TABLE 1-1

PROJECT TEAM MEMBERS AND PRINCIPAL AREAS OF RESPONSIBILITY

Private Fuel Storage Facility
Skull Valley, Utah

NAME	AFFILIATION	RESPONSIBILITIES
Dr. Kevin J. Coppersmith	Geomatrix Consultants	Project Director
Ms. Kathryn L. Hanson	Geomatrix Consultants	Project Manager Quaternary mapping; paleoseismic investigations; seismic source characterization
Dr. F.H. (Bert) Swan	Geomatrix Consultants	Quaternary mapping, paleoseismic investigations, seismic source characterization
Dr. Robert R. Youngs	Geomatrix Consultants	Vibratory ground motion and fault displacement hazard analyses
Mr. John Luttinger	Geomatrix Consultants	Geophysics Feasibility Investigations and Review
Mr. Michael Angell	Geomatrix Consultants	Structural model, bedrock mapping; and seismic source model
Mr. David Lapp	Geomatrix Consultants	GIS Data Management
Mr. Brian Thompson	Geomatrix Consultants	Trench mapping
Mr. Fred Chandler	Geomatrix Consultants	Trench mapping, drilling
Dr. Jeff Unruh	William Lettis & Associates	Structural cross sections, gravity modeling
Mr. Chris Hitchcock	William Lettis & Associates	Drilling
Mr. Richard Gillespie	Stone & Webster Engineering Corporation	Logistical Support; trench mapping

TABLE 3-1

MAJOR SHORELINES OF LAKE BONNEVILLE
(Modified from Currey, 1980; Currey, 1982)
Private Fuel Storage Facility
Skull Valley, Utah

Shoreline	Altitude[1]		Approximate age (10³ RCYBP)[2]
	(m)	(ft)	
Stansbury	1347-1378	4418-4520	22 and 20
Bonneville	1552-1626	5091-5333	~15.5-14.5
Provo	1444-1503	4736-4930	~14.5-14.2
Gilbert	1311-1293	4300-4241	~11-10

1 Shoreline altitudes are reported as ranges because the shorelines have been isostatically deformed different amounts in response to the removal of Lake Bonneville.

2 RCYBP =radiocarbon years before present

TABLE 3-2

SUMMARY OF AGES OF MAJOR STRATIGRAPHIC UNITS IN THE SITE AREA

Private Fuel Storage Facility
Skull Valley, Utah

Unit/Associated Geomorphic Surfaces	Estimated Age (ka)	Climatic Condition	Marine Oxygen Isotope Stage[1]
Post-Provo Deposits	≤ 12 ka	Interpluvial	Stage 1
Bonneville Alloformation	28 ka to 12 ka	Pluvial	Stage 2
Provo Shoreline	~14.3 ka[2] to ~12 ka		
Bonneville Shoreline	~16 ka to ~14.5 ka		
Stansbury Shoreline	~22 ka to ~20 ka		
Stansbury Deep-water facies	~24 ka to 22 ka		
End of Late Pinedale Alluvial Fan Deposition	35 ± 5 ka	Glacial/ Interglacial Transition	Stage 2/3
Cutler Dam Alloformation (not observed at PFSF site)	~ 60 ka	Pluvial	Stage 4
Early Pinedale Alluvial Fan	~60 to 70 ka	Glacial/ Interglacial Transition	Stage 4/5
Qp Unconformity	130 ka to 28 ka	Interpluvial	Stage 5
Promontory Soil formed in pre-Bonneville subaerial deposits			
Little Valley Alloformation	~150 ka to 130 ka	Pluvial	Stage 6
Bull Lake Alluvial Fan	~160 ka	Glacial/ Interglacial Transition	Stage 6/7
Pre-Little Valley Subaerial Deposits	≥160 ka	Interpluvial	Stage 7 and older
Q/T Unconformity	> 4 Ma to 160 ka	N/A	N/A

1 Shackleton and Opdyke (1973)
2 Light and Kaufman (1997)

TABLE 3-3

AGES OF ASH SAMPLES
Private Fuel Storage Facility
Skull Valley, Utah

Sample No. description	Location	Age	Comments
Vitric tuff	SWEC Boring A1 Depth- 85 to 90 ft	6.4 ± 0.1 Ma	Walcott Ash
TR1-1 Gray vitric tuff	Trench T-1, station 38 (Plate 2)	11-5 Ma*	Skull Valley ash bed
TR1-2 Gray vitric tuff	Trench T-1, station 64 (Plate 2)	11-5 Ma*	Skull Valley ash bed
TR1-3 Gray vitric tuff	Trench T-1, station 45.5 (Plate 2)	11-5 Ma*	Skull Valley ash bed
TR1-4 White biotite bearing ash	Trench T-1, station 34.5 (Plate 2)	~15.4 Ma	May correlate with ash beds in the Rio Grande rift north of Santa Fe (rg-18 and rg-143)

* Based on possible correlation to ash bed in Cache Valley.

TABLE 5-1

FAULT SLIP RATE DATA – STANSBURY FAULT ZONE

Private Fuel Storage Facility
Skull Valley, Utah

	Location	Displaced Datum	Age (ka)	Cumulative Vertical Displacement (m)	Slip Rate (mm/year)	Comments
Stansbury Fault – Main Trace:						
a)	Profile SF-1a - Antelope Canyon	Late Pinedale (?) alluvial fan surface	35 ±5	4.6 ±0.4	0.13 ±0.03	Long term rate on primary trace based on multiple events.
b)	Profile SF-1b - Antelope Canyon	Holocene stream terrace	8 ±2	1.9 ±0.2	0.36 +0.16/-0.09	Same trace as above; rate is probably based on a single event and is, therefore, unreliable.
Stansbury Fault – Secondary Traces:						
c)	Profile SF-2 - Indian-Hickman alluvial fan	Post-Stansbury Pre-Bonneville shorelines	18 ±2	2.7	0.15±0.02	Inflection in scarp profile and geomorphic relations indicate displacement is due to two events.
d)	Profile SF-3 - Indian-Hickman alluvial fan	Post-Stansbury Pre-Bonneville shorelines	18 ±2	1.9 ±0.1	0.11 ±0.02	Inflection in scarp profile and geomorphic relations indicate displacement is due to two events.
Cumulative Slip Rate Across Zone:						
g)	Transect west of Indian Hickman Canyon	--	--	--	**0.39 ±0.04**	Sum of slip rates a, c and d

TABLE 5-2

SUMMARY OF FAULT LOCATIONS AND DISPLACEMENTS
From Bay Geophysical Associates, 1999, Table 1

Private Fuel Storage Facility
Skull Valley, Utah

Survey Line		Datum and Amount of Displacement				Sense of Slip			
Line	Shot Point	Q/T (ms)	Calculated Vertical Disp. * (ft.)	Qp (ms)	Calculated Vertical Disp. ** (ft.)	Down-to-the-East	Down-to-the-West	Fault Designation	Comments
GSI UT-34									
34	183	na		na		X		–	Unnamed fault pick. Upper part of section not imaged.
34	193	na		na			X	A	"East Fault." Upper part of section not imaged.
34	227	na		na			X	F	Upper part of section not imaged.
34	260	na		na		X		–	Unnamed fault pick. Upper part of section not imaged.
34	280	na		na			X	West Fault	Upper part of section not imaged.
LINE C									
C	357	4.3	2.4	N			X	C1	
C	418	N		N		X		C2	Fault appears to die out within the Salt Lake Group.
C	820	4.8	2.6	4.8	1.9		X	D1	Extends near surface.
C	930	N		N				E2	
C	1027	N		N		X		E1	
C	1178			N		X		E3	Flexure at Q/T but fault does not appear to extend above Q/T horizon.
LINE A									
A	151	>10	>5.5	?			X	?A7	Uncertain of Qp pick SP 101-700
A	452	>7	>3.8	?		X		?A6	?Qp and Q/T diverge on fault pick
A	607	?		?			X	?A5	?Qp and Q/T converge on fault pick
A	761	?		12.7	5.1		X	A1	Q/T reflector across faults is poorly defined.
A	855			3.5	1.4		X	A4	Displacement uncertain due to dip on Qp.
A	907	?		2.3	0.9	X		A2	
A	946	?		10.8	4.3		X	A3	Extends near surface.
A	1227	4.1?	2.3	2.7	1.1		X	B2	Poor data below Qp between faults B1 and B2.
A	1450			≤2	<1	X		B1	Questionable fault.
A	1745	4.8	2.6	N			X	C1	Highest point on fault is at 121 ms.
A	1852	4.4	2.4	N			X	C2	Possible flexure (change in dip) in Qp horizon. Highest point on fault is at 143 ms.
A	2102	≤2.5		N				D3	Flexure in Q/T horizon; possible channels to west in Qp.
A	2161	5.3	2.9	N			X	D2	Possible small flexure in Qp.
A	2352	2.6	1.4	2.3			X	D1	Lateral uncertainty in location ~25 ft.
A	2560	?					X	E2	Flexure in Qp horizon ?
A	2669	?					X	E1	
A	2810	N				X?		E3	Highest point on fault is at 211 ms.
A	3138	<4	<2.2	5.5	2.2		X	F1	
A	3168	<5	<2.8	3	1.2	X		F3	Extends near surface.
A	3304	<5	<2.8	4.5	1.8	X		F4	Extends near surface.
A	3329	<5	<2.8	3.5	1.4		X	F2	
A	3556	N					X	G2	
A	3602	<2?				X		G1	
A	3930	Y		Y		X		H1	Qp disrupted, but cannot tell amount of displacement.
A	3904	Y		N			X	H2	
LINE D									
D	197	3.2		3.6			X	F2	Extends near surface.
D	330	2.8		3.7		X		F3	
D	369	4.2		4.2			X	F1	
D	828	?		?		X?		–	Unnamed questionable fault.
D	949	?		?		?	?	–	Unnamed questionable fault.
D	1110	?		?				D1 ?	
LINE B									
B	283	≤5		N			X	–	
B	327	≤5.7		N		X		–	Quetionable displacement of Q/T.
B	495	3		N			x	–	
B	766	?		N		?	?	–	Questionable fault. No apparent displacement of Qp.
B	885	?		?		?	?	–	Character change in Qp reflector; poor data to the west.
B	1020	?				?	?	–	Questionable fault.
									Data SW of shotpoint 1000 are very poor quality.

* Using Interval Velocity = 1100 ft./sec.
** Using Interval Velocity = 800 ft./sec.

TABLE 5-3

FAULT SLIP RATE DATA – EAST FAULT AND WEST FAULT

Private Fuel Storage Facility
Skull Valley, Utah

	Location	Displaced Datum	Age (ka)	Vertical Separation			Slip Rate (mm/year)	Comments
				Seismic Survey		Offset Geomorphic Features (m)		
				Calculated Based on Seismic Profile (m)[1]	Adjusted Value (m)[2]			
1) East Fault:								
a)	Fault A-1 – Seismic Line A	Qp [3]	50 to 60 [4]	1.6	4.8	–	0.088 ±0.008	Down-to-the-west.
b)	Fault A-4 – Seismic Line A	Qp	50 to 60	0.4	1.2	–	0.022 ±0.002	Down-to-the-west.
c)	Fault A-2 – Seismic Line A	Qp	50 to 60	0.3	0.9	–	0.018 ±0.002	Down-to-the-east.
d)	Fault A-3 – Seismic Line A	Qp	50 to 60	1.3	3.9	–	0.71 ±0.007	Down-to-the-west.
e)	Net Dispalcement Across Faults A-1, A-4, A-2, and A-3.			3.0	9.0	–	**0.165 ±0.015**	Net displacement is down-to-the-west.
f)	Cumulative across East Fault and secondary traces. (Between Hickman Knolls and Goshute Village)	Provo Shoreline	14.3	–	–	3 ±1 [5]	**0.2 ±0.1**	Net displacement across zone is approximately 10 ft. down-to-the-west.
g)	Truncated edge of alluvium Sec. 32, T4S, R8W	Qf_{bl} (?) [6]	>160 ka	–	–	~30 to ~50 [7]	**< 0.2 to 0.3**	
2) West Fault:								
a)	Between TP-14 and drainage that breaches Stansbury bar in SW ¼ Sec. 12, T5S, R8W	Stansbury Bar	~20 ka	–	–	1 to 1.5	0.05 to 0.07	Down-to-the-west. Distributed on multiple fault traces.

