

PHILADELPHIA ELECTRIC COMPANY^{10 CFR 50.54(f)}
NUCLEAR GROUP HEADQUARTERS GL 87-02 Supp. 1

955-65 CHESTERBROOK BLVD.

WAYNE, PA 19087-5691

September 18, 1992

(215) 640-6000

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

NUCLEAR SERVICES DEPARTMENT

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

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Response to Generic Letter 87-02, Supplement 1,
"Verification of Seismic Adequacy of Mechanical and
Electrical Equipment in Operating Reactors, Unresolved
Safety Issue (USI) A-46."

Dear Sir:

INTRODUCTION

On February 19, 1987, the NRC issued Generic Letter (GL) 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46." GL 87-02 encouraged licensees to participate in a generic program to resolve the seismic verification issues associated with USI A-46. As a result, the Seismic Qualification Utility Group (SQUG) developed the "Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment." By letter dated May 22, 1992, the NRC issued GL 87-02, Supplement 1, which constituted the NRC Staff's review of the GIP and which included Supplemental Safety Evaluation Report Number 2 (SSER-2) on the GIP, Revision 2 corrected on February 14, 1992.

The letter to SQUG enclosing SSER-2 requests that SQUG member utilities provide to the NRC, within 120 days, a schedule for implementing the GIP. By letter dated August 21, 1992, to James G. Partlow, NRR-NRC, SQUG clarified that the 120 days would expire on September 21, 1992. Accordingly, this letter responds to that request.

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COMMITMENT TO GIP

As a member of SQUG, Philadelphia Electric Company (PECo) commits to use the SQUG methodology as documented in the GIP, where "GIP" refers to GIP Revision 2, corrected February 14, 1992, to resolve USI A-46 at Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The GIP, as evaluated by the NRC Staff, permits licensees to deviate from the SQUG commitments embodied in the Commitment sections, provided the Staff is notified of substantial deviations prior to implementation. PECo recognizes that the Staff's position in SSER-2 is that if licensees use other methods that deviate from the criteria and procedures as described in SQUG commitments and in the implementation guidance of the GIP, Rev. 2, without prior NRC Staff approval, the method may not be acceptable to the Staff and, therefore, may result in a deviation from the provisions of GL 87-02.

Specifically, PECo hereby commits to the SQUG commitments set forth in the GIP in their entirety, including the clarifications, interpretations, and exceptions identified in SSER-2 as clarified by the August 21, 1992, SQUG letter responding to SSER-2.

PECo generally will be guided by the remaining (non-commitment) sections of the GIP, i.e., GIP implementation guidance, which comprises suggested methods for implementing the applicable commitments. PECo will notify the NRC as soon as practicable, but no later than the final USI A-46 summary report, of significant or programmatic deviations from the guidance portions of the GIP, if any. Justifications for such deviations, as well as for other minor deviations, will be retained on site for NRC review.

IN-STRUCTURE RESPONSE SPECTRA

For defining seismic demand, PECo will use the options provided in the GIP for conservative and median-centered, design in-structure response spectra, as appropriate, depending on the building, the location of equipment in the building and equipment characteristics.

The licensing-basis safe-shutdown earthquake (SSE) in-structure response spectra may be used as one of the options provided in the GIP for resolution of USI A-46. The licensing-basis spectra as described in the Updated Final Safety Analysis Report (UFSAR) for PBAPS Units 2 and 3 may be used and are considered to be conservative design. The procedures and criteria which were used to generate the licensing-basis in-structure response spectra are described in Attachment 1. Those Attachment 1 pages that are copies of the PBAPS UFSAR are being provided to the NRC for convenience.

Realistic, median-centered in-structure response spectra may be used as one of the options provided in the GIP for resolution of USI A-46.

SCHEDULE

Given the magnitude of the effort required to achieve resolution of USI A-46, final implementation must be carefully integrated with outage schedules and the seismic "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities" response, the completion of which may be affected by the A-46 implementation start date. Because of integration with IPEEE, and the workload set forth by the criteria of the GIP, a Seismic Evaluation Report summarizing the results of the A-46 program at PBAPS will be submitted to the NRC by November 20, 1995.

Regarding in-structure response spectra, if the NRC Staff does not respond by accepting, questioning, or rejecting the spectra within sixty (60) days from the date of this letter, the Staff is deemed to have accepted PECO's spectra, and we will proceed with implementation. If a rejection or question is received from the Staff, we will provide additional information to resolve the problem. Again, if the Staff takes no action on this new information for sixty (60) days from the date of our response, the Staff is deemed to have accepted our resolution and we will proceed with implementation. The completion date of November 20, 1995, is based on the assumption that the implementation program will proceed on November 20, 1992.

If you have any questions, or require additional information regarding this submittal, please contact us.

Sincerely,



G. J. Beck
Manager
Licensing Section

Attachment

Enclosure: Affirmation

cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PBAPS

COMMONWEALTH OF PENNSYLVANIA :

:

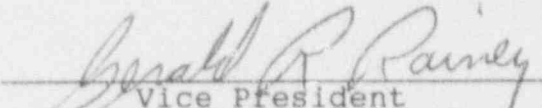
ss.

COUNTY OF CHESTER :

:

G. R. Rainey, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, that he has read the response to Generic Letter No. 87-02, Supplement 1, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46," and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.


Vice President

Subscribed and sworn to
before me this 17th day
of September 1992.


Notary Public

Notarial Seal
Erica A. Santon, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires July 10, 1995

DESCRIPTION OF LICENSING BASIS
IN STRUCTURE RESPONSE SPECTRA
PEACH BOTTOM ATOMIC POWER STATION UNITS 2 AND 3

Description of Models: (Ref: PBAPS UFSAR Appendix C and PBAPS Specification G-14)

- Mathematical models consist of stick models containing lumped masses and stiffness coefficients.
- A dynamic analysis using the time history technique was used to generate the In-Structure Response Spectra.
- No Soil Structure Interaction analysis was performed, since buildings are founded on rock.
- Two percent structural damping was used in the generation of In Structure Response Spectra.
- The Reactor Building and Radwaste Building (contains control room) stick models are shown in Figures 1 and 2, respectively.

