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PILGRIM UNIT 1
 SPECIFICATION
 FOR
 SEISMIC RESPONSE SPECTRA
 SPECIFICATION NUMBER C-114-ER-Q-E0

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REV	PREPARED BY	DATE	VERIFIED BY	DATE	QAD REVIEW	DATE	PREP OK	APPROVED BY	DATE

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1.0 PURPOSE

The purpose of this specification is to consolidate the approved design basis response spectra in a single controlled document, and to provide guidance in selecting and using floor spectra for design of Class 1 equipment and piping at Pilgrim Nuclear Power Station. Proper implementation of this specification will help ensure that the seismic design bases committed to in the Final Safety Analysis Report are maintained.

2.0 SCOPE

This specification applies to equipment and piping directly mounted on the reinforced concrete and structural steel comprising the Class 1 buildings, the biological shield wall, the reactor pedestal and the reactor vessel. The steel containment vessel (drywell) and suppression chamber (torus) are not included under this specification.

3.0 DEFINITIONS

- 3.1 Broadband Response Spectrum - A response spectrum that describes motion in which amplified response occurs over a wide (broad) range of frequencies.
- 3.2 Cutoff Frequency - The frequency in the response spectrum where the zero period asymptote begins (the acceleration is constant). This is the frequency beyond which the single-degree-of-freedom oscillators exhibit no amplification of motion.
- 3.3 Damping - An energy dissipation mechanism that reduces the amplification and broadens the vibratory response in the region of resonance. Damping is usually expressed as a percentage of critical damping, which is the least amount of viscous damping that causes a single-degree-of-freedom system to return to its original position without oscillation after initial disturbance.
- 3.4 Flexible Equipment - Equipment, structures, and components whose lowest natural frequency is less than the cutoff frequency on the response spectrum.
- 3.5 Floor Acceleration - The acceleration of a particular building floor (or equipment mounting) resulting from the motion of a given earthquake. The maximum floor acceleration is the zero period acceleration (ZPA) of the floor response spectrum.
- 3.6 Floor Response Spectrum - A plot of the maximum response, as a function of frequency, of an array of single-degree-of-freedom damped oscillators mounted on a structural system which is subjected to a base excitation. Also called an amplified response spectrum.
- 3.7 Ground Acceleration - The acceleration of the ground resulting from the motion of a given earthquake. The maximum ground acceleration is the zero period acceleration (ZPA) of the ground response spectrum.

- 3.8 Ground Response Spectrum - A plot of the maximum response, as a function of frequency, of an array of single-degree-of-freedom damped oscillators mounted on the ground, subjected to a base excitation.
- 3.9 Natural Frequency - The frequency at which a body vibrates due to its own physical characteristics (mass and stiffness) when the body is subjected to a linear elastic displacement in a specific direction and then released.
- 3.10 Operating Basis Earthquake (OBE) - The maximum earthquake for which the nuclear power plant may continue in operation. For Pilgrim, the OBE is defined in Figure 2.5-5 of the Final Safety Analysis Report. The OBE maximum ground acceleration is .08g.
- 3.11 Response Spectrum - A plot of the maximum acceleration of a single degree of freedom system with a given damping subjected to a given base excitation, over a range of natural frequencies.
- 3.12 Rigid Equipment - Equipment, structures, and components whose lowest natural frequency is greater than the cutoff frequency on the response spectrum.
- 3.13 Safe Shutdown Earthquake (SSE) - The maximum earthquake for which systems required for a safe shutdown of the nuclear power plant must remain functional. The Pilgrim SSE is defined in Figure 2.5-6 of the Final Safety Analysis Report. The SSE maximum ground acceleration is .15g.
- 3.14 Time History - A data set representing structural base motion in terms of acceleration or displacement versus time. Time histories can be recorded during earthquakes or they can be artificially generated by numerical methods. The latter type are called "synthetic" time histories.
- 3.15 Zero Period Acceleration (ZPA) The acceleration level of the high frequency, nonamplified portion of the response spectrum. This acceleration corresponds to the maximum acceleration of the time history used to derive the spectrum.

4.0 BACKGROUND

4.1 Earthquake Motions

Earthquakes produce three-dimensional random ground motions that are characterized by simultaneous but statistically independent horizontal and vertical components. The ground motion is typically broadband random with a frequency range of interest of 1-33 Hertz. For floor mounted equipment, the vibratory nature of the ground motion can be amplified or attenuated depending on the system's natural frequencies (soil, building, and equipment) and the damping mechanisms.

In order to evaluate the effects of an earthquake on a given item of equipment, the engineer must evaluate the forces and displacements

which will be imparted to the equipment. For many items, the dynamic characteristics may be closely approximated as a single lumped mass connected by a single spring to a rigid base. This is called a single-degree-of-freedom (SDOF) system because there is a single unknown quantity: the response of the single lumped mass. The SDOF system has a single natural frequency of vibration which is a function of the lumped mass and the spring stiffness.

The response of an SDOF system to a known base motion (defined as displacement or acceleration versus time) may be calculated very easily. The functional relationship of the base motion versus time is called a time history. The calculation of the response of a system to such a prescribed motion is called a time history analysis.

When an earthquake motion is recorded in the field, the record consists of a time history of the acceleration of the recording instrument. If the recording instrument is located on the ground surface, the resulting record is called a free field or ground time history. Many earthquake records exist; one record which has been widely used for seismic analysis is the Taft 1952. The record used for design at Pilgrim Station was based on the Taft 1952 record.

4.2 Response Spectra

One may calculate the response of a hypothetical SDOF system to an earthquake record by performing a time history analysis. The result will be a time history of the displacement and acceleration of the SDOF system. The response of the SDOF system will be uniquely defined by two parameters: its natural frequency and its damping. If the natural frequency of the SDOF system is varied over some range and the damping is held constant, the maximum acceleration at each frequency could be plotted. This plot is known as a response spectrum. It shows the maximum response to a given base motion of an SDOF system, with a given damping, as a function of its frequency.

A response spectrum is useful because the maximum response of an SDOF system may be determined simply by reading the acceleration value from the response spectrum corresponding to the SDOF system frequency and damping. For relatively simple equipment, the engineer can very easily compute the mass and stiffness of the equivalent SDOF system and then determine the effect of an earthquake by using the response spectrum of the earthquake. This is much quicker than performing a time history analysis.

For more complicated equipment which cannot be idealized by an equivalent SDOF system, the response spectrum is still useful. A complicated system may be modeled as an assemblage of discrete masses interconnected by linear springs. This is known as a multi-degree-of-freedom (MDOF) system. The response of an MDOF system may be computed using the technique of modal analysis in which the responses of each mode of vibration are computed individually and then combined together to find the total response.

One technique for computing the response of an MDOF system to a given ground motion is to perform a time history analysis of each mode of vibration and then combine the modal time histories together. A simpler technique is to compute the maximum response of each mode using the response spectrum. This is done by reading the acceleration for an SDOF system of the same frequency and damping, then multiplying by the modal scale factor. The maximum responses of the modes are then combined in an appropriate manner to arrive at the total maximum response.

4.3 Design Response Spectra

The use of a recorded ground motion for design purposes is questionable because earthquakes are random events and future earthquakes will be different than past earthquakes. Two approaches have been developed to address this problem: (1) using the record from a past earthquake scaled up such that the response of any SDOF system will be larger for it than for any earthquake likely to occur at the site in the future; or (2) using a ground response spectrum constructed so that for all frequencies the design spectrum will exceed the spectrum of any earthquake likely to occur at the site.

The second method (the one used predominantly for design at Pilgrim Station) is the more practical one, and a great deal of research has gone into developing rules for constructing ground response spectra for use in design. For Pilgrim, there are two ground response spectra used for design: (1) the Operational Basis Earthquake (originally referred to as the Design Earthquake), and (2) the Safe Shutdown Earthquake (originally referred to as the Maximum Credible Earthquake). The design ground response spectrum for the horizontal OBE is shown in the FSAR Figure 2.5-5, while the horizontal SSE design ground response spectrum is shown in FSAR Figure 2.5-6. The vertical design ground response spectrum is specified as two thirds of the horizontal design ground response spectrum in accordance with FSAR Section 12.2.3.5.1.

4.4 Floor Response Spectra

For equipment mounted inside buildings, the ground motion will be filtered by the intervening building structure to produce amplified or attenuated narrowband motions within the structure. This effect must be accounted for in order to properly reproduce the postulated earthquake environment in a realistic manner. The most common method for doing this is through the use of floor response spectra.

The computation of floor response spectra involves a dynamic analysis of the building in which the equipment is located. The building is idealized as an MDOF system with mass points specified at locations where floor spectra are required. The time history response of each mass point is computed using an earthquake ground record as input. The floor response spectra are then computed using the mass point time histories as the input motion.

5.0 PILGRIM RESPONSE SPECTRA

5.1 General Requirements

The appendices to this specification provide response spectra to be used in the design of equipment and piping located at Pilgrim Station. This information was consolidated from various approved source documents listed below and in Section 6.0. The consolidation process was controlled by methods described in Calculation C15.0.2779 (Reference 6.12).

Response spectra data is presented for the Operational Basis Earthquake (OBE) ground motion and for the Safe Shutdown Earthquake (SSE) ground motion. The acceleration values for the SSE are obtained by multiplying the OBE accelerations by a factor of 1.875, which is the ratio of the SSE (0.15g) to OBE (0.08g) maximum ground acceleration.

The floor response spectra provided in this specification are for one direction of horizontal motion. For applications requiring two orthogonal directions of horizontal motion, the same floor response spectrum may be used for each direction. The vertical floor response spectrum for any elevation in any building may be obtained by taking two thirds of the acceleration values of the horizontal ground response spectrum. These design approaches using the so-called 2-D earthquake methodology and a rigid vertical response are documented in FSAR Section 12.2.3.5.1.

Floor spectra data are furnished in two ways: (1) as a graph showing acceleration versus frequency for selected values of equipment damping, and (2) as a table showing the acceleration versus frequency for a range of values of equipment damping. The latter form is called digitized spectra. Accelerations for frequencies between those tabulated may be approximated by linear interpolation. Likewise, accelerations corresponding to dampings between values given may also be approximated by linear interpolation. Extrapolation to values of damping outside the range given is not permitted.

Floor spectra graphs are presented for the OBE only. They were generated by plotting the digitized data on linear/linear graph paper, and connecting the points with straight lines. The technique produces a slightly different result at intermediate points than if plotted on linear/log graph paper. These differences are considered to be of minor importance when contrasted with other requirements and techniques which ensure conservatism in the results. Hence linear interpolation of accelerations at intermediate frequencies or dampings is considered appropriate.

Floor spectra are presented for various floor elevations in each of the Class I buildings and selected structures and components at PNPS. When choosing a spectrum to use in qualifying a component mounted on a floor, the spectrum for that floor should be used. If a component is mounted at an intermediate elevation, the spectrum at the next elevation higher than the equipment attachment point should be used.

Alternatively, a spectrum could be interpolated based on the distance of the point of interest between two building elevations. When qualifying a system with multiple support points, the response spectrum used should envelop the response spectra corresponding to each attachment point.

The selection of which building spectra to use for interconnected structures, e.g., Reactor Building, Turbine Building and Radwaste Building, is dependent upon the modeling boundaries used in the analysis of record. Appendix J contains Figures 1 through 10 from Reference 6.11 to show the physical or pseudo "shake space" separations that constitute the model boundaries.

5.2 Reactor Building

Horizontal floor response spectra for the Reactor Building are shown in Appendix A. The spectra are applicable to equipment and piping mounted on the secondary containment portions of the building. The Reactor Building spectra may also be used for the below grade portion of the auxiliary bay (west of 5-line).

The 1%, 2%, and 5% spectra were originally calculated in Reference 1. These spectra were then reproduced and extended in Reference 6.7 to include dampings from 1/2%, 1%, 2%, 5%, and 7% damping. However, the accompanying tables provide digitized spectra for all dampings.

5.3 Biological Shield

Horizontal Floor response spectra for the biological shield wall are shown in Appendix B. The spectra were originally calculated in Reference 6.4. The accelerations in Appendix B away from the highly amplified range are in some cases slightly higher than those of Reference 6.4 for purposes of clarity and ease of use.

5.4 Reactor Vessel and Pedestal

Horizontal Floor response spectra for the reactor vessel are shown in Appendix C. The 1/2% and 1% spectra were developed in Reference 6.5. These spectra were then reproduced in Reference 6.6 and extended to include 2%, 3%, and 5% damping. For ease of use the number of spectral ordinates were reduced; however, the spectra in Appendix C in all cases envelops those in Reference 6.5.

5.5 Turbine Building

The horizontal floor response spectra for the Turbine Building are shown in Appendix D. The 1%, 2%, and 5% spectra were originally calculated in Reference 6.2. These spectra were then reproduced and extended in Reference 6.8 to include dampings from 1/2% to 10%. For convenience the spectra have been plotted only for 1/2%, 1%, 2%, 5%, and 7% damping. However, the tables provide digitized spectra for all dampings.

5.6 Radwaste Building

The horizontal floor response spectra for the Radwaste Building are shown in Appendix E. The 1%, 2%, and 5% spectra were originally calculated in Reference 6.3. These spectra were then reproduced and extended in Reference 6.8 to include dampings from 1/2% to 10%. For convenience, the spectra have been plotted only for 1/2%, 1%, 2%, 5%, and 7% damping. However, the tables provide digitized spectra for all dampings.

5.7 Intake Structure

The horizontal floor response spectra for the Intake Structure are shown in Appendix F. The 4% and 7% spectra were originally calculated in Reference 6.9. These spectra were then reproduced and extended in Reference 6.10 to include dampings from 1/2%, 1%, 2%, 5%, and 7% damping. However, the tables provide digitized spectra for all dampings.

5.8 Diesel Generator Building

The horizontal floor response spectra for the Diesel Generator Building are shown in Appendix G. The 4% and 7% spectra were originally calculated in Reference 6.9. These spectra were then reproduced and extended in Reference 6.10 to include dampings from 1/2% to 10%. For convenience the spectra have been plotted only for 1/2%, 1%, 2%, 5%, and 7% damping. However, the tables provide digitized spectra for all dampings.

5.9 Horizontal Ground Motion

Appendix H contains OBE and SSE ground spectra derived from FSAR Figures 2.5-5 and 2.5-6.

5.10 Vertical Ground Motion

Appendix I presents the vertical ground response spectra for the OBE and SSE. These were derived from the Appendix H graphs by taking 2/3 of the horizontal ground acceleration at each frequency, as discussed in FSAR Section 12.2.3.5.1.

5.11 Building Model Boundaries

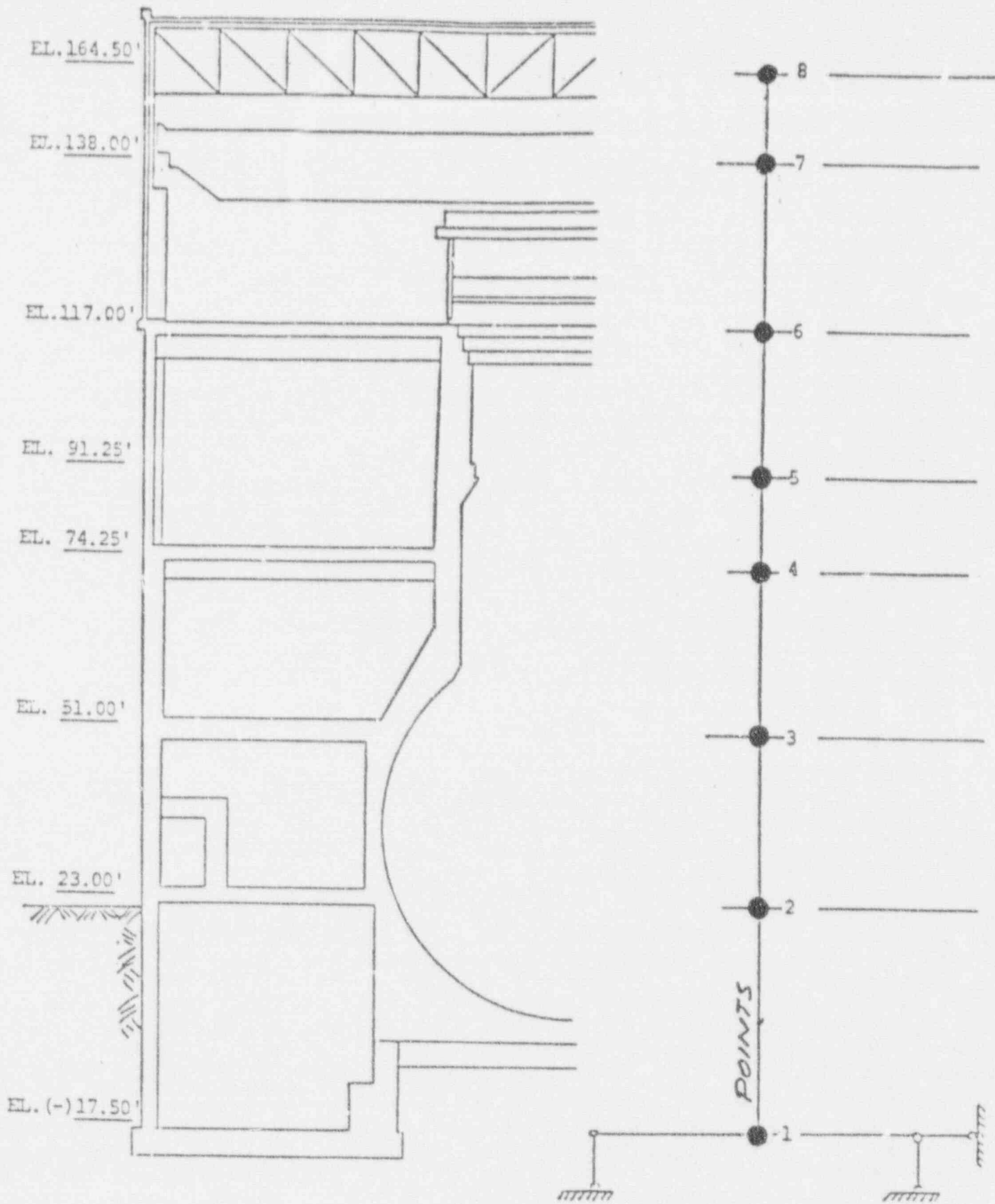
The Reactor Building, Turbine Building and Radwaste Buildings are interconnected structures. At some locations these structures are physically separated with shake spaces, and at other locations they are not. In either case the correct spectra depends on the model boundary used in the analysis of record. Appendix J shows these boundaries as defined by the original plant designer (see Reference 6.11).

6.0 REFERENCES

- 6.1 Bechtel Corporation, Reactor Building Seismic Analysis, 1969. (SUDDS/RF #89-3, Rev. 0)
- 6.2 Bechtel Corporation, Turbine Building Seismic Analysis, 1969. (SUDDS/RF #89-4, Rev. 0)
- 6.3 Bechtel Corporation, Radwaste Building Seismic Analysis, 1969. (SUDDS/RF #89-5, Rev. 0)
- 6.4 Bechtel Corporation, Seismic Analysis - Biological Shield, Calc. No. 085-C1, 1981. (SUDDS/RF #87-1024, Rev. 0)
- 6.5 General Electric Company, Pilgrim Seismic Analysis of Reactor, DAR 113, 1971.
- 6.6 General Electric Company, Recirculation Piping Seismic Reanalysis Revised Response Spectra, Letter G-HK-8-070, dated February 23, 1988. (SUDDS/RF 88-162, Rev. 0)
- 6.7 Cygna Energy Services, Seismic Spectra for Reactor Building, Calc. No. 85070-001, 1986. (SUDDS/RF #86-168, Rev. 0)
- 6.8 Cygna Energy Services, Seismic Response Spectra for Turbine Building and Radwaste Building, Calc. No. 85070-002, 1986. (SUDDS/RF #86-168, Rev. 0)
- 6.9 Cygna Energy Services, Bulletin 80-11 Analysis, Calc. No. 80034-G17000, 1982.
- 6.10 Cygna Energy Services, Seismic Response Spectra for Diesel Generator Building and Intake Structure, Calc. No. 85070-003, 1986. (SUDDS/RF #86-168, Rev. 0)
- 6.11 Bechtel Study Z87-001 entitled "Review of Seismic Separation Design Basis at Pilgrim Nuclear Power Station", April 1987. (SUDDS/RF #87-760, Rev. 0)
- 6.12 BECo Calculation C15.0 2779, Rev 0, Seismic Response Spectra - Spec C114.

APPENDIX A

REACTOR BUILDING HORIZONTAL SPECTRA



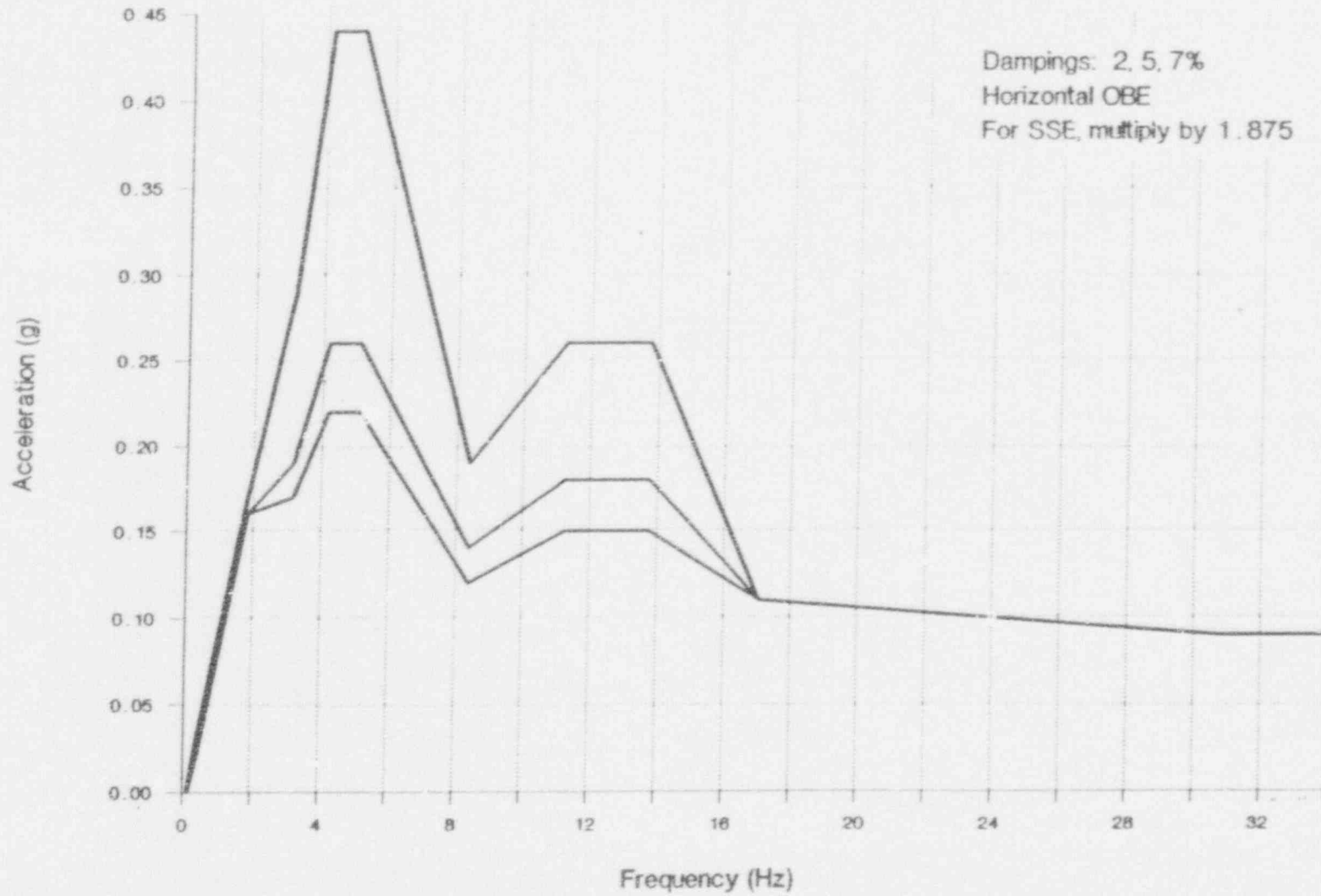
Reactor Building
Mathematical Model from Reference 1

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Sheet A-3

PILGRIM AMPLIFIED RESPONSE SPECTRA Reactor Building - Elev. (-) 17.5 - Mass Point 1



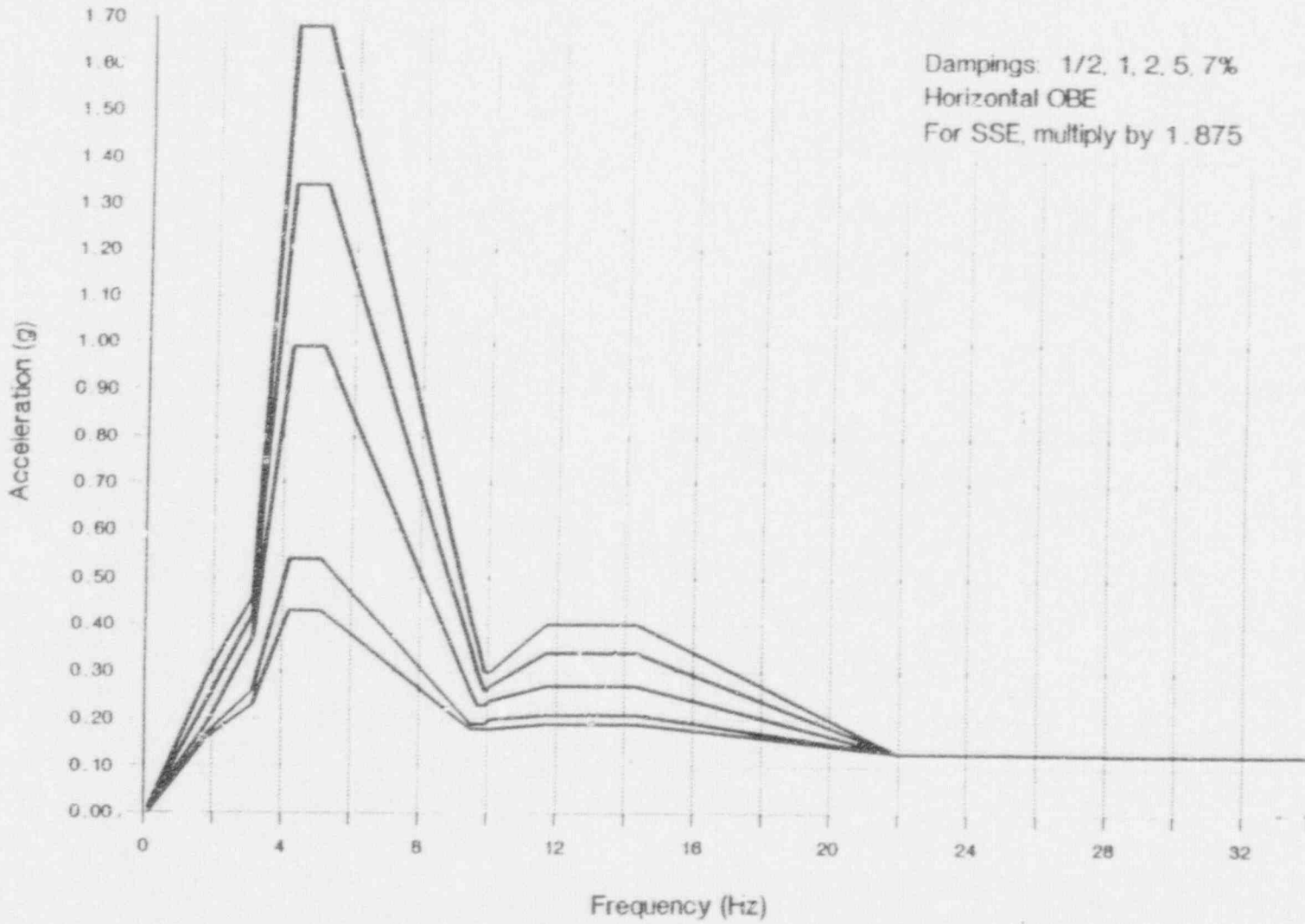
PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. (-) 17.5 - Mass Point 1
 Horizontal OBE

Freq. (Hz)	DAMPING (%)									
	2	3	4	5	6	7	8	9	10	
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.36	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02
1.80	0.17	0.17	0.17	0.16	0.16	0.16	0.15	0.15	0.14	0.14
3.15	0.29	0.24	0.21	0.19	0.17	0.17	0.16	0.16	0.16	0.16
4.16	0.44	0.36	0.31	0.26	0.24	0.22	0.21	0.20	0.19	0.19
5.08	0.44	0.36	0.31	0.26	0.24	0.22	0.21	0.20	0.19	0.19
8.40	0.19	0.17	0.15	0.14	0.12	0.12	0.12	0.11	0.11	0.11
11.25	0.26	0.23	0.20	0.18	0.16	0.15	0.14	0.14	0.13	0.13
13.75	0.26	0.23	0.20	0.18	0.16	0.15	0.14	0.14	0.13	0.13
17.05	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
30.80	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
100.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Horizontal SSE

Freq. (Hz)	DAMPING (%)									
	2	3	4	5	6	7	8	9	10	
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.36	0.06	0.06	0.06	0.06	0.06	0.04	0.04	0.04	0.04	0.04
1.80	0.32	0.32	0.32	0.30	0.30	0.30	0.28	0.28	0.26	0.26
3.15	0.54	0.45	0.39	0.36	0.32	0.32	0.30	0.30	0.30	0.30
4.16	0.83	0.68	0.58	0.49	0.45	0.41	0.39	0.38	0.36	0.36
5.08	0.83	0.68	0.58	0.49	0.45	0.41	0.39	0.38	0.36	0.36
8.40	0.36	0.32	0.28	0.26	0.23	0.23	0.23	0.21	0.21	0.21
11.25	0.49	0.43	0.38	0.34	0.30	0.28	0.26	0.26	0.24	0.24
13.75	0.49	0.43	0.38	0.34	0.30	0.28	0.26	0.26	0.24	0.24
17.05	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
30.80	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
100.00	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17

PILGRIM AMPLIFIED RESPONSE SPECTRA Reactor Building - Elev. 23.0 - Mass Point 2



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 23.0 - Mass Point 2
 Horizontal OBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.80	0.29	0.24	0.19	0.18	0.17	0.17	0.17	0.16	0.16	0.15	0.15
3.11	0.46	0.42	0.37	0.33	0.29	0.26	0.24	0.23	0.22	0.22	0.21
4.16	1.68	1.34	0.99	0.79	0.65	0.54	0.48	0.43	0.39	0.36	0.34
5.08	1.63	1.34	0.99	0.79	0.65	0.54	0.48	0.43	0.39	0.36	0.34
9.50	0.41	0.35	0.26	0.24	0.22	0.19	0.18	0.18	0.17	0.17	0.17
9.70	0.36	0.30	0.23	0.21	0.20	0.19	0.18	0.18	0.17	0.17	0.17
9.90	0.30	0.26	0.23	0.21	0.20	0.19	0.18	0.18	0.17	0.17	0.17
10.07	0.30	0.27	0.24	0.22	0.20	0.20	0.19	0.18	0.18	0.17	0.17
11.70	0.40	0.34	0.27	0.24	0.22	0.21	0.20	0.19	0.19	0.18	0.18
14.30	0.40	0.34	0.27	0.24	0.22	0.21	0.20	0.19	0.19	0.18	0.18
22.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
100.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12

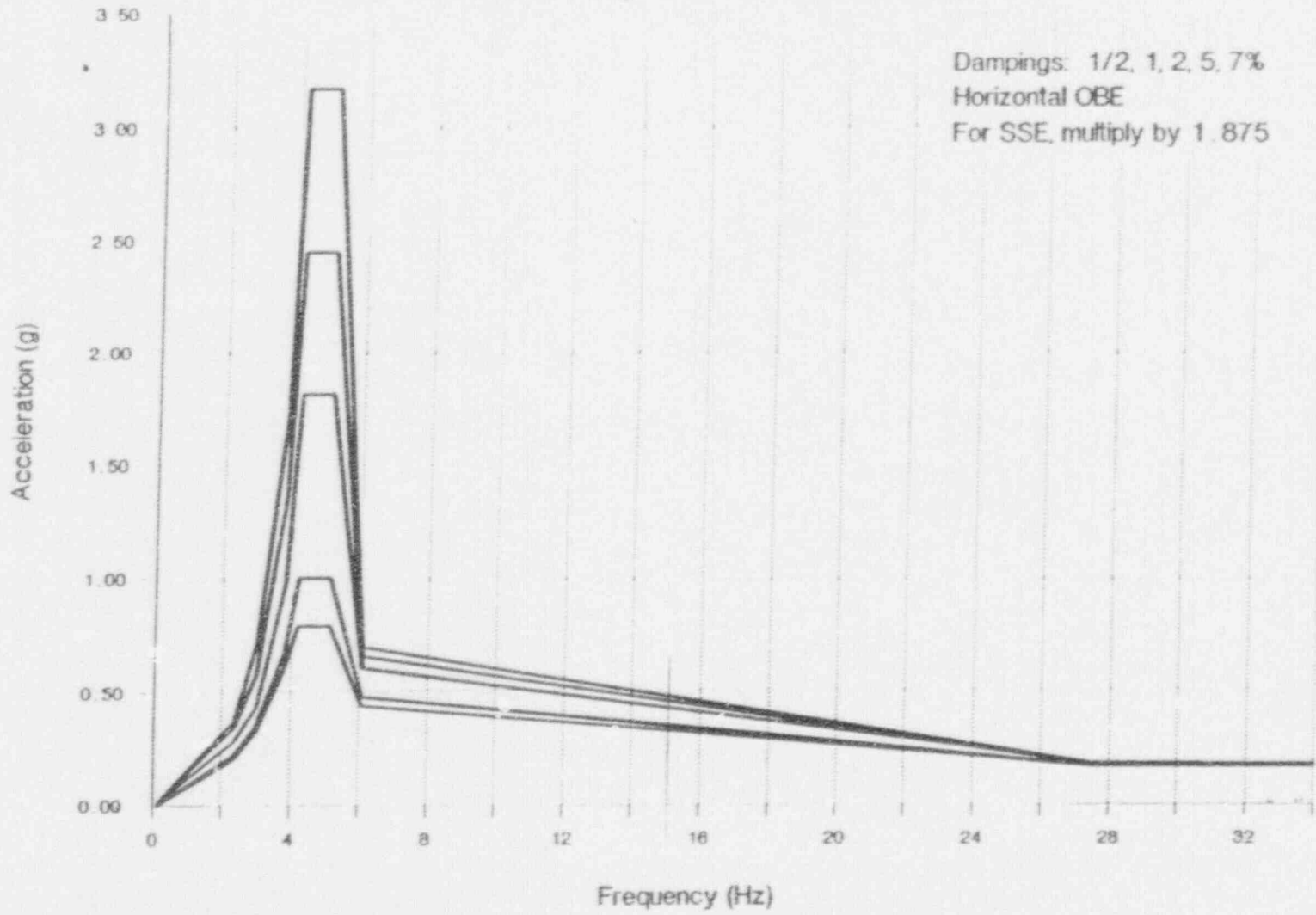
Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.80	0.54	0.45	0.36	0.34	0.32	0.32	0.32	0.30	0.30	0.28	0.28
3.11	0.86	0.79	0.69	0.62	0.54	0.49	0.45	0.43	0.41	0.41	0.39
4.16	3.15	2.51	1.86	1.48	1.22	1.01	0.90	0.81	0.73	0.68	0.64
5.08	3.15	2.51	1.86	1.48	1.22	1.01	0.90	0.81	0.73	0.68	0.64
9.50	0.77	0.66	0.49	0.45	0.41	0.36	0.34	0.34	0.32	0.32	0.32
9.70	0.68	0.56	0.43	0.39	0.38	0.36	0.34	0.34	0.32	0.32	0.32
9.90	0.56	0.49	0.43	0.39	0.38	0.36	0.34	0.34	0.32	0.32	0.32
10.07	0.56	0.51	0.45	0.41	0.38	0.38	0.36	0.34	0.34	0.32	0.32
11.70	0.75	0.64	0.51	0.45	0.41	0.39	0.38	0.36	0.36	0.34	0.34
14.30	0.75	0.64	0.51	0.45	0.41	0.39	0.38	0.36	0.36	0.34	0.34
22.00	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
100.00	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

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USE REFERENCED TO
REVISIONS

Sheet A-7

PILGRIM AMPLIFIED RESPONSE SPECTRA Reactor Building - Elev. 51.1 - Mass Point 3



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 51.1 - Mass Point 3
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.37	0.34	0.28	0.24	0.23	0.22	0.21	0.20	0.19	0.19	0.18
2.97	0.72	0.58	0.43	0.40	0.38	0.35	0.33	0.32	0.31	0.30	0.29
3.78	1.71	1.36	0.98	0.81	0.74	0.68	0.64	0.61	0.58	0.55	0.52
4.16	3.17	2.45	1.81	1.42	1.18	1.00	0.88	0.79	0.72	0.65	0.60
5.08	3.17	2.45	1.81	1.42	1.18	1.00	0.88	0.79	0.72	0.65	0.60
6.05	0.70	0.66	0.61	0.56	0.52	0.48	0.46	0.44	0.43	0.41	0.40
27.50	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17
100.00	0.17	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16

Horizontal SSE

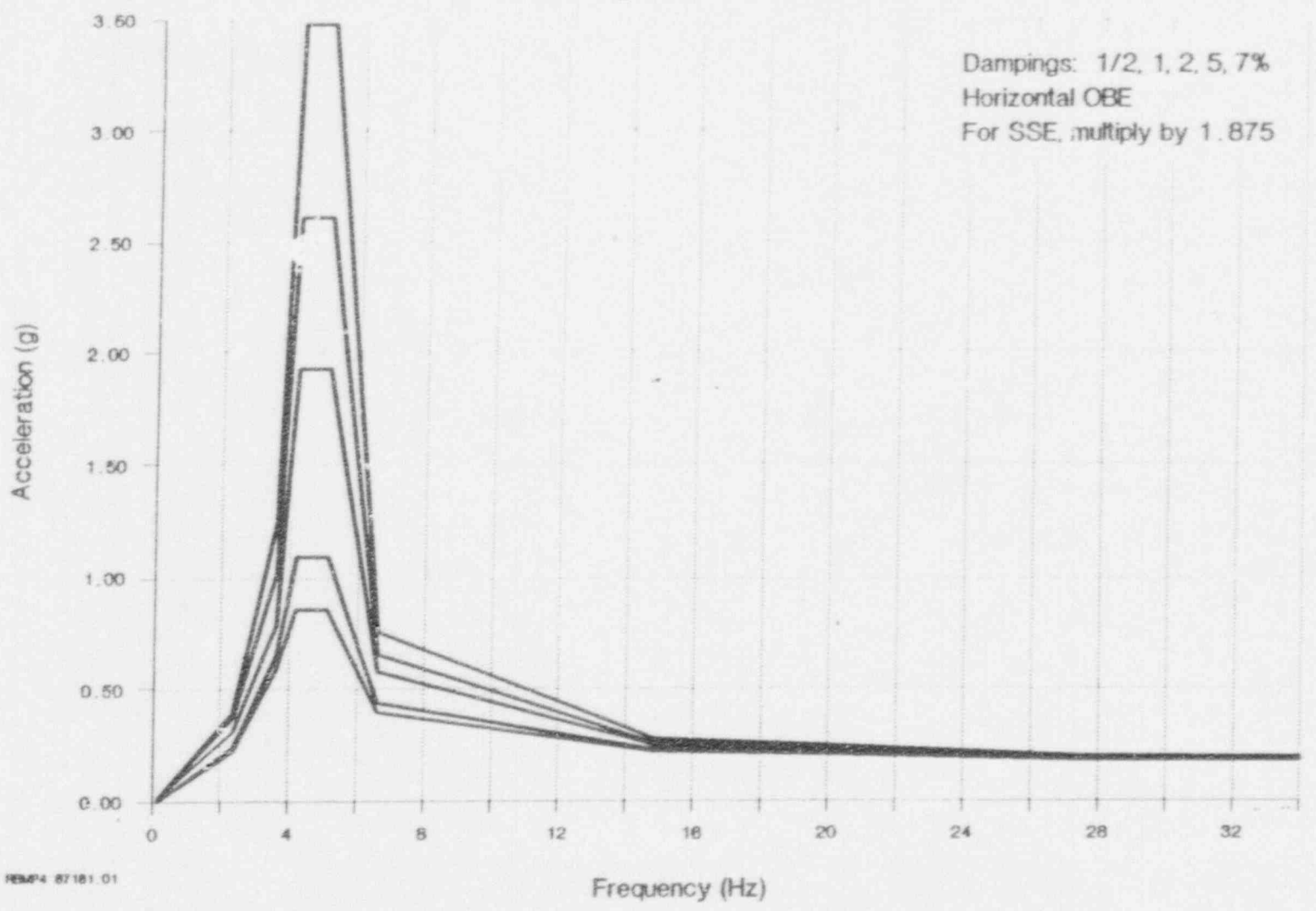
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.69	0.63	0.52	0.45	0.43	0.41	0.39	0.37	0.35	0.35	0.33
2.97	1.35	1.08	0.80	0.75	0.71	0.65	0.61	0.60	0.58	0.56	0.54
3.78	3.20	2.55	1.83	1.51	1.36	1.27	1.20	1.14	1.08	1.03	0.97
4.16	5.94	4.59	3.39	2.66	2.21	1.87	1.65	1.48	1.35	1.21	1.12
5.08	5.94	4.59	3.39	2.66	2.21	1.87	1.65	1.48	1.35	1.21	1.12
6.05	1.31	1.23	1.14	1.05	0.97	0.90	0.86	0.82	0.80	0.76	0.75
27.50	0.33	0.33	0.33	0.33	0.31	0.31	0.31	0.31	0.31	0.31	0.31
100.00	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30

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Sheet A-9

PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Building - Elev. 74.25 - Mass Point 4



183074 87181.01

Specification No. C-114-ER-Q-E

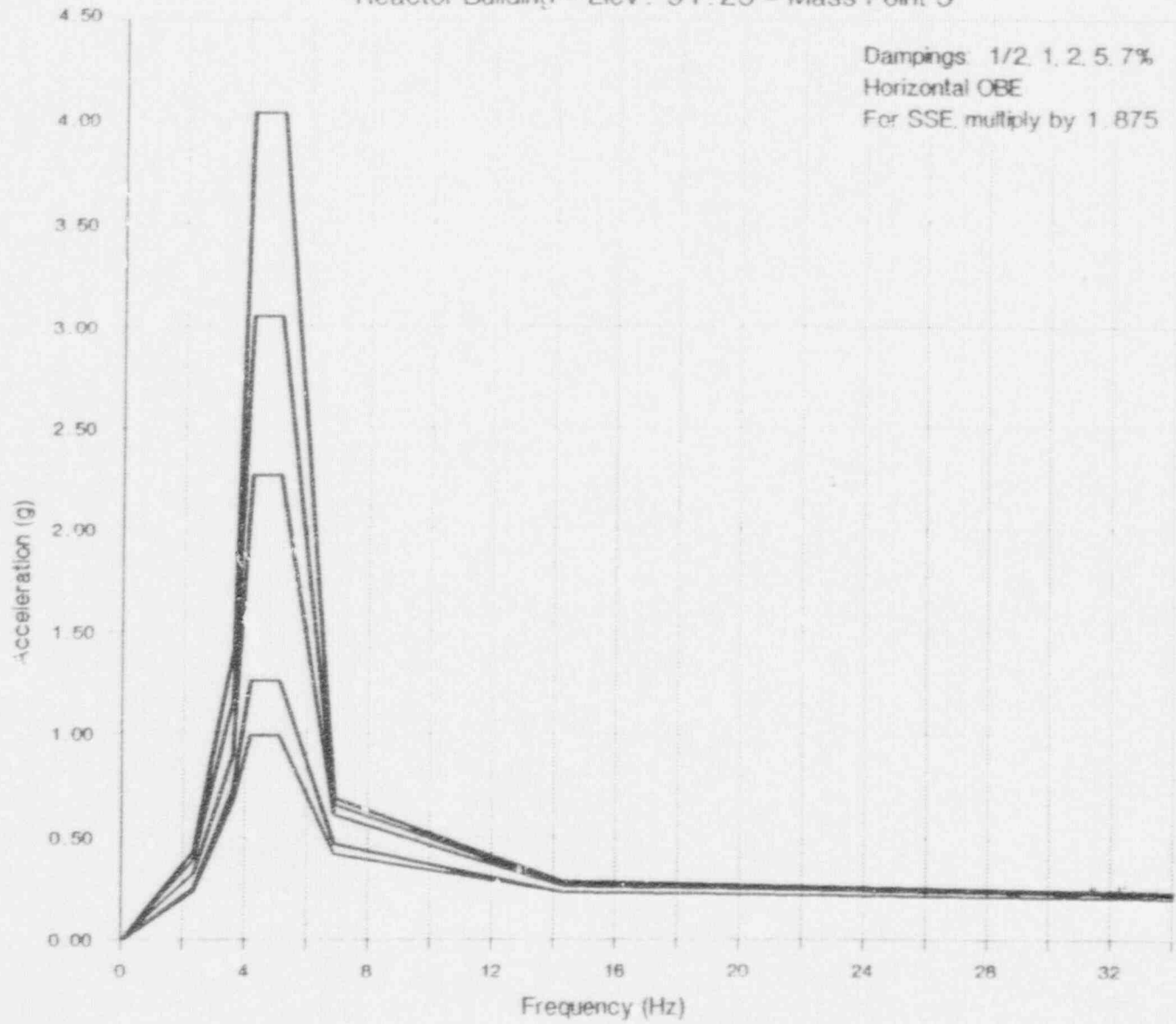
PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 74.25 - Mass Point 4
 Horizontal OBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.40	0.37	0.31	0.26	0.25	0.24	0.23	0.22	0.21	0.20	0.20
3.60	1.25	1.02	0.79	0.72	0.68	0.65	0.62	0.59	0.57	0.54	0.52
4.16	3.48	2.61	1.93	1.57	1.30	1.09	0.96	0.86	0.77	0.72	0.67
5.08	3.48	2.61	1.93	1.57	1.30	1.09	0.96	0.86	0.77	0.72	0.67
6.60	0.76	0.66	0.58	0.52	0.48	0.44	0.42	0.40	0.39	0.37	0.36
14.85	0.28	0.26	0.25	0.24	0.24	0.23	0.23	0.22	0.22	0.22	0.22
27.50	0.20	0.20	0.20	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18
100.00	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18

Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.75	0.69	0.58	0.48	0.46	0.45	0.43	0.41	0.39	0.37	0.37
3.60	2.34	1.91	1.48	1.35	1.27	1.21	1.16	1.10	1.06	1.01	0.97
4.16	6.52	4.89	3.61	2.94	2.43	2.04	1.80	1.61	1.44	1.35	1.25
5.08	6.52	4.89	3.61	2.94	2.43	2.04	1.80	1.61	1.44	1.35	1.25
6.60	1.42	1.23	1.08	0.97	0.90	0.82	0.78	0.75	0.73	0.69	0.67
14.85	0.52	0.48	0.46	0.45	0.45	0.43	0.43	0.41	0.41	0.41	0.41
27.50	0.37	0.37	0.37	0.35	0.35	0.33	0.33	0.33	0.33	0.33	0.33
100.00	0.35	0.35	0.35	0.35	0.33	0.33	0.33	0.33	0.33	0.33	0.33

PILGRIM AMPLIFIED RESPONSE SPECTRA
Reactor Building - Elev. 91.25 - Mass Point 5



INFORMATION
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REFERENCE

Sheet A-11

Specification No. C-114-ER-O-EO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 91.25 - Mass Point 5
 Horizontal OBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.43	0.39	0.32	0.27	0.26	0.25	0.24	0.23	0.22	0.22	0.21
3.60	1.41	1.15	0.89	0.82	0.78	0.73	0.70	0.67	0.64	0.62	0.59
4.16	4.05	3.05	2.27	1.83	1.51	1.26	1.11	0.99	0.89	0.83	0.77
5.08	4.05	3.05	2.27	1.83	1.51	1.26	1.11	0.99	0.89	0.83	0.77
6.88	0.69	0.66	0.61	0.55	0.51	0.47	0.44	0.42	0.40	0.39	0.38
14.30	0.28	0.27	0.26	0.25	0.24	0.23	0.23	0.23	0.23	0.23	0.22
36.30	0.22	0.22	0.22	0.21	0.20	0.20	0.20	0.20	0.20	0.20	0.20
100.00	0.21	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20

