ERRATA*

OMISSIONS

References

Abrahamson, N.A., and Silva, W.J., 1997, Empirical response spectral attenuation relations for shallow crustal earthquakes: Seismological Research Letters, v. 68, p. 94-127.

Anderson, J.G., and Hough, S.E., 1984, A model for the shape of the Fourier amplitude spectrum of acceleration at high frequencies: Bulletin of the Seismological Society of America, v. 74, p. 1969-1994.

Bender, B., 1984, Seismic hazard estimation using a finite fault rupture model: Bulletin of the Seismological Society of America, v. 74, p. 1899-1923.

Boore, D.M., 1983, Stochastic simulation of high-frequency ground motions based on seismological models of the radiated spectra: Bulletin of the Seismological Society of America, v. 73, p. 1865-1894.

Boore, D.M., 1986, Short period P- and S-wave radiation from large earthquakes: Implications for spectral scaling relations: Bulletin of the Seismological Society of America, v. 76, p. 43-64.

Geosphere Midwest, 1997, Seismic survey of the Private Fuel Storage Facility, Skull Valley, Utah: report prepared for Stone & Webster Engineering Corporation.

Hanks, T.C., 1979, *b* values and ω^{-2} seismic source models: Implications for tectonic stress variations along active crustal fault zones and the estimation of high-frequency strong ground motion: Journal of Geophysical Research, V. 84, p. 2235-2242.

Hanks, T.C., and McGuire, R.K., 1981, The character of high frequency strong ground motion: Bulletin of the Seismological Society of America, v. 71, p. 2071-2095.

Magistrale, H., H. Kanamori, and C. Jones, 1992, Forward and inverse three-dimensional *P*-wave velocity models of the southern California crust: Journal of Geophysical Research, v. 97, p. 14,115-14, 135.

Schnabel, P.B., J. Lysmer, and H.B. Seed, 1972, SHAKE: a computer program for earthquake response analysis of horizontally layered sites: Earthquake Engineering Research Institute, University of California, Berkeley, Report EERC 72-12.

Silva, W., 1986, Soil response to earthquake ground motion: Report prepared for the Electric Power Research Institute, Research Project RP2556-07, September.

Silva, W.J. and R.B. Darragh, 1996, Engineering characterization of strong ground motion recorded at rock sites: Report submitted to the Electric Power Research Institute, EPRI RP 2556-48.

* Specific text revisions appear in bold print.

Silva, W.C., Abrahamson, N., Toro, G., and Costantino, C., 1998, Description and validation of the stochastic ground motion model: Report submitted to Brookhaven National Laboratory, Associated Universities, Inc., New York.

Singh, S., and Herrmann, R.B., 1983, Regionalization of crustal coda Q in the continental U.S.: Journal of Geophysical Research, v. 88, p. 527-538.

Tinsley, J.C., King, K.W., Trumm, D.A., Carver, D.L., and Williams, R., 1991, Geologic aspects of shear-wave velocity and relative ground response in the Salt Lake Valley, Utah: Proceedings of the 27th Symposium on Engineering Geology and Geotechnical Engineering, p. 25-1-9.

Wald, D.J., D.V. Helmberger, and R.H. Heaton, 1991, Rupture model of the 1989 Loma Prieta earthquake from the inversion of strong-motion and broadband teleseismic data: Bulletin of the Seismological Society of America, v. 81, p. 1540-1572.

Williams, R.A., King, K.W., and Tinsley, J.C., 1993, Site response estimates in Salt Lake Valley, Utah, from borehole seismic velocities: Bulletin of the Seismological Society of America, v. 83, p. 862-889.

Wong, I., and Silva, W.J., 1993, Site-specific strong ground motion estimates for the Salt Lake Valley, Utah: Utah Geological Survey Miscellaneous Publication 93-9, 34 p.

Figures

Figure 6-6, pp. 2 & 3	Maximum magnitude distributions for fault sources.
Figure 6-9, p. 2	Comparison of horizontal motion attenuation relationships used in the hazard analysis.
Figure 6-10, p. 1	Comparison of vertical motion attenuation relationships used in the hazard analysis.