Input Motion: (Ref: PBAPS UFSAR Appendix C)

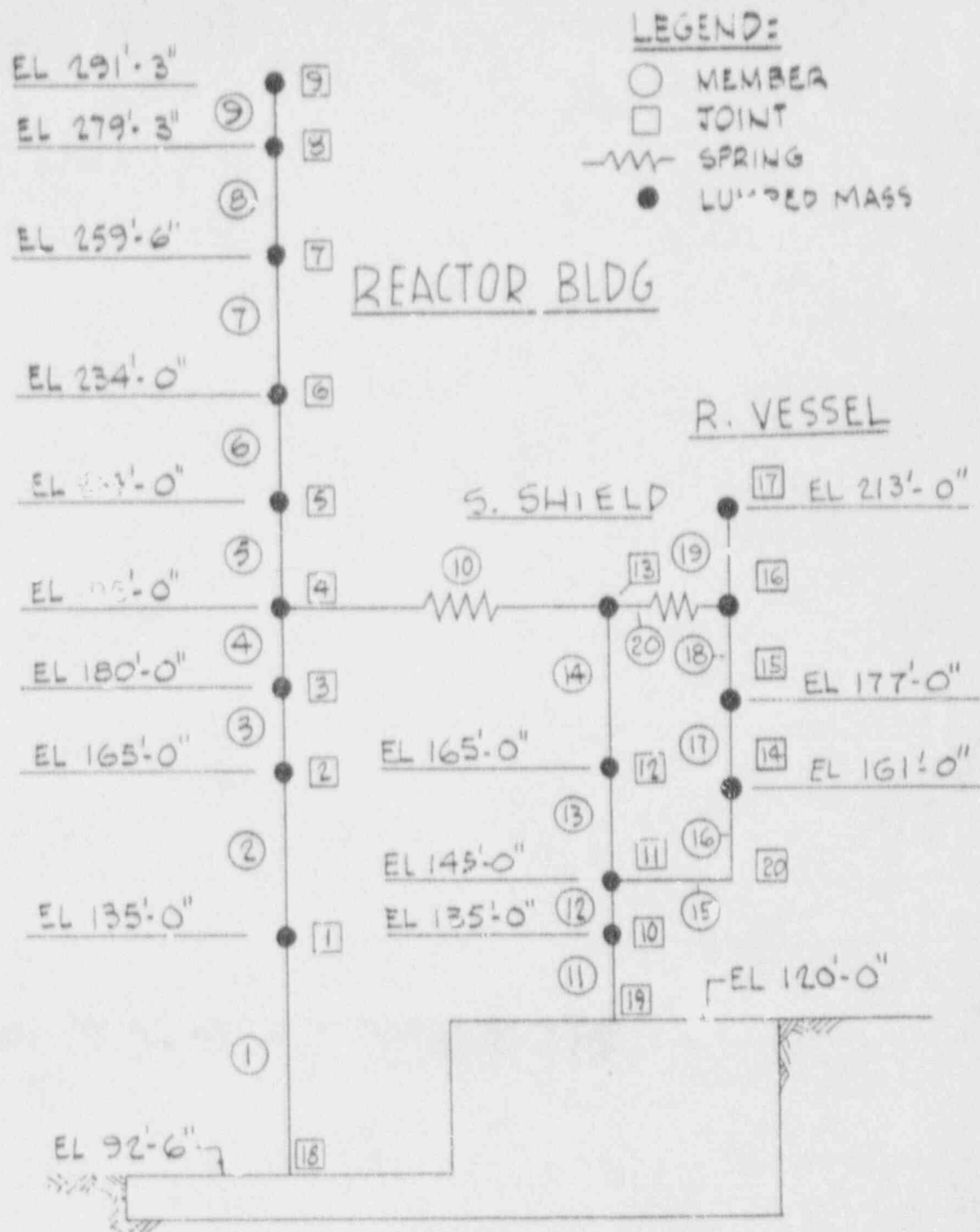
- Design Earthquake: max. horizontal ground acceleration = 0.05g (See Figure 3 for ground response spectrum)
- Maximum Credible Earthquake (MCE or SSE): max. horizontal ground acceleration = 0.12g (See Figure 4 for ground response spectrum)
- The site ground response spectrum and the time history spectrum of the July 12, 1952 Taft, California S69E Earthquake normalized for the 0.05g Design Earthquake are compared in Figure 5 for 2% critical damping since only this was used for developing floor spectrum curves.
- Since some of the points from the time-history spectrum fall below the site response spectrum, the ratio of the accelerations obtained by the spectrum response technique to the accelerations from the time-history analysis was used as a multiplying factor to increase the time-history spectrum for the Class I structures as appropriate.

In Structure Response Spectra:

- In Structure Response Spectra were generated for The Design Earthquake (0.05g max ground acceleration) only. The input motion is described above.
- SSE Response Spectra are obtained by multiplying the Design Earthquake spectral values by 2.4 (0.12/.05). Since higher structural damping for SSE is not considered, the SSE values are very conservative.
- In Structure Response Spectra for 5 percent damping at various locations for the Design Earthquake are listed below. The building locations were chosen to include areas which are higher than about 40 ft above grade and where significant equipment is located (ie. control room). The Response Spectra must be increased by a factor of 2.4 to obtain the SSE Response Spectra.

Reactor Building El 165'-0" N-S/E-W	Figure 6
Reactor Building El 195'-0" N-S/E-W	Figure 7
Radwaste Building El 150'-0" N-S	Figure 8
Radwaste Building El 150'-0" E-W	Figure 9
Radwaste Building El 165'-0" N-S	Figure 10
Radwaste Building El 165'-0" E-W	Figure 11

Structure Response Spectra are obtained from PBAPS Specification G-14, "General Project Class I Seismic Requirements for Equipment, Instrumentation, Systems and Components for Peach Bottom Atomic Power Station Units 2 & 3 for the Philadelphia Electric Company"