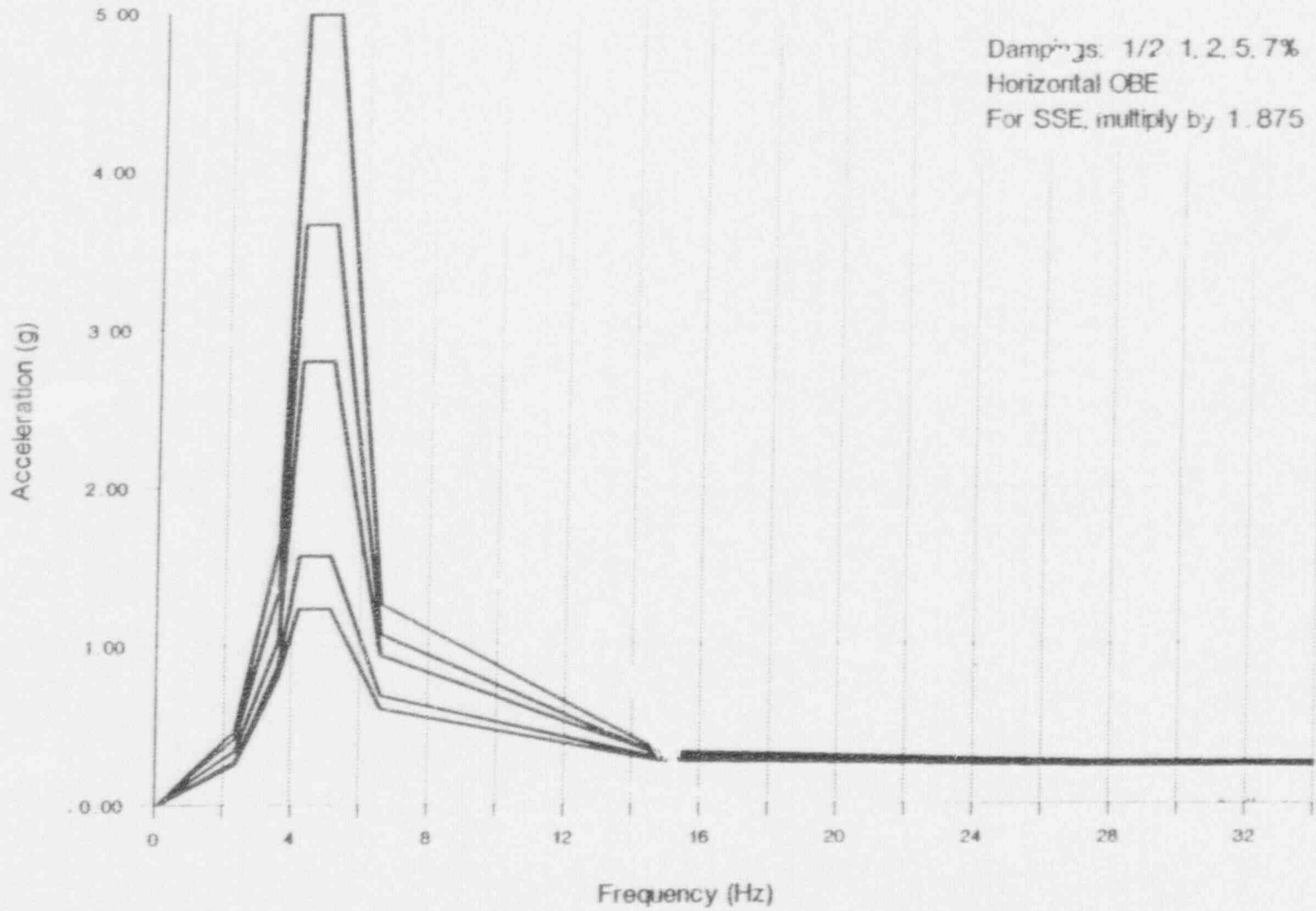
Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.80	0.73	0.60	0.50	0.48	0.46	0.45	0.43	0.41	0.41	0.39
3.60	2.64	2.15	1.66	1.53	1.46	1.36	1.31	1.25	1.20	1.16	1.10
4.16	7.59	5.71	4.25	3.43	2.83	2.36	2.08	1.85	1.66	1.55	1.44
5.08	7.59	5.71	4.25	3.43	2.83	2.36	2.08	1.85	1.66	1.55	1.44
6.88	1.29	1.23	1.14	1.03	0.95	0.88	0.82	0.78	0.75	0.73	0.71
14.30	0.52	0.50	0.48	0.46	0.45	0.43	0.43	0.43	0.43	0.43	0.41
36.30	0.41	0.41	0.41	0.39	0.37	0.37	0.37	0.37	0.37	0.37	0.37
100.00	0.39	0.39	0.39	0.39	0.37	0.37	0.37	0.37	0.37	0.37	0.37

INFORMATION
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USE REFERENCED TO
REFERENCE

Sheet A-13

PILGRIM AMPLIFIED RESPONSE SPECTRA Reactor Building - Elev. 117.0 - Mass Point 6



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 117.0 - Mass Point 6
 Horizontal OBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.47	0.42	0.34	0.30	0.28	0.27	0.26	0.25	0.24	0.23	0.23
3.60	1.66	1.35	1.04	0.98	0.93	0.88	0.85	0.81	0.78	0.74	0.71
4.16	4.99	3.66	2.80	2.26	1.86	1.57	1.38	1.23	1.11	1.02	0.95
5.08	4.99	3.66	2.80	2.26	1.86	1.57	1.38	1.23	1.11	1.02	0.95
6.60	1.26	1.07	0.94	0.83	0.76	0.69	0.65	0.61	0.58	0.56	0.53
14.85	0.33	0.31	0.31	0.30	0.29	0.29	0.28	0.27	0.27	0.27	0.27
27.50	0.27	0.26	0.27	0.26	0.25	0.24	0.24	0.24	0.24	0.24	0.25
100.00	0.26	0.26	0.26	0.25	0.25	0.24	0.24	0.24	0.24	0.24	0.24

Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
2.34	0.88	0.78	0.63	0.56	0.52	0.50	0.48	0.46	0.45	0.43	0.43
3.60	3.11	2.53	1.95	1.83	1.74	1.65	1.59	1.51	1.46	1.38	1.33
4.16	9.35	6.86	5.25	4.23	3.48	2.94	2.58	2.30	2.08	1.91	1.78
5.08	9.35	6.86	5.25	4.23	3.48	2.94	2.58	2.30	2.08	1.91	1.78
6.60	2.36	2.00	1.76	1.55	1.42	1.29	1.21	1.14	1.08	1.05	0.99
14.85	0.61	0.58	0.58	0.56	0.54	0.54	0.52	0.50	0.50	0.50	0.50
27.50	0.50	0.48	0.50	0.48	0.46	0.45	0.45	0.45	0.45	0.45	0.46
100.00	0.48	0.48	0.48	0.46	0.46	0.45	0.45	0.45	0.45	0.45	0.45

INFORMATION
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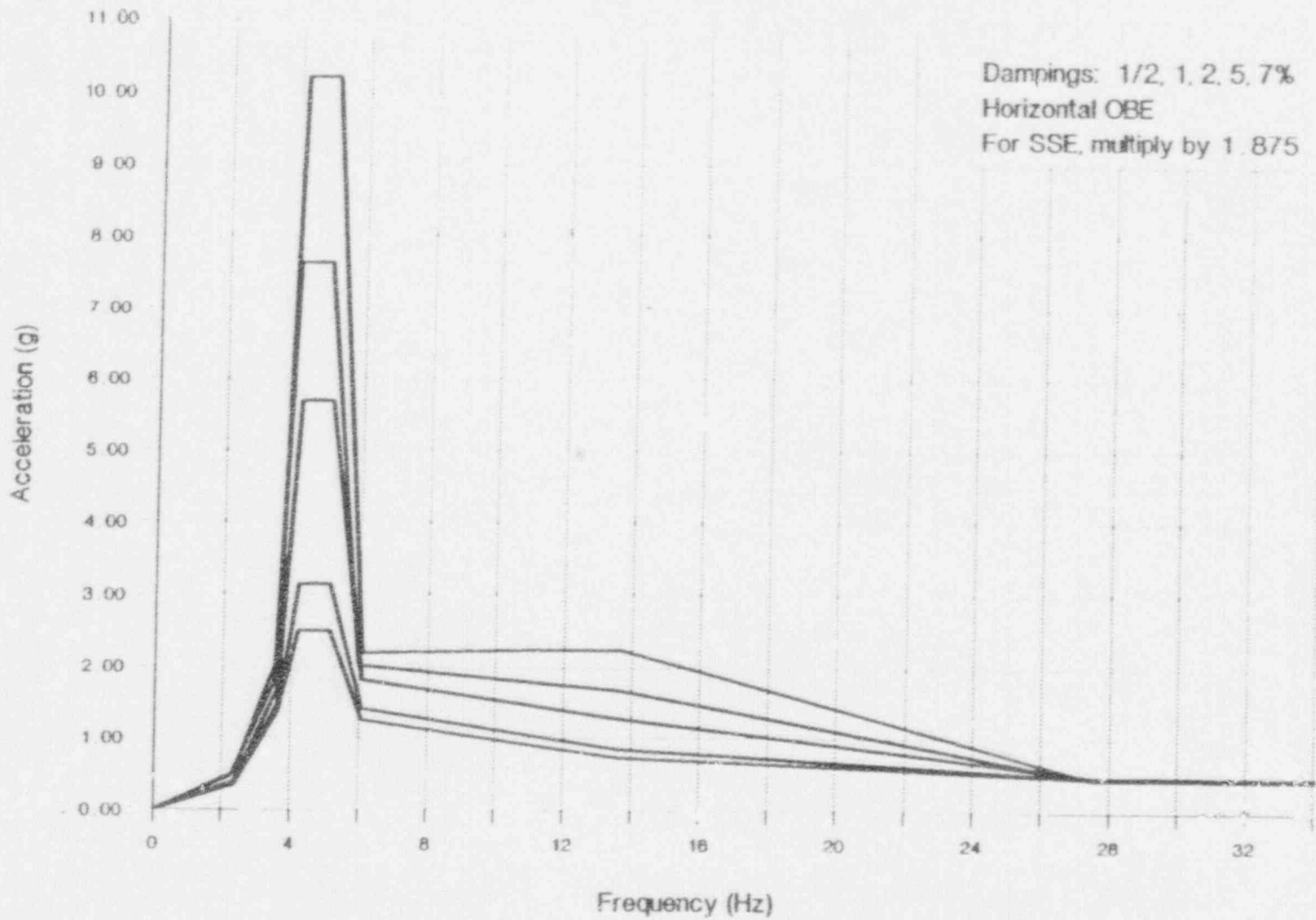
Use restricted to
reference

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USE RESTRICTED TO
REFERENCE

Sheet A-15

PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Building - Elev. 138.0 - Mass Point 7



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 138.0 - Mass Point 7
 Horizontal DBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
2.34	0.52	0.46	0.39	0.37	0.36	0.35	0.34	0.34	0.34	0.34	0.33
3.60	2.14	1.78	1.68	1.61	1.53	1.48	1.42	1.36	1.32	1.27	1.22
4.16	10.21	7.64	5.69	4.40	3.65	3.15	2.79	2.51	2.28	2.08	1.92
5.08	10.21	7.64	5.69	4.40	3.65	3.15	2.79	2.51	2.28	2.08	1.92
6.05	2.20	2.02	1.81	1.64	1.51	1.41	1.33	1.26	1.25	1.23	1.21
11.16	2.25	1.78	1.45	1.26	1.13	1.03	0.96	0.90	0.87	0.85	0.91
13.64	2.25	1.67	1.27	1.08	0.95	0.85	0.78	0.73	0.69	0.66	0.63
27.50	0.45	0.46	0.48	0.48	0.48	0.47	0.47	0.47	0.47	0.47	0.47
100.00	0.43	0.44	0.47	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46

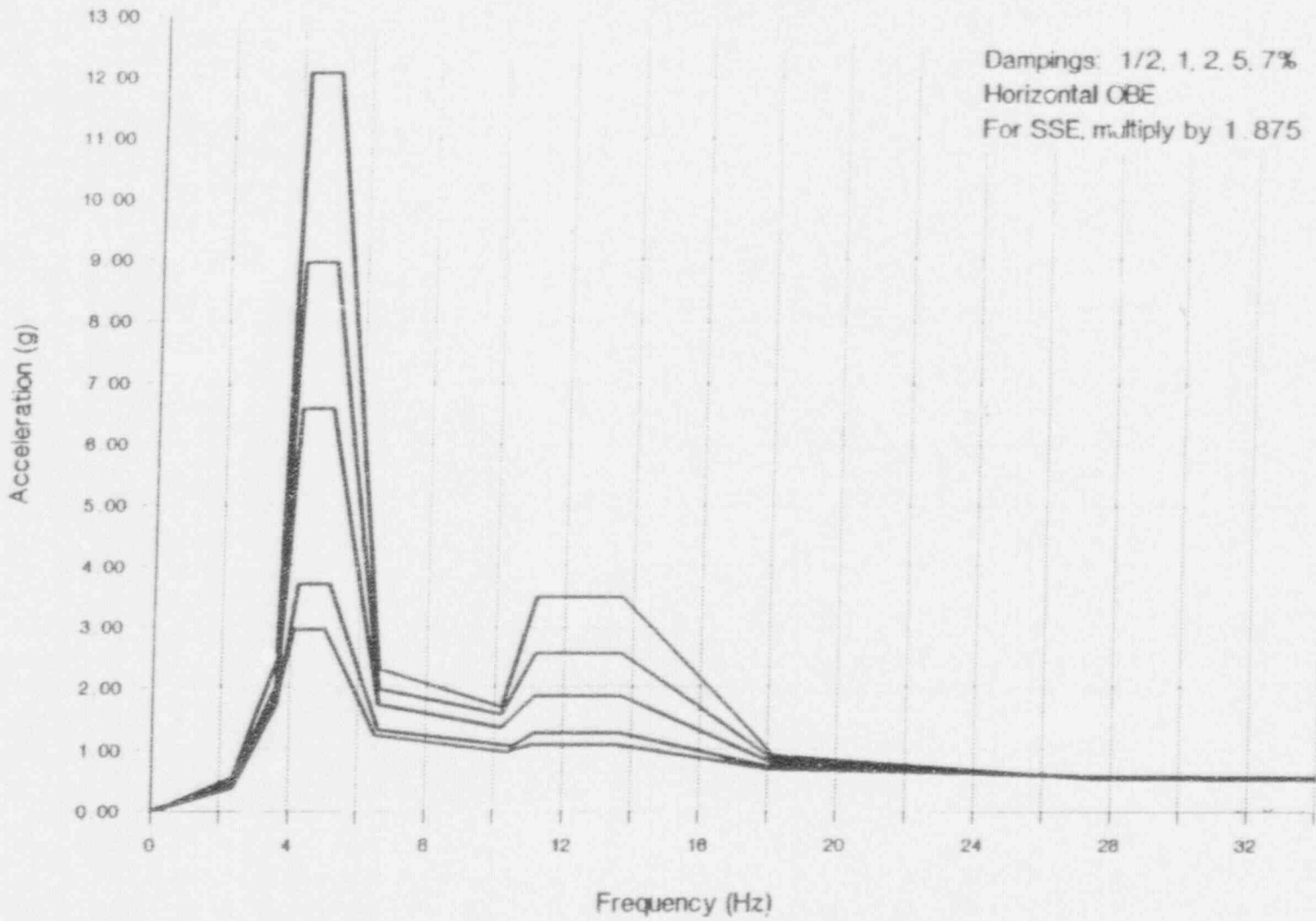
Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
2.34	0.98	0.86	0.73	0.69	0.67	0.65	0.63	0.63	0.63	0.63	0.61
3.60	4.01	3.33	3.15	3.01	2.86	2.77	2.66	2.55	2.47	2.38	2.28
4.16	19.14	14.30	10.60	8.25	6.84	5.90	5.23	4.70	4.27	3.90	3.60
5.08	19.14	14.30	10.60	8.25	6.84	5.90	5.23	4.70	4.27	3.90	3.60
6.05	4.13	3.78	3.39	3.07	2.83	2.64	2.49	2.36	2.34	2.30	2.26
11.16	4.22	3.33	2.71	2.36	2.11	1.93	1.80	1.68	1.63	1.59	1.70
13.64	4.22	3.13	2.38	2.02	1.78	1.59	1.46	1.36	1.29	1.23	1.18
27.50	0.84	0.86	0.90	0.90	0.90	0.88	0.88	0.88	0.88	0.88	0.88
100.00	0.81	0.82	0.88	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86

INFORMATION
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WITH THE PROJECT

Sheet A-17

PILGRIM AMPLIFIED RESPONSE SPECTRA Reactor Building - Elev. 164.5 - Mass Point 8



Specification No. C-114-ER-O-EC

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Building - Elev. 164.5 - Mass Point B
 Horizontal OBE

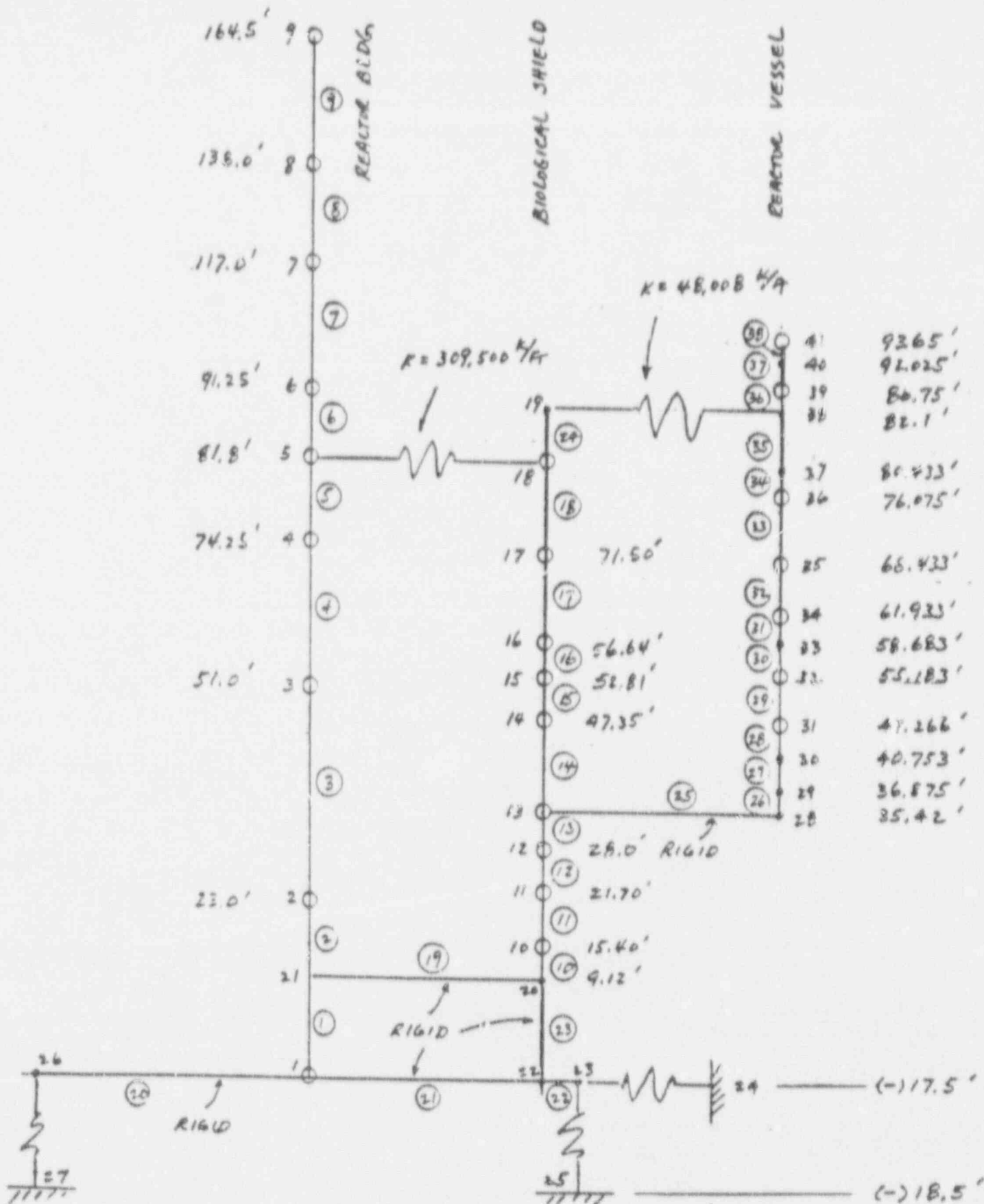
FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2.34	0.56	0.50	0.42	0.40	0.39	0.38	0.37	0.38	0.38	0.37	0.37
3.60	2.43	2.02	1.92	1.85	1.77	1.71	1.64	1.57	1.52	1.47	1.41
4.16	12.07	8.96	6.59	5.14	4.28	3.71	3.27	2.94	2.67	2.44	2.25
5.08	12.07	8.96	6.59	5.14	4.28	3.71	3.27	2.94	2.67	2.44	2.25
6.60	2.31	1.98	1.72	1.53	1.41	1.32	1.27	1.22	1.19	1.16	1.14
10.20	1.69	1.56	1.35	1.23	1.13	1.09	1.02	0.98	0.93	0.92	0.89
10.50	2.26	1.88	1.51	1.33	1.21	1.07	1.00	0.96	0.91	0.90	0.87
10.70	2.63	2.09	1.62	1.40	1.27	1.13	1.05	1.00	0.94	0.89	0.86
11.16	3.50	2.57	1.87	1.56	1.40	1.28	1.17	1.08	1.00	0.93	0.87
13.64	3.50	2.57	1.87	1.56	1.40	1.28	1.17	1.08	1.00	0.93	0.87
18.15	0.93	0.86	0.80	0.75	0.72	0.73	0.70	0.69	0.67	0.66	0.66
27.50	0.54	0.55	0.58	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
100.00	0.51	0.5	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
2.34	1.05	0.93	0.78	0.75	0.73	0.71	0.69	0.71	0.71	0.69	0.69
3.60	4.56	3.78	3.60	3.46	3.31	3.20	3.07	2.94	2.85	2.75	2.64
4.16	22.63	16.80	12.30	9.63	8.02	6.95	6.13	5.51	5.00	4.57	4.21
5.08	22.63	16.80	12.30	9.63	8.02	6.95	6.13	5.51	5.00	4.57	4.21
6.60	4.33	3.71	3.22	2.86	2.64	2.47	2.38	2.28	2.23	2.17	2.13
10.20	3.17	2.92	2.53	2.30	2.11	2.04	1.91	1.83	1.74	1.72	1.66
10.50	4.24	3.52	2.83	2.49	2.26	2.00	1.87	1.80	1.70	1.68	1.63
10.70	4.93	3.91	3.03	2.62	2.38	2.11	1.96	1.87	1.76	1.66	1.61
11.16	6.56	4.81	3.50	2.92	2.62	2.40	2.19	2.02	1.87	1.74	1.63
13.64	6.56	4.81	3.50	2.92	2.62	2.40	2.19	2.02	1.87	1.74	1.63
18.15	1.74	1.61	1.50	1.40	1.35	1.36	1.31	1.29	1.25	1.23	1.23
27.50	1.01	1.03	1.08	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
100.00	0.96	0.99	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03

APPENDIX B

BIOLOGICAL SHIELD HORIZONTAL SPECTRA



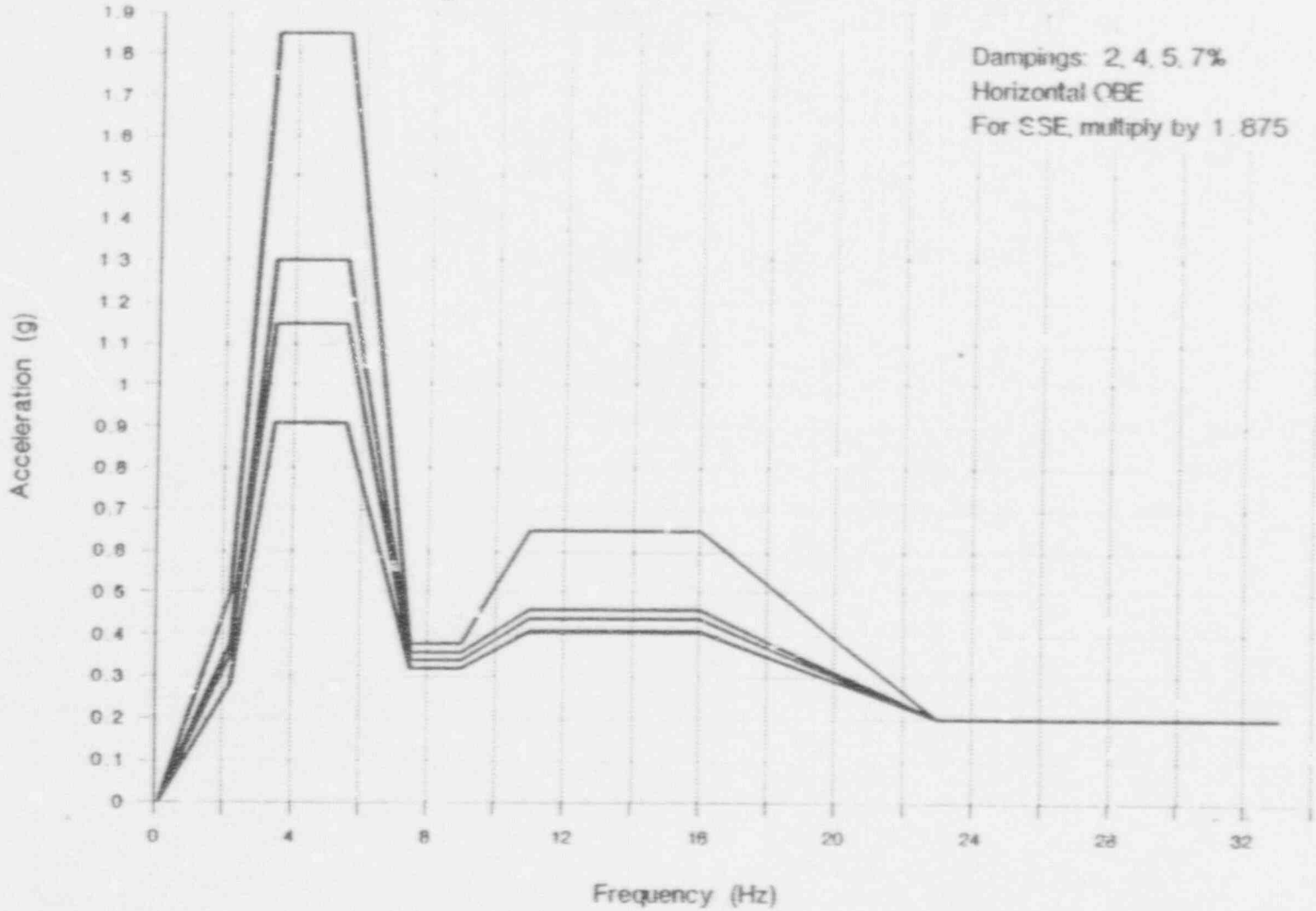
Biological Shield
Mathematical Model from Reference 4

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INFORMATION
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OF THIS

PILGRIM AMPLIFIED RESPONSE SPECTRA

Biological Shield Wall - Elev. 35.4 - Mass Point 13



Sheet B-3

Specification No. C-114-ER-OEO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield Wall - Elev. 35.4 - Mass Point 13
 Horizontal OSE

Freq. (Hz)	% DAMPING			
	2%	4%	5%	7%
0.10	0.00	0.00	0.00	0.00
2.20	0.50	0.38	0.35	0.28
3.40	1.85	1.30	1.15	0.91
5.50	1.85	1.30	1.15	0.91
7.50	0.38	0.36	0.34	0.32
9.00	0.38	0.36	0.34	0.32
11.00	0.65	0.46	0.44	0.41
16.00	0.65	0.46	0.44	0.41
23.00	0.20	0.20	0.20	0.20
33.00	0.20	0.20	0.20	0.20

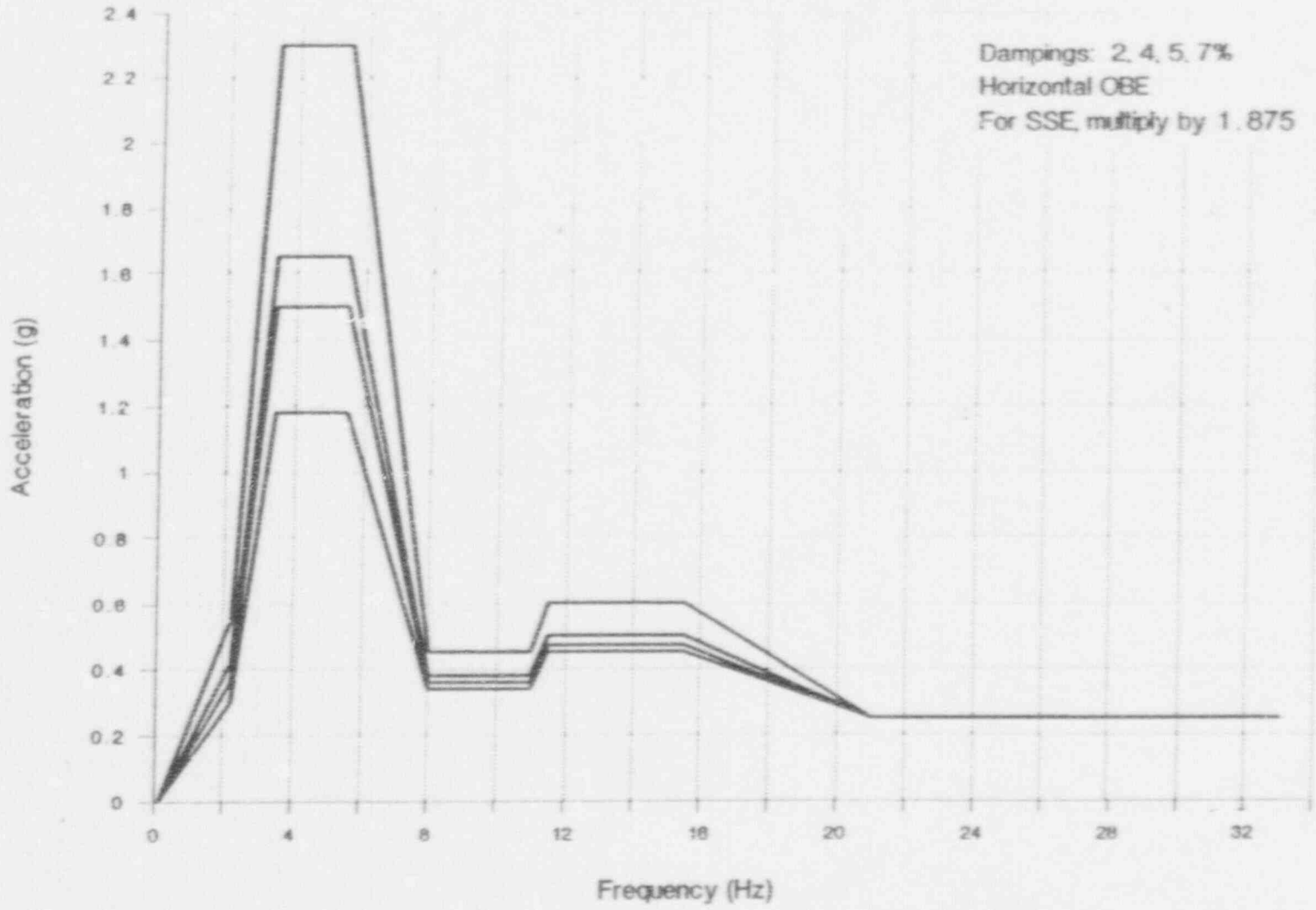
Horizontal SSE

Freq. (Hz)	% DAMPING			
	2%	4%	5%	7%
0.10	0.00	0.00	0.00	0.00
2.20	0.94	0.71	0.66	0.53
3.40	3.47	2.44	2.16	1.71
5.50	3.47	2.44	2.16	1.71
7.50	0.71	0.68	0.64	0.60
9.00	0.71	0.68	0.64	0.60
11.00	1.22	0.86	0.83	0.77
16.00	1.22	0.86	0.83	0.77
23.00	0.38	0.38	0.38	0.38
33.00	0.38	0.38	0.38	0.38

INFORMATION
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SEE ENGINEER'S
REMARKS

Sheet B-5

PILGRIM AMPLIFIED RESPONSE SPECTRA Biological Shield Wall - Elev 47.4 - Mass Point 14



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield Wall - Elev. 47.4 - Mass Point 14
 Horizontal OBE

Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	0.55	0.42	0.36	0.30
3.40	2.30	1.65	1.50	1.18
5.50	2.30	1.65	1.50	1.18
8.00	0.45	0.38	0.35	0.34
11.00	0.45	0.38	0.36	0.34
11.50	0.60	0.50	0.47	0.45
15.50	0.60	0.50	0.47	0.45
21.00	0.25	0.25	0.25	0.25
33.00	0.25	0.25	0.25	0.25

Horizontal SSE

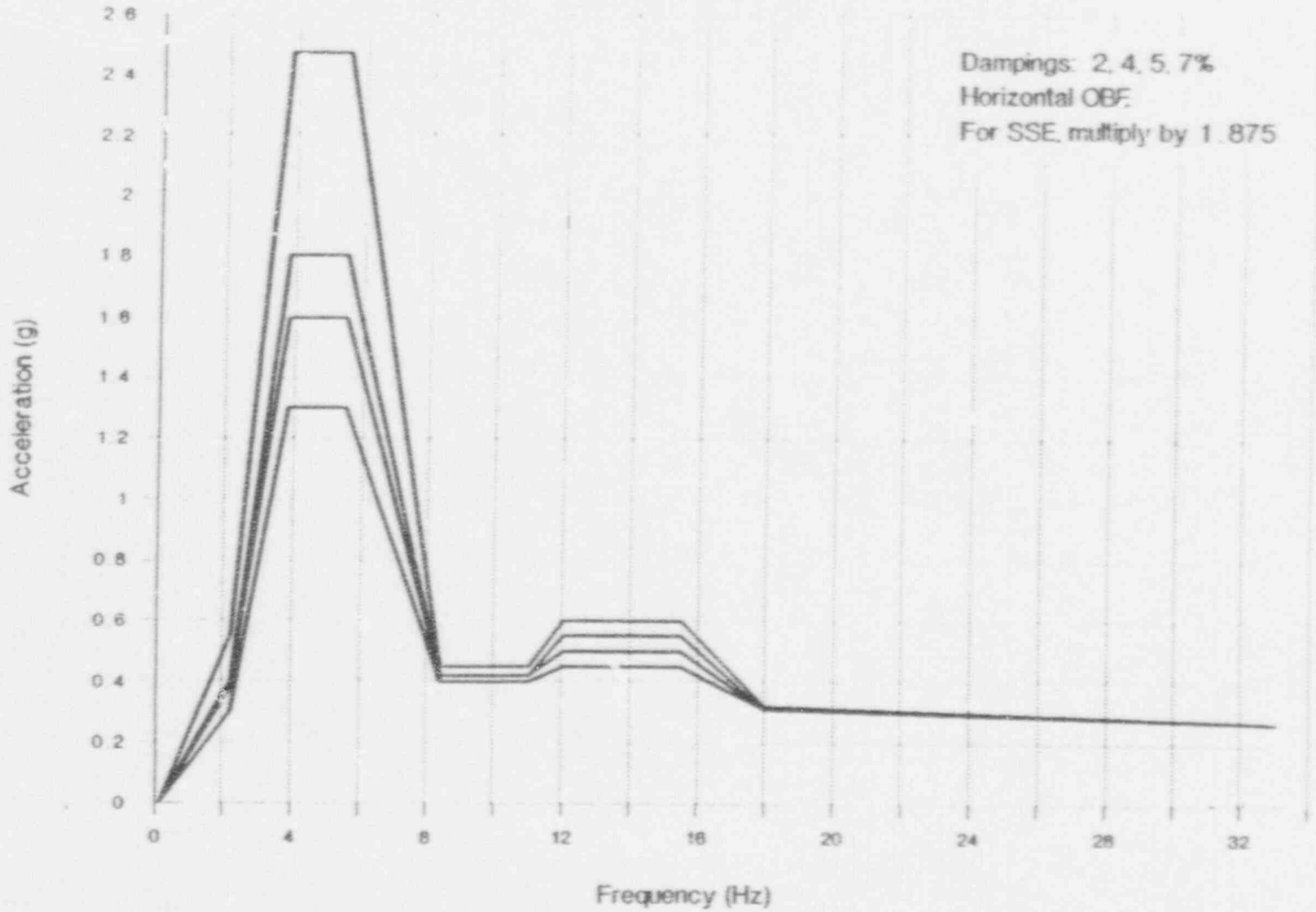
Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	1.03	0.79	0.68	0.56
3.40	4.31	3.09	2.81	2.21
5.50	4.31	3.09	2.81	2.21
8.00	0.84	0.71	0.68	0.64
11.00	0.84	0.71	0.68	0.64
11.50	1.13	0.94	0.88	0.84
15.50	1.13	0.94	0.88	0.84
21.00	0.47	0.47	0.47	0.47
33.00	0.47	0.47	0.47	0.47

INFORMATION
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USE REFERRED TO
BY REFERENCE

Sheet B-7

PILGRIM AMPLIFIED RESPONSE SPECTRA

Biological Shield Wall - Elev. 52.8 - Mass Point 15



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield Wall - Elev. 52.8 - Mass Point 15
 Horizontal OBE

Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	0.55	0.40	0.38	0.30
3.80	2.48	1.80	1.60	1.30
5.50	2.48	1.80	1.60	1.30
8.40	0.45	0.42	0.42	0.40
11.00	0.45	0.42	0.42	0.40
12.00	0.60	0.55	0.50	0.45
15.50	0.60	0.55	0.50	0.45
18.00	0.32	0.31	0.31	0.31
33.00	0.27	0.27	0.27	0.27

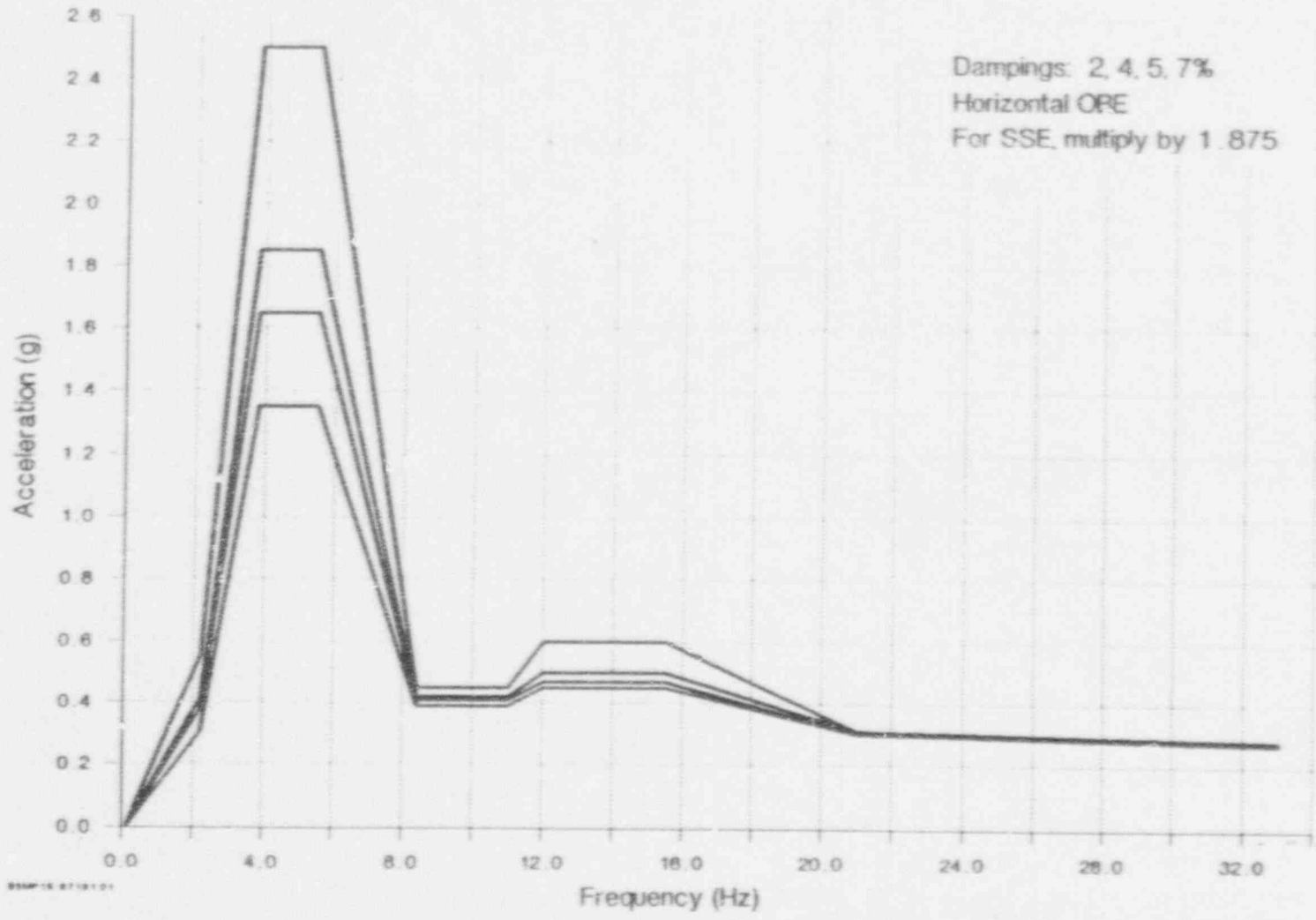
Horizontal SSE

Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	1.03	0.75	0.70	0.56
3.80	4.64	3.38	3.00	2.44
5.50	4.64	3.38	3.00	2.44
8.40	0.84	0.79	0.79	0.75
11.00	0.84	0.79	0.79	0.75
12.00	1.13	1.03	0.94	0.84
15.50	1.13	1.03	0.94	0.84
18.00	0.60	0.58	0.58	0.58
33.00	0.51	0.51	0.51	0.51

INFORMATION ONLY
USE PREVIOUS EDITIONS
REFERENCES

PILGRIM AMPLIFIED RESPONSE SPECTRA

Biological Shield Wall - Elev. 56.6 - Mass Point 16



Sheet B-9

Specification No. C-114-ER-O-EC

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield Wall - Elev. 56.6 - Mass Point 16
 Horizontal OBE

Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	0.55	0.41	0.38	0.30
3.80	2.50	1.85	1.65	1.35
5.50	2.50	1.85	1.65	1.35
8.40	0.45	0.42	0.41	0.39
11.00	0.45	0.42	0.41	0.39
12.00	0.60	0.50	0.47	0.45
15.50	0.60	0.50	0.47	0.45
21.00	0.31	0.31	0.30	0.30
33.00	0.28	0.28	0.27	0.27

Horizontal SSE

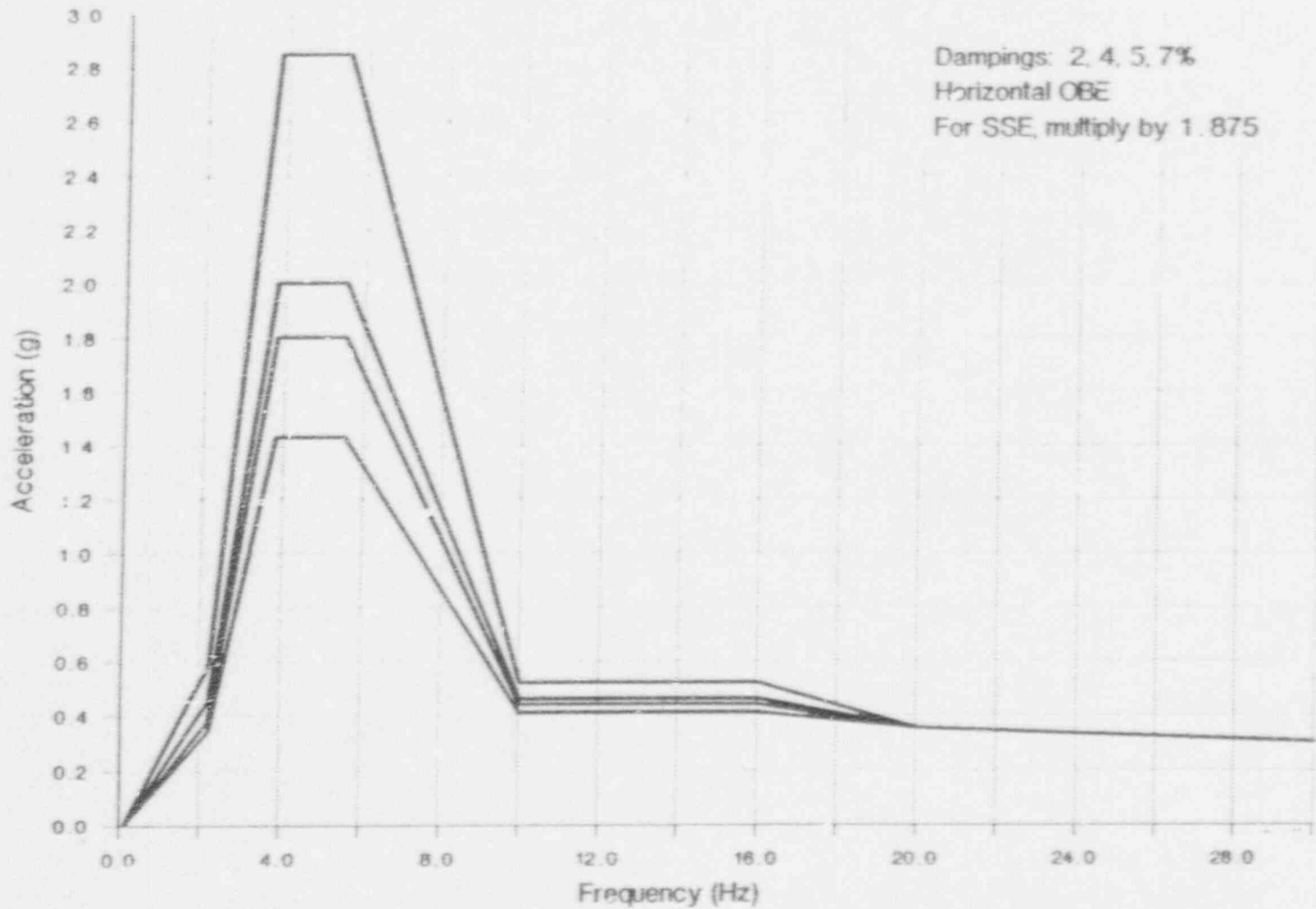
Freq.	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	1.03	0.77	0.70	0.56
3.80	4.69	3.47	3.09	2.53
5.50	4.69	3.47	3.09	2.53
8.40	0.84	0.79	0.77	0.73
11.00	0.84	0.79	0.77	0.73
12.00	1.13	0.94	0.88	0.84
15.50	1.13	0.94	0.88	0.84
21.00	0.58	0.58	0.56	0.56
33.00	0.53	0.53	0.51	0.51

INFORMATION
ONLY

USE RESTRICTED TO
REFERENCE

PILGRIM AMPLIFIED RESPONSE SPECTRA
Biological Shield Wall - Elev. 71.5 - Mass Point 17

INFORMATION
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DRAWING



Sheet B-11

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield wall - Elevation 71.5 - Mass Point 17
 Horizontal DBE

FREQ. (Hz)	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	0.58	0.45	0.38	0.34
3.80	2.85	2.00	1.80	1.43
5.50	2.85	2.00	1.80	1.43
10.00	0.52	0.46	0.44	0.41
16.00	0.52	0.46	0.44	0.41
20.00	0.35	0.35	0.35	0.35
30.00	0.30	0.30	0.30	0.30

Horizontal SSE

FREQ. (Hz)	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	1.09	0.84	0.71	0.64
3.80	5.34	3.75	3.38	2.68
5.50	5.34	3.75	3.38	2.68
10.00	0.98	0.86	0.83	0.77
16.00	0.98	0.86	0.83	0.77
20.00	0.56	0.66	0.66	0.66
30.00	0.56	0.56	0.56	0.56

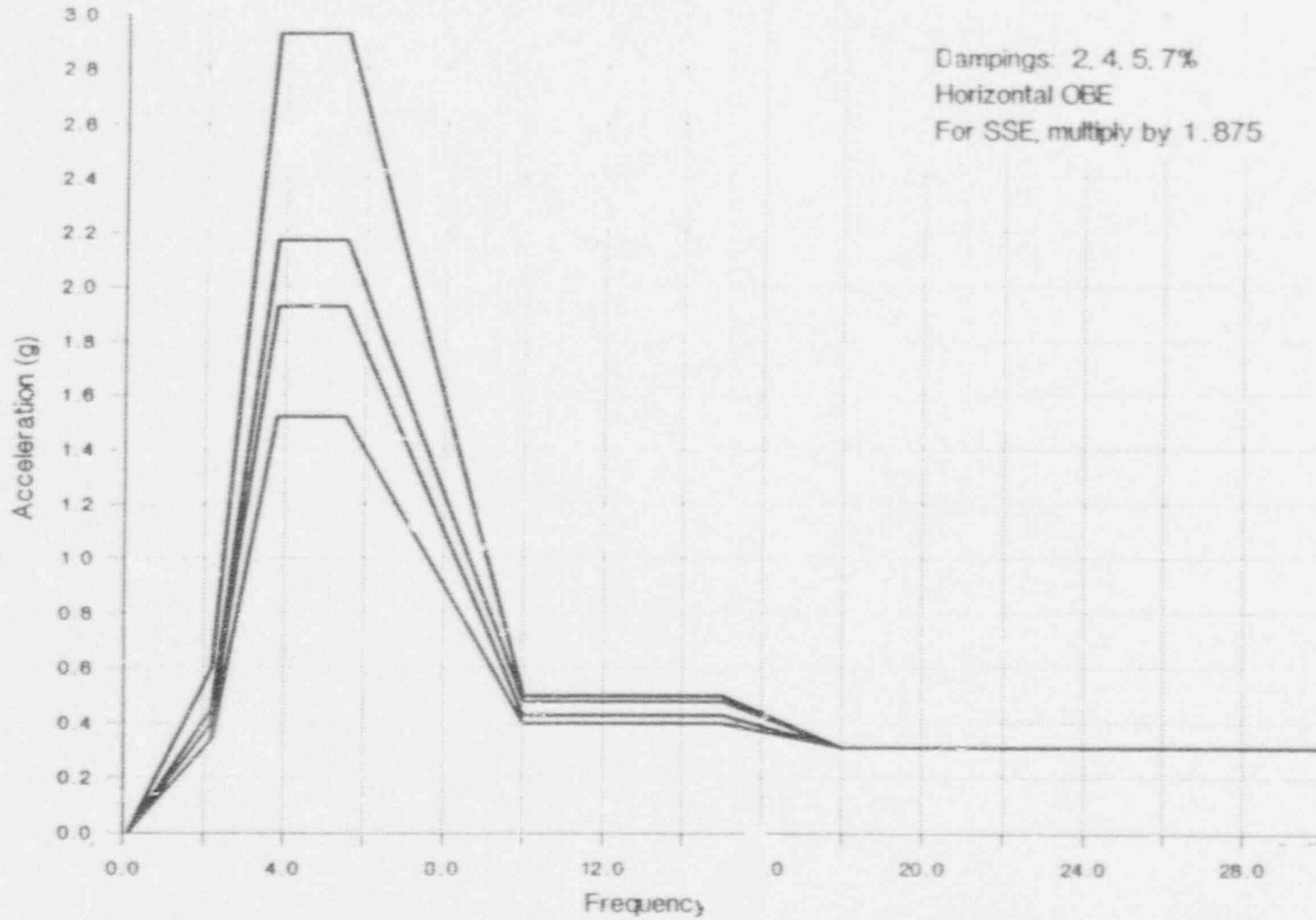
INFORMATION
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REFERENCE

