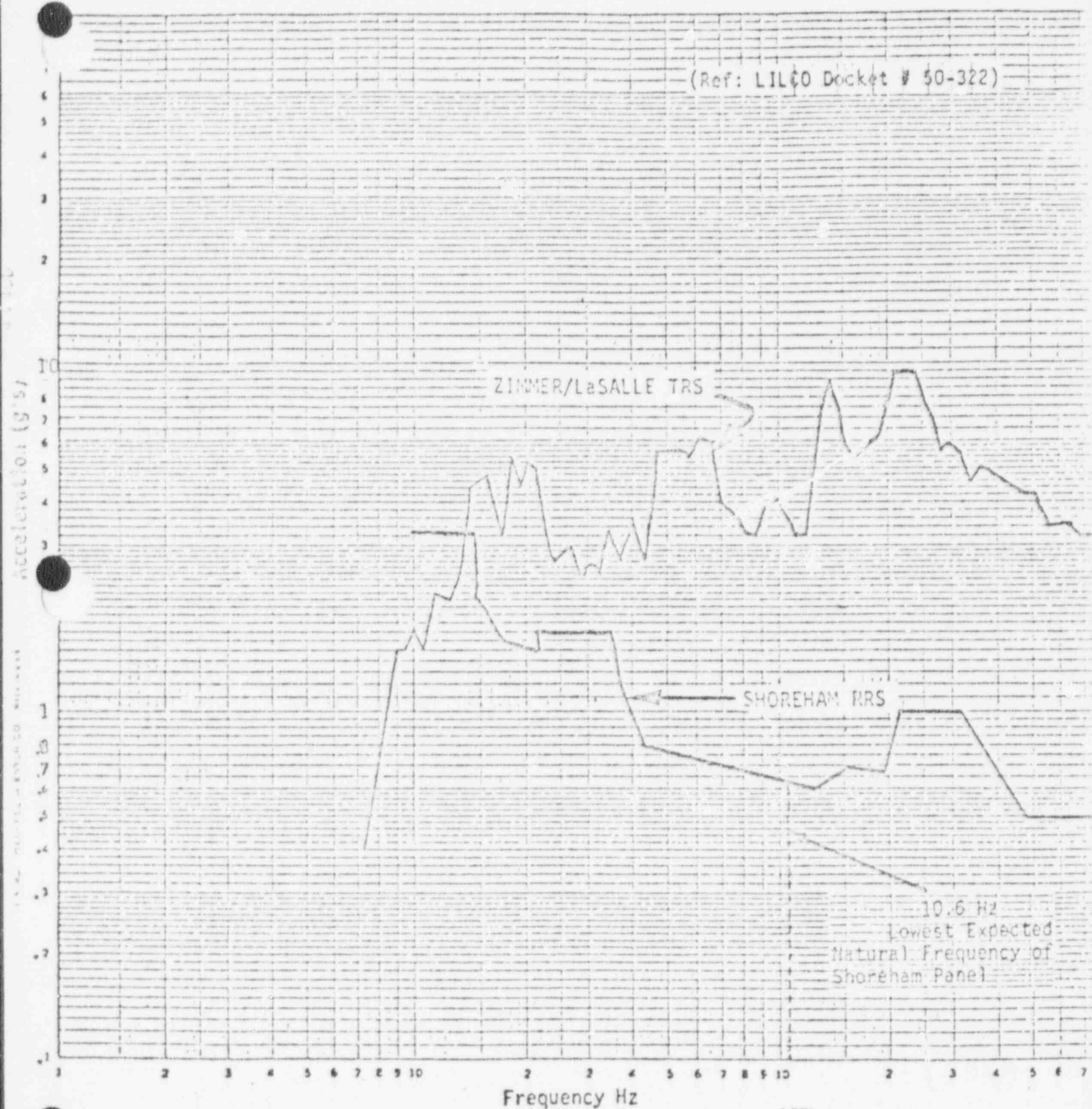
ZIMMER/LASALLE TRS

SHOREHAM RRS

8.2 Hz Lowest Expected
Natural Frequency of
any Shoreham Panel

Frequency Hz

COMPARISON OF VERTICAL RESPONSE SPECTRA, 4% DAMPING



COMPARISON OF HORIZONTAL RESPONSE SPECTRA, 4% DAMPING

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 6

Mark No. 1H21*PNL-22

GE No. H21P022

QUALIFICATION SUMMARY OF EQUIPMENT

SHEET 1 OF 3

I. Plant Name:

SHOREHAM

GE MPL or EDL No.:

1. Utility: Long Island Lighting Co.

Type: PWR

2. NSSS: GE

3. A/E: Stone & Webster

BWR

4 MK II

II Component Name

72" Wide Local Panel

1. Scope: ☒ NSSS ☐ BOP
H21 P002, P004, P005, P014, P015, P017,

2. Model Number: P018, P021, P022, P074

Quantity: 10

3. Vendor: General Electric

4. If the component is a cabinet or panel, name and model no. of the devices included:

As Attached

5. Physical Description

a. Appearance

Open Rack

b. Dimensions 72" x 84" x 30"

c. Weight 1,500 pounds

6. Location: Building: Secondary Containment

Elevation: 8 ft. thru 112 ft.

7. Field Mounting Conditions ☐ Bolt (No. , Size)

☒ Weld (Length 1"-12")

☐

8. Natural Frequencies in Each Direction (Side, Side, Front, Back, Vertical):

S/S: 10.6, 18.3, 41.3 F/B: 12.4, 18.5, 31.5, V: 8.2, 15.5, 25.5, 32.5
36.2, 55.1

9. a. Functional Description: As on panel device list attached for each panel.

b. Is the equipment required for ☒ Hot Standby ☐ Cold Shutdown

☐ Both

10. Pertinent Reference Design Specifications: 22A4016

Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

1. Equipment Qualification Method: Test: By similarity Analysis to tested Zimmer/
LaSalle Plant(s) Local Panel
Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by SAI Report No. SAI-029-QA-80-PA
(name of Company or Laboratory & Report No)

Y. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only

4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 and 2

6. Method of combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

2. Required Response Spectra (attach the graphs): Attached

3. Required Acceleration in Each Direction:

S/S = 0.5g F/B = 0.5g Y = 0.4g

VI. If Qualification by Test, then Complete:

1. ☐ Single Frequency ☒ Multi-Frequency: ☒ random
☐ sine beat
☐ _____

2. ☐ Single Axis ☒ Multi-Axis

3. No. of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)

4. Frequency Range: 1 - 62 Hz

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graph)
☐ No

6. Input g-level Test at S/S = 3.2g F/B = 3.2g Y = 4g

7. Laboratory Mounting:

1. ☒ Bolt (No. 12, Size 5/8) ☐ Weld (Length _____) ☐ _____

8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: The tested panel successfully maintained
its integrity during the test.

10. Other tests performed (such as fragility test, including results): The class
1E devices were tested separately for determining seismic capability.

SEISMIC QUALIFICATION REEVALUATION

72" WIDE LOCAL PANEL CLASS 1E EQUIPMENT

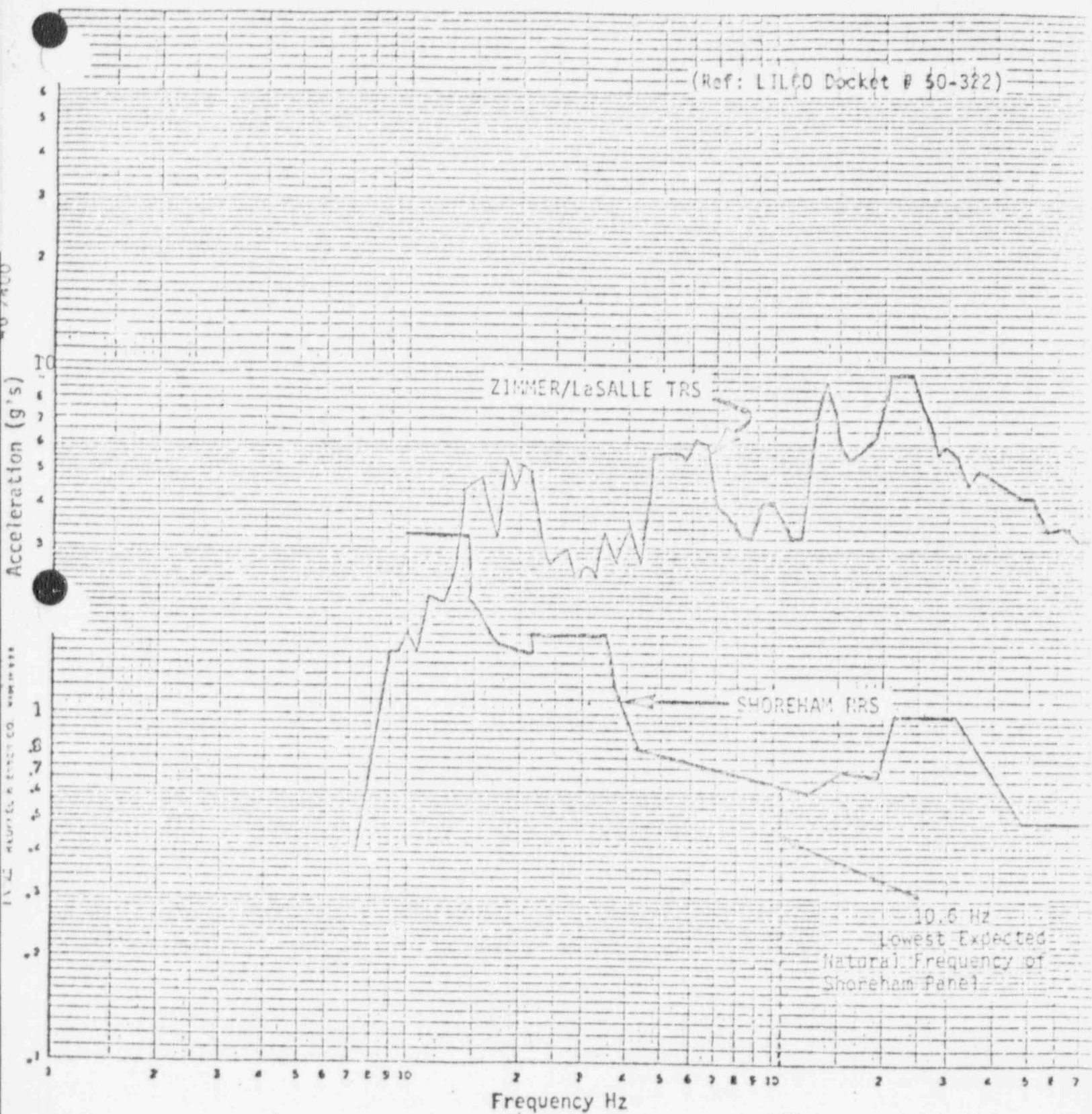
Panel MPL Ref: H21-P022

System: Recirculation Systems
Local Panel B

Panel Dimensions: 72" Wide x 84" High x 30" Deep

Location, Elevation: RB-40

SEISMIC EVALUATION SUMMARY	EQUIPMENT MPL NO.	DESCRIPTION	PURCHASE PART DWG.	ESSENTIAL CODE	MALFUNCTION LIMIT			REMARKS
					f-b	s-s	vert.	
1.0 NATURAL FREQUENCIES	B31-N015B	Differential Pr. Transmitter	163C1182P005	P	4.5-6.0	4.5-6.0	3	
f-b: 12.4, 18.5, 31.5	B31-N018B	Pressure Switch	145C3011P001	A	15	15	15	
s-s: 10.6, 16.3, 41.3	B32-N019B	Differential Pr. Transmitter	145C3009P002	A	5	10	10	
v: 8.2, 15.5, 22.5, 32.5	B32-N020B	Differential Pr. Transmitter	145C3009P002	A	5	10	10	
	B32-N021B	Differential Pr. Transmitter	145C3009P002	A	5	10	10	
2.0 MAX TRANSMISSIBILITY (TR)	B32-N022B	Differential Pr. Transmitter	145C3009P002	A	5	10	10	
f-b: 6.0								
s-s: 9.0								
v: 4.70								
3.0 ZPA FROM RRS AT 203 ELEVATION								
f-b: 0.5g								
s-s: 0.5g								
v: 0.3g								
4.0 MAXIMUM EXPECTED PEAK ACCELERATION								
f-b: 3.0g								
s-s: 4.5g								
v: 1.41g								



COMPARISON OF HORIZONTAL RESPONSE SPECTRA, 4% DAMPING

3-6A

Ref: JLD Docket # 50-322

ZIMMER/LaSALLE TRS

SHOREHAM RRS

8.2 Hz Lowest Expected
Natural Frequency of
any Shoreham Panel

Frequency Hz

COMPARISON OF VERTICAL RESPONSE SPECTRA, 4% DAMPING

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 7

Mark No. 1H21*PNL-36

GE No. H21P036

I. Plant Name:

SHOREHAM

GE MPL or EDL No.: _____

1. Utility: LONG ISLAND LIGHTING CO.

Type: PWR

2. NSSS: GE

3. A/E: STONE & WEBSTER

BWR 4 MK II

II. Component Name

30" Wide Local Panels

1. Scope: ☒ NSSS ☐ BOP

2. Model Number: (H21-) P016, P035, P036, P038, P073 Quantity: 4

3. Vendor: General Electric

4. If the component is a cabinet or panel, name and model no. of the devices included:

As Attached

5. Physical Description a. Appearance Open Rack

b. Dimensions 30"x84"x30"

c. Weight 500 Pounds

6. Location: Building: Secondary Containment

Elevation: 8 ft. thru 40 ft.

7. Field Mounting Conditions ☐ Bolt (No. _____, Size _____)
☒ Weld (Length 1"-12")
☐

8. Natural Frequencies in Each Direction (Side, Side, Front, Back, Vertical):

S: 10.6, 18.3, 41.3 F/B: 19.2, 28.7, 48.8, 56.1 V: 30.5, 45.6, 76.0

9. a. Functional Description: As on panel device list attached for each panel.

b. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown
☒ Both

10. Pertinent Reference Design Specifications:

22A4016

1. Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

2. Equipment Qualification Method: Test: By similarity Analysis to tested Zimmer/
LaSalle Plant(s) Local Panel
Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by SAI Report No. SAI-029-0A-80-PA
: (Name of Company or Laboratory & Report No

V. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only

4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 and 2

6. Method of combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

2. Required Response Spectra (attach the graphs): Attached

3. Required Acceleration in Each Direction:

S/S = 0.5g F/B = 0.5g Y = 0.4g

V1. If Qualification by Test, then Complete:

1. ☐ Single Frequency ☒ Multi-Frequency: ☒ random ☐ sine beat
☐ _____

2. ☐ Single Axis ☒ Multi-Axis

3. No. of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)

4. Frequency Range: _____ 1 - 62 Hz

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graph)
☐ No

6. Input g-level Test at S/S = 3.2g F/B = 3.2g Y = 4g

7. Laboratory Mounting:

1. ☒ Bolt (No. 12, Size 5/8) ☐ Weld (Length _____) ☐ _____

8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: The tested panel successfully maintained
its integrity during the test.

10. Other tests performed (such as fragility test, including results): The class
1E devices were tested separately for determining seismic capability.

SEISMIC QUALIFICATION REEVALUATION

30" WIDE LOCAL PANEL CLASS 1E EQUIPMENT

Panel MPL Ref: H21-P036

Panel Dimensions: 30" Wide x 84" High x 30" Deep

Location, Elevation: RB-8

System: Core Spray High Pressure
Coolant Injection Leak
Detection Panel B

SEISMIC EVALUATION SUMMARY	EQUIPMENT MPL NO.	DESCRIPTION	PURCHASE PART DWG.	ESSENTIAL CODE	MALFUNCTION LIMIT			REMARKS
					f-b	s-s	vert.	
1.0 <u>NATURAL FREQUENCIES</u>	E41-N001BD	Pressure Switch	145C3009P001	A	5	10	10	
f-b: 19.2, 28.7, 40.8, 56.1	E41-N005	Differential Pressure Switch	145C3009P010	A	5	10	10	
s-s: 10.6, 18.3, 41.3								
v: 30.5, 57.6, > 60								
2.0 <u>MAX TRANSMISSIBILITY</u> (TR)								
f-b: 6.0								
s-s: 9.0								
v: 4.70								
3.0 <u>ZPA FROM RRS AT 203</u> <u>ELEVATION</u>								
f-b: 0.5g								
s-s: 0.5g								
v: 0.3g								
4.0 <u>MAXIMUM EXPECTED PEAK</u> <u>ACCELERATION</u>								
f-b: 3.0g								
s-s: 4.5g								
v: 1.41g								

40 7400

Acceleration (g's)

1/4" RECORDING SYSTEM CO. INSTRUMENTS

(Ref: LILEO Docket # 50-322)

ZIMMER/LaSALLE TRS

SHOREHAM RRS

10.6 Hz
Lowest Expected
Natural Frequency of
Shoreham Panel

Frequency Hz

COMPARISON OF HORIZONTAL RESPONSE SPECTRA, 4% DAMPING

Ref: LILCO Docket - 50-322

ZIMMER/LeSALLE TRS

SHOREHAM RRS

8.2 Hz Lowest Expected
 Natural Frequency of
 any Shoreham Panel

Frequency Hz

COMPARISON OF VERTICAL RESPONSE SPECTRA, 4% DAMPING

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 8

Mark No. 1C61*PT 006

GE No. C61N006

NSSS 8

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Pressure Transmitter

1. Scope: ☒ NSSS ☐ BOP2. Vendor and Model Number: Bailey Meter, 556110E - Quantity: 1
AAALWEN3. S/W Mark Nos: 1C61*PT-0064. If the component is a cabinet or panel, name and model No. of the
devices included: N/A5. Physical Description a. Appearance _____b. Dimensions 6 3/4"x8 1/4"x4 1/8" c. Weight < 15#6. Location: Building SC Elevation 79'7. Field Mounting Conditions ☒ Bolt (No. _____, Size 3/8")☐ Weld (Length _____)☐ _____8. a. System in which located: _____b. Functional Description: _____c. Is the equipment required for ☐ Hot Standby ☒ Cold Shutdown☐ Both ☐ Neither9. Pertinent Reference Design Specifications: 1C61N006

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: _____

(No. Title and Date) DV163C1186, No. 440, 3/3/72

Company that Prepared Report: GE MAC

Company that Reviewed Report: GE MAC

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Attached

4. Damping Corresponding to RRS: Upset 2 Faulted 4

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = .6 F/B = .6 V = .7

Faulted S/S = .6 F/B = .6 V = .7

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344-1975

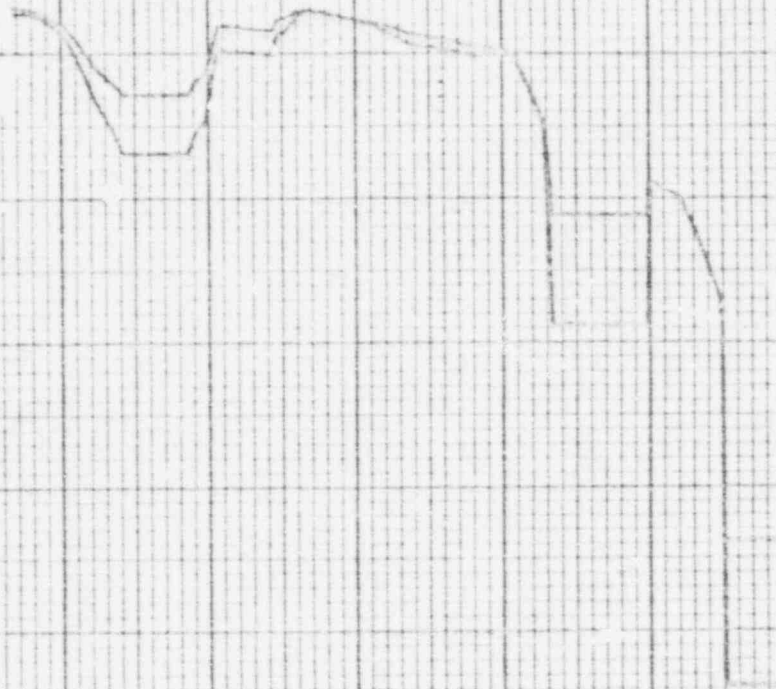
*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☒ Single Frequency ☐ Multi-Frequency ☐ random
☐ sine beat
2. ☒ Single Axis ☐ Multi-Axis
3. No. of Qualification Tests: Upset -- Faulted 6 Other (specify)
4. Frequency Range: 1-33 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = > 33 H F/B = > 33 H V = > 33 H
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☐ Yes (Attach TRS and RRS graphs)
N/A ☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 5.5 F/B = 5.5 V = 3.7
9. Laboratory Mounting:
☒ Bolt (No. 4, Size 3/8") ☐ Weld (Length) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Specification requirements met without modification
12. Other test performed (such as aging or fragility test, including results):
Above test was to fragility level tested to 323-1971 requirements.

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

7	3	1	6	4	2	1	6	0	4	9	9	7	5	3	5
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LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 9

Mark No. 1E32*PDT035

GE No. E32 N059

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Differential Pressure Transmitter

1. Scope: ☒ NSSS ☐ BOP2. Vendor and Model Number: Rosemont 1151DP Quantity: 13. S/W Mark Nos: 1E32*PDT-035

4. If the component is a cabinet or panel, name and model No. of the devices included: N/A

5. Physical Description a. Appearanceb. Dimensions 9"x4 1/2"x7 1/2" c. Weight 10#6. Location: Building SC Elevation 63' (H21P073)7. Field Mounting Conditions ☒ Bolt (No. 4, Size 7/16")☐ Weld (Length)☐ 8. a. System in which located:b. Functional Description:c. Is the equipment required for ☐ Hot Standby ☒ Cold Shutdown☐ Both ☐ Neither9. Pertinent Reference Design Specifications: 1E32N059

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: GE Design Record File

(No. Title and Date) DRF A00992, Cofrentes H22P018, 1978

Company that Prepared Report: GE

Company that Reviewed Report: GM

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ (other, specify)

3. Required Response Spectra (attach the graphs): Attached

4. Damping Corresponding to RRS: Upset 2 Faulted 4

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other (specify)

Upset S/S = .6 F/B = .6 V = .7

Faulted S/S = .6 F/B = .6 V = .7

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344-1975

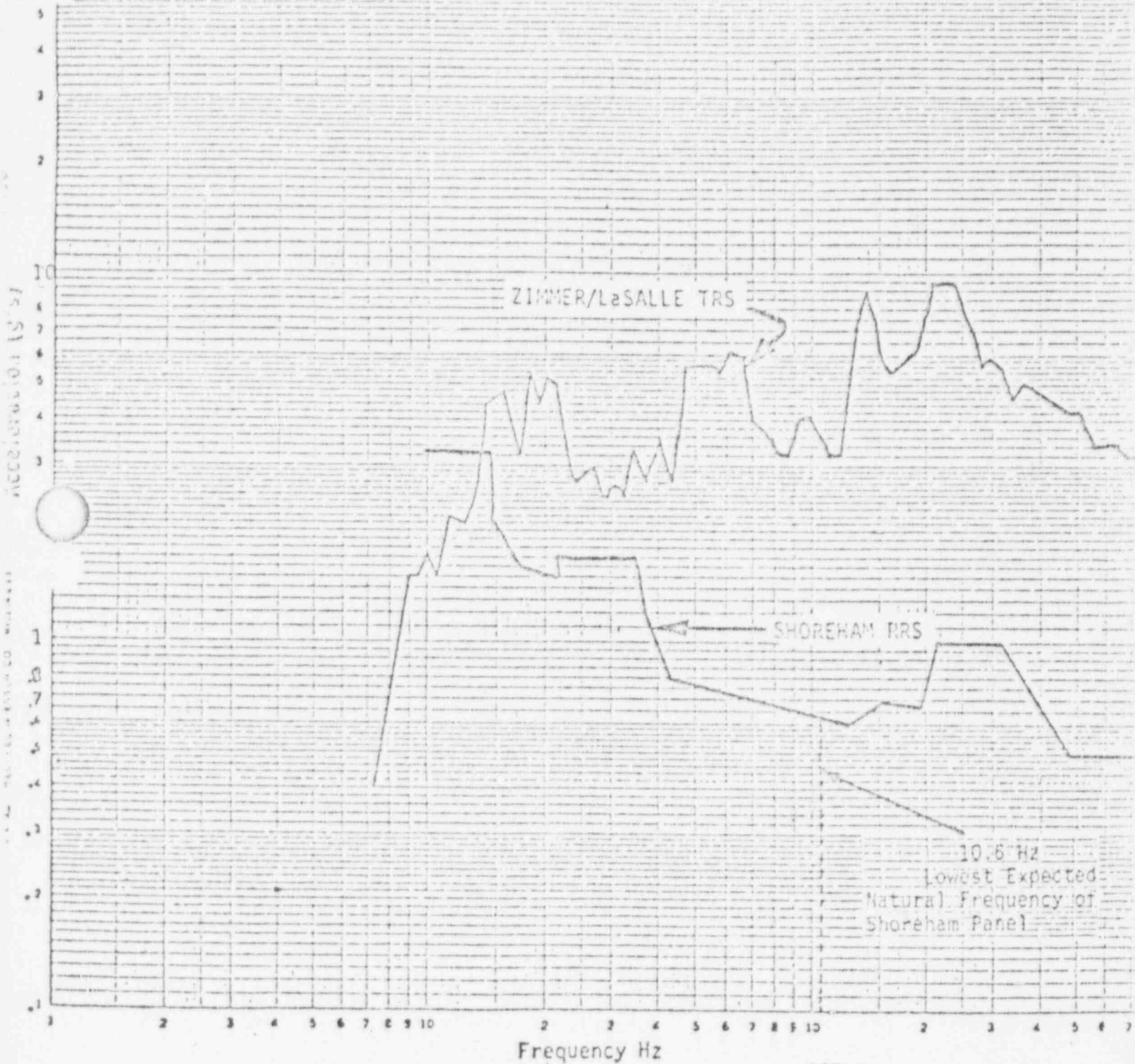
*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other
(specify)
4. Frequency Range: 1-70 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 70 Hz F/B = 70 Hz V = 62 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS
graphs) (Local Panels)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 6 F/B = 6 V = 3
9. Laboratory Mounting:
☒ Bolt (No. , Size) ☐ Weld (Length) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Specification requirements met
without modification
12. Other test performed (such as aging or fragility test, including results):
Above test was to fragility level. Meets 323-1971

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

(Ref: LILCO Docket # 50-322)



COMPARISON OF HORIZONTAL RESPONSE SPECTRA, 4% DAMPING

Ref: L100 Docket # 50-322

40 7160

Acceleration (g's)

1000 100 10 1 0.1

ZIMMER/LASALLE TRS

SHOREHAM RRS

8.2 Hz: Lowest Expected
Natural Frequency of
any Shoreham Panel

Frequency Hz

COMPARISON OF VERTICAL RESPONSE SPECTRA, 4% DAMPING

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 10

Mark No. 1B31*MOVO31

GE No. B31FO23

Qualification Summary of Equipment

1. Plant Name: SHOREHAM Type: _____
 1. Utility: LONG ISLAND LIGHTING CO. PWR _____
 2. NSSS: GE 3. A/E: STONE & WEBSTER DWR 4 MK 11

11. Component Name Recirculation Suction Valve Model

1. Scope: ☒ NSSS ☐ BOP
2. Model Number: Dwg 920D792 Quantity: 2
3. Vendor: Darling Valve Company
4. If the component is a cabinet or panel, name and model No. of the devices included: _____
5. Physical Description
 - a. Appearance: Motor Operated Gate Valve
 - b. Dimensions: 28" x 24" x 28"
 - c. Weight: Dry 8733#; Wet 9583#; extended mass weight 2667#
6. Location: Building: Primary Containment
 Elevation: 70 feet
7. Field Mounting Conditions

<input type="checkbox"/> Bolt (No. _____, Size _____)
<input checked="" type="checkbox"/> Weld (Length <u>Butt</u> welding on 28" Ø pipe)
<input type="checkbox"/> _____
8. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical)

S/S: <u>41 Hz</u>	F/B: <u>41 Hz</u>	Y: <u>41 Hz</u>
greater than		
9. a. Functional Description: Open/Close Service
- b. Is the equipment required for

<input type="checkbox"/> Hot Standby	<input type="checkbox"/> Cold Shutdown
<input type="checkbox"/> Both <u>N/A (Passive safety function)</u>	
10. Pertinent Reference Design Specifications: 21A9200

III. Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

IV. Equipment Qualification Method: Test: _____

Analysis: ☒ _____

Combination of Test and Analysis: _____

Test and/or Analysis by G.E., 385HA661

(Name of Company or Laboratory & Report No.)

V. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only

4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 & 2

6. Method of combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____ (other, specify)

2. Required Response Spectra (attach the graphs): Accelerations obtain in piping analysis.

3. Required Acceleration in Each Direction:

S/S = 4.43g F/B = 4.43g Y = 1.9g

VI. If Qualification by Test, then Complete:

1. ☐ Single Frequency ☐ Multi-Frequency: ☐ random ☐ sine beat

2. ☐ Single Axis ☐ Multi-Axis

3. No. of Qualification Tests: OBE _____ SSE _____ Other _____ (specify)

4. Frequency Range: _____

5. TRS enveloping RRS using Multi-Frequency Test ☐ Yes (Plot TRS on RRS graph) ☐ No

6. Input g-level Test at S/S = _____ F/B = _____ Y = _____

7. Laboratory Mounting:

1. ☐ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☐ _____

8. Functional operability verified: ☐ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: _____

10. Other tests performed (such as fragility test, including results): _____

11. If Qualification by Analysis or by the Combination of Test and Analysis, then
Complete: (static analysis for bonnet flange)

1. Description of Test including Results:

2. Method of Analysis:

☒ Static Analysis ☐ Equivalent Static Analysis

☐ Dynamic Analysis: ☐ Time-History
☐ Response Spectrum

3. Model Type: ☐ 3D ☐ 2D ☐ 1D
☐ Finite Element ☐ Beam ☒ Closed Form Solution

4. [] Computer Codes:

Frequency Range and No. of modes considered:

[x] Hand Calculations

5. Method of Combining Dynamic Responses: ☐ Absolute Sum ☐ SRSS
☐ Other: not applicable

6. Damping: not applicable Basis for the damping used:

7. Support Considerations in the model: not applicable

8. Critical Structural Elements:

A.	Identification	Location	Governing Load or Response Combination	Seismic Stress	Total Stress	Stress Allowable
	Flange		Service level D		15,722psi	16,425psi

B. <u>Max. Deflection</u>	<u>Location</u>	<u>Effect Upon Functional Operability</u>
not applicable		

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 11

Mark No. 1C41*P-024

GE No. C41C001

Qualification Summary of Equipment

Plant Name:

SHOREHAM

Type:

1. Utility: LONG ISLAND LIGHTING CO.

PKR

2. HSSS: GE

3. A/E: STONE & WEBSTER

DWR 4 MK 11

11. Component Name

Standby Liquid Control System Pump

1. Scope: ☒ HSSS

☐ BOP

2. Model Number: 2X3 TD-60 W/Gear Pac and 324T frame Quantity: 2

3. Vendor: Union Pump Company

4. If the component is a cabinet or panel, name and model no. of the devices included: _____

5. Physical Description a. Appearance Pump with three Plungers

b. Dimensions 31" x 40" x 15"

c. Weight 1460 lbs

6. Location: Building: Secondary Containment

Elevation: 112 Feet

7. Field Mounting Conditions ☒ Bolt (No. 4, Size 3/4")

☐ Weld (Length)

☐ _____

8. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

S/S: Greater than 136Hz

F/B: Greater than 136Hz

Y: Greater than 136Hz

9. a. Functional Description: To pump an aqueous solution of sodium pentaborate to the reactor.

b. Is the equipment required for ☐ Hot Standby ☒ Cold Shutdown

☐ Both _____

10. Pertinent Reference Design Specifications: 21A9255 AE

111. Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

7. Equipment Qualification Method: Test: _____

Analysis: _____

Combination of Test and Analysis: ☒ (VPF-6517-2-2)

Test and/or Analysis by Approved Engineering Test Laboratory
(Name of Company or Laboratory & Report No)
Union Pump (VPF-3676-191-2)

V. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only
4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 & 2

6. Method of combining RRS: ☐ Absolute Sum ☐ SRSS ☐ (other, specify) _____

2. Required Response Spectra (attach the graphs): Attached

3. Required Acceleration in each Direction:

S/S = .25g F/B = .25g Y = .2g

1. If Qualification by Test, then Complete:

1. ☐ Single Frequency ☐ Multi-Frequency ☐ random ☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis

3. No. of Qualification Tests: OBE 2 SSE 8 Other (specify) _____

4. Frequency Range: Single Frequency

5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graph) ☐ No

6. Input g-level Test at S/S = 2.0 F/B = 2.0 Y = 2.0

7. Laboratory Mounting:

1. ☒ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☐ _____

8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable

9. Test Results including modifications made: Testing was completed with no adverse effects noted.

10. Other tests performed (such as fragility test, including results): _____

VII. If Qualification by Analysis or by the Combination of Test and Analysis, then Complete:

1. Description of Test including Results: _____

2. Method of Analysis:
[X] Static Analysis [] Equivalent Static Analysis
[] Dynamic Analysis: [] Time-History
[] Response Spectrum
3. Model Type: [] 3D [] 2D [] 1D
[] Finite Element [] Beam [X] Closed Form Solution
4. [] Computer Codes: _____
Frequency Range and No. of modes considered: _____
[] Hand Calculations
5. Method of Combining Dynamic Responses: [] Absolute Sum [] SRSS
[] Other: _____
(specify)
6. Damping: 2% Basis for the damping used: IEEE 344-1975 para 5.3
7. Support Considerations in the model: mounted to floor
8. Critical Structural Elements:

A.	Identification	Location	Governing Load or Response Combination	Seismic Stress	Total Stress	Upset Stress Allowable
	Pump hold down bolts (tensile stress)		SSE+SRV+LOCA		17,689psi	37,500psi
	Pump hold down bolts (shear stress)		"		11,350psi	30,000psi
	Foot		"		11,395psi	15,000psi
	Dowell pins		"		19,430psi	23,400psi
	Cylinder tie studs		"		8,685psi	25,000psi

B.	Max. Deflection	Location	Effect Upon Functional Operability
	N/A		NONE

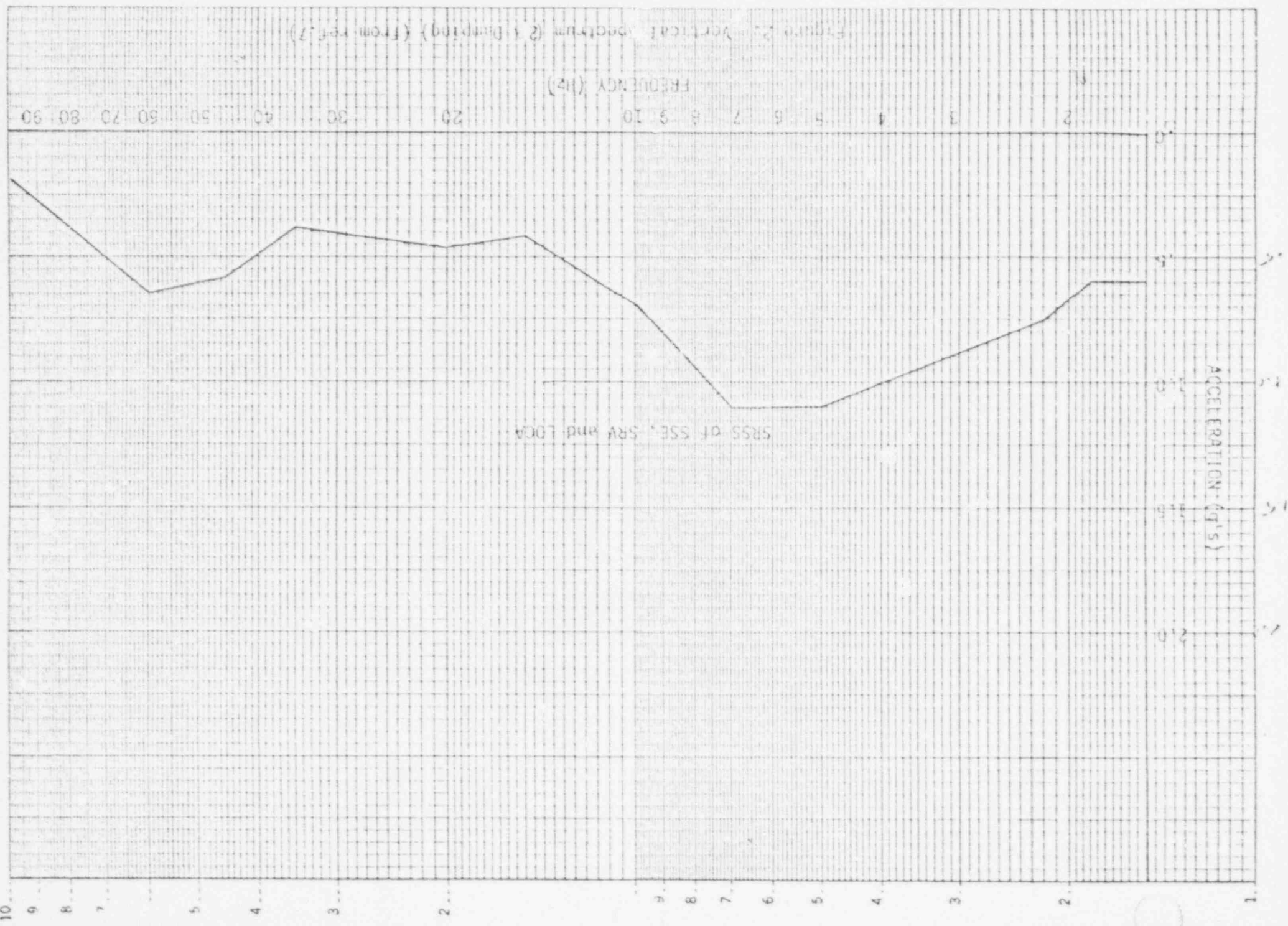


Figure 2: Vertical Spectrum (2. Damping) (from ref. 7)

SRSS of SSE, SRV and LOCA

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 12

Mark No. 1C41#EV 010

GE No. C41F004

Qualification Summary of Equipment

1. Plant Name:

SHOREHAM

Type:

1. Utility: LONG ISLAND LIGHTING CO.

PWR

2. HSSS: GE

3. A/E: STONE & WEBSTER

BWR 4 MK 11

11. Component Name

Standby Liquid Control System, Explosive Valve

1. Scope: ☒ HSSS ☐ BOP

2. Model Number: 1832-159-01

Quantity: 2

3. Vendor: Conax

4. If the component is a cabinet or panel, name and model No. of the devices included:

5. Physical Description a. Appearance Valve, explosive actuated

b. Dimensions 1 1/2"

c. Weight 39.5 lbs.

6. Location: Building: Secondary Containment

Elevation: 112 feet

7. Field Mounting Conditions ☒ Bolt (No. 4, Size 1")

☐ Weld (Length)

☐

8. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical)

S/S: 1360 Hz

F/B: 1360 Hz

Y: 1360 Hz

9. a. Functional Description: Provides leak-tight shutoff of Standby Liquid Control System until operated (fire required to be operable during normal plant operating conditions and for up to one hour following the start of an accident; must not operate inadvertently.

b. Is the equipment required for ☐ Hot Standby ☒ Cold Shutdown

☐ Both

10. Pertinent Reference Design Specifications: 21A9370AB

III. Is Equipment Available for Inspection in the Plant: ☒ Yes ☐ No

IV. Equipment Qualification Method: Test: X

Analysis: _____

Combination of Test and Analysis: _____

Test and/or Analysis by Conax Corporation VPF 3394-36-2
(name of Company or Laboratory & Report)

V. Vibration Input:

1. Loads considered: 1. ☐ Seismic only 2. ☐ Hydrodynamic only 3. ☐ Explosive only
4. ☐ Other (Specify) _____ 5. ☒ Combination of 1 & 2
6. Method of combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)
2. Required Response Spectra (attach the graphs): pipe mounted
3. Required Acceleration in Each Direction:
S/S = 2.36 g F/B = 0.24 g Y = 2.53g

VI. If Qualification by Test, then Complete:

1. ☒ Single Frequency ☐ Multi-Frequency: ☐ random ☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: OBE 5 SSE 1 Other _____
(specify)
4. Frequency Range: 1-33 Hz
5. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Plot TRS on RRS graph) ☐ No
6. Input g-level Test at S/S = 6.5g F/B = 6.5g Y = 4.5
7. Laboratory Mounting:
As field installed condition
1. ☒ Bolt (No. 4, Size 1") ☐ Weld (Length _____) ☐ _____
8. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
The valve was found to have no
9. Test Results including modifications made: structural failures. The resistance checks performed before, during, and after the tests were found to be normal. It should be noted that no resonant frequency were found during the resonant frequency search (1-35 Hz).
10. Other tests performed (such as fragility test, including results): _____

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SORT Audit Items

Item 13

Mark No. 1R24 * MCC 1123

QUALIFICATION SUMMARY OF EQUIPMENT

I. Plant Name: SHOREHAM

Type:

1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

480 V Motor Control Centers

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: Square D Co. 480 Vac Quantity: 28
Model 4 M.C.C.3. C/W Mark Nos: 1R24*MCC1110 thru 1129, 1131, 1133, 1134, 111X, 111Y,
112X, 112Y, 111Z.4. If the component is a cabinet or panel, name and model No. of the
devices included: Circuit Breakers, type FA, FH, KA, MA; Starters

NEMD Size 1, 2, 3 4; Relays Square D Class 8501 GO

5. Physical Description a. Appearance Cabinet (floor mounted)

b. Dimensions 20"Wx20"Dx92"H c. Weight 600 lbs.

6. Location: Building SC, CB, SW Elevation Various

7. Field Mounting Conditions ☒ Bolt (No. 4, Size 1/2")☐ Weld (Length)☐

8. a. System in which located: 480 V Emergency Power

b. Functional Description: Control Circuits for Station Emergency 480 V Power

c. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither

9. Pertinent Reference Design Specifications: SH1-115

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic Qualification Report for a 480 VAC Motor Control Center

(No. Title and Date) 108-1.01-L2, August 2, 1974

Company that Prepared Report: Wyle Lab.

Company that Reviewed Report: Square D Co.

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset _____ Faulted 1%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = _____ F/B = _____ V = _____

Faulted S/S = .58 g F/B = .58 g V = .62 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

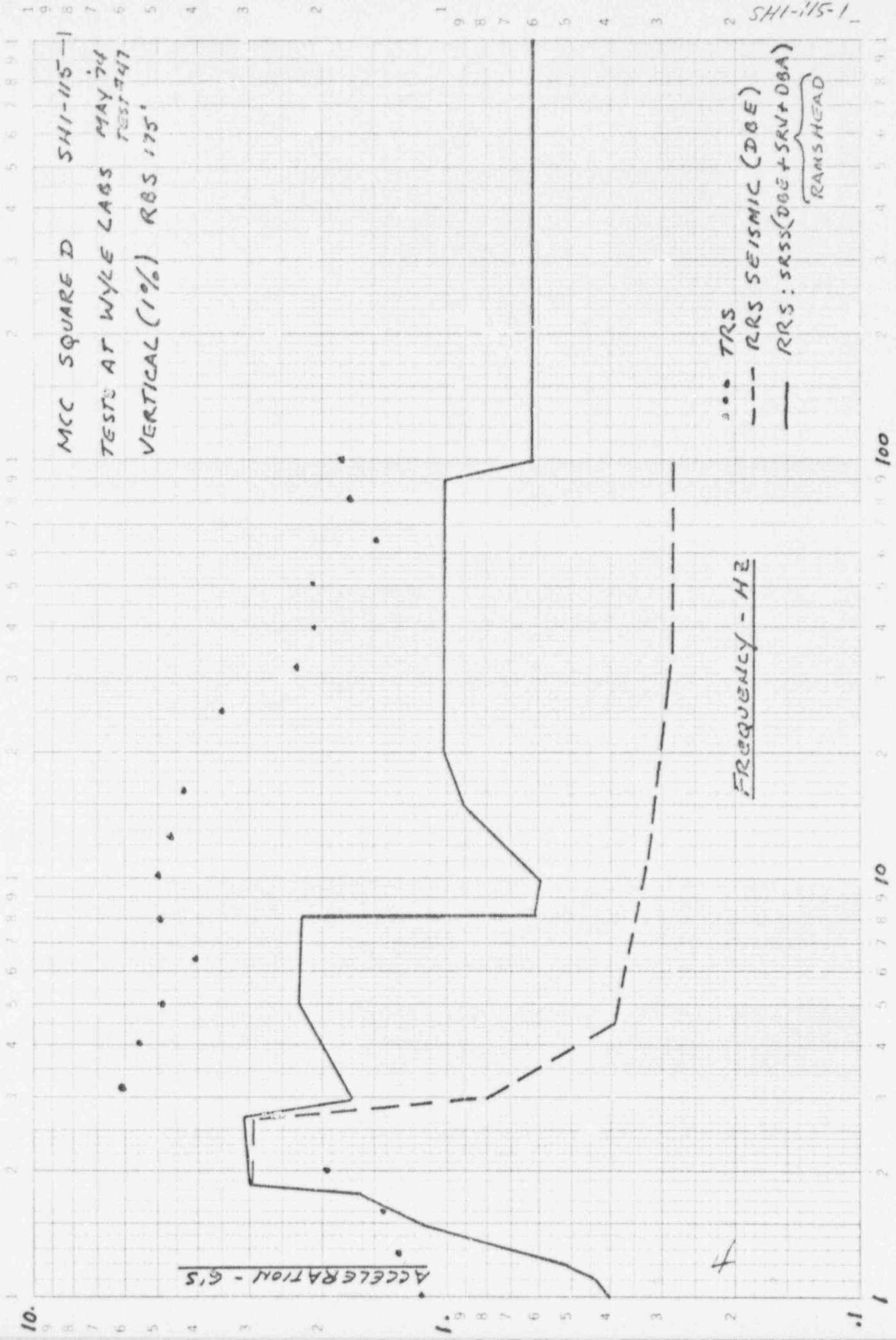
If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344-1975.

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
☐
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other
(specify)
4. Frequency Range: 1 Hz - 100 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 3.6 Hz F/B = 4.0 Hz V = 15.0 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS
graphs)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 1.5 F/B = 1.5 V = 1.8
9. Laboratory Mounting:
☒ Bolt (No. 4, Size 1/2") ☐ Weld (Length) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modification.
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

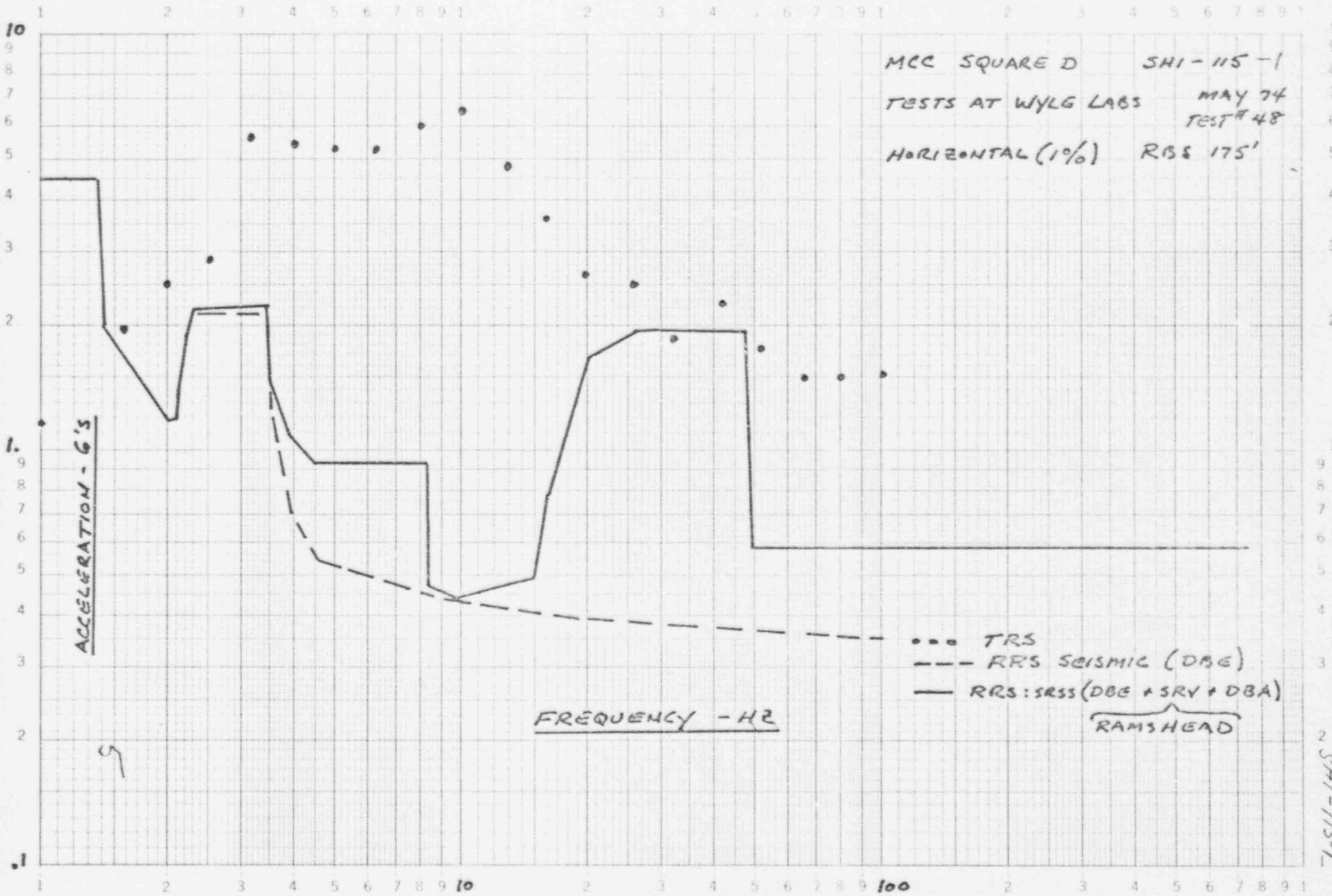


MCC SQUARE D SHI-115-1
TESTS AT WYLG LABS MAY 74
TEST # 48
HORIZONTAL (1%) RBS 175'

ACCELERATION - G's

FREQUENCY - Hz

... TRS
--- RRS SEISMIC (DBE)
— RRS:SRSS (DBE + SRV + DBA)
RAMS HEAD



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 14

Mark No. 1R24 * PNL-G1

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

480 VAC Circuit Breaker Panelboards

1. Scope: ☐ NSGS ☒ BOP2. Vendor and Model Number: Square D, MH-23WP Quantity: 93. S/W Mark Nos: 1R24*PNL-G1, -R1, -R2, -B1, -Y1, -01, -02, -03, -044. If the component is a cabinet or panel, name and model No. of the devices included: Circuit Breakers, FAL 36015, FAL 36030, FAL 36035,

FHL 3060, FHL 36010.

5. Physical Description a. Appearance Cabinet, (wall mounted)

5.75"Dx20"W

b. Dimensions 23" to 74"H c. Weight 50# to 100#6. Location: Building SC Elevation Various7. Field Mounting Conditions ☒ Bolt (No. 6, Size 7/16")☐ Weld (Length)☐ 8. a. System in which located: 480 V Emergency Powerb. Functional Description: Control Circuits for Station Emergency 480 V Powerc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-115

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic Qualification Report for a 480 V Circuit Breaker
Panelboard

(No. Title and Date) 8898-10-09-L23, April 25, 1980

Company that Prepared Report: Wyle Lab.

Company that Reviewed Report: Square D Co.

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset _____ Faulted 2%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = _____ F/B = _____ V = _____

Faulted S/S = .52 F/B = .52 g V = .4 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall
qualification program: To the extent required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

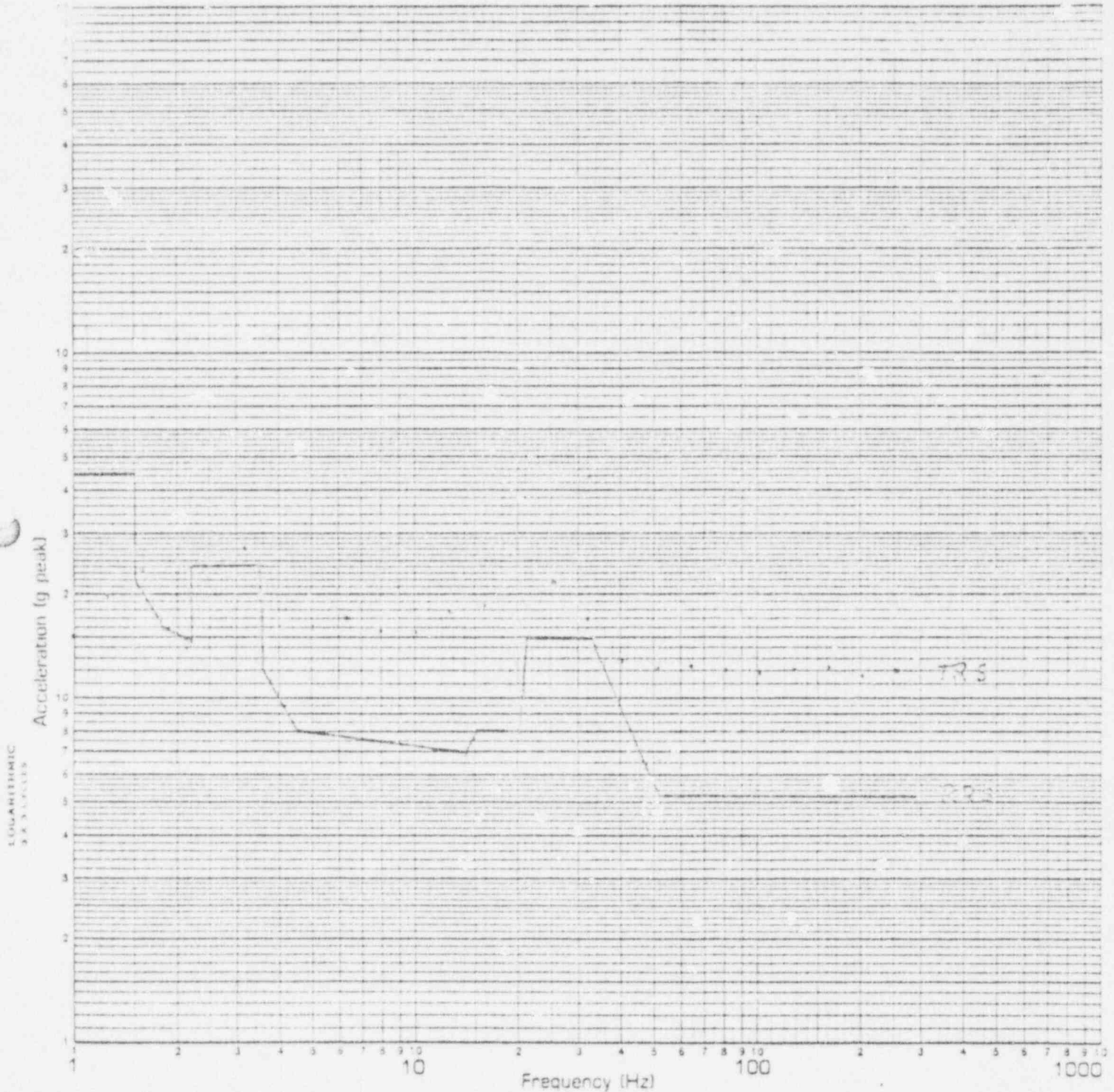
1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat ☐
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other _____
(specify)
4. Frequency Range: 1.0 Hz to 100 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 20 Hz F/B = 20 Hz V = 46 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = _____ F/B = _____ V = _____
Faulted S/S = 1.2 F/B = 1.2 V = .85
9. Laboratory Mounting:
☒ Bolt (No. 6, Size 7/16") ☐ Weld (Length _____) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modification
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☐ 100 ☒ 1000 ☐

DAMPING ☐ 2% ☒



SPECIMEN TABLE

LOCATION NO. 20A

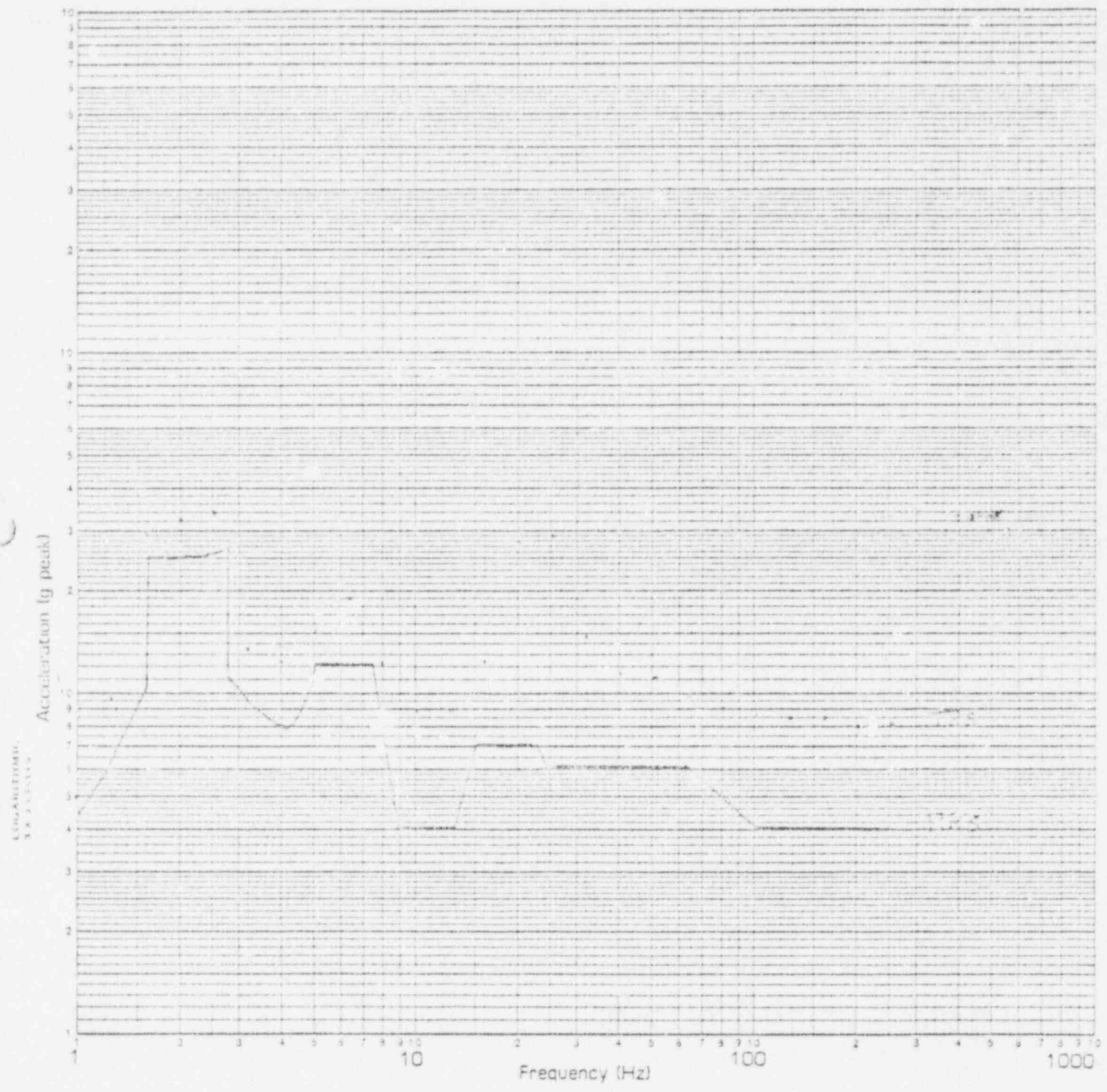
AXIS S-S/V

TEST RUN NO. 10

FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☐ 100 ☒ 1000 ☐

DAMPING



SPECIMEN TABLE

LOCATION NO. ICA

AXIS S-S/V

TEST RUN NO. 10

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 15

Mark No. IT 48 * RC-002

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Hydrogen Recombiner Unit

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: Atomics Int., Ser. No. 302 Quantity: 23. S/W Mark Nos: 1T48*RC-002A & 002B4. If the component is a cabinet or panel, name and model No. of the devices included: N/A5. Physical Description a. Appearance Equipment mounted on skid (floor mounted)b. Dimensions 13'Lgx7'-4 1/2Wx5'-8"H c. Weight 12,000 lbs6. Location: Building Secondary Cont. Elevation 112'7. Field Mounting Conditions ☒ Bolt (No. 6, Size 1")☐ Weld (Length)☐ _____8. a. System in which located: Hydrogen Recombinerb. Functional Description: Post-accident primary containment atmosphere control systemc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-289

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic Testing of Recombiner

(No. Title and Date) 54591-2, May 14, 1976

Company that Prepared Report: Wyle Lab

Company that Reviewed Report: Atomics Int.

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset _____ Faulted 1%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = _____ F/B = _____ V = _____

Faulted S/S = .5 g F/B = .5 g V = .35 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall
qualification program: To the extent required by IEEE-344-1975.