PHILADELPHIA ELECTRIC COMPANY
 PEACH BOTTOM ATOMIC POWER STATION
 UNITS 2 AND 3
 UPDATED FINAL SAFETY ANALYSIS REPORT

REACTOR BUILDING
 MATHEMATICAL MODEL

Attachment 1
 Figure 1
 Reactor Building Model

CALCULATION SHEET

10-2/M-2



SIGNATURE Ch

DATE _____

TITLE FEACH BOTTOM ATIS/RADWASTE BLDG

JOB NO. 6280

SUBJECT MASS CONCENTRATIONS

SHEET NO. 1

00000000000030964997

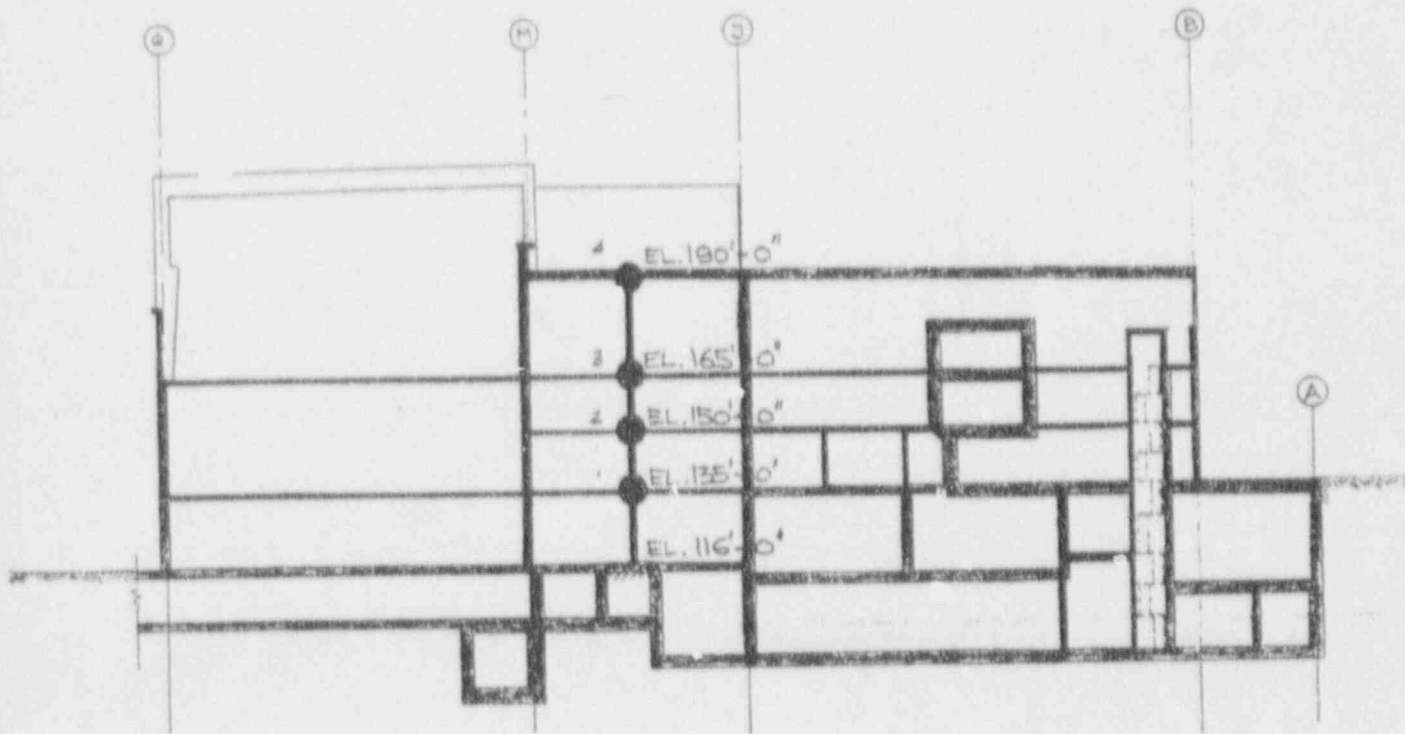
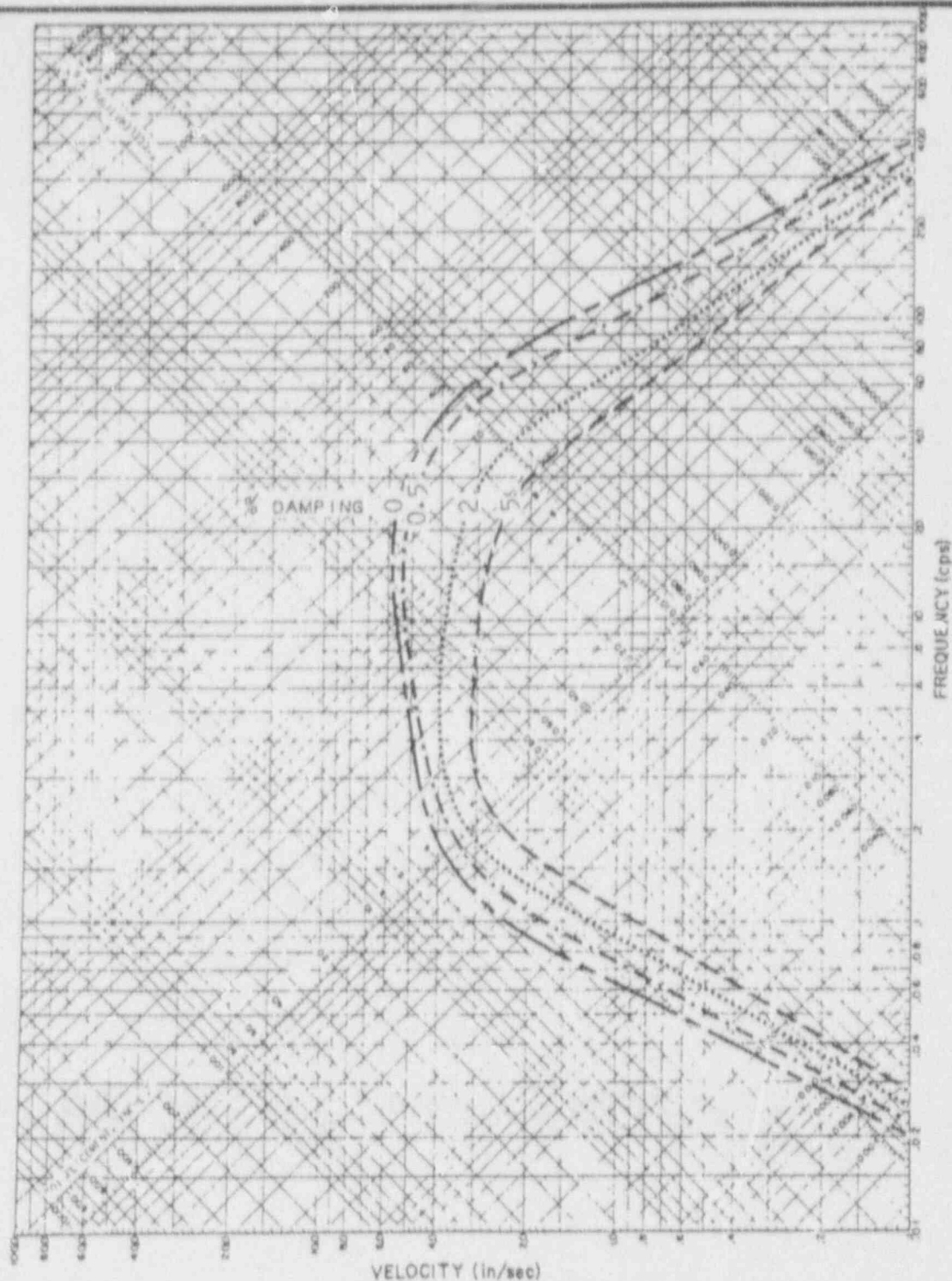