INFORMATION
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USE DESIGNER'S
REFERENCE

Sheet B-13

PILGRIM AMPLIFIED RESPONSE SPECTRA Biological Shield Wall - Elev. 81.8 - Mass Point 18



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Biological Shield Wall - Elevation 81.8 - Mass Point 1B
 Horizontal DBE

FREQ. (Hz)	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	0.60	0.45	0.40	0.34
3.80	2.93	2.17	1.93	1.52
5.50	2.93	2.17	1.93	1.52
10.00	0.50	0.48	0.43	0.40
15.00	0.50	0.48	0.43	0.40
18.00	0.31	0.31	0.31	0.31
30.00	0.31	0.31	0.31	0.31

Horizontal SSE

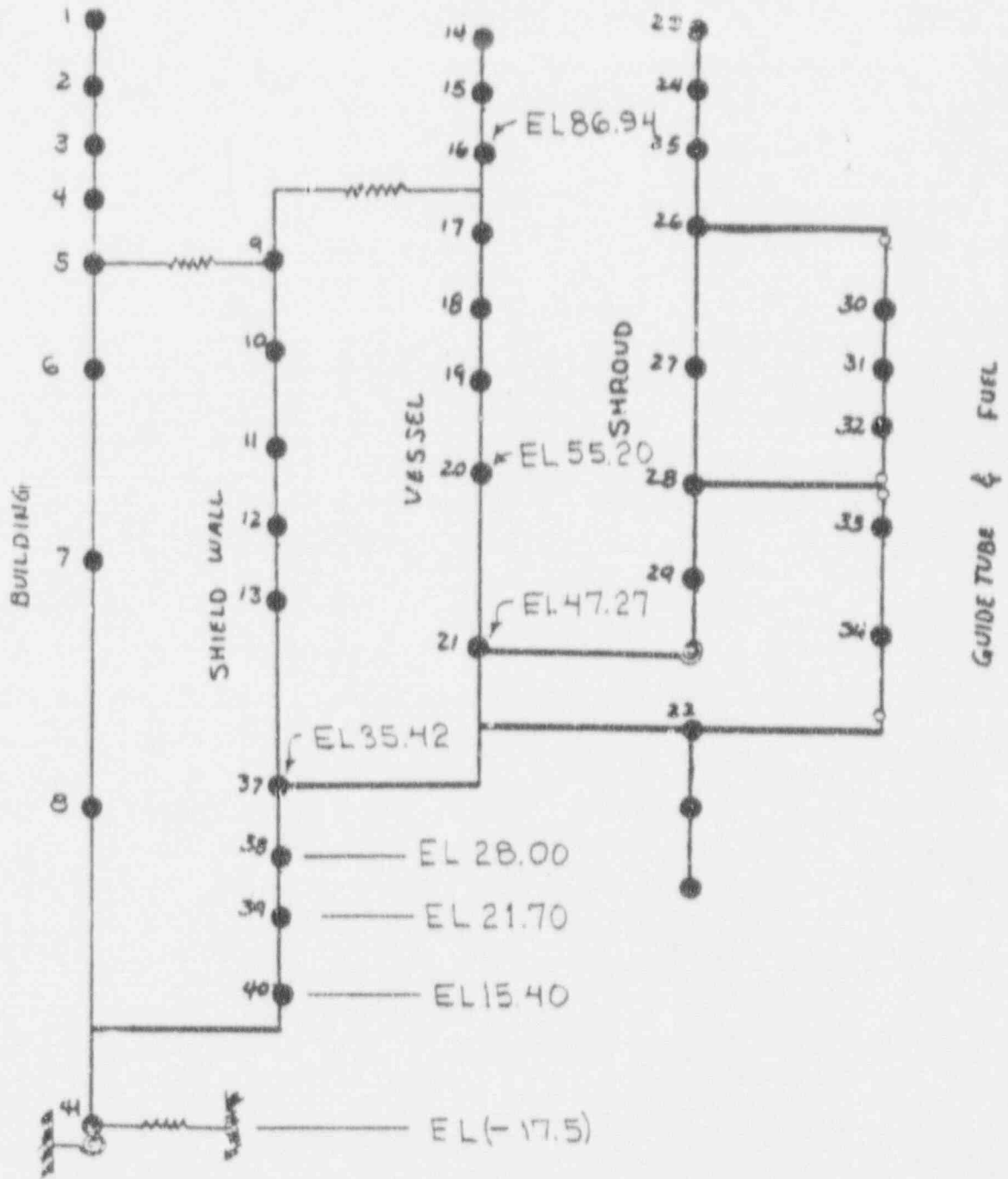
FREQ. (Hz)	% Damping			
	2	4	5	7
0.10	0.00	0.00	0.00	0.00
2.20	1.13	0.84	0.75	0.64
3.80	5.49	4.07	3.62	2.85
5.50	5.49	4.07	3.62	2.85
10.00	0.94	0.90	0.81	0.75
15.00	0.94	0.90	0.81	0.75
18.00	0.58	0.58	0.58	0.58
30.00	0.58	0.58	0.58	0.58

INFORMATION
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REFERENCE

APPENDIX C

REACTOR VESSEL AND PEDESTAL HORIZONTAL SPECTRA



Reactor Vessel and Pedestal
Mathematical Model from Reference 5

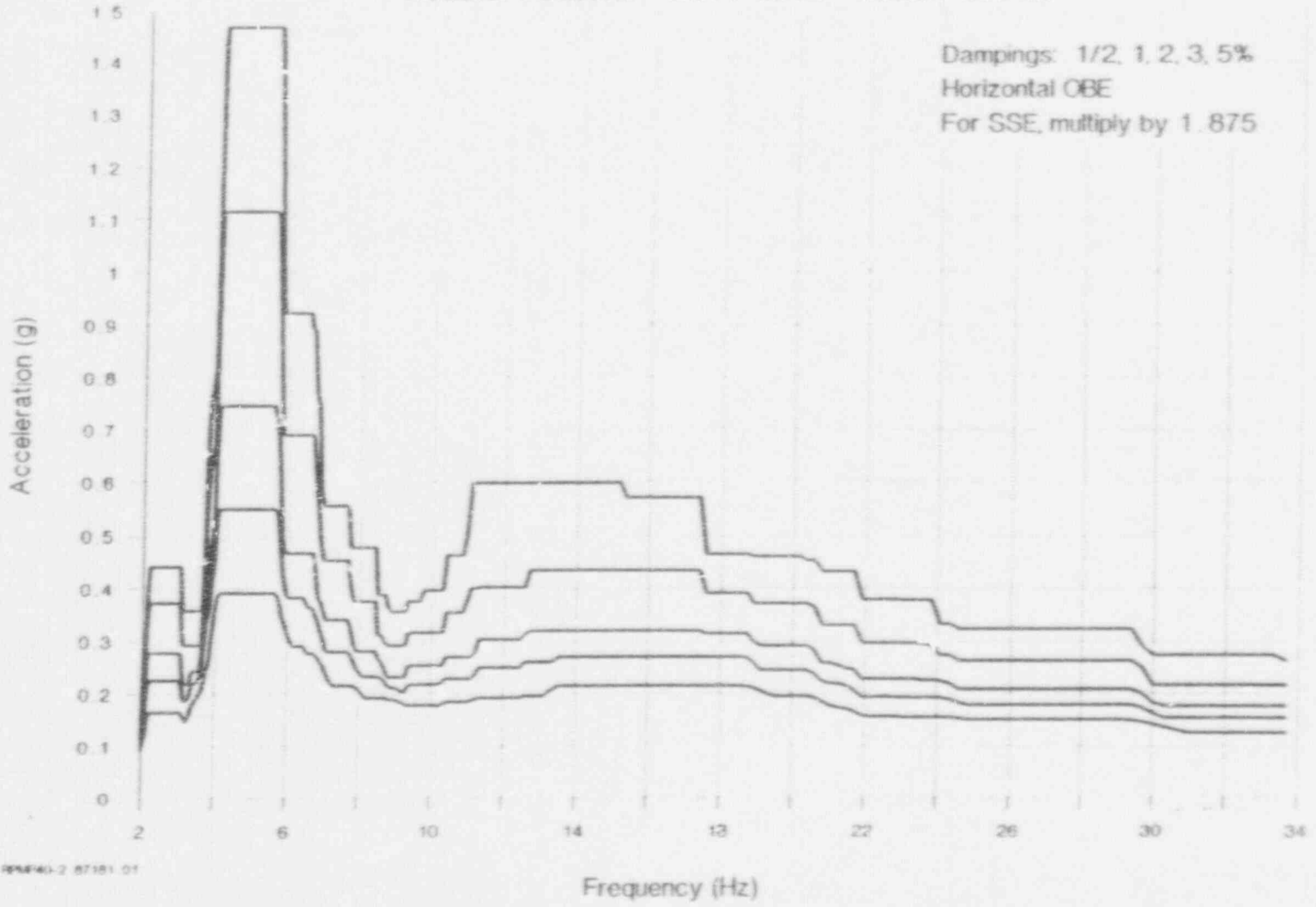
021/np011g

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PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Pedestal - Elev. 15.4 - Mass Point 40

Dampings: 1/2, 1, 2, 3, 5%
Horizontal OBE
For SSE, multiply by 1.875



IPN40-2 87181 01

Sheet C-3

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Specification No. C-114-ER-O-EO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 15.4 - Mass Point 40
 (Page 1 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.020	0.156	0.137	0.120	0.115	0.098	0.293	0.257	0.225	0.216	0.184
2.040	0.157	0.139	0.133	0.125	0.104	0.294	0.261	0.249	0.234	0.195
2.060	0.195	0.179	0.150	0.140	0.111	0.366	0.336	0.296	0.263	0.208
2.090	0.259	0.227	0.185	0.157	0.119	0.486	0.426	0.347	0.294	0.223
2.110	0.303	0.265	0.211	0.174	0.128	0.568	0.497	0.396	0.326	0.240
2.130	0.330	0.292	0.231	0.188	0.136	0.619	0.548	0.433	0.353	0.255
2.150	0.355	0.315	0.248	0.202	0.146	0.666	0.591	0.465	0.379	0.274
2.170	0.387	0.337	0.265	0.213	0.154	0.726	0.632	0.497	0.399	0.289
2.210	0.421	0.363	0.278	0.220	0.161	0.789	0.681	0.521	0.413	0.302
2.220	0.446	0.376	0.281	0.228	0.166	0.836	0.705	0.527	0.428	0.311
2.240	0.446	0.376	0.281	0.229	0.169	0.836	0.705	0.527	0.429	0.317
3.040	0.446	0.376	0.281	0.229	0.169	0.836	0.705	0.527	0.429	0.317
3.070	0.437	0.363	0.279	0.229	0.169	0.819	0.681	0.523	0.429	0.317
3.100	0.380	0.326	0.262	0.221	0.168	0.713	0.611	0.491	0.414	0.315
3.140	0.361	0.296	0.233	0.207	0.164	0.677	0.555	0.437	0.388	0.308
3.170	0.361	0.296	0.222	0.192	0.160	0.677	0.555	0.416	0.360	0.300
3.200	0.361	0.296	0.222	0.191	0.155	0.677	0.555	0.416	0.358	0.291
3.240	0.361	0.296	0.222	0.191	0.151	0.677	0.555	0.416	0.358	0.283
3.270	0.361	0.296	0.222	0.191	0.157	0.677	0.555	0.416	0.358	0.294
3.300	0.361	0.296	0.222	0.196	0.161	0.677	0.555	0.416	0.368	0.302
3.340	0.361	0.296	0.231	0.205	0.166	0.677	0.555	0.433	0.384	0.311
3.370	0.361	0.296	0.240	0.213	0.172	0.677	0.555	0.450	0.399	0.326
3.410	0.361	0.296	0.245	0.219	0.181	0.677	0.555	0.459	0.411	0.339
3.450	0.361	0.296	0.247	0.223	0.186	0.677	0.555	0.463	0.418	0.349
3.480	0.361	0.296	0.247	0.225	0.190	0.677	0.555	0.463	0.422	0.356
3.520	0.361	0.296	0.247	0.225	0.194	0.677	0.555	0.463	0.422	0.364
3.560	0.361	0.296	0.247	0.227	0.197	0.677	0.555	0.463	0.426	0.369
3.590	0.361	0.296	0.247	0.231	0.200	0.677	0.555	0.463	0.433	0.375
3.630	0.361	0.296	0.254	0.239	0.204	0.677	0.555	0.476	0.448	0.383
3.670	0.361	0.304	0.280	0.252	0.212	0.677	0.570	0.525	0.473	0.398
3.710	0.394	0.370	0.323	0.281	0.219	0.739	0.694	0.606	0.527	0.411
3.750	0.523	0.461	0.372	0.311	0.234	0.981	0.866	0.698	0.583	0.439
3.790	0.639	0.539	0.413	0.336	0.247	1.198	1.011	0.774	0.630	0.463
3.830	0.730	0.598	0.436	0.349	0.255	1.369	1.121	0.818	0.654	0.478
3.870	0.769	0.630	0.466	0.370	0.267	1.442	1.181	0.874	0.694	0.501
3.910	0.775	0.649	0.493	0.401	0.299	1.453	1.217	0.924	0.752	0.561
3.950	0.801	0.659	0.512	0.434	0.326	1.502	1.236	0.960	0.814	0.611
3.990	0.823	0.715	0.544	0.461	0.349	1.543	1.341	1.020	0.864	0.654
4.030	0.963	0.844	0.639	0.497	0.369	1.806	1.583	1.198	0.932	0.692
4.070	1.240	1.013	0.717	0.541	0.384	2.325	1.899	1.344	1.014	0.720
4.120	1.433	1.120	0.750	0.553	0.393	2.691	2.100	1.406	1.037	0.737
4.160	1.473	1.120	0.750	0.553	0.394	2.762	2.100	1.406	1.037	0.739

988/mp40.pnn, 12-23-86

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Sheet C-4

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 15.4 - Mass Point 40
 (Page 2 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal TSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
5.630	1.473	1.120	0.750	0.553	0.394	2.762	2.100	1.406	1.037	0.739
5.690	1.473	1.106	0.722	0.553	0.394	2.762	2.074	1.354	1.037	0.739
5.750	1.226	0.967	0.693	0.539	0.386	2.299	1.813	1.299	1.011	0.724
5.810	0.985	0.811	0.613	0.499	0.372	1.847	1.521	1.149	0.936	0.698
5.870	0.926	0.693	0.507	0.470	0.353	1.736	1.299	0.951	0.844	0.662
5.940	0.926	0.693	0.472	0.410	0.336	1.736	1.299	0.885	0.769	0.630
6.000	0.926	0.693	0.472	0.391	0.322	1.736	1.299	0.885	0.733	0.604
6.060	0.926	0.693	0.472	0.386	0.311	1.736	1.299	0.885	0.724	0.583
6.120	0.926	0.693	0.472	0.386	0.302	1.736	1.299	0.885	0.724	0.566
6.190	0.926	0.693	0.472	0.386	0.295	1.736	1.299	0.885	0.724	0.553
6.390	0.926	0.693	0.472	0.386	0.295	1.736	1.299	0.885	0.724	0.553
6.450	0.926	0.693	0.472	0.386	0.294	1.736	1.299	0.885	0.724	0.551
6.520	0.926	0.693	0.472	0.378	0.289	1.736	1.299	0.885	0.709	0.542
6.590	0.926	0.693	0.472	0.367	0.281	1.736	1.299	0.885	0.688	0.527
6.660	0.895	0.693	0.472	0.367	0.281	1.678	1.299	0.885	0.688	0.527
6.730	0.893	0.693	0.472	0.366	0.281	1.674	1.299	0.885	0.686	0.527
6.800	0.774	0.617	0.438	0.352	0.279	1.451	1.157	0.821	0.660	0.523
6.870	0.748	0.552	0.386	0.340	0.274	1.403	1.035	0.724	0.638	0.514
6.940	0.595	0.497	0.360	0.325	0.266	1.116	0.932	0.713	0.609	0.499
7.020	0.559	0.458	0.360	0.306	0.256	1.048	0.859	0.675	0.574	0.480
7.090	0.559	0.458	0.345	0.286	0.246	1.048	0.859	0.647	0.536	0.461
7.170	0.559	0.458	0.345	0.284	0.235	1.048	0.859	0.647	0.533	0.441
7.240	0.559	0.458	0.345	0.284	0.225	1.048	0.859	0.647	0.533	0.422
7.320	0.559	0.458	0.345	0.284	0.220	1.048	0.859	0.647	0.533	0.413
7.430	0.559	0.458	0.345	0.284	0.220	1.048	0.859	0.647	0.533	0.413
7.510	0.554	0.458	0.345	0.284	0.220	1.039	0.859	0.647	0.533	0.413
7.590	0.482	0.412	0.329	0.279	0.220	0.904	0.773	0.617	0.523	0.413
7.670	0.482	0.379	0.298	0.266	0.219	0.904	0.711	0.559	0.499	0.411
7.960	0.482	0.379	0.285	0.252	0.219	0.904	0.711	0.534	0.473	0.405
8.040	0.482	0.379	0.285	0.245	0.211	0.904	0.711	0.534	0.459	0.396
8.120	0.482	0.379	0.285	0.238	0.204	0.904	0.711	0.534	0.446	0.383
8.210	0.482	0.379	0.285	0.237	0.196	0.904	0.711	0.534	0.444	0.368
8.470	0.482	0.379	0.285	0.237	0.196	0.904	0.711	0.534	0.444	0.368
8.560	0.392	0.316	0.271	0.236	0.196	0.735	0.593	0.508	0.443	0.368
8.650	0.392	0.314	0.265	0.234	0.196	0.731	0.589	0.497	0.439	0.368
8.740	0.392	0.300	0.248	0.227	0.196	0.735	0.563	0.465	0.426	0.353
8.830	0.367	0.296	0.236	0.218	0.195	0.688	0.555	0.443	0.409	0.366
8.930	0.359	0.296	0.236	0.216	0.194	0.673	0.555	0.443	0.405	0.364
9.020	0.359	0.296	0.236	0.216	0.193	0.673	0.555	0.443	0.405	0.362
9.110	0.359	0.296	0.235	0.213	0.191	0.673	0.555	0.441	0.399	0.358
9.210	0.359	0.296	0.235	0.208	0.188	0.673	0.555	0.441	0.390	0.353
9.310	0.359	0.296	0.235	0.208	0.185	0.673	0.555	0.441	0.390	0.347

988/mp40.prn/12-23-88

Sheet C-5

INFORMATION
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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 15.4 - Mass Point 40
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
9.400	0.378	0.320	0.255	0.218	0.183	0.709	0.600	0.478	0.409	0.343
9.500	0.378	0.320	0.258	0.222	0.183	0.709	0.600	0.484	0.416	0.343
9.700	0.378	0.320	0.258	0.222	0.183	0.709	0.600	0.484	0.416	0.343
9.810	0.400	0.320	0.258	0.222	0.183	0.750	0.600	0.484	0.416	0.343
10.120	0.400	0.320	0.258	0.222	0.183	0.750	0.600	0.484	0.416	0.343
10.230	0.400	0.320	0.258	0.222	0.181	0.750	0.600	0.484	0.416	0.339
10.330	0.400	0.320	0.258	0.226	0.185	0.750	0.600	0.484	0.424	0.347
10.440	0.467	0.358	0.274	0.233	0.188	0.876	0.671	0.514	0.437	0.353
10.550	0.467	0.358	0.274	0.233	0.190	0.876	0.671	0.514	0.437	0.356
10.890	0.467	0.358	0.274	0.233	0.190	0.876	0.671	0.514	0.437	0.356
11.000	0.512	0.379	0.274	0.233	0.190	0.960	0.711	0.514	0.437	0.356
11.120	0.602	0.404	0.274	0.233	0.191	1.129	0.758	0.514	0.437	0.358
11.240	0.602	0.404	0.282	0.239	0.194	1.129	0.758	0.529	0.448	0.364
11.350	0.602	0.406	0.308	0.253	0.196	1.129	0.761	0.578	0.474	0.368
11.470	0.602	0.406	0.308	0.254	0.196	1.129	0.761	0.578	0.476	0.368
12.470	0.602	0.406	0.308	0.254	0.196	1.129	0.761	0.578	0.476	0.368
12.610	0.602	0.406	0.315	0.263	0.200	1.129	0.761	0.597	0.493	0.375
12.740	0.602	0.439	0.323	0.264	0.200	1.129	0.823	0.606	0.495	0.375
13.140	0.602	0.439	0.323	0.264	0.200	1.129	0.823	0.606	0.495	0.375
13.280	0.602	0.439	0.323	0.264	0.208	1.129	0.823	0.606	0.495	0.390
13.420	0.602	0.439	0.323	0.266	0.214	1.129	0.823	0.606	0.499	0.401
13.560	0.602	0.439	0.323	0.273	0.218	1.129	0.823	0.606	0.512	0.409
15.220	0.602	0.439	0.323	0.273	0.218	1.129	0.823	0.606	0.512	0.409
15.380	0.574	0.439	0.323	0.273	0.218	1.076	0.823	0.606	0.512	0.409
17.430	0.574	0.439	0.3	0.273	0.218	1.076	0.823	0.606	0.512	0.409
17.620	0.469	0.394	0.318	0.273	0.218	0.879	0.739	0.596	0.512	0.409
18.560	0.469	0.394	0.318	0.273	0.218	0.879	0.739	0.596	0.512	0.409
18.760	0.469	0.394	0.318	0.272	0.217	0.879	0.739	0.596	0.510	0.407
18.950	0.465	0.374	0.302	0.263	0.215	0.872	0.701	0.566	0.493	0.403
19.150	0.465	0.374	0.295	0.248	0.209	0.872	0.701	0.553	0.465	0.392
19.360	0.465	0.374	0.295	0.248	0.202	0.872	0.701	0.553	0.465	0.379
19.560	0.465	0.374	0.295	0.248	0.199	0.872	0.701	0.553	0.465	0.373
20.180	0.465	0.374	0.295	0.248	0.199	0.872	0.701	0.553	0.465	0.373
20.390	0.458	0.374	0.295	0.248	0.199	0.859	0.701	0.553	0.465	0.373
20.610	0.458	0.368	0.287	0.242	0.196	0.859	0.690	0.538	0.454	0.368
20.830	0.437	0.334	0.262	0.227	0.190	0.819	0.626	0.491	0.426	0.356
21.040	0.437	0.334	0.262	0.223	0.182	0.819	0.626	0.491	0.418	0.341
21.270	0.437	0.334	0.258	0.223	0.178	0.819	0.626	0.484	0.418	0.334
21.490	0.437	0.334	0.251	0.219	0.175	0.819	0.626	0.471	0.411	0.328
21.720	0.437	0.334	0.249	0.211	0.170	0.819	0.626	0.467	0.396	0.319
21.940	0.383	0.300	0.231	0.198	0.163	0.718	0.563	0.433	0.371	0.306
22.170	0.383	0.300	0.231	0.198	0.161	0.718	0.563	0.433	0.371	0.302

12-23-88

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 15.4 - Mass Point 40
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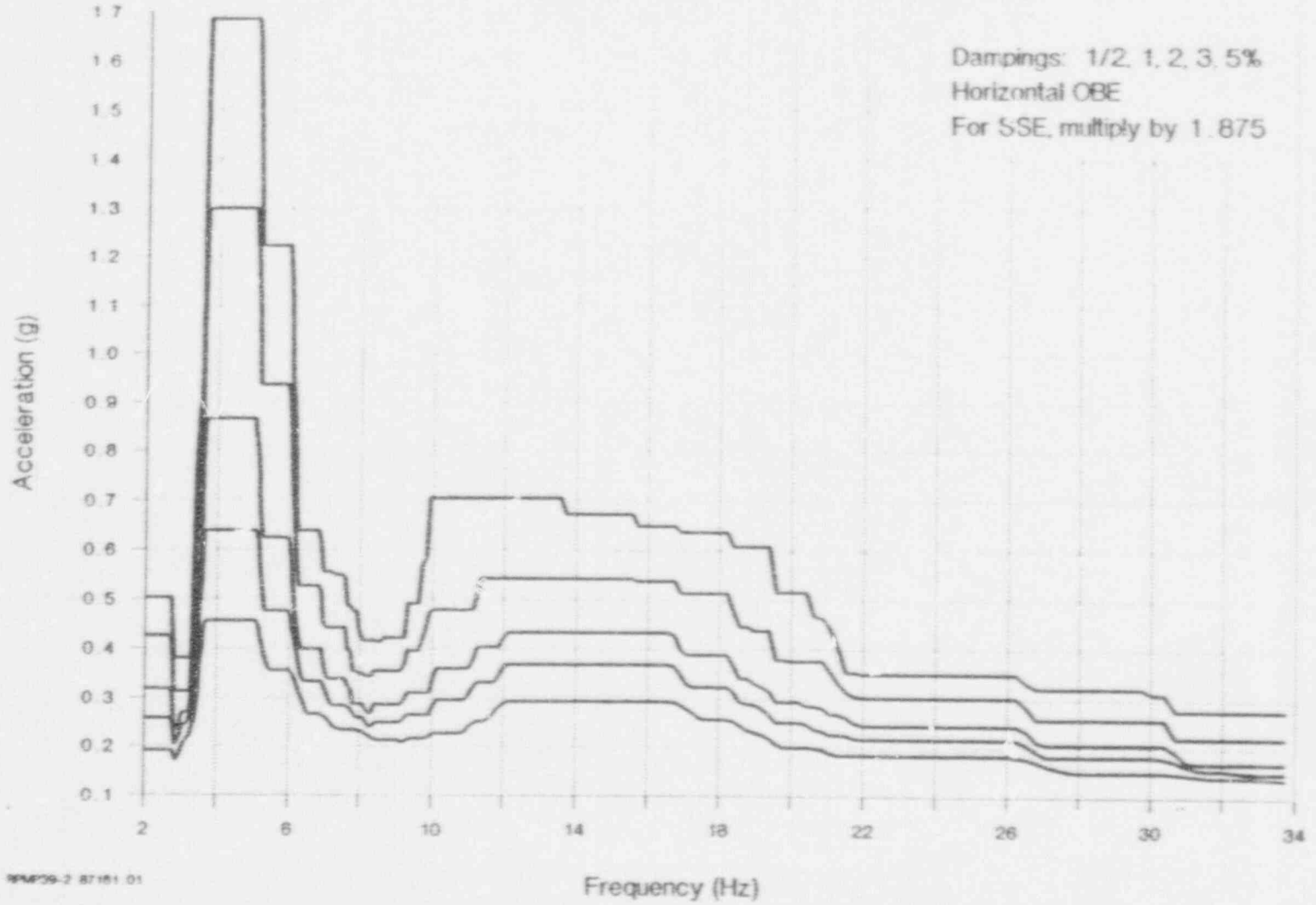
Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
22.640	0.383	0.300	0.231	0.198	0.161	0.718	0.563	0.433	0.371	0.302
22.880	0.383	0.300	0.231	0.196	0.161	0.718	0.563	0.433	0.368	0.302
23.120	0.381	0.300	0.231	0.196	0.160	0.714	0.563	0.433	0.368	0.300
23.360	0.381	0.300	0.231	0.196	0.160	0.714	0.563	0.433	0.368	0.300
23.610	0.381	0.299	0.229	0.196	0.160	0.714	0.561	0.429	0.368	0.300
23.860	0.381	0.296	0.229	0.196	0.160	0.714	0.555	0.429	0.368	0.300
24.110	0.335	0.276	0.228	0.196	0.160	0.628	0.516	0.428	0.367	0.300
24.360	0.335	0.276	0.223	0.193	0.160	0.628	0.518	0.418	0.367	0.300
24.620	0.326	0.266	0.212	0.187	0.158	0.611	0.499	0.398	0.351	0.296
24.880	0.326	0.266	0.212	0.183	0.155	0.611	0.499	0.398	0.343	0.291
29.100	0.326	0.266	0.212	0.183	0.155	0.611	0.499	0.398	0.343	0.291
29.410	0.326	0.266	0.212	0.183	0.154	0.611	0.499	0.398	0.343	0.289
29.720	0.293	0.254	0.204	0.178	0.151	0.549	0.476	0.383	0.334	0.283
30.030	0.276	0.220	0.187	0.168	0.147	0.518	0.413	0.351	0.315	0.276
30.350	0.276	0.220	0.181	0.159	0.141	0.518	0.413	0.339	0.298	0.264
30.670	0.276	0.220	0.181	0.159	0.136	0.518	0.413	0.339	0.298	0.255
30.990	0.276	0.220	0.181	0.159	0.131	0.518	0.413	0.339	0.298	0.246
33.340	0.276	0.220	0.181	0.159	0.131	0.518	0.413	0.339	0.298	0.246
33.690	0.266	0.220	0.181	0.159	0.131	0.499	0.413	0.339	0.298	0.246

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Sheet C-8

PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Pedestal - Elev. 21.7 - Mass Point 39



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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 21.7 - Mes. Point 39
 (Page 1 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.02	0.503	0.425	0.319	0.258	0.192	0.943	0.797	0.598	0.484	0.360
2.71	0.503	0.425	0.319	0.258	0.192	0.943	0.797	0.598	0.484	0.360
2.74	0.481	0.401	0.310	0.257	0.192	0.902	0.752	0.581	0.482	0.360
2.77	0.407	0.351	0.286	0.245	0.190	0.763	0.658	0.536	0.459	0.356
2.80	0.381	0.314	0.252	0.228	0.185	0.714	0.589	0.473	0.428	0.347
2.82	0.381	0.314	0.236	0.213	0.180	0.714	0.589	0.443	0.399	0.338
2.85	0.381	0.314	0.236	0.204	0.175	0.714	0.589	0.443	0.383	0.328
2.88	0.381	0.314	0.236	0.205	0.171	0.714	0.589	0.443	0.384	0.321
2.91	0.381	0.314	0.236	0.213	0.176	0.714	0.589	0.443	0.399	0.330
2.95	0.381	0.314	0.246	0.219	0.180	0.714	0.589	0.461	0.411	0.338
2.98	0.381	0.314	0.258	0.229	0.187	0.714	0.589	0.484	0.429	0.351
3.01	0.381	0.314	0.265	0.237	0.194	0.714	0.589	0.497	0.444	0.364
3.04	0.381	0.314	0.269	0.242	0.201	0.714	0.589	0.504	0.454	0.377
3.07	0.381	0.314	0.270	0.245	0.206	0.714	0.589	0.506	0.459	0.386
3.10	0.381	0.314	0.270	0.246	0.210	0.714	0.589	0.506	0.461	0.394
3.14	0.381	0.314	0.270	0.246	0.213	0.714	0.589	0.506	0.461	0.399
3.17	0.381	0.314	0.270	0.247	0.216	0.714	0.589	0.506	0.463	0.405
3.20	0.381	0.314	0.270	0.252	0.219	0.714	0.589	0.506	0.473	0.411
3.24	0.381	0.314	0.277	0.261	0.224	0.714	0.589	0.519	0.489	0.420
3.27	0.381	0.327	0.299	0.275	0.232	0.714	0.613	0.561	0.516	0.435
3.30	0.435	0.402	0.345	0.297	0.240	0.816	0.754	0.647	0.557	0.450
3.34	0.567	0.494	0.394	0.328	0.245	1.063	0.924	0.739	0.615	0.459
3.37	0.686	0.572	0.431	0.311	0.257	1.286	1.073	0.808	0.658	0.482
3.41	0.794	0.654	0.483	0.386	0.285	1.489	1.226	0.906	0.724	0.534
3.45	0.845	0.692	0.514	0.418	0.322	1.584	1.298	0.964	0.784	0.604
3.48	0.886	0.706	0.561	0.467	0.355	1.661	1.324	1.052	0.876	0.666
3.52	0.896	0.762	0.581	0.502	0.385	1.680	1.429	1.089	0.941	0.722
3.56	0.978	0.865	0.666	0.536	0.410	1.834	1.622	1.249	1.005	0.769
3.59	1.204	1.035	0.772	0.597	0.432	2.258	1.941	1.448	1.119	0.810
3.63	1.519	1.222	0.851	0.639	0.448	2.848	2.291	1.596	1.198	0.840
3.67	1.684	1.300	0.867	0.640	0.456	3.161	2.438	1.626	1.200	0.855
5.02	1.686	1.300	0.867	0.640	0.456	3.161	2.438	1.626	1.200	0.855
5.07	1.643	1.235	0.832	0.639	0.454	3.081	2.316	1.560	1.198	0.851
5.13	1.323	1.079	0.784	0.616	0.443	2.481	2.023	1.470	1.155	0.831
5.18	1.223	0.936	0.682	0.567	0.424	2.293	1.755	1.279	1.063	0.795
5.24	1.223	0.936	0.625	0.511	0.402	2.293	1.755	1.172	0.958	0.754
5.29	1.223	0.936	0.625	0.476	0.385	2.293	1.755	1.172	0.893	0.722
5.35	1.223	0.936	0.625		0.372	2.293	1.755	1.172	0.893	0.698
5.40	1.223	0.936	0.625		0.361	2.293	1.755	1.172	0.893	0.677
5.46	1.223	0.936	0.625	0.476	0.357	2.293	1.755	1.172	0.893	0.669
5.94	1.223	0.936	0.625	0.476	0.357	2.293	1.755	1.172	0.893	0.669
6.00	1.150	0.898	0.611	0.468	0.356	2.156	1.684	1.146	0.878	0.668

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 21.7 - Mass Point 39
 (Page 2 of 4)

Frec. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
6.06	0.951	0.764	0.553	0.444	0.351	1.783	1.433	1.037	0.833	0.658
6.12	0.898	0.673	0.481	0.422	0.342	1.684	1.262	0.902	0.791	0.641
6.19	0.661	0.575	0.453	0.399	0.330	1.239	1.078	0.849	0.748	0.619
6.25	0.639	0.528	0.423	0.373	0.317	1.198	0.990	0.793	0.699	0.594
6.31	0.639	0.528	0.399	0.346	0.302	1.198	0.990	0.748	0.649	0.566
6.39	0.639	0.528	0.399	0.335	0.288	1.198	0.990	0.748	0.628	0.540
6.45	0.639	0.528	0.399	0.335	0.275	1.198	0.990	0.748	0.628	0.516
6.52	0.639	0.528	0.399	0.335	0.266	1.198	0.990	0.748	0.628	0.499
6.60	0.639	0.528	0.399	0.375	0.266	1.198	0.990	0.748	0.628	0.499
6.67	0.614	0.515	0.399	0.335	0.266	1.151	0.966	0.748	0.628	0.495
6.94	0.556	0.451	0.376	0.327	0.264	1.043	0.846	0.705	0.613	0.495
7.02	0.556	0.442	0.343	0.312	0.259	1.043	0.829	0.643	0.585	0.486
7.09	0.556	0.442	0.340	0.297	0.254	1.043	0.829	0.638	0.557	0.476
7.17	0.556	0.442	0.340	0.287	0.247	1.043	0.829	0.638	0.538	0.463
7.24	0.550	0.442	0.340	0.284	0.239	1.031	0.829	0.638	0.533	0.448
7.47	0.550	0.442	0.340	0.284	0.234	1.031	0.829	0.638	0.533	0.439
7.55	0.543	0.442	0.340	0.284	0.234	1.018	0.829	0.638	0.533	0.439
7.63	0.486	0.397	0.324	0.282	0.234	0.911	0.744	0.608	0.529	0.435
7.71	0.486	0.397	0.318	0.279	0.234	0.911	0.744	0.596	0.523	0.439
7.79	0.476	0.356	0.289	0.268	0.234	0.893	0.648	0.542	0.503	0.439
7.87	0.476	0.356	0.288	0.260	0.233	0.893	0.668	0.540	0.488	0.437
7.96	0.437	0.351	0.288	0.260	0.231	0.819	0.658	0.540	0.488	0.433
8.04	0.417	0.351	0.288	0.260	0.229	0.782	0.658	0.540	0.488	0.429
8.12	0.416	0.345	0.278	0.254	0.226	0.780	0.647	0.521	0.476	0.424
8.21	0.416	0.345	0.269	0.242	0.222	0.780	0.647	0.504	0.454	0.416
8.30	0.416	0.345	0.269	0.240	0.218	0.780	0.647	0.504	0.450	0.409
8.38	0.416	0.356	0.287	0.247	0.215	0.780	0.668	0.538	0.463	0.403
8.47	0.414	0.356	0.287	0.250	0.213	0.776	0.668	0.538	0.469	0.399
8.56	0.414	0.356	0.287	0.250	0.213	0.776	0.668	0.538	0.469	0.399
8.65	0.422	0.356	0.287	0.250	0.213	0.791	0.668	0.538	0.469	0.399
8.93	0.422	0.356	0.287	0.250	0.213	0.791	0.668	0.538	0.469	0.399
9.02	0.422	0.356	0.287	0.250	0.212	0.791	0.668	0.538	0.469	0.398
9.11	0.422	0.356	0.287	0.250	0.210	0.791	0.668	0.538	0.469	0.397
9.21	0.422	0.366	0.296	0.258	0.210	0.791	0.686	0.555	0.484	0.394
9.31	0.492	0.396	0.311	0.265	0.214	0.923	0.743	0.583	0.497	0.401
9.40	0.492	0.396	0.311	0.265	0.216	0.923	0.743	0.583	0.497	0.405
9.50	0.492	0.396	0.311	0.265	0.216	0.923	0.743	0.583	0.497	0.405
9.60	0.492	0.396	0.311	0.265	0.216	0.923	0.743	0.583	0.497	0.405
9.70	0.570	0.417	0.311	0.265	0.216	1.069	0.782	0.583	0.497	0.405
9.81	0.584	0.443	0.311	0.265	0.217	1.095	0.831	0.583	0.497	0.407
9.91	0.708	0.475	0.311	0.265	0.221	1.328	0.891	0.583	0.497	0.414

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 21.7 - Mass Point 39
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
10.01	0.708	0.479	0.341	0.283	0.226	1.328	0.898	0.639	0.531	0.424
10.12	0.708	0.479	0.361	0.297	0.228	1.328	0.898	0.677	0.557	0.428
10.77	0.708	0.479	0.361	0.297	0.228	1.328	0.898	0.677	0.557	0.428
10.89	0.708	0.479	0.361	0.297	0.230	1.328	0.898	0.677	0.557	0.431
11.00	0.708	0.479	0.361	0.307	0.240	1.328	0.898	0.677	0.576	0.450
11.12	0.708	0.479	0.377	0.322	0.247	1.328	0.898	0.707	0.604	0.463
11.24	0.708	0.513	0.403	0.333	0.252	1.328	0.962	0.756	0.624	0.473
11.35	0.708	0.543	0.404	0.333	0.252	1.328	1.018	0.758	0.624	0.473
11.47	0.708	0.543	0.404	0.333	0.252	1.328	1.018	0.758	0.624	0.473
11.59	0.708	0.543	0.404	0.333	0.258	1.328	1.018	0.758	0.624	0.484
11.72	0.708	0.543	0.404	0.333	0.270	1.328	1.018	0.758	0.624	0.506
11.84	0.708	0.543	0.404	0.343	0.281	1.328	1.018	0.758	0.643	0.527
11.96	0.708	0.543	0.418	0.360	0.289	1.328	1.018	0.784	0.675	0.542
12.09	0.708	0.543	0.433	0.369	0.293	1.328	1.018	0.812	0.692	0.549
13.56	0.708	0.543	0.433	0.369	0.293	1.328	1.018	0.812	0.692	0.549
13.71	0.675	0.543	0.433	0.369	0.293	1.266	1.018	0.812	0.692	0.549
15.54	0.675	0.543	0.433	0.369	0.293	1.266	1.018	0.812	0.692	0.549
15.70	0.651	0.539	0.433	0.369	0.293	1.221	1.011	0.812	0.692	0.549
16.54	0.651	0.539	0.433	0.369	0.293	1.221	1.011	0.812	0.692	0.549
16.72	0.651	0.539	0.427	0.365	0.292	1.221	1.011	0.801	0.684	0.548
16.89	0.638	0.514	0.399	0.350	0.287	1.196	0.964	0.748	0.656	0.538
17.07	0.638	0.514	0.389	0.330	0.279	1.196	0.964	0.729	0.619	0.523
17.25	0.638	0.514	0.389	0.324	0.270	1.196	0.964	0.729	0.608	0.506
17.43	0.638	0.514	0.389	0.324	0.259	1.196	0.964	0.729	0.608	0.486
17.62	0.638	0.514	0.389	0.324	0.257	1.196	0.964	0.729	0.608	0.482
18.18	0.638	0.484	0.389	0.324	0.257	1.196	0.964	0.729	0.608	0.482
18.37	0.610	0.477	0.370	0.314	0.253	1.144	0.894	0.694	0.589	0.474
18.56	0.610	0.446	0.342	0.293	0.245	1.144	0.836	0.641	0.549	0.459
18.76	0.610	0.446	0.342	0.290	0.234	1.144	0.836	0.641	0.544	0.439
18.95	0.610	0.438	0.332	0.289	0.229	1.144	0.821	0.623	0.542	0.429
19.15	0.610	0.438	0.326	0.281	0.225	1.144	0.821	0.611	0.527	0.422
19.36	0.610	0.438	0.317	0.268	0.217	1.144	0.821	0.594	0.503	0.407
19.56	0.516	0.380	0.294	0.251	0.206	0.968	0.713	0.551	0.471	0.386
19.76	0.516	0.380	0.294	0.251	0.200	0.968	0.713	0.551	0.471	0.375
19.97	0.516	0.377	0.294	0.251	0.200	0.968	0.707	0.551	0.471	0.375
20.18	0.516	0.377	0.294	0.251	0.200	0.968	0.707	0.551	0.471	0.375
20.39	0.516	0.377	0.286	0.247	0.200	0.968	0.707	0.536	0.463	0.375
20.61	0.468	0.377	0.284	0.237	0.198	0.878	0.707	0.533	0.444	0.371
20.83	0.463	0.377	0.282	0.233	0.194	0.868	0.707	0.529	0.437	0.364
21.04	0.446	0.358	0.269	0.225	0.188	0.876	0.671	0.504	0.422	0.353
21.27	0.406	0.333	0.268	0.225	0.184	0.761	0.624	0.503	0.422	0.345
21.49	0.354	0.314	0.261	0.224	0.184	0.664	0.589	0.489	0.420	0.345

988/mp39.pnn/12-23-88

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Sheet C-11

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 21.7 - Mass Point 39
 (Page 4 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
21.72	0.354	0.306	0.250	0.217	0.184	0.664	0.574	0.469	0.407	0.345
21.94	0.351	0.303	0.245	0.216	0.184	0.658	0.568	0.459	0.405	0.345
25.94	0.351	0.303	0.245	0.216	0.184	0.658	0.568	0.459	0.405	0.345
26.21	0.351	0.303	0.245	0.215	0.182	0.658	0.568	0.459	0.403	0.341
26.49	0.335	0.284	0.234	0.206	0.178	0.628	0.533	0.439	0.386	0.334
26.77	0.323	0.259	0.212	0.193	0.172	0.606	0.486	0.398	0.362	0.323
27.05	0.323	0.259	0.208	0.183	0.165	0.606	0.486	0.390	0.343	0.309
27.33	0.323	0.259	0.208	0.183	0.159	0.606	0.486	0.390	0.343	0.298
27.62	0.323	0.259	0.208	0.183	0.153	0.606	0.486	0.390	0.343	0.287
27.91	0.323	0.259	0.208	0.183	0.151	0.606	0.486	0.390	0.343	0.283
29.72	0.323	0.259	0.208	0.183	0.151	0.606	0.486	0.390	0.343	0.283
30.03	0.312	0.259	0.208	0.183	0.151	0.585	0.486	0.390	0.343	0.283
30.35	0.312	0.259	0.207	0.181	0.151	0.585	0.486	0.388	0.339	0.283
30.67	0.278	0.221	0.193	0.174	0.149	0.521	0.414	0.362	0.326	0.279
30.99	0.278	0.221	0.172	0.165	0.147	0.521	0.414	0.323	0.309	0.276
31.32	0.278	0.221	0.170	0.158	0.144	0.521	0.414	0.319	0.296	0.270
31.64	0.278	0.221	0.170	0.157	0.142	0.521	0.414	0.319	0.294	0.266
31.98	0.278	0.221	0.170	0.157	0.142	0.521	0.414	0.319	0.294	0.266
32.31	0.278	0.221	0.170	0.155	0.142	0.521	0.414	0.319	0.291	0.266
32.65	0.278	0.221	0.170	0.152	0.142	0.521	0.414	0.319	0.285	0.266
33.00	0.278	0.221	0.170	0.151	0.141	0.521	0.414	0.319	0.283	0.264
33.34	0.278	0.221	0.170	0.151	0.140	0.521	0.414	0.319	0.283	0.263
33.69	0.278	0.221	0.170	0.151	0.139	0.521	0.414	0.319	0.283	0.261

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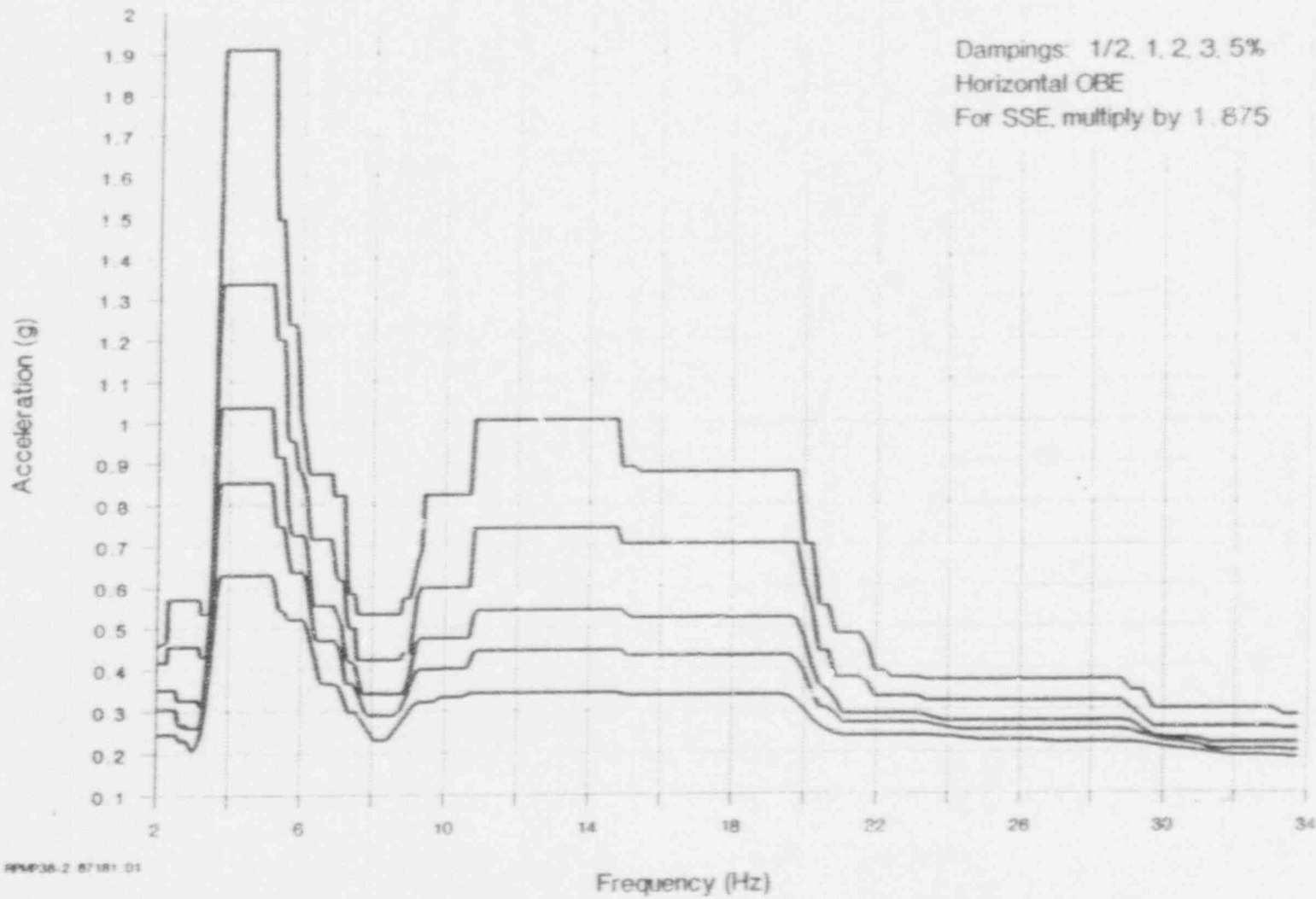
Sheet C-12