REVISIONS

Text Revisions

Page 3, paragraph 1	line 4 should read: "...sources that might affect the site. The hazard results are in the form..." (change "effect" to "affect")
	Line 9 should read: "...attenuation, including earthquake source, wave propagation path, and side effects; and (3) the..." (change "pate" to "path")
Page 5, Section 1.1.1	Line 5 – insert "Dr. Donald Currey (Limneotectonics Laboratory, University of Utah); before "Ms. Jennifer M. Helm (currently employed by AGRA Earth & Environmental, Inc.); ..."

Page 19, Section 2.3.2	Add following sentence to end of opening paragraph: "Secondary faults also are present in the block between the East and West faults. One of the more prominent of these structures, Fault "F" is shown on the northern cross section (Figure 2-1) and described below."
Page 25, paragraph 2	line 4 should read: "...9 m (28 to 30 **ft**) (replace "m" with "ft")
Page 28, paragraph 3	<u>Post-Provo Eolian, Reworked Eolian, and Playa Deposits</u> line 2: change "2.5" to "0.8" <u>Post-Provo Sand-ramp</u> line 4: change "faction" to "fraction"
Page 30, paragraph 3	Lines 6 & 8: change "southwest" to "south**east**"
Page 31, 2nd paragraph	Line 5: change "upper" to "late" ("...considered middle to **late** Ordovician in age...)
Page 32, 1st paragraph	last sentence should read: Many of the layers exhibit strongly developed asymmetric shear structures including shear bands, reidel shears and pinch-and-swell structures that all indicate down-to-the-**east** extensional displacement.
Page 34, Section 4.4	1st paragraph, 3rd line: change "late" to "upper"
Page 35, last paragraph	Paragraph should end as follows: "... discussed in Section 5.2.4." **New paragraph header: Nontectonic Deformation**
Page 38	last sentence (line 5): delete comma after "Although"
Page 39, Section 5.1	2nd sentence, lines 2 – 3: At its closest location, the main scarp is 9 km **east** of the east border of the proposed PFSF site.
Page 53	line 5 should read: "...little or **no** deformation across discrete fault traces..."
Page 68, 2nd paragraph	**Stansbury Fault** section, 1st sentence: change "east" to "west"

Page 80	2nd full paragraph, line 1 Following Pechmann **and others** (1987)…
Page 91, Section 6.4.1	3rd Paragraph, line 4 Sentence should read: Histograms are presented for peak acceleration and spectral acceleration at a period **of** 1.0 second for mean annual frequencies of exceedance of $2x10^{-3}$, $5x10^{-4}$, and 10^{-4} (return periods of 500, 2,000, and 10,000 years, respectively.
Page 92	Paragraph 2, line 8 – Sentence should read: Similarly, Figure 6-16 shows that consideration of the West fault as an independent source or as a secondary feature **of** the **East** fault has a minimal impact on the hazard.
Page 95	1st Sentence should read: At the present time, methodologies for the probabilistic assessment of fault displacement hazard **are not as well developed as those for ground motion hazard.**
Page 96	Paragraph before Section 7.1.3 The logic tree methodology described in Section **6** was utilized to characterize the uncertainty in the fault displacement PSHA.
Page 99	1st sentence after equation (7-5) should read: "where *h* is 1.0 if the site lies in the hanging wall of the rupture and 0.0 if the site lies in the foot wall,…" (change "is" to "if"). last paragraph, line 3 – Sentence should read: The various methods are described below as they are applied to distributed faulting (strike "principal and").
Page 100	Section 7.1.4.1, line 3 – Sentence should read: The **Smith-DePolo-O'Leary** (SDO) expert team…" Section 7.1.4.1, 1st paragraph, last line – MD should read $MD_{principal}$ Section 7.1.4.2 – delete last two sentences of 1st paragraph

Section 7.1.4.2, 2nd paragraph (last paragraph on page)
DFS refers to Doser-Fredrick-Swan expert team
SBK refers to Smith-Bruhn-Knuepfer expert team

Page 101 — Section 7.2, 3rd paragraph, last sentence should read:
These weights represent the average across the six Yucca Mountain **Seismic** Source Characterization Expert Teams.

Page 104 — 2nd full paragraph (**Average Slip Rate**), line 9
Based on these data, the slip rate is well constrained between about 0.01 mm/yr and 0.04 mm/yr, with the preferred rate in the range of **0.02** to **0.03** mm/yr.