FIG. 1 PAGE 2

Attachment 1
Figure 2
Radwaste Building Model

04

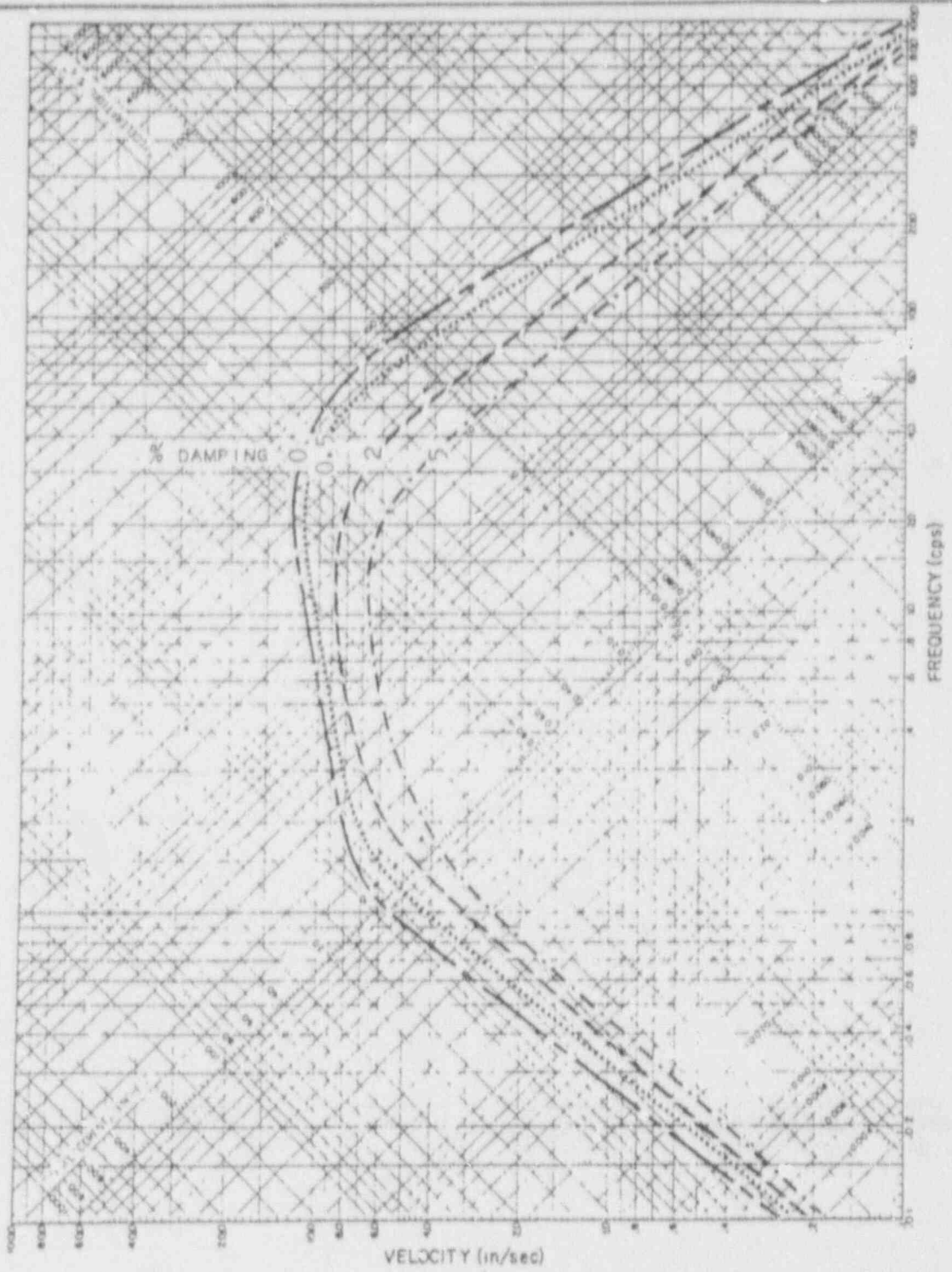


**RESPONSE SPECTRA
(DESIGN EARTHQUAKE)**

PHILADELPHIA ELECTRIC COMPANY
 PEACH BOTTOM ATOMIC POWER STATION
 UNITS 2 AND 3
 UPDATED FINAL SAFETY ANALYSIS REPORT

**RESPONSE SPECTRA
(DESIGN EARTHQUAKE)**

Attachment 1
 Figure 3
 Ground Response Spectra
 Design Earthquake

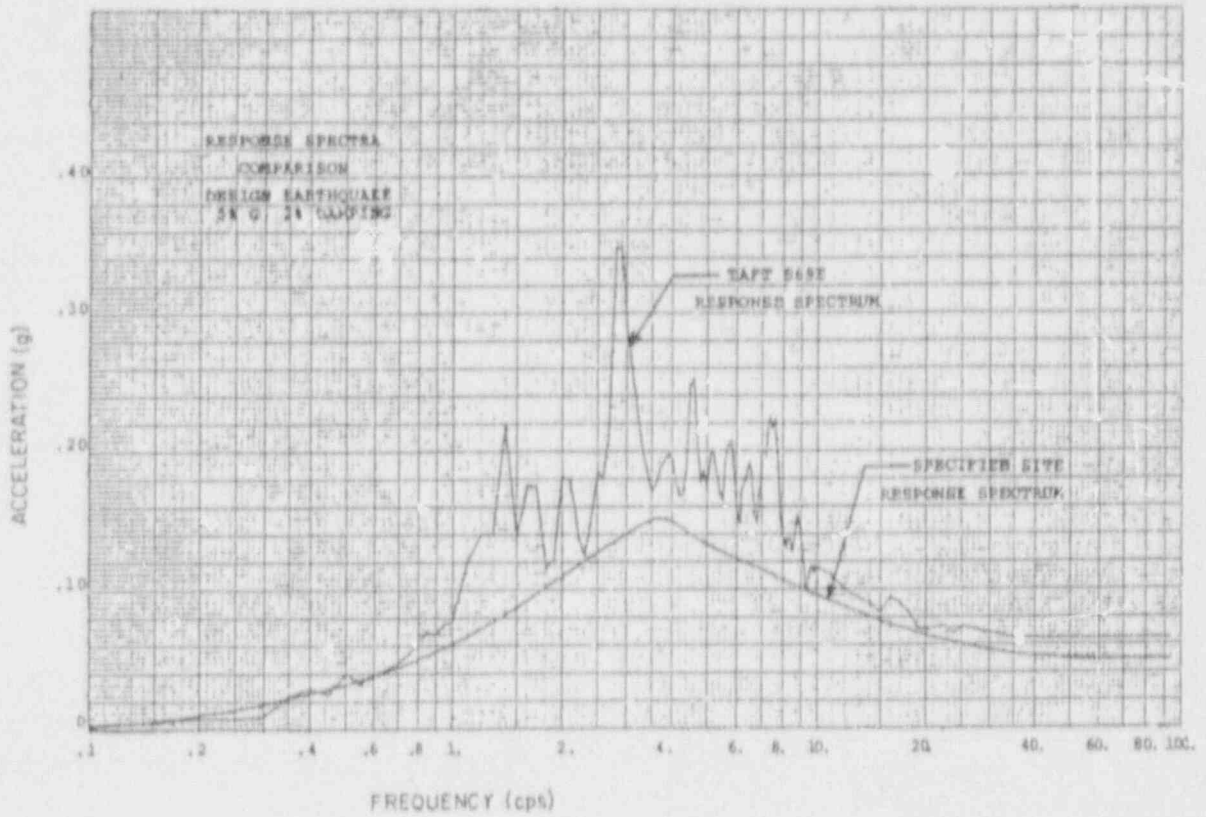


**RESPONSE SPECTRA
(MAXIMUM CREDIBLE EARTHQUAKE)**

PHILADELPHIA ELECTRIC COMPANY
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UNITS 2 AND 3
UPDATED FINAL SAFETY ANALYSIS REPORT