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Sheet C-13

PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Pedestal - Elev. 28.0 - Mass Point 38



HPMP38-2 87181 01

Specification No. C-114-ER-Q-EO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 25.0 - Mass Point 38
 (Page 1 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.02	0.458	0.417	0.352	0.306	0.245	0.859	0.782	0.660	0.574	0.459
2.27	0.468	0.417	0.352	0.306	0.245	0.878	0.782	0.660	0.574	0.459
2.29	0.571	0.454	0.352	0.306	0.245	1.071	0.851	0.660	0.574	0.459
2.49	0.571	0.454	0.352	0.306	0.245	1.071	0.851	0.660	0.574	0.459
2.52	0.37	0.454	0.350	0.306	0.245	1.071	0.851	0.656	0.574	0.459
2.54	0.571	0.454	0.340	0.300	0.244	1.071	0.851	0.638	0.563	0.458
2.57	0.571	0.454	0.326	0.287	0.241	1.071	0.851	0.611	0.538	0.452
2.60	0.571	0.454	0.326	0.269	0.235	1.071	0.851	0.611	0.504	0.441
2.63	0.571	0.454	0.326	0.269	0.231	1.071	0.851	0.611	0.504	0.433
2.80	0.571	0.454	0.326	0.269	0.231	1.071	0.851	0.611	0.504	0.433
2.82	0.571	0.454	0.326	0.262	0.230	1.071	0.851	0.611	0.491	0.431
2.85	0.571	0.454	0.326	0.261	0.227	1.071	0.851	0.611	0.489	0.426
2.88	0.571	0.454	0.326	0.261	0.223	1.071	0.851	0.611	0.489	0.418
2.91	0.571	0.454	0.326	0.261	0.218	1.071	0.851	0.611	0.489	0.409
2.95	0.571	0.454	0.326	0.261	0.213	1.071	0.851	0.611	0.489	0.399
2.98	0.571	0.454	0.326	0.261	0.208	1.071	0.851	0.611	0.489	0.390
3.01	0.571	0.454	0.326	0.261	0.210	1.071	0.851	0.611	0.489	0.394
3.04	0.571	0.454	0.326	0.261	0.210	1.071	0.851	0.611	0.489	0.394
3.07	0.571	0.454	0.326	0.261	0.212	1.071	0.851	0.611	0.489	0.398
3.10	0.571	0.454	0.326	0.261	0.218	1.071	0.851	0.611	0.489	0.409
3.14	0.571	0.454	0.326	0.261	0.225	1.071	0.851	0.611	0.489	0.422
3.17	0.566	0.443	0.315	0.261	0.234	1.061	0.831	0.591	0.489	0.439
3.20	0.536	0.431	0.315	0.263	0.242	1.005	0.808	0.591	0.493	0.454
3.24	0.536	0.431	0.315	0.275	0.252	1.005	0.808	0.591	0.516	0.473
3.27	0.536	0.431	0.315	0.294	0.269	1.005	0.808	0.591	0.551	0.504
3.30	0.536	0.431	0.330	0.318	0.290	1.005	0.808	0.619	0.596	0.544
3.34	0.536	0.431	0.360	0.345	0.313	1.005	0.808	0.675	0.647	0.587
3.37	0.536	0.431	0.396	0.377	0.339	1.005	0.808	0.743	0.707	0.636
3.41	0.536	0.462	0.437	0.413	0.367	1.005	0.866	0.819	0.774	0.688
3.45	0.536	0.508	0.482	0.454	0.398	1.005	0.953	0.904	0.851	0.746
3.48	0.582	0.567	0.537	0.502	0.432	1.091	1.063	1.007	0.941	0.810
3.52	0.679	0.655	0.608	0.558	0.468	1.273	1.228	1.140	1.046	0.878
3.56	0.834	0.782	0.697	0.623	0.506	1.564	1.466	1.307	1.168	0.949
3.59	1.036	0.940	0.799	0.693	0.543	1.943	1.763	1.498	1.299	1.018
3.63	1.267	1.102	0.899	0.760	0.577	2.338	2.066	1.605	1.425	1.082
3.67	1.467	1.236	0.982	0.814	0.605	2.751	2.318	1.841	1.526	1.134
3.71	1.848	1.315	1.032	0.847	0.623	3.465	2.466	1.935	1.588	1.168
3.75	1.909	1.337	1.038	0.852	0.629	3.579	2.507	1.946	1.598	1.179
5.13	1.909	1.337	1.038	0.852	0.629	3.579	2.507	1.946	1.598	1.179
5.18	1.606	1.310	0.996	0.827	0.622	3.011	2.456	1.868	1.551	1.166
5.24	1.494	1.212	0.910	0.775	0.603	2.801	2.273	1.718	1.433	1.131
5.29	1.494	1.203	0.916	0.747	0.577	2.801	2.256	1.718	1.401	1.082

958/mp38.prs/1-10-89

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 28.1 - Mass Point
 (Page 2 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
5.35	1.494	1.203	0.916	0.747	0.547	2.801	2.256	1.718	1.401	1.026
5.40	1.494	1.203	0.916	0.747	0.543	2.801	2.256	1.718	1.401	1.018
5.46	1.432	1.199	0.916	0.747	0.543	2.685	2.248	1.718	1.401	1.018
5.52	1.311	1.115	0.875	0.729	0.538	2.458	2.091	1.641	1.347	1.009
5.57	1.238	0.967	0.807	0.695	0.526	2.321	1.813	1.513	1.303	0.986
5.63	1.238	0.954	0.751	0.659	0.521	2.321	1.789	1.408	1.236	0.977
5.69	1.238	0.954	0.730	0.637	0.521	2.321	1.789	1.369	1.194	0.977
5.75	1.238	0.954	0.725	0.637	0.521	2.321	1.789	1.359	1.194	0.977
5.81	1.225	0.922	0.725	0.637	0.521	2.297	1.729	1.359	1.194	0.977
5.87	1.134	0.882	0.725	0.637	0.521	2.126	1.654	1.359	1.194	0.977
5.94	1.013	0.882	0.725	0.637	0.521	1.899	1.654	1.359	1.194	0.977
6.00	0.990	0.865	0.725	0.637	0.521	1.856	1.622	1.359	1.194	0.977
6.06	0.949	0.849	0.722	0.632	0.516	1.779	1.592	1.354	1.185	0.968
6.12	0.898	0.817	0.697	0.614	0.504	1.684	1.532	1.307	1.151	0.945
6.19	0.874	0.752	0.654	0.583	0.486	1.639	1.410	1.226	1.093	0.911
6.25	0.874	0.717	0.598	0.544	0.465	1.639	1.344	1.177	1.020	0.872
6.32	0.874	0.717	0.556	0.501	0.441	1.639	1.344		0.939	0.827
6.39	0.874	0.717	0.556	0.470	0.417	1.639	1.344		0.881	0.782
6.45	0.874	0.717	0.556	0.470	0.394	1.639	1.344	1.043	0.881	0.739
6.52	0.874	0.717	0.556	0.470	0.373	1.639	1.344	1.043	0.881	0.699
6.59	0.874	0.717	0.556	0.470	0.366	1.639	1.344	1.043	0.881	0.666
6.80	0.874	0.717	0.556	0.470	0.366	1.639	1.344	1.043	0.881	0.686
6.87	0.822	0.679	0.556	0.470	0.366	1.541	1.273	1.043	0.881	0.686
6.94	0.822	0.632	0.541	0.466	0.365	1.541	1.185	1.014	0.874	0.684
7.02	0.822	0.618	0.524	0.454	0.358	1.541	1.159	0.983	0.851	0.671
7.09	0.822	0.618	0.506	0.434	0.346	1.541	1.159	0.949	0.814	0.649
7.17	0.822	0.614	0.464	0.404	0.331	1.541	1.151	0.870	0.758	0.621
7.24	0.620	0.527	0.429	0.367	0.313	1.163	0.988	0.804	0.688	0.587
7.32	0.585	0.499	0.418	0.367	0.298	1.097	0.936	0.784	0.688	0.559
7.39	0.585	0.495	0.418	0.367	0.298	1.097	0.936	0.784	0.688	0.559
7.47	0.584	0.499	0.412	0.362	0.297	1.095	0.936	0.773	0.679	0.557
7.55	0.533	0.423	0.388	0.349	0.292	0.999	0.793	0.728	0.654	0.548
7.63	0.533	0.423	0.364	0.333	0.285	0.999	0.793	0.683	0.624	0.534
7.71	0.533	0.423	0.342	0.316	0.275	0.999	0.793	0.641	0.593	0.516
7.79	0.533	0.423	0.342	0.299	0.264	0.999	0.793	0.641	0.561	0.495
7.87	0.533	0.423	0.342	0.289	0.252	0.999	0.793	0.641	0.542	0.473
7.96	0.533	0.423	0.342	0.289	0.240	0.999	0.793	0.641	0.542	0.450
8.04	0.533	0.423	0.342	0.289	0.231	0.999	0.793	0.641	0.542	0.433
8.12	0.533	0.423	0.342	0.289	0.231	0.999	0.793	0.641	0.542	0.433
8.47	0.533	0.423	0.342	0.289	0.238	0.999	0.793	0.641	0.542	0.446
8.56	0.533	0.423	0.342	0.289	0.248	0.999	0.793	0.641	0.542	0.465
8.65	0.533	0.423	0.342	0.293	0.258	0.999	0.793	0.641	0.549	0.484

ORR 12-23-88

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal · Elev. 28. · Mass Point 38
 (Page 3 of 4)

Freq. (Hz)	Horizontal JBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
8.74	0.533	0.423	0.342	0.301	0.268	0.999	0.793	0.641	0.564	0.503
8.83	0.572	0.439	0.342	0.316	0.279	1.073	0.823	0.641	0.593	0.523
8.93	0.572	0.439	0.359	0.335	0.290	1.073	0.823	0.673	0.628	0.544
9.02	0.572	0.439	0.390	0.357	0.302	1.073	0.823	0.731	0.669	0.566
9.11	0.618	0.509	0.431	0.380	0.312	1.159	0.954	0.808	0.712	0.585
9.21	0.661	0.576	0.465	0.397	0.319	1.239	1.080	0.872	0.744	0.598
9.31	0.689	0.600	0.475	0.401	0.322	1.292	1.125	0.891	0.752	0.604
9.40	0.824	0.670	0.475	0.401	0.322	1.545	1.125	0.891	0.752	0.604
9.70	0.824	0.600	0.475	0.401	0.323	1.545	1.125	0.891	0.752	0.606
9.81	0.824	0.600	0.475	0.401	0.330	1.545	1.125	0.891	0.752	0.619
9.91	0.824	0.600	0.475	0.402	0.334	1.545	1.125	0.891	0.754	0.626
10.44	0.824	0.600	0.475	0.402	0.334	1.545	1.125	0.891	0.754	0.626
10.55	0.824	0.600	0.475	0.402	0.336	1.545	1.125	0.891	0.754	0.630
10.66	0.824	0.600	0.475	0.410	0.341	1.545	1.125	0.891	0.769	0.639
10.77	1.006	0.741	0.530	0.437	0.343	1.576	1.389	0.994	0.819	0.643
10.89	1.006	0.741	0.543	0.444	0.343	1.576	1.389	1.018	0.833	0.643
14.75	1.006	0.741	0.543	0.444	0.343	1.886	1.389	1.018	0.833	0.643
14.90	0.889	0.703	0.543	0.444	0.340	1.667	1.318	1.018	0.833	0.638
15.06	0.889	0.703	0.529	0.431	0.336	1.667	1.318	0.992	0.808	0.630
15.22	0.889	0.703	0.523	0.431	0.336	1.667	1.318	0.981	0.808	0.630
15.38	0.877	0.703	0.523	0.431	0.336	1.644	1.318	0.981	0.808	0.630
19.36	0.877	0.703	0.523	0.431	0.336	1.644	1.318	0.981	0.808	0.630
19.56	0.877	0.703	0.523	0.431	0.331	1.644	1.318	0.981	0.808	0.621
19.76	0.876	0.703	0.518	0.420	0.319	1.643	1.318	0.971	0.788	0.598
19.97	0.700	0.605	0.474	0.390	0.301	1.313	1.134	0.889	0.731	0.564
20.18	0.700	0.546	0.409	0.345	0.279	1.313	1.024	0.767	0.647	0.523
20.39	0.550	0.441	0.359	0.307	0.262	1.031	0.827	0.673	0.576	0.491
20.61	0.550	0.440	0.346	0.302	0.249	1.031	0.825	0.649	0.566	0.467
20.83	0.483	0.377	0.322	0.288	0.242	0.906	0.707	0.604	0.540	0.454
21.04	0.483	0.377	0.290	0.269	0.238	0.906	0.707	0.544	0.504	0.446
21.27	0.483	0.377	0.290	0.268	0.238	0.906	0.707	0.544	0.503	0.446
21.49	0.483	0.377	0.290	0.268	0.238	0.906	0.707	0.544	0.503	0.446
21.72	0.454	0.363	0.290	0.268	0.238	0.851	0.68	0.544	0.503	0.446
21.94	0.393	0.331	0.290	0.268	0.238	0.737	0.621	0.544	0.503	0.446
22.17	0.393	0.331	0.290	0.268	0.238	0.737	0.621	0.544	0.503	0.446
22.41	0.376	0.331	0.290	0.268	0.238	0.705	0.621	0.544	0.503	0.446
23.12	0.376	0.331	0.290	0.268	0.238	0.705	0.621	0.544	0.503	0.446
23.36	0.371	0.320	0.285	0.266	0.238	0.696	0.600	0.534	0.499	0.446
23.61	0.371	0.320	0.277	0.262	0.237	0.696	0.600	0.519	0.491	0.444
23.86	0.371	0.320	0.273	0.258	0.236	0.696	0.600	0.512	0.484	0.443
24.11	0.371	0.320	0.273	0.254	0.234	0.696	0.600	0.512	0.476	0.439
24.36	0.371	0.320	0.273	0.251	0.231	0.696	0.600	0.512	0.471	0.433

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 28.0 - Mass Point 38
 (Page 4 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
24.62	0.371	0.320	0.273	0.250	0.229	0.696	0.600	0.512	0.469	0.429
24.88	0.371	0.320	0.273	0.250	0.227	0.696	0.600	0.512	0.469	0.426
26.21	0.371	0.320	0.273	0.250	0.227	0.696	0.600	0.512	0.469	0.426
26.49	0.371	0.320	0.273	0.250	0.226	0.696	0.600	0.512	0.469	0.424
26.77	0.371	0.320	0.273	0.250	0.223	0.696	0.600	0.512	0.469	0.418
27.05	0.371	0.320	0.273	0.250	0.222	0.696	0.600	0.512	0.469	0.416
28.50	0.371	0.320	0.273	0.250	0.222	0.696	0.600	0.512	0.469	0.416
28.80	0.371	0.320	0.273	0.250	0.221	0.696	0.600	0.512	0.469	0.414
29.10	0.374	0.301	0.268	0.246	0.220	0.645	0.564	0.503	0.461	0.413
29.41	0.344	0.278	0.251	0.238	0.217	0.645	0.521	0.471	0.446	0.407
29.72	0.301	0.256	0.234	0.230	0.213	0.564	0.480	0.439	0.431	0.399
30.03	0.301	0.256	0.231	0.225	0.209	0.564	0.480	0.433	0.422	0.392
30.35	0.301	0.256	0.231	0.222	0.206	0.564	0.480	0.433	0.416	0.386
30.67	0.301	0.256	0.230	0.219	0.202	0.564	0.480	0.431	0.411	0.379
30.99	0.301	0.256	0.227	0.214	0.199	0.564	0.480	0.426	0.401	0.373
31.32	0.301	0.256	0.219	0.206	0.195	0.564	0.480	0.411	0.386	0.366
31.64	0.301	0.256	0.219	0.203	0.191	0.564	0.480	0.411	0.381	0.358
31.98	0.301	0.256	0.219	0.203	0.189	0.564	0.480	0.411	0.381	0.354
32.31	0.301	0.256	0.219	0.203	0.188	0.564	0.480	0.411	0.381	0.353
32.65	0.301	0.256	0.219	0.203	0.187	0.564	0.480	0.411	0.381	0.351
33.00	0.301	0.256	0.219	0.203	0.186	0.564	0.480	0.411	0.381	0.349
33.34	0.285	0.252	0.219	0.201	0.185	0.534	0.473	0.411	0.377	0.347
33.69	0.285	0.252	0.219	0.200	0.183	0.534	0.473	0.411	0.375	0.343

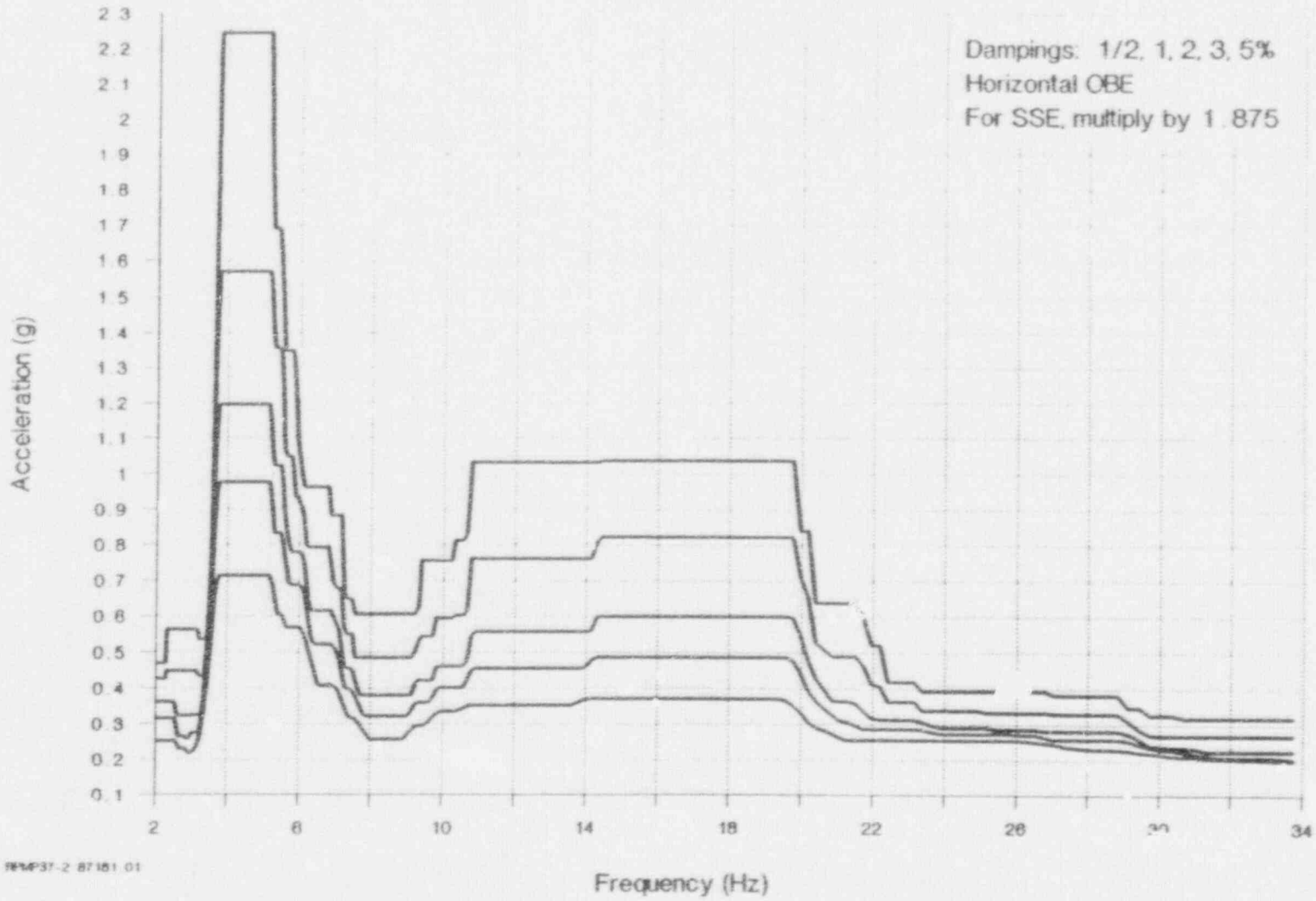
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PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Pedestal - Elev. 35.42 - Mass Point 37



Sheet C-18

WMP37-2 87181 01

Specification No. C-114-ER-O-EO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 35.42 - Mass Point 37
 (Page 1 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.02	0.470	0.428	0.362	0.315	0.252	0.881	0.803	0.679	0.591	0.473
2.27	0.470	0.428	0.362	0.315	0.252	0.881	0.803	0.679	0.591	0.473
2.29	0.562	0.449	0.362	0.315	0.252	1.054	0.842	0.679	0.591	0.473
2.49	0.562	0.449	0.362	0.315	0.252	1.054	0.842	0.679	0.591	0.473
2.52	0.562	0.449	0.361	0.315	0.252	1.054	0.842	0.677	0.591	0.473
2.54	0.562	0.449	0.353	0.310	0.252	1.054	0.842	0.662	0.581	0.473
2.57	0.562	0.449	0.333	0.297	0.248	1.054	0.842	0.628	0.557	0.465
2.60	0.562	0.449	0.323	0.278	0.242	1.054	0.842	0.606	0.521	0.454
2.63	0.562	0.449	0.323	0.265	0.235	1.054	0.842	0.606	0.497	0.441
2.65	0.562	0.449	0.323	0.265	0.231	1.054	0.842	0.606	0.497	0.433
2.80	0.562	0.449	0.323	0.265	0.231	1.054	0.842	0.606	0.497	0.433
2.82	0.562	0.449	0.323	0.260	0.230	1.054	0.842	0.606	0.488	0.431
2.85	0.562	0.449	0.323	0.260	0.227	1.054	0.842	0.606	0.488	0.426
2.88	0.562	0.449	0.323	0.260	0.224	1.054	0.842	0.606	0.488	0.420
2.91	0.562	0.449	0.323	0.260	0.221	1.054	0.842	0.606	0.488	0.414
2.95	0.562	0.449	0.323	0.260	0.216	1.054	0.842	0.606	0.468	0.405
2.98	0.562	0.449	0.323	0.267	0.218	1.054	0.842	0.606	0.501	0.409
3.01	0.562	0.449	0.325	0.275	0.224	1.054	0.842	0.609	0.516	0.420
3.07	0.562	0.449	0.325	0.275	0.224	1.054	0.842	0.609	0.516	0.420
3.10	0.562	0.449	0.325	0.275	0.230	1.054	0.842	0.609	0.516	0.431
3.14	0.562	0.449	0.325	0.275	0.237	1.054	0.842	0.609	0.516	0.444
3.17	0.557	0.437	0.325	0.275	0.246	1.044	0.819	0.609	0.516	0.461
3.20	0.536	0.435	0.325	0.279	0.257	1.005	0.816	0.609	0.523	0.482
3.24	0.536	0.435	0.325	0.293	0.272	1.005	0.816	0.609	0.549	0.510
3.27	0.536	0.435	0.325	0.315	0.292	1.005	0.816	0.609	0.591	0.548
3.30	0.536	0.435	0.349	0.341	0.316	1.005	0.816	0.654	0.639	0.593
3.34	0.536	0.435	0.385	0.372	0.342	1.005	0.816	0.7	0.698	0.641
3.37	0.536	0.448	0.429	0.410	0.372	1.005	0.840	0.804	0.769	0.698
3.41	0.536	0.507	0.480	0.454	0.405	1.005	0.951	0.900	0.851	0.759
3.45	0.583	0.568	0.537	0.504	0.441	1.093	1.065	1.007	0.945	0.827
3.48	0.656	0.642	0.604	0.562	0.481	1.230	1.204	1.133	1.054	0.902
3.52	0.773	0.747	0.689	0.629	0.524	1.449	1.401	1.292	1.179	0.983
3.56	0.956	0.896	0.795	0.706	0.568	1.793	1.680	1.491	1.324	1.065
3.59	1.193	1.079	0.913	0.788	0.612	2.237	2.023	1.712	1.478	1.148
3.63	1.442	1.271	1.030	0.866	0.652	2.704	2.383	1.931	1.624	1.223
3.67	1.726	1.432	1.128	0.930	0.685	3.236	2.685	2.115	1.744	1.284
3.71	2.176	1.527	1.187	0.969	0.706	4.080	2.863	2.226	1.817	1.324
3.75	2.246	1.569	1.196	0.977	0.714	4.211	2.942	2.243	1.832	1.339
5.13	2.246	1.569	1.196	0.977	0.714	4.211	2.942	2.243	1.832	1.339
5.18	1.894	1.536	1.150	0.949	0.707	3.551	2.880	2.156	1.779	1.326
5.24	1.691	1.411	1.054	0.890	0.686	3.171	2.646	1.976	1.669	1.286
5.29	1.691	1.358	1.025	0.834	0.655	3.171	2.546	1.922	1.564	1.228

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Sheet C-19

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 35.42 - Mass Point 37
 (Page 2 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
5.35	1.691	1.358	1.025	0.834	0.620	3.171	2.546	1.922	1.564	1.163
5.40	1.691	1.358	1.025	0.834	0.606	3.171	2.546	1.922	1.564	1.136
5.46	1.609	1.345	1.025	0.834	0.606	3.017	2.522	1.922	1.564	1.136
5.52	1.461	1.243	0.976	0.813	0.600	2.739	2.331	1.830	1.524	1.125
5.57	1.349	1.072	0.899	0.774	0.586	2.529	2.010	1.686	1.451	1.099
5.63	1.349	1.049	0.834	0.732	0.568	2.529	1.967	1.564	1.373	1.065
5.69	1.349	1.049	0.809	0.692	0.568	2.529	1.967	1.517	1.298	1.065
5.75	1.349	1.049	0.779	0.688	0.568	2.529	1.967	1.461	1.290	1.065
5.81	1.334	1.010	0.779	0.688	0.568	2.501	1.894	1.461	1.290	1.065
5.87	1.234	0.936	0.779	0.688	0.568	2.314	1.755	1.461	1.290	1.065
5.94	1.095	0.936	0.779	0.688	0.568	2.053	1.755	1.461	1.290	1.065
6.00	1.043	0.916	0.779	0.688	0.568	1.956	1.718	1.461	1.290	1.065
6.06	1.000	0.907	0.775	0.682	0.561	1.875	1.701	1.453	1.279	1.052
6.12	0.964	0.872	0.748	0.662	0.548	1.808	1.635	1.403	1.241	1.028
6.19	0.964	0.802	0.701	0.628	0.529	1.808	1.504	1.314	1.178	0.992
6.25	0.964	0.793	0.642	0.587	0.506	1.808	1.487	1.204	1.101	0.949
6.32	0.964	0.793	0.616	0.541	0.480	1.808	1.487	1.155	1.014	0.900
6.39	0.964	0.793	0.616	0.523	0.455	1.808	1.487	1.155	0.981	0.853
6.45	0.964	0.793	0.616	0.523	0.430	1.808	1.487	1.155	0.981	0.806
6.52	0.964	0.793	0.616	0.523	0.409	1.808	1.487	1.155	0.981	0.767
6.59	0.964	0.793	0.616	0.523	0.408	1.808	1.487	1.155	0.981	0.765
6.80	0.964	0.793	0.616	0.523	0.408	1.808	1.487	1.155	0.981	0.765
6.87	0.885	0.750	0.616	0.523	0.408	1.659	1.406	1.155	0.981	0.765
6.94	0.885	0.697	0.599	0.518	0.407	1.659	1.307	1.123	0.971	0.763
7.02	0.885	0.680	0.580	0.504	0.400	1.659	1.275	1.088	0.945	0.750
7.09	0.885	0.630	0.561	0.483	0.387	1.659	1.275	1.052	0.906	0.726
7.17	0.885	0.664	0.517	0.451	0.370	1.659	1.245	0.969	0.846	0.694
7.24	0.669	0.571	0.464	0.411	0.351	1.254	1.071	0.870	0.771	0.658
7.32	0.649	0.550	0.456	0.397	0.331	1.217	1.031	0.855	0.744	0.621
7.39	0.649	0.550	0.456	0.397	0.319	1.217	1.031	0.855	0.744	0.598
7.47	0.645	0.549	0.450	0.392	0.318	1.209	1.029	0.844	0.735	0.596
7.55	0.606	0.486	0.424	0.379	0.314	1.136	0.911	0.795	0.711	0.589
7.63	0.606	0.486	0.399	0.363	0.306	1.136	0.911	0.748	0.681	0.574
7.71	0.606	0.486	0.381	0.345	0.295	1.136	0.911	0.714	0.647	0.553
7.79	0.606	0.486	0.381	0.326	0.283	1.136	0.911	0.714	0.611	0.531
7.87	0.606	0.486	0.381	0.321	0.270	1.136	0.911	0.714	0.602	0.506
7.96	0.606	0.486	0.381	0.321	0.257	1.136	0.911	0.714	0.602	0.487
8.8	0.606	0.486	0.381	0.321	0.257	1.136	0.911	0.714	0.602	0.482
8.93	0.606	0.486	0.381	0.321	0.260	1.136	0.911	0.714	0.602	0.488
9.02	0.606	0.486	0.381	0.321	0.271	1.136	0.911	0.7	0.602	0.508
9.11	0.606	0.486	0.381	0.335	0.282	1.136	0.911	0.714	0.628	0.529
9.21	0.606	0.500	0.409	0.354	0.290	1.136	0.938	0.767	0.664	0.544

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Sheet C-20

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 35.42 - Mass Point 37
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
9.50	0.756	0.544	0.423	0.361	0.296	1.418	1.020	0.793	0.677	0.555
9.60	0.756	0.544	0.423	0.361	0.307	1.418	1.020	0.793	0.677	0.576
9.70	0.756	0.544	0.423	0.371	0.318	1.418	1.020	0.793	0.696	0.596
9.81	0.756	0.594	0.459	0.394	0.328	1.418	1.114	0.861	0.739	0.615
9.91	0.756	0.594	0.462	0.401	0.334	1.418	1.114	0.866	0.752	0.626
10.01	0.756	0.594	0.462	0.401	0.336	1.418	1.114	0.866	0.752	0.630
10.23	0.756	0.594	0.462	0.401	0.336	1.418	1.114	0.866	0.752	0.627
10.33	0.813	0.603	0.462	0.401	0.336	1.524	1.131	0.866	0.752	0.630
10.44	0.813	0.603	0.462	0.401	0.338	1.524	1.131	0.866	0.752	0.634
10.55	0.813	0.603	0.462	0.401	0.343	1.524	1.131	0.866	0.752	0.643
10.66	0.833	0.613	0.476	0.420	0.349	1.522	1.149	0.893	0.788	0.654
10.77	1.034	0.762	0.544	0.448	0.352	1.939	1.429	1.020	0.840	0.660
10.89	1.034	0.762	0.558	0.456	0.352	1.939	1.429	1.046	0.855	0.660
13.56	1.034	0.762	0.558	0.456	0.352	1.939	1.429	1.046	0.855	0.660
13.71	1.034	0.762	0.558	0.456	0.357	1.939	1.429	1.046	0.855	0.669
13.85	1.034	0.762	0.558	0.456	0.364	1.939	1.429	1.046	0.855	0.683
14.00	1.034	0.762	0.558	0.460	0.370	1.939	1.429	1.046	0.863	0.694
14.14	1.034	0.762	0.560	0.478	0.371	1.939	1.429	1.050	0.896	0.696
14.29	1.034	0.811	0.599	0.487	0.371	1.939	1.521	1.123	0.913	0.696
14.44	1.038	0.824	0.599	0.487	0.371	1.946	1.545	1.123	0.913	0.696
19.36	1.038	0.824	0.599	0.487	0.371	1.946	1.545	1.123	0.913	0.696
19.56	1.038	0.824	0.599	0.487	0.366	1.946	1.545	1.123	0.913	0.686
19.76	1.038	0.824	0.597	0.477	0.354	1.946	1.545	1.119	0.894	0.664
19.97	0.842	0.710	0.548	0.444	0.334	1.579	1.331	1.028	0.833	0.626
20.18	0.842	0.654	0.480	0.394	0.308	1.579	1.226	0.900	0.739	0.578
20.39	0.639	0.528	0.429	0.366	0.292	1.198	0.990	0.804	0.686	0.548
20.61	0.639	0.510	0.399	0.345	0.283	1.198	0.956	0.748	0.647	0.531
20.83	0.638	0.491	0.367	0.327	0.274	1.196	0.921	0.688	0.613	0.514
21.04	0.633	0.491	0.365	0.310	0.263	1.196	0.921	0.684	0.581	0.493
21.27	0.638	0.491	0.365	0.307	0.254	1.196	0.921	0.634	0.576	0.476
21.49	0.638	0.491	0.359	0.297	0.254	1.196	0.921	0.673	0.557	0.476
21.72	0.593	0.462	0.337	0.287	0.254	1.112	0.866	0.632	0.538	0.476
21.94	0.521	0.413	0.318	0.287	0.254	0.977	0.774	0.596	0.538	0.476
22.17	0.521	0.406	0.313	0.287	0.254	0.977	0.761	0.587	0.538	0.476
22.41	0.419	0.363	0.313	0.287	0.254	0.786	0.681	0.587	0.538	0.476
23.12	0.419	0.363	0.313	0.287	0.254	0.786	0.681	0.587	0.538	0.476
23.36	0.393	0.338	0.306	0.284	0.254	0.737	0.634	0.574	0.533	0.476
23.61	0.393	0.338	0.296	0.279	0.254	0.737	0.634	0.555	0.523	0.476
23.86	0.393	0.338	0.292	0.274	0.254	0.737	0.634	0.548	0.514	0.476
24.88	0.393	0.338	0.292	0.274	0.254	0.737	0.634	0.548	0.514	0.476
25.14	0.393	0.332	0.290	0.274	0.254	0.737	0.623	0.544	0.514	0.476
25.40	0.393	0.332	0.287	0.274	0.254	0.737	0.623	0.538	0.514	0.476

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Pedestal - Elev. 35.42 - Mass Point 37
 (Page 4 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
25.67	0.393	0.332	0.287	0.273	0.254	0.737	0.623	0.538	0.512	0.476
25.94	0.393	0.332	0.286	0.272	0.254	0.737	0.623	0.536	0.510	0.476
26.21	0.393	0.332	0.286	0.271	0.253	0.737	0.623	0.536	0.508	0.474
26.49	0.393	0.332	0.286	0.270	0.251	0.737	0.623	0.536	0.506	0.471
26.77	0.393	0.332	0.282	0.264	0.247	0.737	0.623	0.529	0.495	0.463
27.05	0.382	0.330	0.282	0.258	0.244	0.716	0.619	0.529	0.484	0.458
27.33	0.382	0.330	0.282	0.258	0.239	0.716	0.619	0.529	0.484	0.448
27.62	0.382	0.330	0.282	0.258	0.236	0.716	0.619	0.529	0.484	0.443
27.91	0.382	0.330	0.282	0.258	0.232	0.716	0.619	0.529	0.484	0.435
28.21	0.382	0.330	0.282	0.258	0.230	0.716	0.619	0.529	0.484	0.431
28.50	0.382	0.330	0.282	0.258	0.230	0.716	0.619	0.529	0.484	0.431
28.80	0.382	0.330	0.282	0.258	0.229	0.716	0.619	0.529	0.484	0.429
29.10	0.349	0.310	0.276	0.254	0.227	0.654	0.581	0.518	0.476	0.426
29.41	0.349	0.286	0.259	0.245	0.224	0.654	0.536	0.486	0.459	0.420
29.72	0.326	0.271	0.241	0.237	0.220	0.611	0.508	0.452	0.444	0.413
30.03	0.326	0.269	0.238	0.232	0.216	0.611	0.504	0.446	0.435	0.405
30.35	0.326	0.269	0.237	0.228	0.213	0.611	0.504	0.444	0.428	0.399
30.67	0.319	0.269	0.237	0.225	0.211	0.598	0.504	0.444	0.422	0.396
30.99	0.319	0.269	0.233	0.219	0.210	0.598	0.504	0.437	0.411	0.394
31.32	0.319	0.269	0.226	0.212	0.208	0.598	0.504	0.424	0.398	0.390
31.64	0.319	0.269	0.226	0.209	0.206	0.598	0.504	0.424	0.392	0.386
31.98	0.319	0.269	0.226	0.209	0.204	0.598	0.504	0.424	0.392	0.383
32.31	0.319	0.269	0.226	0.209	0.203	0.598	0.504	0.424	0.392	0.381
32.65	0.319	0.269	0.226	0.209	0.202	0.598	0.504	0.424	0.392	0.379
33.00	0.319	0.269	0.226	0.209	0.201	0.598	0.504	0.424	0.392	0.377
33.34	0.319	0.269	0.226	0.207	0.200	0.598	0.504	0.424	0.388	0.375
33.69	0.319	0.269	0.226	0.204	0.199	0.598	0.504	0.424	0.383	0.373

12-23-88

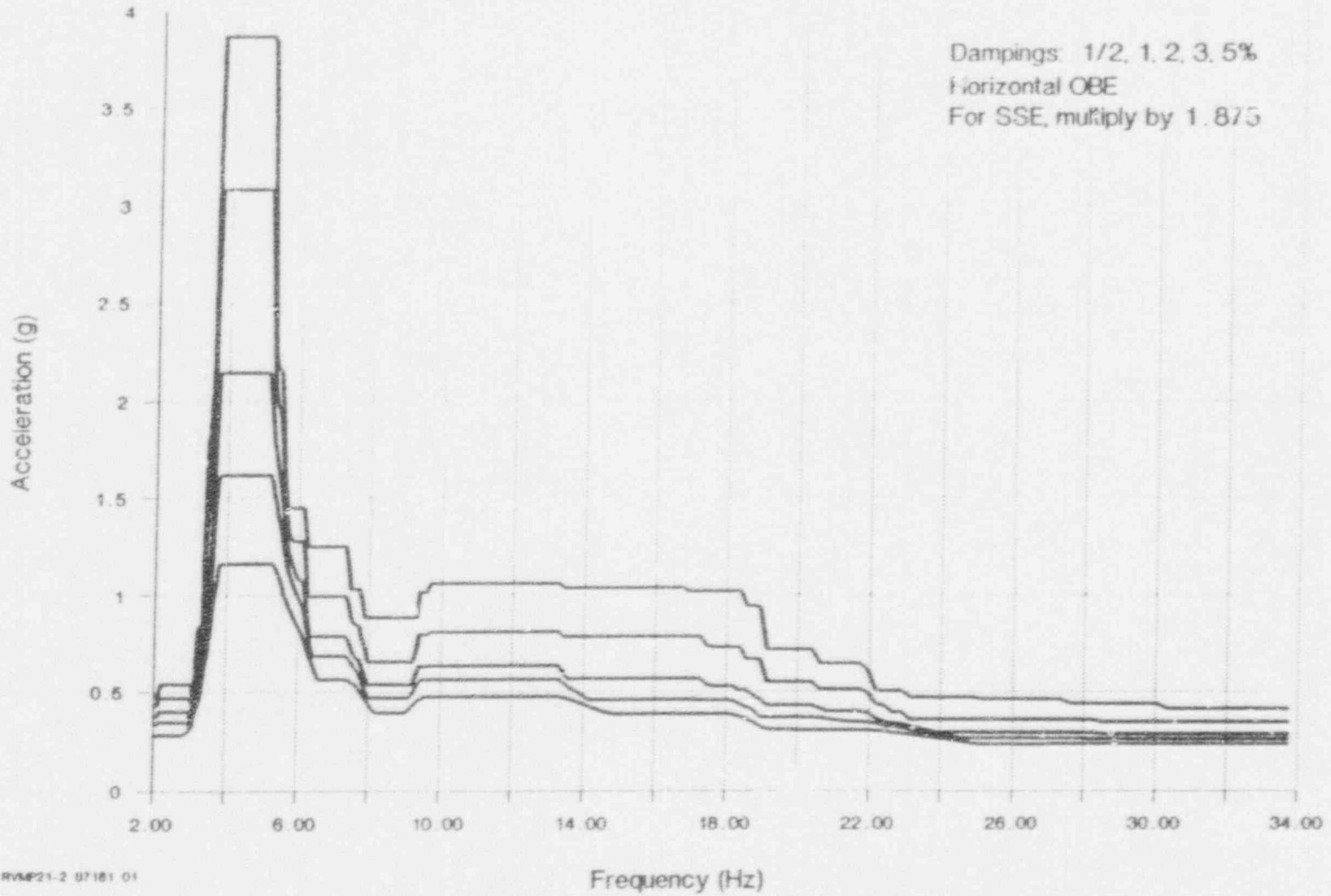
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Sheet C-22

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PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Vessel - Elev. 47.27 - Mass Point 21



Sheet C-23

RVM21-2 97181 01

Specification No. C-114-ER-O-E0

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 47.27 - Mass Point 21
 (Page 1 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSF				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.02	0.476	0.431	0.378	0.338	0.278	0.893	0.808	0.709	0.634	0.521
2.09	0.476	0.431	0.378	0.338	0.278	0.893	0.808	0.709	0.634	0.521
2.11	.494	0.448	0.385	0.342	0.278	0.926	0.840	0.722	0.641	0.521
2.13	0.503	0.460	0.397	0.348	0.281	0.943	0.863	0.744	0.653	0.527
2.15	0.514	0.470	0.400	0.348	0.281	0.964	0.881	0.750	0.653	0.527
2.17	0.518	0.470	0.400	0.348	0.281	0.971	0.881	0.750	0.653	0.527
2.20	0.542	0.470	0.400	0.348	0.281	1.016	0.881	0.750	0.653	0.527
2.82	0.542	0.470	0.400	0.348	0.281	1.016	0.881	0.750	0.653	0.527
2.85	0.542	0.470	0.400	0.348	0.287	1.016	0.881	0.750	0.653	0.538
2.88	0.542	0.470	0.400	0.348	0.291	1.016	0.881	0.750	0.653	0.546
2.91	0.542	0.470	0.400	0.348	0.295	1.016	0.881	0.750	0.653	0.553
2.95	0.542	0.470	0.400	0.348	0.300	1.016	0.881	0.750	0.653	0.563
2.98	0.542	0.464	0.392	0.340	0.306	1.016	0.870	0.735	0.638	0.574
3.01	0.542	0.462	0.371	0.337	0.313	1.016	0.866	0.696	0.632	0.587
3.04	0.535	0.453	0.374	0.346	0.326	1.003	0.849	0.701	0.649	0.611
3.07	0.491	0.441	0.402	0.380	0.352	0.921	0.827	0.754	0.713	0.660
3.10	0.536	0.503	0.454	0.420	0.378	1.005	0.943	0.851	0.788	0.709
3.14	0.580	0.553	0.498	0.456	0.402	1.088	1.037	0.934	0.855	0.754
3.17	0.712	0.611	0.534	0.483	0.424	1.335	1.146	1.001	0.906	0.795
3.20	0.805	0.682	0.561	0.499	0.441	1.509	1.279	1.052	0.936	0.827
3.24	0.827	0.714	0.593	0.521	0.456	1.551	1.339	1.112	0.977	0.855
3.27	0.845	0.751	0.636	0.565	0.478	1.584	1.408	1.193	1.059	0.896
3.30	0.845	0.751	0.680	0.619	0.523	1.584	1.408	1.275	1.161	0.981
3.34	0.850	0.810	0.734	0.672	0.567	1.594	1.519	1.376	1.260	1.063
3.37	1.145	1.030	0.833	0.725	0.611	2.147	1.931	1.562	1.359	1.146
3.41	1.628	1.307	0.953	0.774	0.656	3.053	2.451	1.787	1.451	1.230
3.45	1.808	1.443	1.022	0.822	0.702	3.390	2.706	1.916	1.541	1.316
3.48	1.808	1.487	1.054	0.888	0.752	3.390	2.788	1.976	1.665	1.410
3.52	1.987	1.558	1.172	0.975	0.808	3.726	2.921	2.198	1.828	1.515
3.56	2.044	1.702	1.304	1.085	0.869	3.833	3.191	2.445	2.034	1.629
3.59	2.199	1.902	1.429	1.214	0.931	4.123	3.566	2.679	2.276	1.746
3.63	2.682	2.211	1.622	1.357	0.989	5.029	4.146	3.041	2.544	1.854
3.67	3.410	2.638	1.883	1.493	1.034	6.394	4.946	3.531	2.799	1.939
3.71	3.876	3.004	2.092	1.585	1.085	7.268	5.633	3.923	2.972	2.034
3.75	3.876	3.083	2.144	1.604	1.134	7.268	5.781	4.020	3.008	2.126
3.79	3.876	3.083	2.144	1.617	1.159	7.268	5.781	4.020	3.032	2.173
3.83	3.876	3.083	2.144	1.617	1.165	7.268	5.781	4.020	3.032	2.184
5.07	3.876	3.083	2.144	1.617	1.165	7.268	5.781	4.020	3.032	2.184
5.13	3.852	3.083	2.144	1.617	1.165	7.223	5.781	4.020	3.032	2.184
5.18	3.401	2.810	2.032	1.617	1.165	6.377	5.269	3.610	3.032	2.184
5.24	2.750	2.382	1.894	1.583	1.165	5.156	4.466	3.551	2.968	2.184
5.29	2.246	2.077	1.790	1.528	1.156	4.211	3.894	3.356	2.865	2.168

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 47.27 - Mass Point 21
 (Page 2 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal aSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
5.35	2.164	1.981	1.714	1.472	1.138	4.058	3.714	3.214	2.760	2.134
5.40	2.164	1.969	1.657	1.418	1.113	4.058	3.692	3.107	2.659	2.087
5.45	2.149	1.917	1.584	1.372	1.083	4.029	3.594	2.970	2.573	2.031
5.52	1.957	1.765	1.495	1.315	1.047	3.669	3.309	2.803	2.466	1.963
5.57	1.672	1.572	1.398	1.248	1.007	3.135	2.948	2.621	2.340	1.888
5.63	1.463	1.418	1.302	1.180	0.978	2.743	2.659	2.441	2.213	1.834
5.69	1.451	1.326	1.228	1.128	0.950	2.721	2.486	2.303	2.115	1.781
5.75	1.451	1.295	1.185	1.093	0.924	2.721	2.428	2.222	2.049	1.733
5.81	1.451	1.279	1.160	1.064	0.898	2.721	2.398	2.175	1.995	1.684
5.87	1.451	1.278	1.128	1.036	0.874	2.721	2.396	2.115	1.943	1.639
5.94	1.451	1.278	1.095	1.009	0.852	2.721	2.396	2.053	1.892	1.598
6.00	1.451	1.278	1.084	0.988	0.834	2.721	2.396	2.033	1.853	1.564
6.06	1.451	1.278	1.084	0.967	0.813	2.721	2.396	2.033	1.813	1.524
6.12	1.451	1.278	1.063	0.933	0.787	2.721	2.396	1.993	1.749	1.476
6.19	1.346	1.184	0.992	0.885	0.756	2.524	2.220	1.850	1.659	1.418
6.25	1.251	0.998	0.888	0.819	0.720	2.346	1.871	1.665	1.536	1.350
6.32	1.251	0.998	0.788	0.749	0.682	2.346	1.871	1.478	1.404	1.279
6.39	1.251	0.998	0.788	0.689	0.646	2.346	1.871	1.478	1.292	1.211
6.45	1.251	0.998	0.788	0.683	0.613	2.346	1.871	1.478	1.281	1.149
6.52	1.251	0.998	0.788	0.683	0.584	2.346	1.871	1.478	1.281	1.095
6.59	1.251	0.998	0.788	0.683	0.564	2.346	1.871	1.478	1.281	1.058
7.32	1.251	0.998	0.788	0.683	0.564	2.346	1.871	1.478	1.281	1.052
7.39	1.168	0.963	0.769	0.677	0.561	2.190	1.806	1.442	1.269	1.052
7.47	1.035	0.891	0.729	0.657	0.551	1.941	1.671	1.367	1.232	1.033
7.55	1.035	0.853	0.692	0.631	0.546	1.941	1.599	1.298	1.183	1.024
7.63	1.035	0.849	0.673	0.617	0.535	1.941	1.592	1.262	1.157	1.003
7.71	1.035	0.841	0.667	0.598	0.519	1.941	1.577	1.251	1.121	0.973
7.79	0.986	0.777	0.631	0.563	0.498	1.849	1.457	1.183	1.056	0.934
7.87	0.886	0.730	0.578	0.512	0.472	1.661	1.369	1.084	0.960	0.885
7.96	0.886	0.653	0.538	0.474	0.447	1.661	1.224	1.009	0.889	0.838
8.04	0.886	0.653	0.538	0.472	0.424	1.661	1.224	1.009	0.885	0.795
8.12	0.886	0.653	0.538	0.472	0.405	1.661	1.224	1.009	0.885	0.759
8.21	0.886	0.653	0.538	0.472	0.395	1.661	1.224	1.009	0.885	0.741
9.02	0.886	0.653	0.538	0.472	0.395	1.661	1.224	1.009	0.885	0.741
9.11	0.886	0.653	0.538	0.472	0.409	1.661	1.224	1.009	0.885	0.767
9.21	0.886	0.653	0.538	0.490	0.429	1.661	1.224	1.009	0.919	0.804
9.31	0.886	0.720	0.594	0.527	0.448	1.661	1.350	1.114	0.988	0.840
9.40	1.018	0.798	0.631	0.552	0.462	1.909	1.496	1.183	1.035	0.866
9.50	1.018	0.798	0.631	0.562	0.472	1.909	1.496	1.183	1.054	0.885
9.60	1.018	0.798	0.631	0.565	0.477	1.909	1.496	1.183	1.059	0.894
9.70	1.062	0.810	0.634	0.565	0.477	1.991	1.519	1.189	1.059	0.894
13.14	1.062	0.810	0.634	0.565	0.477	1.991	1.519	1.189	1.059	0.894