1 Source: Bay Geophysical Associates, 1999, Table 1.
2 Adjusted value is 3 times the calculated value based on locations where offsets observed on seismic lines were also measured between borings.
3 Unconformity between Promontory soil and base of Bonneville alloformation.
4 Minimum age of Promontory soil based on age of ~28 ka age of the base Bonneville alloformation at the site and estimated minimum interaval of 20 ka to 30 ka needed to form a Stage 2+ carbonate soil.
5 Based on interpretation of 1:20,000-scale aerial photographs and USGS 7.5' topographic maps, the Provo shoreline at the village is at an elevation of 4860 ft.; at Hickman Knolls, it is at an elevation of 4850 ft.
6 Based on the weathering rinds on quartzite boulders, the alluvial fan is inferred to correlate to Bull Lake or older Basin and Range fans (Oxygen Isotope Stage 6 or older), which suggest a minimum age ~160 ka.
7 Based on height of the scarp (100 ft) and depth of Bonneville alloformation to the west in boring C-5 (47').

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TABLE 5-4

FAULT SLIP RATE DATA – "F" FAULTS

Private Fuel Storage Facility
Skull Valley, Utah

	Location	Displaced Datum	Age (ka)	Vertical Separation: Calculated Based on Seismic Profile (m) [1]	Vertical Separation: Adjusted Value (m) [2]	Vertical Separation: Measured in Trenches or Between Boreholes (m)	Slip Rate (mm/year)	Comments
	FAULTS F-1 AND F-3 (GRABEN)							
1.) Seismic Line A (Based on Qp Reflector):								
a)	Fault F-1	Qp [3]	50 to 60 [4]	0.7	2.1	–	0.038 ±0.004	Down-to-the-west.
b)	Fault F-3	Qp	50 to 60	0.4	1.2	–	0.022 ±0.002	Down-to-the-east.
c)	Net displacement across graben				0.9	–	**0.018 ±0.002**	Net displacement across graben is down-to-the-west.
2.) Seismic Line A (Based on Borehole Data – See Figure 5-4):								
a)	n1	Qp	50 to 60	–	–	0.94	0.017 ±0.001	Down-to-the-west
b)	n2	Qp	50 to 60	–	–	1.44	0.026 ±0.003	Down-to-the-west
c)	n3	Qp	50 to 60	–	–	.0.99	0.018 ±0.002	Down-to-the-east
d)	n4	Qp	50 to 60	–	–	0.51	.009 ±0.001	Down-to-the-west
e)	Net displacement across graben					0.88	**0.016 ±0.001**	Net Displacement across graben is down-to-the-west.

1 Source: Bay Geophysical Associates, 1999, Table 1.
2 Adjusted value is 3 times the calculated value based on locations where offsets observed on seismic lines were also measured between borings.
3 Unconformity between Promontory soil and base of Bonneville alloformation.
4 Minimum age of Promontory soil based on age of 28 ka age of the base Bonneville alloformation at the site and estimated minimum time needed to form a Stage 2+ carbonate soil (20 ka to 30 kyr).

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TABLE 5-4 (Continued)

FAULT SLIP RATE DATA – "F" FAULTS

Location		Displaced Datum	Age (ka)	Vertical Separation: Calculated Based on Seismic Profile (m) [5]	Vertical Separation: Adjusted Value (m) [6]	Vertical Separation: Measured in Trenches or Between Boreholes (m)	Slip Rate (mm/year)	Comments
FAULTS F-1 AND F-3 (GRABEN) – Continued								
3.) Seismic Line D (Based on Qp Reflector)								
a)	Fault F-1	Qp	50 to 60	0.5	1.5	–	0.027 ±0.003	Down-to-the-west
b)	Fault F-3	Qp	50 to 60	0.5	1.5	–	0.027 ±0.003	Down-to-the-east
					0	–	0	No measureable stratigraphic separation across the graben.
FAULTS F-4 AND F-2 (HORST)								
4.) Seismic Line A (Based on Qp Reflector):								
a)	Fault F-4	Qp	50 to 60	0.5	1.5	–	0.027 ±0.003	Down-to-the-east.
b)	Fault F-2	Qp	50 to 60	0.4	1.2	–	0.022 ±0.002	Down-to-the-west.
c)					0.3	–	**0.005 ±0.001**	Net displacement across horst is down-to-the-east.
5.) Seismic Line D (Based on Qp Reflector):								
a)	Fault F-2	Qp	50 to 60	0.4	1.2	–	**0.022 ±0.002**	Down-to-the-west
	Fault F-4 not seen on this line.	–	–	–	–	–	–	–
6.) Entire "F" Fault Zone:								
a)	Stansbury Bar between TP-23 and TP-24 (Plate 5) [7]	Stansbury Bar	~ 20 ka	–	–	0.6	0.03	Down-to-the-west

5 Source: Bay Geophysical Associates, 1999, Table 1.
6 Adjusted value is 3 times the calculated value based on locations where offsets observed on seismic lines were also measured between borings.
7 See Plate 5

TABLE 5-5

FAULT SLIP RATE DATA – "D" FAULTS

Private Fuel Storage Facility
Skull Valley, Utah

	Location	Displaced Datum	Age (ka)	Vertical Separation: Calculated Based on Seismic Profile (m) [1]	Vertical Separation: Adjusted Value (m) [2]	Vertical Separation: Measured Between Boreholes (m)	Slip Rate (mm/year)	Comments
1.) Seismic Line C (Based on Qp Reflector):								
a)	Fault D1	Qp	50 to 60	0.6	1.7	–	0.032 ±0.003	Down-to-the-west
2.) Seismic Line A (Based on Qp Reflector):								
a)	Fault D1	Qp	50 to 60	0.27	0.8	–	0.015 ±0.001	Down-to-the-west
b)	Fault D2	Qp	50 to 60	0 [3]	–	–	–	–
c)	Fault d3	Qp	50 to 60	0 [3]	—	–	–	–
3.) Seismic Line A (Based on Borehole Data, Plate 4):								
a)	Fault D1	Qp	50 to 60	–	–	0.7	0.013 ±0.001	Down-to-the-west
4.) Seismic Line D (Based on Qp Reflector):								
a)	Fault D1	Qp	50 to 60	* [4]	<0.6 [5]	–	<0.012	Questionable fault
5.) Seismic Line B (Based on Qp Reflector):								
a)	Shotpoint 885 [6]	Qp	50 to 60	* [4]	<0.6 [5]	–	<0.012	Questionable fault
	Shotpoint 1020 [6]	Qp	50 to 60	* [4]	<0.6 [5]	–	<0.012	Questionable fault

1 Source: Bay Geophysical Associates, 1999, Table 1.
2 Adjusted value is 3 times the calculated value based on locations where offsets observed on seismic lines were also measured between borings.
3 No detectable offset of Qp reflector.
4 Questionable displacement of Qp reflector; displacement not measureable.
5 Assumes displacement is less than the 2-ft. limit of resolution of the survey.

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TABLE 6-1

POTENTIAL CAPABLE FAULTS WITHIN 100 KM OF PFSF SITE

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Distance from PFSF Site	Length (km)	Activity[1]	Fault source
East fault	0.9	28[3]	LP	Yes
West fault	2.0	23[3]	LP	Yes
Springline fault	12.8	18[3]	LP?	Yes
Stansbury fault	9.5	73	LP	Yes
East Cedar Mountains fault	9	72	Q(?)	Yes
West Cedar Mountains fault	19	8.5	Q(?)	No[2]
Clover fault zone	27	4 to 7	LP	Yes
Mid-Valley Horst faults	32	6	LP	No[2]
Lookout Pass fault	36	6	Q(?)	No[2]
Mercur-Topliff Hill fault zone	40	16	LP	Yes
Sheeprock fault zone	41	10 to 11	LP	Yes
Oquirrh fault zone	45	21	H-LP	Yes
Vernon Hills fault zone	47	5 to 7	LP	No[2]
Lakeside Mountains fault zone	49	5	Q(?)	No[2]
Simpson Mountains fault	52	10	MP-LP	No[2]
Sheeprock Mountains fault	57	4.5	EP-MP	No[2]
Puddle Valley fault zone	61	6	H-LP	No[2]
East Great Salt Lake fault zone	66	82	H-LP	Yes
East Tintic Mountains fault	72	36	MP-LP	Yes
West Valley fault zone	75	18	H-LP	Yes
East Lakeside Mountains fault zone	78	38	Q(?)	No[2]
Utah Lake faults	79	30	H-LP	Yes
Drum Mountains fault zone	80	36	H-LP	Yes
Fish Springs fault	81	12	H-LP	Yes
Wasatch fault zone		370	H-LP	Yes
Salt Lake City segment	81	46	H-LP	
Provo segment	98	70	H-LP	
Nephi segment	99	43	H-LP	
West Deep Creek fault	99	12	LP	No[2]

1 Activity based on Hecker (1993) and this study

H-LP	Holocene to latest Pleistocene (0-30,000 yrs)
LP	Latest Pleistocene (10,000-30,000 yrs)
MP-LP	Middle to late Pleistocene (750,000 -10,000 yrs)
EP-MP	Early to middle Pleistocene (1,650,000 -130,000 yrs)
Q(?)	Quaternary (?) (<1,650,000 yrs)

2 Earthquakes that occur on this fault are modeled as part of the seismic source zone.

3 Length based on preferred model; alternate fault geometry and length are shown on Plate 6

TABLE 6-2

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downdip Geometry	Maximum Rupture Lengths (km)	Slip Rate (mm/yr) [wt]	Single Event Displacement[1] (m)	Comments
Mid-Valley Faults								
East, West, and Springline faults	EF, WF, and SpF	EF [1.0] WF [1.0] SpF [0.8]	EF 28 [1.0] SpF 18 [1.0] EF/SpF 46 [1.0] WF-Model A 23 [1.0] WF-Model B 36 [1.0]	45°W [0.33] 55°W [0.34] 65°W [0.33] In cases where the West fault is treated as an independent fault source, the dips of the East and West faults are modeled to be parallel to preclude intersections or truncations of the faults at depth.	EF 12 [0.2] 18 [0.5] 28 [0.3] SpF 18 [1.0] EF/SpF 12 [0.1] 18 [0.3] 28 [0.5] 46 [0.1] WF-Model A 12 [0.6] 23 [0.4] WF-Model B 12 [0.5] 21 [0.4] 36 [0.1]	EF 0.05 [0.1] 0.1 [0.3] 0.2 [0.4] 0.3 [0.19] 0.45 [0.01] WF 0.01 [0.2] 0.04 [0.5] 0.07 [0.2] 0.1 [0.1] EF-WF 0.05 [0.1] 0.1 [0.28] 0.2 [0.29] 0.3 [0.28] 0.45 [0.05] SpF 0.05 [0.2] 0.1 [0.2] 0.2 [0.35] 0.3 [0.2] 0.45 [0.05] EF/SpF and EF-WF/SpF Variable slip along strike		See Figure 6-4 for logic tree showing alternate mid-valley fault sources included in seismic hazard model

GEOMATRIX

TABLE 6-2 (CONTINUED)

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downdip Geometry	Rupture Lengths (km)	Slip Rate (mm/yr)	Single Event Displacement[1] (m)	Comments/ References
						based on above distributions		
Stansbury	SZF	1.0	73	45°W [0.33] 55°W [0.34] 65°W [0.33]	23 [0.1] 47 [0.2] 32 [0.3] 56 [0.3] 7.3 [0.1]	0.3 [0.2] 0.4 [0.6] 0.5 [0.2]	AD 1 [0.1] 2 [0.4] 3 [0.4] 4.5 [0.1]	
East Cedar Mountains	ECMF	0.7	72	45°E [0.33] 55°E [0.34] 65°E [0.33]	12 [0.3] 27 [0.4] 45 [0.25] 72 [0.05]	0.01 [0.25] 0.04 [0.25] 0.07 [0.25] 0.1 [0.2] 0.45 [0.05]		
Rush Valley Faults								
Clover Fault [Model A (0.8)]	C	1.0	19 [0.75]	45°E [0.33] 55°E [0.34] 65°E [0.33]	7.0 [1.0] 19 [1.0]	0.01 [0.6] 0.05 [0.4]	MD [0.3] 0.6 [1.0] AD [0.7] 0.6 [1.0]	
Sheeprock [Model A (0.8)]	Sh	1.0	19[1.0]	45°E [0.33] 55°E [0.34] 65°E [0.33]	19 [1.0]	0.01 [0.4] 0.05 [0.5] 0.1 [0.1]		
West Side Zone [Model B (0.2)]	C & Sh	1.0	52	45°E [0.33] 55°E [0.34] 65°E [0.33]	18 [1.0]	0.01 [0.4] 0.05 [0.5] 0.1 [0.1]	MD [0.3] 0.6 [1.0] AD [0.7] 0.6 [1.0]	