RESPONSE SPECTRA
(MAXIMUM CREDIBLE EARTHQUAKE)

Attachment 1
Figure 4
Ground Response Spectra
Maximum Credible Earthquake (MCE, SSE)



PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
UPDATED FINAL SAFETY ANALYSIS REPORT

RESPONSE SPECTRA
COMPARISON, DESIGN EARTHQUAKE
5 % g, 2 % DAMPING

Attachment 1
Figure 5
Response Spectra Comparison

ACCELERATION SPECTRUM(G) VS FREQUENCY(CPS)

0.1 0.2 0.4 0.5 1.0 2.0 4.0 6.0 10. 20. 40. 60. 100.

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P. B. Unit 2 & 3 Reactor Bldg.

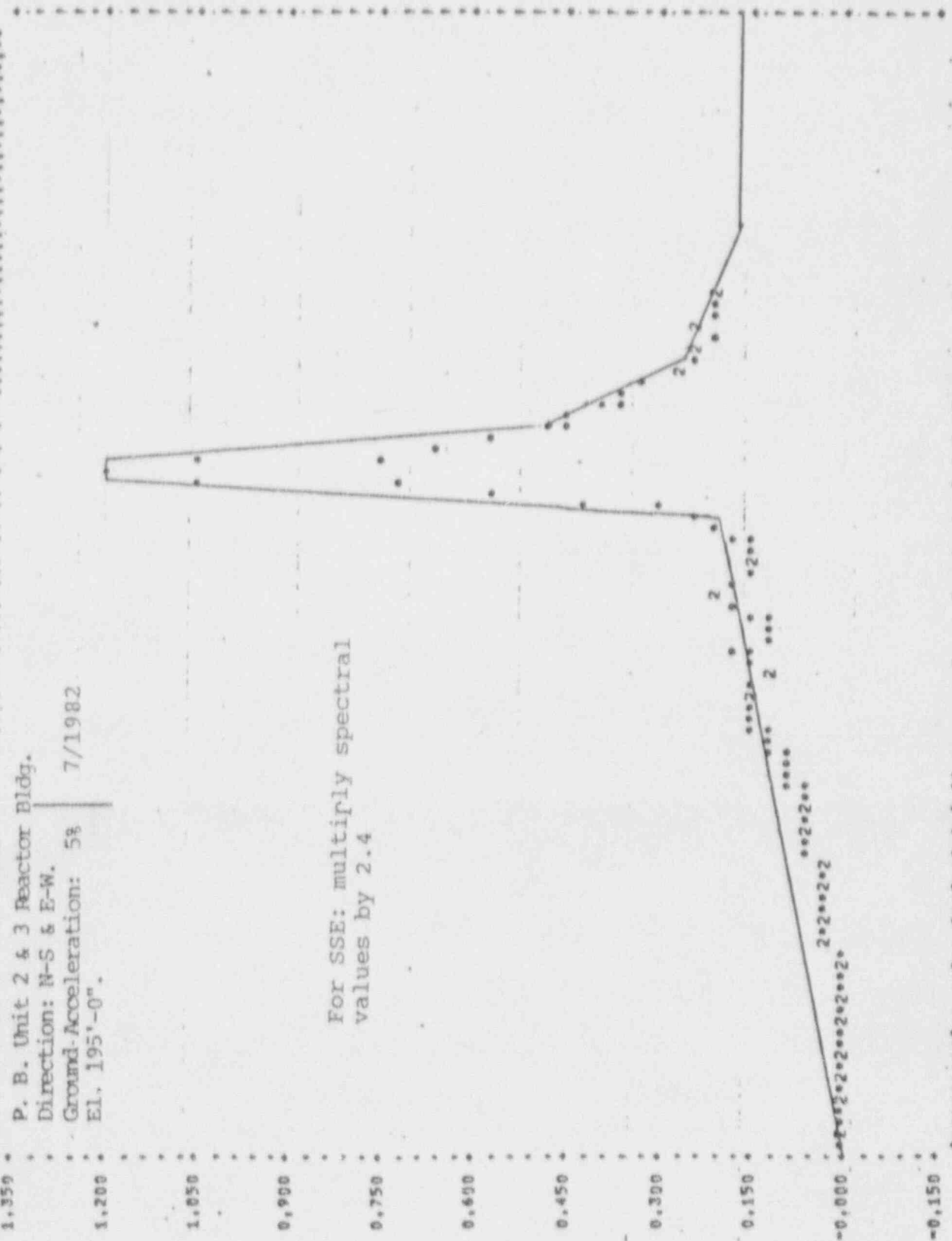
Direction: N-S & E-W.