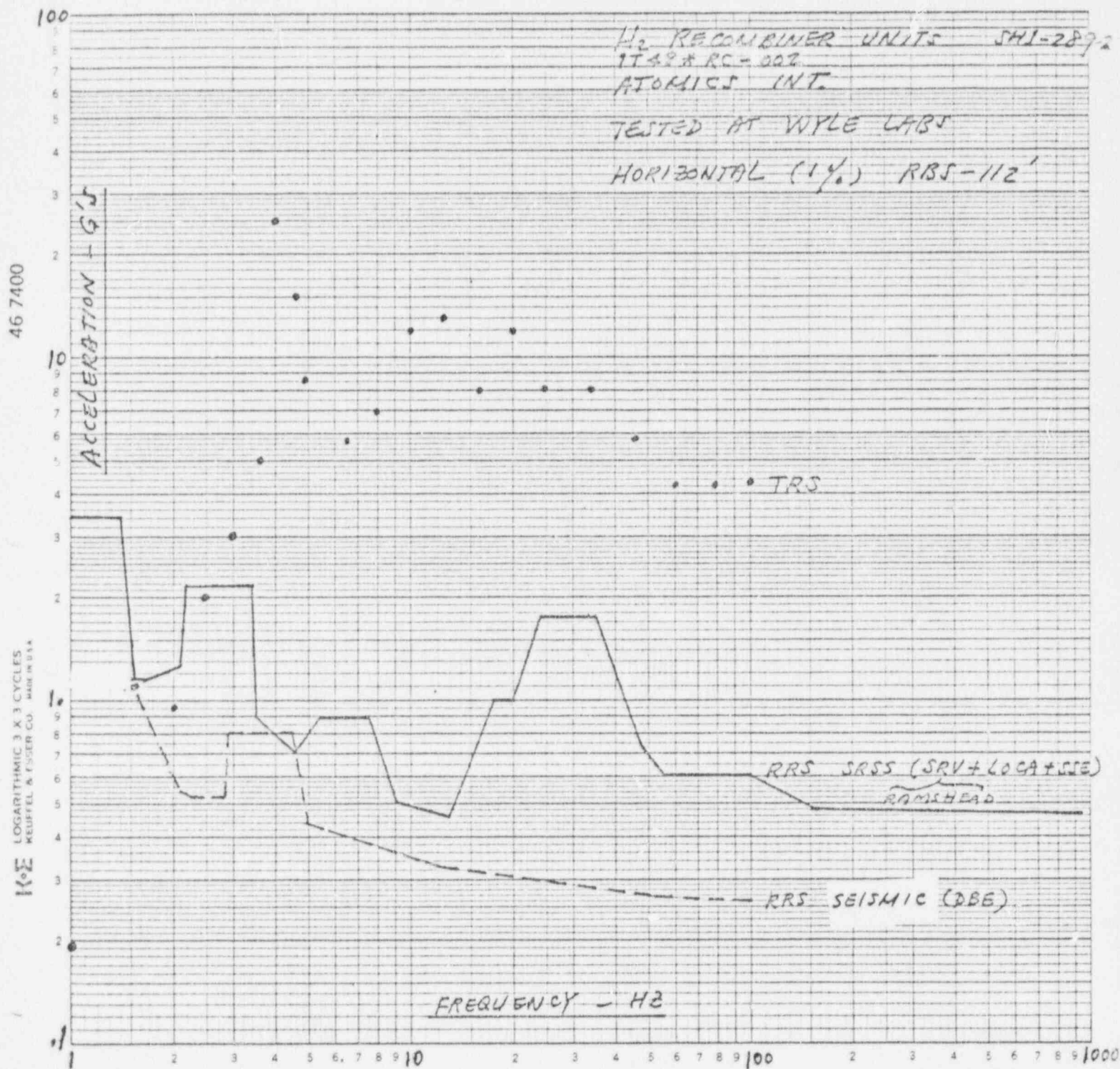
*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random +
☒ sine beat
☐ _____
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other _____
(specify)
4. Frequency Range: 1 to 100 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 14 Hz F/B = 17 Hz V = 18 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = _____ F/B = _____ V = _____
Faulted S/S = 4.0 F/B = 4.0 V = 3.4
9. Laboratory Mounting:
☒ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☐ _____
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modification.
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

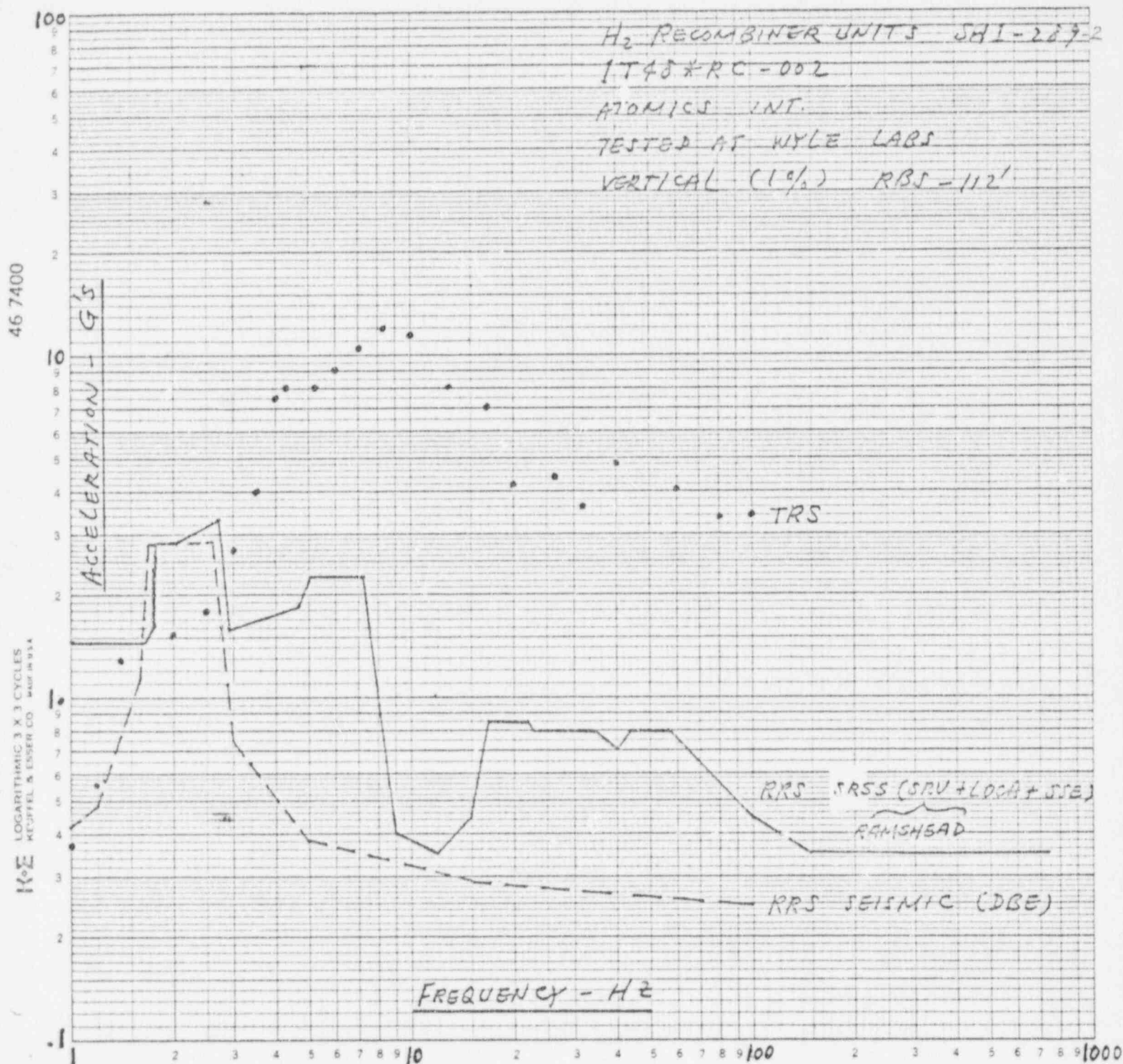
SHI-289-2



TR5 reprint 54591-2
P.43

SPSS (SRV+LOGA+SSE)
reprint closure report
Fig 9-16

4



TR5 reprint 52501-2
p. 46

SRSS (GRV+LCA+SSE)
reprint closure reprint
Fig 9-17

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 16

Mark No. 1T48 * PNL-68

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Drywell Gas Monitor

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: Comsip Inc. KIV Quantity: 43. S, M Mark Nos: 1T48*PNL-68 A&B, 1T48*PNL-69 A&B

4. If the component is a cabinet or panel, name and model No. of the devices included: See attached Table A-1

5. Physical Description a. Appearance Rectangular Boxb. Dimensions 72" High 30" Sq. c. Weight 2500 lbs.6. Location: Building SC Elevation 112'7. Field Mounting Conditions ☒ Bolt (No. 6, Size 5/8") (not installed)☐ Weld (Length)☐ 8. a. System in which located: N/Ab. Functional Description: Measure levels of hydrogen & oxygen in primary containmentc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ both ☐ Neither9. Pertinent Reference Design Specifications: SH1-344

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Qualification of DELPHI IV Hydrogen Analyzer to IEEE-323

(No. Title and Date) 1035-1 December 1980 (instrumentation)

Company that Prepared Report: Eng. Anal. & Test Co.

Company that Reviewed Report: Comsip - Delphi Inc.

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ (other, specify)

3. Required Response Spectra (attach the graphs): See Graphs

4. Damping Corresponding to RRS: Upset 5% Faulted 5%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other (specify)

Upset S/S = 0.5 g F/B = 0.5 g V = 0.4 g

Faulted S/S = 1.0 g F/B = 1.0 g V = 0.4 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To extent required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other (specify)
4. Frequency Range: 1 to 40
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = N/A F/B = N/A V = N/A
6. Method of Determining Natural Frequencies N/A
☐ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 10 g F/B = 10 g V = 10 g
9. Laboratory Mounting: Inservice mounting per drawings.
☐ Bolt (No. , Size) ☐ Weld (Length) ☐
10. Functional oper bility verified: ☐ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: No modifications, test satisfied all specification requirements
12. Other test performed (such as aging or fragility test, including results):
Aging tests were in accordance with NRC requirements and IEEE-323-1974, Qualified Life 5-10 years. See attached table D-II

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

TABLE A-1 Pg 14-17 OF REPORT-1035-1

List Of Safety Related Instruments

Item	Description
1	Entry Exit Valve Hoke Model 4251 G6Y Serial No. 2190
2	Moisture Separator Armstrong Model 11-AV Serial No. 1793
3	Gas Manifold Serial No. 3
4	Air Cooled Heat Exchanger Serial No. 4
5	Flowmeter Brooks Model 1350 Tube No. 196A Serial No. 2189-5
6	Flowmeter Brooks Model 1350 Tube No. 5-65A Serial No. 2189-6
7	Pressure Indicator Marshalltown Model 52B Serial No. 0195
8	Sample Pump Serial No. 1882
9	H2 Analyzer Serial No. 371
10	Analyzer Electronics Serial No. 10
11	Flow Orifice Serial No. 3356

TABLE A-1

List Of Safety Related Instruments (continued)

Item	Description
12 A&B	Differential Pressure Switch Static O-Ring Model No. 15R3-K2-VYIC Serial No. 78-4-1097
13	Down Stream Regulator Conoflow Model H21XT-XXX R1 Serial No. 3204-15
14	Down Stream Regulator Conoflow Model H21XT-XXX R2 Serial No. 3204-16
15	Down Stream Regulator Conoflow Model H21XT-XXX R3 Serial No. 1791
16A	Down Stream Regulator Conoflow Model H21XT-XXX-RB Serial No. 2191-16A
16B	Down Stream Regulator Conoflow Model H21XT-XXX-RB Serial No. 2191-16B
17	Calibration & Reagent Valve ASCO Catalog No. THT8262C7E Serial No. 93415D
18 A,B, C	Check Valve NUPRO Model SS-4CA-3 Serial No. 2187
19	Temperature Switch Fenwall Model 22800 Serial No. 7901
20	Temperature Bulb Fenwall Model 22800 Serial No. 21918

TABLE A-1

List Of Safety Related Instruments (continued)

Item	Description
21	Lights GE Model Et-16 Serial No. 0165A7844P5
22	Relay Potter Brumfield Model KRP11AG Serial No. 174414
23	Relay Potter Brumfield Model KRP14AG Serial No. 173308
24	Relay GE Model CR2810A 14AJ Serial No. 22D135
25	Magnetic Motor Starter GE Model CR206B0 Serial No. 15D21G2
26	Switch GE Model CR2940U201 Serial No. 26
27	Terminal Strip GE Model EB5 Serial No. 27
28	Circuit Breaker ITE Pushmatic Model P1515 Serial No 614
29	Fittings Hoke Gyrolok Model 6CM6-316 Serial No. 29
30A	Cal Rod Strip Heater (4 EA) GE Model 2A907A102 Serial No. SS2041-30A
30B	Cal Rod Strip Heater (4 EA) GE Model 2A907A102 Serial No. SS2041-30B

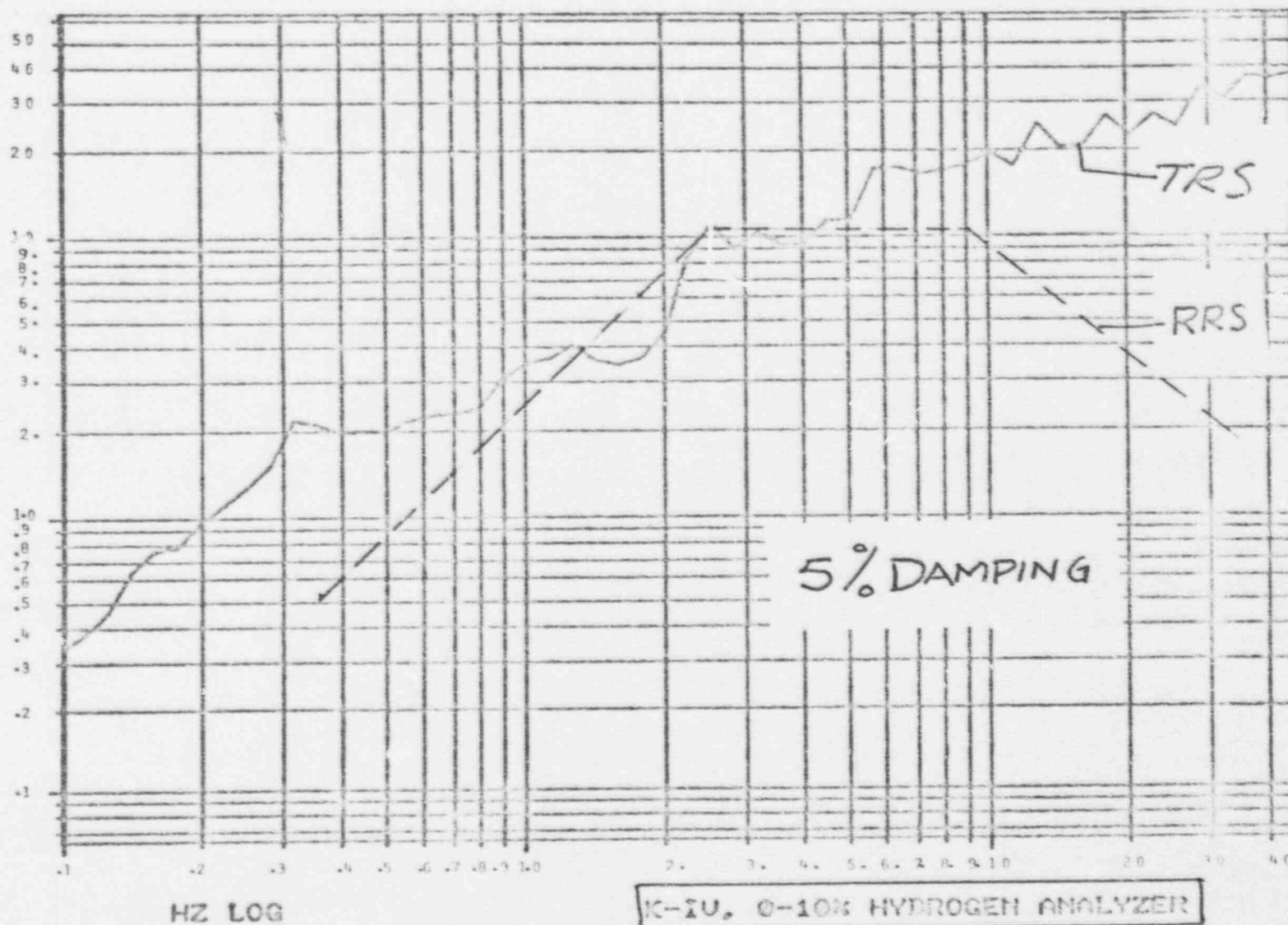
TABLE A-1

List Of Safety Related Instruments (continued)

Item	Description
30C	Cal Rod Strip Heater (4 EA) GE Model 2A907A102 Serial No. SS2041-30C
30D	Cal Rod Strip Heater (4 EA) GE Model 2A907A102 Serial No. SS2041-30D
31	Sample Pump Motor (1) Reliance ID No. 1YF882640A20 NE Serial No. 31
32	Current Transmitter AGM Model CD-4000 Serial No. 38-320
33	Trip Switch AGM Model CD-4004-1 Serial No. 38-213
34	Matheson Flowmeter Tube No. 600 Serial No. 34
35	Matheson Flowmeter Tube No. 601 Serial No. 35
36	Flowmeter Brooks Model 1350 Tube No. 459 Serial No. 36
37A	Terminal Strip Allied Barrier Block Model 750R1503 Serial No. 37A
37B	Terminal Strip Allied Barrier Block Model 750R1503 Serial No. 37B

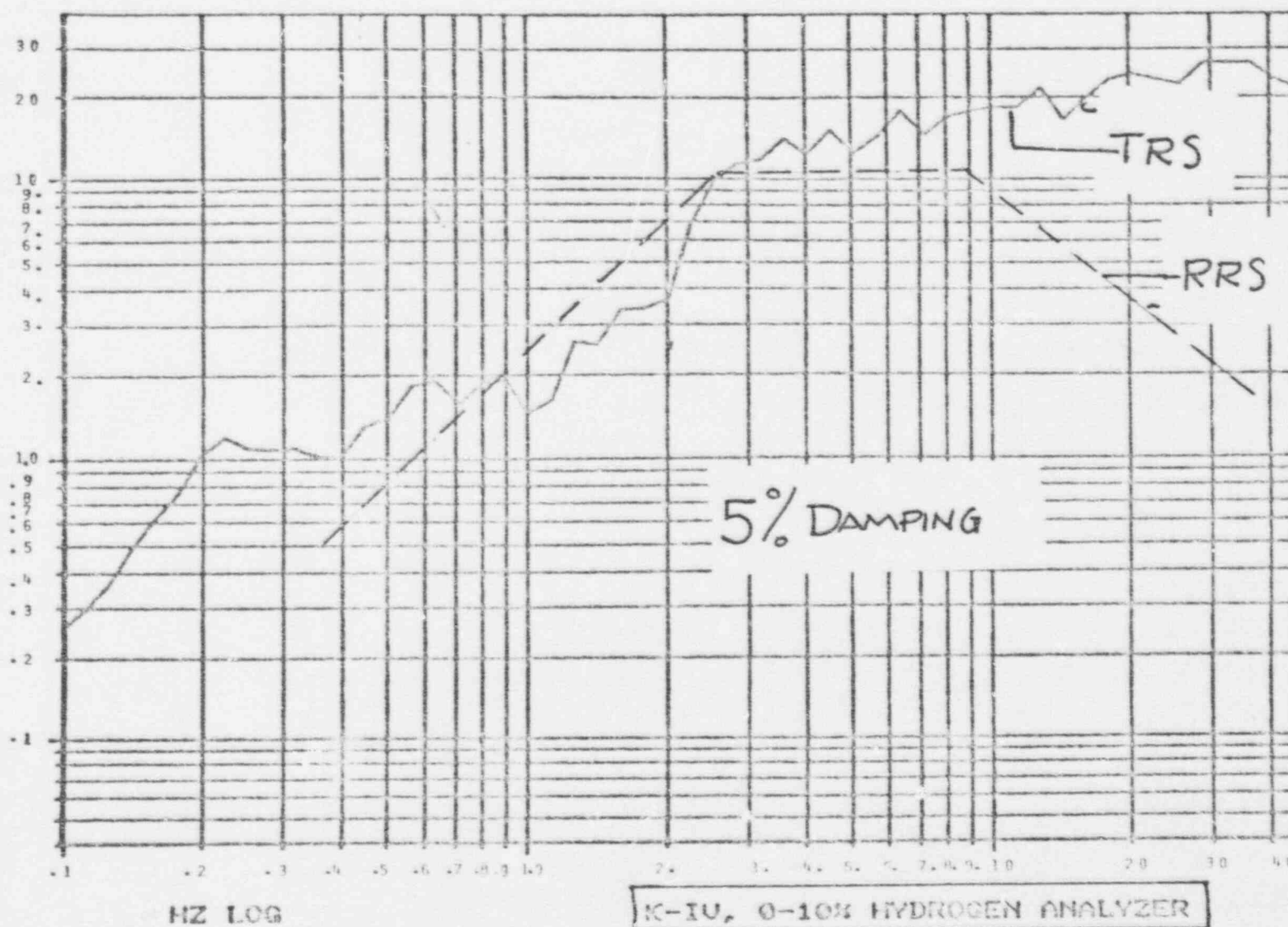
Note: (1) Sample Pump Motor is purchased as prequalified to IEEE-323-1974 by manufacturer.

SSE, VERT-LONG, REC 5, CH 3, VERT. ON UNIT, 3-14-80
SHOCK RESPONSE SPECTRUM



REPORT NO. 1035-1
Pg 53

SSE, VERT-LAT, REC 3, CH 4, LAT. ON UNIT, 3-14-80
SHOCK RESPONSE SPECTRUM



REPORT NO. 1035-1
Pg 55

REPORT NO. 1035-1
 IT48* PNL-69A, B
 IT48* PNL-69A, B

TABLE D-II Mechanical Aging ~~P5~~ 33-36 CF REPORT-
 1035-1

Item	Description	Design Life t_b Years	Mechanical Cycles	Cycle Rate RPM
1	Extry Exit Valve Hoke Model 4251G6Y Serial No. 2190	10	3000	10
2	Moisture Separator Armstrong Model 11-AV Serial No. 1793	10	3000	10
3	Gas Manifold Serial No. 3	10	3000	10
4	Air Cooled Heat Ex- changer Serial No. 4	10	3000	10
5	Flowmeter Brooks Model 1350 Tube No. 465 Serial No. 2189	10	3000	10
6	Flowmeter Brooks Model 1350 Tube No. 5-65A Serial No. 2189	10	3000	10
7	Pressure Indicator Marshalltown Model 52D Serial No. 0195	10	3000	10
8	Sample Pump Serial No. 1882	5	3000	10
9	H ₂ Analyzer Serial No. 371	5	3000	10
10	Signal Conditioner	5	3000	10

TABLE D-II Mechanical Aging (continued)

Item	Description	Design Life t_b Years	Mechanical Cycles	Cycle Rate RPM
11	Flow Orifice Serial No. 3356	10	3000	10
12	Differential Pressure Switch Static O-Ring Model No. 15R3-K2-VYIC Serial No. 78-4-1097	5	3000	10
13	Down Stream Regulator Conflow Model H21XT-XXX R1 Serial No. 3204-15	5	3000	10
14	Down Stream Regulator Conoflow Model H21XT-XXX R2 Serial No. 3204-16	5	3000	10
15	Down Stream Regulator Conoflow Model H21XT-XXX R3 Serial No. 1791	5	3000	10
16	Down Stream Regulator Conoflow Model H21XT-XXX R4 Serial No. 2191	5	3000	10
17	Calibration & Reagent Valve ASCO Catalog No. THT8262C7E Serial No. 93415D	10	3000	10
18	Check Valve Circle Seal Model Serial No. 2187	10	3000	10
19	Temperature Switch Fenwall Model 22800-0 Serial No. 7901	10	3.5×10^5	$10^{(1)}$
20	Temperature Bulb Fenwall Model 22800-0 Serial No. 21918	10	3.5×10^5	10

TABLE D-II Mechanical Aging (continued)

Item	Description	Design Life t_b Years	Mechanical Cycles	Cycle Rate RPM
21	Lights GE Model Et-16 Serial No. 0165A7844P5	5	3000	10
22	Relay Potter Brumfield Model KRPl1AG Serial No. 174414	10	3000	10 ⁽²⁾
23	Relay Potter Brumfield Model KRPl4AG Serial No. 173308	10	3000	10 ⁽³⁾
24	Relay GE Model CR2810A 14AJ Serial No. 22D135	10	3000	10 ⁽⁴⁾
25	Magnetic Motor Starter GE Model CR206B0 Serial No. 15D21G2	10	3000	10 ⁽⁵⁾
26	Switch GE Model CR2940W201 Serial No. 26	10	3000	10 ⁽⁶⁾
27	Terminal Strip GE Model EB5 Serial No. 27	10	3000	10
28	Circuit Breaker ITE Pushmatic Model Serial No. 614 P1515	10	3000	10 ⁽⁷⁾
29	Fittings Hoke Gyrolok Model 6CM6-316	10	N/A	N/A
30	Calrod Strip Heater GE Model 2A907A102 Serial No. SS2041	10	N/A	N/A

TABLE D-II Mechanical Aging (continued)

Item	Description	Design Life t_b Years	Mechanical Cycles	Cycle Rate RPM
31	Sample Pump Motor Reliance ID No. 1YF882640A20	N/A	N/A	N/A
32	Current Transmitter AGM Model CD-4000 Serial No. 33-320	5	3000	10
33	Trip Switch AGM Model CD-4004-1 Serial No. 38-213	5	3000	10
34	Matheson Flowmeter Tube No. 600	10	3000	10
35	Matheson Flowmeter Tube No. 601	10	3000	10

Note: (1) To be cycled under normal load
 (2) To be cycled under normal load
 (3) To be cycled under normal load
 (4) To be cycled under normal load
 (5) To be cycled under normal load
 (6) To be cycled under normal load
 (7) To be cycled under normal load

TEST PANEL REPORT NO. 58095
PANEL WITH DUMMY INSTRUMENT MASSES

IV. Equipment Qualification Method:☒ Test☐ Analysis☐ Combination of Test
and AnalysisQualification Report*: IEEE-344 Seismic Testing of K-IV Monitor(No. Title and Date) 58095, 12 August 1976 (Panel)Company that Prepared Report: Wyle LabCompany that Reviewed Report: Comsip - DelphiV. Vibration Input:1. Loads considered: a. ☐ Seismic onlyb. ☐ Hydrodynamic onlyc. ☒ Combination of (a) and (b)2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ (other, specify)3. Required Response Spectra (attach the graphs): See Graphs4. Damping Corresponding to RRS: Upset 5% Faulted 5%5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other (specify)Upset S/S = 0.5 g F/B = 0.5 g V = 0.4 gFaulted S/S = 1.0 g F/B = 1.0 g V = 0.4 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ NoIf yes, describe loads considered and how they were treated in overall
qualification program: To extent required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random +
☐ sine beat ☐
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other
(specify)
4. Frequency Range: 1 to 100 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 18 F/B = > 33 V = > 33
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 3.5 g F/B = 3.5 g V = 3.0 g
9. Laboratory Mounting:
☒ Bolt (No. 5, Size 5/8) ☐ Weld (Length) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: No structural failures
observed.
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

CUSTOMER

DELPHI

Job No. 58095

Page No.

3

ADDENDUM I

Full Scale 100 g

Accel. No. 1

Control (X)

Response ()

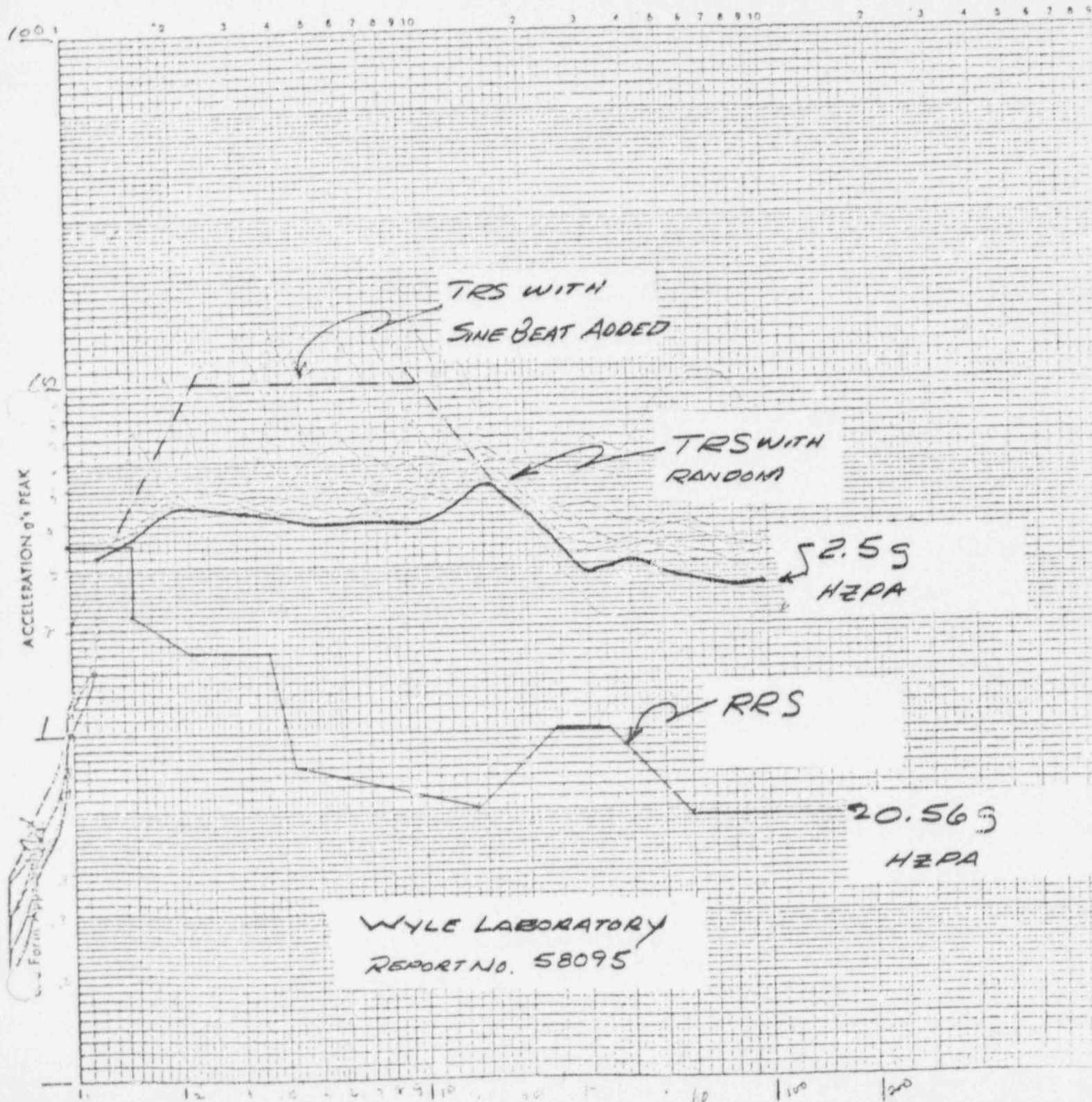
Operator Foss

Specimen K-1V MONITOR

Date 8-24-76

Damping 5 %

Axis of Test (x-y) Horiz

COMPOSITE SINE BEAT WITH BACKGROUND RANDOM
RESPONSE SPECTRA

STOMER

Delphi

Job No.

58075

Page No.