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 47.27 - Mass Point 21
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
13.28	1.062	0.810	0.634	0.561	0.477	1.991	1.519	1.189	1.052	0.894
13.42	1.041	0.784	0.595	0.546	0.472	1.952	1.470	1.116	1.024	0.885
13.56	1.041	0.784	0.566	0.526	0.465	1.952	1.470	1.061	0.986	0.872
13.71	1.041	0.784	0.566	0.510	0.456	1.952	1.470	1.061	0.956	0.855
13.85	1.041	0.784	0.566	0.494	0.446	1.952	1.470	1.061	0.926	0.836
14.00	1.041	0.784	0.566	0.476	0.435	1.952	1.470	1.061	0.893	0.816
14.14	1.041	0.784	0.566	0.458	0.424	1.952	1.470	1.061	0.859	0.795
14.29	1.041	0.784	0.566	0.458	0.413	1.952	1.470	1.061	0.859	0.774
14.44	1.041	0.784	0.566	0.458	0.404	1.952	1.470	1.061	0.859	0.758
14.59	1.041	0.784	0.566	0.458	0.396	1.952	1.470	1.061	0.859	0.743
14.75	1.041	0.784	0.566	0.458	0.390	1.952	1.470	1.061	0.859	0.731
14.90	1.041	0.784	0.566	0.458	0.383	1.952	1.470	1.061	0.859	0.724
16.72	1.041	0.784	0.566	0.458	0.386	1.952	1.470	1.061	0.859	0.724
16.89	1.023	0.784	0.566	0.458	0.386	1.918	1.470	1.061	0.859	0.724
17.07	1.023	0.784	0.566	0.458	0.386	1.918	1.470	1.061	0.859	0.724
17.25	1.023	0.784	0.566	0.456	0.386	1.918	1.470	1.061	0.855	0.724
17.43	1.023	0.738	0.535	0.456	0.386	1.918	1.384	1.003	0.855	0.724
17.62	1.023	0.729	0.526	0.456	0.386	1.918	1.367	0.986	0.855	0.724
17.94	1.023	0.729	0.526	0.456	0.386	1.918	1.367	0.986	0.855	0.724
18.18	1.023	0.729	0.526	0.455	0.381	1.918	1.367	0.986	0.853	0.714
18.37	1.023	0.729	0.506	0.437	0.372	1.918	1.367	0.949	0.819	0.698
18.56	0.948	0.667	0.506	0.422	0.359	1.778	1.251	0.949	0.791	0.673
18.76	0.948	0.667	0.476	0.403	0.344	1.778	1.251	0.893	0.756	0.645
18.95	0.936	0.662	0.462	0.373	0.326	1.755	1.241	0.866	0.699	0.611
19.15	0.717	0.551	0.431	0.369	0.310	1.344	1.033	0.808	0.692	0.581
19.36	0.717	0.551	0.431	0.369	0.307	1.344	1.033	0.808	0.692	0.576
19.56	0.717	0.551	0.431	0.369	0.307	1.344	1.033	0.808	0.692	0.576
19.76	0.717	0.551	0.431	0.369	0.307	1.344	1.033	0.808	0.692	0.576
19.97	0.717	0.551	0.431	0.369	0.305	1.344	1.033	0.808	0.692	0.572
20.39	0.717	0.551	0.431	0.369	0.305	1.344	1.033	0.808	0.692	0.572
20.61	0.644	0.512	0.414	0.366	0.305	1.208	0.960	0.776	0.686	0.572
20.83	0.644	0.512	0.400	0.360	0.305	1.208	0.960	0.750	0.675	0.572
21.04	0.644	0.512	0.400	0.355	0.305	1.208	0.960	0.750	0.666	0.572
21.27	0.644	0.512	0.400	0.350	0.305	1.208	0.960	0.750	0.656	0.572
21.49	0.644	0.512	0.400	0.347	0.305	1.208	0.960	0.750	0.651	0.572
21.72	0.644	0.512	0.400	0.347	0.305	1.208	0.960	0.750	0.651	0.572
21.94	0.608	0.497	0.391	0.343	0.305	1.140	0.932	0.733	0.643	0.572
22.17	0.505	0.436	0.364	0.337	0.303	0.947	0.818	0.683	0.632	0.568
22.41	0.504	0.430	0.347	0.327	0.298	0.945	0.806	0.651	0.613	0.559
22.64	0.504	0.395	0.337	0.321	0.293	0.945	0.741	0.632	0.602	0.549
22.88	0.504	0.395	0.335	0.315	0.288	0.945	0.741	0.528	0.591	0.540
23.12	0.471	0.358	0.324	0.308	0.283	0.883	0.671	0.608	0.578	0.531

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 47.27 - Mass Point 21
 (Page 4 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
23.36	0.471	0.758	0.315	0.300	0.277	0.883	0.671	0.591	0.563	0.519
23.61	0.471	0.358	0.304	0.292	0.270	0.883	0.671	0.570	0.548	0.506
23.86	0.471	0.358	0.295	0.284	0.264	0.883	0.671	0.553	0.533	0.495
24.11	0.471	0.358	0.295	0.277	0.258	0.883	0.671	0.553	0.519	0.484
24.36	0.471	0.358	0.295	0.270	0.251	0.883	0.671	0.553	0.506	0.471
24.62	0.471	0.358	0.295	0.266	0.244	0.883	0.671	0.553	0.499	0.458
24.88	0.471	0.358	0.295	0.266	0.237	0.883	0.671	0.553	0.499	0.444
25.14	0.462	0.358	0.295	0.266	0.234	0.866	0.671	0.553	0.499	0.439
26.77	0.462	0.358	0.295	0.266	0.234	0.866	0.671	0.553	0.499	0.439
27.05	0.462	0.358	0.295	0.266	0.235	0.866	0.671	0.553	0.499	0.441
27.33	0.462	0.358	0.295	0.266	0.238	0.866	0.671	0.553	0.499	0.446
27.62	0.440	0.358	0.295	0.266	0.238	0.825	0.671	0.553	0.499	0.446
27.91	0.440	0.358	0.295	0.266	0.238	0.825	0.671	0.553	0.499	0.446
28.21	0.438	0.358	0.294	0.264	0.238	0.821	0.671	0.551	0.495	0.446
28.50	0.438	0.346	0.288	0.262	0.238	0.821	0.649	0.540	0.491	0.446
30.03	0.438	0.346	0.288	0.262	0.238	0.821	0.649	0.540	0.491	0.446
30.35	0.414	0.346	0.288	0.262	0.238	0.776	0.649	0.540	0.491	0.446
33.69	0.414	0.346	0.288	0.262	0.238	0.776	0.649	0.540	0.491	0.446

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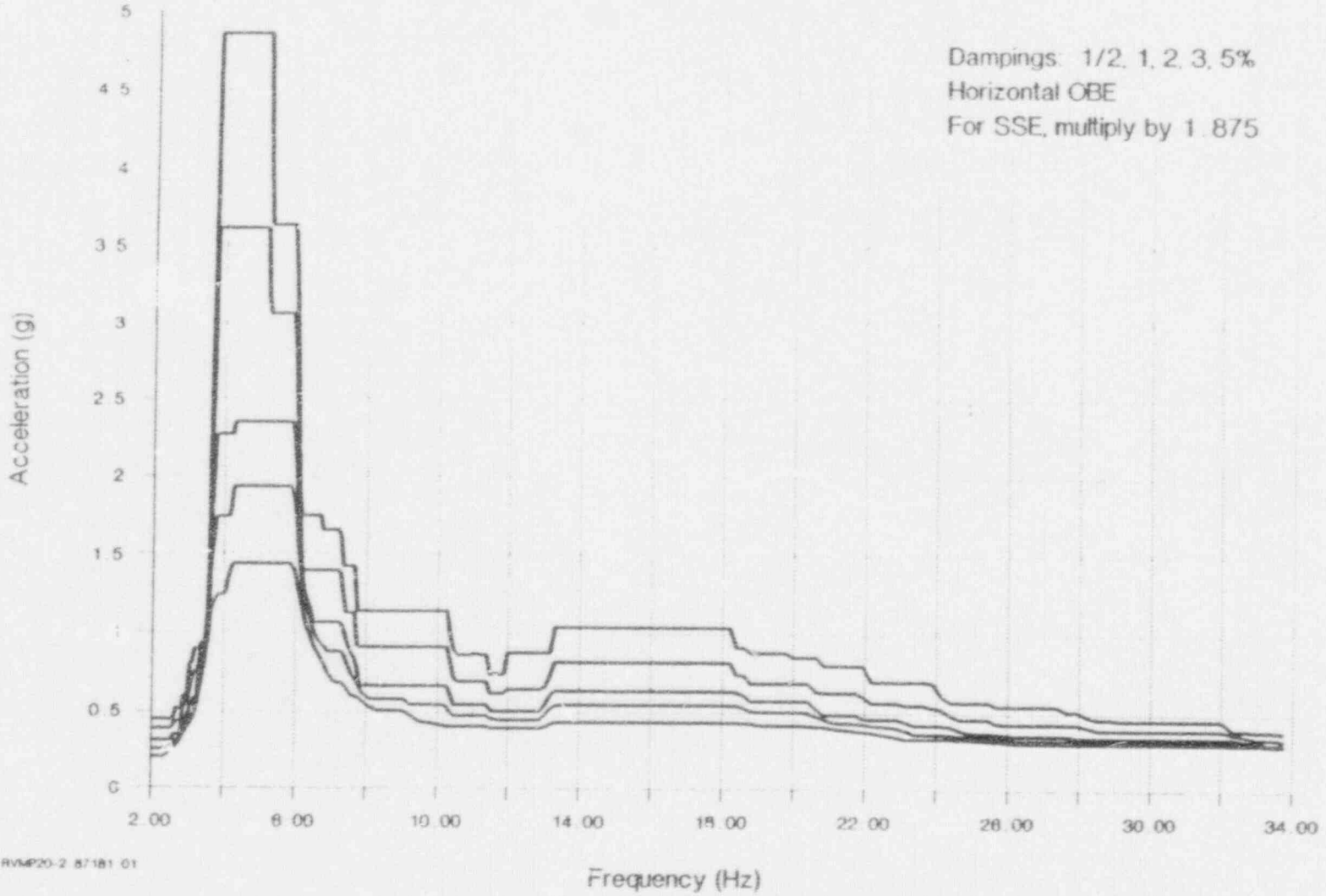
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Sheet C-28

PILGRIM AMPLIFIED RESPONSE SPECTRA

Reactor Vessel - Elev. 55.2 - Mass Point 20

Dampings: 1/2, 1, 2, 3, 5%
Horizontal OBE
For SSE, multiply by 1.875



RVMP20-2 8/18/01

Specification No. C-114-ER-Q-EC

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 55.2 - Mass Point 20
 (Page 1 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
2.02	0.441	0.383	0.306	0.251	0.199	0.827	0.718	0.574	0.471	0.373
2.04	0.441	0.383	0.306	0.251	0.199	0.827	0.718	0.574	0.471	0.373
2.06	0.441	0.383	0.306	0.251	0.199	0.827	0.718	0.574	0.471	0.373
2.32	0.441	0.383	0.306	0.251	0.199	0.827	0.718	0.574	0.471	0.373
2.34	0.441	0.383	0.306	0.251	0.205	0.827	0.718	0.574	0.471	0.384
2.36	0.441	0.383	0.306	0.251	0.209	0.827	0.718	0.574	0.471	0.392
2.39	0.441	0.383	0.306	0.251	0.211	0.827	0.718	0.574	0.471	0.396
2.41	0.441	0.383	0.306	0.251	0.211	0.827	0.718	0.574	0.471	0.396
2.44	0.441	0.383	0.306	0.251	0.217	0.827	0.718	0.574	0.471	0.407
2.47	0.441	0.383	0.306	0.262	0.225	0.827	0.718	0.574	0.491	0.422
2.49	0.441	0.383	0.306	0.265	0.231	0.827	0.718	0.574	0.497	0.433
2.52	0.437	0.383	0.306	0.265	0.234	0.819	0.718	0.574	0.497	0.439
2.54	0.440	0.389	0.318	0.275	0.237	0.825	0.729	0.596	0.516	0.444
2.57	0.443	0.392	0.322	0.280	0.241	0.831	0.735	0.604	0.525	0.452
2.60	0.469	0.416	0.344	0.299	0.250	0.879	0.780	0.645	0.561	0.469
2.63	0.474	0.416	0.344	0.304	0.259	0.889	0.780	0.645	0.570	0.486
2.65	0.514	0.431	0.344	0.304	0.264	0.964	0.808	0.645	0.570	0.495
2.68	0.514	0.431	0.344	0.305	0.271	0.964	0.808	0.645	0.572	0.508
2.71	0.514	0.431	0.344	0.308	0.283	0.964	0.808	0.645	0.578	0.531
2.74	0.514	0.431	0.344	0.312	0.294	0.964	0.808	0.645	0.585	0.551
2.77	0.514	0.431	0.344	0.323	0.306	0.964	0.808	0.645	0.606	0.574
2.80	0.514	0.431	0.368	0.343	0.319	0.964	0.808	0.690	0.643	0.598
2.82	0.514	0.462	0.401	0.365	0.332	0.964	0.866	0.752	0.684	0.623
2.95	0.587	0.520	0.432	0.383	0.344	1.101	0.975	0.810	0.718	0.645
2.97	0.593	0.528	0.442	0.392	0.353	1.112	0.990	0.829	0.735	0.662
2.99	0.593	0.528	0.445	0.410	0.365	1.112	0.990	0.83	0.769	0.684
2.95	0.608	0.533	0.446	0.418	0.379	1.140	0.999	0.836	0.784	0.711
2.98	0.639	0.571	0.477	0.423	0.390	1.198	1.071	0.894	0.793	0.731
3.01	0.741	0.633	0.499	0.436	0.401	1.389	1.187	0.936	0.818	0.752
3.04	0.797	0.673	0.513	0.444	0.410	1.494	1.262	0.962	0.833	0.769
3.07	0.797	0.687	0.529	0.444	0.421	1.494	1.288	0.992	0.833	0.789
3.10	0.797	0.692	0.540	0.454	0.435	1.494	1.298	1.013	0.851	0.816
3.14	0.854	0.725	0.571	0.477	0.454	1.601	1.359	1.071	0.894	0.851
3.17	0.891	0.748	0.584	0.485	0.480	1.671	1.403	1.095	0.909	0.900
3.20	0.891	0.748	0.584	0.520	0.512	1.671	1.403	1.095	0.975	0.960
3.24	0.871	0.748	0.599	0.579	0.551	1.671	1.403	1.123	1.086	1.033
3.27	0.891	0.748	0.679	0.641	0.592	1.671	1.403	1.273	1.202	1.110
3.30	0.891	0.817	0.747	0.699	0.66	1.671	1.532	1.401	1.311	1.193
3.34	0.914	0.868	0.800	0.750	0.679	1.714	1.628	1.500	1.406	1.273
3.37	0.931	0.894	0.839	0.795	0.723	1.746	1.676	1.573	1.491	1.356
3.41	0.931	0.898	0.871	0.839	0.770	1.746	1.684	1.633	1.573	1.444
3.45	0.931	0.903	0.910	0.891	0.820	1.746	1.693	1.706	1.671	1.538
3.48	0.931	0.955	0.981	0.963	0.878	1.746	1.791	1.839	1.806	1.646

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 55.2 - Mass Point 20
 (Page 2 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
3.52	1.079	1.109	1.108	1.065	0.944	2.023	2.079	2.078	1.997	1.770
3.56	1.436	1.396	1.301	1.199	1.015	2.693	2.618	2.439	2.248	1.903
3.59	1.967	1.800	1.543	1.352	1.087	3.688	3.375	2.893	2.535	2.030
3.63	2.567	2.239	1.787	1.495	1.148	4.813	4.198	3.351	2.803	2.153
3.67	3.462	2.722	1.984	1.599	1.188	6.491	5.123	3.720	2.998	2.228
3.71	4.552	3.403	2.161	1.657	1.209	8.546	6.381	4.052	3.107	2.267
3.75	4.860	3.614	2.270	1.737	1.213	9.113	6.776	4.256	3.257	2.274
3.79	4.860	3.614	2.270	1.747	1.230	9.113	6.776	4.256	3.273	2.306
3.83	4.860	3.614	2.270	1.747	1.242	9.113	6.776	4.256	3.276	2.329
3.99	4.860	3.614	2.270	1.747	1.242	9.113	6.776	4.256	3.276	2.329
4.03	4.860	3.614	2.270	1.747	1.272	9.113	6.776	4.256	3.276	2.385
4.07	4.860	3.614	2.270	1.747	1.319	9.113	6.776	4.256	3.276	2.473
4.12	4.860	3.614	2.270	1.747	1.365	9.113	6.776	4.256	3.276	2.559
4.16	4.860	3.614	2.270	1.803	1.404	9.113	6.776	4.256	3.381	2.633
4.20	4.860	3.614	2.270	1.885	1.432	9.113	6.776	4.256	3.534	2.685
4.25	4.860	3.614	2.341	1.935	1.441	9.113	6.776	4.389	3.628	2.702
4.29	4.860	3.614	2.349	1.935	1.441	9.113	6.776	4.404	3.628	2.702
5.13	4.860	3.614	2.349	1.935	1.441	9.113	6.776	4.404	3.628	2.702
5.18	4.080	3.168	2.349	1.935	1.441	7.650	5.940	4.404	3.628	2.702
5.24	3.634	3.061	2.349	1.935	1.441	6.814	5.739	4.404	3.628	2.702
5.81	3.634	3.061	2.349	1.935	1.441	6.814	5.739	4.404	3.628	2.702
5.87	3.627	3.061	2.349	1.922	1.426	6.801	5.739	4.404	3.604	2.674
5.94	3.287	2.813	2.206	1.834	1.387	6.163	5.274	4.136	3.439	2.601
6.00	2.601	2.332	1.952	1.688	1.328	4.877	4.373	3.660	3.165	2.490
6.06	1.892	1.820	1.670	1.521	1.259	3.548	3.413	3.131	2.852	2.361
6.12	1.753	1.441	1.439	1.373	1.188	3.287	2.702	2.608	2.574	2.228
6.19	1.753	1.398	1.298	1.262	1.123	3.287	2.621	2.434	2.366	2.106
6.25	1.753	1.398	1.234	1.189	1.064	3.287	2.621	2.314	2.229	1.999
6.32	1.753	1.398	1.200	1.136	1.017	3.287	2.621	2.250	2.130	1.907
6.39	1.753	1.398	1.152	1.085	0.972	3.287	2.621	2.160	2.034	1.823
6.45	1.753	1.398	1.085	1.035	0.933	3.287	2.621	2.034	1.941	1.749
6.52	1.753	1.398	1.066	0.989	0.900	3.287	2.621	1.999	1.854	1.688
6.59	1.753	1.398	1.066	0.955	0.870	3.287	2.621	1.999	1.791	1.631
6.66	1.753	1.398	1.066	0.929	0.842	3.287	2.621	1.999	1.742	1.579
6.73	1.664	1.398	1.066	0.916	0.814	3.120	2.621	1.999	1.718	1.526
6.80	1.664	1.398	1.066	0.903	0.792	3.120	2.621	1.999	1.693	1.466
6.87	1.664	1.398	1.066	0.880	0.742	3.120	2.621	1.999	1.650	1.391
6.94	1.664	1.398	1.066	0.880	0.723	3.120	2.621	1.999	1.650	1.356
7.02	1.664	1.398	1.066	0.880	0.695	3.120	2.621	1.999	1.650	1.303
7.09	1.664	1.398	1.066	0.880	0.688	3.120	2.621	1.999	1.650	1.290
7.17	1.664	1.398	1.066	0.877	0.678	3.120	2.621	1.999	1.644	1.271
7.24	1.617	1.365	1.058	0.877	0.678	3.032	2.559	1.984	1.644	1.271
7.32	1.425	1.240	1.018	0.861	0.671	2.672	2.325	1.909	1.614	1.258

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 55.2 - Mass Point 20
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
7.39	1.425	1.129	0.955	0.822	0.670	2.672	2.117	1.791	1.541	1.219
7.47	1.425	1.129	0.904	0.777	0.627	2.672	2.117	1.695	1.457	1.163
7.55	1.425	1.129	0.866	0.736	0.600	2.672	2.117	1.624	1.380	1.125
7.63	1.425	1.125	0.837	0.706	0.593	2.672	2.109	1.569	1.328	1.112
7.71	1.137	0.914	0.761	0.682	0.588	2.132	1.714	1.427	1.279	1.103
7.79	1.137	0.904	0.664	0.642	0.576	2.132	1.695	1.245	1.204	1.080
7.87	1.137	0.904	0.660	0.613	0.561	2.132	1.695	1.238	1.149	1.052
7.96	1.137	0.904	0.660	0.598	0.544	2.132	1.695	1.238	1.121	1.020
8.04	1.137	0.904	0.660	0.581	0.527	2.132	1.695	1.238	1.089	0.988
8.12	1.137	0.904	0.660	0.576	0.520	2.132	1.695	1.238	1.080	0.975
8.21	1.137	0.904	0.660	0.576	0.513	2.132	1.695	1.238	1.080	0.962
8.30	1.137	0.904	0.660	0.576	0.503	2.132	1.695	1.238	1.080	0.943
8.39	1.137	0.904	0.660	0.576	0.503	2.132	1.695	1.238	1.080	0.943
8.48	1.137	0.904	0.660	0.576	0.500	2.132	1.695	1.238	1.080	0.938
8.57	1.137	0.904	0.660	0.561	0.490	2.132	1.695	1.238	1.052	0.919
8.66	1.137	0.904	0.660	0.542	0.475	2.132	1.695	1.238	1.016	0.891
8.75	1.137	0.904	0.660	0.542	0.457	2.132	1.695	1.238	1.016	0.857
8.84	1.137	0.904	0.660	0.542	0.442	2.132	1.695	1.238	1.016	0.829
8.93	1.137	0.904	0.660	0.542	0.432	2.132	1.695	1.238	1.016	0.810
9.02	1.137	0.904	0.660	0.542	0.428	2.132	1.695	1.238	1.016	0.803
9.11	1.137	0.904	0.660	0.542	0.424	2.132	1.695	1.238	1.016	0.795
9.20	1.137	0.904	0.660	0.542	0.420	2.132	1.695	1.238	1.016	0.788
9.29	1.137	0.904	0.660	0.542	0.413	2.132	1.695	1.238	1.016	0.774
9.38	1.137	0.904	0.660	0.542	0.410	2.132	1.695	1.238	1.016	0.759
9.47	1.137	0.904	0.660	0.542	0.406	2.132	1.695	1.238	1.016	0.761
9.56	1.137	0.904	0.660	0.530	0.401	2.132	1.695	1.238	0.994	0.752
9.65	0.985	0.818	0.508	0.493	0.401	1.847	1.534	1.140	0.924	0.752
9.74	0.885	0.709	0.540	0.471	0.401	1.659	1.329	1.013	0.883	0.752
9.83	0.857	0.689	0.540	0.471	0.401	1.607	1.292	1.013	0.883	0.752
9.92	0.857	0.689	0.540	0.471	0.401	1.607	1.292	1.013	0.883	0.752
10.01	0.857	0.689	0.540	0.471	0.398	1.607	1.292	1.013	0.883	0.746
10.10	0.737	0.616	0.508	0.456	0.391	1.382	1.155	0.953	0.855	0.733
10.19	0.737	0.616	0.497	0.443	0.391	1.382	1.155	0.932	0.831	0.733
10.28	0.737	0.616	0.497	0.443	0.391	1.382	1.155	0.932	0.831	0.733
10.37	0.870	0.640	0.497	0.443	0.391	1.631	1.200	0.932	0.831	0.733
10.46	0.870	0.640	0.497	0.443	0.391	1.631	1.200	0.932	0.831	0.733
10.55	0.870	0.658	0.543	0.477	0.397	1.631	1.234	1.018	0.894	0.744
10.64	0.870	0.720	0.598	0.513	0.412	1.631	1.350	1.121	0.962	0.773
10.73	1.036	0.811	0.630	0.535	0.424	1.943	1.521	1.181	1.003	0.795
10.82	1.036	0.811	0.630	0.539	0.430	1.943	1.521	1.181	1.011	0.806
10.91	1.036	0.811	0.630	0.539	0.430	1.943	1.521	1.181	1.011	0.806
11.00	0.909	0.737	0.625	0.539	0.430	1.704	1.382	1.172	1.011	0.806
11.09	0.909	0.737	0.607	0.528	0.428	1.704	1.382	1.138	0.990	0.803

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 55.2 - Mass Point 20
 (Page 4 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
18.76	0.875	0.683	0.569	0.506	0.423	1.641	1.281	1.067	0.949	0.793
18.95	0.875	0.683	0.568	0.499	0.413	1.641	1.281	1.065	0.936	0.774
19.15	0.875	0.683	0.568	0.499	0.411	1.641	1.281	1.045	0.936	0.771
19.76	0.875	0.683	0.568	0.499	0.411	1.641	1.281	1.065	0.936	0.771
19.97	0.848	0.683	0.566	0.499	0.411	1.590	1.281	1.065	0.936	0.771
20.18	0.848	0.683	0.568	0.499	0.411	1.590	1.281	1.065	0.936	0.771
20.39	0.848	0.683	0.558	0.491	0.408	1.590	1.281	1.046	0.921	0.765
20.61	0.848	0.628	0.521	0.471	0.405	1.590	1.178	0.977	0.883	0.759
20.83	0.794	0.622	0.484	0.452	0.398	1.489	1.166	0.908	0.848	0.746
21.04	0.794	0.622	0.484	0.436	0.392	1.489	1.166	0.908	0.818	0.735
21.27	0.794	0.622	0.484	0.430	0.386	1.489	1.166	0.908	0.806	0.724
21.49	0.794	0.622	0.484	0.430	0.382	1.489	1.166	0.908	0.806	0.716
21.72	0.794	0.622	0.484	0.428	0.377	1.489	1.166	0.908	0.803	0.707
21.94	0.794	0.595	0.458	0.422	0.372	1.489	1.116	0.859	0.791	0.700
22.17	0.692	0.559	0.453	0.411	0.365	1.298	1.048	0.849	0.771	0.686
22.41	0.692	0.559	0.453	0.406	0.358	1.298	1.048	0.849	0.761	0.671
22.64	0.692	0.559	0.453	0.404	0.349	1.298	1.048	0.849	0.758	0.654
22.88	0.692	0.559	0.453	0.397	0.338	1.298	1.048	0.849	0.744	0.634
23.12	0.692	0.546	0.436	0.380	0.329	1.298	1.024	0.818	0.713	0.617
23.36	0.692	0.546	0.417	0.359	0.324	1.298	1.024	0.782	0.673	0.617
23.61	0.692	0.546	0.417	0.359	0.329	1.298	1.024	0.782	0.673	0.617
23.86	0.684	0.526	0.417	0.359	0.328	1.283	0.986	0.782	0.673	0.615
24.11	0.605	0.521	0.417	0.359	0.327	1.134	0.977	0.782	0.673	0.613
24.36	0.565	0.481	0.406	0.357	0.326	1.059	0.902	0.761	0.669	0.611
24.62	0.565	0.458	0.385	0.348	0.324	1.059	0.859	0.722	0.653	0.608
24.88	0.565	0.458	0.369	0.345	0.323	1.059	0.859	0.692	0.647	0.606
25.14	0.565	0.458	0.365	0.345	0.321	1.059	0.859	0.684	0.647	0.602
25.40	0.565	0.458	0.365	0.344	0.318	1.059	0.859	0.684	0.645	0.596
25.67	0.538	0.430	0.363	0.339	0.313	1.009	0.806	0.681	0.636	0.587
25.94	0.538	0.428	0.354	0.330	0.308	1.009	0.803	0.664	0.619	0.578
26.21	0.538	0.428	0.351	0.320	0.302	1.009	0.803	0.658	0.600	0.566
27.33	0.538	0.428	0.351	0.320	0.302	1.009	0.803	0.658	0.600	0.566
27.62	0.512	0.428	0.351	0.320	0.302	0.960	0.803	0.658	0.600	0.566
27.91	0.512	0.426	0.341	0.320	0.302	0.960	0.799	0.639	0.600	0.566
28.21	0.476	0.407	0.341	0.320	0.302	0.893	0.763	0.639	0.600	0.566
28.50	0.461	0.391	0.341	0.320	0.302	0.864	0.733	0.639	0.600	0.566
28.80	0.461	0.391	0.341	0.320	0.302	0.864	0.733	0.639	0.600	0.566
29.10	0.451	0.391	0.341	0.320	0.302	0.846	0.733	0.639	0.600	0.566
31.98	0.451	0.391	0.341	0.320	0.302	0.846	0.733	0.639	0.600	0.566
32.31	0.394	0.370	0.339	0.320	0.301	0.739	0.694	0.636	0.600	0.564
32.65	0.394	0.359	0.330	0.316	0.301	0.739	0.673	0.619	0.593	0.564
33.00	0.387	0.340	0.316	0.308	0.299	0.726	0.638	0.593	0.578	0.561
33.34	0.387	0.340	0.303	0.302	0.296	0.726	0.638	0.568	0.566	0.555
33.69	0.380	0.335	0.303	0.298	0.293	0.713	0.628	0.568	0.559	0.549

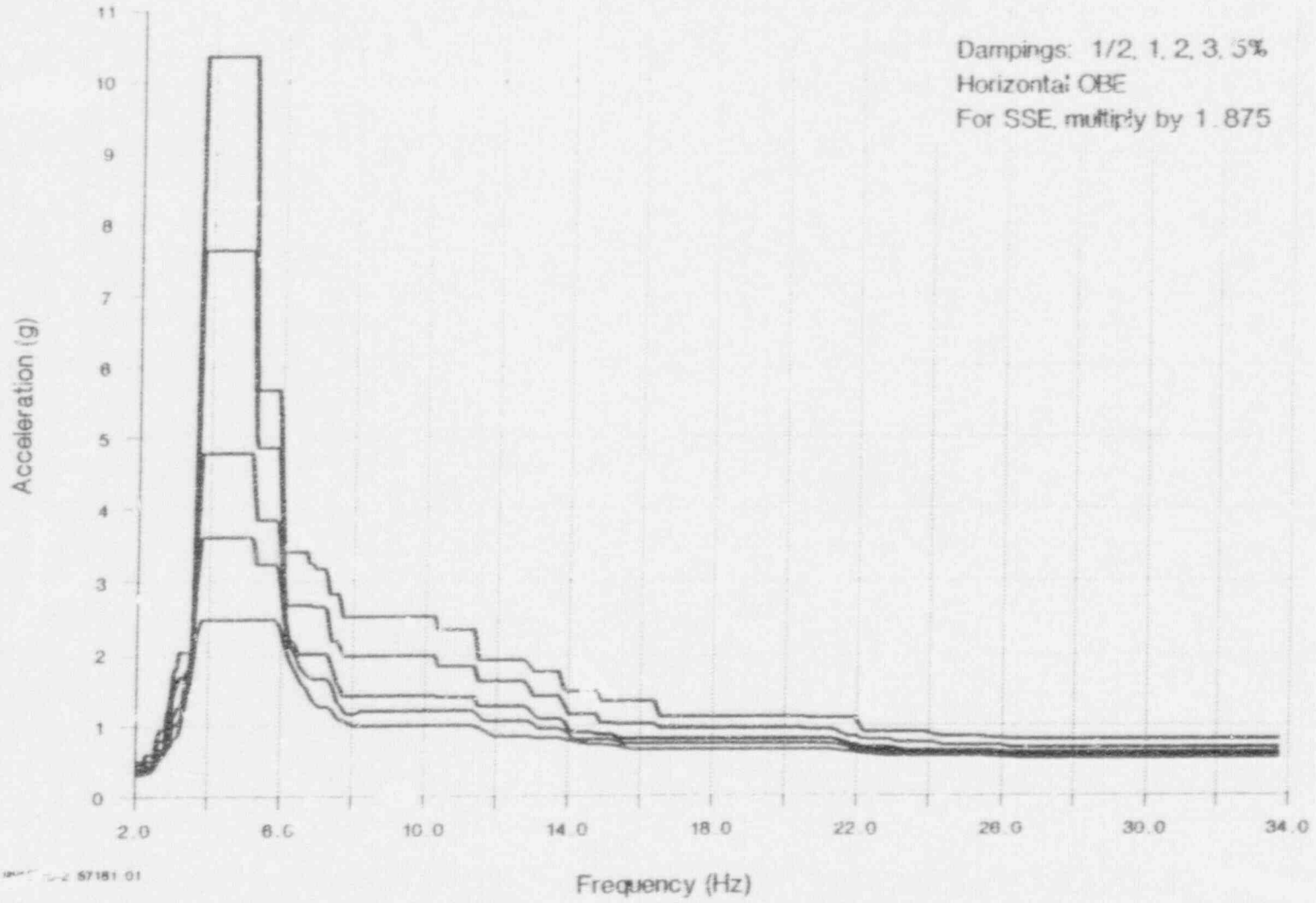
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Sheet C-32

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PILGRIM AMPLIFIED RESPONSE SPECTRA
Reactor Vessel - Elev. 86.94 - Mass Point 16

Dampings: 1/2, 1, 2, 3, 5%
Horizontal: OBE
For SSE, multiply by 1.875



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Sheet C-33

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Specification No. C-114-ER-OED

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 86.94 - Mass Point 16
 (Page 1 of 4)

Freq. (Hz)	Horizontal DBE					Horizontal SSE				
	1/2	1X	2X	3X	5X	1/2	1X	2X	3X	5X
2.02	0.497	0.457	0.396	0.356	0.310	0.932	0.857	0.743	0.668	0.581
2.04	0.497	0.457	0.396	0.356	0.312	0.932	0.857	0.743	0.668	0.585
2.06	0.497	0.457	0.396	0.356	0.314	0.932	0.857	0.743	0.668	0.589
2.09	0.497	0.457	0.396	0.356	0.315	0.932	0.857	0.743	0.668	0.591
2.11	0.497	0.457	0.396	0.356	0.318	0.932	0.857	0.743	0.668	0.596
2.13	0.497	0.457	0.396	0.356	0.320	0.932	0.857	0.743	0.668	0.600
2.15	0.497	0.457	0.396	0.356	0.323	0.932	0.857	0.743	0.668	0.606
2.17	0.497	0.457	0.396	0.358	0.324	0.932	0.857	0.743	0.671	0.608
2.20	0.497	0.457	0.396	0.358	0.324	0.932	0.857	0.743	0.671	0.608
2.22	0.514	0.458	0.409	0.373	0.324	0.964	0.859	0.767	0.699	0.608
2.24	0.554	0.479	0.425	0.386	0.333	1.039	0.898	0.797	0.724	0.624
2.27	0.600	0.500	0.430	0.391	0.340	1.125	0.938	0.806	0.733	0.638
2.29	0.600	0.500	0.430	0.391	0.341	1.125	0.938	0.806	0.733	0.639
2.39	0.600	0.500	0.430	0.391	0.341	1.125	0.938	0.806	0.733	0.639
2.41	0.600	0.500	0.430	0.391	0.342	1.125	0.938	0.806	0.733	0.641
2.44	0.600	0.500	0.430	0.391	0.358	1.125	0.938	0.806	0.733	0.671
2.47	0.627	0.543	0.454	0.413	0.374	1.176	1.018	0.851	0.774	0.701
2.49	0.627	0.543	0.459	0.421	0.387	1.176	1.018	0.861	0.789	0.726
2.52	0.648	0.584	0.495	0.440	0.407	1.215	1.095	0.928	0.825	0.763
2.54	0.733	0.654	0.547	0.489	0.441	1.374	1.226	1.020	0.917	0.827
2.57	0.799	0.719	0.610	0.544	0.472	1.498	1.348	1.144	1.020	0.885
2.60	0.866	0.778	0.656	0.581	0.497	1.624	1.459	1.230	1.089	0.932
2.63	0.876	0.778	0.665	0.595	0.514	1.643	1.459	1.247	1.116	0.964
2.65	0.944	0.795	0.665	0.595	0.524	1.770	1.491	1.247	1.116	0.983
2.68	0.944	0.795	0.665	0.599	0.531	1.770	1.491	1.247	1.123	0.996
2.71	0.944	0.795	0.665	0.606	0.554	1.770	1.491	1.247	1.136	1.039
2.74	0.944	0.795	0.674	0.628	0.575	1.770	1.491	1.264	1.178	1.078
2.77	0.944	0.795	0.698	0.655	0.598	1.770	1.491	1.309	1.228	1.121
2.80	0.974	0.808	0.744	0.685	0.622	1.770	1.515	1.395	1.284	1.166
2.82	1.008	0.924	0.806	0.722	0.646	1.890	1.733	1.511	1.354	1.211
2.85	1.163	1.035	0.869	0.764	0.667	2.181	1.961	1.629	1.433	1.251
2.88	1.193	1.057	0.889	0.783	0.684	2.237	1.982	1.667	1.468	1.283
2.91	1.262	1.069	0.889	0.785	0.696	2.366	2.004	1.667	1.472	1.305
2.95	1.393	1.227	1.000	0.865	0.722	2.612	2.301	1.875	1.622	1.354
2.98	1.483	1.307	1.089	0.942	0.770	2.781	2.451	2.042	1.766	1.444
3.01	1.696	1.437	1.128	0.984	0.805	3.180	2.694	2.115	1.845	1.509
3.04	1.801	1.517	1.154	1.005	0.826	3.377	2.844	2.164	1.884	1.549
3.07	1.801	1.543	1.185	1.023	0.834	3.377	2.893	2.222	1.918	1.564
3.10	1.801	1.563	1.209	1.028	0.842	3.377	2.931	2.267	1.928	1.577
3.14	1.954	1.640	1.276	1.057	0.856	3.664	3.075	2.396	1.982	1.605
3.17	2.034	1.687	1.308	1.077	0.906	3.814	3.163	2.453	2.019	1.699
3.20	2.034	1.687	1.308	1.077	0.970	3.814	3.163	2.453	2.019	1.819

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 86.94 - Mass Point 16
 (Page 2 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
3.24	2.034	1.687	1.308	1.100	1.046	3.814	3.163	2.453	2.063	1.961
3.27	2.034	1.687	1.308	1.226	1.130	3.814	3.163	2.453	2.299	2.119
3.30	2.034	1.687	1.439	1.344	1.217	3.814	3.163	2.698	2.520	2.282
3.34	2.034	1.687	1.551	1.450	1.306	3.814	3.163	2.908	2.719	2.449
3.37	2.034	1.757	1.639	1.546	1.395	3.814	3.294	3.073	2.899	2.616
3.41	2.034	1.785	1.711	1.638	1.488	3.814	3.347	3.208	3.071	2.790
3.45	2.034	1.800	1.792	1.743	1.589	3.814	3.375	3.360	3.268	2.979
3.48	2.034	1.881	1.927	1.884	1.703	3.814	3.533	3.613	3.533	3.193
3.52	2.088	2.160	2.170	2.084	1.833	3.915	4.050	4.069	3.908	3.437
3.56	2.784	2.725	2.553	2.351	1.975	5.220	5.109	4.787	4.408	3.703
3.59	3.892	3.562	3.051	2.662	2.117	7.298	6.675	5.721	4.991	3.969
3.63	5.183	4.503	3.568	2.962	2.240	9.718	8.443	6.690	5.554	4.200
3.67	7.204	5.698	4.018	3.209	2.320	13.508	10.684	7.534	6.017	4.350
3.71	7.724	7.161	4.510	3.405	2.385	18.233	13.427	8.456	6.384	4.472
3.75	10.350	7.647	4.789	3.596	2.422	19.406	14.338	8.979	6.743	4.541
3.79	10.350	7.647	4.789	3.613	2.479	19.406	14.338	8.979	6.774	4.648
3.83	10.350	7.647	4.789	3.613	2.480	19.406	14.338	8.979	6.774	4.650
5.13	10.350	7.647	4.789	3.613	2.480	19.406	14.338	8.979	6.774	4.650
5.18	8.629	6.676	4.538	3.575	2.480	16.179	12.518	8.509	6.703	4.650
5.24	5.742	5.046	4.074	3.399	2.480	10.766	9.461	7.639	6.373	4.650
5.29	5.688	4.869	3.854	3.245	2.479	10.665	9.129	7.226	6.084	4.648
5.81	5.688	4.869	3.854	3.245	2.479	10.665	9.129	7.226	6.084	4.648
5.87	5.638	4.869	3.835	3.202	2.447	10.665	9.129	7.191	6.004	4.588
5.94	5.099	4.445	3.590	3.052	2.379	9.561	8.734	6.731	5.723	4.461
6.00	4.026	3.691	3.191	2.821	2.284	7.549	6.921	5.983	5.289	4.283
6.06	3.415	2.935	2.770	2.570	2.175	6.403	5.503	5.194	4.819	4.078
6.12	3.415	2.684	2.443	2.355	2.069	6.403	5.033	4.581	4.416	3.879
6.19	3.415	2.684	2.261	2.204	1.973	6.403	5.033	4.239	4.133	3.699
6.25	3.415	2.684	2.178	2.110	1.891	6.403	5.033	4.121	3.956	3.546
6.32	3.415	2.684	2.171	2.043	1.819	6.403	5.033	4.071	3.831	3.411
6.39	3.415	2.684	2.110	1.974	1.752	6.403	5.033	3.956	3.701	3.285
6.45	3.415	2.684	2.014	1.899	1.689	6.403	5.033	3.776	3.561	3.167
6.52	3.415	2.684	2.014	1.829	1.632	6.403	5.033	3.776	3.429	3.060
6.59	3.415	2.684	2.014	1.773	1.585	6.403	5.033	3.776	3.324	2.972
6.66	3.415	2.684	2.014	1.727	1.540	6.403	5.033	3.776	3.238	2.888
6.73	3.271	2.684	2.014	1.703	1.490	6.133	5.033	3.776	3.193	2.794
6.80	3.271	2.684	2.014	1.676	1.430	6.133	5.033	3.776	3.143	2.681
6.87	3.236	2.662	2.014	1.660	1.353	6.068	4.991	3.776	3.113	2.537
6.94	3.187	2.662	2.014	1.660	1.324	5.976	4.991	3.776	3.113	2.483
7.02	3.187	2.662	2.014	1.660	1.278	5.976	4.991	3.776	3.113	2.396
7.09	3.187	2.662	2.014	1.660	1.270	5.976	4.991	3.776	3.113	2.381
7.17	3.187	2.662	2.014	1.660	1.270	5.976	4.991	3.776	3.113	2.381

000/imp/16 p. 12-23-88

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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 86.94 - Mass Point 16
 (Page 3 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
7.24	3.120	2.619	2.014	1.660	1.270	5.250	4.911	3.776	3.113	2.381
7.32	2.841	2.376	1.942	1.635	1.263	5.327	4.455	3.641	3.066	2.368
7.39	2.841	2.82	1.826	1.567	1.231	5.327	4.091	3.424	2.938	2.308
7.47	2.841	2.16	1.720	1.470	1.179	5.327	4.091	3.225	2.756	2.211
7.55	2.841	2.182	1.589	1.339	1.112	5.327	4.091	2.979	2.511	2.085
7.63	2.721	2.105	1.547	1.301	1.084	5.102	3.947	2.901	2.439	2.033
7.71	2.520	1.977	1.428	1.253	1.079	4.725	3.707	2.678	2.349	2.023
7.79	2.520	1.977	1.428	1.182	1.061	4.725	3.707	2.678	2.216	1.989
7.87	2.520	1.977	1.428	1.167	1.039	4.725	3.707	2.678	2.188	1.948
7.96	2.520	1.977	1.428	1.167	1.014	4.725	3.707	2.678	2.188	1.901
8.04	2.520	1.977	1.428	1.167	0.989	4.725	3.707	2.678	2.188	1.854
8.2	2.520	1.977	1.428	1.172	0.998	4.725	3.707	2.678	2.198	1.871
8.21	2.520	1.977	1.428	1.204	1.000	4.725	3.707	2.678	2.258	1.875
10.23	2.520	1.977	1.428	1.204	1.000	4.725	3.707	2.678	2.258	1.875
10.33	2.339	1.833	1.394	1.204	1.000	4.386	3.437	2.614	2.258	1.875
11.24	2.339	1.833	1.394	1.204	1.000	4.386	3.437	2.614	2.258	1.875
11.35	2.339	1.833	1.394	1.197	0.991	4.386	3.437	2.614	2.244	1.858
11.47	1.915	1.625	1.278	1.145	0.970	3.591	3.047	2.396	2.147	1.819
11.59	1.915	1.625	1.265	1.078	0.941	3.591	3.047	2.372	2.021	1.764
11.72	1.915	1.625	1.265	1.063	0.908	3.591	3.047	2.372	1.993	1.703
11.84	1.915	1.625	1.265	1.063	0.874	3.591	3.047	2.372	1.993	1.639
11.96	1.915	1.625	1.265	1.063	0.845	3.591	3.047	2.372	1.993	1.584
12.74	1.915	1.625	1.265	1.063	0.845	3.591	3.047	2.372	1.993	1.584
12.87	1.852	1.554	1.238	1.056	0.844	3.473	2.914	2.321	1.980	1.583
13.01	1.759	1.421	1.161	1.117	0.828	3.298	2.664	2.177	1.907	1.553
13.14	1.759	1.421	1.097	0.965	0.824	3.298	2.664	2.057	1.809	1.545
13.28	1.759	1.421	1.096	0.954	0.824	3.298	2.664	2.055	1.789	1.545
13.56	1.759	1.421	1.096	0.954	0.824	3.298	2.664	2.055	1.789	1.545
13.71	1.759	1.421	1.096	0.954	0.821	3.298	2.664	2.055	1.789	1.539
13.85	1.505	1.302	1.056	0.932	0.811	2.822	2.441	1.980	1.748	1.521
14.00	1.475	1.157	0.944	0.875	0.792	2.766	2.169	1.770	1.641	1.485
14.14	1.475	1.157	0.900	0.808	0.770	2.766	2.169	1.688	1.515	1.444
14.29	1.475	1.157	0.900	0.797	0.750	2.766	2.169	1.688	1.494	1.406
14.44	1.475	1.157	0.900	0.797	0.737	2.766	2.169	1.688	1.494	1.382
14.59	1.475	1.157	0.900	0.797	0.731	2.766	2.169	1.688	1.494	1.371
14.75	1.475	1.157	0.880	0.797	0.729	2.766	2.169	1.650	1.494	1.367
14.90	1.333	1.030	0.863	0.797	0.727	2.499	1.931	1.618	1.494	1.363
15.06	1.333	1.030	0.863	0.797	0.722	2.499	1.931	1.618	1.494	1.354
15.22	1.333	1.030	0.863	0.791	0.711	2.499	1.931	1.618	1.483	1.333
15.38	1.333	1.014	0.820	0.766	0.697	2.499	1.901	1.538	1.436	1.307
15.54	1.333	1.014	0.809	0.734	0.676	2.499	1.901	1.517	1.376	1.268
15.70	1.333	1.014	0.809	0.734	0.655	2.499	1.901	1.517	1.376	1.228

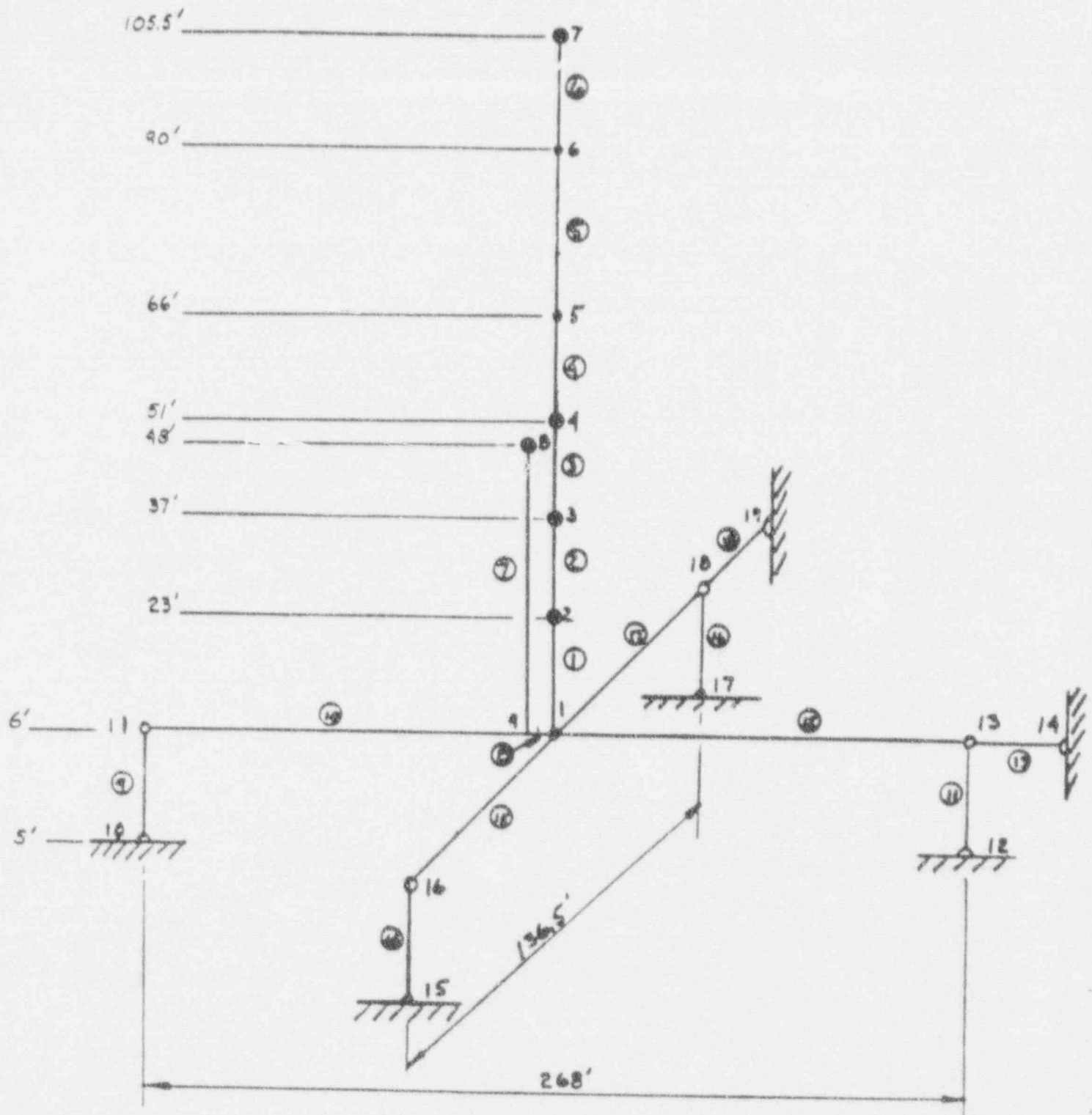
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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Reactor Vessel - Elev. 86.94 - Mass Point 16
 (Page 4 of 4)