Page 118 — Reference: Wells, D.W., and Coppersmith, K.J… should read Wells, D.L., and Coppersmith, K.J…

Page F-3 — 2nd full paragraph, last sentence should read:
As a result, nine alternative attenuation relationships were used to evaluate **vertical** ground motions.

Modifications for Crustal Path Effects, 2nd paragraph, line 3
Delete punctuation mark after reference citation (…Boore, 1983, 1986)

Page F-4 — 1st paragraph, line 3
Missing parenthesis after "…hazard at the site)."

Modifications for Local Site Conditions, 1st paragraph, line 7 – Sentence should read: These velocities are consistent with the average velocities estimated by Bay **Geophysical Associates** (1999) of 800 ft/sec for the soil above a depth of 45 feet and 1,100 ft/sec for soil above the Tertiary boundary.

Page F-7 — 1st full paragraph: change "Schnable" to "Schnabel"

2nd full paragraph should read as follows:
The material damping in the rock below a depth of 50 ft was estimated using the observed high frequency attenuation at rock site recording stations. Anderson and Hough (1984) have show that the high frequency attenuation of ground motions in the near surface can be modeled by the attenuation parameter κ. Silva and

Darragh (1996) indicate that κ is related to the near surface shear wave quality factor, Q_s by the expression:

Page F-9 — Relative Site Response, 1st paragraph, line 10
"...velocities **on** the three-layer crustal model..."

Relative Site Response, 2nd paragraph
line 2: missing quotation mark – "So. CA crust, Set A"
line 3: delete "curves"

Page F-10 — 1st paragraph, line 7
"...California sites, we **use** the average relative response over all four..."

3rd paragraph, line 3
"...damping relationships (Figures F-10a and F-10b) and part **(b)** shows the effect of varying the soil velocity..."

Revised Tables

Table 6-2 — Downdip Geometry for Wasatch Zone (page T-15, column 5, row 7) should read as follows:

45°**W** [0.33]
55°**W** [0.34]
65°**W** [0.35]

Table F-5 — Page 2 of 3 - Three Crustal Layers, $\kappa = 0.03$ sec, Midrange Tertiary V_s
Column 3
(λ (%)) – values should be 2.3 (0-0.2 depth range), 1.6 (0.2-1.4 depth range), 0.9 (1.4-2.0 depth range).
Column 4
(Layer κ (sec)) - values should be 0.007 (0-0.2 depth range), 0.020 (0.2-1.4 depth range), 0.003 (1.4-2.0 depth range).

Revised Figures

Figure 1-3 — Photogeologic map of site vicinity showing surficial geologic units and landforms. Registration of overlay corrected and a key to the black contact was added to EXPLANATION. (New Figure included)

Figure 2-1 — EXPLANATION – Cambrian strata, undivided: change "ϵq" to "ϵ"

Paleozoic unconformity in hanging wall of West fault should be at top Dsd as shown on rest of cross-section (not at top of Ocq).

Figure 2-2 EXPLANATION – Cambrian strata, undivided: change "∈q" to "∈"
Paleozoic unconformity in hanging wall of West fault should be at top Dsd as shown on rest of cross-section (not at top of Ocq).