TABLE 6-2 (CONTINUED)

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downdip Geometry	Rupture Lengths (km)	Slip Rate (mm/yr)	Single Event Displacement[1] (m)	Comments/ References
Oquirrh-East Great Salt Lake Fault Zone								
Mercur [Model A (0.40)]	M	1.0	27	45°W [0.33] 55°W [0.34] 65°W [0.33]	16 [0.4] 27 [0.6]	0.05 [0.5] 0.1 [0.4] 0.2 [0.1]	MD [0.3] 0.9 [0.5] 1.9 [0.5] AD [0.7] 0.9 [0.5 1.9 [0.5]	
Topliff Hill [Model A (0.40)]	TH	1.0	24	45°W [0.33] 55°W [0.34] 65°W [0.33]	12 [0.4] 24 [0.6]	0.05 [0.5] 0.1 [0.4] 0.2 [0.1]		
Mercur-Topliff Hill [Model B (0.6)]	M-TH	1.0	56	45°W [0.33] 55°W [0.34] 65°W [0.33]	16 [0.2] 33 [0.5] 56 [0.3]	0.05 [0.5] 0.1 [0.4] 0.2 [0.1]	MD [0.3] 0.9 [0.5] 1.9 [0.5] AD [0.7] 0.9 [0.5 1.9 [0.5]	
Oquirrh (Model A [0.9])	O	1.0	35	45°W [0.33] 55°W [0.34] 65°W [0.33]	12 [0.2] 21 [0.4] 35 [0.4]	0.1 [0.3] 0.15 [0.5] 0.2 [0.2]	MD [0.3] 2.2 [0.5] 2.7 [0.5] AD [0.7] 2.2 [0.5 2.7 [0.5]	
East Great Salt Lake (Model A [0.9])	EGSL	1.0	*100*	40°W [0.33] 50°W [0.34] 60°W [0.33]	35 [0.3] 40 [0.4) 52 [0.3]	0.2 [0.4] 0.4 [0.4] 0.7 [0.2]		
Oquirrh & East Great Salt Lake	O & EGSL	1.0	100	40°W [0.33] 50°W [0.34]	21 [0.3] 35 [0.5]	0.1[0.2] 0.2[0.4]	MD [0.3] 0.9 [0.5]	

TABLE 6-2 (CONTINUED)

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downdip Geometry	Rupture Lengths (km)	Slip Rate (mm/yr)	Single Event Displacement[1] (m)	Comments/ References
(Model B [0.1])				60°W [0.33]	52 [0.2]	0.4[0.3] 0.7[0.1]	1.9 [0.5] AD [0.7] 0.9 [0.5 1.9 [0.5]	
East Tintic Mountains	ETM	1.0	36	40°W [0.33] 50°W [0.34] 60°W [0.33]	20 [0.4] 36 [0.6]	0.005 [0.1] 0.01[0.4] 0.05 [0.4] 0.1 [0.1]		
West Valley Fault Zone	WVFZ	0.6	18	45°E [0.33] 55°E [0.34] 65°E [0.33]	18 [1.0]	0.3 [0.5] 0.5 [0.5]		
Utah Lake faults	UL	0.6	30	45°E [0.33] 55°E [0.34] 65°E [0.33]	20[0.5] 30[0.5]	0.3 [0.5] 0.5 [0.5]		
Drum Mountains	DM	1.0	36	45°E [0.33] 55°E [0.34] 65°E [0.33]	36[1.0]	0.02 [0.3] 0.05 [0.4] 0.2 [0.3]	AD [0.7] 2.4 [1.0] MD [0.3] 3.7 [1.0]	
Fish Springs	FS	1.0	30	45°E [0.33] 55°E [0.34] 65°E [0.33]	15 [0.5] 30 [0.5]	0.02 [0.3] 0.05 [0.4] 0.2 [0.3]	MD 3.3 [1.0]	
Wasatch Fault Zone	WFZ	1.0	370	45°E [0.33] 55°E [0.34] 65°E [0.33]				Seismic source model modified from Youngs and others (1987) and using recurrence data from McCalpin and Nishenko (1996)

TABLE 6-2 (CONTINUED)

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS

Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downdip Geometry	Rupture Lengths (km)	Slip Rate (mm/yr)	Single Event Displacement[1] (m)	Comments/ References
(Unsegmented Model)					35 [0.05] 45 [0.4] 65 [0.5] 100 [0.05]	0.7 [0.1] 0.9 [0.2] 1.1 [0.4] 1.3 [0.25] 1.8 [0.05]		
(Segmented Model)								
*Collinston**					30 [1]	0.02 [0.45] 0.04 [0.45] 0.08 [0.1]		
Brigham City					40 [1]	*		
Weber					61 [1]	*		
Salt Lake City					46 [1]	*		
Provo					70 [1]	*		
Nephi					43 [1]	*		
Levan					30 [1]	0.05 [0.1] 0.1 [0.4] 0.2 [0.4] 0.3 [0.1]		

1 MD = maximum displacement; AD = average displacement
* Frequency of events based on recurrence intervals from McCalpin and Nishenko (1995).

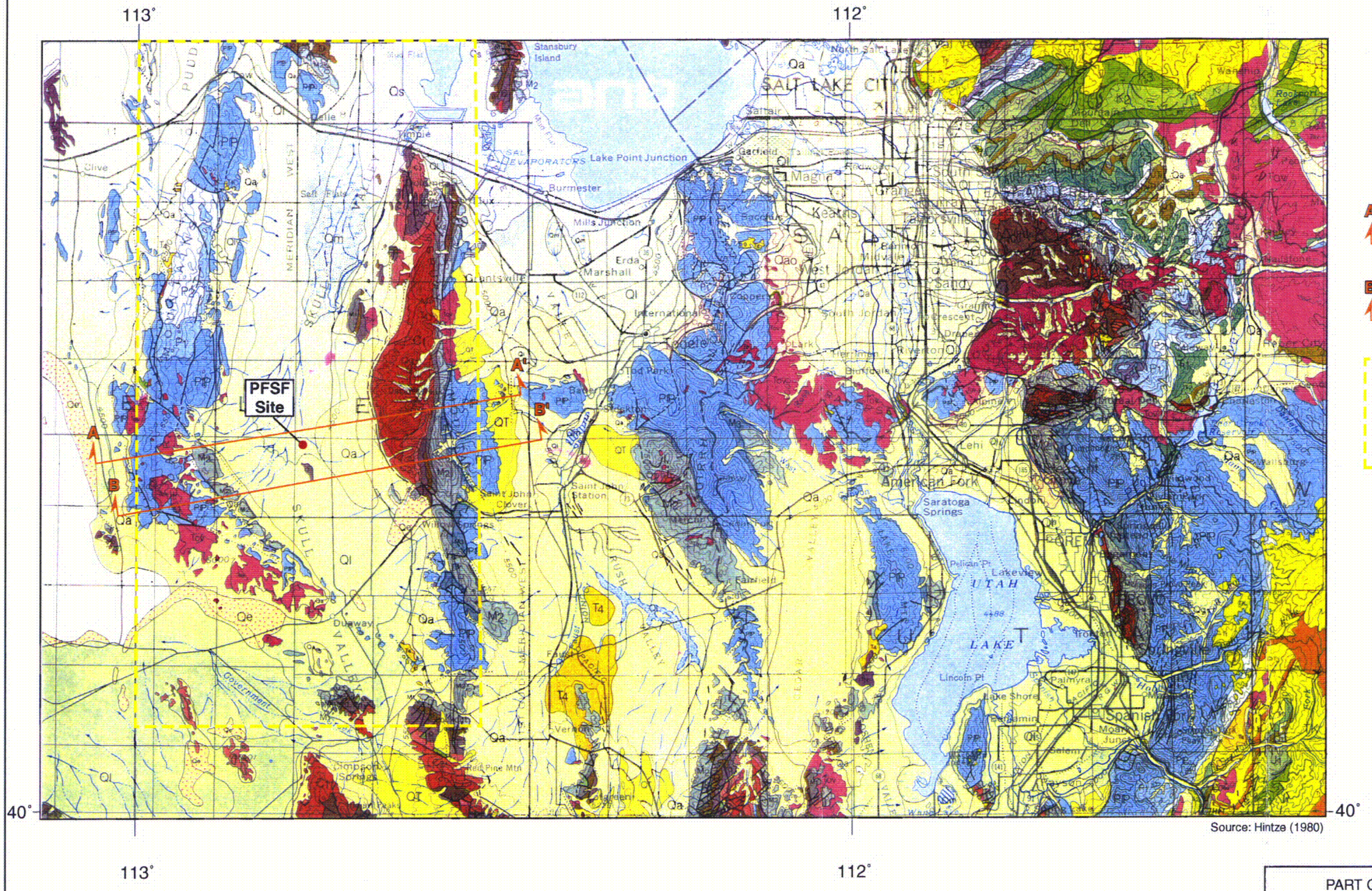
TABLE 6-3

MID-VALLEY FAULTS – MAXIMUM LENGTH RUPTURE SCENARIOS

Private Fuel Storage Facility
Skull Valley, Utah

Fault Source	Rupture Scenario[1]	Length (km)
East Fault/ Springline Fault (EF/SpF)		
	Gravity Low	12
	South tip to Castle Rock	18
	South tip to Pass Canyon	28
	South tip to Burnt Spring	46
Springline Fault (SpF)	Pass Canyon –Burnt Spring	18
East Fault (EF)	Gravity Low	12
	South tip–Castle Rock	18
	South tip–Pass Canyon	28
West Fault (WF)		
Model A	Gravity Low	12
	South tip (East fault) – North basin	23
Model B	Gravity Low	12
	South tip (East fault)–North basin	21
	South tip (West fault)–Pass Canyon west	36

1 See Plate 6 for location of postulated rupture segment boundaries.



Source: Hintze (1980)

EXPLANATION

A — A' Structural cross section A-A' (Figure 2-1)

B — B' Structural cross section B-B' (Figure 2-1)

Location of Plate 6

0 — 10 miles

0 — 10 kilometers

Contour interval = 500 feet

C01

PART OF GEOLOGIC MAP OF UTAH
SHOWING LOCATIONS OF SITE
AND REGIONAL CROSS SECTIONS
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX	Project No.	Figure
	4790	1-1