Freq. (Hz)	Horizontal OBE					Horizontal SSE				
	1/2	1%	2%	3%	5%	1/2	1%	2%	3%	5%
15.87	1.333	1.014	0.809	0.734	0.650	2.499	1.901	1.517	1.376	1.219
16.37	1.333	1.014	0.809	0.734	0.650	2.499	1.901	1.517	1.376	1.219
16.54	1.111	0.950	0.809	0.734	0.650	2.083	1.781	1.517	1.376	1.219
20.39	1.111	0.950	0.809	0.734	0.650	2.083	1.781	1.517	1.376	1.219
20.61	1.099	0.940	0.809	0.734	0.650	2.061	1.763	1.517	1.376	1.219
21.04	1.099	0.940	0.809	0.734	0.650	2.061	1.763	1.517	1.376	1.219
21.27	1.099	0.940	0.809	0.732	0.646	2.061	1.763	1.517	1.373	1.211
21.49	1.099	0.897	0.785	0.717	0.639	2.061	1.682	1.472	1.344	1.198
21.72	1.099	0.833	0.746	0.691	0.627	2.061	1.562	1.399	1.296	1.176
21.94	1.099	0.833	0.720	0.665	0.611	2.061	1.562	1.350	1.247	1.146
22.17	0.899	0.792	0.679	0.649	0.594	1.686	1.485	1.273	1.217	1.114
22.41	0.899	0.792	0.679	0.635	0.578	1.686	1.485	1.273	1.191	1.084
22.64	0.899	0.792	0.679	0.629	0.566	1.686	1.485	1.273	1.179	1.061
22.88	0.899	0.792	0.679	0.618	0.558	1.686	1.485	1.273	1.159	1.046
23.12	0.899	0.754	0.657	0.599	0.558	1.686	1.414	1.232	1.123	1.046
23.36	0.899	0.754	0.635	0.599	0.558	1.686	1.414	1.191	1.123	1.046
23.86	0.899	0.754	0.635	0.599	0.558	1.686	1.414	1.191	1.123	1.046
24.11	0.856	0.754	0.635	0.599	0.558	1.605	1.414	1.191	1.123	1.046
24.36	0.834	0.713	0.635	0.599	0.558	1.564	1.337	1.191	1.123	1.046
25.14	0.834	0.713	0.635	0.599	0.558	1.564	1.337	1.191	1.123	1.046
25.40	0.834	0.713	0.635	0.599	0.557	1.564	1.337	1.191	1.123	1.044
25.67	0.816	0.713	0.635	0.595	0.552	1.530	1.337	1.191	1.116	1.035
25.94	0.816	0.713	0.623	0.583	0.546	1.530	1.337	1.168	1.093	1.024
26.21	0.795	0.684	0.612	0.571	0.537	1.491	1.283	1.148	1.071	1.007
26.49	0.795	0.684	0.612	0.571	0.529	1.491	1.283	1.148	1.071	0.992
26.77	0.795	0.684	0.612	0.571	0.523	1.491	1.283	1.148	1.071	0.981
33.34	0.795	0.684	0.612	0.571	0.523	1.491	1.283	1.148	1.071	0.981
33.69	0.795	0.682	0.612	0.571	0.523	1.491	1.279	1.148	1.071	0.981

APPENDIX D

TURBINE BUILDING HORIZONTAL SPECTRA

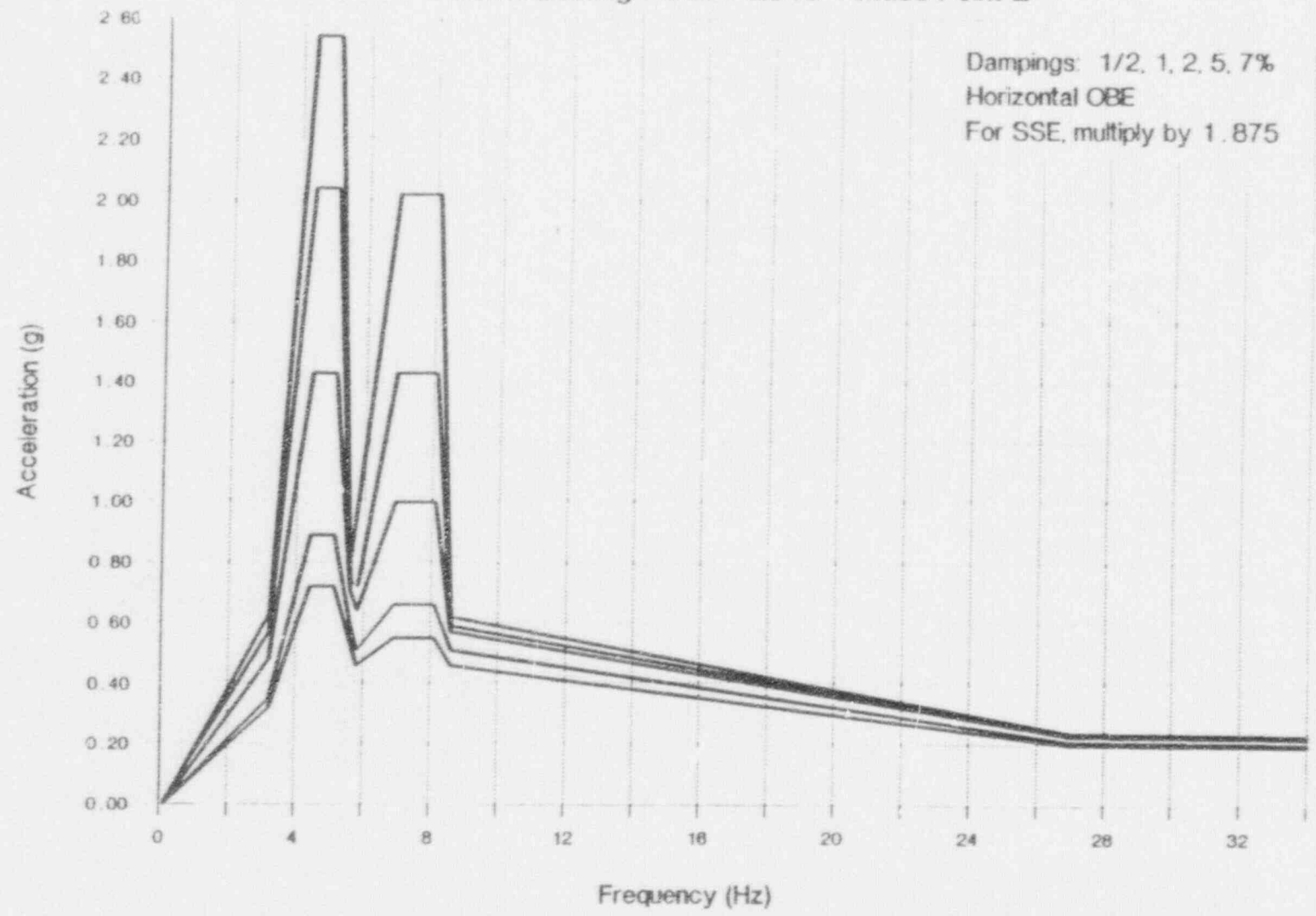


Turbine Building
Mathematical Model from Reference 2

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PILGRIM AMPLIFIED RESPONSE SPECTRA Turbine Building - Elev. 23.0 - Mass Point 2



Sheet D-3

Specification No. C-114-ER-Q-EC

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Turbine Building - Elev. 23.0 - Mass Point 2
 Horizontal OBE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	0.63	0.57	0.48	0.42	0.38	0.35	0.33	0.32	0.32	0.32	0.31
4.40	2.54	2.04	1.43	1.21	1.03	0.89	0.79	0.72	0.66	0.61	0.57
5.10	2.54	2.04	1.43	1.21	1.03	0.89	0.79	0.72	0.66	0.61	0.57
5.60	0.81	0.74	0.71	0.67	0.54	0.60	0.57	0.54	0.52	0.49	0.47
5.80	1.00	0.72	0.64	0.59	0.55	0.51	0.48	0.46	0.44	0.42	0.41
6.90	2.02	1.43	1.00	0.85	0.74	0.66	0.60	0.55	0.51	0.48	0.46
8.10	2.02	1.43	1.00	0.85	0.74	0.66	0.60	0.55	0.51	0.48	0.46
8.60	0.62	0.59	0.57	0.56	0.53	0.51	0.48	0.46	0.44	0.42	0.40
27.00	0.24	0.24	0.23	0.22	0.21	0.21	0.20	0.20	0.20	0.20	0.20
100.00	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18

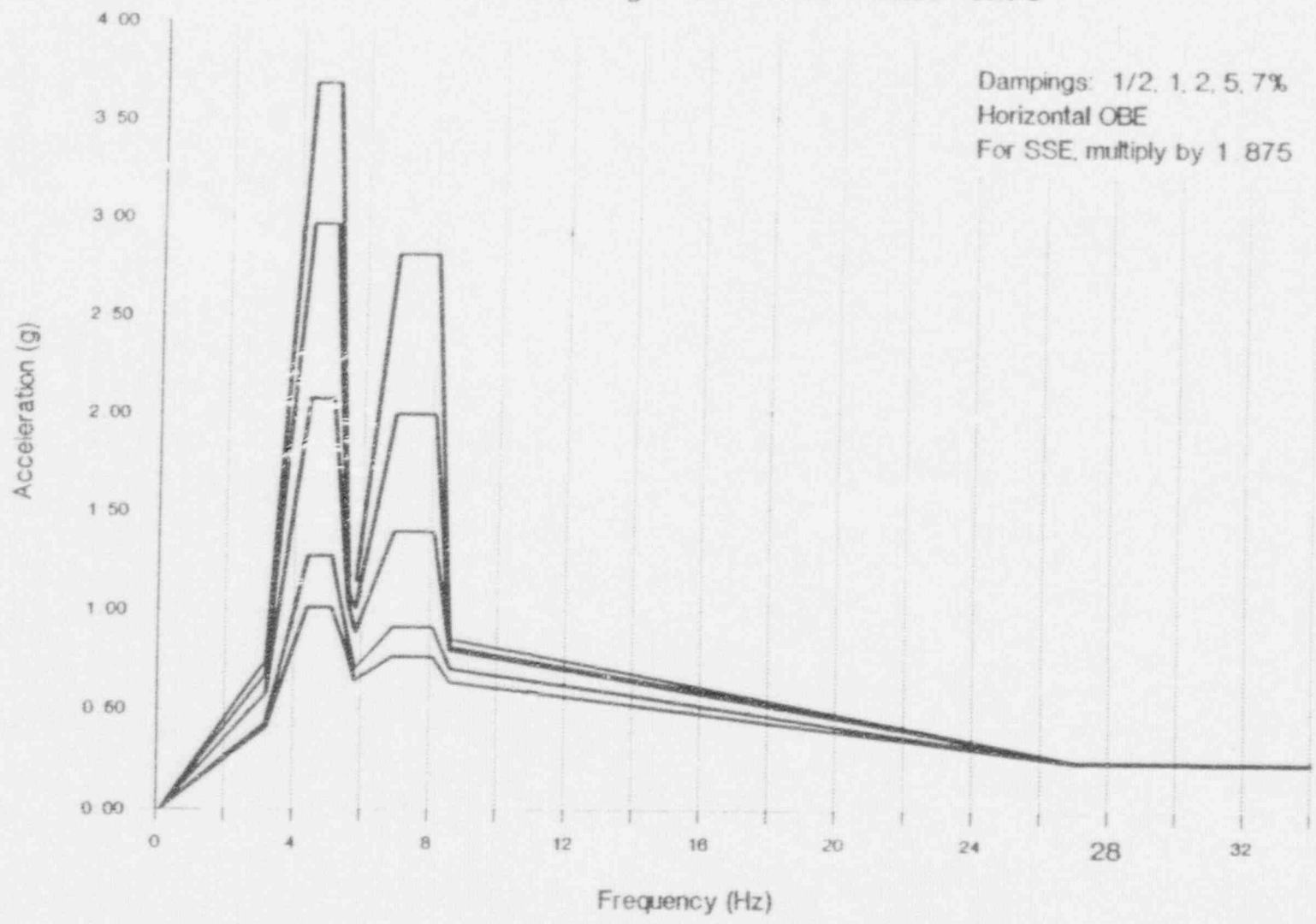
Horizontal SSE

FREQ. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	1.18	1.06	0.90	0.78	0.71	0.65	0.61	0.60	0.60	0.60	0.58
4.40	4.76	3.82	2.68	2.26	1.93	1.66	1.48	1.35	1.23	1.14	1.06
5.10	4.76	3.82	2.68	2.26	1.93	1.66	1.48	1.35	1.23	1.14	1.06
5.60	1.51	1.35	1.33	1.25	1.20	1.12	1.06	1.01	0.97	0.91	0.88
5.80	1.87	1.35	1.20	1.10	1.03	0.95	0.90	0.86	0.82	0.78	0.76
6.90	3.78	2.68	1.87	1.59	1.38	1.23	1.12	1.03	0.95	0.90	0.86
8.10	3.78	2.68	1.87	1.59	1.38	1.23	1.12	1.03	0.95	0.90	0.86
8.60	1.16	1.10	1.06	1.05	0.99	0.95	0.90	0.86	0.82	0.78	0.75
27.00	0.45	0.45	0.43	0.41	0.39	0.39	0.37	0.37	0.37	0.37	0.37
100.00	0.35	0.35	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33

INFORMATION
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Sheet D-5

PILGRIM AMPLIFIED RESPONSE SPECTRA Turbine Building - Elev. 37.0 - Mass Point 3



Specification No. C-114-ER-O-EC

PILG 1M AMPLIFIED RESPONSE SPECTRA
 Turbine Building - Elev. 37.0 - Mass Point 3
 Horizontal DBE

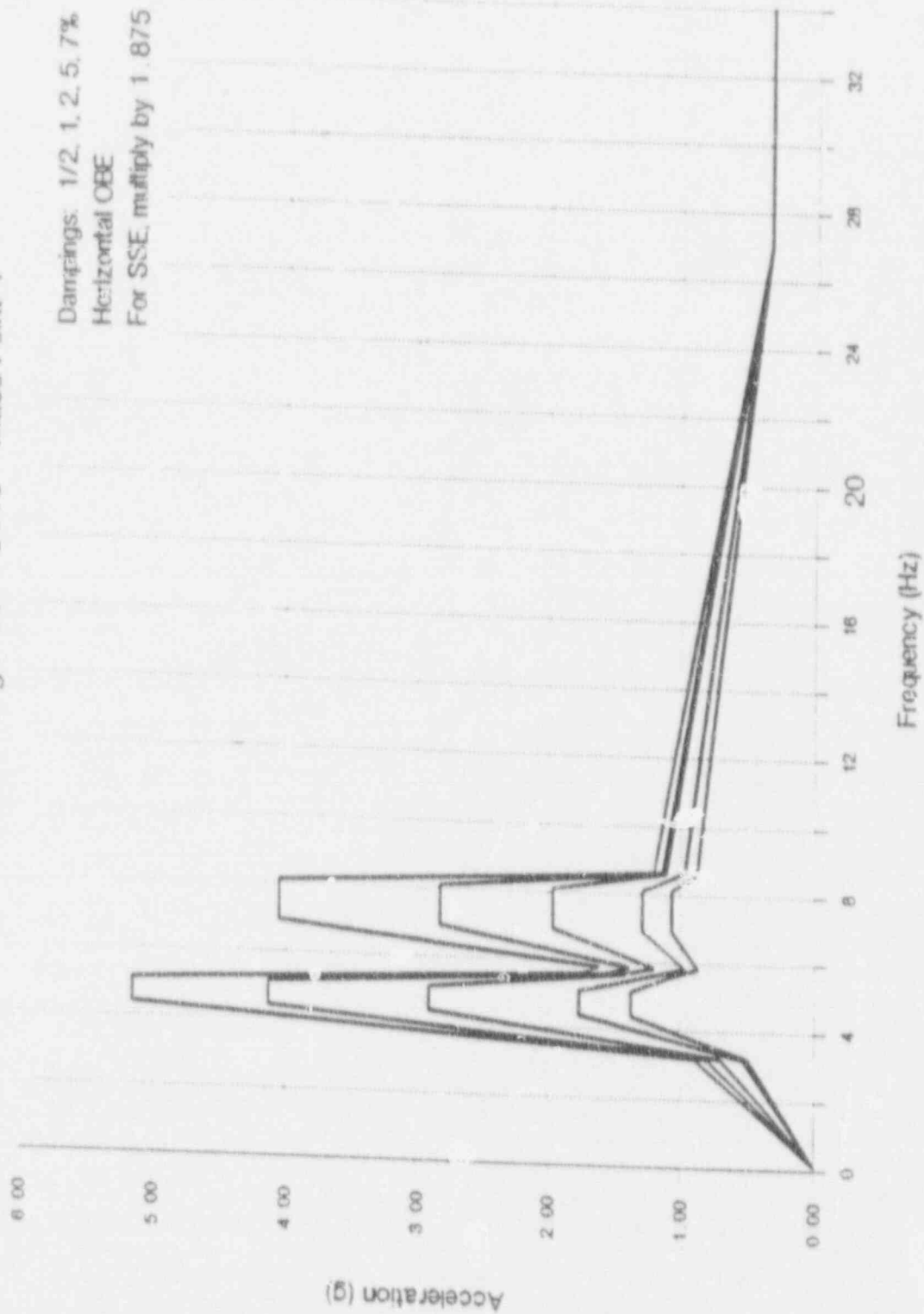
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	3.74	0.67	0.57	0.51	0.47	0.43	0.41	0.40	0.40	0.39	0.39
4.40	3.68	2.96	2.07	1.73	1.48	1.27	1.11	1.01	0.93	0.86	0.80
5.10	3.68	2.96	2.07	1.73	1.48	1.27	1.11	1.01	0.93	0.86	0.80
5.60	1.18	1.09	1.03	0.96	0.91	0.85	0.81	0.77	0.73	0.69	0.65
5.80	1.14	1.00	0.88	0.80	0.75	0.70	0.67	0.64	0.61	0.58	0.56
6.90	2.81	1.99	1.39	1.18	1.03	0.91	0.83	0.76	0.71	0.67	0.63
8.10	2.81	1.99	1.39	1.18	1.03	0.91	0.83	0.76	0.71	0.67	0.63
8.60	0.85	0.81	0.79	0.78	0.73	0.70	0.66	0.63	0.61	0.58	0.56
27.00	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.24	0.24	0.24	0.24
100.00	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	1.38	1.25	1.06	0.95	0.88	0.80	0.76	0.75	0.75	0.73	0.73
4.40	6.90	5.55	3.88	3.24	2.77	2.38	2.08	1.89	1.74	1.61	1.50
5.10	6.90	5.55	3.88	3.24	2.77	2.38	2.08	1.89	1.74	1.61	1.50
5.60	2.21	2.04	1.93	1.80	1.70	1.59	1.51	1.44	1.36	1.29	1.21
5.80	2.13	1.87	1.65	1.50	1.40	1.31	1.25	1.20	1.14	1.08	1.05
6.90	5.26	3.73	2.60	2.21	1.93	1.70	1.55	1.42	1.33	1.25	1.18
8.10	5.26	3.73	2.60	2.21	1.93	1.70	1.55	1.42	1.33	1.25	1.18
8.60	1.59	1.51	1.48	1.46	1.36	1.31	1.25	1.18	1.14	1.08	1.05
27.00	0.46	0.46	0.46	0.46	0.46	0.45	0.45	0.45	0.45	0.45	0.45
100.00	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Turbine Building - Elev. 51.0 - Mass Point 4

Dampings: 1/2, 1, 2, 5, 7%
 Horizontal OBE
 For SSE multiply by 1.875



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PILGRIM AMPLIFIED RESPONSE SPECTRA
Turbine Building - Elev. 51.0 - Mass Point 4
Horizontal DBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	0.90	0.81	0.70	0.64	0.58	0.54	0.51	0.50	0.49	0.49	0.48
4.40	5.15	4.13	2.91	2.40	2.05	1.77	1.54	1.33	1.27	1.18	1.09
5.10	5.15	4.13	2.91	2.40	2.05	1.77	1.54	1.38	1.27	1.18	1.09
5.60	1.76	1.58	1.44	1.34	1.26	1.19	1.12	1.05	0.99	0.94	0.89
5.80	1.62	1.39	1.20	1.10	1.03	0.97	0.92	0.87	0.83	0.80	0.77
6.90	4.05	2.82	1.97	1.66	1.45	1.29	1.17	1.07	0.99	0.93	0.88
8.10	4.05	2.82	1.97	1.66	1.45	1.29	1.17	1.07	0.99	0.93	0.88
8.60	1.21	1.14	1.11	1.07	1.02	0.97	0.93	0.88	0.84	0.82	0.79
27.00	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.34
100.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32

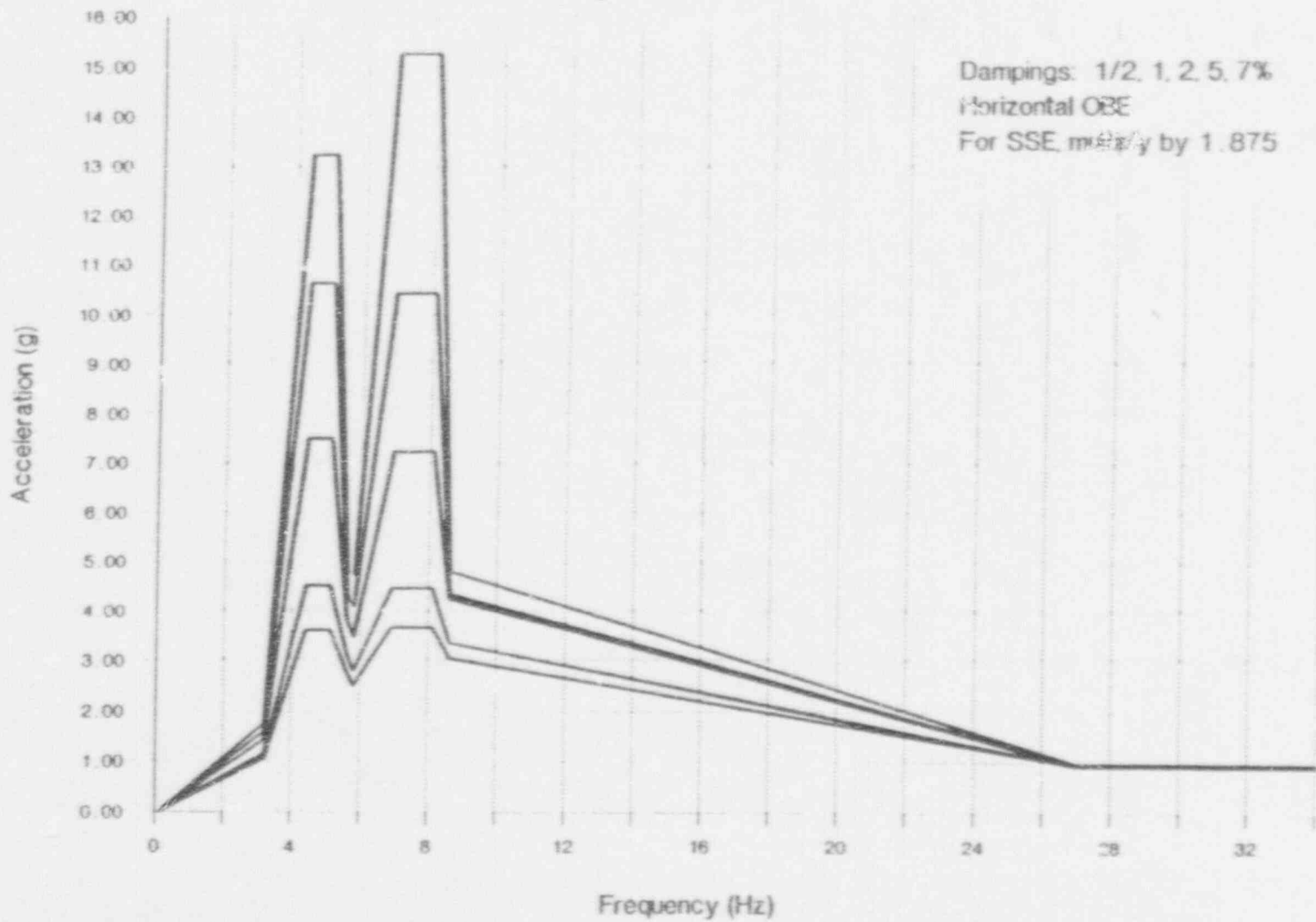
Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	1.68	1.51	1.31	1.20	1.08	1.01	0.95	0.93	0.91	0.91	0.90
4.40	9.65	7.74	5.45	4.50	3.84	3.31	2.88	2.58	2.38	2.21	2.04
5.10	9.65	7.74	5.45	4.50	3.84	3.31	2.88	2.58	2.38	2.21	2.04
5.60	3.30	2.96	2.70	2.51	2.36	2.23	2.10	1.96	1.85	1.76	1.66
5.80	3.03	2.60	2.25	2.06	1.93	1.81	1.72	1.63	1.55	1.50	1.44
6.90	7.59	5.28	3.69	3.11	2.71	2.41	2.19	2.00	1.85	1.74	1.65
8.10	7.59	5.28	3.69	3.11	2.71	2.41	2.19	2.00	1.85	1.74	1.65
8.60	2.26	2.13	2.08	2.00	1.91	1.81	1.74	1.65	1.59	1.53	1.48
27.00	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.63
100.00	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60

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PILGRIM AMPLIFIED RESPONSE SPECTRA

Turbine Building - Elev. 105.5 - Mass Point 7



Sheet D-9

Specification No. C-114-ER-Q-EL

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Turbine Building - Elev. 105.5 - Mass Point 7
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	1.76	1.60	1.44	1.33	1.24	1.15	1.10	1.05	1.03	1.03	1.02
4.40	13.23	10.63	7.50	6.16	5.26	4.53	3.98	3.61	3.30	3.03	2.80
5.10	13.23	10.63	7.50	6.16	5.26	4.53	3.98	3.61	3.30	3.03	2.80
5.60	4.83	4.33	3.82	3.58	3.33	3.13	2.95	2.78	2.62	2.46	2.32
5.80	4.75	4.09	3.19	3.20	2.98	2.80	2.66	2.52	2.40	2.29	2.19
6.90	15.25	10.43	7.72	5.88	5.07	4.48	4.03	3.68	3.40	3.16	2.97
8.10	15.25	10.43	7.22	5.88	5.07	4.48	4.03	3.68	3.40	3.16	2.97
8.60	4.81	4.35	4.24	3.94	3.60	3.35	3.21	3.06	2.92	2.79	2.67
27.00	0.97	0.96	0.94	0.93	0.93	0.93	0.94	0.94	0.94	0.94	0.94
100.00	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91

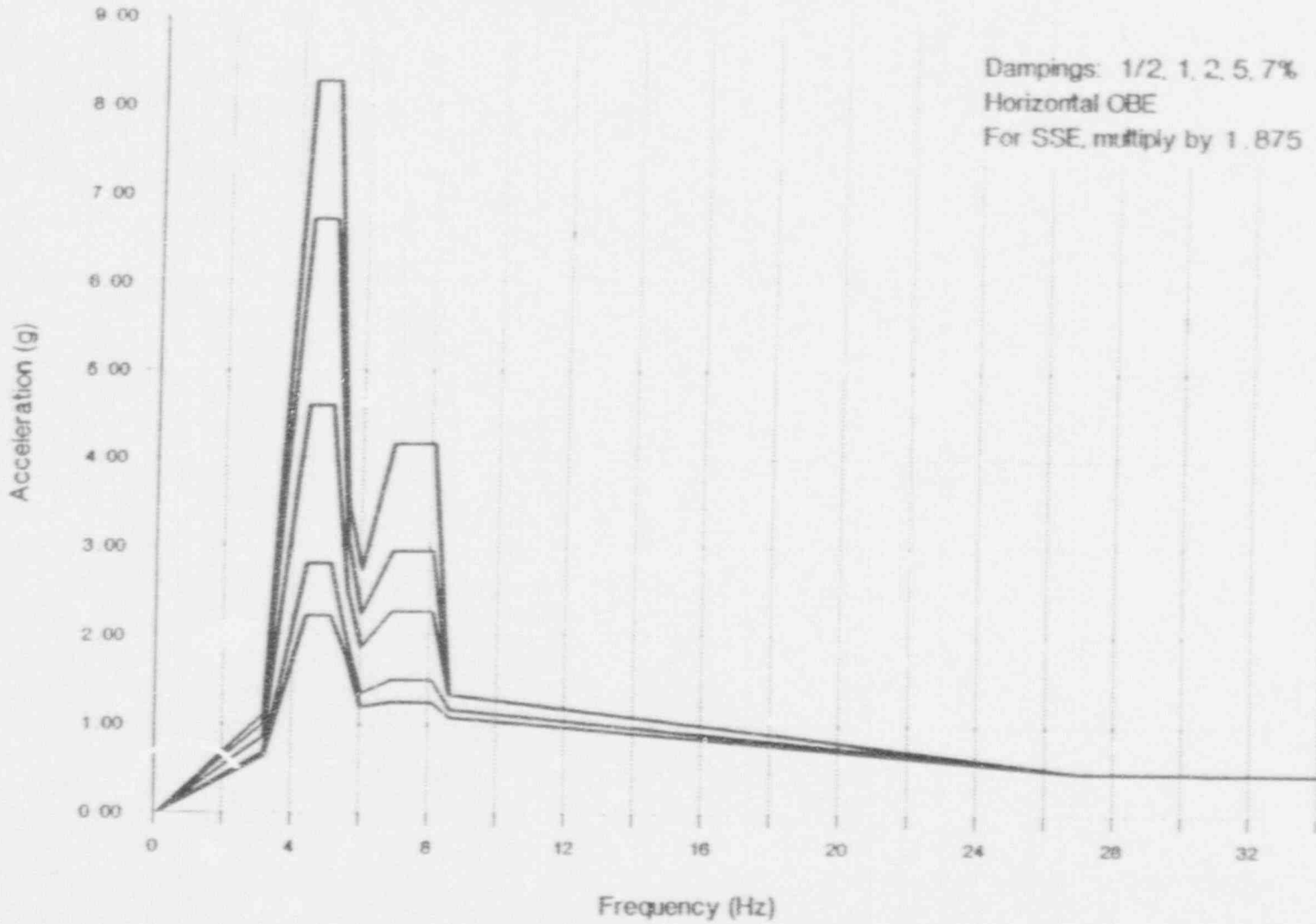
Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	3.30	3.00	2.70	2.49	2.32	2.15	2.06	1.96	1.93	1.93	1.91
4.40	24.80	19.93	14.00	11.50	9.86	8.49	7.46	6.76	6.18	5.68	5.25
5.10	24.80	19.93	14.00	11.50	9.86	8.49	7.46	6.76	6.18	5.68	5.25
5.60	9.06	8.12	7.16	6.71	6.24	5.86	5.53	5.21	4.91	4.61	4.35
5.80	8.91	7.67	6.54	6.00	5.58	5.25	4.98	4.72	4.50	4.29	4.10
6.90	28.59	19.55	13.50	11.00	9.50	8.40	7.55	6.90	6.37	5.92	5.56
8.10	28.59	19.55	13.50	11.00	9.50	8.40	7.55	6.90	6.37	5.92	5.56
8.60	9.02	8.16	7.95	7.38	6.75	6.28	6.01	5.73	5.47	5.23	5.00
27.00	1.82	1.80	1.76	1.74	1.74	1.74	1.76	1.76	1.76	1.76	1.76
100.00	1.71	1.71	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70

INFORMATION
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PILGRIM AMPLIFIED RESPONSE SPECTRA

Turbine Building - Turbine Pedestal - Mass Point 8



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Turbine Building - Turbine Pedestal - Mass Point 8
 Horizontal OBE

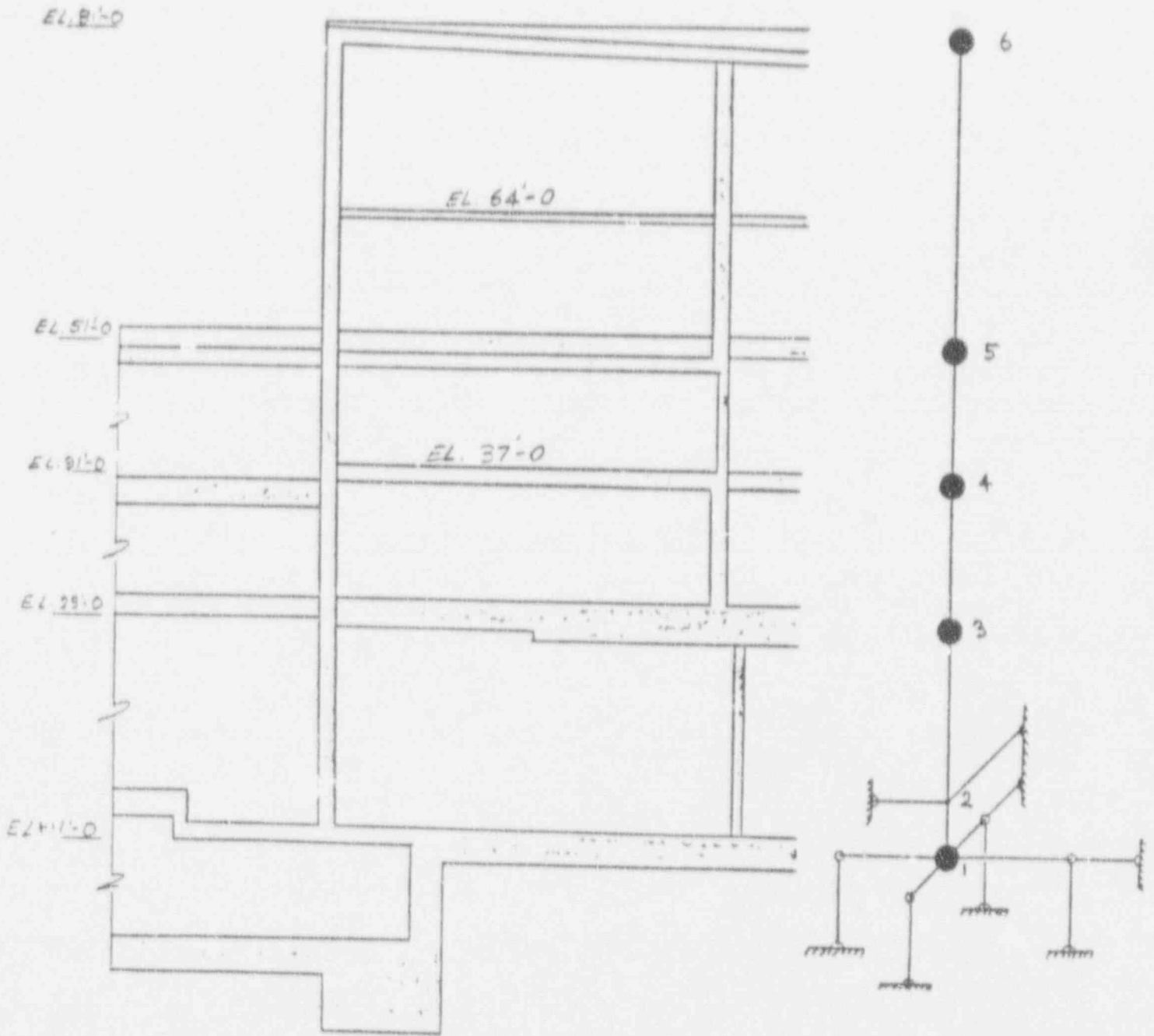
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	1.11	1.01	0.86	0.78	0.72	0.67	0.64	0.63	0.61	0.61	0.60
4.40	8.27	6.71	4.60	3.77	3.20	2.81	2.49	2.23	2.01	1.83	1.68
5.10	8.27	6.71	4.60	3.77	3.20	2.81	2.49	2.23	2.01	1.83	1.68
5.60	3.52	3.08	2.52	2.25	2.07	1.94	1.85	1.75	1.66	1.57	1.49
6.00	2.74	2.25	1.87	1.64	1.47	1.35	1.27	1.20	1.15	1.11	1.09
6.90	4.16	2.95	2.28	1.92	1.67	1.50	1.36	1.25	1.17	1.11	1.07
8.10	4.16	2.95	2.28	1.92	1.67	1.50	1.36	1.25	1.17	1.10	1.04
8.60	1.33	1.34	1.34	1.29	1.23	1.17	1.12	1.08	1.04	0.72	0.73
17.50	0.92	0.92	0.92	0.90	0.87	0.84	0.81	0.79	0.77	0.75	0.73
18.30	0.88	0.89	0.89	0.86	0.83	0.81	0.78	0.76	0.74	0.72	0.71
27.00	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
100.00	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47

Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.20	2.08	1.89	1.61	1.46	1.35	1.25	1.20	1.18	1.14	1.14	1.12
4.40	15.50	12.58	8.62	7.06	6.00	5.26	4.66	4.18	3.76	3.43	3.15
5.10	15.50	12.58	8.62	7.06	6.00	5.26	4.66	4.18	3.76	3.43	3.15
5.60	6.60	5.77	4.72	4.21	3.88	3.63	3.46	3.28	3.11	2.94	2.79
6.00	5.13	4.21	3.50	3.07	2.75	2.53	2.38	2.25	2.15	2.08	2.04
6.90	7.80	5.53	4.27	3.60	3.13	2.81	2.55	2.34	2.19	2.08	2.00
8.10	7.80	5.53	4.27	3.60	3.13	2.81	2.55	2.34	2.19	2.06	1.95
8.60	2.49	2.51	2.51	2.41	2.30	2.19	2.10	2.02	1.95	2.02	1.91
17.50	1.72	1.72	1.72	1.68	1.63	1.57	1.51	1.48	1.44	1.40	1.36
18.30	1.65	1.66	1.66	1.61	1.55	1.51	1.46	1.42	1.38	1.35	1.33
27.00	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
100.00	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

APPENDIX E

RADWASTE BUILDING HORIZONTAL SPECTRA



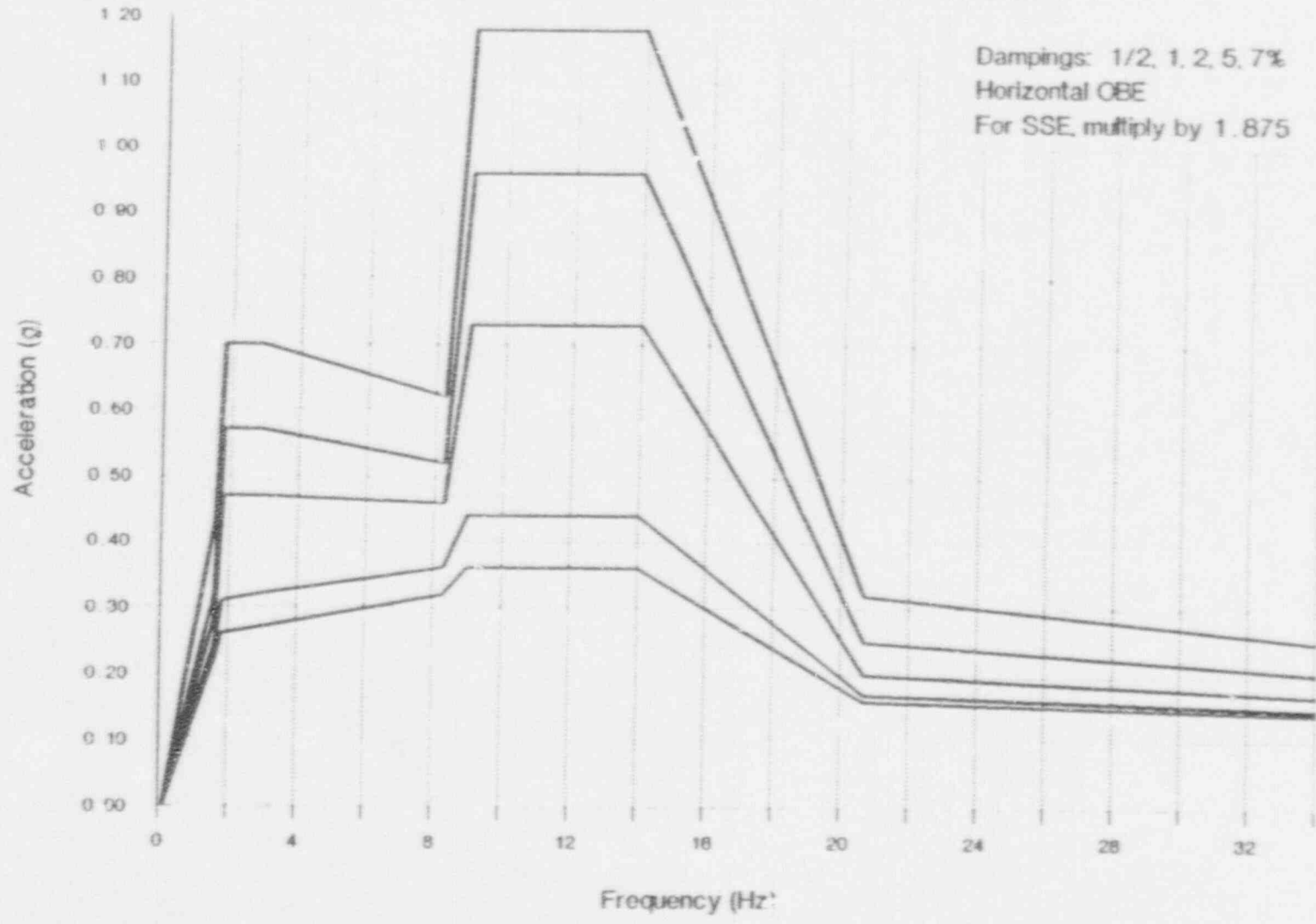
Radwaste Building
Mathematical Model from Reference 3

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PILGRIM AMPLIFIED RESPONSE SPECTRA

Radwaste Building - Elev. 37.0 - Mass Point 4



Sheet E-3

FILTRIM AMPLIFIED RESPONSE SPECTRA
Radwaste Building - Elev. 37.0 - Mass Point 4
Horizontal DBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.43	0.32	0.28	0.26	0.25	0.24	0.23	0.22	0.21	0.20	0.19
1.80	0.70	0.57	0.47	0.40	0.35	0.31	0.28	0.26	0.24	0.22	0.20
2.90	0.70	0.57	0.47	0.40	0.36	0.32	0.29	0.27	0.25	0.23	0.21
8.30	0.62	0.52	0.46	0.42	0.39	0.36	0.34	0.32	0.29	0.28	0.26
9.00	1.18	0.96	0.73	0.57	0.49	0.44	0.40	0.36	0.33	0.31	0.29
14.00	1.18	0.96	0.73	0.57	0.49	0.44	0.40	0.36	0.33	0.31	0.29
20.70	0.32	0.25	0.20	0.18	0.17	0.17	0.16	0.16	0.16	0.15	0.15
61.00	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
100.00	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11

Horizontal SSE

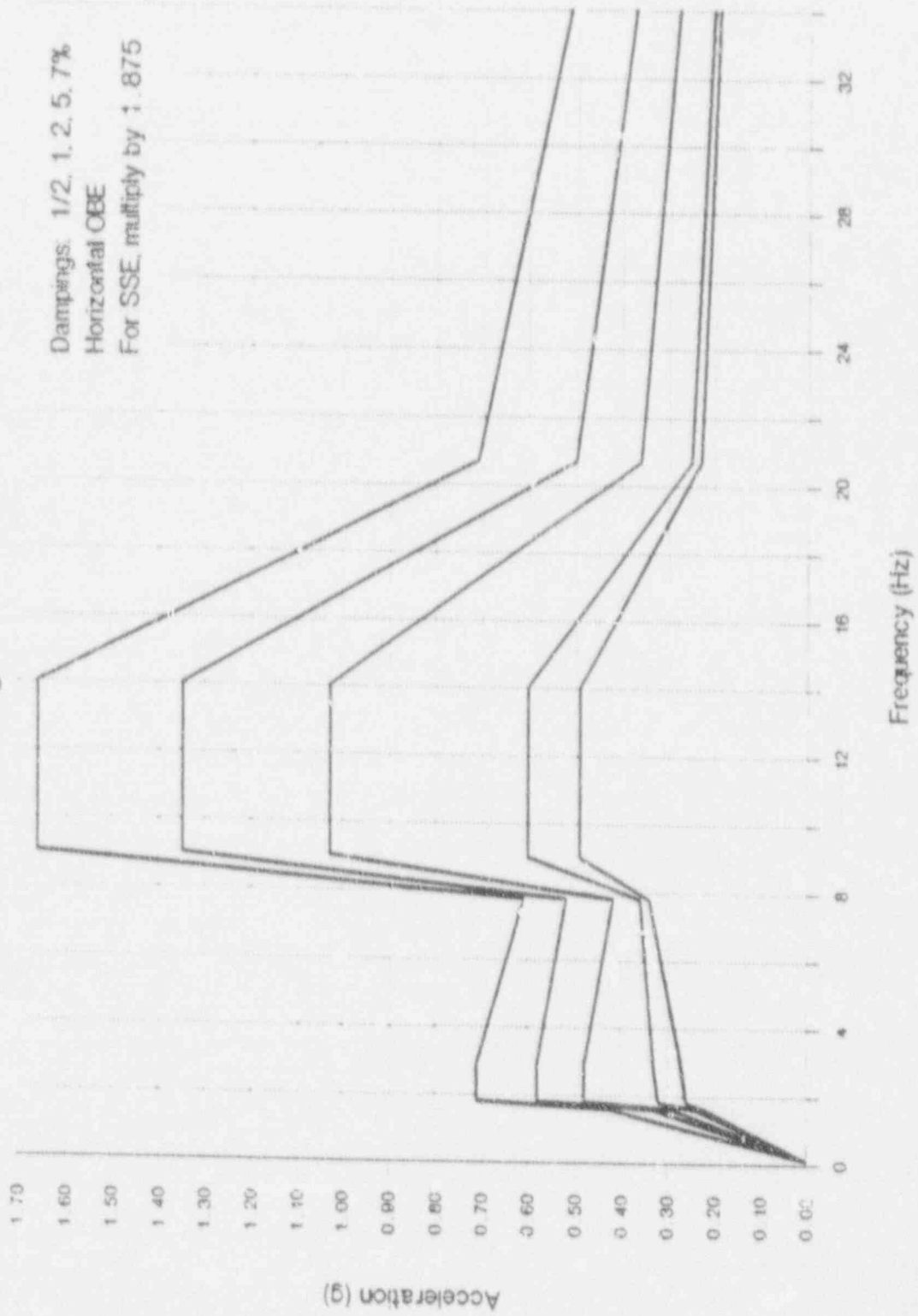
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.80	0.60	0.52	0.48	0.46	0.45	0.43	0.41	0.39	0.37	0.35
1.80	1.31	1.06	0.88	0.75	0.65	0.58	0.52	0.48	0.45	0.41	0.37
2.90	1.31	1.06	0.88	0.75	0.67	0.60	0.54	0.50	0.46	0.43	0.39
8.30	1.16	0.97	0.86	0.78	0.73	0.67	0.63	0.60	0.54	0.52	0.48
9.00	2.21	1.80	1.36	1.06	0.91	0.82	0.75	0.67	0.61	0.58	0.54
14.00	2.21	1.80	1.36	1.06	0.91	0.82	0.75	0.67	0.61	0.58	0.54
20.70	0.60	0.46	0.37	0.33	0.31	0.31	0.30	0.30	0.30	0.28	0.28
61.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
100.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

INFORMATION
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Use restricted to
reference

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Radwaste Building - Elev. 51.0 - Mass Point 5

Dampings: 1/2, 1.2, 5, 7%
 Horizontal OBE
 For SSE, multiply by 1.875



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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Radwaste Building - Elev. 51.0 - Mass Point 5
 Horizontal DBE