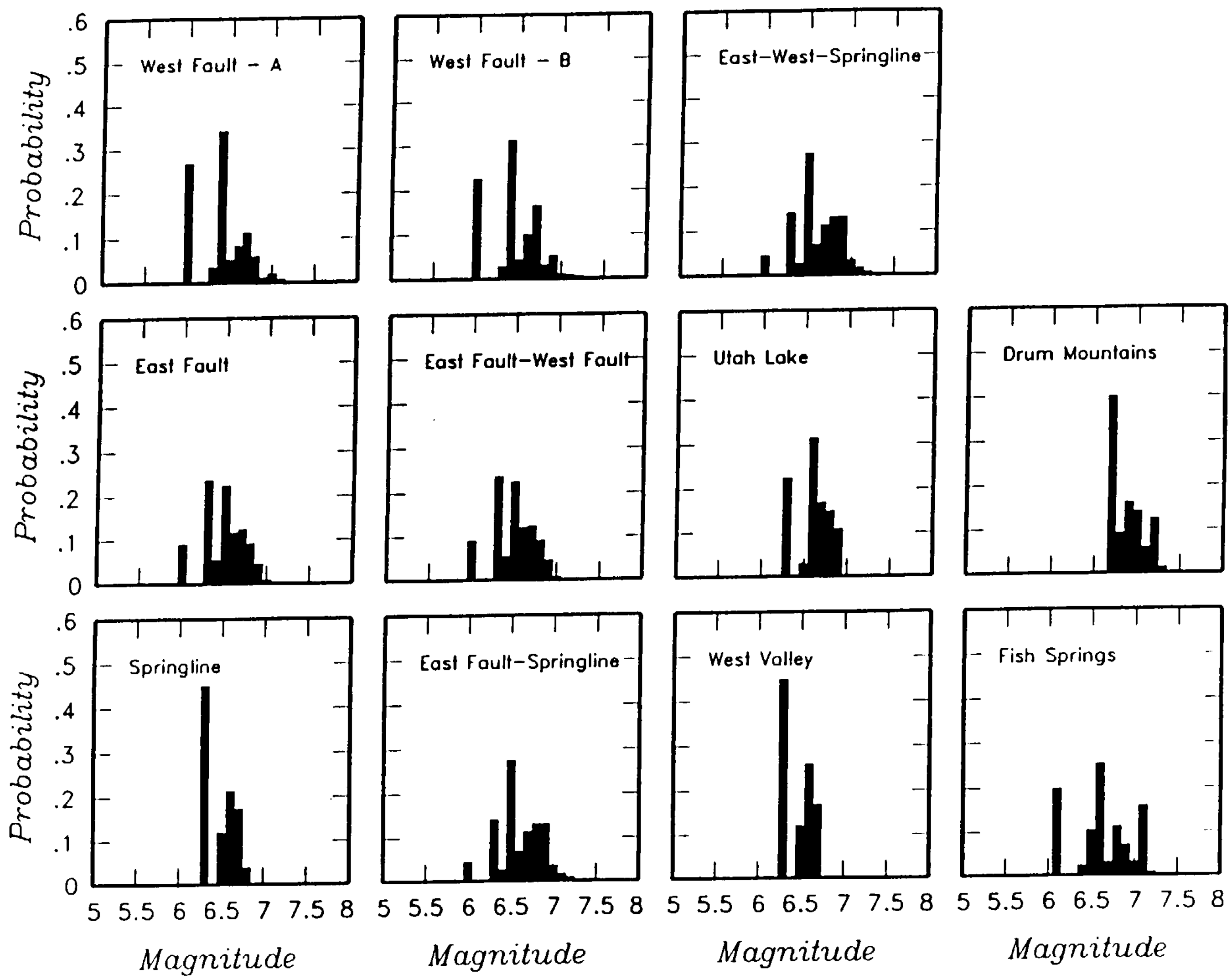
Figure 5-3 Caption: "scrap" should be changed to "scarp."

Figure 6-14 Legend: dashed line (- - - -) should read **AS97**

Figure 6-21 Legend: dashed line (- - - -) should read **AS97**

Figure 6-23 Mean seismic hazard curves for horizontal and vertical motions for the CTB site.

Figure F-13 Figure caption should read as follows:
(a) Effect of choice of soil properties for Skull Valley soils on median relative response. Skull Valley sediment response computed using three-layer crustal model, median sediment velocity, and $\kappa = 0.03$ sec. (b) Effect of velocity of **Pleistocene** soils on relative response. Skull Valley sediment response computed using three-layer crustal model, median Tertiary velocity, $\kappa = 0.03$ sec, and Set A properties. Rock motions scaled to **M** 6.5 for both plots.