Ground-Acceleration: 5%

7/1982

El. 195'-0"

1,350 1,200 1,050 0,900 0,750 0,600 0,450 0,300 0,150 -0,000 -0,150



For SSE: multiply spectral values by 2.4

ZPA = 0.18

HORIZONTAL ACCELERATION(G'S)

Attachment 1
Figure 7
Reactor Building
El 195, N-S & E-W
0.05g ground accel

ACCELERATION SPECTRUM

POINT = 2

DAMPING = 0.050

0.1 0.2 0.4 0.6 1.0 2.0 4.0 6.0 10. 20. 40. 60. 100.

P.B. UNIT 2 & 3 RADW. BLDG.
DIRECTION: N.-S.
GROUND ACCELERATION: 5%
El. 150'-0" / 7/1982

For SSE: multiply spectral
values by 2.4

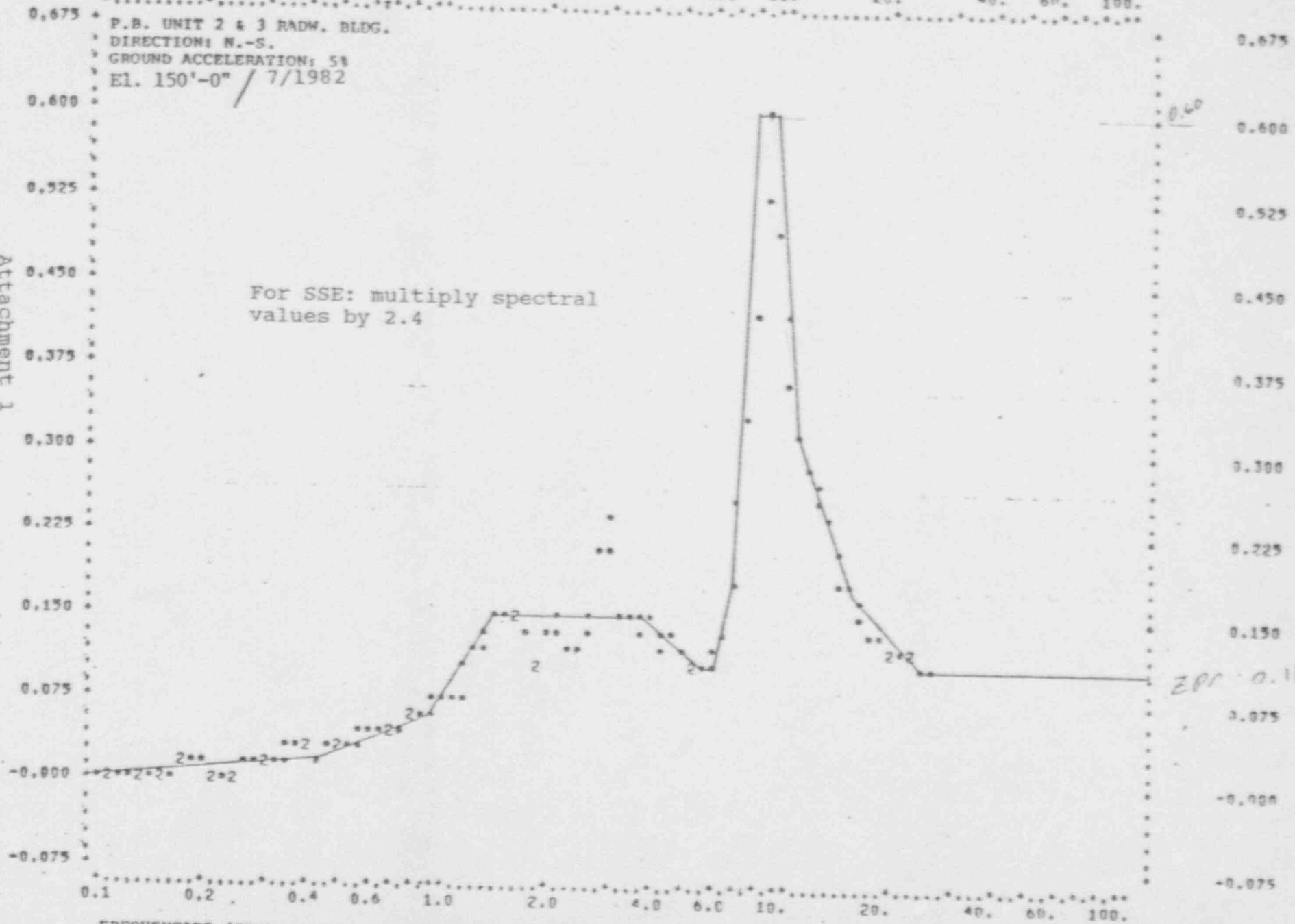
HORIZONTAL ACCELERATION LEVELS (G's)

FREQUENCIES (Cps)

Attachment 1
Figure 8
Radwaste Building
El 150, N-S
0.05g ground accel

0.40

ZPI 0.11



ACCELERATION SPECTRUM POINT # 2 DAMPING = 0.050

0.1 0.2 0.4 0.6 1.0 2.0 3.0 6.0 10. 20. 40. 60. 100.