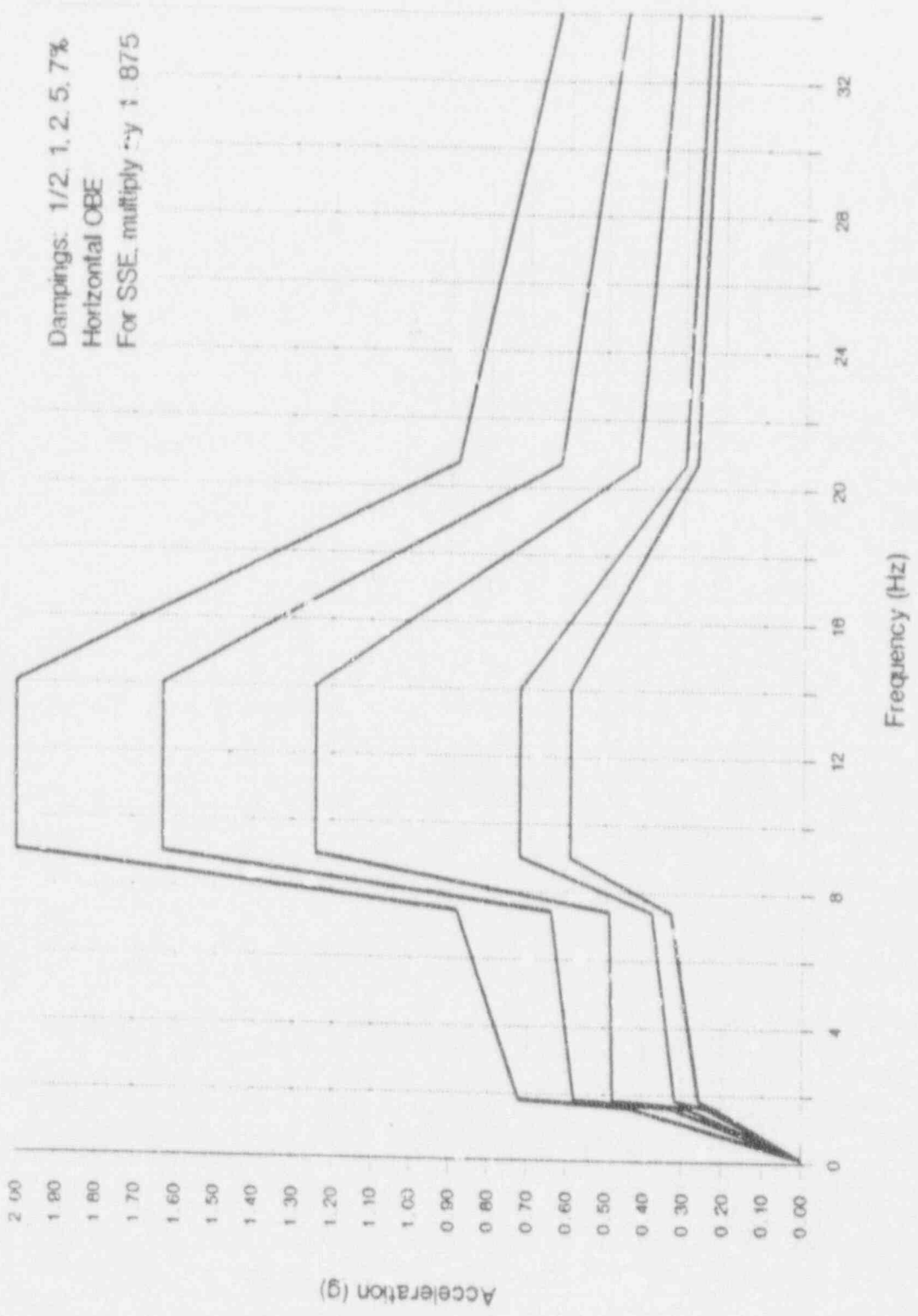
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.43	0.33	0.29	0.27	0.25	0.24	0.23	0.22	0.21	0.20	0.19
1.80	0.71	0.58	0.48	0.41	0.36	0.32	0.29	0.26	0.24	0.22	0.21
2.90	0.71	0.58	0.48	0.41	0.36	0.33	0.30	0.27	0.26	0.24	0.23
7.80	0.61	0.52	0.42	0.39	0.37	0.36	0.36	0.34	0.33	0.32	0.31
9.00	1.66	1.35	1.03	0.80	0.68	0.60	0.54	0.49	0.45	0.42	0.39
14.00	1.66	1.35	1.03	0.80	0.68	0.60	0.54	0.49	0.45	0.42	0.39
20.70	0.71	0.50	0.36	0.30	0.27	0.25	0.24	0.23	0.22	0.22	0.21
61.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
100.00	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Horizontal SBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.80	0.61	0.54	0.50	0.46	0.45	0.43	0.41	0.39	0.37	0.35
1.80	1.33	1.08	0.90	0.76	0.67	0.60	0.54	0.48	0.45	0.41	0.39
2.90	1.33	1.08	0.90	0.76	0.67	0.61	0.56	0.50	0.48	0.45	0.43
7.80	1.14	0.97	0.78	0.73	0.69	0.67	0.67	0.63	0.61	0.60	0.58
9.00	3.11	2.53	1.93	1.50	1.27	1.12	1.01	0.91	0.84	0.78	0.73
14.00	3.11	2.53	1.93	1.50	1.27	1.12	1.01	0.91	0.84	0.78	0.73
20.70	1.33	0.93	0.67	0.56	0.50	0.46	0.45	0.43	0.41	0.41	0.39
61.00	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
100.00	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Radwaste Building - Elev. 64.0 - Mass Point 5.5

Dampings: 1/2, 1, 2, 5, 7%
 Horizontal OBE
 For SSE, multiply by 1.875



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PILGRIM AMPLIFIED RESPONSE SPECTRA
 Redwaste Building - Elev. 64.0 - Mass Point 5.5
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.44	0.33	0.29	0.27	0.25	0.34	0.23	0.22	0.21	0.20	0.20
1.80	0.72	0.58	0.48	0.41	0.36	0.32	0.29	0.26	0.24	0.22	0.21
7.40	0.88	0.64	0.49	0.45	0.41	0.38	0.36	0.33	0.32	0.31	0.30
9.00	2.00	1.63	1.24	0.97	0.81	0.72	0.65	0.59	0.54	0.49	0.46
14.00	2.00	1.63	1.24	0.97	0.81	0.72	0.65	0.59	0.54	0.49	0.46
20.70	0.88	0.62	0.42	0.35	0.32	0.30	0.29	0.27	0.26	0.25	0.25
50.00	0.33	0.26	0.21	0.19	0.18	0.18	0.17	0.17	0.17	0.16	0.16
61.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
100.00	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13

Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.82	0.61	0.54	0.50	0.46	0.45	0.43	0.41	0.39	0.37	0.37
1.80	1.35	1.08	0.90	0.76	0.67	0.60	0.54	0.48	0.45	0.41	0.39
7.40	1.65	1.20	0.91	0.84	0.76	0.71	0.67	0.61	0.60	0.58	0.56
9.00	3.75	3.05	2.32	1.81	1.51	1.35	1.21	1.10	1.01	0.91	0.86
14.00	3.75	3.05	2.32	1.81	1.51	1.35	1.21	1.10	1.01	0.91	0.86
20.70	1.65	1.16	0.78	0.65	0.60	0.56	0.54	0.50	0.48	0.46	0.46
50.00	0.61	0.41	0.39	0.35	0.33	0.33	0.31	0.31	0.31	0.30	0.30
61.00	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
100.00	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24

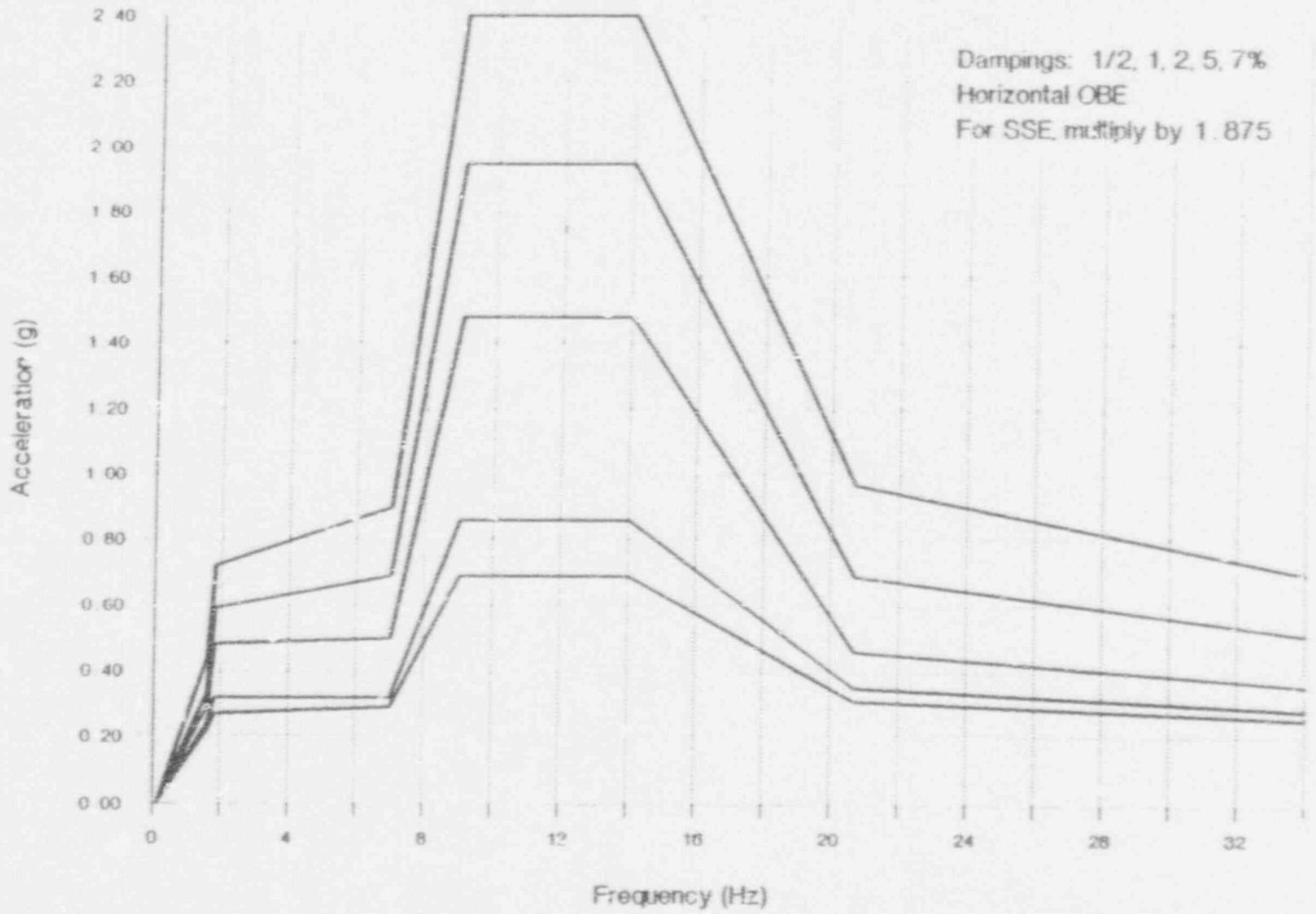
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PILGRIM AMPLIFIED RESPONSE SPECTRA

Radwaste Building - Elev. 81.0 - Mass Point 6



Sheet E.9

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Radwaste Building - Elev. B1.0 - Mass Point 6
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.44	0.33	0.29	0.27	0.25	0.24	0.23	0.22	0.21	0.21	0.20
1.80	0.72	0.59	0.48	0.41	0.36	0.32	0.29	0.27	0.24	0.23	0.21
7.00	0.90	0.69	0.50	0.41	0.36	0.32	0.30	0.29	0.29	0.28	0.27
9.00	2.40	1.95	1.48	1.15	0.97	0.86	0.77	0.69	0.64	0.59	0.54
14.00	2.40	1.95	1.48	1.15	0.97	0.86	0.77	0.69	0.64	0.59	0.54
20.70	0.97	0.69	0.46	0.40	0.37	0.35	0.33	0.31	0.30	0.29	0.28
61.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
100.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.60	0.82	0.61	0.54	0.50	0.46	0.45	0.43	0.41	0.39	0.39	0.37
1.80	1.35	1.10	0.90	0.76	0.67	0.60	0.54	0.50	0.45	0.43	0.39
7.00	1.68	1.29	0.93	0.76	0.67	0.60	0.56	0.54	0.51	0.52	0.50
9.00	4.50	3.65	2.77	2.15	1.81	1.61	1.44	1.29	1.20	1.10	1.01
14.00	4.50	3.65	2.77	2.15	1.81	1.61	1.44	1.29	1.20	1.10	1.01
20.70	1.81	1.29	0.86	0.75	0.69	0.65	0.61	0.58	0.56	0.54	0.52
61.00	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
100.00	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28

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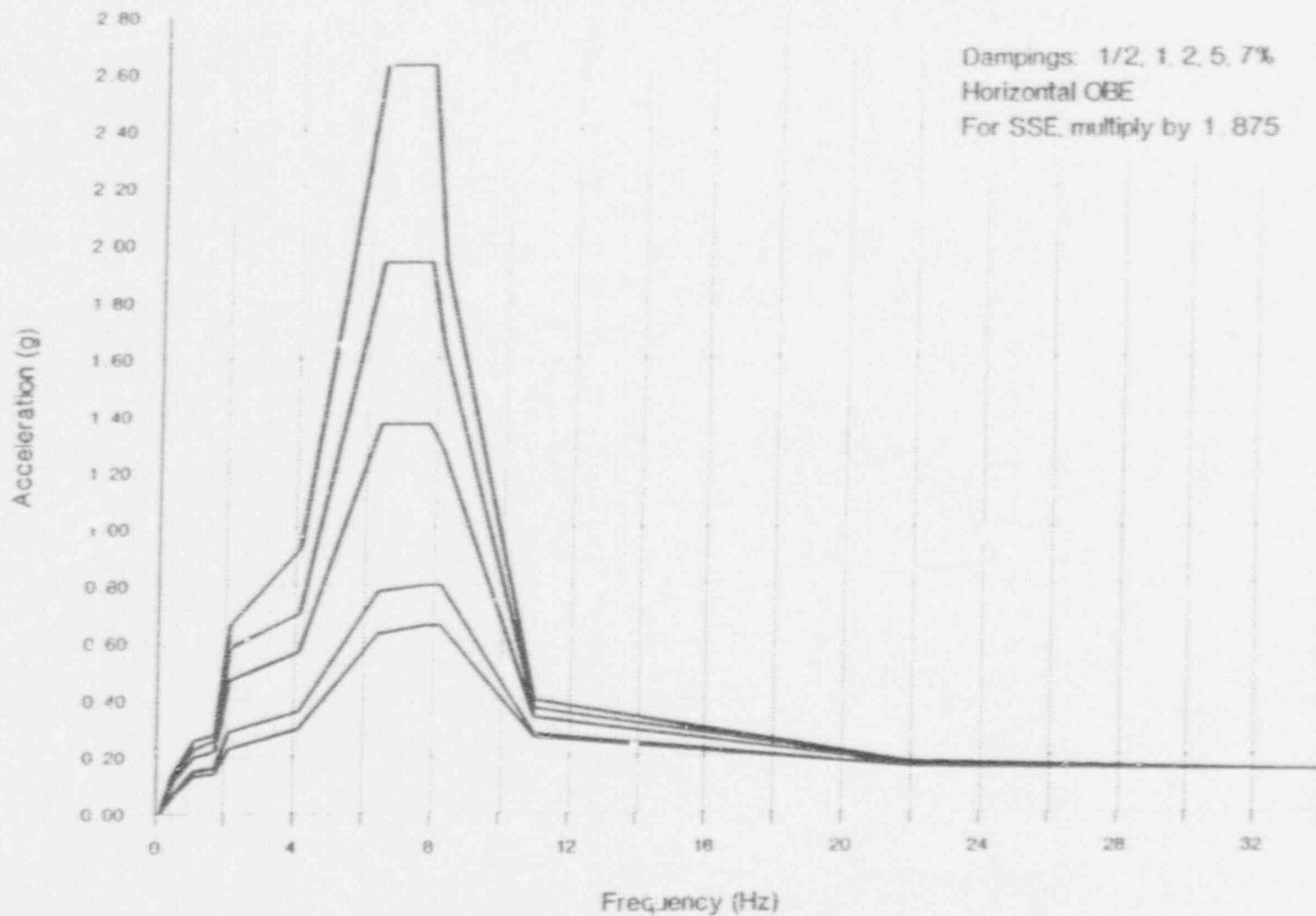
APPENDIX F

INTAKE STRUCTURE HORIZONTAL SPECTRA

PILGRIM AMPLIFIED RESPONSE SPECTRA

Intake Structure - Elev. 21.5 - Mass Point 1

Dampings: 1/2, 1, 2, 5, 7%
Horizontal OBE
For SSE, multiply by 1.875



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Sheet F-2

Specification No. C-114-ER-O-EI

PILGRIM AMPLIFIED RESPONSE SPECTRA
Intake Structure - Elev. 21.5 - Mass Point 1
Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.14	0.13	0.11	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.05
1.10	0.26	0.23	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.11
1.70	0.28	0.26	0.22	0.20	0.18	0.16	0.15	0.14	0.14	0.13	0.13
2.10	0.66	0.58	0.47	0.39	0.33	0.29	0.25	0.23	0.21	0.19	0.18
4.10	0.93	0.70	0.57	0.47	0.40	0.36	0.32	0.30	0.28	0.26	0.24
6.40	2.63	1.94	1.37	1.07	0.89	0.78	0.69	0.63	0.59	0.55	0.52
7.80	2.63	1.94	1.37	1.07	0.91	0.80	0.72	0.66	0.60	0.56	0.52
8.20	1.94	1.64	1.28	1.05	0.91	0.80	0.72	0.66	0.60	0.56	0.52
11.00	0.40	0.37	0.34	0.31	0.29	0.28	0.27	0.27	0.27	0.27	0.27
22.00	0.18	0.18	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
33.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
100.00	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14

Horizontal SSE

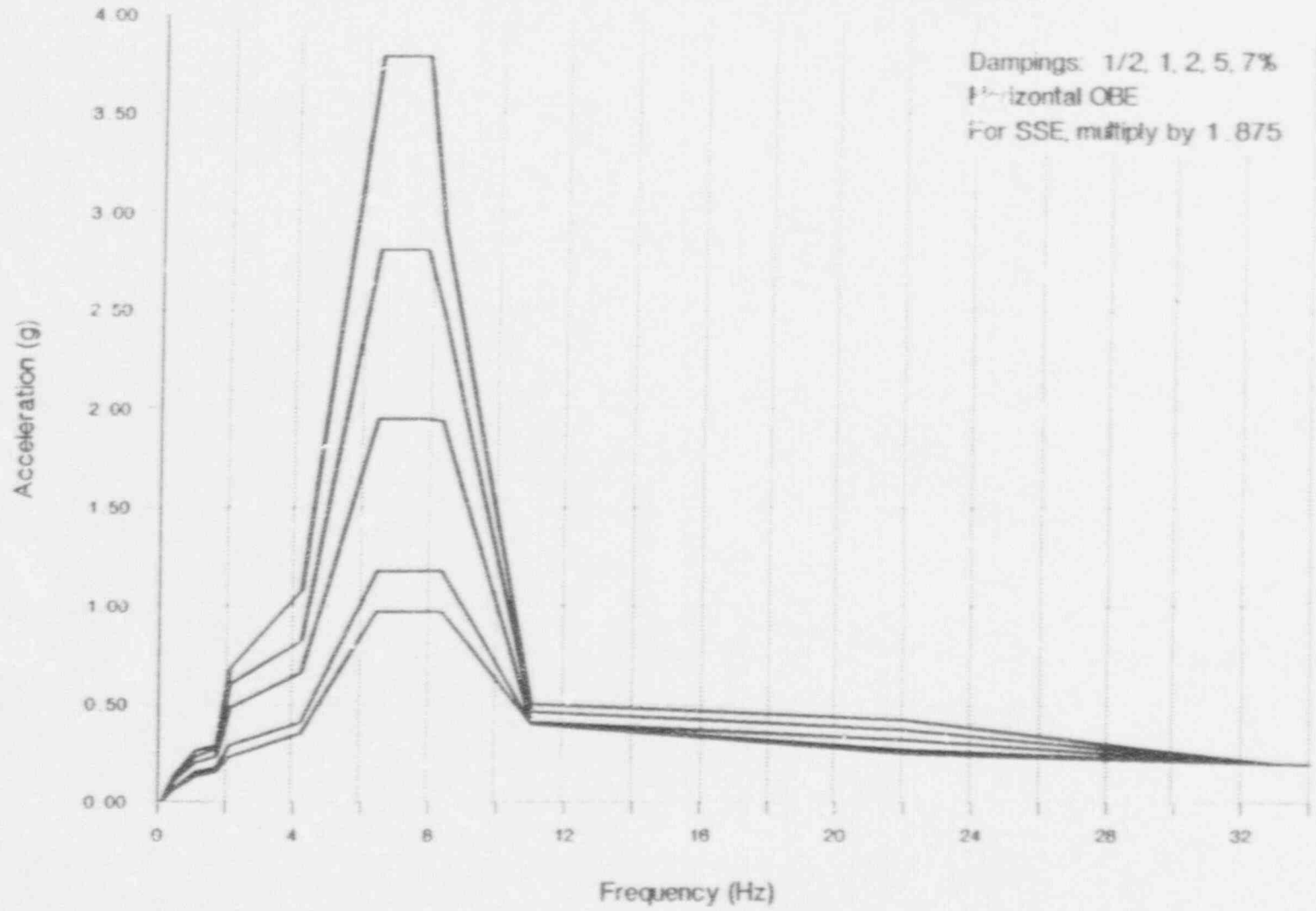
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.26	0.24	0.20	0.16	0.15	0.13	0.13	0.11	0.09	0.09	0.09
1.10	0.48	0.43	0.37	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.20
1.70	0.52	0.48	0.41	0.37	0.33	0.30	0.28	0.26	0.26	0.24	0.24
2.10	1.23	1.08	0.88	0.73	0.61	0.54	0.46	0.43	0.39	0.35	0.34
4.10	1.74	1.31	1.06	0.88	0.75	0.67	0.60	0.56	0.52	0.48	0.45
6.40	4.93	3.63	2.56	2.00	1.66	1.46	1.29	1.18	1.10	1.03	0.97
7.80	4.93	3.63	2.56	2.00	1.70	1.50	1.35	1.23	1.12	1.05	0.97
8.20	3.63	3.07	2.40	1.96	1.70	1.50	1.35	1.23	1.12	1.05	0.97
11.00	0.75	0.69	0.63	0.58	0.54	0.52	0.50	0.50	0.50	0.50	0.50
22.00	0.33	0.33	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
33.00	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
100.00	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26

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PILGRIM AMPLIFIED RESPONSE SPECTRA Intake Structure - Elev. 38.0 - Mass Point 2



Sheet F-4

FILGRIM AMPLIFIED RESPONSE SPECTRA
Intake Structure - Elev. 38.0 - Mass Point 2
Horizontal DSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.14	0.13	0.11	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.05
1.10	0.26	0.23	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.11
1.70	0.29	0.27	0.23	0.20	0.18	0.17	0.16	0.15	0.14	0.14	0.13
2.10	0.68	0.60	0.48	0.40	0.34	0.29	0.26	0.23	0.21	0.20	0.19
4.20	1.08	0.82	0.66	0.55	0.47	0.41	0.38	0.35	0.32	0.30	0.28
6.40	3.79	2.81	1.95	1.59	1.35	1.18	1.06	0.97	0.89	0.82	0.77
7.80	3.79	2.81	1.95	1.59	1.35	1.18	1.06	0.97	0.89	0.82	0.77
8.30	2.93	2.44	1.94	1.59	1.35	1.18	1.06	0.97	0.89	0.82	0.77
11.00	0.50	0.46	0.41	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.39
22.00	0.42	0.37	0.32	0.30	0.28	0.27	0.26	0.25	0.24	0.24	0.24
33.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
100.00	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19

Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.26	0.24	0.21	0.17	0.15	0.13	0.13	0.11	0.09	0.09	0.09
1.10	0.49	0.43	0.38	0.34	0.30	0.28	0.26	0.24	0.23	0.21	0.21
1.70	0.54	0.51	0.43	0.38	0.34	0.32	0.30	0.28	0.26	0.26	0.24
2.10	1.28	1.13	0.90	0.75	0.64	0.54	0.49	0.43	0.39	0.38	0.36
4.20	2.03	1.54	1.24	1.03	0.88	0.77	0.71	0.66	0.60	0.56	0.53
6.40	7.11	5.27	3.66	2.98	2.53	2.21	1.99	1.82	1.67	1.54	1.44
7.80	7.11	5.27	3.66	2.98	2.53	2.21	1.99	1.82	1.67	1.54	1.44
8.30	5.49	4.67	3.64	2.98	2.53	2.21	1.99	1.82	1.67	1.54	1.44
11.00	0.94	0.86	0.77	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.73
22.00	0.79	0.69	0.60	0.56	0.53	0.51	0.49	0.47	0.45	0.45	0.45
33.00	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
100.00	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36

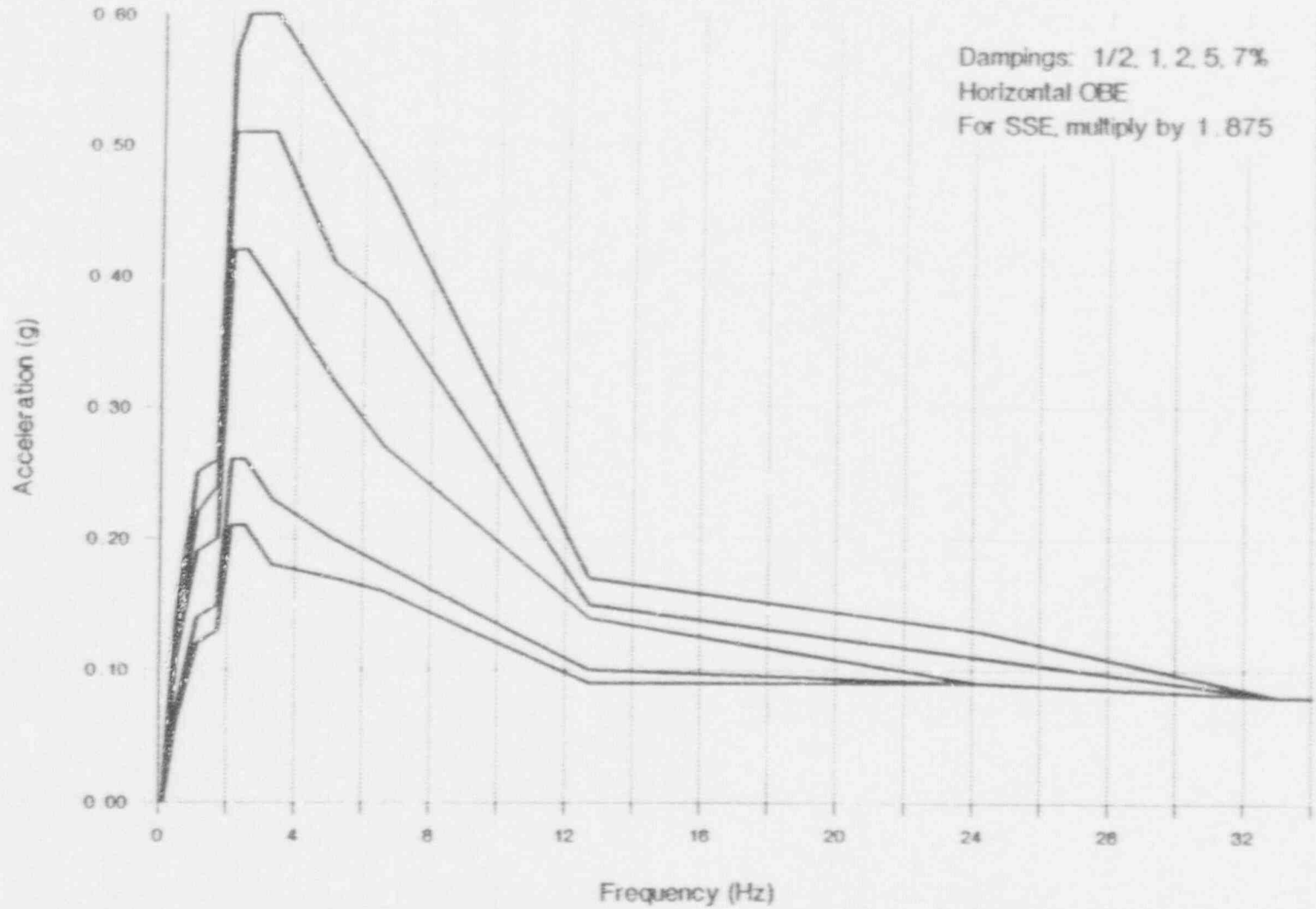
APPENDIX G

DIESEL GENERATOR BUILDING HORIZONTAL SPECTRA

INFORMATION
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SEE INSTRUCTIONS TO
DRAWING

Sheet G-2

PILGRIM AMPLIFIED RESPONSE SPECTRA Diesel Generator Building - Elev. 23.0 - Mass Point 1



PILGRIM AMPLIFIED RESPONSE SPECTRA
 Diesel Generator Building - Elev. 23.0 - Mass Point 1
 Horizontal DPE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.14	0.12	0.11	0.09	0.08	0.07	0.06	0.06	0.05	0.05	0.05
1.10	0.25	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.11	0.10
1.70	0.26	0.24	0.20	0.18	0.16	0.15	0.14	0.13	0.13	0.12	0.12
2.10	0.57	0.51	0.42	0.35	0.30	0.26	0.23	0.21	0.19	0.17	0.17
2.50	0.60	0.51	0.42	0.35	0.30	0.26	0.23	0.21	0.19	0.17	0.17
3.30	0.60	0.51	0.39	0.32	0.27	0.23	0.20	0.18	0.17	0.15	0.14
5.10	0.53	0.41	0.32	0.26	0.22	0.20	0.19	0.17	0.16	0.15	0.14
6.60	0.47	0.38	0.27	0.22	0.20	0.18	0.17	0.16	0.15	0.14	0.13
12.70	0.17	0.15	0.14	0.12	0.11	0.10	0.09	0.09	0.09	0.09	0.09
24.20	0.13	0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
33.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
100.00	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08

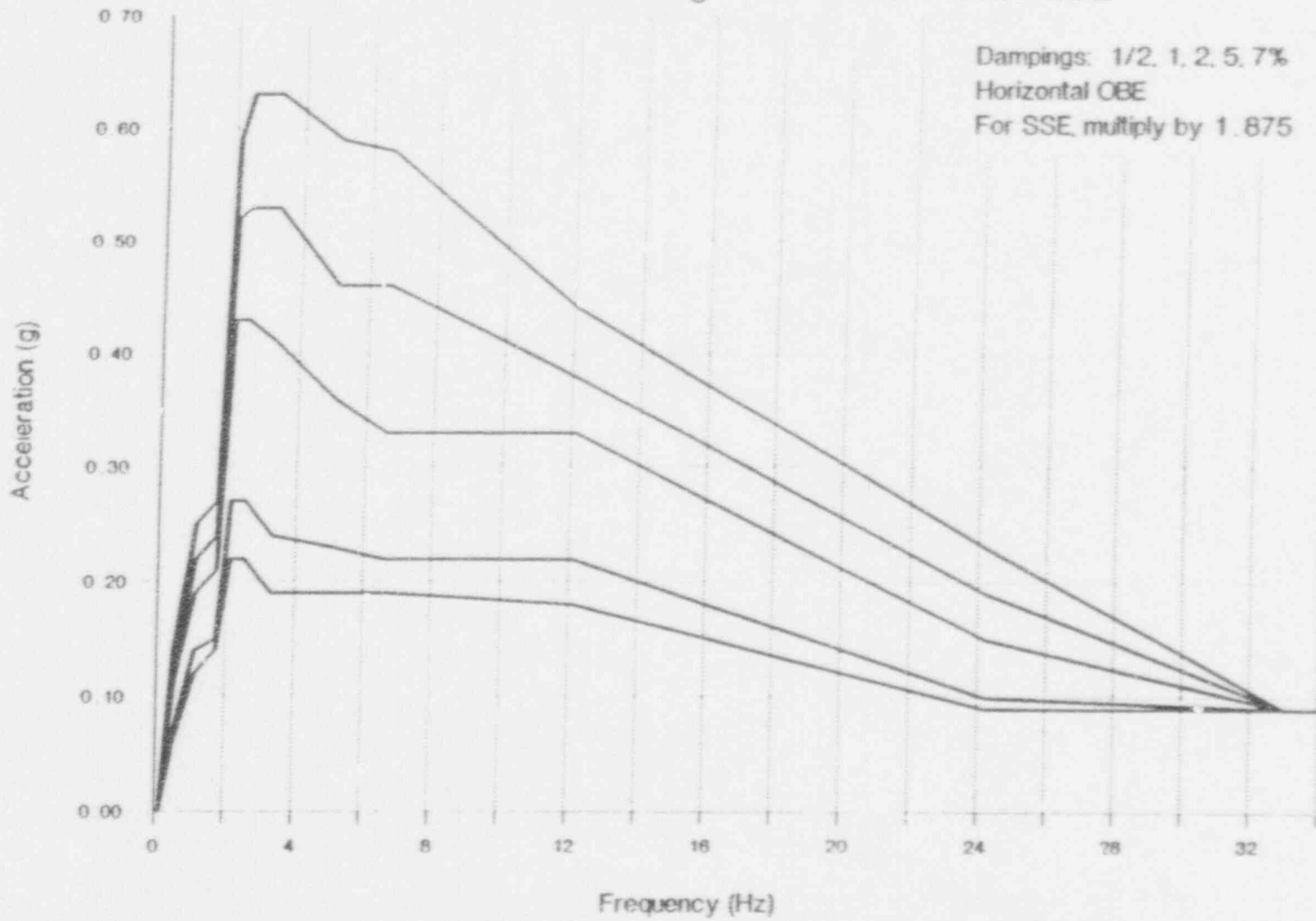
Horizontal SSE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.26	0.22	0.20	0.16	0.15	0.13	0.11	0.11	0.09	0.09	0.09
1.10	0.46	0.41	0.35	0.31	0.28	0.26	0.24	0.22	0.20	0.20	0.18
1.70	0.48	0.45	0.37	0.33	0.30	0.28	0.26	0.24	0.24	0.22	0.22
2.10	1.06	0.95	0.78	0.65	0.56	0.48	0.43	0.39	0.35	0.31	0.31
2.50	1.12	0.95	0.78	0.65	0.56	0.48	0.43	0.39	0.35	0.31	0.31
3.30	1.12	0.95	0.73	0.60	0.50	0.43	0.37	0.33	0.31	0.28	0.26
5.10	0.99	0.76	0.60	0.48	0.41	0.37	0.35	0.31	0.30	0.28	0.26
6.60	0.88	0.71	0.50	0.41	0.37	0.33	0.31	0.30	0.28	0.26	0.24
12.70	0.31	0.28	0.26	0.22	0.20	0.18	0.16	0.16	0.16	0.16	0.16
24.20	0.24	0.20	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
33.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
100.00	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

INFORMATION
ONLY
USE PREVIOUS EDITIONS
FOR REFERENCE

Sheet G-4

PILGRIM AMPLIFIED RESPONSE SPECTRA Diesel Generator Building - Elev. 34.5 - Mass Point 2



PILORIM AMPLIFIED RESPONSE SPECTRA
 Diesel Generator Building - Elev. 34.5 - Mass Point 2
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.14	0.12	0.11	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.05
1.10	0.25	0.22	0.19	0.17	0.16	0.14	0.13	0.12	0.12	0.11	0.10
1.70	0.27	0.24	0.21	0.18	0.17	0.15	0.14	0.14	0.13	0.12	0.12
2.10	0.59	0.52	0.43	0.36	0.31	0.27	0.24	0.22	0.20	0.18	0.17
2.50	0.63	0.53	0.43	0.36	0.31	0.27	0.24	0.22	0.20	0.18	0.17
3.30	0.63	0.53	0.41	0.33	0.28	0.24	0.21	0.19	0.18	0.17	0.16
5.10	0.59	0.46	0.36	0.29	0.25	0.23	0.21	0.19	0.18	0.17	0.16
6.60	0.58	0.46	0.33	0.28	0.25	0.22	0.20	0.19	0.18	0.17	0.16
12.10	0.44	0.38	0.33	0.28	0.24	0.22	0.21	0.18	0.17	0.16	0.15
24.20	0.23	0.19	0.15	0.12	0.11	0.10	0.09	0.09	0.09	0.09	0.09
33.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
100.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Horizontal SSE

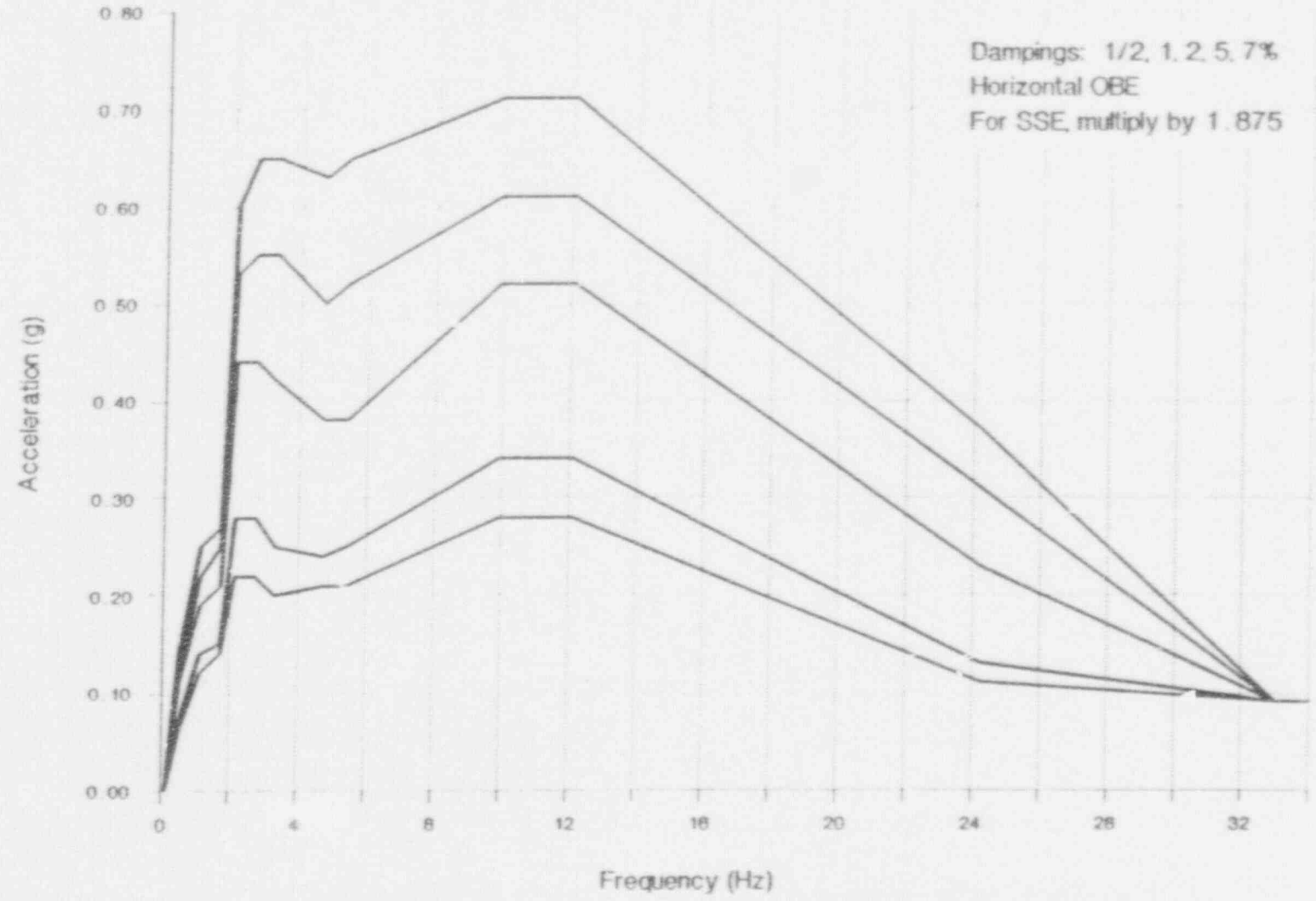
Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.26	0.22	0.20	0.16	0.15	0.13	0.13	0.11	0.09	0.09	0.09
1.10	0.46	0.41	0.35	0.31	0.30	0.26	0.24	0.22	0.22	0.20	0.18
1.70	0.50	0.45	0.39	0.33	0.31	0.28	0.26	0.26	0.24	0.22	0.22
2.10	1.10	0.97	0.80	0.67	0.58	0.50	0.45	0.41	0.37	0.33	0.31
2.50	1.18	0.99	0.80	0.67	0.58	0.50	0.45	0.41	0.37	0.33	0.31
3.30	1.18	0.99	0.76	0.61	0.52	0.45	0.39	0.35	0.33	0.31	0.30
5.10	1.10	0.86	0.67	0.54	0.46	0.43	0.39	0.35	0.33	0.31	0.30
6.60	1.08	0.86	0.61	0.52	0.46	0.41	0.37	0.35	0.33	0.31	0.30
12.10	0.82	0.71	0.61	0.52	0.45	0.41	0.37	0.35	0.33	0.30	0.30
24.20	0.43	0.35	0.28	0.22	0.20	0.18	0.16	0.16	0.16	0.16	0.16
33.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
100.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16

PILGRIM AMPLIFIED RESPONSE SPECTRA

Diesel Generator Building - Elev. 49.75 - Mass Point 3

INFORMATION ONLY
USE DESIGN, DO NOT REPRODUCE

Dampings: 1/2, 1, 2, 5, 7%
Horizontal OBE
For SSE, multiply by 1.875



Sheet G-6

Specification No. C-114-ER-O-EO

PILGRIM AMPLIFIED RESPONSE SPECTRA
 Diesel Generator Building - Elev. 49.75 - Mass Point 3
 Horizontal OBE

Freq. (Hz)	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00
0.50	0.14	0.12	0.11	0.09	0.08	0.07	0.07	0.06	0.05	0.05	0.05
1.10	0.25	0.22	0.19	0.17	0.16	0.14	0.13	0.12	0.12	0.11	0.10
1.70	0.27	0.25	0.21	0.18	0.17	0.16	0.14	0.14	0.13	0.13	0.12
2.10	0.60	0.53	0.44	0.37	0.32	0.28	0.24	0.22	0.20	0.19	0.17
2.70	0.65	0.55	0.44	0.37	0.32	0.28	0.24	0.22	0.20	0.18	0.17
3.30	0.65	0.55	0.42	0.34	0.29	0.25	0.22	0.20	0.18	0.17	0.15
4.70	0.63	0.50	0.48	0.31	0.27	0.24	0.23	0.21	0.19	0.18	0.16
5.40	0.65	0.52	0.38	0.31	0.28	0.25	0.23	0.21	0.19	0.18	0.17
9.90	0.71	0.61	0.52	0.44	0.38	0.34	0.30	0.28	0.26	0.24	0.22
12.10	0.71	0.61	0.52	0.44	0.38	0.34	0.30	0.28	0.26	0.24	0.22
24.20	0.77	0.31	0.23	0.18	0.15	0.13	0.12	0.11	0.10	0.10	0.10
33.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
100.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

Horizontal SDR

Freq.	DAMPING (%)										
	0.5	1	2	3	4	5	6	7	8	9	10
0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.50	0.26	0.22	0.20	0.16	0.15	0.13	0.13	0.11	0.09	0.09	0.09
1.10	0.46	0.41	0.35	0.31	0.30	0.26	0.24	0.22	0.22	0.20	0.18
1.70	0.50	0.46	0.39	0.33	0.31	0.28	0.26	0.26	0.24	0.24	0.22
2.10	1.12	0.99	0.82	0.69	0.60	0.52	0.45	0.41	0.37	0.33	0.31
2.70	1.21	1.03	0.82	0.69	0.60	0.52	0.45	0.41	0.37	0.33	0.31
3.30	1.21	1.03	0.78	0.63	0.54	0.46	0.41	0.37	0.35	0.33	0.31
4.70	1.18	0.93	0.71	0.58	0.50	0.45	0.43	0.39	0.35	0.33	0.28
5.40	1.21	0.97	0.71	0.58	0.52	0.46	0.43	0.39	0.35	0.33	0.30
9.90	1.33	1.14	0.97	0.82	0.71	0.63	0.56	0.52	0.48	0.45	0.41
12.10	1.33	1.14	0.97	0.82	0.71	0.63	0.56	0.52	0.48	0.45	0.41
24.20	0.69	0.58	0.43	0.33	0.28	0.24	0.22	0.20	0.18	0.18	0.18
33.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
100.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16

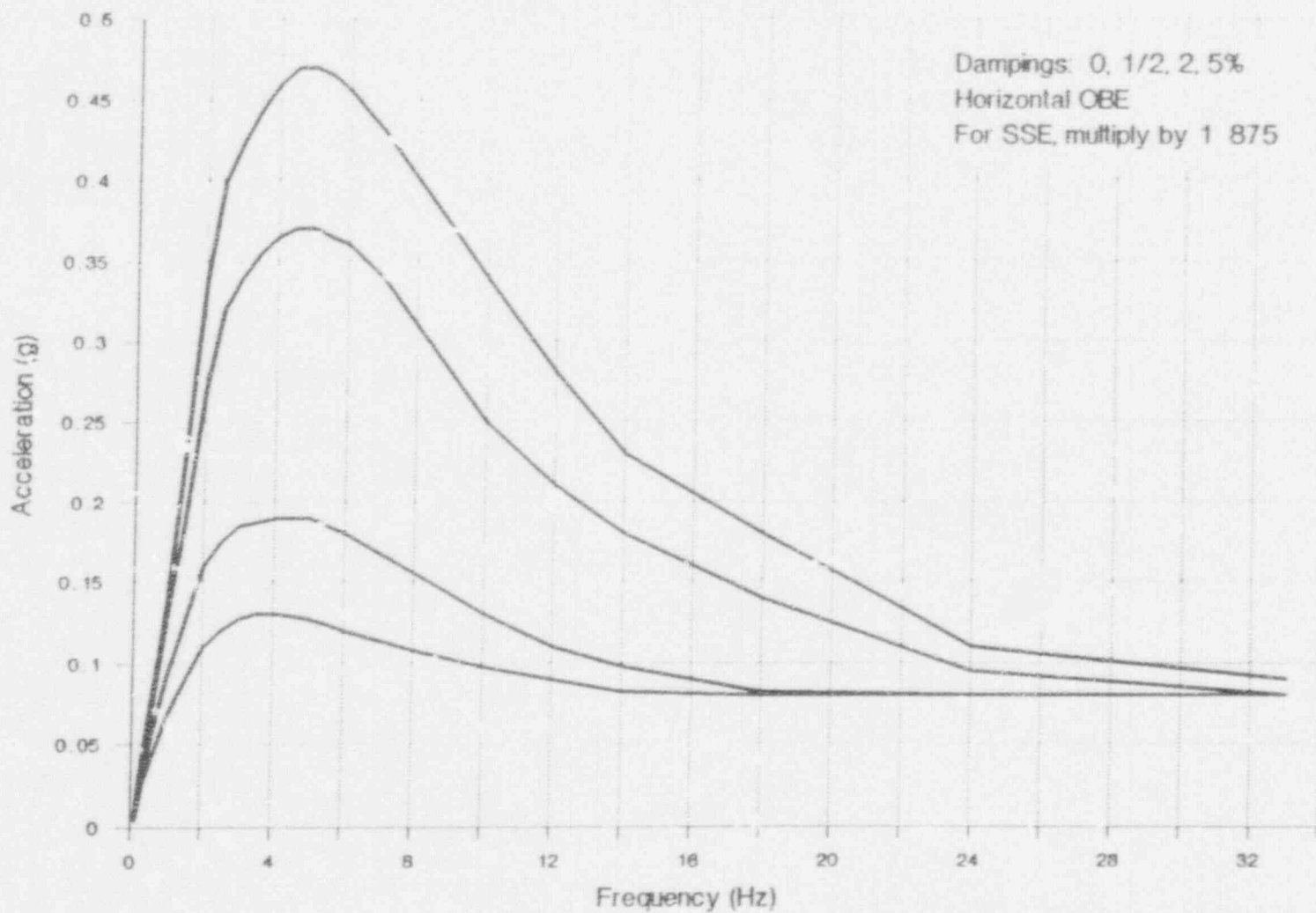
APPENDIX H
HORIZONTAL GROUND SPECTRA

PILGRIM AMPLIFIED RESPONSE SPECTRA

Ground Response Spectra

INFORMATION ONLY
USE RESTRICTED TO REVISIONS

Sheet H-2



PILGRIM AMPLIFIED RESPONSE SPECTRA

Ground Response Spectra

Horizontal OBE

FREQ. (Hz)	Damping (%)			
	0	0.5	2	5
0.10	0.007	0.007	0.005	0.004
0.30	0.040	0.036	0.029	0.025
0.60	0.082	0.076	0.060	0.044
1.00	0.140	0.130	0.092	0.067
1.40	0.220	0.180	0.120	0.085
2.00	0.340	0.270	0.160	0.110
2.50	0.400	0.320	0.175	0.120
3.00	0.425	0.340	0.183	0.127
3.50	0.445	0.355	0.187	0.130
4.00	0.460	0.365	0.190	0.130
4.50	0.470	0.370	0.190	0.129
5.0	0.470	0.370	0.190	0.127
5.50	0.465	0.365	0.185	0.124
6.00	0.455	0.360	0.180	0.120
7.00	0.430	0.340	0.168	0.114
8.00	0.400	0.310	0.155	0.108
10.00	0.310	0.250	0.130	0.098
12.00	0.280	0.210	0.110	0.090
14.00	0.230	0.180	0.098	0.082
18.00	0.180	0.140	0.082	0.080
24.00	0.110	0.095	0.080	0.080
33.00	0.090	0.080	0.080	0.080