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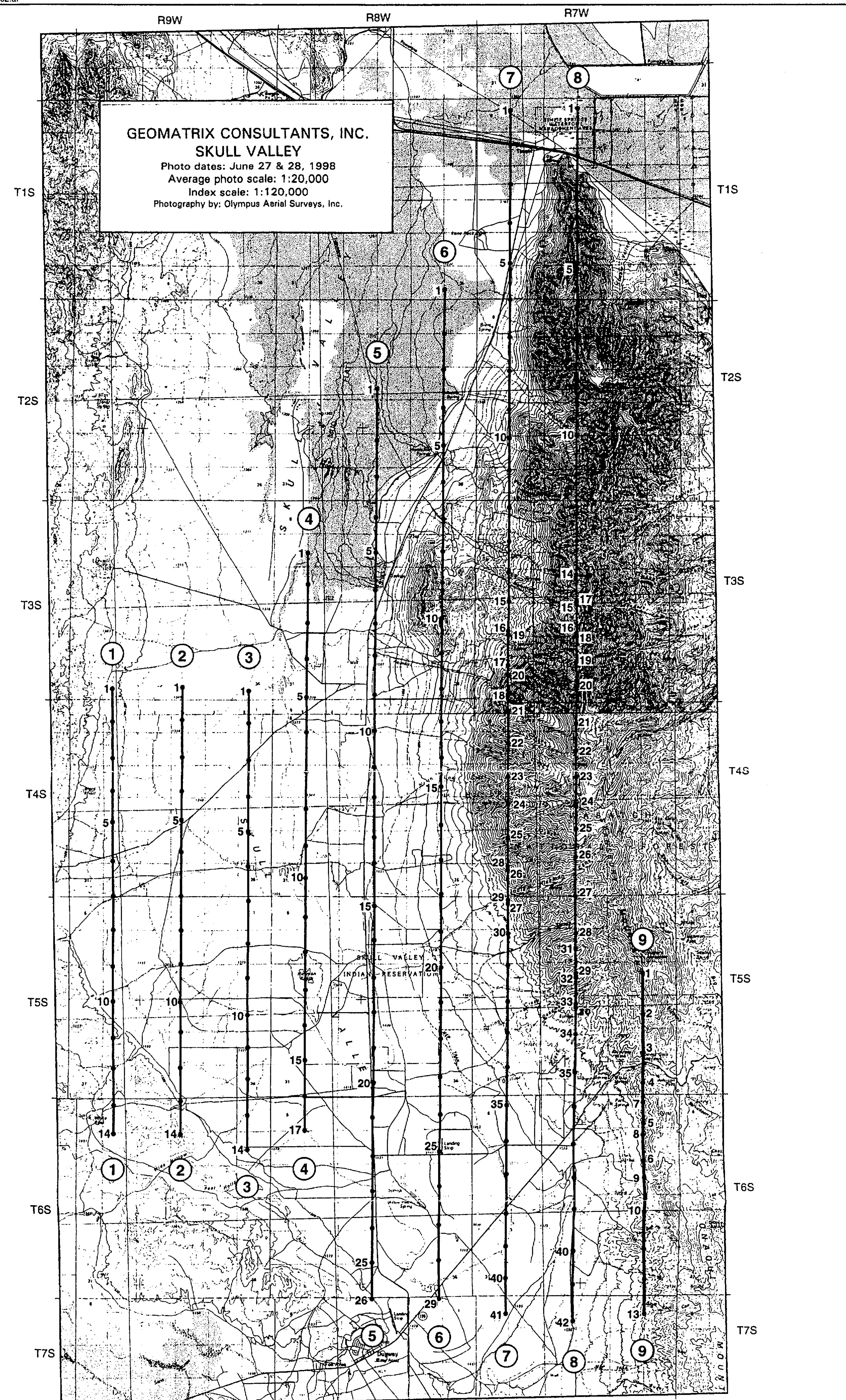

0 3 Miles
0 4 Kilometers

INDEX OF LOW-SUN-ANGLE AERIAL PHOTOGRAPHS
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX	Project No.	Figure
	4790	1-2

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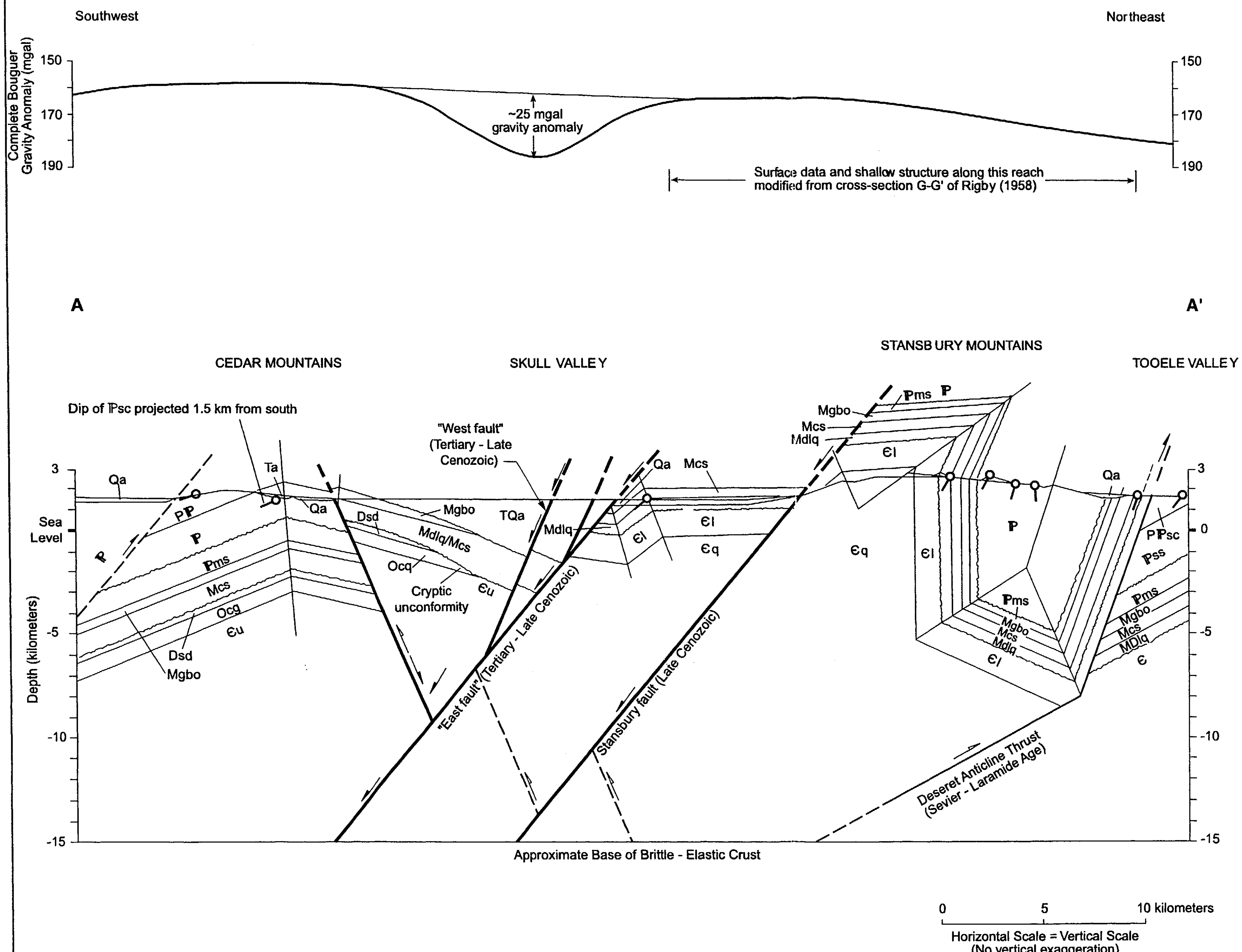

EXPLANATION

Stratigraphy

Qa	Quaternary alluvium	TQa = Tertiary - Quaternary alluvium
Ta	Tertiary andesitic rocks	
~~	Unconformity	
Pℙ	Pennsylvanian - Permian strata	
ℙ	Pennsylvanian strata, undivided	
ℙms	Mississippian - Pennsylvanian strata	
Mgbo	Great Blue Limestone (Mississippian)	
Mcs	Mississippian carbonates; undivided	
MDlq	Mississippian and Devonian strata	
~~	Angular unconformity	
Dsd	Silurian and Devonian strata	
Ocq	Ordovician carbonate and clastic rocks	
Єl	Cambrian limestone	Єq = Cambrian strata, undivided
Єq	Cambrian quartzite	

Structural

- Normal fault having evidence for Quaternary activity; dashed above ground
- Reverse fault, inactive and offset by normal fault
- Dip of Bedrock strata

Notes

1. Cross section developed by J. Unruh, William Lettis & Associates.
2. Data Sources
   - A. Geologic mapping: Maurer (1970), Moore and Sorensen (1979), Rigby (1958), and Geomatrix (this study).
   - B. Gravity: Cook et al. (1989), and proprietary data (Appendix E).
   - C. Seismic reflection profile GSI-UT-34 (Bay Geophysics, 1999).

STRUCTURAL GEOLOGIC CROSS SECTION A-A', TOOELE VALLEY TO GREAT SALT LAKE DESERT, UTAH
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX	Project No.	Figure
	4790	2-1

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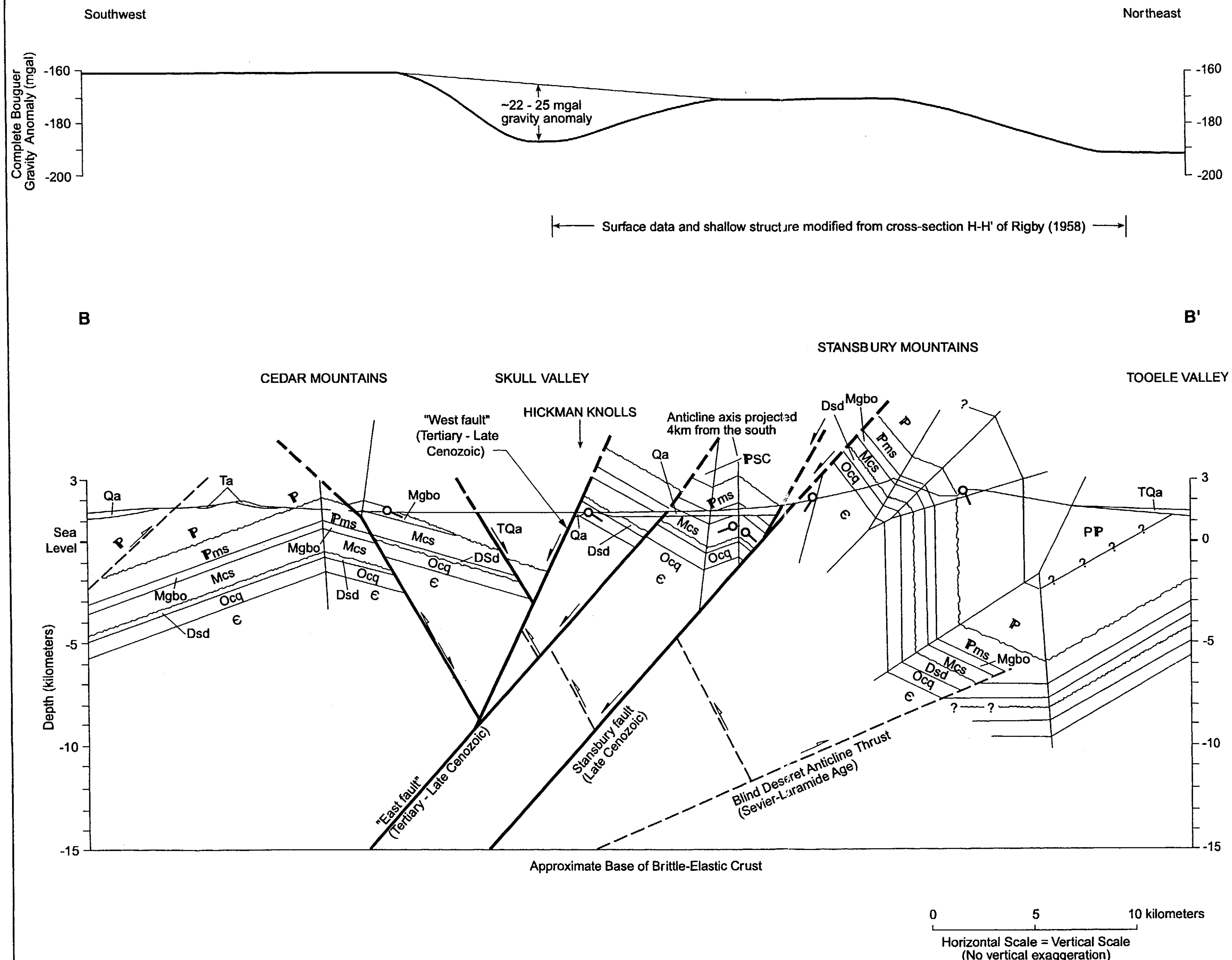

EXPLANATION

Stratigraphy

Qa	Quaternary alluvium ⎤ TQa = Tertiary - Quaternary alluvium
Ta	Tertiary andesitic rocks ⎦
~~	Unconformity
PP	Pennsylvanian - Permian strata
P	Pennsylvanian strata, undivided
Pms	Mississippian - Pennsylvanian strata
Mgbo	Great Blue Limestone (Mississippian)
Mcs	Mississippian carbonates; undivided
MDlq	Mississippian and Devonian strata
~~	Angular unconformity
Dsd	Silurian and Devonian strata
Ocq	Ordovician carbonate and clastic rocks
Єl	Cambrian limestone ⎤ Єq = Cambrian strata, undivided
Єq	Cambrian quartzite ⎦

Structural

- Normal fault having evidence for Quaternary activity; dashed above ground
- Reverse fault, inactive and offset by normal fault
- Dip of Bedrock strata

Notes

1. Cross section developed by J. Unruh, William Lettis & Associates.
2. Data Sources
   A. Geologic mapping: Maurer (1970), Moore and Sorensen (1979), Rigby (1958), and Geomatrix (this study).
   B. Gravity: Cook et al. (1989), and proprietary data (Appendix E).
   C. Seismic reflection profile GSI-UT-34 (Bay Geophysics, 1999).