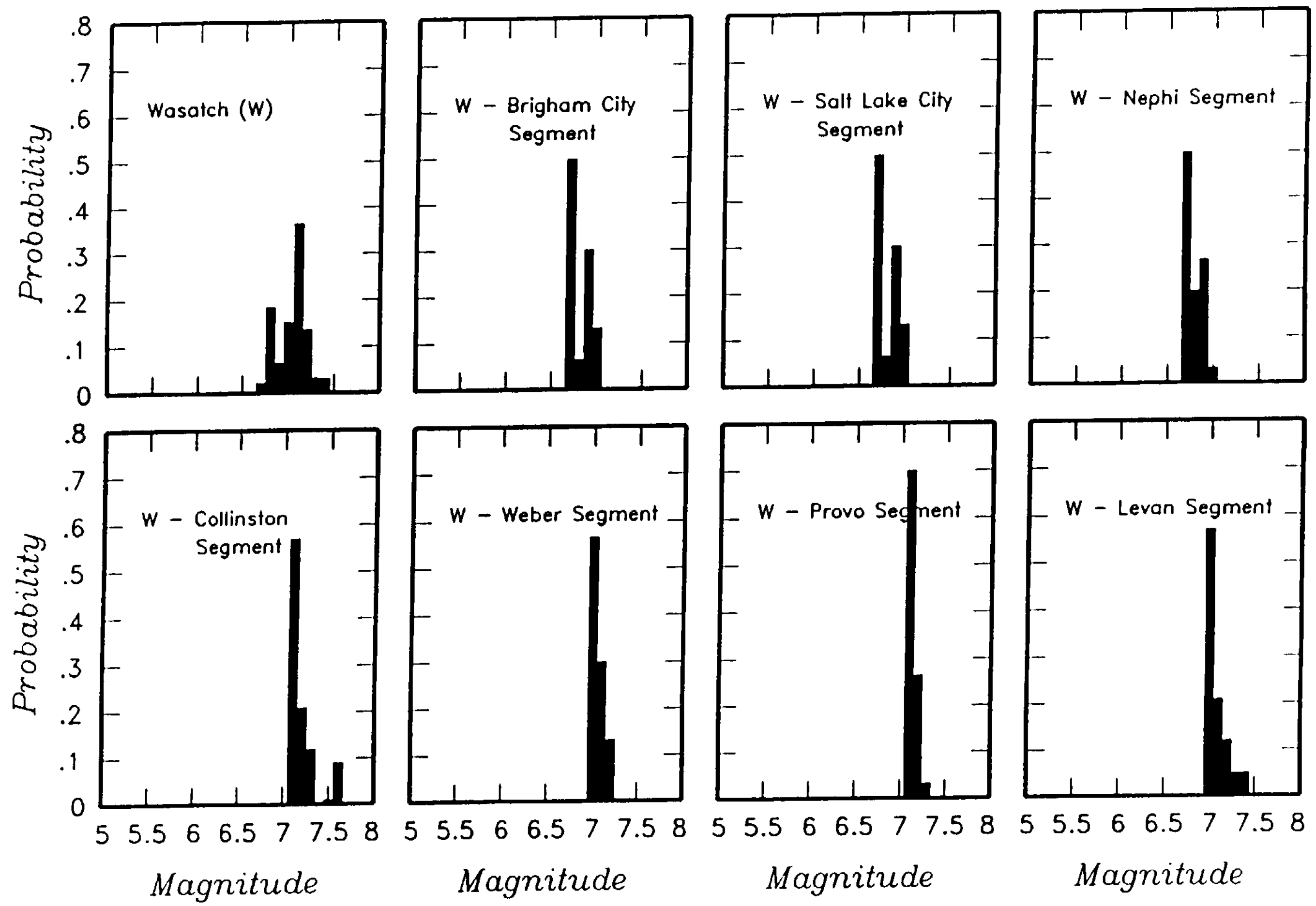
GEOMATRIX

MAXIMUM MAGNITUDE DISTRIBUTIONS FOR FAULT SOURCES
Private Fuel Storage Facility
Skull Valley, Utah
(page 2 of 3)