Horizontal SSE

FREQ. (Hz)	Damping (%)			
	0	0.5	2	5
0.10	0.014	0.012	0.009	0.008
0.30	0.075	0.068	0.054	0.047
0.60	0.154	0.143	0.113	0.083
1.00	0.263	0.244	0.173	0.126
1.40	0.413	0.338	0.225	0.159
2.00	0.638	0.506	0.300	0.206
2.50	0.750	0.600	0.328	0.225
3.00	0.797	0.638	0.343	0.238
3.50	0.834	0.666	0.351	0.244
4.00	0.863	0.684	0.356	0.244
4.50	0.881	0.694	0.356	0.242
5.00	0.881	0.694	0.356	0.238
5.50	0.872	0.684	0.347	0.233
6.00	0.853	0.675	0.338	0.225
7.00	0.806	0.638	0.315	0.214
8.00	0.750	0.581	0.291	0.203
10.00	0.638	0.469	0.244	0.184
12.00	0.525	0.394	0.206	0.169
14.00	0.431	0.338	0.184	0.154
18.00	0.338	0.263	0.154	0.150
24.00	0.206	0.178	0.150	0.150
33.00	0.169	0.150	0.150	0.150

953/obe-sse.prn/1-10-89

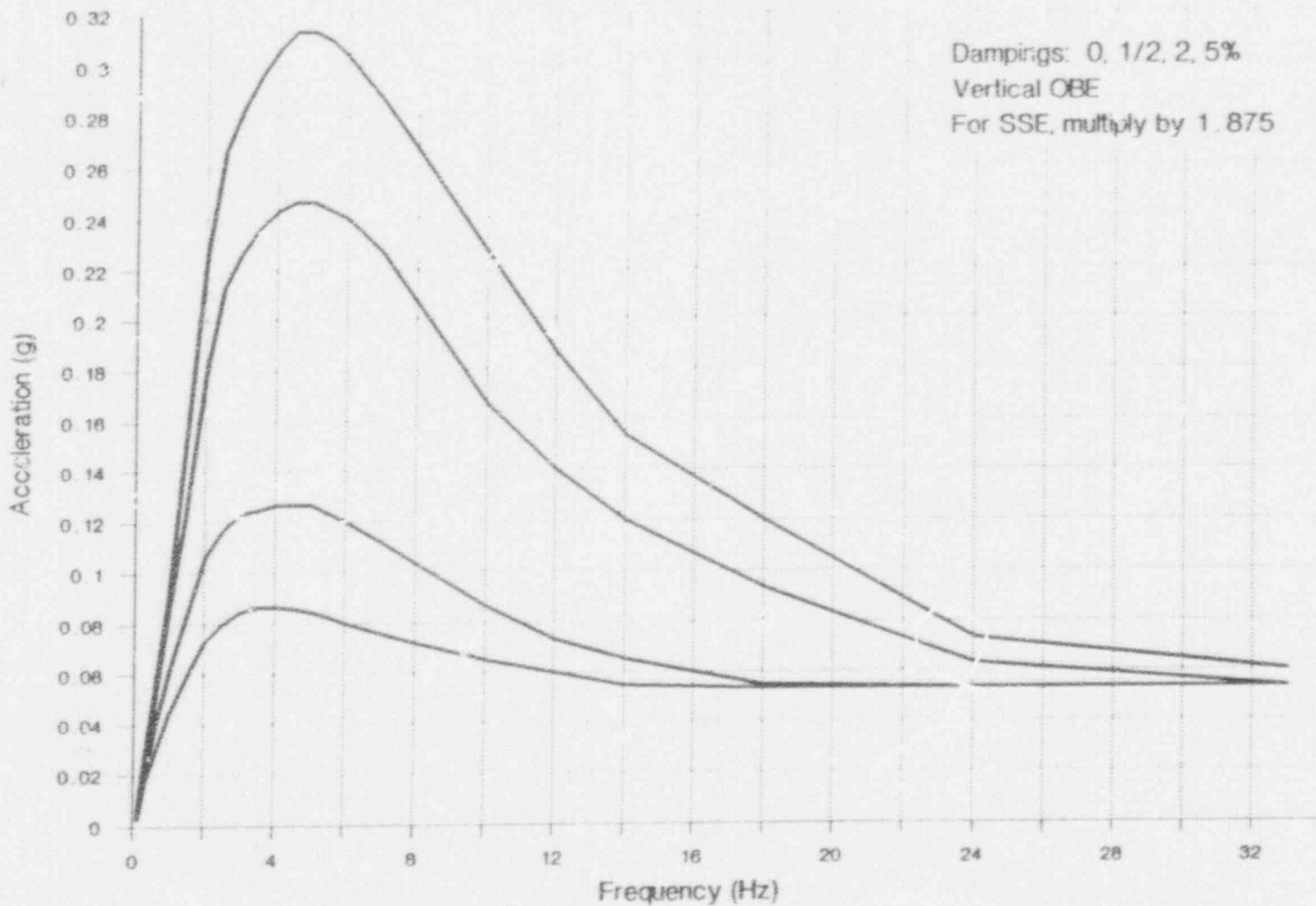
INFORMATION
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reference

APPENDIX I

VERTICAL GROUND SPECTRA

PILGRIM: AMPLIFIED RESPONSE SPECTRA

Vertical Response Spectra



INFORMATION
ONLY
USE DESIGNER'S
REFERENCE

Sheet 1-2

PILGRIM AMPLIFIED RESPONSE SPECTRA

Vertical Response Spectra

Vertical OBE

FREQ. (Hz)	Damping (%)			
	0	0.5	2	5
0.10	0.005	0.004	0.003	0.003
0.30	0.027	0.023	0.019	0.017
0.60	0.055	0.051	0.039	0.029
1.00	0.093	0.081	0.061	0.045
1.40	0.147	0.120	0.080	0.057
2.00	0.227	0.180	0.107	0.073
2.50	0.267	0.213	0.117	0.080
3.00	0.283	0.227	0.122	0.085
3.50	0.297	0.237	0.125	0.087
4.00	0.307	0.243	0.127	0.087
4.50	0.313	0.247	0.127	0.086
5.00	0.313	0.247	0.127	0.085
5.50	0.310	0.243	0.123	0.083
6.00	0.303	0.240	0.120	0.080
7.00	0.287	0.227	0.112	0.076
8.00	0.267	0.207	0.103	0.072
10.00	0.227	0.167	0.087	0.065
12.00	0.187	0.140	0.073	0.060
14.00	0.153	0.120	0.065	0.055
18.00	0.120	0.093	0.055	0.053
24.00	0.073	0.063	0.053	0.053
33.00	0.060	0.053	0.053	0.053

Vertical SSE

FREQ. (Hz)	Damping (%)			
	0	0.5	2	5
0.10	0.009	0.008	0.006	0.005
0.30	0.050	0.044	0.036	0.031
0.60	0.102	0.095	0.074	0.054
1.00	0.175	0.162	0.115	0.084
1.40	0.275	0.225	0.150	0.106
2.00	0.425	0.337	0.200	0.137
2.50	0.500	0.400	0.219	0.150
3.00	0.531	0.425	0.229	0.159
3.50	0.556	0.444	0.234	0.162
4.00	0.575	0.456	0.237	0.162
4.50	0.587	0.462	0.237	0.161
5.00	0.587	0.462	0.237	0.159
5.50	0.581	0.456	0.231	0.155
6.00	0.569	0.450	0.225	0.150
7.00	0.537	0.425	0.210	0.142
8.00	0.500	0.387	0.194	0.135
10.00	0.425	0.312	0.162	0.122
12.00	0.350	0.262	0.137	0.112
14.00	0.287	0.225	0.122	0.102
18.00	0.225	0.175	0.102	0.100
24.00	0.137	0.119	0.100	0.100
33.00	0.112	0.100	0.100	0.100

953/obe-sac.pnn/1-10-89

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REFERENCE

APPENDIX J

BUILDING MODEL BOUNDARIES

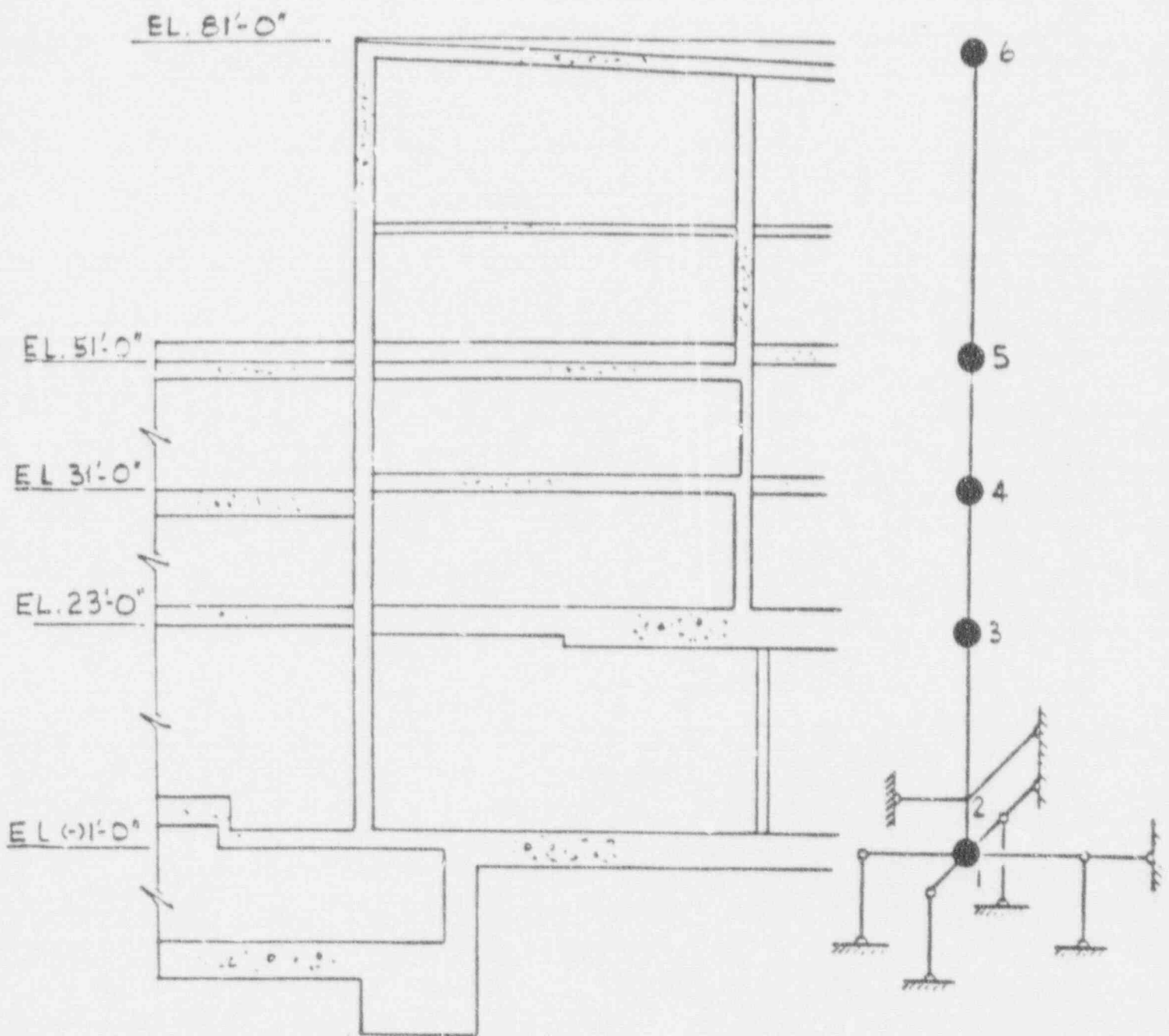


FIGURE 1
RADWASTE BLDG. MODEL

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 REFERENCE

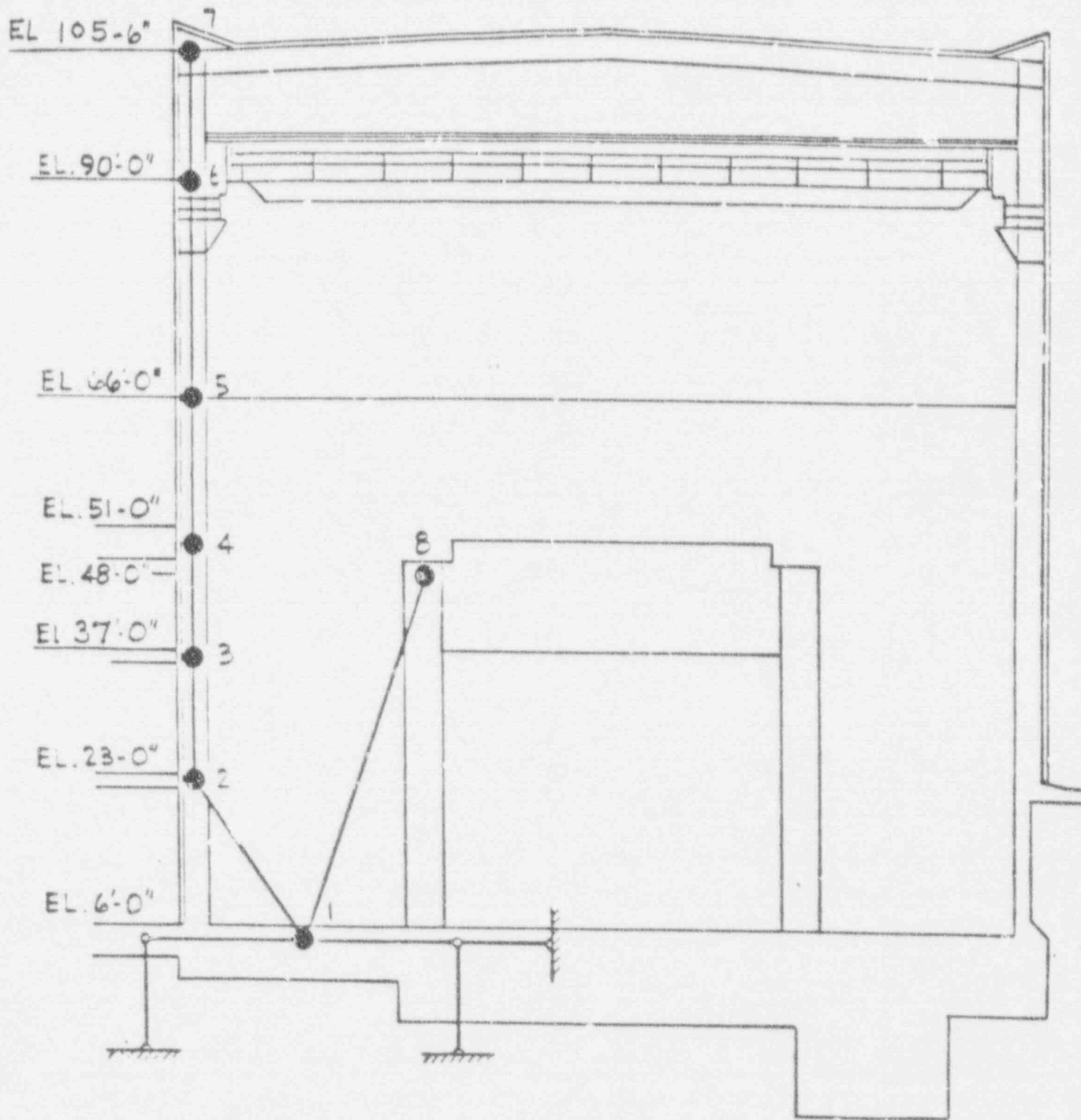


FIGURE 2
TURBINE BLDG. MODEL

INFORMATION
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 reference

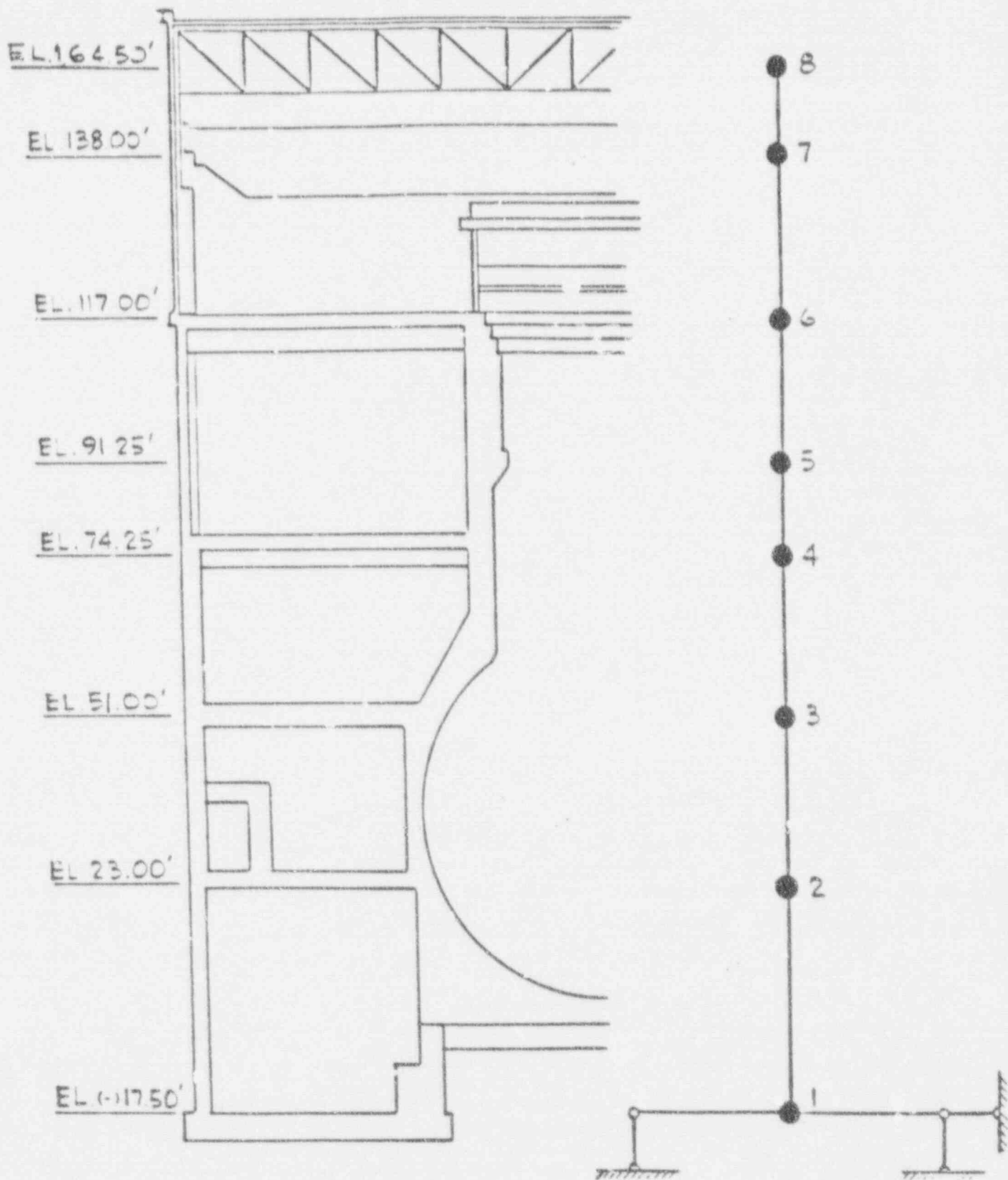


FIGURE 3
REACTOR BLDG. MODEL

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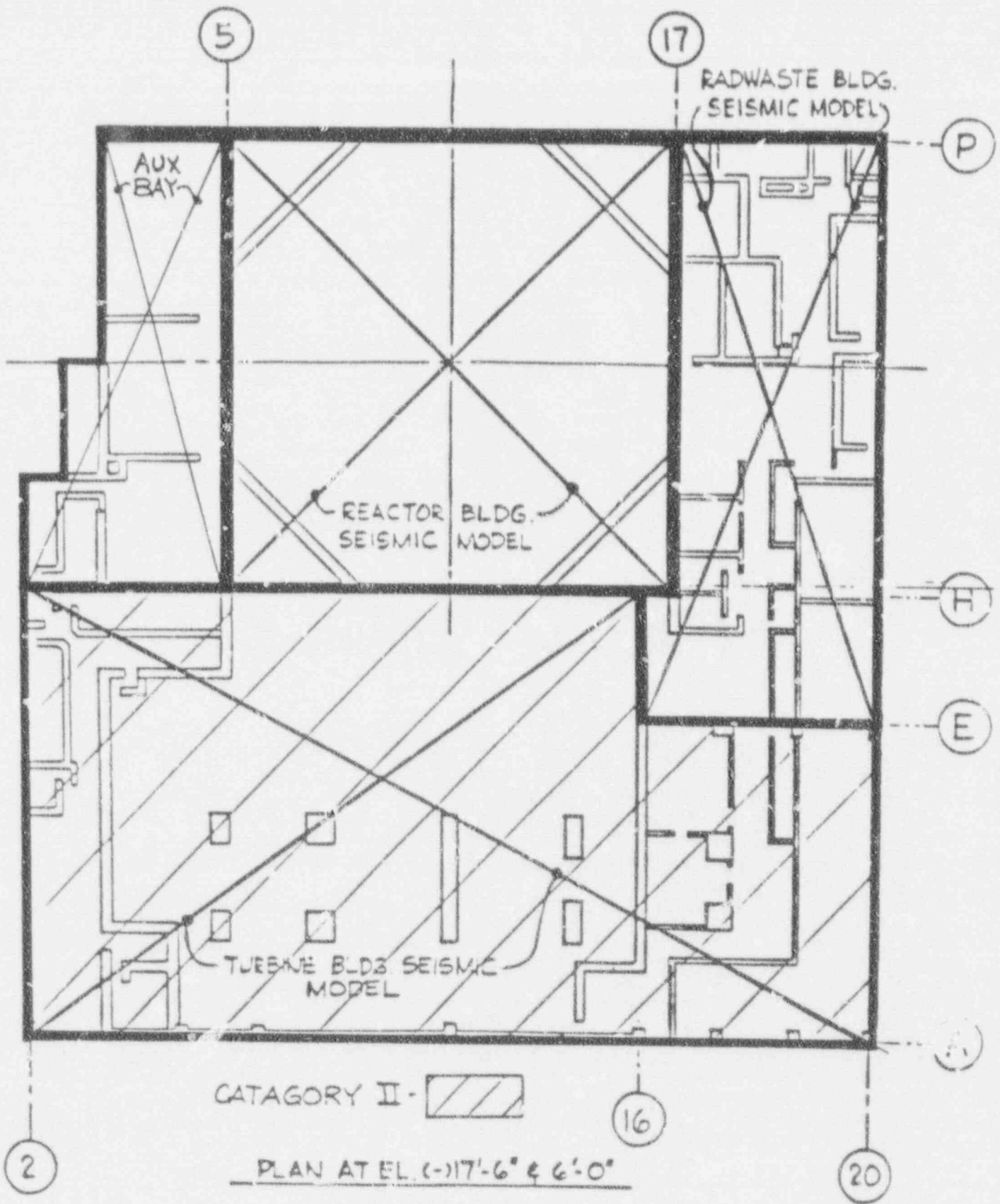


FIGURE 4
MATH MODEL BOUNDARIES

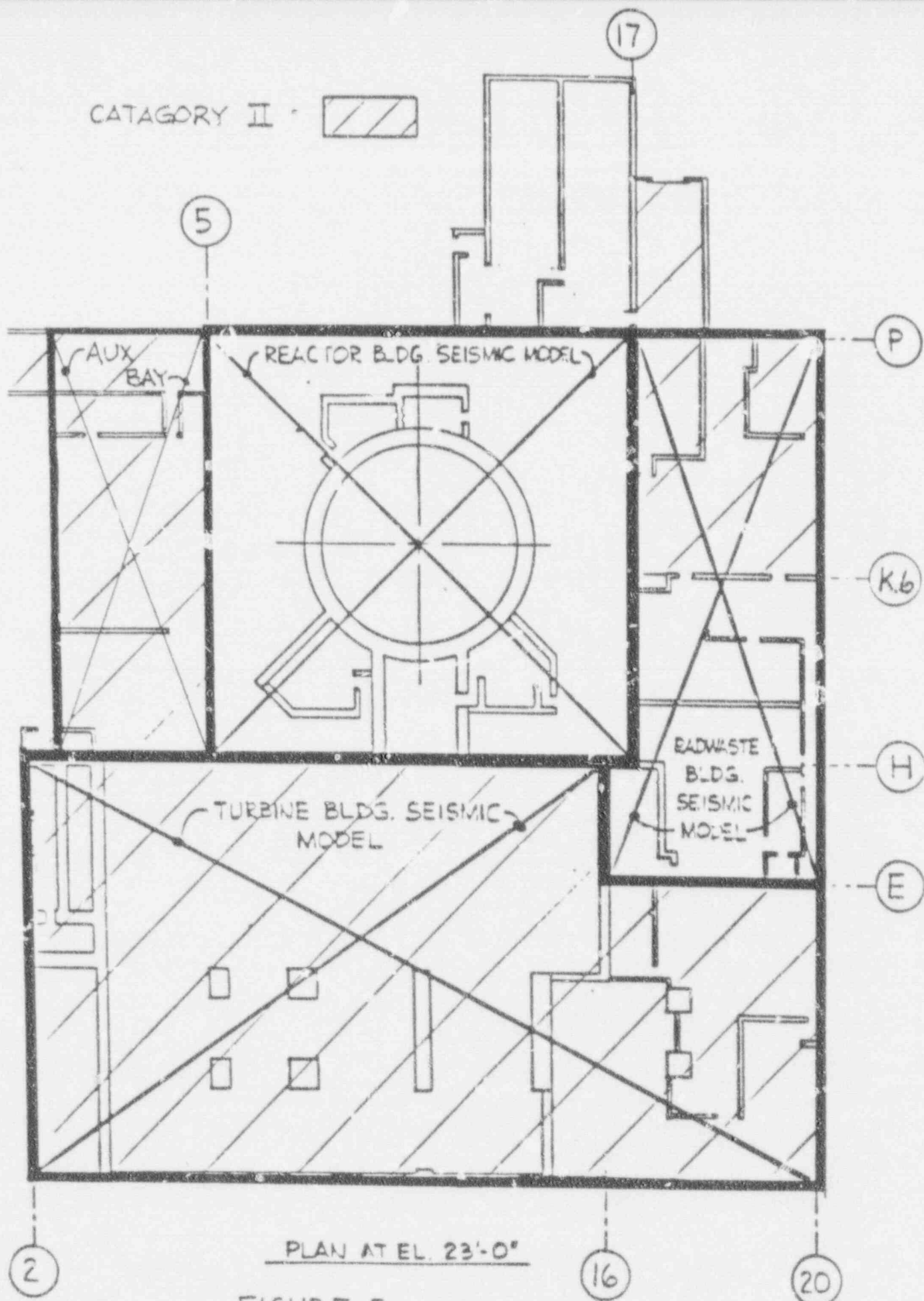


FIGURE 5
MATH MODEL BOUNDARIES

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CATAGORY II

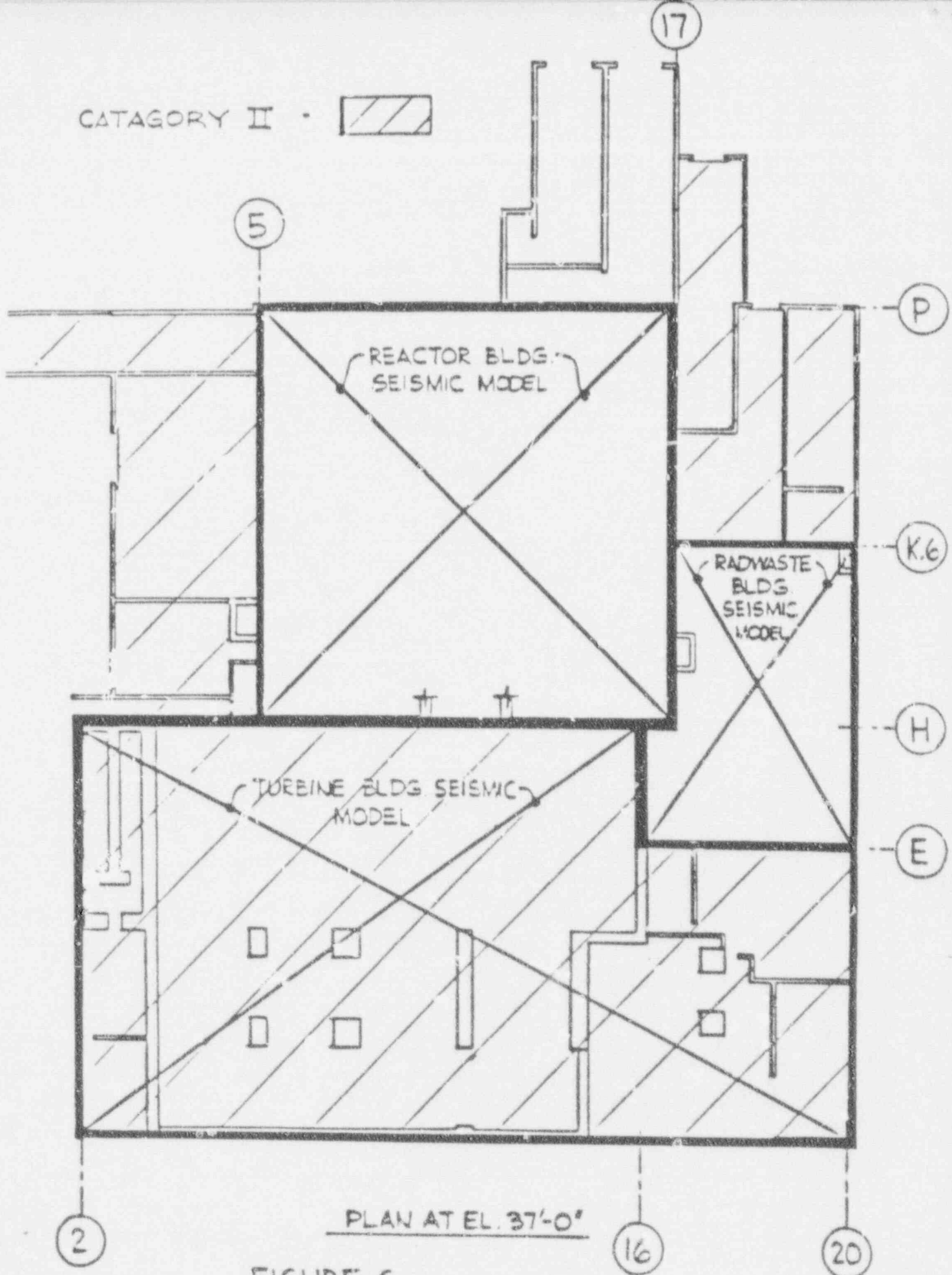
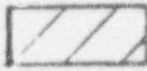


FIGURE 6
MATH MODEL BOUNDARIES

INFORMATION ONLY
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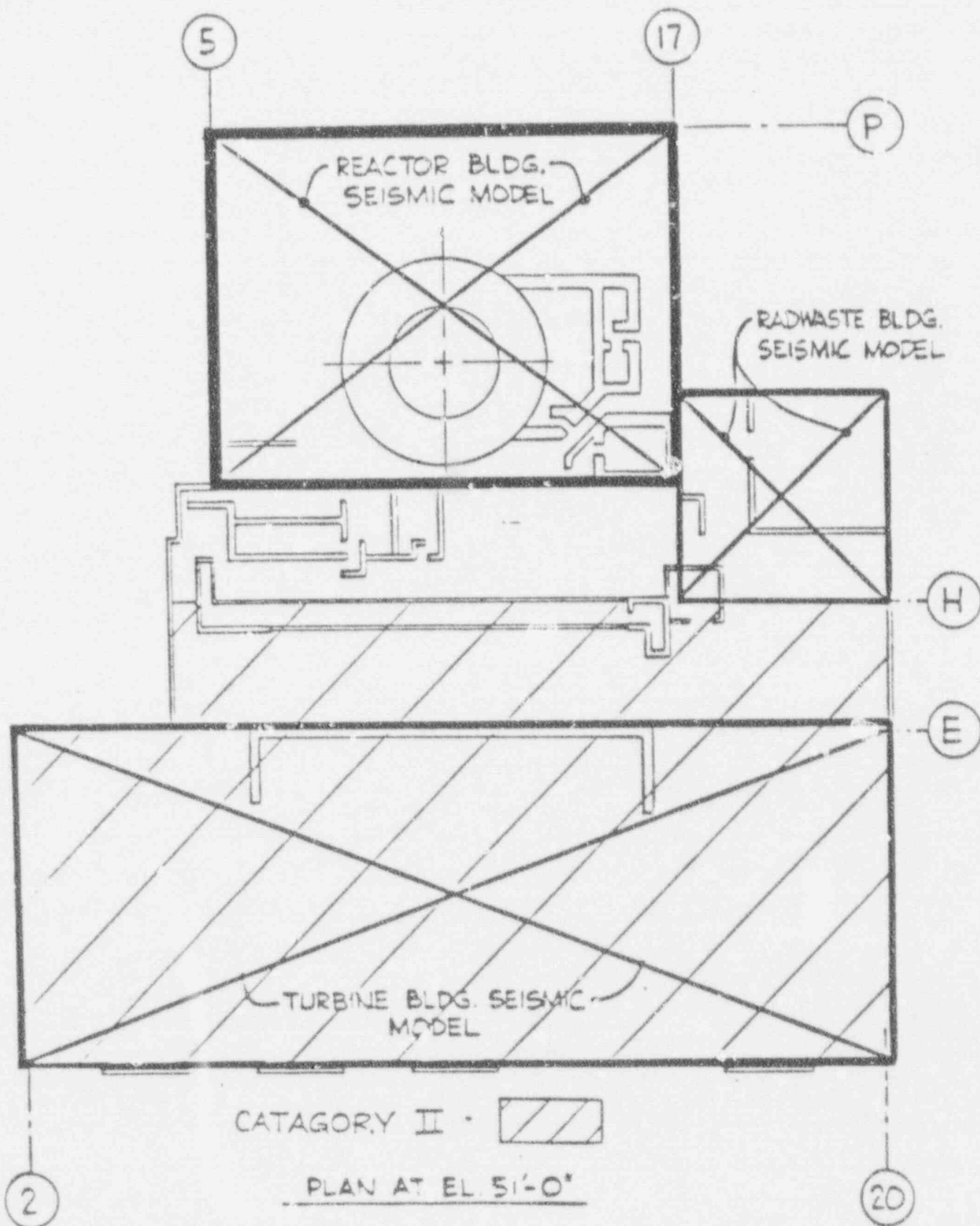


FIGURE 7
MATH MODEL BOUNDARIES

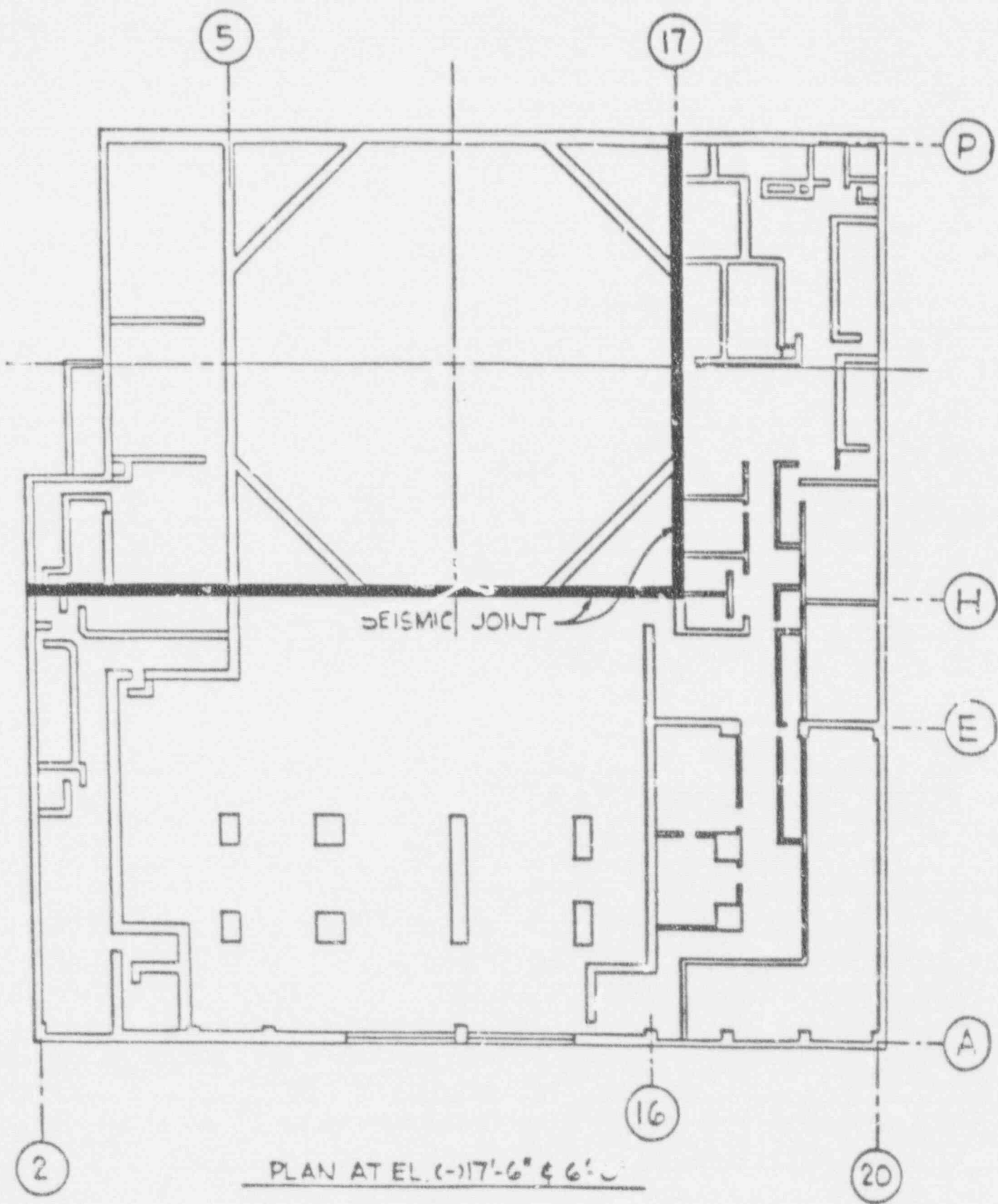
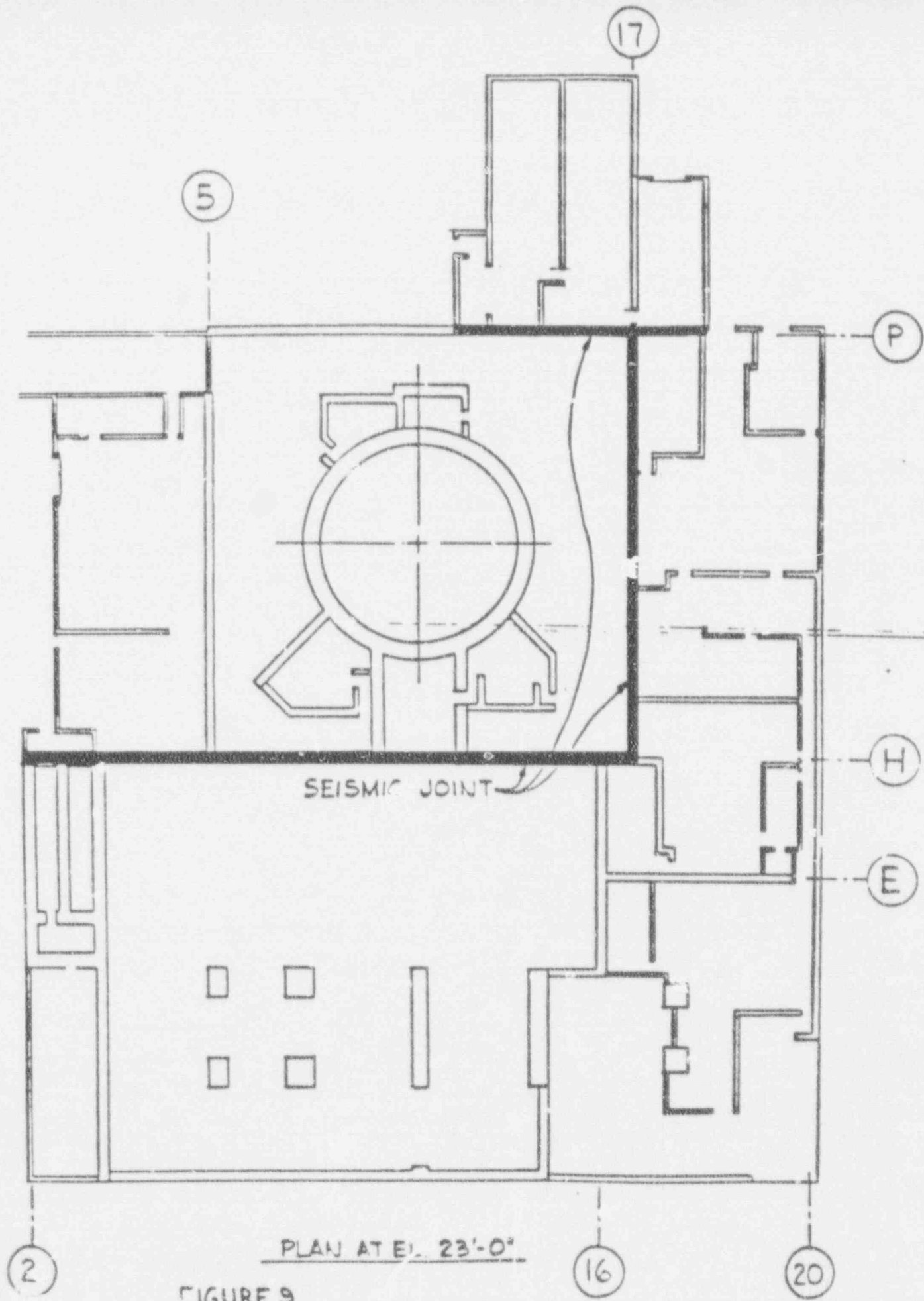


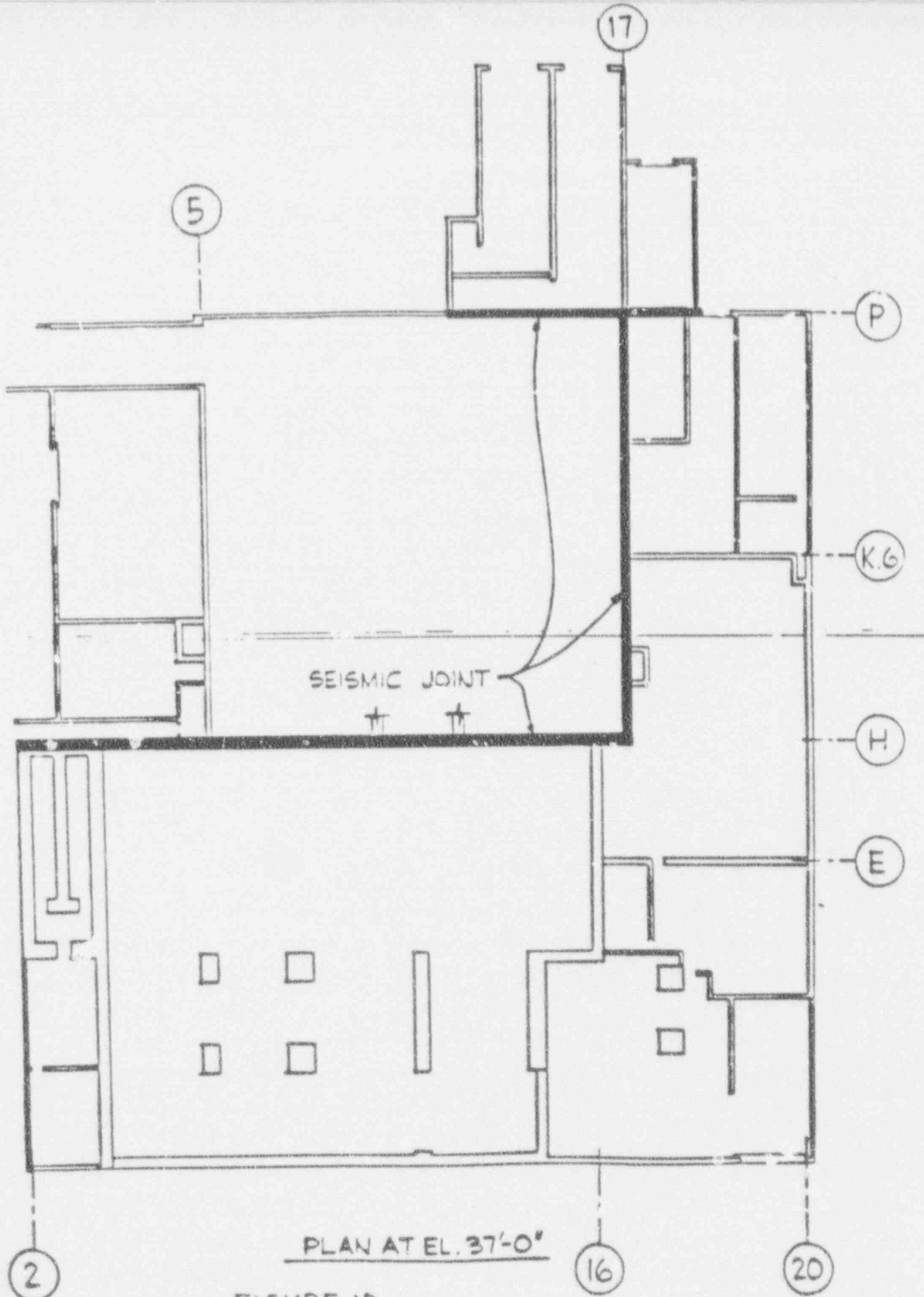
FIGURE 8
SEPARATION JOINTS



PLAN AT EL. 23'-0"

FIGURE 9
SEPARATION JOINTS

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PLAN AT EL. 37'-0"

FIGURE 10
SEPARATION JOINTS

INFORMATION ONLY
USE REFERENCED TO
REFERENCE

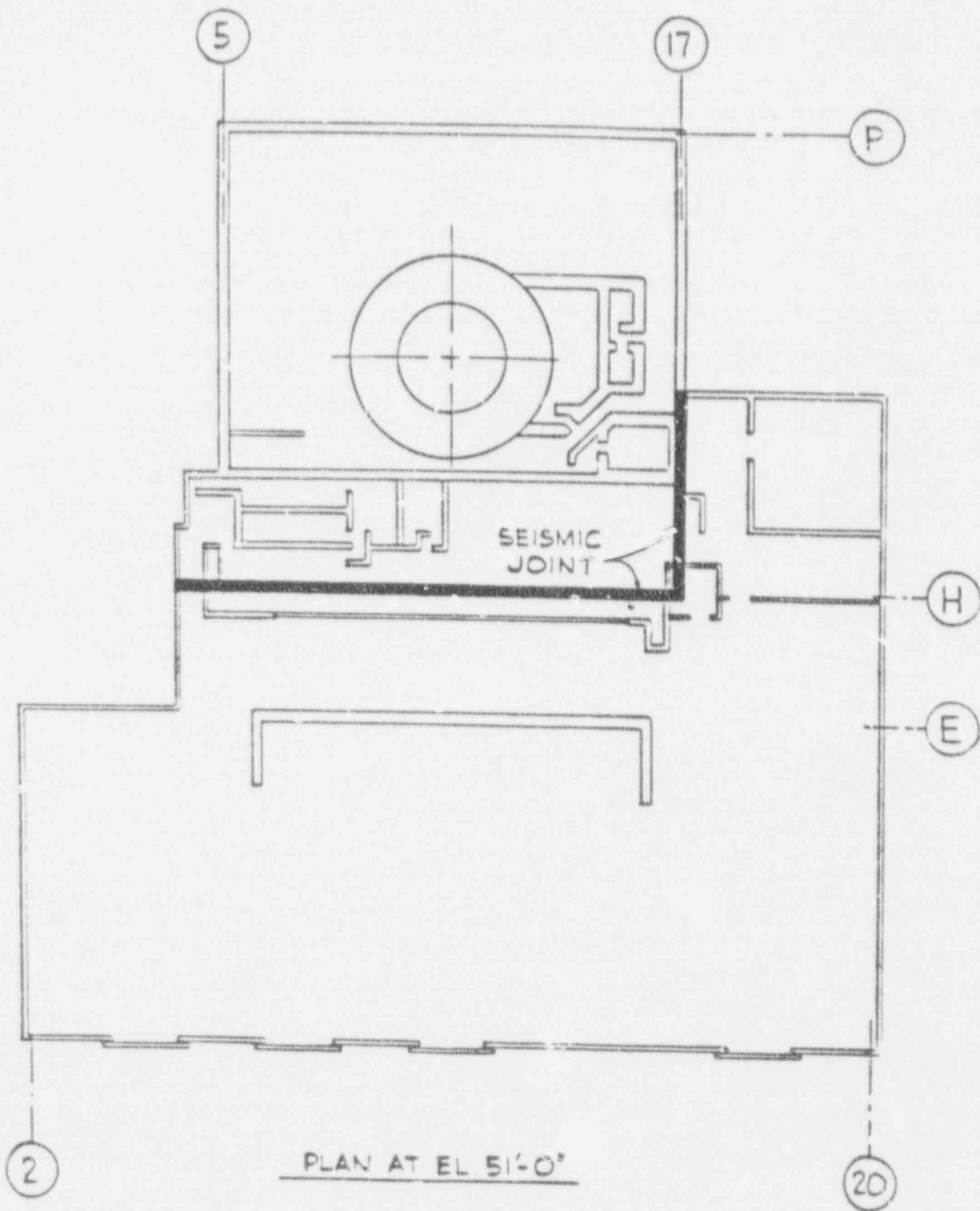


FIGURE 11
SEPARATION JOINTS

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