1

ADDENDUM I

Full Scale 100 g

Accel. No. 2

Control (✓)

Response ()

Operator Fogg

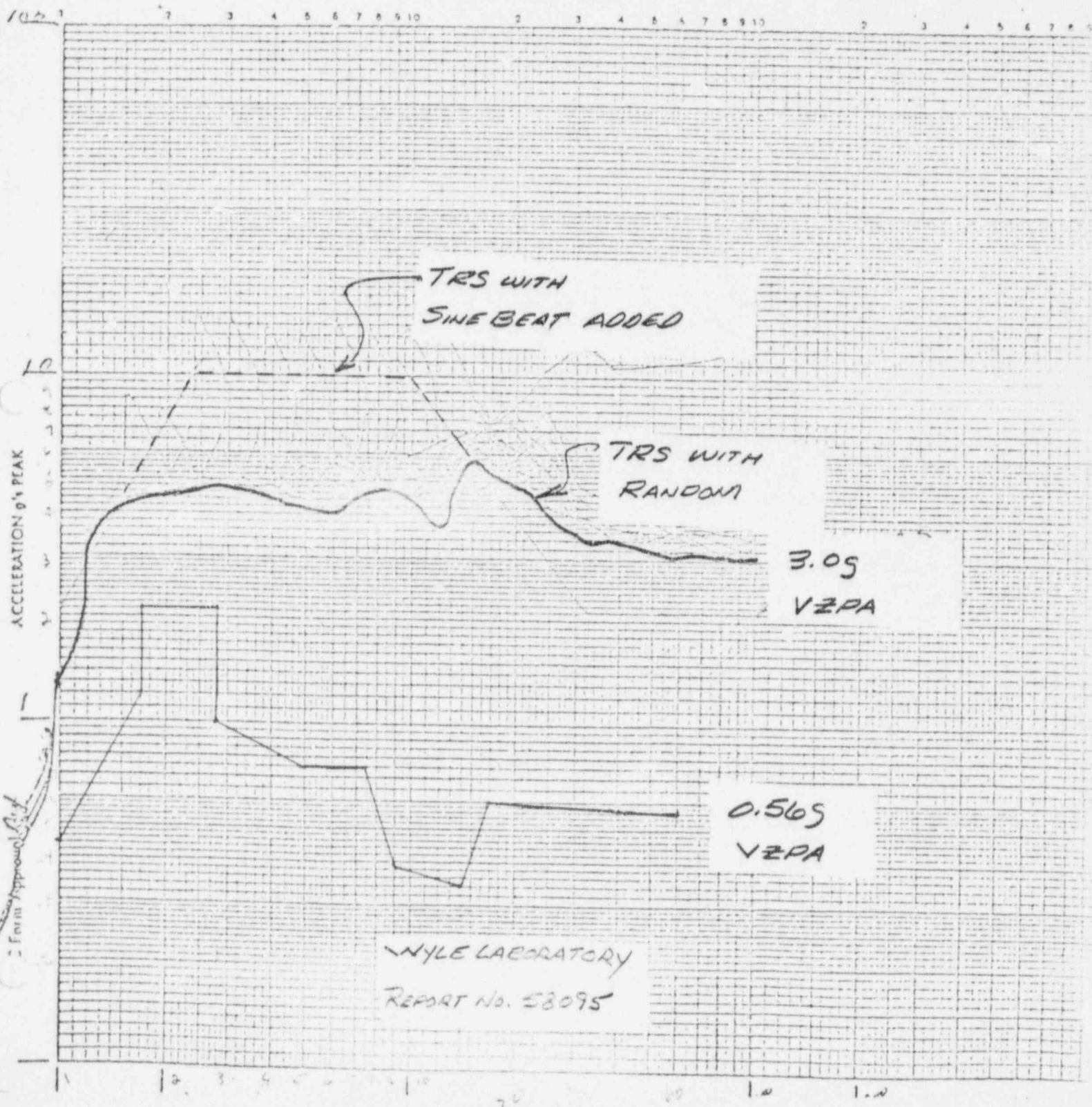
Specimen K-14 max. Tox

Date 9-24-76

Damping 5 %

Axis of Test $(X-Y) \sqrt{2}$

COMPOSITE SINE BEAT WITH BACKGROUND RANDOM
RESPONSE SPECTRA



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 17

Mark No. 1T46 * L/U 059

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE3. A/E: Stone & Webster

BWR 4 MKII

II. Component NameElec. Anal. Instrumentation *Cabinet*1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: RelianceQuantity: 13. S/W Mark Nos: 1H21*PNL-0604. If the component is a cabinet or panel, name and model No. of the devices included: Logic unit 1T46*L/U-059; Bailey 724610 KAHN1see attached list for other devices5. Physical Description a. Appearance Cabinet (floor mounted)b. Dimensions 36"Dx60"Lgx90"Hc. Weight 2394 lbs. (one of three sections)6. Location: Building CBElevation 44 ft.7. Field Mounting Conditions ☒ Bolt (No. 8, Size 1/2")☐ Weld (Length _____)☐ _____8. a. System in which located: H21 - Local Panels and Racks, Controls and instrumentation for various ventilationb. Functional Description: systemsc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-125

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☐ Test

☐ Analysis

☒ Combination of Test
and Analysis

Qualification Report*: Seismic analysis of the 1H21-PNL-60

(No. Title and Date) 99AX400679, October 4, 1977

Company that Prepared Report: Reliance Co.

Company that Reviewed Report: Reliance Co.

V. Vibration Input:

1. Loads considered: a. ☒ Seismic only

b. ☐ Hydrodynamic only

c. ☐ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☐ SRSS ☒ N/A
(other, specify)

3. Required Response Spectra (attach the graphs): Attached (CB44)

4. Damping Corresponding to RRS: Upset 1/2% Faulted 1%

5. Required Acceleration in Each Direction: ☐ ZPA ☒ Other FH > 12Hz
(specify)

Upset S/S = .5 F/B = .5 V = .2

Faulted S/S = .9 F/B = .9 V = .46

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall
qualification program: Not required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☐ random
☐ sine beat
☒ Time History
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset _____ Faulted _____ Other _____
(specify)
4. Frequency Range: 1 - 50 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = >33 Hz F/B = >33 V = >33
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☐ Yes (Attach TRS and RRS graphs)
☒ No Not required
8. Input g-level Test: Upset S/S = _____ F/B = _____ V = _____
Faulted S/S = 7 F/B = 7 V = 7
9. Laboratory Mounting:
☒ Bolt (No. _____, Size _____) ☐ Weld (Length _____) ☐ _____
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modification.
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

SNPS-1

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET

SHOREHAM NUCLEAR POWER STATION - UNIT 1

LONG ISLAND LIGHTING COMPANY

11600.02-ESK-4TB01

CONTROLLED

NUCLEAR SAFETY RELATED
Q.A. CAT. I, II

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

11600.02-ESK-4TB01 Rev. 4 Sh 1

		3/24/80	3/20/78	10/31/77	2/23/77
		RLP	RLP	RLP	RLP
		IMJ	IMJ	IMJ	IMJ
6	5	4	3	2	1
		GRH	GRH	GRH	GRH

CATEGORY I INSTRUMENT CABINET
1H21*PNI-60
CONTROL ROOM BUILDING CR-044

GENERAL NOTES:

Rev.

1. Location of devices on elementary diagrams and wiring sketches are as shown in the REMARKS column.
2. Terminal blocks are to be provided in quantities required to include 20 percent spare points.
3. The Category I Instrument Cabinet shall be constructed to meet the requirements of specification SH1-125 and all addenda thereto.
4. All control switch and nameplate engraving shall conform to the requirements of Specification SH1-125 and the Engineers' engraving list.

LEGEND

"S" in the "By" column indicates Seller.

"E" in the "By" column indicates Engineers.

"(E)" in the "By" column indicates equipment provided by the Engineers for mounting at the jobsite. Equipment so designated will not be shipped to the panel vendor.

REFERENCE DRAWINGS

Outline and arrangement drawings - 11600.02-1.52-564C

4

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABIN
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600.02-ESK-h1801 Rev. 4 Sh 2

SNPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
4	1A	None	1	S	Exhaust Fan 120V/60 Hz/1PH 50-75 cfm, IMC Type BS2107F-0-1 or equal	Shipping Section "A"	A	ESK-6R3537
4	1B	None	1	S	Same as Item 1A	Shipping Section "A"	A	ESK-6R3537
4	1C	None	1	S	Same as Item 1A	Shipping Section "B"	B	ESK-6R3538
4	1D	None	1	S	Same as Item 1A	Shipping Section "B"	B	ESK-6R3538
4	1E	None	1	S	Same as Item 1A	Shipping Section "C"	C	ESK-6R3539
4	1F	None	1	S	Same as Item 1A	Shipping Section "C"	C	ESK-6R3539
4	2A	1A-1R35A17	1	S	Control switch, microswitch type CMC with 4 indicating lamps and transformers, cover plate and inserts 906BDB, operator 910AEA511, and contact block PTCC (ESK-3J/BW1)	Used with Item 1A	A	ESK-6R3537
4	2B	1B-1R35A17	1	S	Same as Item 2A	Used with Item 1B	A	ESK-6R3537
4	2C	1A-1R35B17	1	S	Same as Item 2A	Used with Item 1C	B	ESK-6R3538
4	2D	1B-1R35B17	1	S	Same as Item 2A	Used with Item 1D	B	ESK-6R3538
4	2E	1A-1R35C17	1	S	Same as Item 2A	Used with Item 1E	C	ESK-6R3539
4	2F	1B-1R35C17	1	S	Same as Item 2A	Used with Item 1F	C	ESK-6R3539
	3A	None	1	E	Balloy Type 761 rack unit	Equipment Mounting Rack	A	
	3B	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3C	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3D	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3E	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3F	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600-02-ESK-41801 Rev. 4 Sh 3

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	3G	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3H	None	1	E	Same as Item 3A	Equipment Mounting Rack	A	
	3K	None	1	E	Same as Item 3A	Equipment Mounting Rack	C	
	3J	None	1	E	Same as Item 3A	Equipment Mounting Rack	C	
	3L	None	1	E	Same as Item 3A	Equipment Mounting Rack	C	
	3M	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3N	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3P	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3R	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3S	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3T	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3U	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
	3V	None	1	E	Same as Item 3A	Equipment Mounting Rack	B	
2	4A	74-1E51N21	1	S	Agastat time delay relay, time delay dropout, 5-50 seconds, 120V/60 Hz coil, 2 form "C" contacts, with panel mount option, Model No. 7022ADK	1E51*PCV142	A	ESK-13E5101
2	4B	74-1M50A17	1	S	Same as Item 4A	1M50*PCV019A	A	ESK-13M5001
3	4C	74-1T46A31	1	S	Same as Item 4A	1T46*TCV059A	A	ESK-13T4621
2	4D	74-1T46A26	1	S	Same as Item 4A	1T46*TCV022A	A	ESK-13T4605
2	4E	74-1T46A27	1	S	Same as Item 4A	1T46*TCV023A	A	ESK-13T4607
2	4F	74-1T46A28	1	S	Same as Item 4A	1T46*TCV024A	A	ESK-13T4609

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
 SHOREHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

11600.02-ESK-41101 Rev. 4 Sh 4

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	4G	74-1T46A24	1	S	Same as Item 4A	1T46*TCV025A	A	ESK-13T4611
2	4H	74-1T46A25	1	S	Same as Item 4A	1T46*TCV028A	A	ESK-13T4613
2	4J	74-1X41A20	1	S	Same as Item 4A	1X41*TCV021A	A	ESK-13X4101
2	4K	74-1X61A10	1	S	Same as Item 4A	1X61*TCV021A	A	ESK-13X6101
2	4L	74-1T46A29	1	S	Same as Item 4A	1T46*TCV026A	A	ESK-13T4615
4	4M	74-1R35A17	1	S	Same as Item 4A	Fan A Loss of Control	A	ESK-6R3537
	4N	-	-	-	Not Used			
	4P	74-1T46A32	1	S	Same as Item 4A	1T46*TCV060A	C	ESK-13T4623
	4R	74-1T46B32	1	S	Same as Item 4A	1T46*TCV060B	C	ESK-13T4624
4	4S	74-1R35C17	1	S	Same as Item 4A	Fan A Loss of Control	C	ESK-6R3539
4	4T	74-1R35C17	1	S	Same as Item 4A	Fan B Loss of Control	C	ESK-6R3539
	4U	-	1	S	Same as Item 4A	Spare	C	
	4V	-	1	S	Same as Item 4A	Spare	C	
2	4W	74-1E41R26	1	S	Same as Item 4A	1E41*PCV142	B	ESK-134101
2	4X	74-1M50B17	1	S	Same as Item 4A	1M50*PCV019A	B	ESK-13M5002
3	4Y	74-1T46B31	1	S	Same as Item 4A	1T46*TCV059B	B	ESK-13T4622
2	4Z	74-1T46B26	1	S	Same as Item 4A	1T46*TCV022B	B	ESK-13T4606
2	4AA	74-1T46B27	1	S	Same as Item 4A	1T46*TCV023B	B	ESK-13T4608
2	4AB	74-1T46B28	1	S	Same as Item 4A	1T46*TCV024B	B	ESK-13T4610
2	4AC	74-1T46B24	1	S	Same as Item 4A	1T46*TCV025B	B	ESK-13T4612
2	4AD	74-1T46B25	1	S	Same as Item 4A	1T46*TCV029B	B	ESK-13T4614

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

STORE & WEBSTER ENGINEERING CORPORATION

11600, 02-ESK-41R01 Rev. 4 Sh 5

CONTROLLED

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	4AE	74-1X41B20	1	S	Same as Item 4A	1X41*TCV021B	B	ESK-13X4102
2	4AF	74-1X61A10	1	S	Same as Item 4A	1X61*TCV021B	B	ESK-13X6102
2	4AG	74-1T46B29	1	S	Same as Item 4A	1T46*TCV026B	B	ESK-13T4616
4	4AH	74-1R35B17	1	S	Same as Item 4A	Fan A Loss of Control	B	ESK-6R3538
2	5A	-	1	S	Agastat time delay relay, time delay dropout, 1-300 seconds, 24VDC coil, 2 Form "C" contacts, with panel mounting option, Model No. 70220KX	Spare	A	
2	5B	-	1	S	Same as Item 5A	Spare	B	
2	6A	74-1P41C26	1	S	Agastat time delay relay, time delay dropout, 5-50 seconds, 120V/60 HZ coil, 4 Form "C" contacts, Model No. 7024AD	1P41*TCV055T	A	ESK-13P4103
2	6B	74-1P41A26	1	S	Same as Item 6A	1P41*TCV055W	A	ESK-13P4101
2	6C	74-1P41E26	1	S	Same as Item 6A	1P41*TCV055X	A	ESK-13P4103
2	6D	74-1P41C29	1	S	Same as Item 6A	1P41*TCV060T	C	ESK-13P4111
2	6E	74-1P41E29	1	S	Same as Item 6A	1P41*TCV060X	C	ESK-13P4111
2	6F	74-1P41A29	1	S	Same as Item 6A	1P41*TCV060W	C	ESK-13P4109
2	6G	74-1P41D29	1	S	Same as Item 6A	1P41*TCV060V	C	ESK-13P4112
2	6H	74-1P41B29	1	S	Same as Item 6A	1P41*TCV060Y	C	ESK-13P4110
2	6J	74-1P41F29	1	S	Same as Item 6A	1P41*TCV060Z	C	ESK-13P4112
2	6K	74-1P41D26	1	S	Same as Item 6A	1P41*TCV055V	B	ESK-13P4104
2	6L	74-1P41B26	1	S	Same as Item 6A	1P41*TCV055Y	B	ESK-13P4102
4	6M	74-1P41F26	1	S	Same as Item 6A	1P41*TCV055Z	B	ESK-13P4104

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
 SHOREHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 11600.02-ESK-41B01 Rev. B Sh 6

3NPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
4	7A	74-1R35A17	1	F	Same as item 4A	Fan B Loss of Control	A	ESK-6R3537
4	7B	74-1R35B17	1	F	Same as item 4A	Fan B Loss of Control	B	ESK-6R3538
2	8A	-	1	S	Potter & Brumfield type MDR relay 125VDC coil 16 PDT contacts Model No. MDR173-1	Spare	C	
2	8B	-	1	S	Same as item 8A	Spare	C	
2	8C	-	1	S	Same as item 8A	Spare	C	
2	8D	74X-1R35A13	1	S	Same as item 8A	Division I System INOP	C	ESK-6R3537
2	8E	74X-1R35B13	1	S	Same as item 8A	Division II System INOP	C	ESK-6R3538
2	8F	74X-1R35C13	1	S	Same as item 8A	Division III System INOP	C	ESK-6R3539
	9A	-	1	S	Potter & Brumfield type MDR relay 125VDC coil, 4 PDT contacts, Model MDR 137-8	Spare	C	
	9B	-	1	S	Same as item 9A	Spare	C	
3	10A	1R41* E/S060A(1)	1	E	Bailey Power Supply Model No. 8080B02P0010	Division I Power Supply	A	ESK-6R3537
3	10B	1R41* E/S060A(2)	1	E	Same as item 10A	Division I Power Supply	A	ESK-6R3537
3	10C	1R41* E/S060B(1)	1	E	Same as item 10A	Division II Power Supply	B	ESK-6R3538
3	10D	1R41* E/S060B(2)	1	E	Same as item 10A	Division II Power Supply	B	ESK-6R3538
3	11A	1R41* E/S060C(1)	1	E	Bailey Power Supply Model No. 8080B02P0008	Division III Power Supply	C	ESK-6R3539
3	11B	1R41* E/S060C(2)	1	E	Same as item 11A	Division III Power Supply	C	ESK-6R3539

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-1 SK-41801 Rev. 4 Sh. 7

ENPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
3	12A				ITEM DELETED			
3	12B				ITEM DELETED			
4	13A	None	1	S	Binding post assembly, gold plated, 1 each superior Type DF31RC, Type DF31BC, and Type DF31GNC	1P50*PS116A	A	ESK-13P5001
4	13B	None	1	S	Same as Item 13A	1P50*PS116B	B	ESK-13P5002
3	13C	None	1	S	Binding post assembly, gold plated 1 each superior Type DF31RC, DF31BC, and DF31BLC	1P41*TIC060A	C	ESK-13P4109
2	14A	None	1	S	Same as Item 13A	1M50*PCV019A	A	ESK-13M5001
2	14B	None	1	S	Same as Item 13A	1M50*PCV019B	B	ESK-13M5002
3	14C	None	1	S	Same as Item 13C	1P41*TIC060B	C	ESK-13P4110
3	15A	None	1	S	Same as Item 13C	1P41*TIC055A	A	ESK-13P4101
3	15B	None	1	S	Same as Item 13C	1P41*TIC055B	B	ESK-13P4102
2	15C	None	1	S	Same as Item 13A	1M50*FS053A	C	ESK-13M5005
2	16A	None	1	S	Same as Item 13A	1T46*MOD034A	A	ESK-1314603
2	16B	None	1	S	Same as Item 13A	1T46*MOD034B	B	ESK-1314604
2	16C	None	1	S	Same as Item 13A	1M50*FS053B	C	ESK-13M5006
3	17A	None	1	S	Same as Item 13C	1T46*TCV022A	A	ESK-1314605
3	17B	None	1	S	Same as Item 13C	1T46*TCV022B	B	ESK-1314606
	17C	None	1	S	Same as Item 13A	1P41*FS059A	C	ESK-13P4107
3	18A	None	1	S	Same as Item 13C	1T46*TCV023A	A	ESK-1314607
3	18B	None	1	S	Same as Item 13C	1T46*TCV023B	B	ESK-1314608

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINE
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-ESK-41801 Rev. 4 Sh. 8

INPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	18C	None	1	S	Same as Item 13A	1P41*FS059B	C	ESK-13P4108
3	19A	None	1	S	Same as Item 13C	1T46*TCV024A	A	ESK-13T4609
3	19B	None	1	S	Same as Item 13C	1T46*TCV024B	B	ESK-13T4610
3	19C	None	1	S	Same as Item 13C	1T46*TCV069A	C	ESK-13T4623
3	20A	None	1	S	Same as Item 13C	1T46*TCV025A	A	ESK-13T4611
3	20B	None	1	S	Same as Item 13C	1T46*TCV025B	B	ESK-13T4612
3	20C	None	1	S	Same as Item 13C	1T46*TCV060B	C	ESK-13T4624
3	21A	None	1	S	Same as Item 13C	1T46*TCV028A	A	ESK-13T4613
3	21B	None	1	S	Same as Item 13C	1T46*TCV028B	B	ESK-13T4614
	21C	None	1	S	Same as Item 13A	Spare	C	
3	22A	None	1	S	Same as Item 13C	1T46*TR001A	A	ESK-13T4619
3	22B	None	1	S	Same as Item 13C	1T46*TR001B	B	ESK-13T4620
	22C	None	1	S	Same as Item 13A	Spare	C	
3	23A	None	1	S	Same as Item 13C	1X41*TCV021A	A	ESK-13X4101
3	23B	None	1	S	Same as Item 13C	1X41*TCV021B	B	ESK-13X4102
	23C	None	1	S	Same as Item 13A	Spare	C	
3	24A	None	1	S	Same as Item 13C	1X61*TCV021A	A	ESK-13X6101
3	24B	None	1	S	Same as Item 13C	1X61*TCV021B	B	ESK-13X6102
	24C	None	1	S	Same as Item 13A	Spare	C	
4	25A	None	1	S	Same as Item 13A	RB SW Strainer "A" Diff Press	A	ESK-13P4114
4	25B	None	1	S	Same as Item 13A	RB SW Strainer "B" Diff Press	B	ESK-13P4114

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET SHOREHAM NUCLEAR POWER STATION - UNIT 1 LONG ISLAND LIGHTING COMPANY STONE & WEBSTER ENGINEERING CORPORATION 11600 02-ESK-41B01 Rev. 4 Sh. 9

NPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/ DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
4	25C	None	1	S	Same as Item 13A	RB SW Strainer "C" Diff Press	C	ESK-13P4115
4	26A	None	1	S	Same as Item 13A	RB SW - RBCLCW HX "A" Flow	A	ESK-13P4113
4	26B	None	1	S	Same as Item 13A	RB SW - RBCLCW HX "B" Flow	B	ESK-13P4113
4	26C	None	1	S	Same as Item 13A	RB SW Strainer "D" Diff Press	C	ESK-13P4115
2	27A	None	1	S	Same as Item 13A	1M50*FS043A	A	ESK-13M5003
2	27B	None	1	S	Same as Item 13A	1M50*FS043B	B	ESK-13M5004
	27C	None	1	S	Same as Item 13A	Spare	C	
2	28A	None	1	S	Same as Item 13A	1P41*FS054A	A	ESK-13P4105
2	28B	None	1	S	Same as Item 13A	1P41*FS054B	B	ESK-13P4106
	28C	None	1	S	Same as Item 13A	Spare	C	
3	29A	None	1	S	Same as Item 13A	1X61*FT002A	A	ESK-13X6103
3	29B	None	1	S	Same as Item 13A	1X61*FT002B	B	ESK-13X6103
	29C	None	1	S	Same as Item 13A	Spare	C	
2	30A	None	1	S	Same as Item 13A	1146*PDS003A	A	ESK-1314601
2	30B	None	1	S	Same as Item 13A	1146*PDS003B	B	ESK-1314602
	30C	None	1	S	Same as Item 13A	Spare	C	
	31A	None	1	S	Same as Item 13A	Spare	A	
2	31B	None	1	S	Same as Item 13A	1148*FS005X	B	ESK-1314801
	31C	None	1	S	Same as Item 13A	Spare	C	
	32A	None	1	S	Same as Item 13A	Spare	A	
2	32B	None	1	S	Same as Item 13A	1148*FS005Y	B	ESK-1314801

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-ESK-41801 Rev. 4 Sh. 10

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	32C	None	1	S	Same as Item 13A	Spare	C	
2	33A	None	1	S	Same as Item 13A	1X61*MT021A	A	ESK-13X6101
2	33B	None	1	S	Same as Item 13A	1X61*MT021B	B	ESK-13X6102
	33C	None	1	S	Same as Item 13A	Spare	C	
2	34A	None	1	S	Same as Item 13A	1T46*PD1C043A	A	ESK-13T4617
2	34B	None	1	S	Same as Item 13A	1T46*PD1C043B	B	ESK-13T4618
	34C	None	1	S	Same as Item 13A	Spare	C	
2	35A	None	1	S	Same as Item 13A	1X41*MT021A	A	ESK-13X4101
2	35B	None	1	S	Same as Item 13A	1X41*MT021B	B	ESK-13X4102
	35C	None	1	S	Same as Item 13A	Spare	C	
2	36A	None	1	S	Same as Item 13A	1M50*R/1089A	A	ESK-13M5007
2	36B	None	1	S	Same as Item 13A	1M50*R/1089B	B	ESK-13M5008
	36C	None	1	S	Same as Item 13A	Spare	C	
3	37A	None	1	S	Same as Item 13C	1T46*TCV059A	A	ESK-13T4621
3	37B	None	1	S	Same as Item 13C	1T46*TCV059B	B	ESK-13T4622
3	38A	None	1	S	Same as Item 13C	1T46*TCV060A	A	ESK-13T4623
3	38B	None	1	S	Same as Item 13C	1T46*TCV060B	B	ESK-13T4624
	39A	None	1	S	Same as Item 13A	Spare	A	
	39B	None	1	S	Same as Item 13A	Spare	B	
	40A	None	1	S	Same as Item 13A	Spare	A	
	40B	None	1	S	Same as Item 13A	Spare	B	

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
 SHOREHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 Y1600_02-ESK-4TH01 Rev. 4 Sh 11

SNPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	41A	None	1	S	Same as Item 13A	Spare	A	
	41B	None	1	S	Same as Item 13A	Spare	B	
	42A	None	1	S	Same as Item 13A	Spare	A	
	42B	None	1	S	Same as Item 13A	Spare	B	
	43A	None	1	S	Same as Item 13A	Spare	A	
	43B	None	1	S	Same as Item 13A	Spare	B	
	44A	None	1	S	Same as Item 13A	Spare	A	
	44B	None	1	S	Same as Item 13A	Spare	B	
	45A	None	1	S	Same as Item 13A	Spare	A	
	45B	None	1	S	Same as Item 13A	Spare	B	
	46A	None	1	S	Same as Item 13A	Spare	A	
	46B	None	1	S	Same as Item 13A	Spare	B	
	47A	None	1	S	Same as Item 13A	Spare	A	
	47B	None	1	S	Same as Item 13A	Spare	B	
	48A	None	1	S	Same as Item 13A	Spare	A	
	48B	None	1	S	Same as Item 13A	Spare	B	
3	49A		1	(E)	Bailey Type 720 Manual/Auto Station	THESE ITEM NUMBERS ARE NOT USED		
3	49B		1	(E)	Bailey Type 721 Control Unit	THESE ITEM NUMBERS ARE NOT USED		
3	49C		1	(F)	Bailey Type 722 Manual Memory Unit	THESE ITEM NUMBERS ARE NOT USED		
3	49D		1	(E)	Bailey Type 724 Logic Unit	THESE ITEM NUMBERS ARE NOT USED		

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINETS
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-15K-41901 Rev. 4 SH 12

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	50A	1M50* PDC019A	1	(E)	Same as Item 49A	1M50*PCV019A	—A—	ESK-13M5001
2	50B	1M50* PDC019A	1	(E)	Same as Item 49B	1M50*PCV019A	A	ESK-13M5001
2	50C	1M50* H/U019A	1	(E)	Same as Item 49C	1M50*PCV019A	A	ESK-13M5001
2	50D	1M50* L/U019A	1	(E)	Same as Item 49D	1M50*PCV019A	A	ESK-13M5001
2	51A	1P41* TIC055A	1	(E)	Same as Item 49A	1P41*TIC055A	A	ESK-13P4101
2	51B	1P41* TIC055A	1	(E)	Same as Item 49B	1P41*TIC055A	A	ESK-13P4101
2	51C	1P41* H/U055A	1	(E)	Same as Item 49C	1P41*TIC055A	A	ESK-13P4101
2	51D	1P41* L/U055A	1	(E)	Same as Item 49D	1P41*TIC055A	A	ESK-13P4101
2	51E	1P41* R/E055A	1	(E)	Balley Type 740 R/E Converter	1P41*TIC055A	A	ESK-13P4101
	52A	-	-	(NOT USED)				
2	52B	1T46* FC004A	1	(E)	Same as Item 49B	1T46*MOD034A	A	ESK-13T4603
2	52C	1T46* H/U004A	1	(E)	Same as Item 49C	1T46*MOD034A	A	ESK-13T4603
2	52D	1T46* L/U004A	1	(E)	Same as Item 49D	1T46*MOD034A	A	ESK-13T4603
2	53A	1T46* TIC022A	1	(E)	Same as Item 49A	1T46*TCV022A	A	ESK-13T4603

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
 SHORHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 11603.02-ESK-81P01 Rev. 4 Sh 13

EQUIPMENT LIST

REV	ITEM NO.	INSTR/ DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	53B	1T46* TC022A	1	(E)	Same as Item 49B	1T46*TCV022A	A	ESK-1314605
2	53C	1T46* M/U022A	1	(E)	Same as Item 49C	1T46*TCV022A	A	ESK-1314605
2	53D	1T46* L/U022A	1	(E)	Same as Item 49D	1T46*TCV022A	A	ESK-1314605
2	53E	1T46* R/E022A	1	(E)	Same as Item 51E	1T46*TCV022A	A	ESK-1314605
2	54A	1T46* TC023A	1	(E)	Same as Item 49A	1T46*TCV023A	A	ESK-1314607
2	54B	1T46* TC023A	1	(E)	Same as Item 49B	1T46*TCV023A	A	ESK-1314607
2	54C	1T46* M/U023A	1	(E)	Same as Item 49C	1T46*TCV023A	A	ESK-1314607
2	54D	1T46* L/U023A	1	(E)	Same as Item 49D	1T46*TCV023A	A	ESK-1314607
2	54E	1T46* R/E023A	1	(E)	Same as Item 51E	1T46*TCV023A	A	ESK-1314607
2	55A	1T46* TC024A	1	(E)	Same as Item 49A	1T46*TCV024A	A	ESK-1314609
2	55B	1T46* TC024A	1	(E)	Same as Item 49B	1T46*TCV024A	A	ESK-1314609
2	55C	1T46* M/U024A	1	(E)	Same as Item 49C	1T46*TCV024A	A	ESK-1314609
2	55D	1T46* L/U024A	1	(E)	Same as Item 49D	1T46*TCV024A	A	ESK-1314609
2	55E	1T46* R/E024A	1	(E)	Same as Item 51E	1T46*TCV024A	A	ESK-1314609

CONTROLLED

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
 SHOREHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

11600.02-ESK-41B01 Rev. 4 Sh. 14

EQUIPMENT LIST

REV	ITEM NO.	INSTR/ DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	56A	1T46* TIC025A	1	(E)	Same as Item 49A	1T46*TCV025A	A	ESK-13T4611
2	56B	1T46* TIC025A	1	(E)	Same as Item 49B	1T46*TCV025A	A	ESK-13T4611
2	56C	1T46* M/UC025A	1	(E)	Same as Item 49C	1T46*TCV025A	A	ESK-13T4611
2	56D	1T46* L/UC025A	1	(E)	Same as Item 49D	1T46*TCV025A	A	ESK-13T4611
2	56E	1T46* R/UC025A	1	(E)	Same as Item 51E	1T46*TCV025A	A	ESK-13T4611
2	57A	1T46* TIC028A	1	(E)	Same as Item 49A	1T46*TCV028A	A	ESK-13T4613
2	57B	1T46* TIC028A	1	(E)	Same as Item 49B	1T46*TCV028A	A	ESK-13T4613
2	57C	1T46* M/UC028A	1	(E)	Same as Item 49C	1T46*TCV028A	A	ESK-13T4613
2	57D	1T46* L/UC028A	1	(E)	Same as Item 49D	1T46*TCV028A	A	ESK-13T4613
2	57E	1T46* R/UC028A	1	(E)	Same as Item 51E	1T46*TCV028A	A	ESK-13T4613
	58A	-	-	-	NOT USED			
2	58B	1T46* PDC043A	1	(E)	Same as Item 49B	1T46*PDC043A	A	ESK-13T4617
2	58C	1T46* M/UC043A	1	(E)	Same as Item 49C	1T46*PDC043A	A	ESK-13T4617
2	58D	1T46* L/UC043A	1	(E)	Same as Item 49D	1T46*PDC043A	A	ESK-13T4617

CONTROLLED

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINETS
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

11600, 02-ESK-41101 Rev. 4 Sh 15

SNPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	58E	1T46* PDS043A	1	(E)	Bailey Type 745 Alarm Unit	1T46*PDI043A	A	ESK-13T4617
2	59A	1X41* TIC021A	1	(E)	Same as Item 49A	1X41*TCV021A	A	ESK-13X4101
2	59B	1X41* TC021A	1	(E)	Same as Item 49B	1X41*TCV021A	A	ESK-13X4101
2	59C	1X41* H/U021A	1	(E)	Same as Item 49C	1X41*TCV021A	A	ESK-13X4101
2	59D	1X41* I/U021A	1	(E)	Same as Item 49D	1X41*TCV021A	A	ESK-13X4101
2	59E	1X41* R/E021A	1	(E)	Same as Item 51E	1X41*TCV021A	A	ESK-13X4101
2	59F	1X41* I/Y021A	1	(E)	Bailey Type 747 Signal Selector	1X41*TCV021A	A	ESK-13X4101
	60A	-	-	-	NOT USED			
2	60B	1X61* TC021A	1	(E)	Same as Item 49B	1X61*TCV021A	A	ESK-13X6101
2	60C	1X61* H/U021A	1	(E)	Same as Item 49C	1X61*TCV021A	A	ESK-13X6101
2	60D	1X61* I/U021A	1	(E)	Same as Item 49D	1X61*TCV021A	A	ESK-13X6101
2	60E	1X61* R/E021A	1	(E)	Same as Item 51E	1X61*TCV021A	A	ESK-13X6101
2	60F	1X61* I/Y021A	1	(E)	Same as Item 59F	1X61*TCV021A	A	ESK-13X6101
3	61A				ITEM DELETED			
3	61B				ITEM DELETED			