Project No.	4790
Figure	6-6

H:\yharden\fig 6-6 doc

Non-GDS

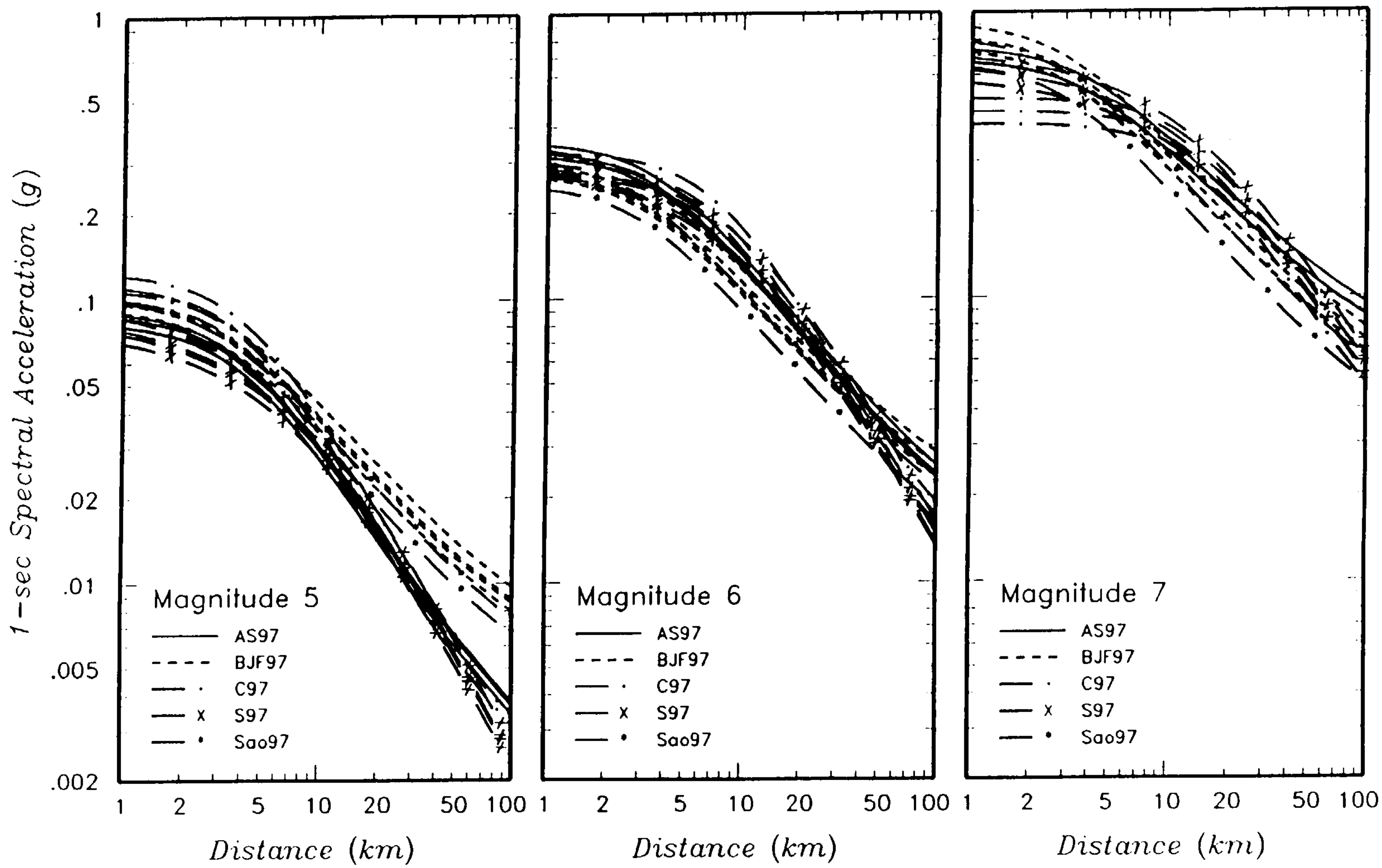


GEOMATRIX

MAXIMUM MAGNITUDE DISTRIBUTIONS FOR FAULT SOURCES
Private Fuel Storage Facility
Skull Valley, Utah
(page 3 of 3)