STRUCTURAL GEOLOGIC CROSS SECTION B-B',
TOOELE VALLEY TO
GREAT SALT LAKE DESERT, UTAH
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX

Project No.	Figure
4790	2-2

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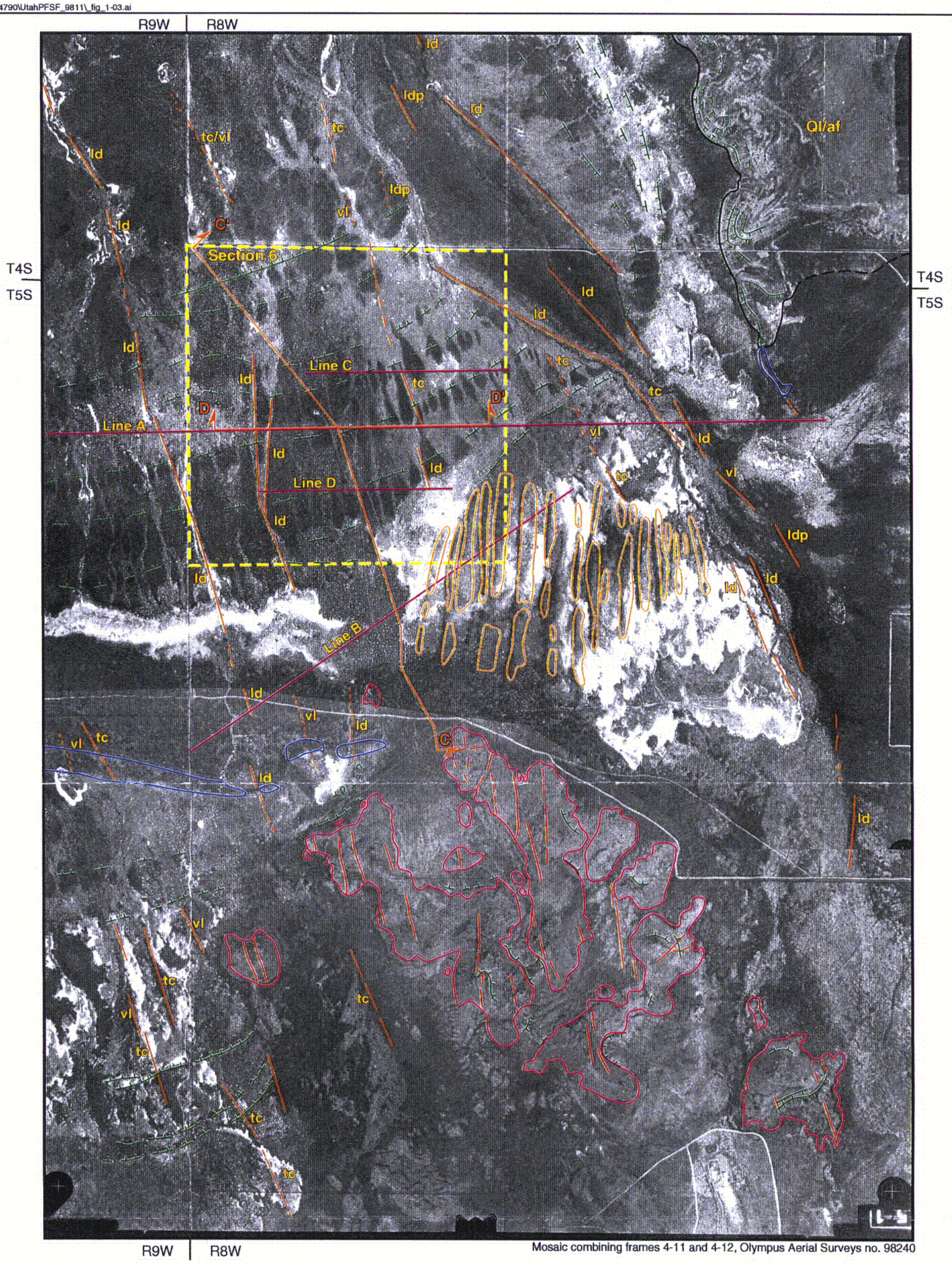


Mosaic combining frames 4-11 and 4-12, Olympus Aerial Surveys no. 98240

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
- Ql/af 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

N

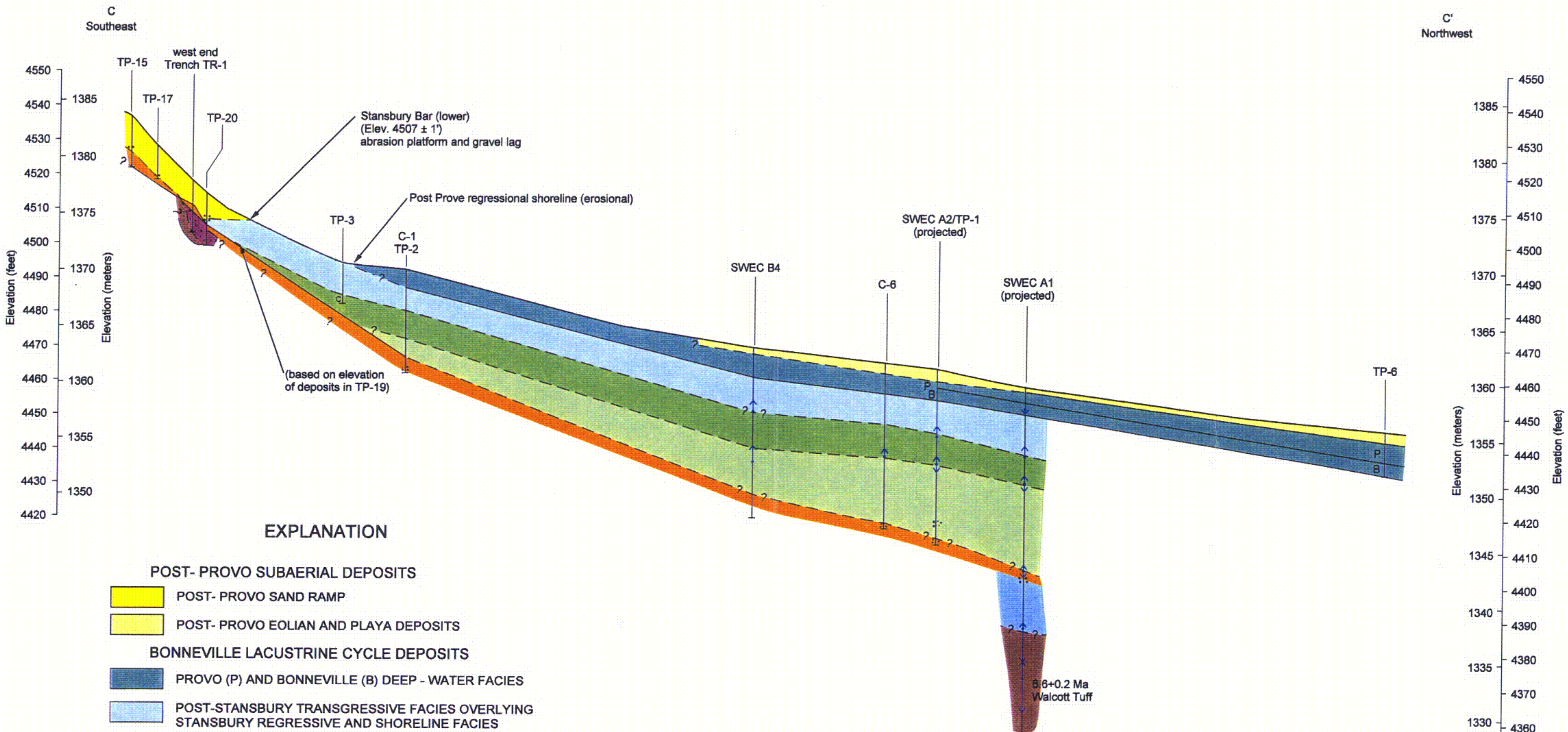
0 0.5 mile

0 1 kilometer

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

C02

GEOMATRIX	Project No.	Figure
	4790	1-3



EXPLANATION

POST- PROVO SUBAERIAL DEPOSITS

- POST- PROVO SAND RAMP
- POST- PROVO EOLIAN AND PLAYA DEPOSITS

BONNEVILLE LACUSTRINE CYCLE DEPOSITS

- PROVO (P) AND BONNEVILLE (B) DEEP - WATER FACIES
- POST-STANSBURY TRANSGRESSIVE FACIES OVERLYING STANSBURY REGRESSIVE AND SHORELINE FACIES
- STANSBURY DEEP - WATER FACIES (C=CHAROPHYTES PRESENT)
- STANSBURY TRANSGRESSIVE FACIES

PRE- BONNEVILLE DEPOSITS

- PROMONTORY SOIL DEVELOPED ON PRE - BONNEVILLE SUBAERIAL DEPOSITS (REWORKED, EOLIAN SAND RAMP AND ALLUVIUM)
- LITTLE VALLEY LACUSTRINE CYCLE DEPOSITS
- PRE - LITTLE VALLEY ALLUVIUM (CHANNEL GRAVEL)

TERTIARY ROCKS

- SALT LAKE GROUP

Gravel

c Charophytes casts (algal filament impressions)

Range in elevation of contact based on 5 ft - spacing of samples collected from SWEC borings

? Contact, solid where well constrained; dashed where less certain; queried where uncertain or no data are available

Note:

Location of boreholes shown on Plate 1.

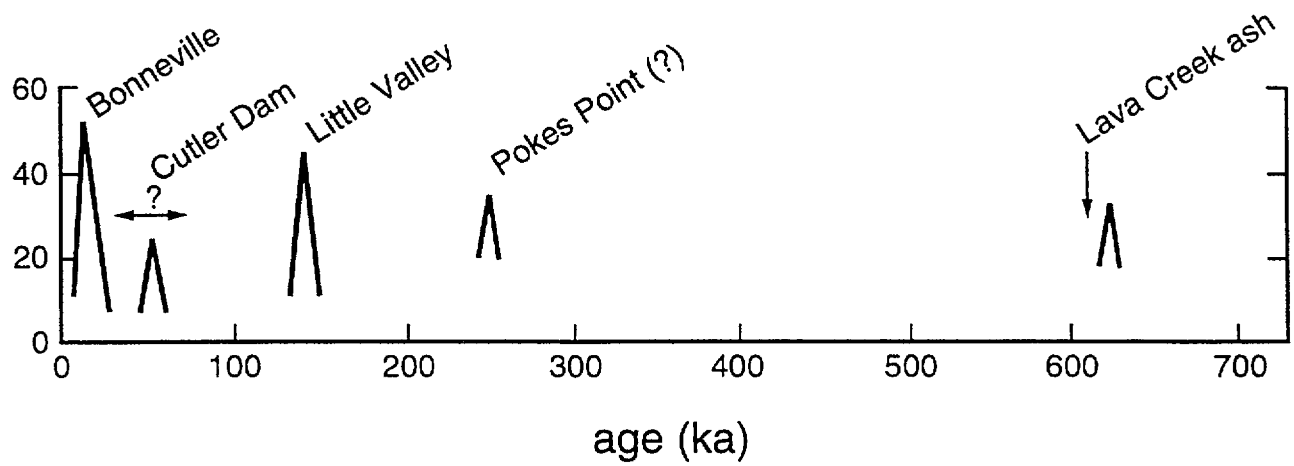
C03

GEOLOGIC CROSS-SECTION C-C' SHOWING MAIN STRATIGRAPHIC UNITS IN THE SITE VICINITY
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX

Project No. 4790

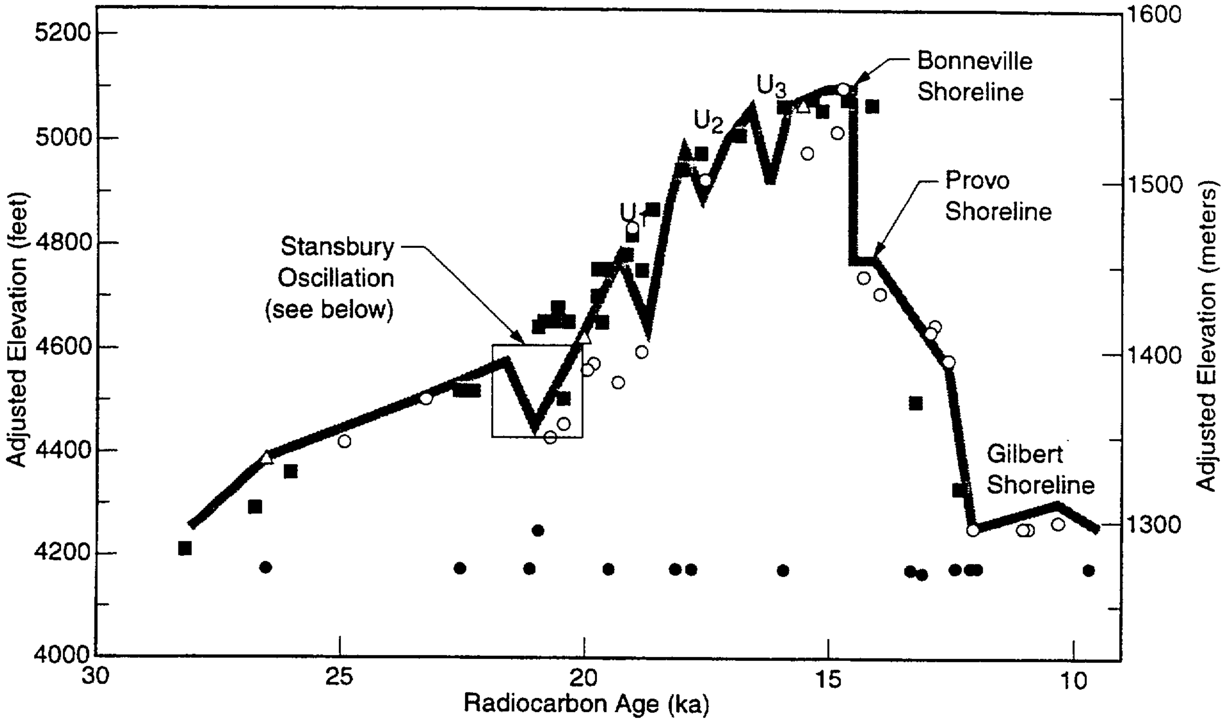
Figure 3-1



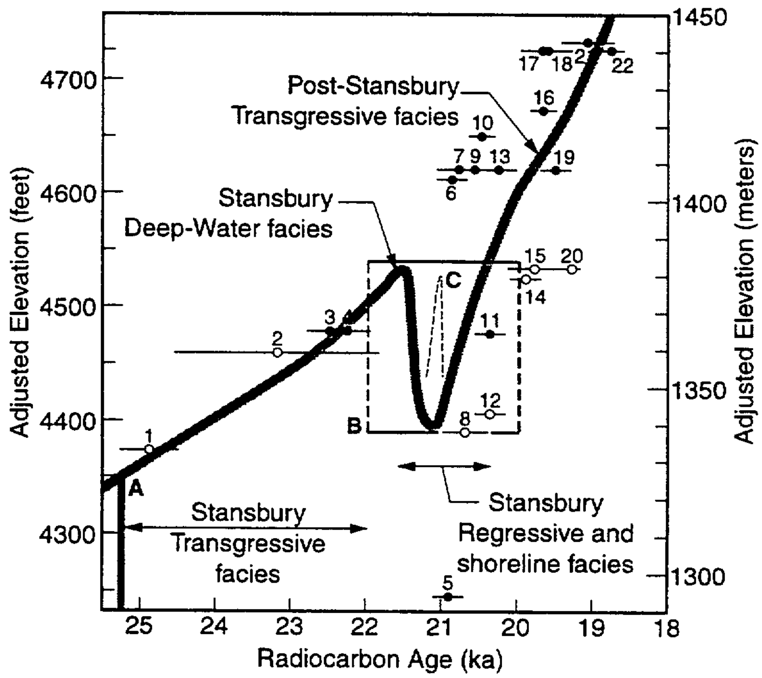
GEOMATRIX

MAJOR QUATERNARY LAKE CYCLES IN THE BONNEVILLE BASIN
Private Fuel Storage Facility
Skull Valley, Utah
(from Oviatt and Miller, 1977)

Project No.	4790
Figure	3-2



(a) Hydrograph modified from Oviatt and others (1992, fig. 3) and Oviatt and Miller (1997, fig. 5). U1, U2, and U3 are unnamed transgressive-phase fluctuations.



(b) Hydrograph showing details of the early transgressive phase of Lake Bonneville and the Stansbury oscillation modified from Oviatt and other (1990, fig. 4) to show depositional-facies terminology used in this report. A = informally named "Thiokol" basaltic ash (Oviatt and Nash 1989), which is exposed as high as altitude shown; its age is not precisely known, but it is close to 25,000 yr BP. B = time-altitude rectangle, during which the Stansbury oscillation probably occurred. C = possible secondary fluctuation during Stansbury oscillation as suggested by Oviatt 1987).

Figure 3-3. Lake Bonneville hydrographs. Elevations are adjusted for the effects of isostatic rebound in the basin (Oviatt and others, 1992), and ages are in radiocarbon years. Open circles are carbonate radiocarbon samples (shell, tufa), solid circles are disseminated organic carbon samples, solid squares are wood or charcoal samples, and open triangles are basaltic ashes.

C04

SOUTHERN VIEW OF HICKMAN KNOLLS BEDROCK EXPOSURE. NOTE LOW-ANGLE EAST-DIPPING FABRIC AT WESTERN AND EASTERN MARGINS OF THE KNOLLS. TRENCH 1 IS LOCATED IN MIDDLE FOREGROUND
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX	Project No.	Figure
	4790	4-1

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C05

GEOMATRIX

EXPOSURE OF ISOLATED BEDDING WITHIN
BLACK DOLOMITE BRECCIA IN CENTRAL HICKMAN KNOLLS
Private Fuel Storage Facility
Skull Valley, Utah

Figure
4-2

Project No.
4790

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C06

GEOMATRIX

BRECCIA LAYERING IN MEDIUM GRAY DOLOMITE,
NORTH MARGIN OF HICKMAN KNOLLS
Private Fuel Storage Facility
Skull Valley, Utah

Figure 4-3
Project No. 4790

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Figure 4-4a. Brittle normal fault cutting across layered breccia fabric near the summit of Hickman Knolls.

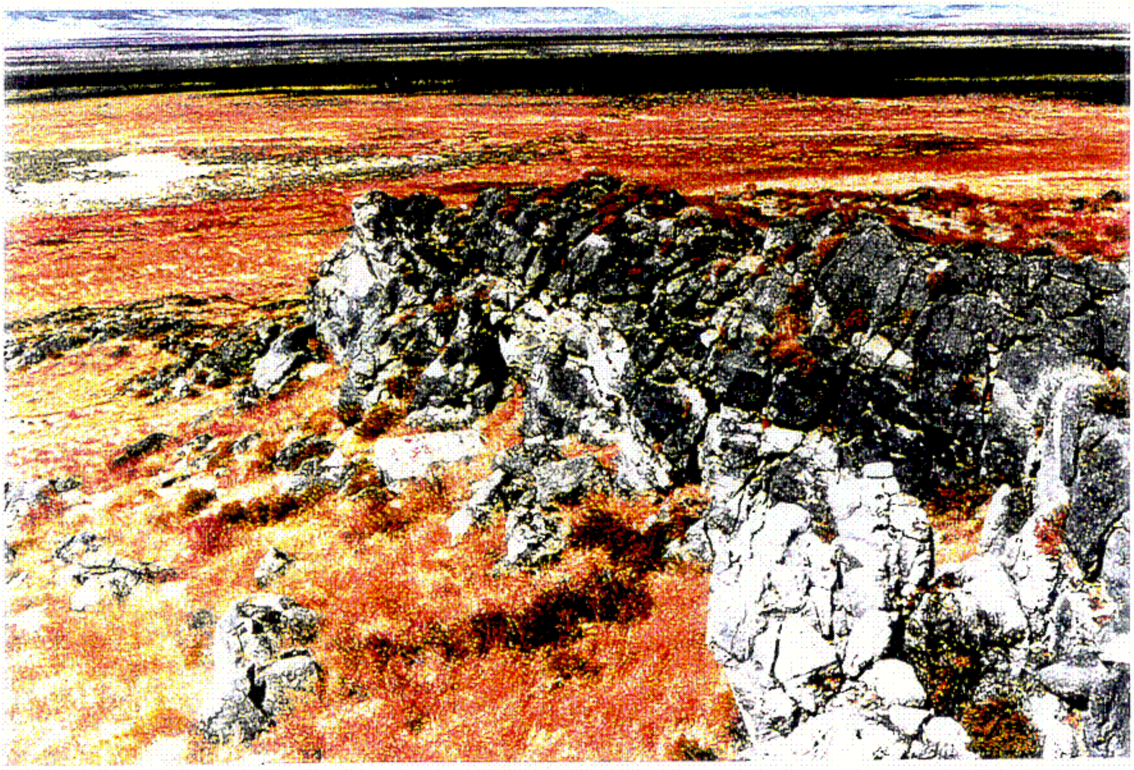

Figure 4-4b. Ductile shear zone (light gray) subparallel to breccia layering in black dolomite at northwest margin of Hickman Knolls. Note isolated boudins of black dolomite within shear zone indicating extension. View is to the north.

C07

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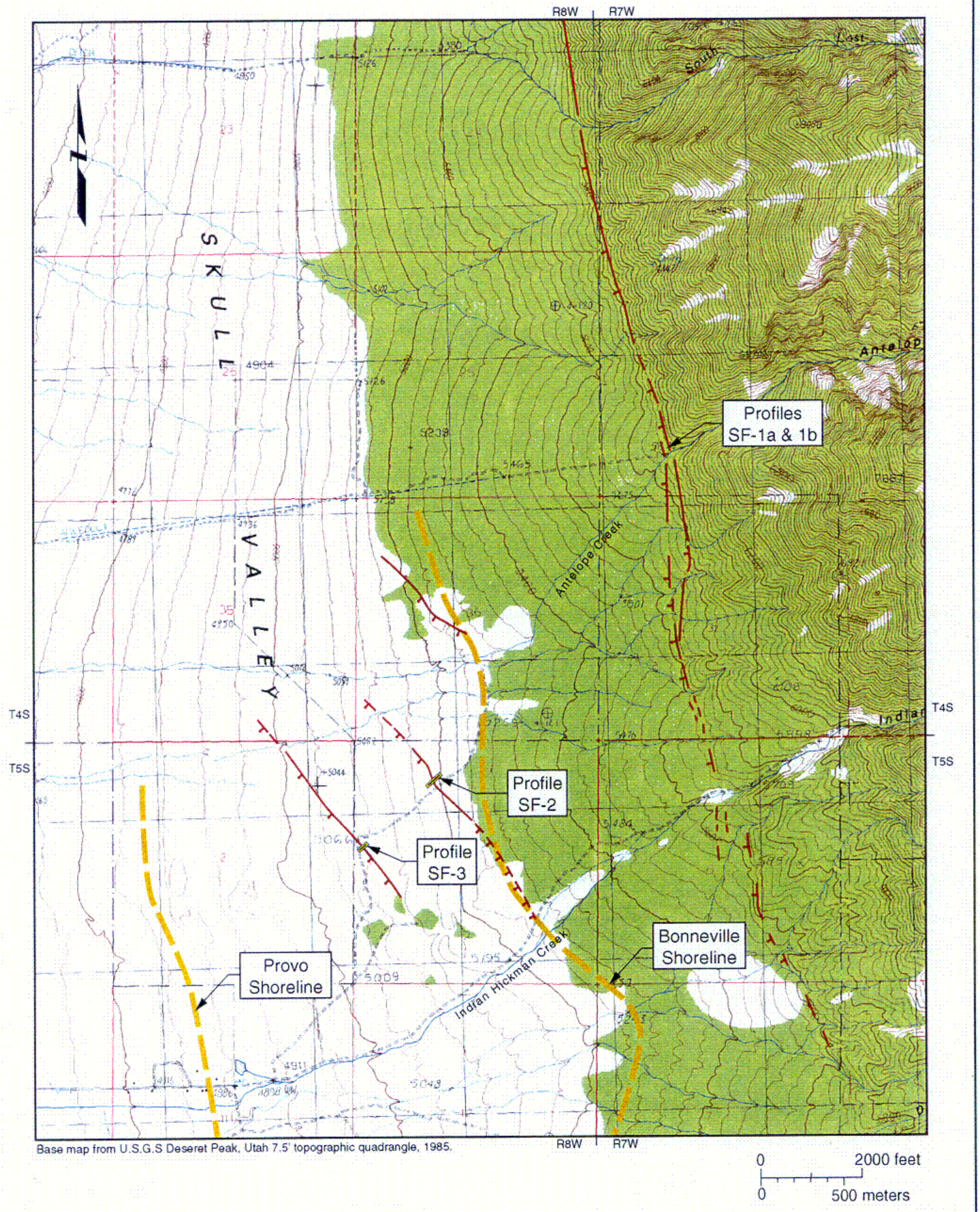