CONTROLLED

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-ESK-41B01 Rev. 1 Sh. 16

SNPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
3	62A				ITEM DELETED			
3	62B				ITEM DELETED			
2	63	1M50* FS043A	1	(E)	Same as Item 58E	1M50*FS043A	A	ESK-13M5003
2	64	1P41* FS054A	1	(E)	Same as Item 58E	1P41*FS054A	A	ESK-13P4105
2	65	1P41* FS059A	1	(E)	Same as Item 58E	1P41*FS059A	C	ESK-13P4107
2	66	1T46* PDS003A	1	(E)	Same as Item 58E	1T46*PDS003	A	ESK-13T4603
2	67	1M50* R/1089A	1	(E)	Bailey Type 740 R/I Convertor	1M50*R/1089A	A	ESK-13M5007
2	68A	1T46* E/1022A	1	(E)	Bailey Type 740 E/I Convertor	1T46*TCV022A	A	ESK-13T4617
2	68B	1T46* E/1023A	1	(E)	Same as Item 68A	1T46*TCV023A	A	ESK-13T4617
2	68C	1T46* E/1024A	1	(E)	Same as Item 68A	1T46*TCV024A	A	ESK-13T4617
2	68D	1T46* E/1025A	1	(E)	Same as Item 68A	1T46*TCV025A	A	ESK-13T4617
2	68E	1T46* E/1026A	1	(E)	Same as Item 68A	1T46*TCV026A	A	ESK-13T4617
3	69A				ITEM DELETED			
3	69B				ITEM DELETED			
3	69C				ITEM DELETED			
3	69D				ITEM DELETED			

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600-02-ESK-41801 Rev. 0 8/17

SNPS-1

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	70A	1M50* P01C019B	1	(E)	Same as Item 49A	1M50*PCV019B	P	ESK-13M5002
2	70B	1M50* P0C019B	1	(E)	Same as Item 49B	1M50*PCV019B	B	ESK-13M5002
2	70C	1M50* H/0019B	1	(E)	Same as Item 49C	1M50*PCV019B	B	ESK-13M5002
2	70D	1M50* L/0019B	1	(E)	Same as Item 49D	1M50*PCV019B	B	ESK-13M5002
2	71A	1P41* TIC055B	1	(E)	Same as Item 49A	1P41*TIC055B	B	ESK-13P4102
2	71B	1P41* TC055B	1	(E)	Same as Item 49B	1P41*TIC055B	B	ESK-13P4102
2	71C	1P41* M/0055B	1	(E)	Same as Item 49C	1P41*TIC055B	B	ESK-13P4102
2	71D	1P41* L/0055B	1	(E)	Same as Item 49D	1P41*TIC055B	B	ESK-13P4102
2	71E	1P41* R/0055B	1	(E)	Same as Item 51E	1P41*TIC055B	B	ESK-13P4102
2	72A	-	-	-	NOT USED			
2	72B	1H46* FC004B	1	(F)	Same as Item 49B	1H46*MOD034B	B	ESK-13H4604
2	72C	1H46* M/0004B	1	(E)	Same as Item 49C	1H46*MOD034B	B	ESK-13H4604
2	72D	1H46* L/0004B	1	(E)	Same as Item 49D	1H46*MOD034B	B	ESK-13H4604
2	72E	1H46* F3004	1	(E)	Same as Item 58E	1H46*MOD034B	B	ESK-13H4604

EQUIPMENT LIST - CATEGORY 1 EQUIPMENT CABINET
 SHORHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 11600, 02-15K-01P01 PAX. R. SH. 19

CONTROLLED

EQUIPMENT LIST

REV	ITEM NO.	INSTR/ DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	73A	1146* TIC022B	1	(E)	Same as Item 49A	1146*ICV022B	---B---	ESK-1314605
2	73B	1146* IC022B	1	(E)	Same as Item 49B	1146*ICV022B	B	ESK-1314606
2	73C	1146* M/UC22B	1	(E)	Same as Item 49C	1146*ICV022B	B	ESK-1314606
2	73D	1146* L/UC22B	1	(E)	Same as Item 49D	1146*ICV022B	B	ESK-1314606
2	73E	1146* R/EO22B	1	(E)	Same as Item 51E	1146*ICV022B	B	ESK-1314606
2	74A	1146* TIC023B	1	(E)	Same as Item 49A	1146*ICV023B	B	ESK-1314608
2	74B	1146* IC023B	1	(E)	Same as Item 49B	1146*ICV023B	B	ESK-1314608
2	74C	1146* M/UC23B	1	(E)	Same as Item 49C	1146*ICV023B	B	ESK-1314608
2	74D	1146* L/UC23B	1	(E)	Same as Item 49D	1146*ICV023B	B	ESK-1314608
2	74E	1146* R/EO23B	1	(E)	Same as Item 51E	1146*ICV023B	B	ESK-1314608
2	75A	1146* TIC024B	1	(E)	Same as Item 49A	1146*ICV024B	B	ESK-1314610
2	75B	1146* IC024B	1	(E)	Same as Item 49B	1146*ICV024B	B	ESK-1314610
2	75C	1146* M/UC24B	1	(E)	Same as Item 49C	1146*ICV024B	B	ESK-1314610
2	75D	1146* L/UC24B	1	(E)	Same as Item 49D	1146*ICV024B	B	ESK-1314610

CONTROLLED

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
 SHORHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 11600-02-ESK-41001 Rev. 0 Sh 19

SNPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	75E	1T46* R/E024B	1	(E)	Same as Item 51E	1T46*TCV024B	B	ESK-13T4610
2	76A	1T46* TIC025B	1	(E)	Same as Item 49A	1T46*TCV025B	B	ESK-13T4612
2	76B	1T46* TC025B	1	(E)	Same as Item 49B	1T46*TCV025B	B	ESK-13T4612
2	76C	1T46* M/U025B	1	(E)	Same as Item 49C	1T46*TCV025B	B	ESK-13T4612
2	76D	1T46* L/U025B	1	(E)	Same as Item 49D	1T46*TCV025B	B	ESK-13T4612
2	76E	1T46* R/E025B	1	(E)	Same as Item 51E	1T46*TCV025B	B	ESK-13T4612
2	77A	1T46* TIC028B	1	(E)	Same as Item 49A	1T46*TCV028B	B	ESK-13T4614
2	77B	1T46* TC028B	1	(E)	Same as Item 49B	1T46*TCV028B	B	ESK-13T4614
2	77C	1T46* M/U028B	1	(E)	Same as Item 49C	1T46*TCV028B	B	ESK-13T4614
2	77D	1T46* L/U028B	1	(E)	Same as Item 49D	1T46*TCV028B	B	ESK-13T4614
2	77E	1T46* R/L028B	1	(E)	Same as Item 51E	1T46*TCV028B	B	ESK-13T4614
	78A	-	-	-	NOT USED			
2	78B	1T46* PDC043B	1	(E)	Same as Item 49B	1T46*PDIC043B	B	ESK-13T4618
2	78C	1T46* M/U043B	1	(E)	Same as Item 49C	1T46*PDIC043B	B	ESK-13T4618

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600-02-ESK-41101 Rev. 4 Sh 20

NPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	78D	1T46* L/0043B	1	(E)	Same as Item 49D	1T46*PDIC043B	B	ESK-13T4618
2	78E	1T46* PD0043B	1	(E)	Same as Item 58E	1T46*PDIC043B	B	ESK-13T4618
2	79A	1X41* TIC021B	1	(E)	Same as Item 49A	1X41*TCV021B	B	ESK-13X4102
2	79B	1X41* TC021B	1	(E)	Same as Item 49B	1X41*TCV021B	B	ESK-13X4102
2	79C	1X41* M/0021B	1	(E)	Same as Item 49C	1X41*TCV021B	B	ESK-13X4102
2	79D	1X41* L/0021B	1	(E)	Same as Item 49D	1X41*TCV021B	B	ESK-13X4102
2	79E	1X41* R/0021B	1	(E)	Same as Item 51E	1X41*TCV021B	B	ESK-13X4102
2	79F	1X41* I/0021B	1	(E)	Same as Item 59F	1X41*TCV021B	B	ESK-13X4102
	80A	-	-	-	NOT USED			
2	80B	1X61* TC021B	1	(E)	Same as Item 49B	1X61*TCV021B	B	ESK-13X6102
2	80C	1X61* M/0021B	1	(E)	Same as Item 49C	1X61*TCV021B	B	ESK-13X6102
2	80D	1X61* L/0021B	1	(E)	Same as Item 49D	1X61*TCV021B	B	ESK-13X6102
2	80E	1X61* R/0021B	1	(E)	Same as Item 51E	1X61*TCV021B	B	ESK-13X6102
2	80F	1X61* I/0021B	1	(E)	Same as Item 59F	1X61*TCV021B	B	ESK-13X6102

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHORHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600.02-ESK-41801 Rev. 4 SB 21

EQUIPMENT LIST

ITEM NO.	REV	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
3	81A	1B21* R/L037B	1	(E)	ITEM DELETED			
3	81B	1B21* L5037B	1	(E)	ITEM DELETED			
3	82A	1B21* F/L037D	1	(E)	ITEM DELETED			
3	82B	1B21* L5037D	1	(E)	ITEM DELETED			
2	83	1P41* FS043B	1	(E)	Same as Item 58E	1M50*FS043B	B	ESK-13P4106
2	84	1P41* FS054B	1	(E)	Same as Item 58E	1P41*FS054B	B	ESK-13P4106
2	85	1P41* FS059B	1	(E)	Same as Item 58E	1P41*FS059B	C	ESK-13P4106
2	86	1P41* PD5003B	1	(E)	Same as Item 58E	1P41*PD5003B	B	ESK-13P4106
2	87	1P50* R/L059B	1	(E)	Same as Item 67	1P50*R/L059B	B	ESK-13P5003
2	88	1P43* FS005A	1	(E)	Same as Item 58E	1P43*FS005X	B	ESK-13P4301
2	89	1P43* FS005Y	1	(E)	Same as Item 58E	1P43*FS005Y	B	ESK-13P4301
2	90A	1P46* L/L022B	1	(E)	Same as Item 68A	1P46*LCV022B	B	ESK-13P4613
2	90B	1P46* L/L023B	1	(E)	Same as Item 68A	1P46*LCV023B	B	ESK-13P4613
2	90C	1P46* L/L024B	1	(E)	Same as Item 68A	1P46*LCV024B	B	ESK-13P4613

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
 SHELLMAN NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY

STONE & MURPHY ENGINEERING CORPORATION

1100-02-ESK-41001 Rev. 4 8/82

CONTROLLED

NPS-1
EQUIPMENT LIST

CONTROLLED

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	REMARKS
2	90D	1T46* E/1025B	1	(E)	Same as Item 68A	ESK-13T4618
2	90E	1T46* E/1026B	1	(E)	Same as Item 68A	ESK-13T4618
2	91A	1P41* TIC060A	1	(E)	Same as Item 49A	ESK-13P4109
2	91B	1P41* TIC060A	1	(E)	Same as Item 49B	ESK-13P4109
2	91C	1P41* H/0060A	1	(E)	Same as Item 49C	ESK-13P4109
2	91D	1P41* L/0060A	1	(E)	Same as Item 49D	ESK-13P4109
2	91E	1P41* R/1060A	1	(E)	Same as Item 51E	ESK-13P4109
2	92A	1P41* TIC060B	1	(E)	Same as Item 49A	ESK-13P4110
2	92B	1P41* TIC060B	1	(E)	Same as Item 49B	ESK-13P4110
2	92C	1P41* H/0060B	1	(E)	Same as Item 49C	ESK-13P4110
2	92D	1P41* L/0060B	1	(E)	Same as Item 49D	ESK-13P4110
2	92E	1P41* R/1060B	1	(E)	Same as Item 51E	ESK-13P4110
2	93A	1M50* FS053A	1	(E)	Same as Item 58E	ESK-13M5006
2	93B	1M50* FS053B	1	(E)	Same as Item 58E	ESK-13M5006

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600.02-ESK-41801 REV. 4 SH. 23

EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	94A	1P41* E/Y060A	1	E	Balley Power Supply Auctioneer Panel	Division I Power Supply	A	ESK-6R3537
2	94B	1P41* E/Y060B	1	E	Same as Item 94A	Division II Power Supply	B	ESK-5R3535
2	94C	1P41* E/Y060C	1	E	Same as Item 94A	Division III Power Supply	C	ESK-6R3539
2	95A	1P41* E/Y060C	1	(E)	Balley Type 750 Square Root Extractor	114B*F1005	B	ESK-13P4106
2	95B	1P41* E/Y060A	1	(E)	Same as Item 95A	1P41*F1054A	A	ESK-13P4105
2	95C	1P41* E/Y060A	1	(E)	Same as Item 95A	1P41*F1059A	C	ESK-13P4107
3	95D				ITEM DELETED			
2	95E	1P41* E/Y060B	1	(E)	Same as Item 95A	1P41*F1054B	B	ESK-13P4106
2	95F	1P41* E/Y060B	1	(E)	Same as Item 95A	1P41*F1059B	C	ESK-13P4108
3	95G				ITEM DELETED			
2	96A	1P41* E/Y060A	1	(E)	Same as Item 68A	114B*F1005	B	ESK-13P4105
2	96B	1P41* E/Y060A	1	(E)	Same as Item 68A	1P41*F1054A	A	ESK-13P4105
2	96C	1P41* E/Y060A	1	(E)	Same as Item 68A	1P41*F1059A	C	ESK-13P4107
2	96D	1P41* E/Y060A	1	(E)	Same as Item 68A	1146*F1004A	A	ESK-13P4103

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

STONE & MORTER ENGINEERING CORPORATION

11609.02-ESK-41001 Rev. 4 SH 74

CONTROLLED

NPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/ DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	96E	1P41* E/1054B	1	(E)	Same as Item 68A	1P41*F1054B	B	ESK-13P4106
	96F	1P41* E/1059B	1	(E)	Same as Item 68A	1P41*F1059B	C	ESK-13P4108
	96G	1T46* E/1004B	1	(E)	Same as Item 68A	1T46*FR004B	B	ESK-13T4604
	97A	1T46* R/1001A	1	(E)	Same as Item 67	1T46*TR001A	A	ESK-13T4619
	97B	1T46* R/1001B	1	(E)	Same as Item 67	1T46*TR001B	B	ESK-13T4620
2	98A	-	1	S	150 OHM, 5 Watt, Wire Wound Resistor 5% Tolerance Ohmite Type 995 or Equal	Spare	A	
2	98B	-	1	S	Same as Item 98A	Spare	B	
2	99A	27A	1	F	Agastat Time Delay Relay, TDDO 5-50 Sec With 2 form C Contacts, Model No. 7022D	Power Supply 1R41*E/S060A(1) Monitor	A	ESK-6R3537
2	99B	27B	1	F	Same as Item 99A	Power Supply 1R41*E/S060A(2) Monitor	A	ESK-6R3537
2	100A	27A	1	F	Same as Item 99A	Power Supply 1R41*E/S060B(1) Monitor	B	ESK-6R3538
2	100B	27B	1	F	Same as Item 99A	Power Supply 1R41*E/S060B(2) Monitor	B	ESK-6R3538
2	101A	27A	1	F	Same as Item 99A	Power Supply 1R41*E/S060C(1) Monitor	C	ESK-6R3539
2	101B	27B	1	F	Same as Item 99A	Power Supply 1R41*E/S060C(2) Monitor	C	ESK-6R3539

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600 D.P. - ESK-61501 Rev. 4 SB 29

SNPS-1

EQUIPMENT LIST
AGASTAT E SERIES TIME DELAY
DROPOUT RELAY, 24VDC COIL VOLTAGE,
4 FORM C CONTACTS, RANGE 1-300 SEC.
DESCRIPTION
MODEL 10, E70240K001
Solderless Plug-In Relay Type 43720X-
1000, Timing Range 30-300 Seconds,
24VDC Coil, Front Connected Socket
No. 39144, and 100-Kohm resistor - 44ms.
Note: Items 102A and 104B have the same
description as 102B and 104C respectively.

ITEM NO. INSTR/DEV. NO. QTY BY 102A 63X 1146A30 1 S

VEC
10-20-80

102B 63X 1146B30 1 S

103 - A/R S
Cinch Joints Type 20-101 Barrier Terminal Strip With Screw Terminals and With Cinch Joints Type MS-20-101 Marking Strip

104A 1146* 11C059A 1 (E) Same as Item 102A

104B 1146* 1C059A 1 (E) Same as Item 102B

104C 1146* 1C059A 1 (E) Same as Item 102C

104D 1146* 1C059A 1 (E) Same as Item 102D

104E 1146* 1C059A 1 (E) Same as Item 102E

105A 1146* 11C060A 1 (E) Same as Item 102A

105B 1146* 1C060A 1 (E) Same as Item 102B

105C 1146* 1C060A 1 (E) Same as Item 102C

CONTROL

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

SHORE & WELSH ENGINEERING CORPORATION

11600-02-15K-41301 REV. 2 20 20

REMARKS

102A 63X 1146A30 1 S

RBSVS "A" Initiation Time Delay

RBSVS "B" Initiation Time Delay

For Use Only to Mount Diodes and Furnished Zener Diodes and 150 R Resistors on Rear of Test Jack Panels in Sections A, B, & C as Required

1146*1C059A A FSK-1314621

1146*1C059A A FSK-1314621

1146*1C059A A FSK-1314621

1146*1C059A A FSK-1314621

1146*1C059A A FSK-1314621

1146*1C060A C FSK-1314623

1146*1C060A C FSK-1314623

1146*1C060A C FSK-1314623

EQUIPMENT LIST

RCV	ITEM NO.	INSTR/DEV. NO.	QTY	HY	DESCRIPTION	SERVICE	SECT	REMARKS
	105D	1146* L/0060A	1	(E)	Same as Item 49D	1146*TCV060A	C	ESK-1314623
	105E	1146* R/0060A	1	(E)	Same as Item 51E	1146*1CV060A	C	ESK-1314623
	106A	1146* 11C059B	1	(E)	Same as Item 49A	1146*1CV059B	B	ESK-1314622
	106B	1146* TC059B	1	(E)	Same as Item 49B	1146*TCV059B	B	ESK-1314622
	106C	1146* H/0059B	1	(E)	Same as Item 49C	1146*1CV059B	B	ESK-1314622
	106D	1146* L/0059B	1	(E)	Same as Item 49D	1146*1CV059B	B	ESK-1314622
	106E	1146* R/0059B	1	(E)	Same as Item 51E	1146*1CV059B	B	ESK-1314622
	107A	1146* 11C060B	1	(E)	Same as Item 49A	1146*1CV060B	C	ESK-1314624
	107B	1146* TC060B	1	(E)	Same as Item 49B	1146*TCV060B	C	ESK-1314624
	107C	1146* H/0060B	1	(E)	Same as Item 49C	1146*1CV060B	C	ESK-1314624
	107D	1146* L/0060B	1	(E)	Same as Item 49D	1146*1CV060B	C	ESK-1314624
	107E	1146* R/0060B	1	(E)	Same as Item 51E	1146*1CV060B	C	ESK-1314624
2	109	1146* FS004A	1	(E)	Same as Item 58E	1011*3LO-012A	A	ESK-1314603
2	109	1146* FS004B	1	(E)	Same as Item 58E	1011*3LO-012B	B	ESK-1314603

CONTROLLED

EQUIPMENT LIST - CATEGORY 1 INSTRUMENT CONTROL
 SHOREHAM NUCLEAR POWER STATION - UNIT 1
 LONG ISLAND LIGHTING COMPANY
 STORE & WEBSTER ENGINEERING CORPORATION
 11600, 07-ESK-41001 Rev. 4, 8/81

NPS-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
2	110	1E41* PIC142	1	(E)	Same as Item 49A	1E41*PCV142	B	GE DWG 791E42CT7
2	111	1E51* PIC142	1	(E)	Same as Item 49A	1E51*PCV142	A	GE DWG 791E42CTF
2	112A	1P50* PS116A	1	(E)	Same as Item 58E	SRV "A" HDR Press	A	13P5001
2	112B	1P50* PS116B	1	(E)	Same as Item 58E	SRV "B" HDR Press	B	13P5002
	113A	1P41* PDS150A	1	(E)	Same as Item 58E	RB SW STNR A	A	13P4114
	113B	1P41* PDS150B	1	(E)	Same as Item 58E	RB SW STNR B	B	13P4114
	113C	1P41* PDS150C	1	(E)	Same as Item 58E	RB SW STNR C	C	13P4115
	113D	1P41* PDS150D	1	(E)	Same as Item 58E	RB SW STNR D	C	13P4115
	114A	1P41* E/1150A	1	(E)	Same as Item 68A	RB SW STNR A	A	13P4114
	114B	1P41* E/1150B	1	(E)	Same as Item 68A	RB SW STNR B	B	13P4114
	114C	1P41* E/1150C	1	(E)	Same as Item 68A	RB SW STNR C	C	13P4115
	114D	1P41* E/1150D	1	(E)	Same as Item 68A	RB SW STNR D	C	13P4115
	115A	1P41* FK146A	1	(E)	Same as Item 95A	RBCLW HX A SW FLOW	A	13P4113
	115B	1P41* FK146B	1	(E)	Same as Item 95A	RBCLW HX B SW FLOW	B	13P4113

CONTROLLED

EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STORE & WEBSTER ENGINEERING CORPORATION
11679.02-13K-41101 Rev. 4 SH 18

95-1
EQUIPMENT LIST

REV	ITEM NO.	INSTR/DEV. NO.	QTY	BY	DESCRIPTION	SERVICE	SECT	REMARKS
	116A	1P41* E/1146A	1	(E)	Same as Item 66A	RBCLCW HX A SW FLOW	A	13P4113
	116B	1P41* E/1146B	1	(E)	Same as Item 66A	RBCLCW HX B SW FLOW	B	13P4113

CONTROLLED

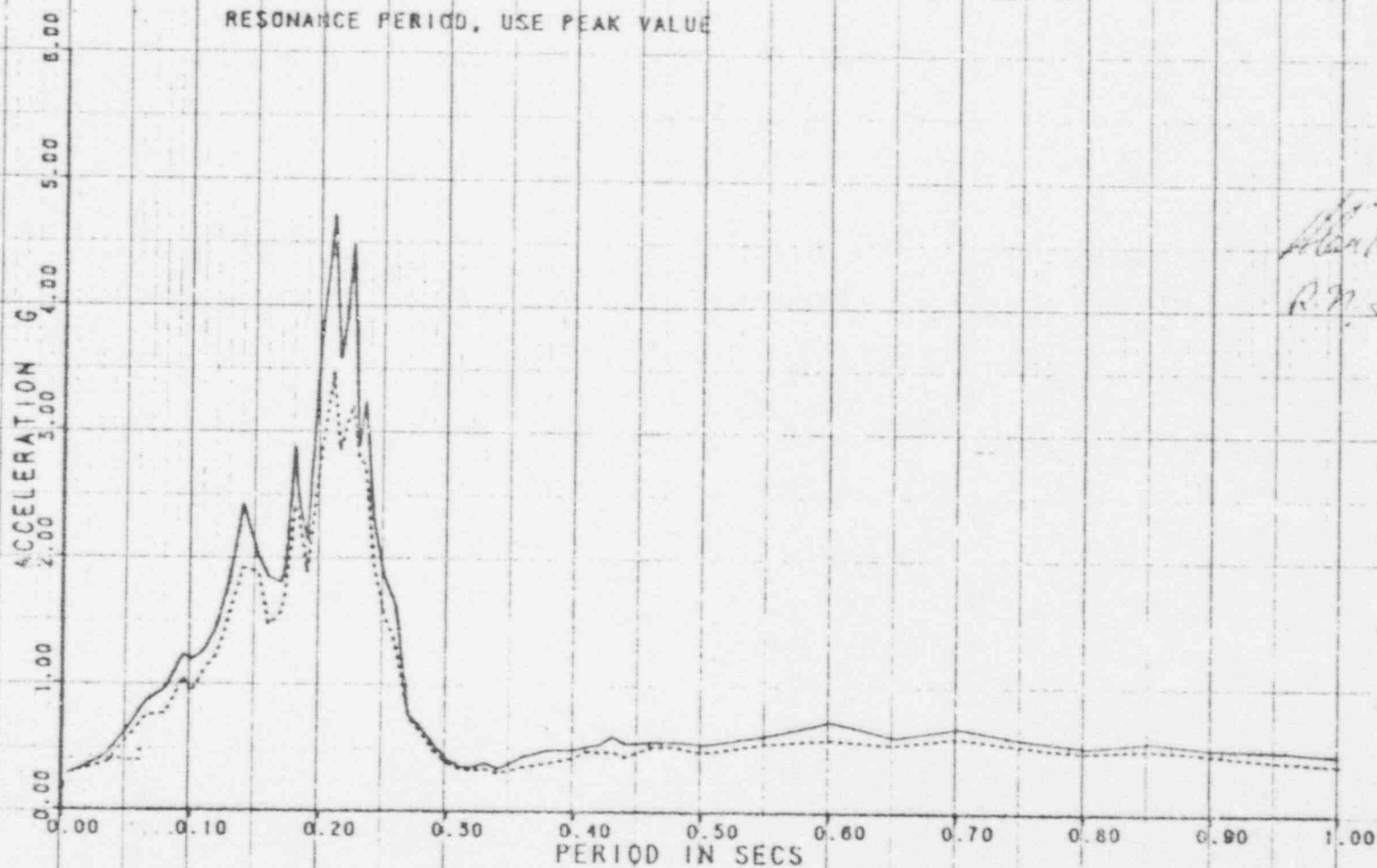
EQUIPMENT LIST - CATEGORY I INSTRUMENT CABINET
SHORHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY
STONE & WEBSTER ENGINEERING CORPORATION
11600, 02-15K-01001 Rev. 4 SH 79

ANPL RESP SPECT LILCO TURBINE/CONTROL ROOM BLDG ROOF OFFICE BLDG EL. 53.3
HORIZONTAL DBE 'W-S' EXCI SOIL G- 13 KSI JAN. 29, 1973

— 7. PERCENT STRUCT DAMP AND .5 PERCENT EQUIP DAMP

- - - 7. PERCENT STRUCT DAMP AND 1.0 PERCENT EQUIP DAMP

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN +25 OR -20% OF
RESONANCE PERIOD, USE PEAK VALUE



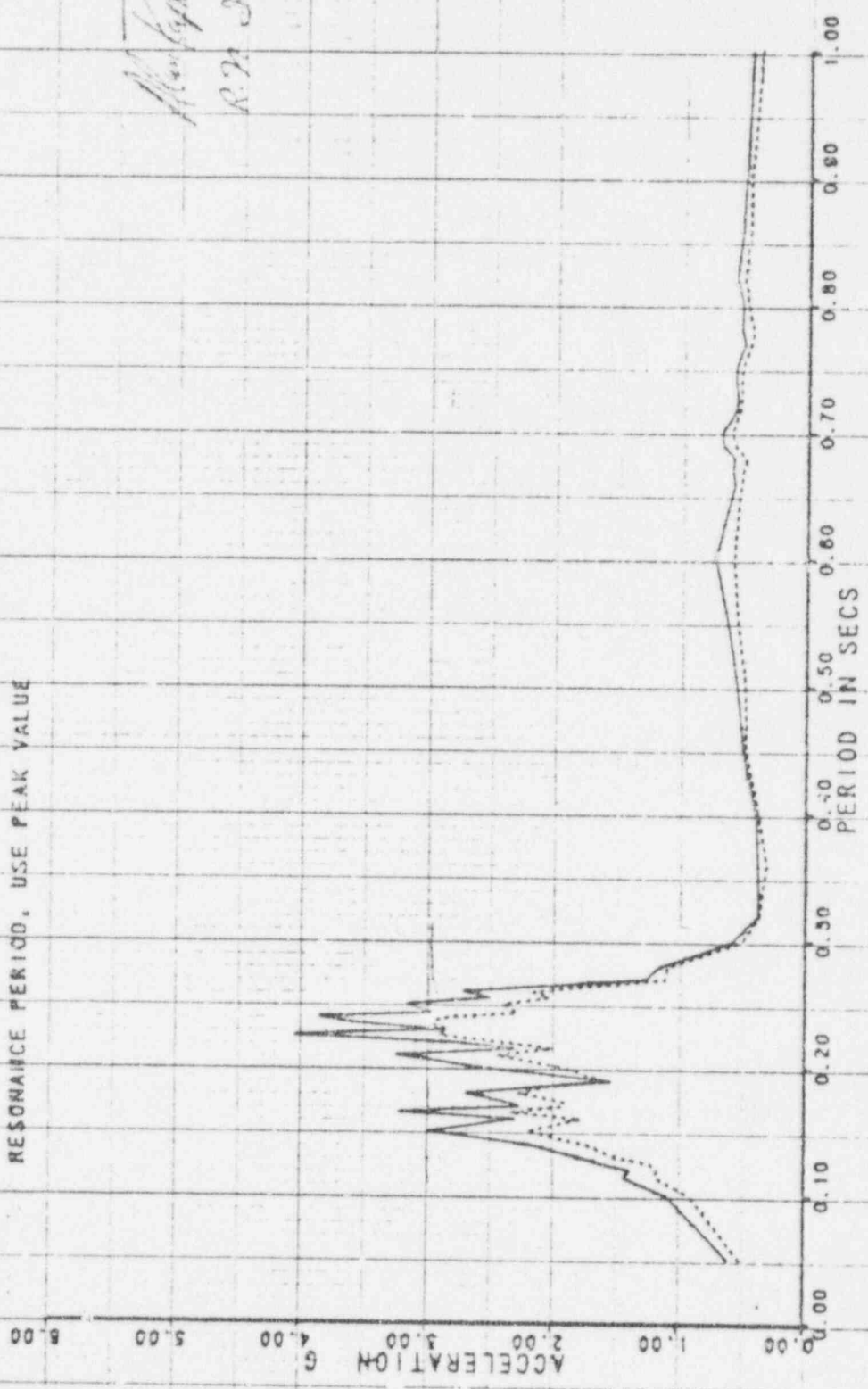
Alan K. Rand
R. N. Jensen

SHI-125-1

AMPL RESP SPECT LILCO TURBINE/CONTROL ROOM BLDG ROOF OFFICE BLDG CL. 53.3
 HORIZONTAL DDE 'E-W' EXCI SOIL C-13 KSI JAN. 30, 1975
 --- 7. PERCENT STRUCT DAMP AND .5 PERCENT EQUIP DAMP
 --- 7. PERCENT STRUCT DAMP AND 1. PERCENT EQUIP DAMP

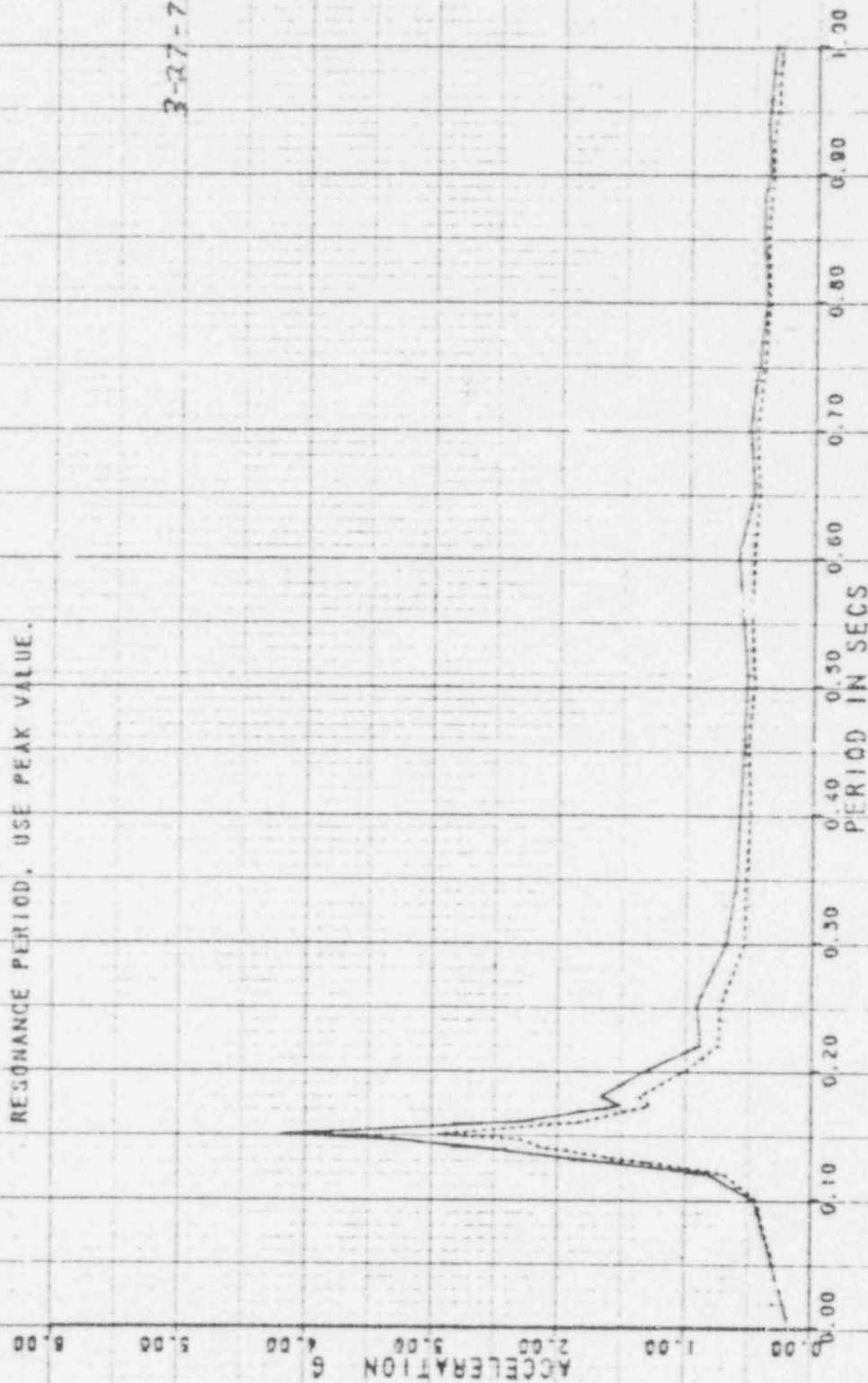
NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN ± 25 OR -20% OF
 RESONANCE PERIOD, USE PEAK VALUE

Monty
 R. W. Jacone



AMPL RESP SPECI LILCO TURBINE/CONTROL ROOM BLDG ROOF OFFICE BLDG EL. 55.3
 DBE VERTICAL EXCITATION SOIL G-13 KSI MARCH 22, 1973
 --- 7. PERCENT STRUCT DAMPING AND .5 PERCENT EQUIPMENT DAMPING
 - - - 7. PERCENT STRUCT DAMPING AND 1. PERCENT EQUIPMENT DAMPING

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN ± 25 OR $\pm 20\%$ OF
 RESONANCE PERIOD, USE PEAK VALUE.