Project No.
4790

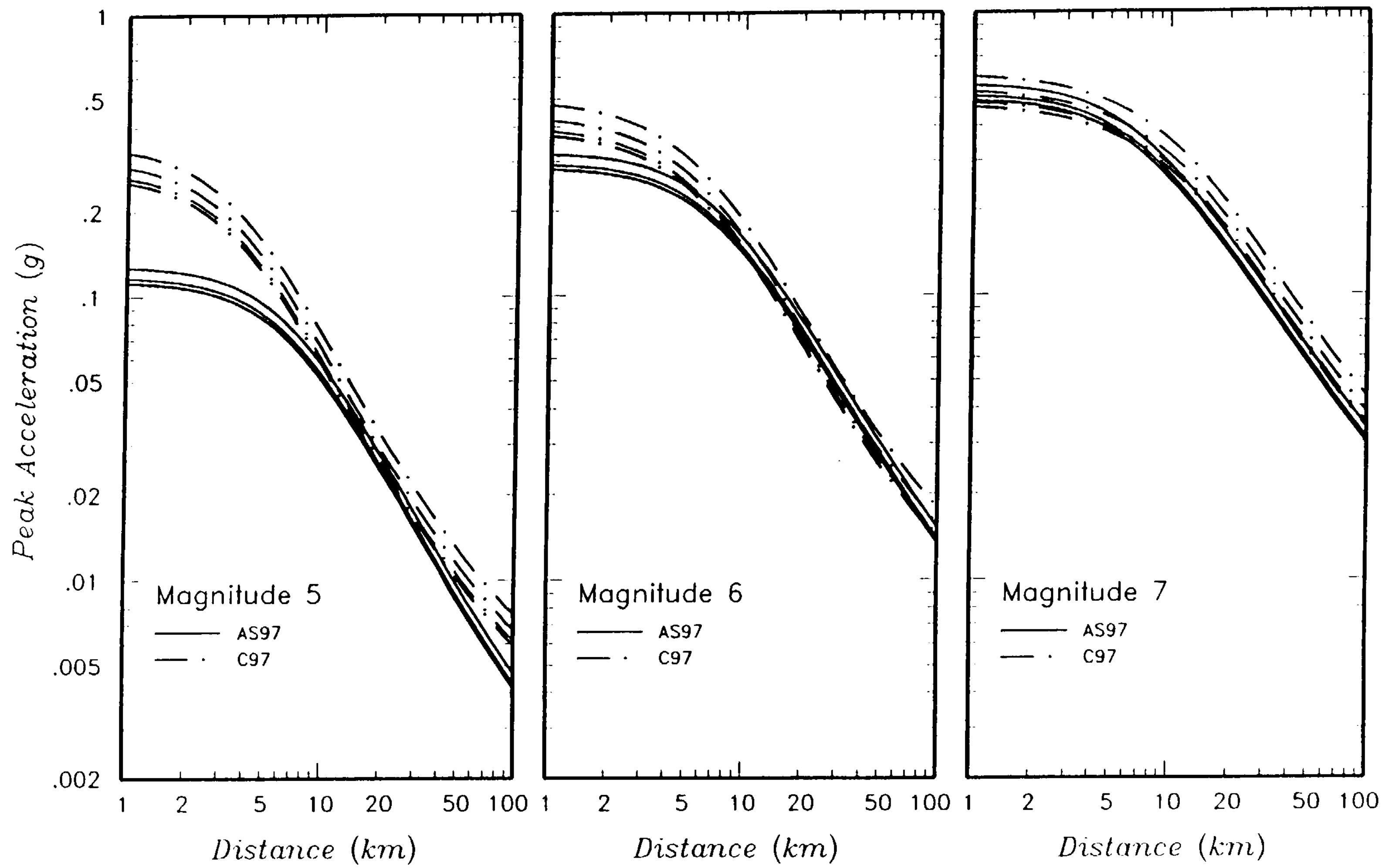
Figure
6-6



GEOMATRIX

COMPARISON OF HORIZONTAL MOTION ATTENUATION RELATIONSHIPS USED IN THE HAZARD ANALYSIS.
Private Fuel Storage Facility
Skull Valley, Utah
(Page 2 of 2)

Project No.	4790
Figure	6-9



GEOMATRIX

COMPARISON OF VERTICAL MOTION ATTENUATION RELATIONSHIPS USED IN THE HAZARD ANALYSIS.
Private Fuel Storage Facility
Skull Valley, Utah
(Page 1 of 2)

Project No. 4790

Figure 6-10

Mosaic combining frames 4-11 and 4-12, Olympus Aerial Surveys no. 98240

EXPLANATION

- Limit of bedrock exposure
- Stansbury sand ridge
- Stansbury gravel bar
- Shoreline
- Lineament in bedrock
- Lineament in Quaternary deposits; dotted where less distinct.
  - ld - linear drainage
  - tc - tonal contrast
  - vl - vegetation lineament
  - ldp - linear depression
- Limit of alluvial fan mantled by lacustrine deposits
- 1998 PFSF High resolution seismic survey line (S-wave)
- Location of geologic cross section
  - C-C' see Figure 3-1
  - D-D see Plate 4

0 — 0.5 mile

0 — 1 kilometer

PHOTOGEOLOGIC MAP OF SITE VICINITY
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX	Project No.	Figure
	4790	1-3