C08

GEOMATRIX

MAP SHOWING THE STANSBURY FAULT EAST OF THE SITE AND LOCATIONS OF SCARP PROFILES
Private Fuel Storage Facility
Skull Valley, Utah

Figure 5-1

Project No. 4790

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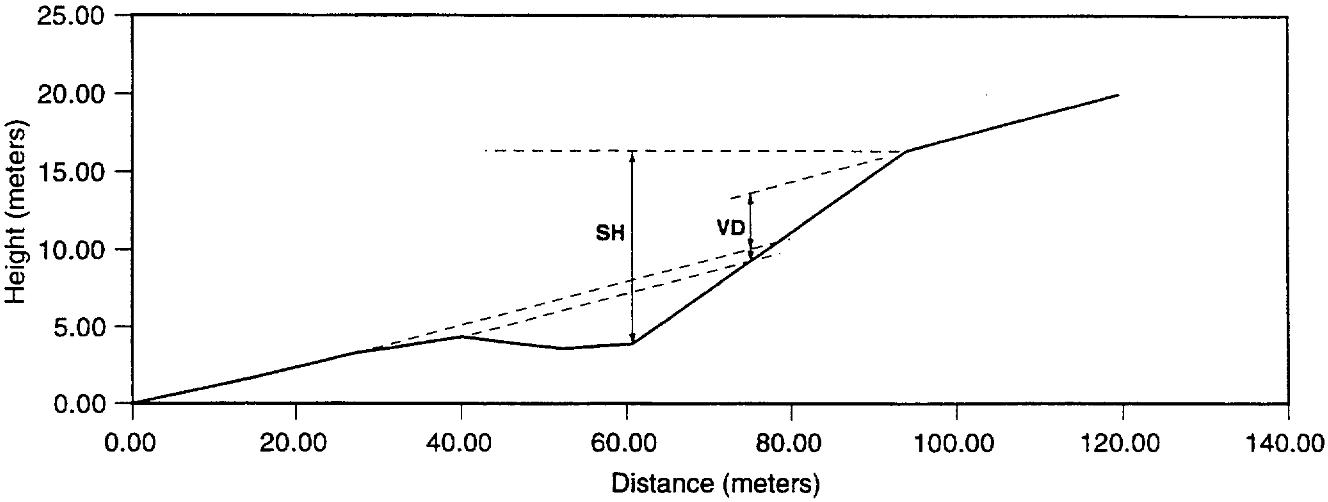
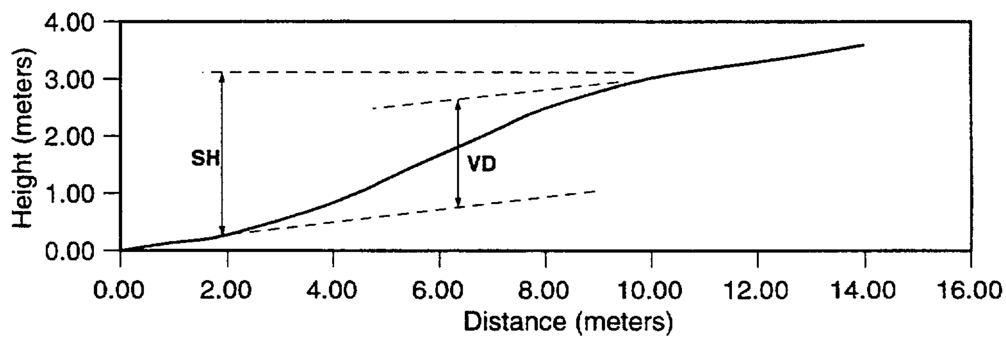


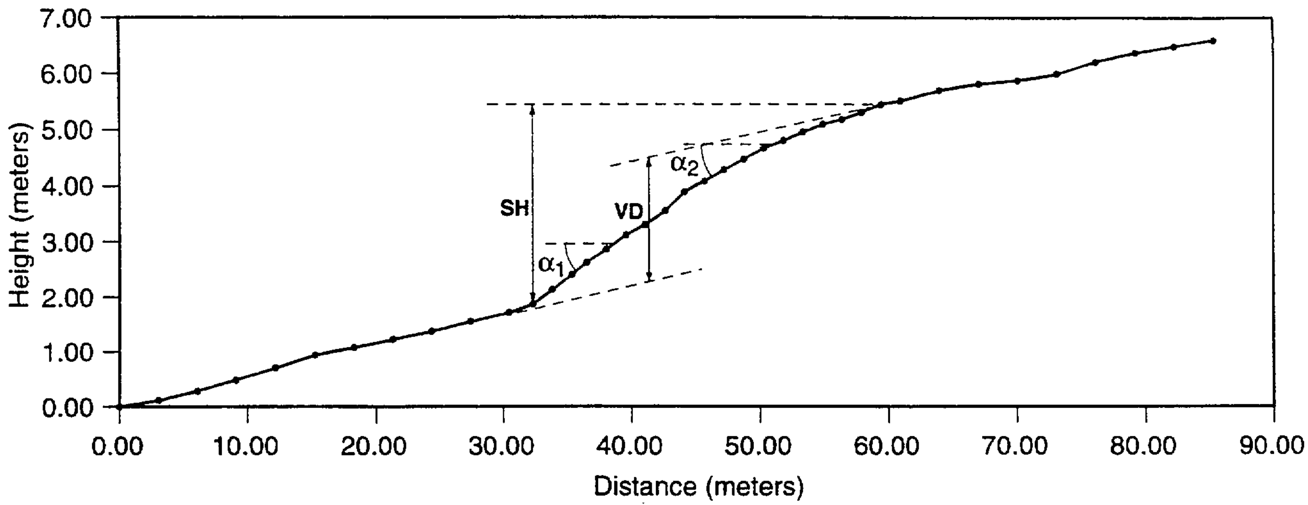
(a) Alluvial Fan Surface (Late Pleistocene)
Scarp Height (SH) = 12.5 m
Net Vertical Displacement (VD) = 4.2 to 5.0 m



(b) Inset Stream Terrace (Holocene)
Scarp Height (SH) = 2.9 m
Net Vertical Displacement (VD) = 1.9±0.2 m

GEOMATRIX	SCHEMATIC PROFILES OF SF-1A AND SF-1B ACROSS FAULT SCARPS ALONG THE MAIN TRACE OF THE STANSBURY FAULT AT ANTELOPE CANYON. SLOPE ANGLES AND HEIGHTS WERE MEASURED USING A HAND-HELD INCLINOMETER Private Fuel Storage Facility Skull Valley, Utah	Figure 5-2 Project No. 4790

S:\4700s\4790\UtahPFSF_9811_fig_5-02a.ai



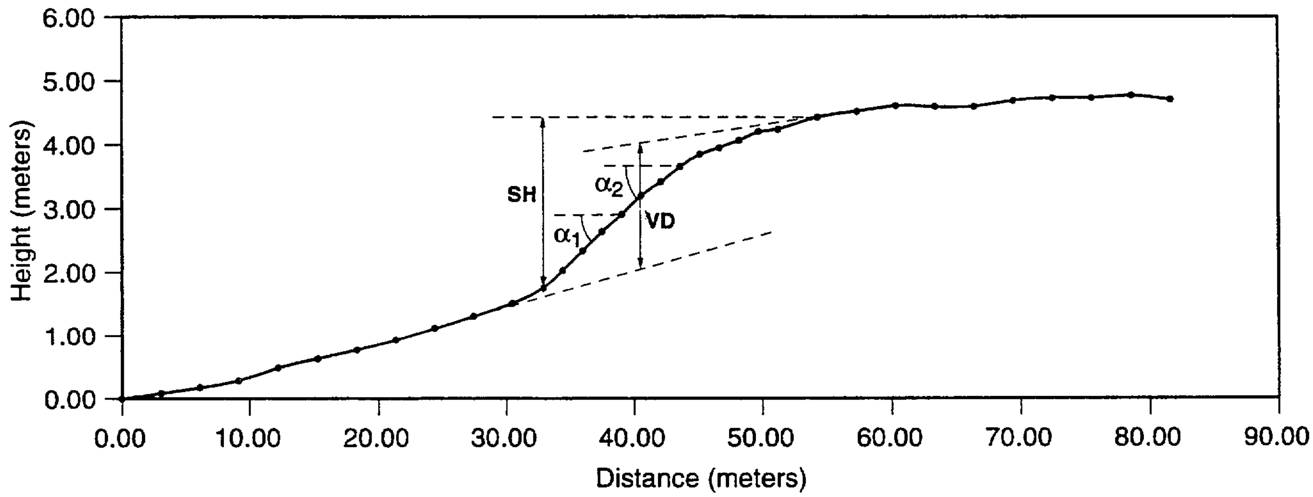
(a) Profile SF-2

Scarp Height (SH) = 3.6 m

Cummulative Vertical Displacement (VD) = 2.7 m

Slope angle (α_1) lower part of scrap = 10°

Slope angle (α_2) upper part of scrap = 7°



(b) Profile SF-3

Scarp Height (SH) = 2.8±0.1 m

Cummulative Vertical Displacement (VD) = 1.9±0.1 m

Slope angle (α_1) lower part of scrap = 11°

Slope angle (α_2) upper part of scrap = 8°

GEOMATRIX	TOPOGRAPHIC PROFILES SF-2 AND SF-3 ACROSS TWO WESTERN SPLAYS OF THE STANSBURY FAULT. PROFILES SURVEYED WITH A HAND-LEVEL, STADIA ROD AND MEASURING TAPE Private Fuel Storage Facility Skull Valley, Utah	Figure 5-3 Project No. 4790

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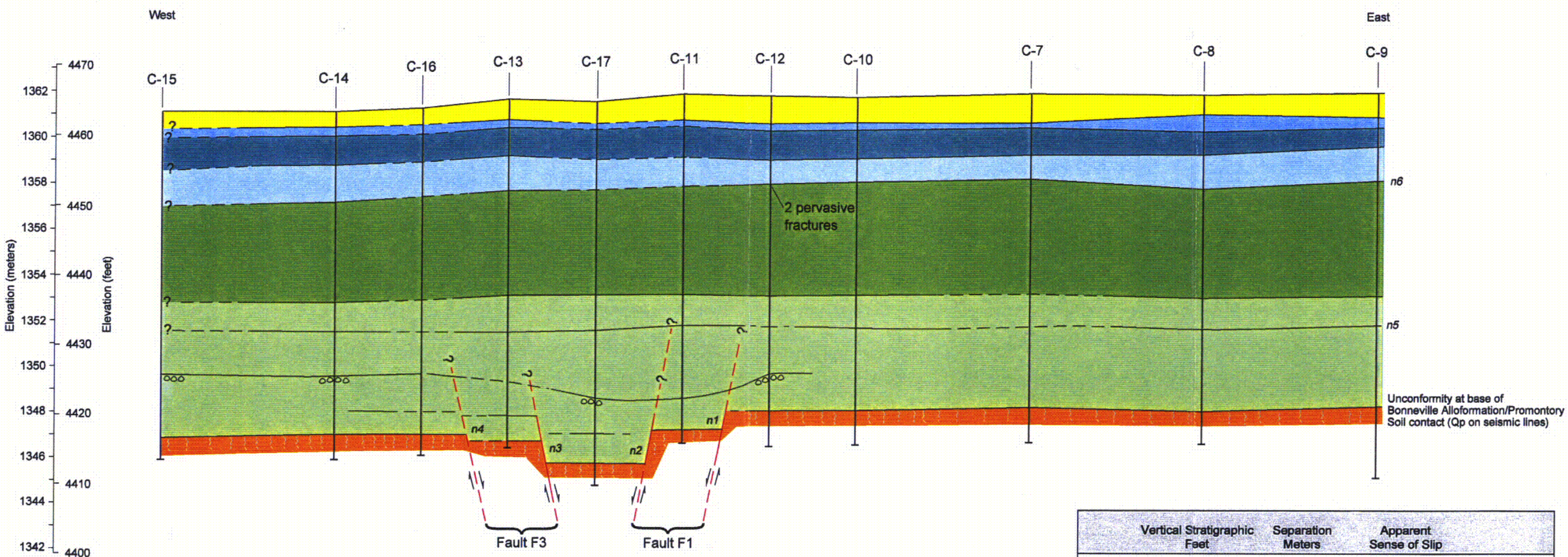