3-27-73 R21 D. Anderson
[Signature]

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 18

Mark No. 1E11 * R0158

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCOPWR2. NSSS: GE 3. A/E: Stone & WebsterBWR 4 MKIIII. Component Name

Orifice Plates

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: PERMUTIT Quantity: 403. S/W Mark Nos: 1E11*R0158, 1E21*R0095, etc. (see attached listed of all
restricting orifices qualified by this report)4. If the component is a cabinet or panel, name and model No. of the
devices included: N/A5. Physical Description a. Appearance Orificeb. Dimensions For pipe size 16" & 3" c. Weight Insignificant6. Location: Building SC Elevation 16 ft. & 14 ft.7. Field Mounting Conditions ☐ Bolt (No. _____, Size _____)☐ Weld (Length _____)☒ Flanged Gaskets8. a. System in which located: RHR & Core Spray Pipingb. Functional Description: Flow Limitersc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown
☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-440

III. Is Equipment Available for Inspection in the plant: ☐ Yes ☒ No

IV. Equipment Qualification Method:

☐ Test

☒ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Restriction Orifice Plates

(No. Title and Date) NM(B)-220-CZC 10/15/79

Company that Prepared Report: Stone & Webster

Company that Reviewed Report: Stone & Webster

V. Vibration Input: Insignificant compared to operating pressure loads.

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☐ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☐ SRSS ☐ (other, specify)

3. Required Response Spectra (attach the graphs): _____

4. Damping Corresponding to RRS: Upset _____ Faulted _____

5. Required Acceleration in Each Direction: ☐ ZPA ☐ Other (specify)

Upset S/S = _____ F/B = _____ V = _____

Faulted S/S = _____ F/B = _____ V = _____

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: Not required by IEEE-344-1975.

*NOTE: If more than one report, complete Items IV through VII for each report.

VII. If Qualification by Analysis, then complete

1. Method of Analysis:

☒ Static Analysis ☐ Equivalent Static Analysis
☐ Dynamic Analysis: ☐ Time-History ☐ Response Spectrum

2. Natural Frequencies in each Direction (Side/Side, Front/Back, Vertical):

S/S = > 60 Hz F/B = > 60 Hz V = > 60 Hz

3. Model Type: ☐ 3D ☐ 2D ☐ 1D
☒ Finite Element ☐ Beam ☐ Closed Form Solution

4. ☒ Computer Codes: GHOSH

Frequency Range and No. of modes considered: N/A

☐ Hand Calculations

5. Method of Combining Dynamic Responses: ☐ Absolute Sum ☐ SRSS
☒ Other: N/A
(specify)

5a. Input g-level: Upset H V
N/A Faulted H V

6. Damping: Upset Faulted Basis for the damping
N/A used:

7. Support Considerations in the model: Flange bolts and gasket

8. Critical Structural Elements:

A.	Identification	Location	Governing Load or Response	Service Level	Total Stress	Stress Allow
MK NO.	1E11*R0158	SC EL16	Fluid Pressure	A	14,300PSI	1.28
MK NO.	1E21*R0095	SC EL14	Fluid Pressure	A	13,200PSI	1.42

B.

Maximum Critical
Deflection

Location

Maximum Allowable Deflection
to Assure Functional
Operability

N/A

CALCULATION SHEET

STATE & FEDERAL ENGINEERING CORPORATION

SHI-440

J.O./W.O./CALCULATION NO.

11600.02-NM(B)-220-C.F.C

REVISION

PAGE

6

PREPARED/DATE

S. Fisher 10/5/79

REVIEWER/CHECKER/DATE

INDEPENDENT REVIEWER/DATE

SUBJECT/TITLE

SHI-440

QA CATEGORY/CODE CLASS

SUMMARY

The purpose of this calculation is to determine the thickness of the restriction orifice plates, called out in SHI-440, required to meet operating plus seismic plus hydrodynamic loads. Results are summarized in the Table below by Mark Number.

Item [*] No	Mark No	Pipe Size (IN.)	Orifice Bore (IN.)	Plate Thickness (IN.)
1-1	1E11 x Ro 160	1	.125	.125
1-2	1E21 x Ro 097A	1	.20	.125
1-3	1E21 x Ro 097B	1	.20	.125
1-4	1E41 x Ro 135	1	.125	.125
1-5	1E41 x Ro 137	1	.191	.125
1-6	1E51 x Ro 135	1	.125	.125
1-7	1E51 x Ro 137	1	.200	.125
1-8	1G33 x Ro 109A	3/4	.125	.125
1-9	1G33 x Ro 109B	3/4	.125	.125
2-1	1E41 x Ro 133	2	.44	.125
2-2	1E41 x Ro 134	2	.62	.125
2-3	1E41 x Ro 136A	3/4	.125	.250
2-4	1E41 x Ro 136B	3/4	.125	.250
2-5	1E41 x Ro 136C	3/4	.125	.250
2-6	1E41 x Ro 136D	3/4	.125	.250
2-7	1E41 x Ro 136E	3/4	.125	.250
2-8	1E41 x Ro 138	2	.125	.250
2-9	1E51 x Ro 136A	3/4	.125	.250
2-10	1E51 x Ro 136B	3/4	.125	.250

* Reference 9 nomenclature

table cont. pg. 7

PREPARED BY/DATE

S. F. L. 9/5/79

REVIEWER/CHECKER/DATE

INDEPENDENT REVIEWER/DATE

SUBJECT/TITLE

SHI-420

QA CATEGORY/CODE CLASS

SUMMARY CONT.

Item No	Mark No	pipe Size (in.)	Outside Core (in.)	Plate Thickness (in.)	
3-1	1E11XFE006A	20	14.43	.25	
3-2	1E11XFE006B	20	14.43	.25	
3-3	1E11XRO140A	3	1.57	.437	
3-4	1E11XRO140B	3	1.57	.437	
3-5	1E11XRO140C	3	1.57	.437	
3-6	1E11XRO140D	3	1.57	.437	
3-7	1E11XRO158A	16	7.48	.50	
3-8	1E11XRO158B	16	7.48	.50	
3-9	1E11XRO158C	16	7.48	.50	
3-10	1E11XRO158D	16	7.48	.50	
3-11	1E11XRO159	1	.125	.312	
3-12	1E21XRO094A	10	6.88	.1875	
3-13	1E21XRO094B	10	6.88	.1875	
3-14	1E21XRO095A	3	1.136	.50	
3-15	1E21XRO095B	3	1.136	.50	
3-16	1E41XRO131	4	.84	1.25	
3-17	1E41XRO132	10	4.33	.75	
3-18	1E51XRO131	2	.287	.562	
3-19	1E51XRO132	4	1.30	.437	
3-20	1E51XRO138	3/4	.125	.125	
3-21	1G33XRO050	4	.250	.875	

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 19

Mark No. 1E21*RO095

(SAME AS 18)

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 20

Mark No. 1R43 * G-102

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Diesel Generator

1. Scope: [] NSSS [X] BOP2. Vendor and Model Number: Delaval Turbine Inc. Quantity: 3

L-11027 (Portec)

3. S/W Mark Nos: 1R43*G-101, -102, -103

4. If the component is a cabinet or panel, name and model No. of the devices included: N/A

5. Physical Description a. Appearance Generatorb. Dimensions 105"wx98"Hx91"Lg c. Weight 42,245 lbs.6. Location: Building CB Elevation 15'7. Field Mounting Conditions [X] Bolt (No. 4, Size 1 3/4") stator

[] Weld (Length _____) 1 1/4" Rotor

[] _____

8. a. System in which located: Emergency Powerb. Functional Description: Provide electrical power following loss of offsite power.

c. Is the equipment required for [] Hot Standby [] Cold Shutdown

[X] Both [] Neither

9. Pertinent Reference Design Specifications: SH1-89

Item ()

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ NoIV. Equipment Qualification Method:☐ Test☒ Analysis☐ Combination of Test
and AnalysisQualification Report*: Static Analysis of 4375 KVA, 450 RPM - Synchronous Gen.(No. Title and Date) 11001 (DD) May 22, 1975Company that Prepared Report: Portec. Inc.Company that Reviewed Report: DelavalV. Vibration Input:1. Loads considered: a. ☒ Seismic onlyb. ☐ Hydrodynamic onlyc. ☐ Combination of (a) and (b)2. Method of Combining RRS: ☐ Absolute Sum ☐ SRSS ☒ N/A
(other, specify)3. Required Response Spectra (attach the graphs): Attached4. Damping Corresponding to RRS: Upset 1/2% Faulted 1%5. Required Acceleration in Each Direction: ☐ ZPA ☐ Other
(specify)Upset S/S = .15 F/B = .15 V = .10Faulted S/S = .26 F/B = .26 V = .20

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ NoIf yes, describe loads considered and how they were treated in overall
qualification program: Not required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

1. Method of Analysis:

[X] Dynamic Analysis: [] Time-History [] Response Spectrum
(Rotor & Stator)

2. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

S/S = 38 Hz F/B = 106 Hz V = 92 Hz

3. Model Type: ☒ 3D ☐ 2D ☐ 1D
 ☒ Finite Element ☐ Beam ☐ Closed Form Solution

4. ☒ Computer Codes: "ANSYS"

Frequency Range and No. of modes considered: Unknown

[X] Hand Calculations (Anchorage)

5. Method of Combining Dynamic Responses: ☒ Absolute Sum ☐ SRSS
☐ Other: _____
(specify)

5a. Input g-level: Upset H N/A V N/A

Faulted H N/A V N/A

6. Damping: Upset 1/2% Faulted 1% Basis for the damping used: FSAR

7. Support Considerations in the model: Same as service conditions

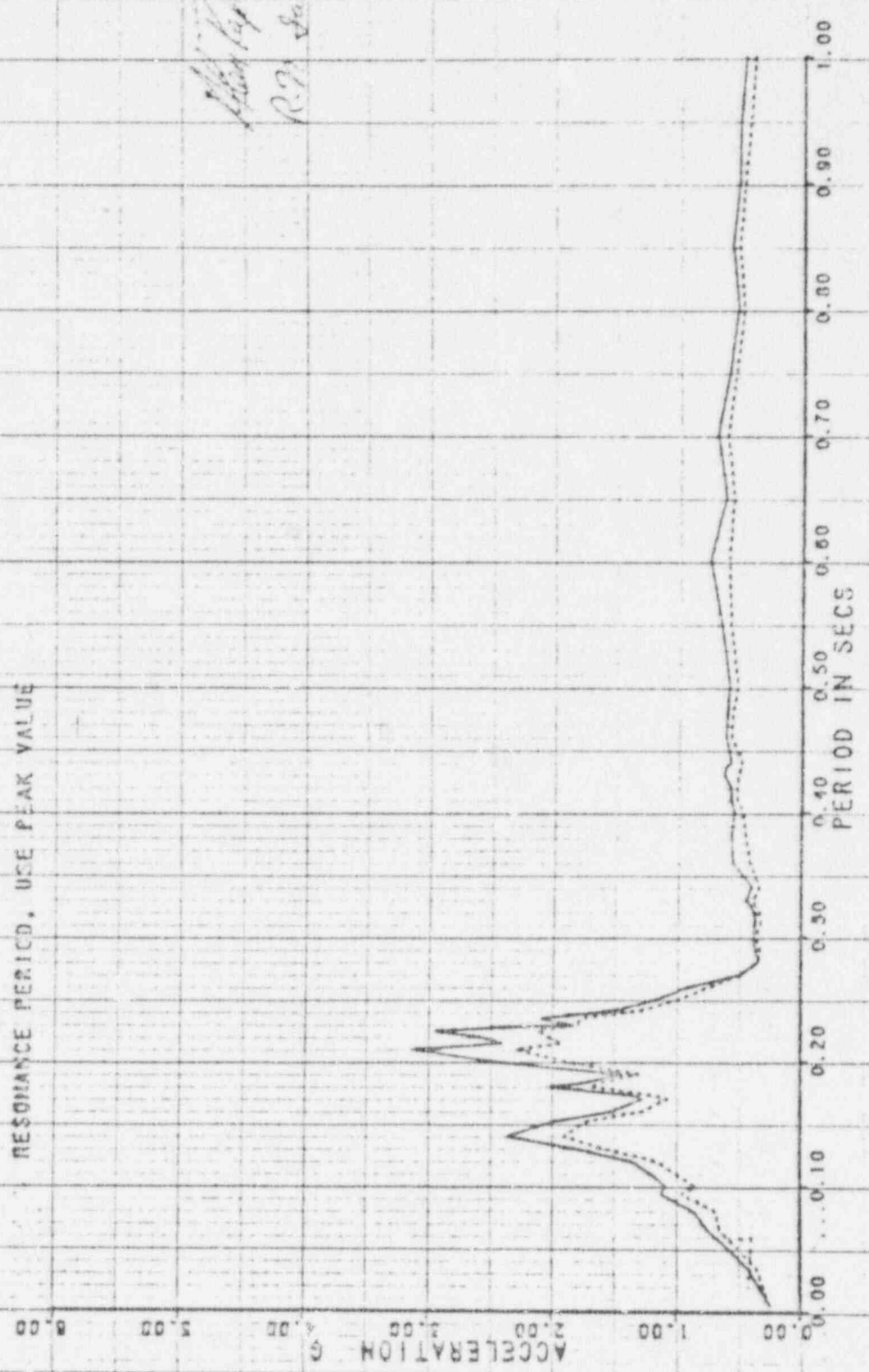
8. Critical Structural Elements:

<u>Identification</u>	<u>Location</u>	<u>Governing Load or Response</u>	<u>Service Level</u>	<u>Total Stress</u>	<u>Stress Allow</u>
Staton	Core	Seismic	Faulted	29000 psi	1.10
Brush Stem	Support	Seismic	Faulted	19200	1.67

<u>Maximum Critical Deflection</u>	<u>Location</u>	<u>Maximum Allowable Deflection to Assure Functional Operability</u>
.0055" (Magnetic Pull)	Stator Gap	.35"

AMPL RESP SPECI LILCO TURBINE/CONTROL ROOM BLDG TURBINE & HEATER BAY EL. 15.0
 HORIZONTAL DBE 'M-5' EXCI SOIL C-13 X51 JAN. 29, 1973
 --- 7. PERCENT STRUCT DAMP AND 5 PERCENT EQUIP DAMP
 ---- 7. PERCENT STRUCT DAMP AND 1.0 PERCENT EQUIP DAMP

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN +25 OR -20% OF
 RESONANCE PERIOD, USE PEAK VALUE

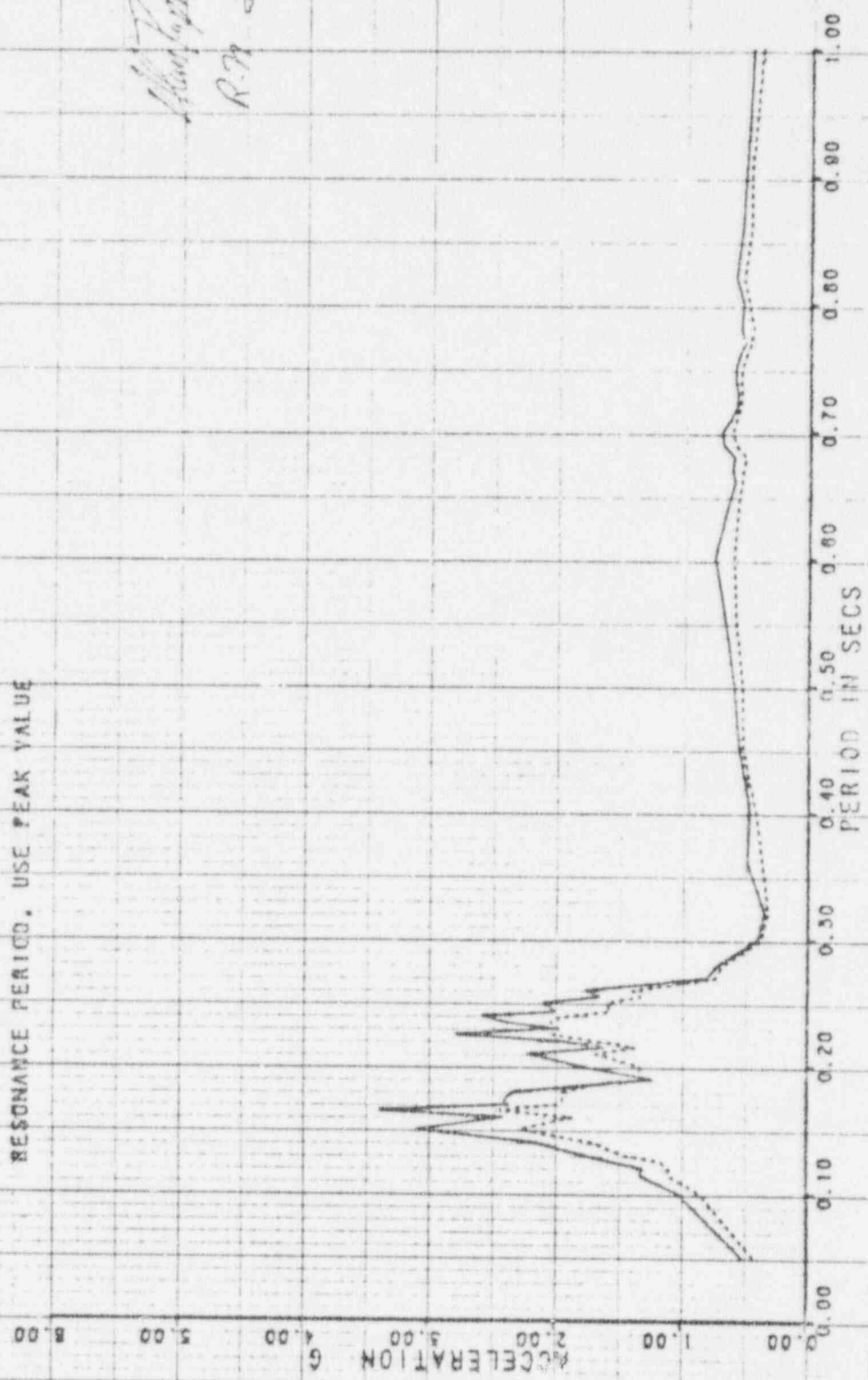


Handwritten:
 R. J. Savone

AMAL RESP ERECT LILCO TURBINE/CONTROL ROOM BLDG TURBINE & HEATER BAY EL. 15.0
 HORIZONTAL DDE 'E-W' EXCI SOIL G-13 KSI JAN. 30, 1973

7. PERCENT STRUCT DAMP AND .5 PERCENT EQUIP DAMP
 7. PERCENT STRUCT DAMP AND 1. PERCENT EQUIP DAMP

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN +25 OR -20% OF
 RESONANCE PERIOD, USE PEAK VALUE



Handwritten signature
 R. H. Jacobs

AMPL RESP SPECT LILCO TURBINE/CONTROL ROOM BLDG. TURBINE & HEATER BAY EL. 15.0
DNE VERTICAL EXCITATION SOIL G-15 KSI MARCH 22, 1973

----- 7. PERCENT STRUCT DAMPING AND .5 PERCENT EQUIPMENT DAMPING
----- 7. PERCENT STRUCT DAMPING AND 1. PERCENT EQUIPMENT DAMPING

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN +25 OR -20% OF
RESONANCE PERIOD, USE PEAK VALUE.

ACCELERATION G

0.00

0.10

0.20

0.30

0.40

0.50

0.60

0.70

0.80

0.90

1.00

PERIOD IN SECS

3-27-73 RM Incone

[Signature]

SHI-89

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 21

Mark No. 1 R 23 * T-102

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

4160-480V Transformer Bus 1

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: ITE Imperial Corp, Type VU-9 Quantity: 33. S/W Mark Nos: 1R23*T-102, -101, -103

4. If the component is a cabinet or panel, name and model No. of the devices included: N/A

5. Physical Description a. Appearance Enclosed in cabinet (floor mounted) Cabinetb. Dimensions 58"Dx126"Lgx90"H c. Weight 3,900 lbs. (only) trans6. Location: Building CB Elevation 25 ft.7. Field Mounting Conditions ☒ Bolt (No. _____, Size _____)☐ Weld (Length _____)☐ _____8. a. System in which located: 480 V Emergency Powerb. Functional Description: Control Circuits for Station Emergency 480 V Powerc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-95

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic Certification Report for Class 1E Electrical Eqpt.

(No. Title and Date) 33-48359, April 27, 1976

Company that Prepared Report: Wyle Lab

Company that Reviewed Report: I-T-E Imperial Corp.

V. Vibration Input:

1. Loads considered: a. ☒ Seismic only

b. ☐ Hydrodynamic only

c. ☐ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☐ SRSS ☒ N/A
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset Faulted 1%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other
(specify)

Upset S/S = F/B = V =

Faulted S/S = 0.3 g F/B = 0.3 g V = 0.2

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

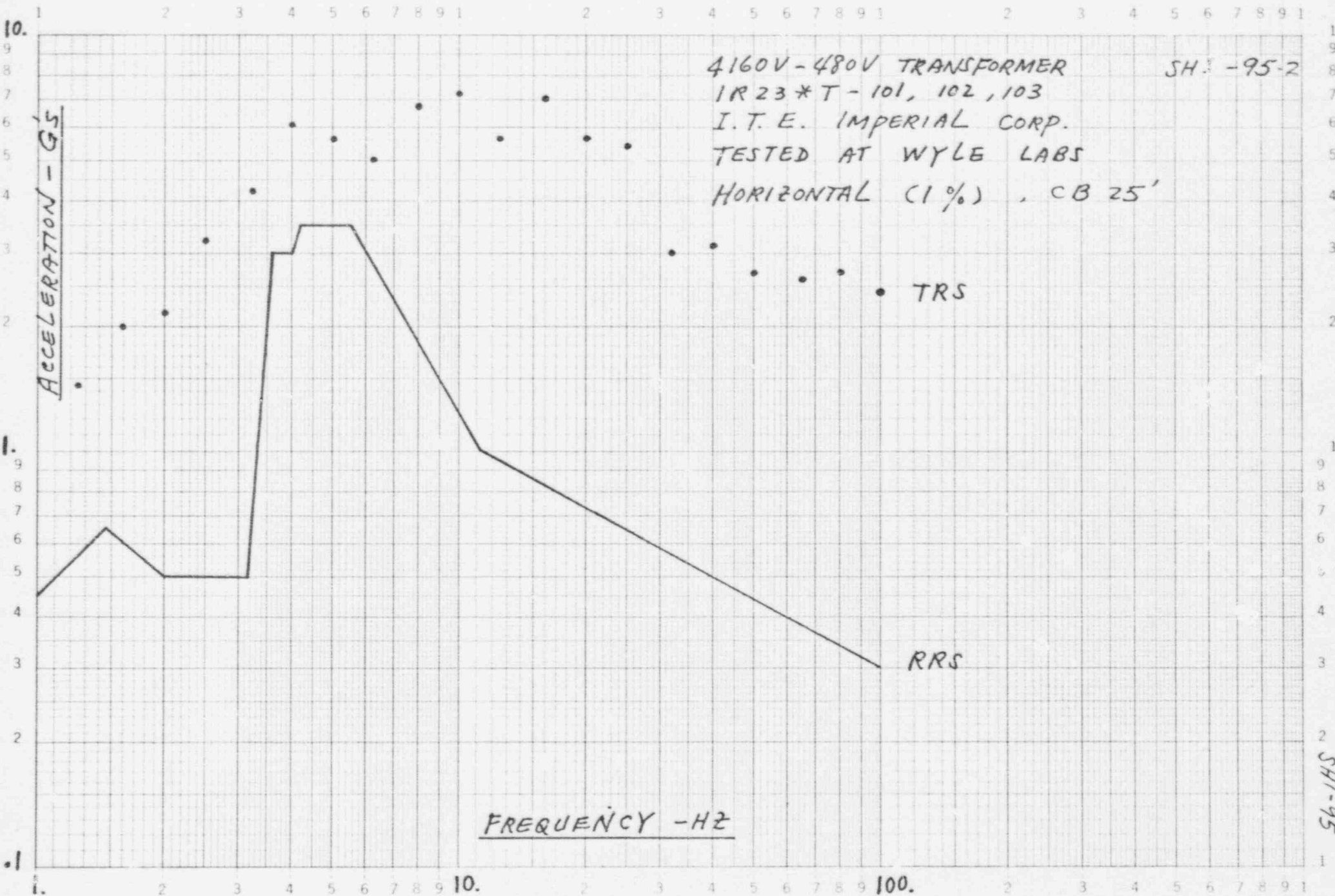
If yes, describe loads considered and how they were treated in overall qualification program: To the extent require by IEEL-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset > 5 Faulted > 1 Other _____
(specify)
4. Frequency Range: 1 - 50 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 8.5 Hz F/B = 5.5 Hz V = _____
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = _____ F/B = _____ V = _____
Faulted S/S = 2.4 F/B = 2.4 V = 2.4
9. Laboratory Mounting:
☒ Bolt (No. 4, Size 1/2") ☐ Weld (Length _____) ☐ _____
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the Spec requirements
without modification
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.



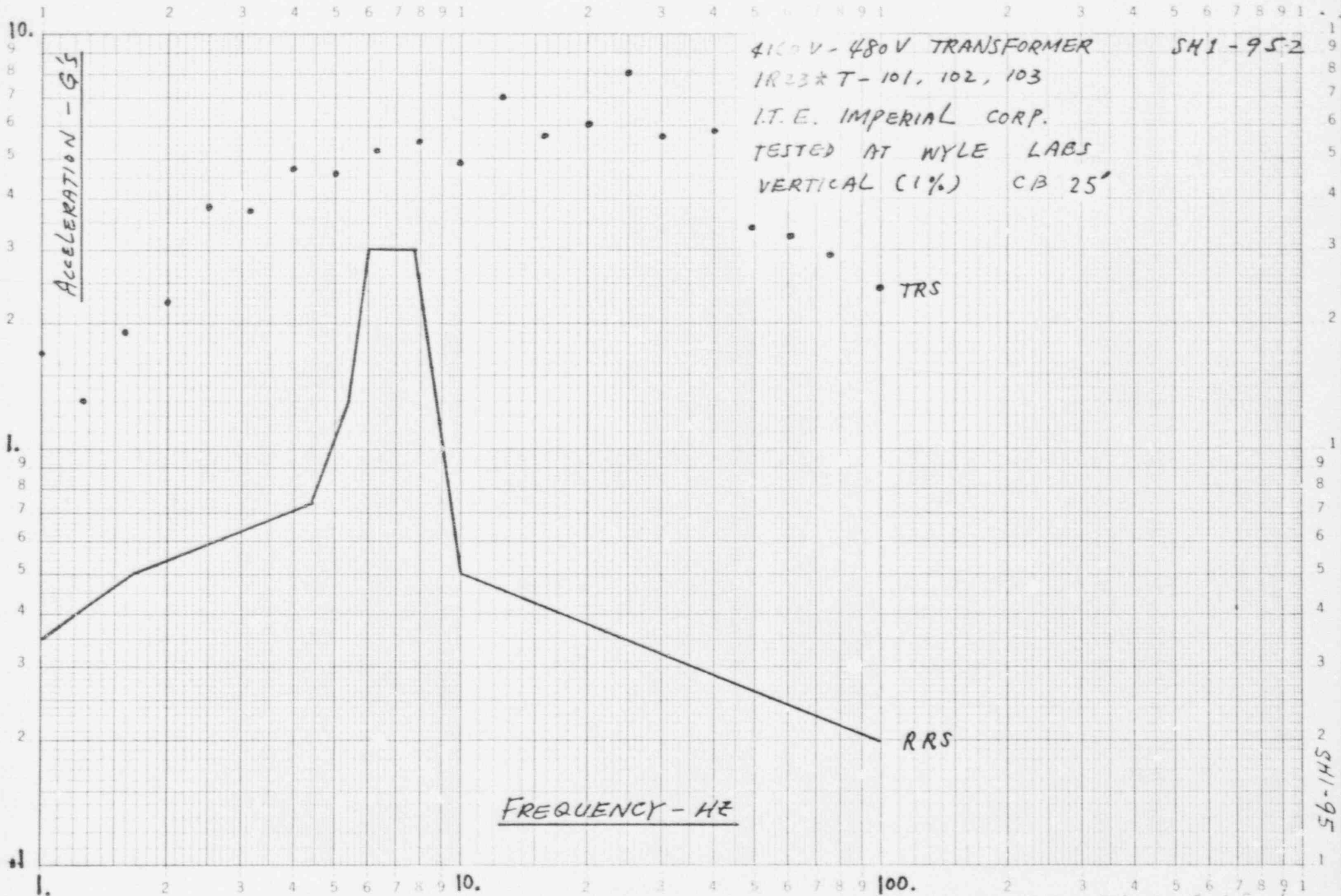
4160V-480V TRANSFORMER
1R23*T-101, 102, 103
I.T.E. IMPERIAL CORP.
TESTED AT WYLE LABS
HORIZONTAL (1%) , CB 25'

TRS

RRS

FREQUENCY - Hz

ACCELERATION - G's



4100 V - 480 V TRANSFORMER

SH1-95-2

1R23 * T - 101, 102, 103

I.T.E. IMPERIAL CORP.