P.B. Unit 2 & 3 Radw. Bldg.
 Direction: E-W
 Ground Acceleration: 5%
 El. 150'-0" / 7/1982

0.345

0.307

0.278

0.232

0.195

0.157

0.120

0.082

0.045

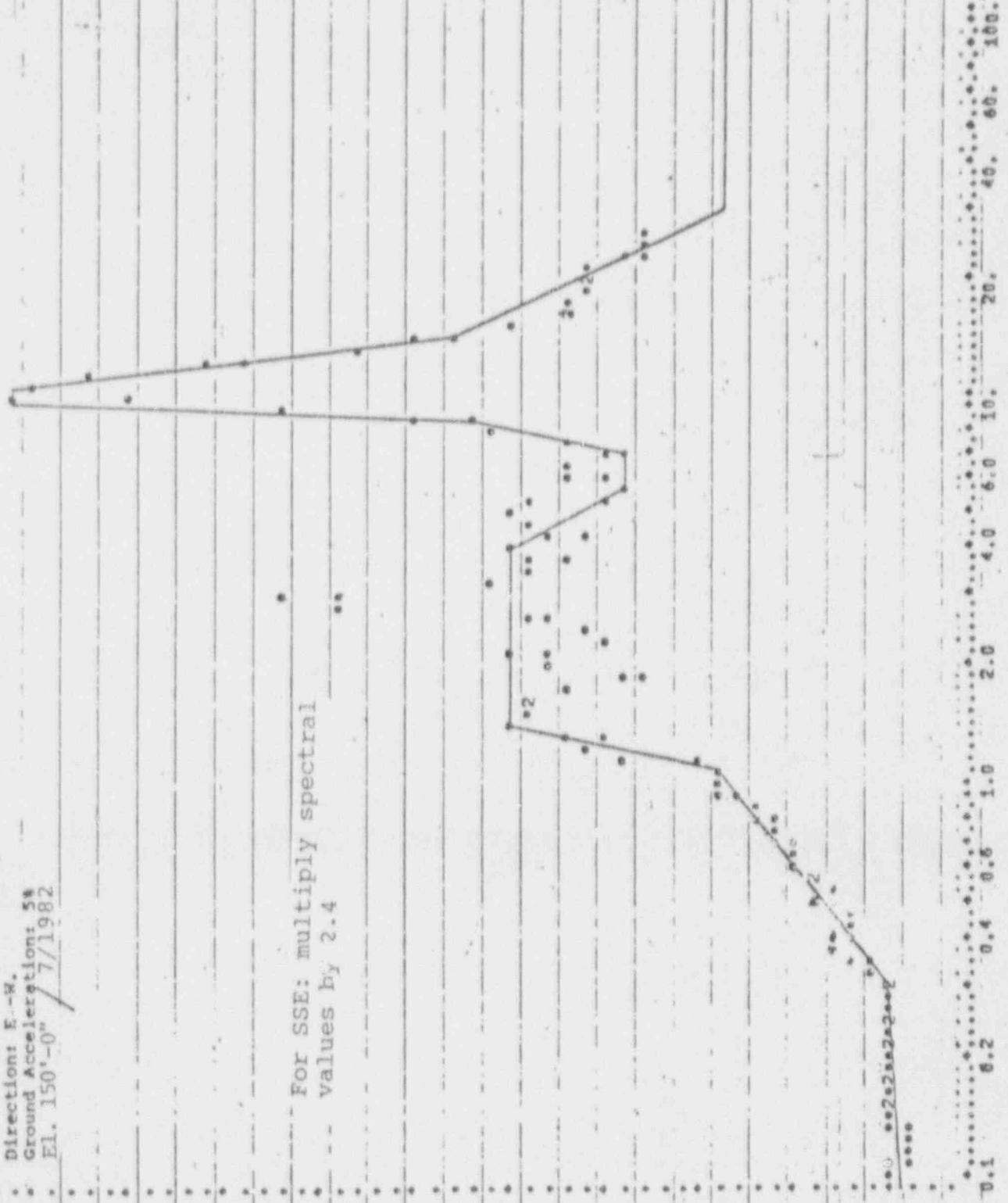
0.007

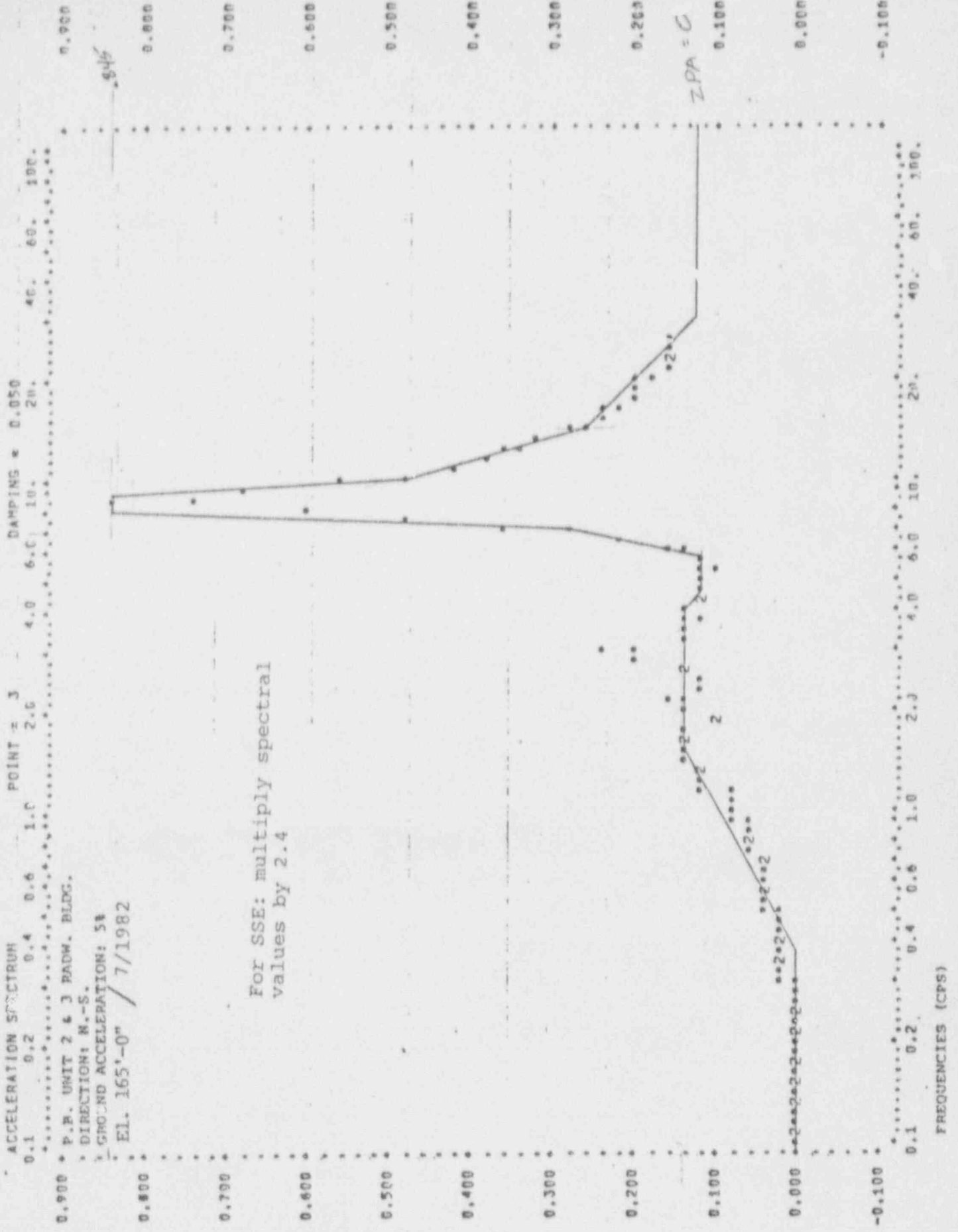
EPA: 0.08

For SSE: multiply spectral values by 2.4

Attachment 1
 Figure 9
 Radwaste Building
 El 150, E-W
 0.05g ground accel

Horizontal Acceleration Levels (G's)



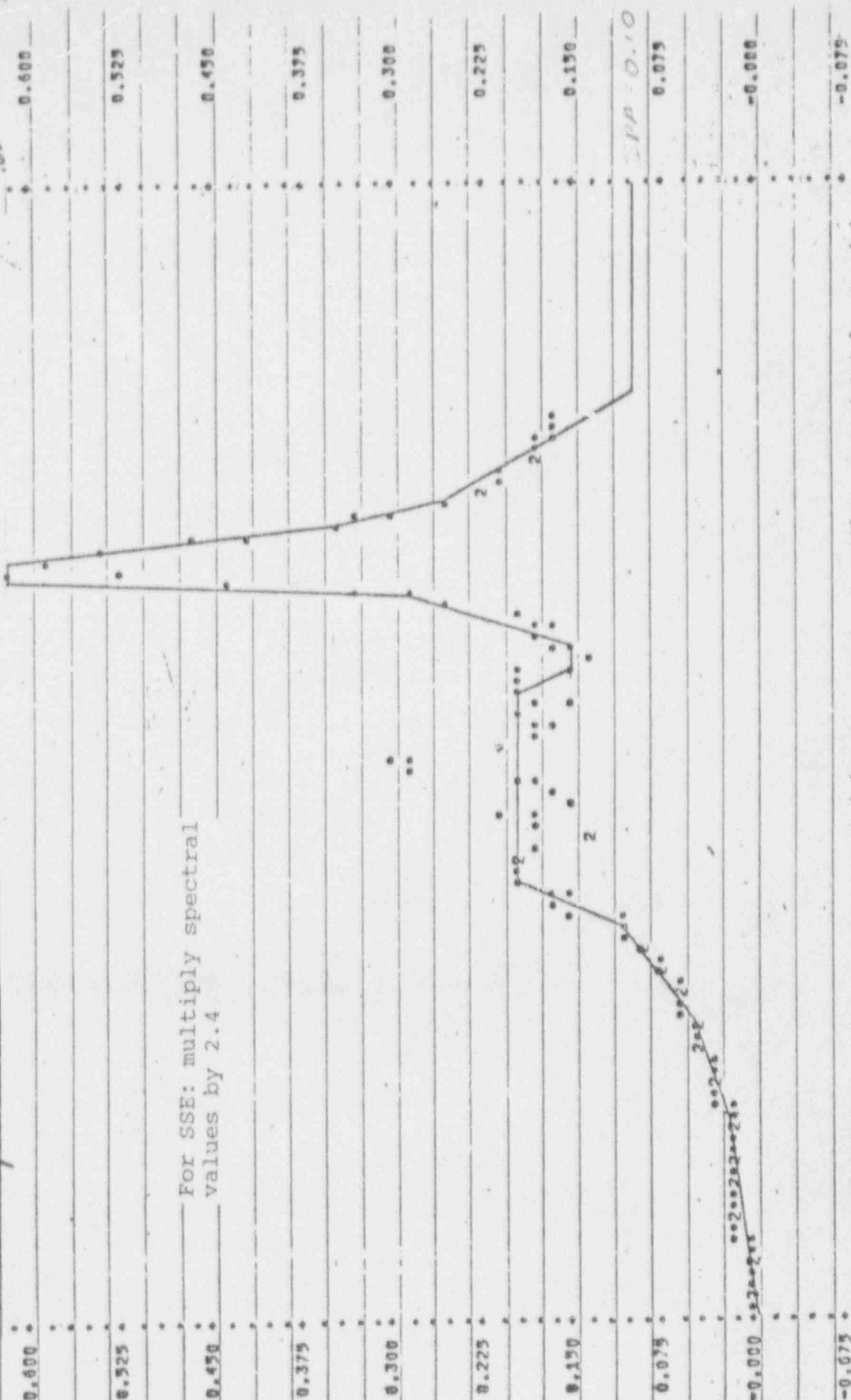


Attachment 1
 Figure 10
 Radwaste Building
 El 165, N-S
 0.05g ground accel

HORIZONTAL ACCELERATION LEVELS (G)

ACCELERATION SPECTRUM
 0.1 0.2 0.4 0.6 1.0 2.0 3 4.0 6.0 10. 20. 40. 60. 100.
 DAMPING %

P.B. Unit 2 & 3 Radw. Bldg.
 Directions: E.-W.
 Ground Acceleration: 5%
 El. 165'-0" / 7/1982



For SSE: multiply spectral values by 2.4

Attachment 1
 Figure 11
 Radwaste Building
 El 165, E-W
 0.05g ground accel