TESTED AT WYLE LABS

VERTICAL (1%) CB 25"

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 22

Mark No. 1M50*PNL-04

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. MSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Control Panel

1. Scope: ☐ MSSS ☒ BOP2. Vendor and Model Number: Trane Co. Quantity: 43. S/W Mark Nos: 1M50*PNL-04, -03

4. If the component is a cabinet or panel, name and model No. of the devices included: Agastat Relays 7022 AFTS, 7012 ADS, 7012 AHLS;

Micro Switches PTCB, PTCO

5. Physical Description a. Appearance Cabinet (floor mounted)b. Dimensions 48"Wx24"Dx72"H c. Weight _____6. Location: Building CB Elevation 63 ft.7. Field Mounting Conditions ☒ Bolt (No. 8, Size 5/8")☐ Weld (Length _____)☐ _____8. a. System in which located: Water Chillersb. Functional Description: Provides chilled water for cooling coils and unit coolers in the RBSVS & cooling coils in the crac unit.c. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-106

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic qualification of the CAT I centrifugal water chillers

(No. Title and Date) NUC-102, February 18, 1977

Company that Prepared Report: Wyle Lab (R. No. 58096)

Company that Reviewed Report: Trane Co.

V. Vibration Input:

1. Loads considered: a. ☒ Seismic only

b. ☐ Hydrodynamic only

c. ☐ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset _____ Faulted 1%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = _____ F/B = _____ V = _____

Faulted S/S = 1.1 g F/B = 1.1 g V = .74

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other
(specify)
4. Frequency Range: 1 - 60 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 18 Hz F/B = 13 Hz V = > 60 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 2.3 F/B = 2.3 V = 1.6
9. Laboratory Mounting:
☒ Bolt (No. 8, Size 5/8") ☐ Weld (Length) ☐
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modifications.
12. Other test performed (such as aging or fragility test, including results):
Fragility (ZPA) - 6.0 g's horizontal; 4.2 g's vertical.

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

CUSTOMER THAYER CO.

SH1-106

(2)

Scale 100 g

Accel. No. 1

Control (X) Response ()

Serial KN04

Specimen CONTROL PANEL

Date 9-3-76

Damping 1.0 %

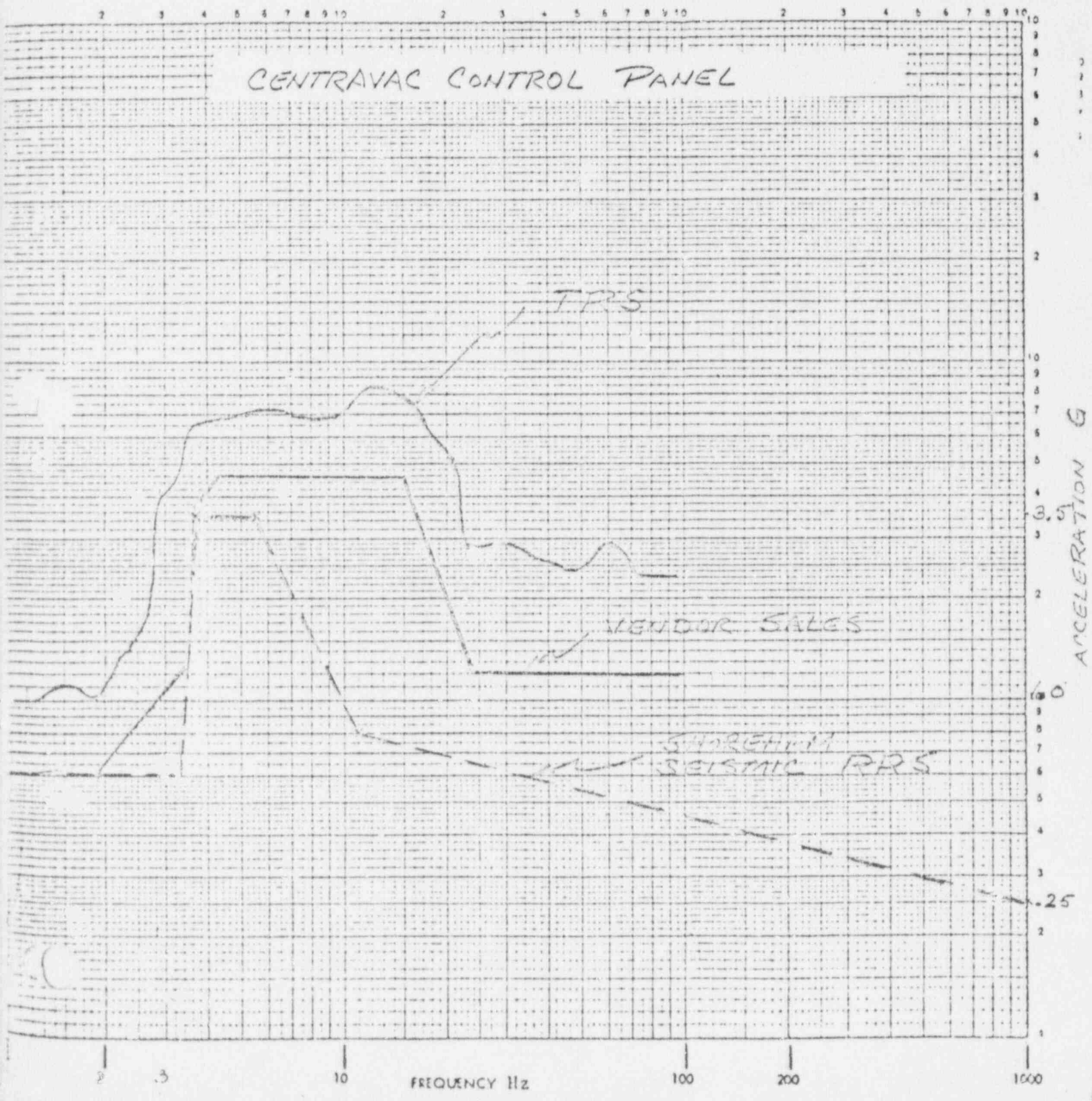
Axis of Test X-Y

58096

8980

RESPONSE SPECTRA HORIZ

DBE # 8



STOMER TRANE Co.

SH1-106

(2)

ile 100 g

Accel. No. 2

Control 00

Response ()

erator KN 11

Specimen CONTROL PANEL

ate 9-3-76

Damping 1.0 %

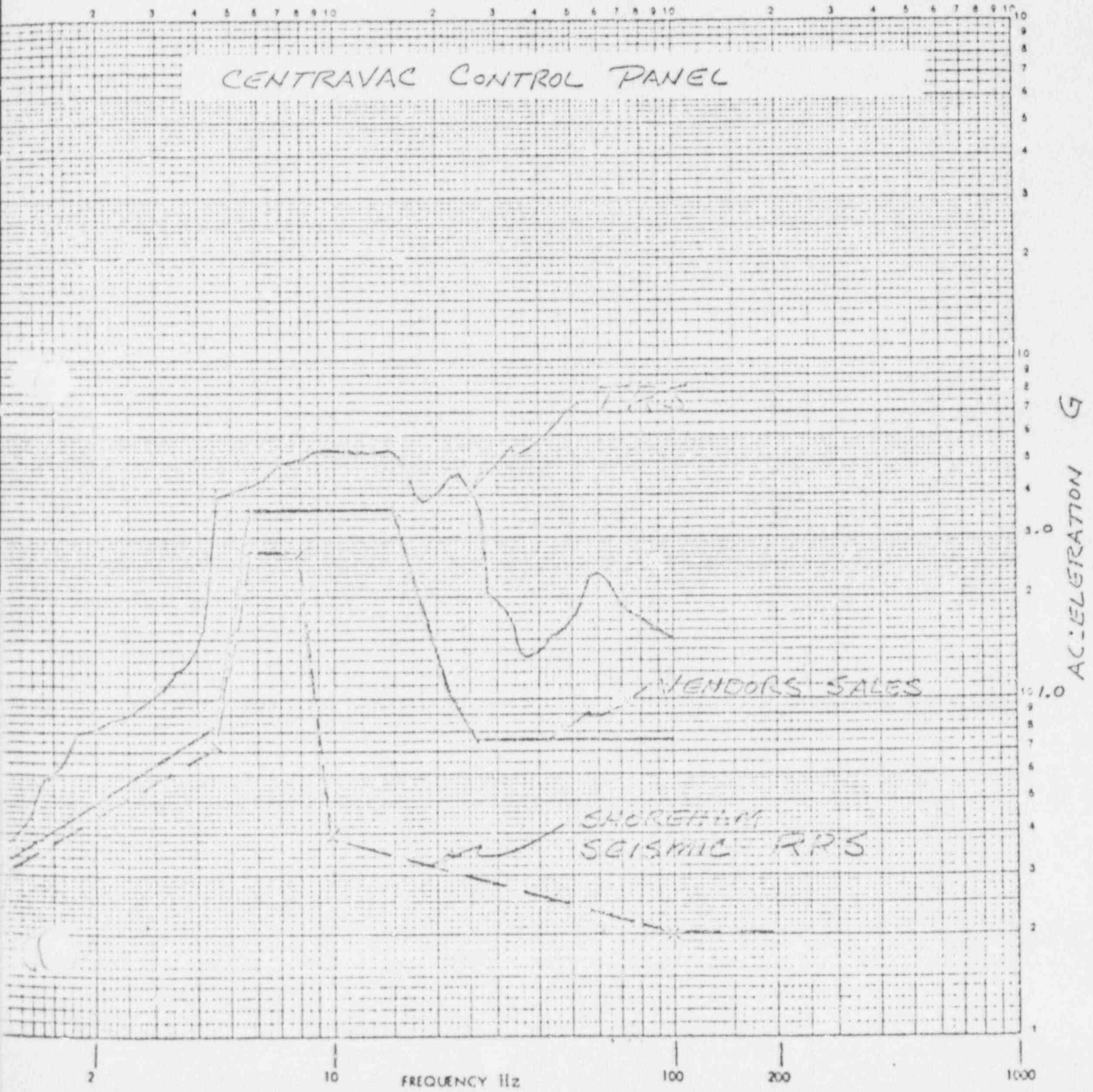
Axis of Test X-Y

58096

pg 81

RESPONSE SPECTRA VERT DBE #8

CENTRAVAC CONTROL PANEL



CUSTOMER

TRANE Co

541-106

Full Scale 100 g

Accel. No. 1

Control (X) Response ()

Operator K 1011

Specimen Control Panel

Date 9-3-76

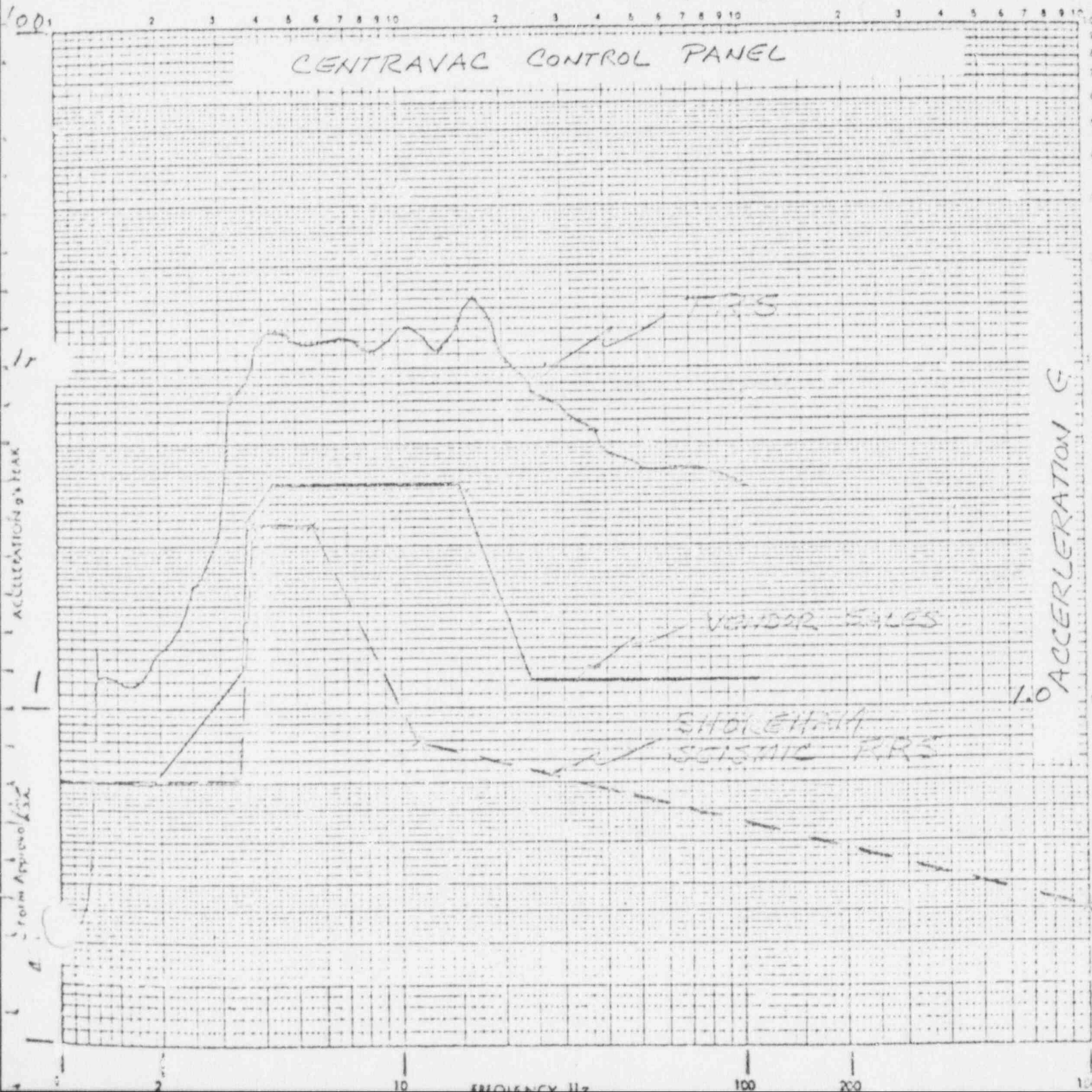
Damping 1.0 %

Axis of Test (2-9)

58096

pg 130

RESPONSE SPECTRA Horiz



WYLE LABORATORIES

CUSTOMER TRANS Co.

SHI-106

(2)

1 Scale 100 8

Accel. No. 2

Control (x) Response ()

Operator Knoll

Specimen CONTROL PANEL

Date 9-3-76

Damping 1.0 %

Axis of Test (Z-Y)

58096

13131

RESPONSE SPECTRA VERT

CENTRAVAC CONTROL PANEL

TR3

VENDOR SALES

1.0

SHOREHAM
SEISMIC RRS

ACCELERATION G

FREQUENCY Hz

100

200

1000

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SQRT Audit Items

Item 23

Mark No. 1 H11 * PNL - SMP

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Seismic Monitor

1. Scope: [] NSSS [X] BOP2. Vendor and Model Number: Reliance _____ Quantity: 13. S/W Mark Nos: 1H11-PNL-SMP

4. If the component is a cabinet or panel, name and model No. of the devices included: See Panel Equipment List

5. Physical Description a. Appearance Cabinet, floor-mountedb. Dimensions 30"x30"x90"H c. Weight 750#6. Location: Building CB _____ Elevation 63 ft.7. Field Mounting Conditions [X] Bolt (No. 8, Size 1/2")

[] Weld (Length _____) -

[] _____

8. a. System in which located: H11 - Main Steam Control Room Panelsb. Functional Description: Seismic Monitoring

c. Is the equipment required for [] Hot Standby [] Cold Shutdown

[] Both [X] Neither

9. Pertinent Reference Design Specifications: SH1-125

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☐ Test

☒ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic Analysis of Panel SMF

(No. Title and Date) 99AX400695, Sept. 14, 1977

Company that Prepared Report: Reliance Co.

Company that Reviewed Report: Reliance Co.

V. Vibration Input:

1. Loads considered: a. ☒ Seismic only

b. ☐ Hydrodynamic only

c. ☐ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☐ SRSS ☒ N/A
(other, specify)

3. Required Response Spectra (attach the graphs): Attached

4. Damping Corresponding to RRS: Upset 1/2% Faulted 1%

5. Required Acceleration in Each Direction: ☐ ZPA ☒ Other FN > 12 Hz
(specify)

Upset S/S = .50 F/B = .50 V = .20

Faulted S/S = .90 F/B = .90 V = .50

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: Not required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VII. If Qualification by Analysis, then complete

1. Method of Analysis:

☐ Static Analysis ☒ Equivalent Static Analysis
☐ Dynamic Analysis: ☐ Time-History ☐ Response Spectrum

2. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

S/S = 18 F/B = 18 V = > 18 Hz

3. Model Type: ☒ 3D ☐ 2D ☐ 1D
☐ Finite Element ☒ Beam ☐ Closed Form Solution

4. ☒ Computer Codes: STARDYNE

Frequency Range and No. of modes considered: N/A

☒ Hand Calculations (Anchorage)

5. Method of Combining Dynamic Responses: ☒ Absolute Sum ☐ SRSS
☐ Other: (specify)

5a. Input g-level: Upset H .55 V .30
Faulted H .90 V .50

6. Damping: Upset 1/2% Faulted 1% Basis for the damping used: FSAR

7. Support Considerations in the model: same as service conditions

8. Critical Structural Elements:

A.	Identification	Location	Governing Load or Response	Service Level	Total Stress	Stress Allow
	3x2x1/2L	#3	Seismic	Faulted	13100 psi	1.8

B.	Maximum Critical Deflection	Location	Maximum Allowable Deflection to Assure Functional Operability
	N/A		

GENERAL NOTES

1. LOCATION OF DEVICES ON ELEMENTARY DIAGRAM ARE AS SHOWN IN THE REMARKS COLUMN.
2. TERMINAL BLOCKS ARE TO BE PROVIDED IN QUANTITIES AS REQUIRED TO INCLUDE 20 PERCENT SPARE POINTS.
3. THE SEISMIC MONITOR PANEL SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF SPECIFICATION SHI-125 AND ALL ADDENDA THERETO.
4. ALL CONTROL SWITCH AND NAMEPLATE ENGRAVING SHALL CONFORM TO THE REQUIREMENTS OF SPECIFICATION SHI-125 AND THE ENGINEERS ENGRAVING LIST.

LEGEND

"S" IN "PROVIDED BY" COLUMN INDICATES "SELLER"
"E" IN "PROVIDED BY" COLUMN INDICATES PROVIDED BY "ENGINEERS" BUT MOUNTED AND WIRED AT THE JOBSITE.


REFERENCE DRAWINGS

- A. OUTLINE - 11600.02-ESK-4TCA02
B. ENGRAVING LIST - 11600.02-E-4TCA01

SEISMIC MONITOR PANEL
1H11-PNL-SMP

O.A. CAT. II

8	7	6	5	4	3	2	1	4/29/77
								RLP
								11600.02-E-4TCA01
								1/6 4"

EQUIPMENT LIST	
SEISMIC MONITOR PANEL	
SHOREHAM NUCLEAR POWER STATION - UNIT 1	
LONG ISLAND LIGHTING COMPANY	
STONE & WEBSTER ENGINEERING CORPORATION	
	11600.02-ESK-4TCA01 SH. 2 CONT. ON SH. 3

EQUIPMENT LIST

ITEM NO	INSUR OR DEV NO	QTY	PROV BY	DESCRIPTION	SERVICE	MARKS
1A	27-1211101	1	S	AG-STAT TIME DELAY RELAY, TDDO, 120 VOLT/60 HZ COIL, 2 FORM C, CONTACTS, 5-50 SECOND RANGE, MODEL NO. 7022AD	LOSS OF POWER FEED TO ALARM RELAYS	ESK-6Z9401
1B	74A-12941101	1	S	SQUARE D TYPE DO-80 RELAY 120V/60 HZ COIL, 8 N.O. CONTACTS	O.OIG ALARM POINT	ESK-6Z9401
1C	74B-12941101	1	S	SQUARE D TYPE DO-40 RELAY 120V/60 HZ COIL, 4 N.O. CONTACTS	O.OIG ALARM POINT	ESK-6Z9401
1D	74C-12941101	1	S	SAME AS ITEM 1C	O.OIG ALARM POINT [CONTAINMENT FOUNDATION]	ESK-6Z9401
CONTROLE						
2A	H1-12941101	1	S	ELECTRONIC HORN, BETATONE III 120 V/60 HZ, BETA PRODUCTS INC.	O.OIG AUDIBLE ALARM	ESK-6Z9401
2B	H2-12941101	1	S	SAME AS ITEM 2A	O.OIG AUDIBLE ALARM	ESK-6Z9401
3	1294- (ER004) (112-01	1	(E)	KINEMATICS MODEL PSH1575 ANNUNCIATOR UNIT 19" W x 15.75" H x 17" D [33 LBS-WEIGHT]	ANNUNCIATOR	ESK-6Z9401
4A	1294- (ER300) ZK002	1	(E)	KINEMATICS MODEL SMA-3 RECORDING PIVOTEL 19" W x 7" H x 8" D [13 LBS-WEIGHT]	SEISMIC RECORDER	—
4B				ITEM DELETED		

STONE & WEBSTER ENGINEERING CORPORATION

HDC-6Z-ESK-6Z9401
SH. 3. CONT. ON SH. 4

EQUIPMENT LIST

ITEM NO	INSTR OR DEV NO	QTY	PROV BY	DESCRIPTION	SERVICE	REMARKS
4C	1274- E/S 003	1	(E)	KINEMATICS MODEL SMP-3 CONTROL UNIT 19"W X 7"H X 7.5"D [17 LBS-WEIGHT]	SEISMIC RECORDER CONTROL UNIT	ESK-627401
5	NONE	1	S	STEEL PLATE 19" WIDE, 7" HIGH, PAINTED FCS 595a NO. 21643 BEIGE SEWIGLOSS DRILLED FOR ATTACHMENT TO STANDARD 19" INSTRUMENT RACK	MOUNTING PLATE FOR ITEM 6	—
6	1- 127401	1	S	PUSHBUTTON SWITCH, C-11 TYPE E3011 OPERATOR, E30KLA3 CONTACT BLOCK WITH BUTTON MARKING AS SHOWN ON ESK 3F/11K2	0.01G ALARM RESET	ESK-627401
7	1274- E/S 003	1	(E)	KINEMATICS MODEL SMP-1 PLAYBACK UNIT 19"W X 10.5"H X 8"D [23 LBS-WEIGHT]	PLAYBACK UNIT	—
8	1274- E/S 003	1	(E)	KINEMATICS MODEL SP-1 SWITCH TEST PANEL 19"W X 3.5"H X 8"D [5 LBS-WEIGHT]	SWITCH TEST PANEL	ESK-627401
9	27A- 127401	1	S	SAME AS ITEM 1A	LOSS OF POWER FEED TO SEISMIC INSTRUMENTATION	ESK-627401
10	BY LILCO	1	LILCO	RFL INDUSTRIES RECEIVER RACK	METEOROLOGICAL MONITORING	—

CONTROLLED

STONE & WEBSTER ENGINEERING CORPORATION

11/3/68

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11/3/68

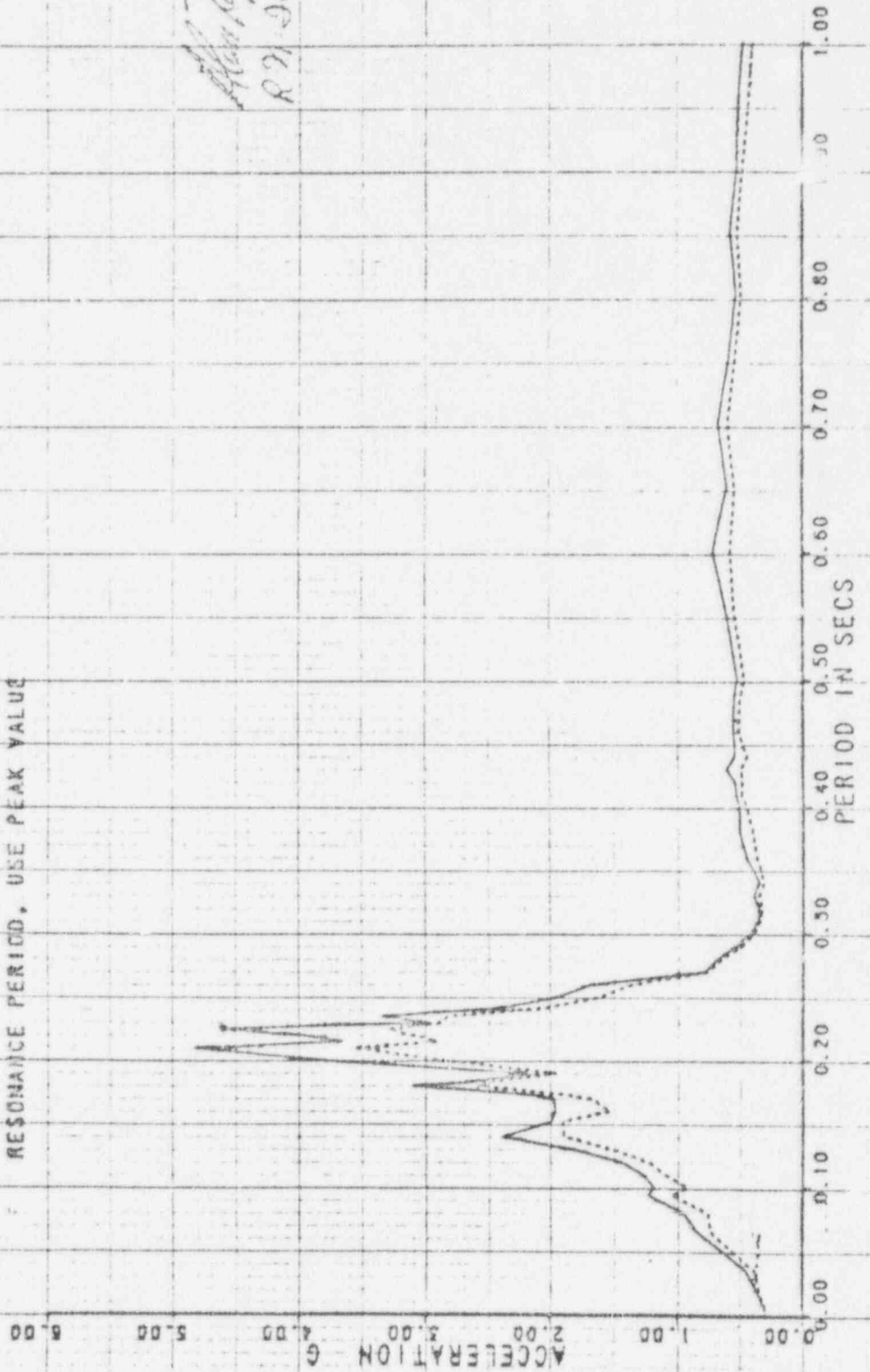
11/3/68

11/3/68

AMPL RESP SPECT LILCO TURBINE/CONTROL ROOM BLDG OPERATING FLOOR EL. 83.0
HORIZONTAL DBE 'M-5' EXCI SOIL G- 13 KSI JAN. 20, 1973

----- 7. PERCENT STRUCT DAMP AND 1.0 PERCENT EQUIP DAMP
----- 7. PERCENT STRUCT DAMP AND 1.0 PERCENT EQUIP DAMP

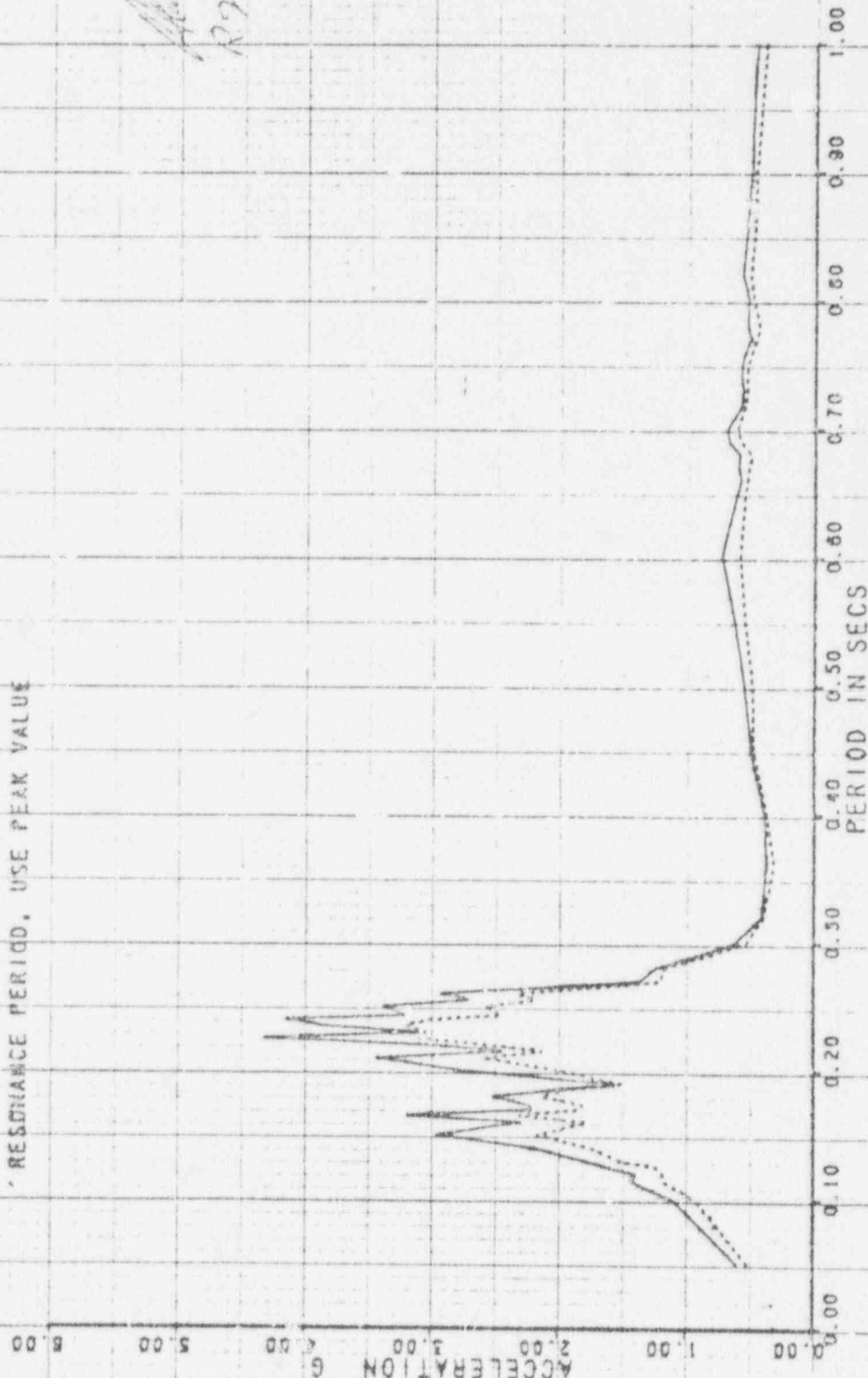
NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN ± 25 OR -20% OF
RESONANCE PERIOD, USE PEAK VALUE



Handwritten signature
R. J. Jacone

AMPL RESP SPECT, LILCO TURBINE/CONTROL ROOM BLDG OPERATING FLOOR EL. 03.0
 HORIZONTAL DOE 'E-W' EXCI SOIL G-13 KSI JAN. 30, 1973
 --- 7. PERCENT STRUCT DAMP AND .5 PERCENT EQUIP DAMP
 ---- 7. PERCENT STRUCT DAMP AND 1. PERCENT EQUIP DAMP

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN +25 OR -20% OF
 RESONANCE PERIOD, USE PEAK VALUE



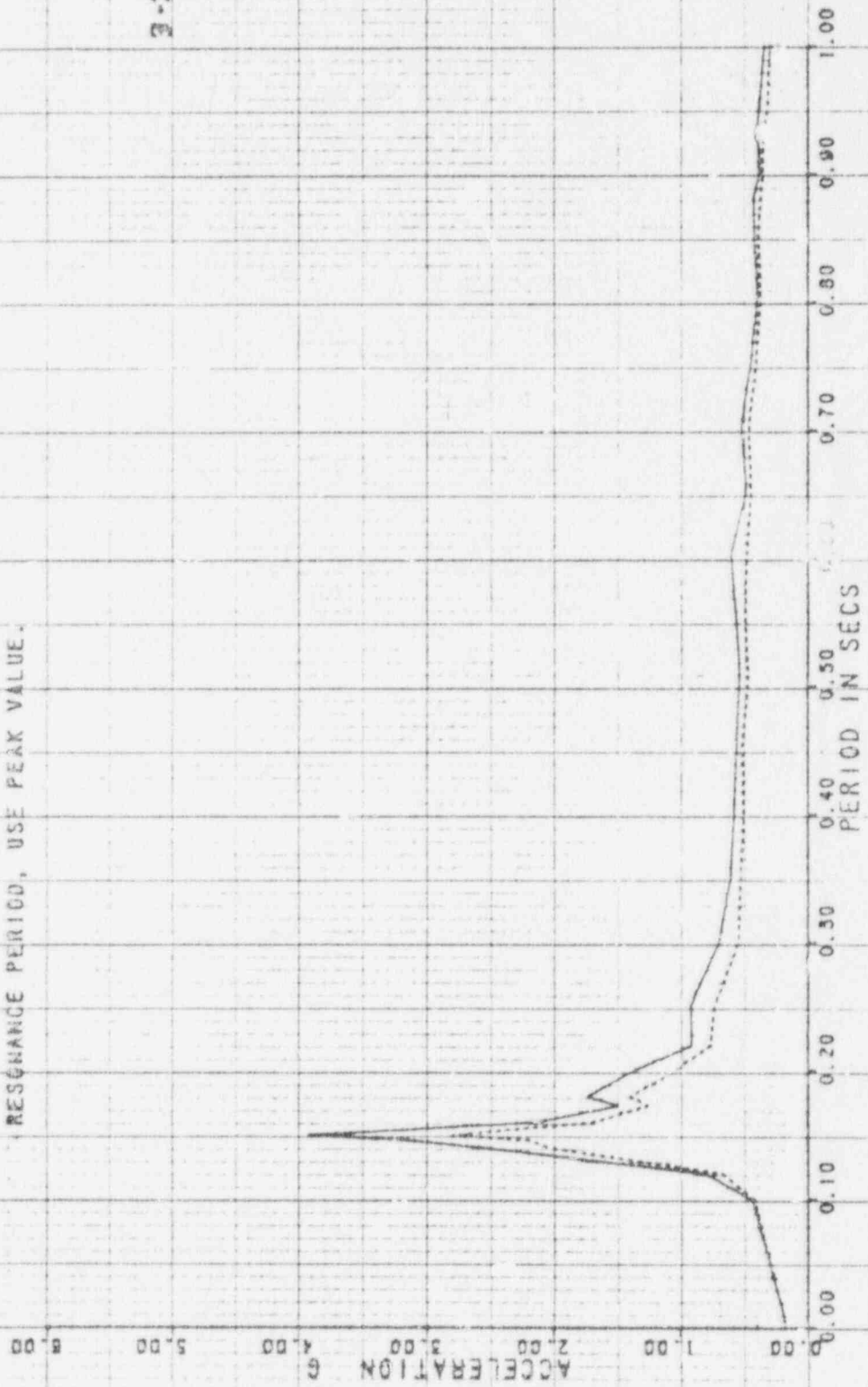
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Handwritten text: R. M. J. J. J. J.

SHI-125-2

3-27-73 *MD*
W-11

AMPL RESP SPECT LILCO TURBINE/CONTROL ROOM BLDG OPERATING FLOOR EL. 83.0
 DBE VERTICAL EXCITATION SOIL 6-13 KSI MARCH 22, 1973
 --- 7. PERCENT STRUCT DAMPING AND .5 PERCENT EQUIPMENT DAMPING
 ---- 7. PERCENT STRUCT DAMPING AND 1. PERCENT EQUIPMENT DAMPING

NOTE: FOR EQUIPMENT WITH NATURAL PERIOD WITHIN ± 25 OR -20% OF
 RESONANCE PERIOD, USE PEAK VALUE.



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 24

Mark No. 1R 35 * T-201

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR _____

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Dry-type Transformers

1. Scope: [] NSSS [X] BOP2. Vendor and Model Number: Magnetics, L-12819 Quantity: 13. S/W Mark Nos: 1R35*T-201

4. If the component is a cabinet or panel, name and model No. of the devices included: _____

5. Physical Description a. Appearance Rectangular Boxb. Dimensions 31 x 27 1/2 x 17 1/2 " c. Weight 400 lbs.6. Location: Building CB Elevation 237. Field Mounting Conditions [X] Bolt (No. 4, Size 3/4") (Wall mounted)

[] Weld (Length _____)

[] _____

8. a. System in which located: N/Ab. Functional Description: Power Distribution Transformer

c. Is the equipment required for [] Hot Standby [] Cold Shutdown

[X] Both [] Neither

9. Pertinent Reference Design Specifications: SH1-248

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Seismic simulation test program on three transformers

(No. Title and Date) 43424-1 12-16-76

Company that Prepared Report: Wyle Laboratory

Company that Reviewed Report: Magnetics

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ (other, specify)

3. Required Response Spectra (attach the graphs): See graphs

4. Damping Corresponding to RRS: Upset Faulted 1%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other (specify)

Upset S/S = 0.31 F/B = 0.31 V = 0.16

Faulted S/S = 0.30 F/B = 0.30 V = 0.30

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344

*NOTE: If more than one report, complete Items IV through VII for each report.

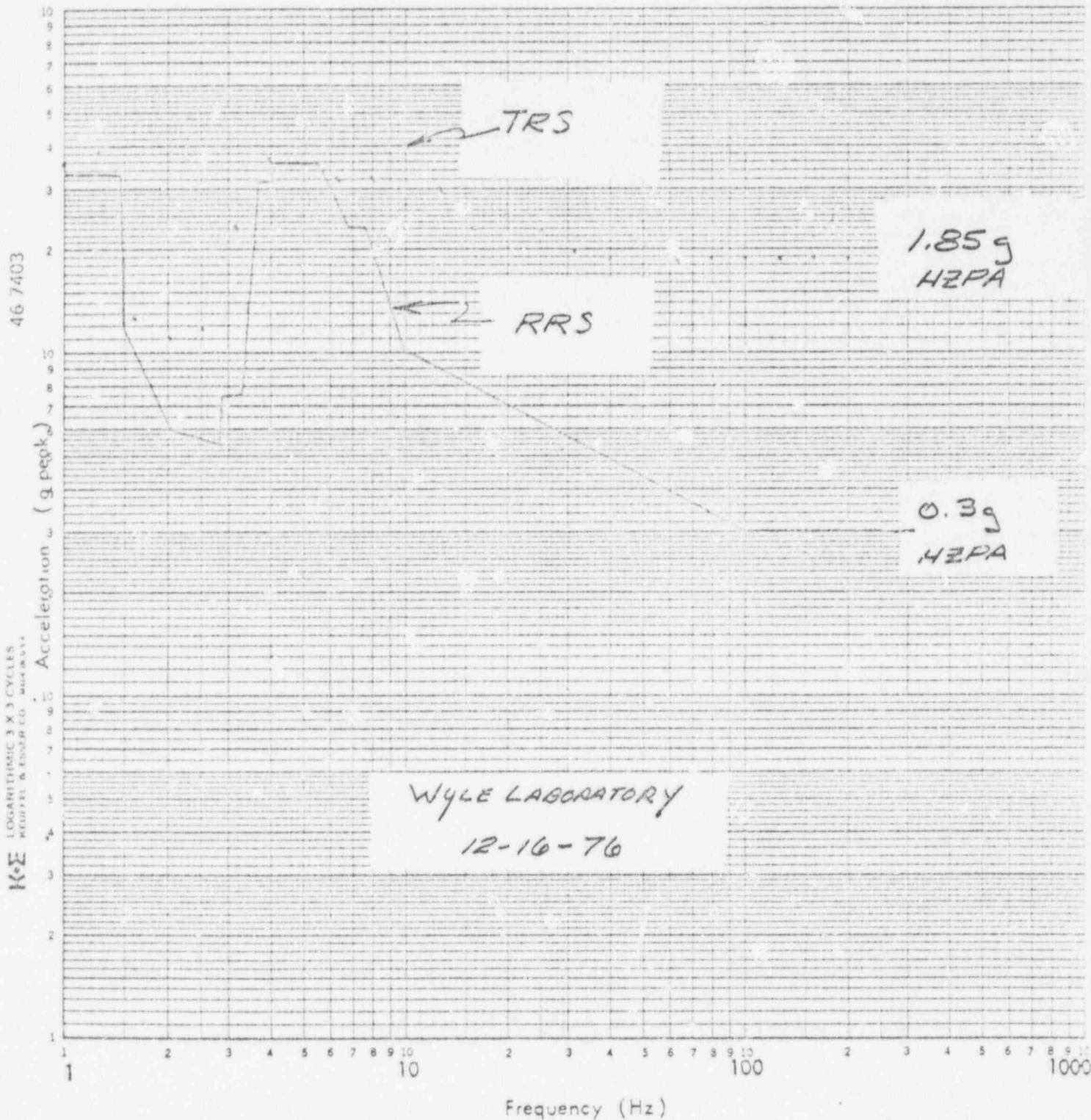
Item ()

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other _____
(specify)
4. Frequency Range: 1 - 60 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 9 Hz F/B = 9 Hz V = 23 Hz
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = 1.6 F/B = 1.35 V = 0.35
Faulted S/S = 1.9 F/B = 1.85 V = 0.64
9. Laboratory Mounting:
☒ Bolt (No. 4, Size 1/2) ☐ Weld (Length _____) ☐ _____
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets specification requirements without modifications.
12. Other test performed (such as aging or fragility test, including results):
None

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

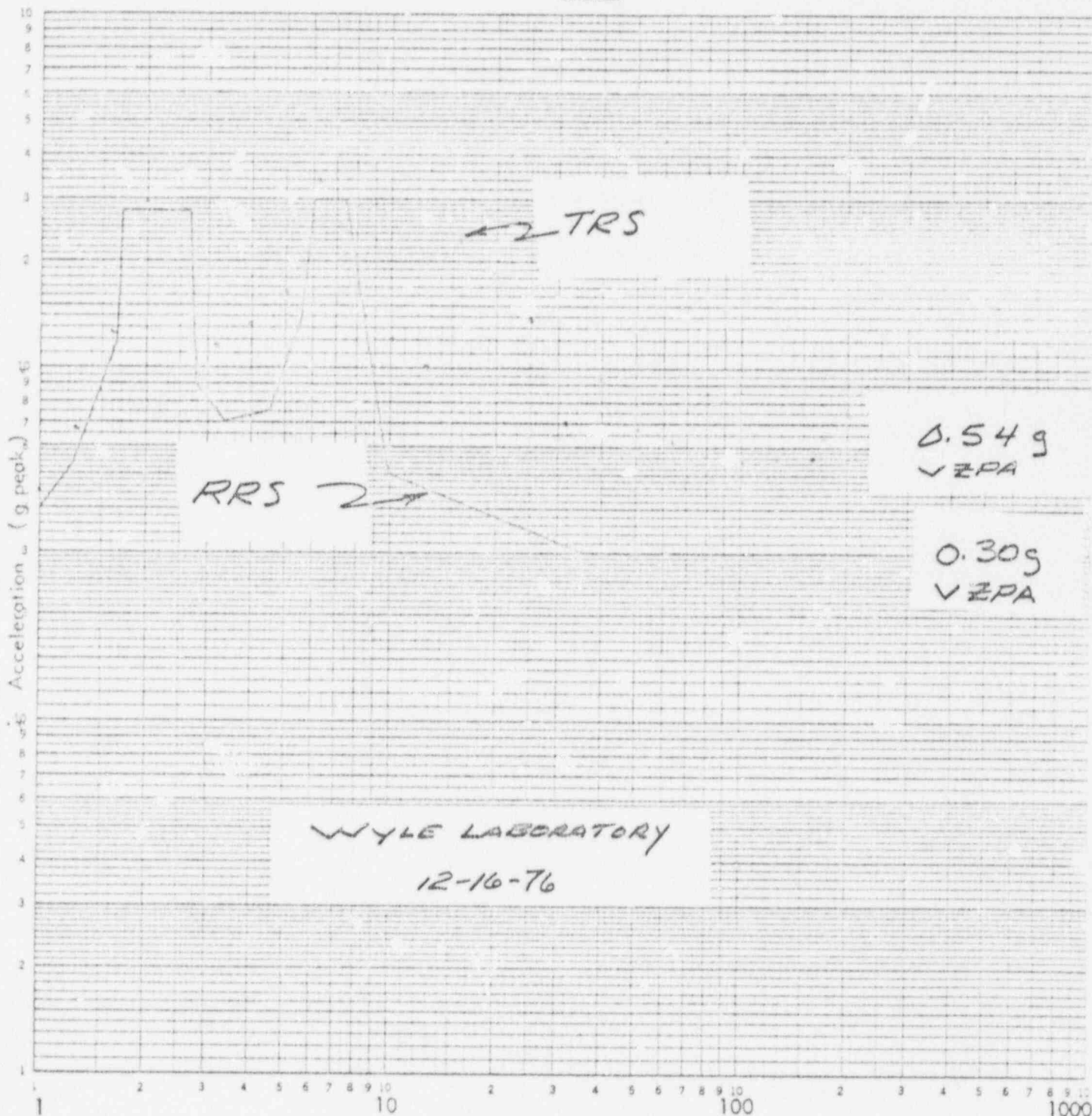
FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☒ 100 ☐ 1000 ☐DAMPING ☐ 1% ☒AXIS FB/VLOCATION NO. HCATEST RUN NO. 10

FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☒ 100 ☐ 1000 ☐DAMPING ☐ 1%

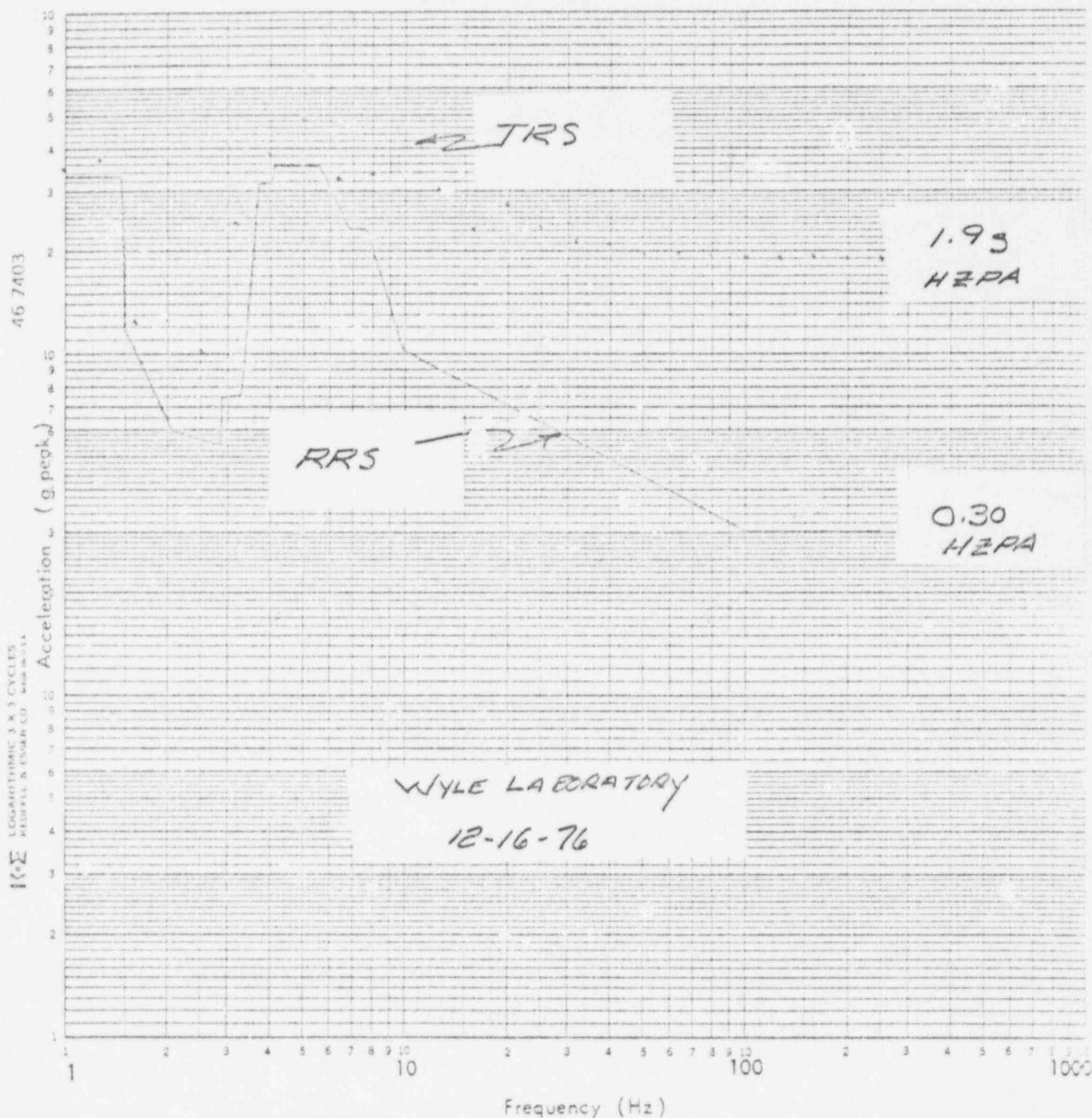
46 7403

K&S LOGARITHMIC 3 X 3 CYCLES
REUTHER & KESLER CO. MADE IN U.S.A.

Frequency (Hz)

AXIS FB/VLOCATION NO. VCATEST RUN NO. 10

FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☒ 100 ☐ 1000 ☐DAMPING ☐ 1 %AXIS SS/VLOCATION NO. HCPTEST RUN NO. 17

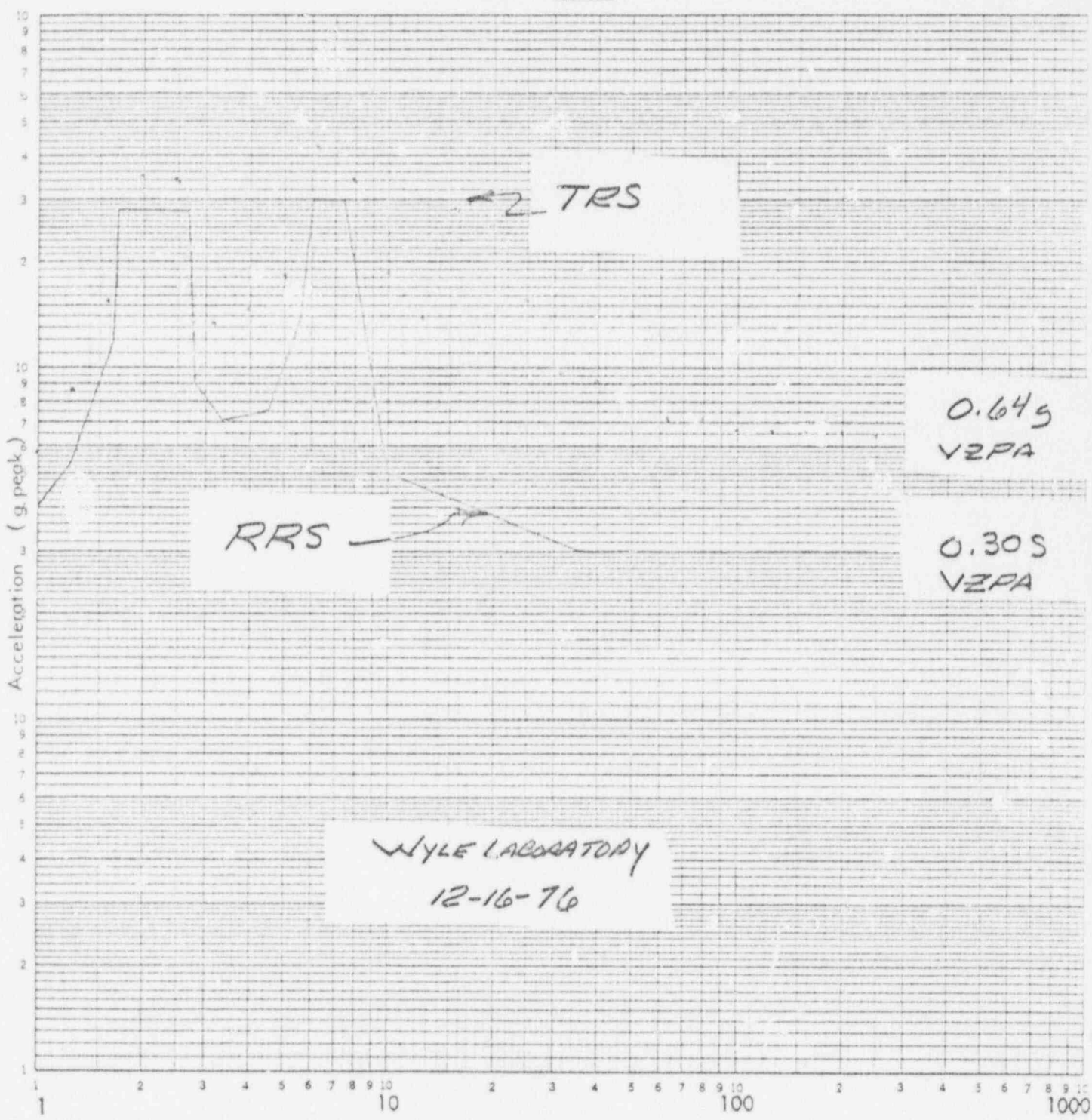
FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☒ 100 ☐ 1000 ☐

DAMPING ☐ 1 %

46 7403

LOGARITHMIC 3 X 3 CYCLES
MODEL N 11-111 CO. MADE IN U.S.A.



Frequency (Hz)

AXIS SS/V
LOCATION NO. VCR
TEST RUN NO. 17

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment

for

Selected NRC SQRT Audit Items

Item 25

Mark No. 1M50*LS-002

QUALIFICATION SUMMARY OF EQUIPMENTI. Plant Name: SHOREHAMType:1. Utility: LILCO

PWR

2. NSSS: GE 3. A/E: Stone & Webster

BWR 4 MKII

II. Component Name

Liquid Level Controls

1. Scope: ☐ NSSS ☒ BOP2. Vendor and Model Number: Magnetrol, 291-MPG-M74PC Quantity: 163. S/W Mark Nos: 1M50*LS-002 1P42*LS-012, -013; 1T48*LS-0614. If the component is a cabinet or panel, name and model No. of the devices included: N/A5. Physical Description a. Appearance Small tandem cylindrical tanksb. Dimensions 9"Dia max x 28" Lg Max c. Weight Not given6. Location: Building CB&SC Elevation CB-63 ft. & SC-151 ft. & 82 ft.7. Field Mounting Conditions ☐ Bolt (No. , Size)☐ Weld (Length)☒ Stand pipe or bracket mounted8. a. System in which located: { RBSVS & CRAC ch wtr surge tank TK88A&B; RB CLCW
head tank TK-26A&B; recombiner - 002A&Bb. Functional Description: Water level controlc. Is the equipment required for ☐ Hot Standby ☐ Cold Shutdown☒ Both ☐ Neither9. Pertinent Reference Design Specifications: SH1-407

III. Is Equipment Available for Inspection in the plant: ☒ Yes ☐ No

IV. Equipment Qualification Method:

☒ Test

☐ Analysis

☐ Combination of Test
and Analysis

Qualification Report*: Type test program on liquid level controls

(No. Title and Date) 43235-1, May 2, 1977

Company that Prepared Report: Wyle, Lab.

Company that Reviewed Report: Magnetrol International

V. Vibration Input:

1. Loads considered: a. ☐ Seismic only

b. ☐ Hydrodynamic only

c. ☒ Combination of (a) and (b)

2. Method of Combining RRS: ☐ Absolute Sum ☒ SRSS ☐ _____
(other, specify)

3. Required Response Spectra (attach the graphs): Yes

4. Damping Corresponding to RRS: Upset 2% Faulted 3%

5. Required Acceleration in Each Direction: ☒ ZPA ☐ Other _____
(specify)

Upset S/S = .3 g F/B = .3 g V = .2 g

Faulted S/S = .4 g F/B = .4 g V = .3 g

6. Were fatigue effects or other vibration loads considered?

☒ Yes ☐ No

If yes, describe loads considered and how they were treated in overall qualification program: To the extent required by IEEE-344-1975

*NOTE: If more than one report, complete Items IV through VII for each report.

VI. If Qualification by Test, then Complete*:

1. ☐ Single Frequency ☒ Multi-Frequency ☒ random
☐ sine beat ☐
2. ☐ Single Axis ☒ Multi-Axis
3. No. of Qualification Tests: Upset 5 Faulted 1 Other (specify)
4. Frequency Range: 1-60 Hz
5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):
S/S = 16 F/B = 16 V = 30
6. Method of Determining Natural Frequencies
☒ Lab Test ☐ In-Situ Test ☐ Analysis
7. TRS enveloping RRS using Multi-Frequency Test ☒ Yes (Attach TRS and RRS graphs)
☐ No
8. Input g-level Test: Upset S/S = F/B = V =
Faulted S/S = 3.7 F/B = 3.7 V = 1.5
9. Laboratory Mounting:
☐ Bolt (No. , Size) ☐ Weld (Length) ☒ Standpipe or bracket
10. Functional operability verified: ☒ Yes ☐ No ☐ Not Applicable
11. Test Results including modifications made: Meets the spec requirements
without modification
12. Other test performed (such as aging or fragility test, including results):
Aging to IEEE-323-1974 requirements, qualified life is 5 years.

*NOTE: If qualification by a combination of test and analysis, also complete Item VII.

FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☐ 100 ☒ 1000 ☐

DAMPING 3 %

AXIS 1/3

LOCATION NO. HCP

TEST RUN NO. 9

DBE

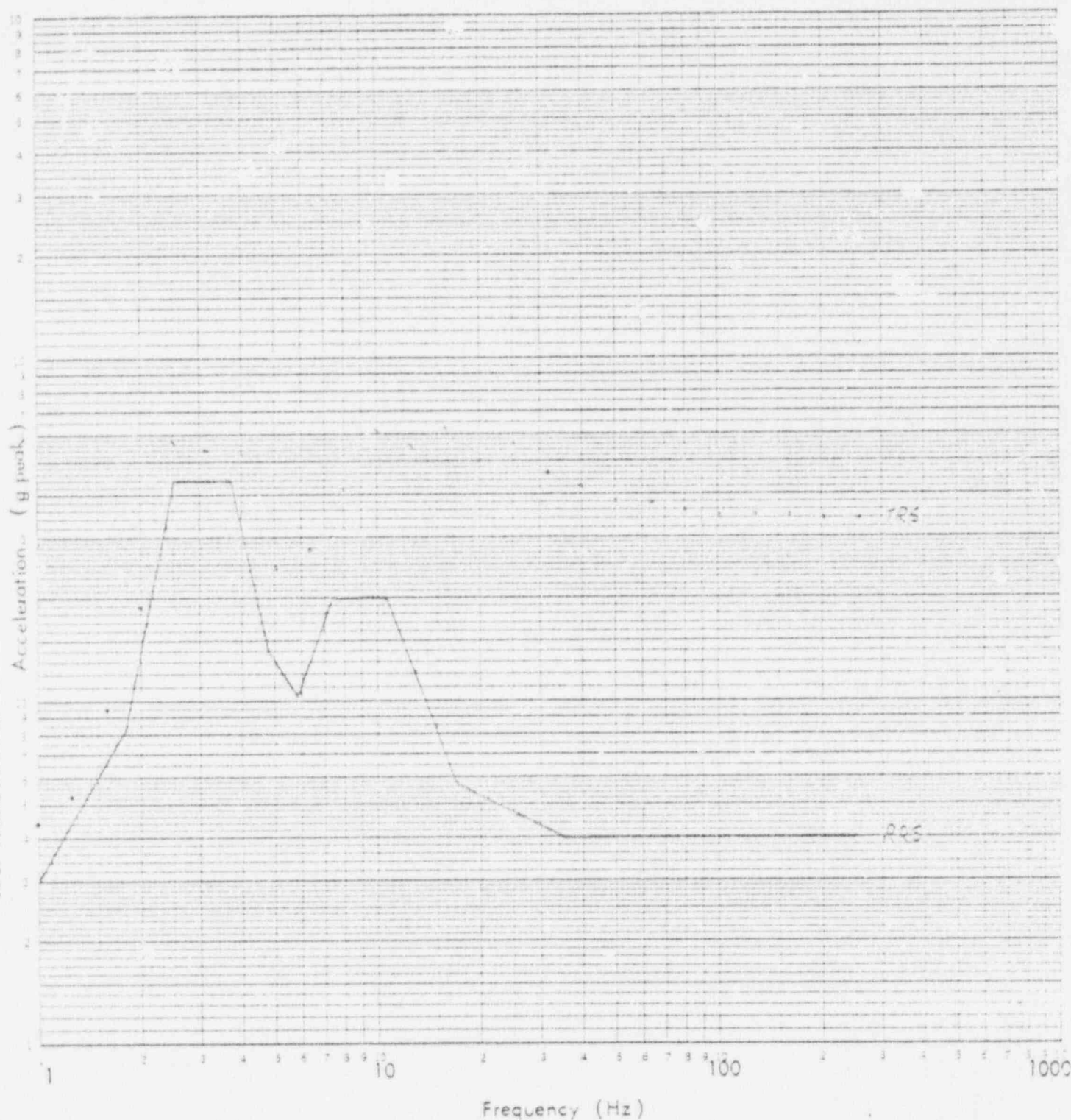
FULL SCALE SHOCK SPECTRUM (g Peak)

1.0 ☐ 10 ☐ 100 ☒ 1000 ☐

DAMPING ☒ 3 %

46 7403

16.2 (CALCULATED) 1/3 G-CURVES
BASED ON AVERAGE 1000 G DATA



AXIS 1/3
LOCATION NO. HCR
TEST RUN NO. 9
DBE

LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

Qualification Summary of Equipment
for
Selected NRC SORT Audit Items

Item 26

Mark No. 1R24*MCC 1110

(SAME AS 13)