	Vertical Stratigraphic Feet	Separation Meters	Apparent Sense of Slip
Unconformity at Base of Bonneville Alloformation/Promomtory Soil Contact:			
n1	3.1	0.94	down-to-the west
n2	4.7	1.44	down-to-the west
n3	3.2	0.99	down-to-the east
n4	1.7	0.51	down-to-the east
	2.9	0.88	net separation across zone; down-to-the-west
Marker bed (clay layer) within Stansbury Transgressive Facies:			
n5	≤ 1.8	≤ 0.54	warp?-net separation between borings C12 and C14; down-to-the-west
Base of Bonneville Deep Water Facies (laminar):			
n6	≤ 1.0	≤ 0.32	warp?-net separation between borings C12 and C14; down-to-the-west

UNIT DESCRIPTIONS

POST-PROVO REWORKED EOLIAN DEPOSIT
Reddish yellow (7.5 YR 6/6) SANDY SILT, dry, medium stiff, platey, weak (Stage I) carbonate soil

BONNEVILLE DEEP-WATER FACIES (BLOCKY)
Pale olive (5Y 6/3) to light yellowish brown (2.5Y 6/4) SILTY CLAY to CLAYEY SILT (MARL), with white calcium carbonate mottles, medium dense, blocky structure

BONNEVILLE DEEP-WATER FACIES (LAMINAR)
Pale yellow to yellow (2.5Y 7/4 to7/6) CLAYEY SILT (MARL), medium stiff, laminar, ostracodes on partings, laminated, coarsens downwards into sandy silt

STANSBURY OSCILLATION SEQUENCE: [includes Post-Stansbury Transgressive Facies (upper part), Stansbury Regressive and Stansbury Deep-water Facies (lower part)]

Upper unit: Light yellowish brown (2.5 Y 6/4) SANDY SILT to SILTY SAND, marly, well bedded

Lower unit: Interbedded SANDY SILT and SILTY CLAY (upper 30 to 45 cm (1 to 1.5 ft) grading down to yellow (2.5Y 7/6) CLAYEY SILT AND SILTY CLAY; basal part is very pale brown (10YR 8/3 to 8/4) CLAYEY SILT (MARL), laminated, platey, contains ostracodes

STANSBURY TRANSGRESSIVE FACIES
Very pale brown (10YR 8/3) SILTY SAND, loose, well bedded to massive, marly, fine to very fine grained, includes light olive gray (5Y 6/2), thin, clay beds and locally a thin gravel stringer. The basal part of the unit (Borings C-14, C-16, C-13, and C-17) consists of interbedded gravelly sand and sandy gravel. Subangular pebble clasts with carbonate rinds, which are likely reworked from the underlying Promontory soil/pre-Bonneville alluvium, locally are mixed with subrounded pebbles in a well-sorted beach sand matrix in the basal sandy gravel units

PROMONTORY SOIL DEVELOPED ON PRE-BONNEVILLE ALLUVIUM
GRAVEL and SANDY GRAVEL; poorly sorted, subangular to subrounded clasts, maximum size range from 4 to 7.5 cm (1.5 to 3 in), mode 1-2 cm (0.4 to 0.8 in); 1 to 2 mm-thick carbonate rinds on clasts

Note:

Location of boreholes shown on Plate 1.

METERS 0 1 2 3
FEET 0 10
0 1 2 3 10

GEOLOGIC CROSS SECTION BASED ON CLOSELY SPACED BOREHOLES ACROSS FAULTS F1 AND F3
Private Fuel Storage Facility
Skull Valley, Utah

C09

GEOMATRIX

Project No. 4790

Figure 5-4

MAP_WT3X.pen

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\\SFPRNT2\Splash 5750 v5.0 geomtrx.ctb

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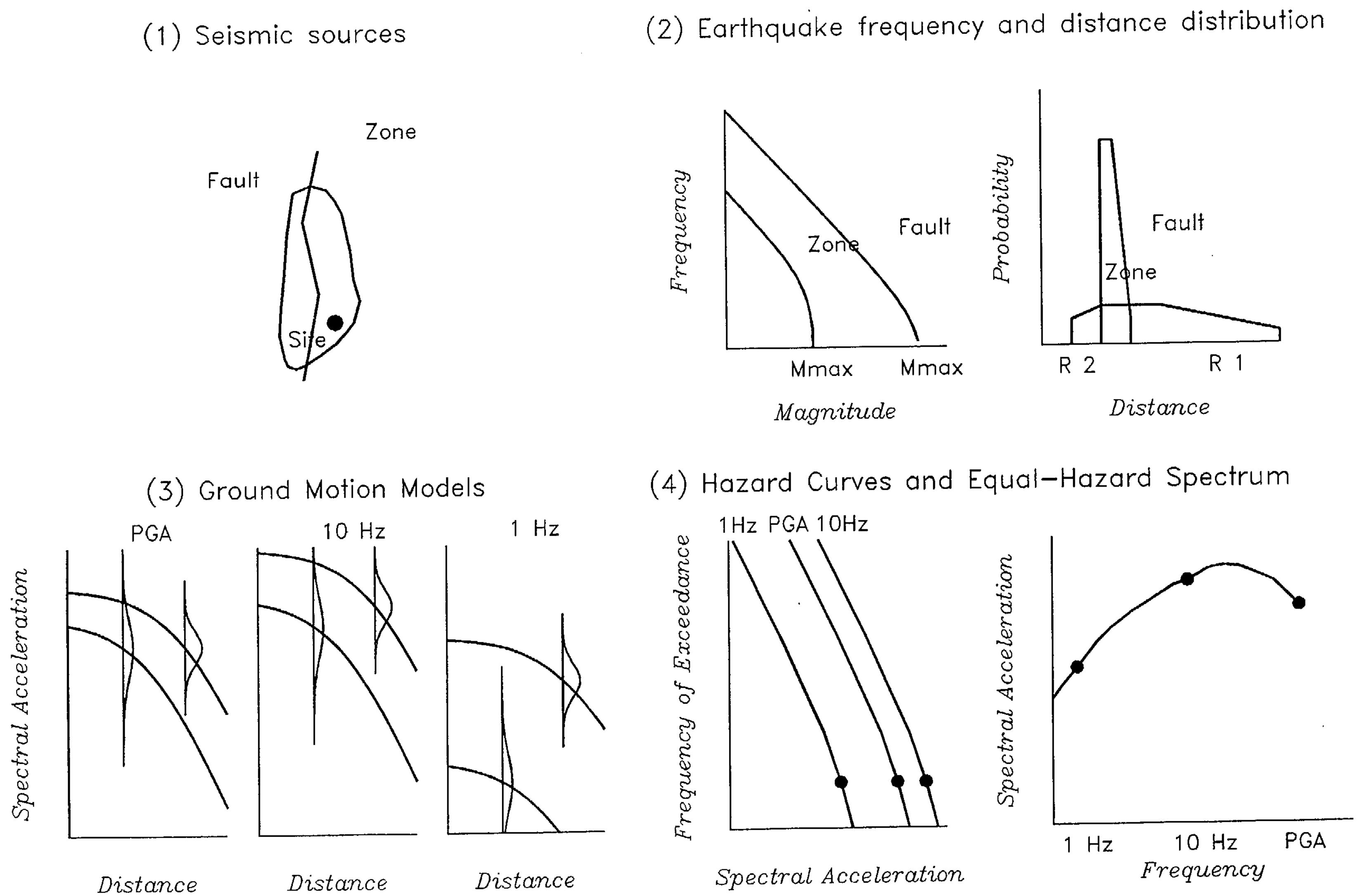
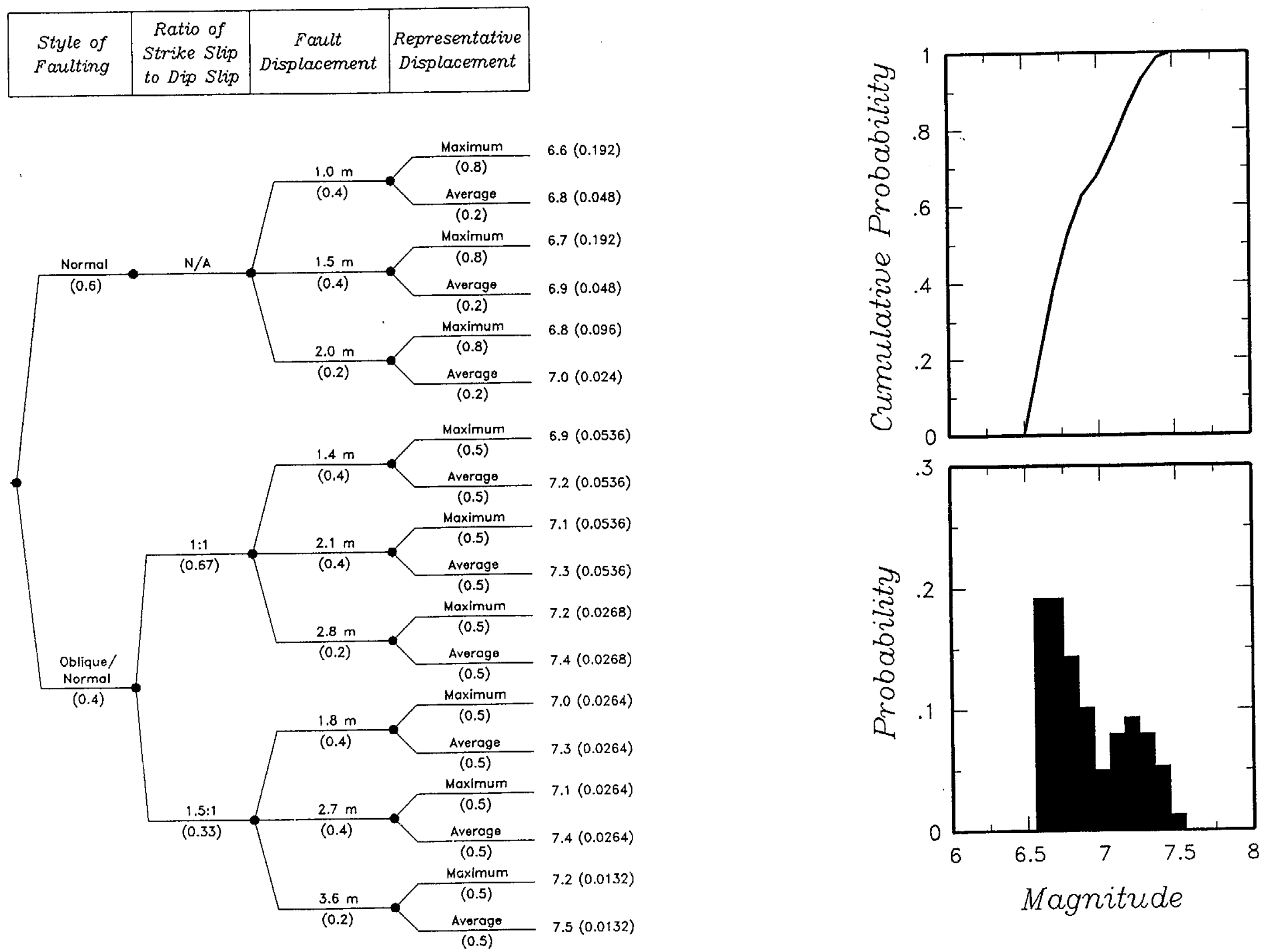


GEOMATRIX

SEISMIC HAZARD COMPUTATIONAL MODEL
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

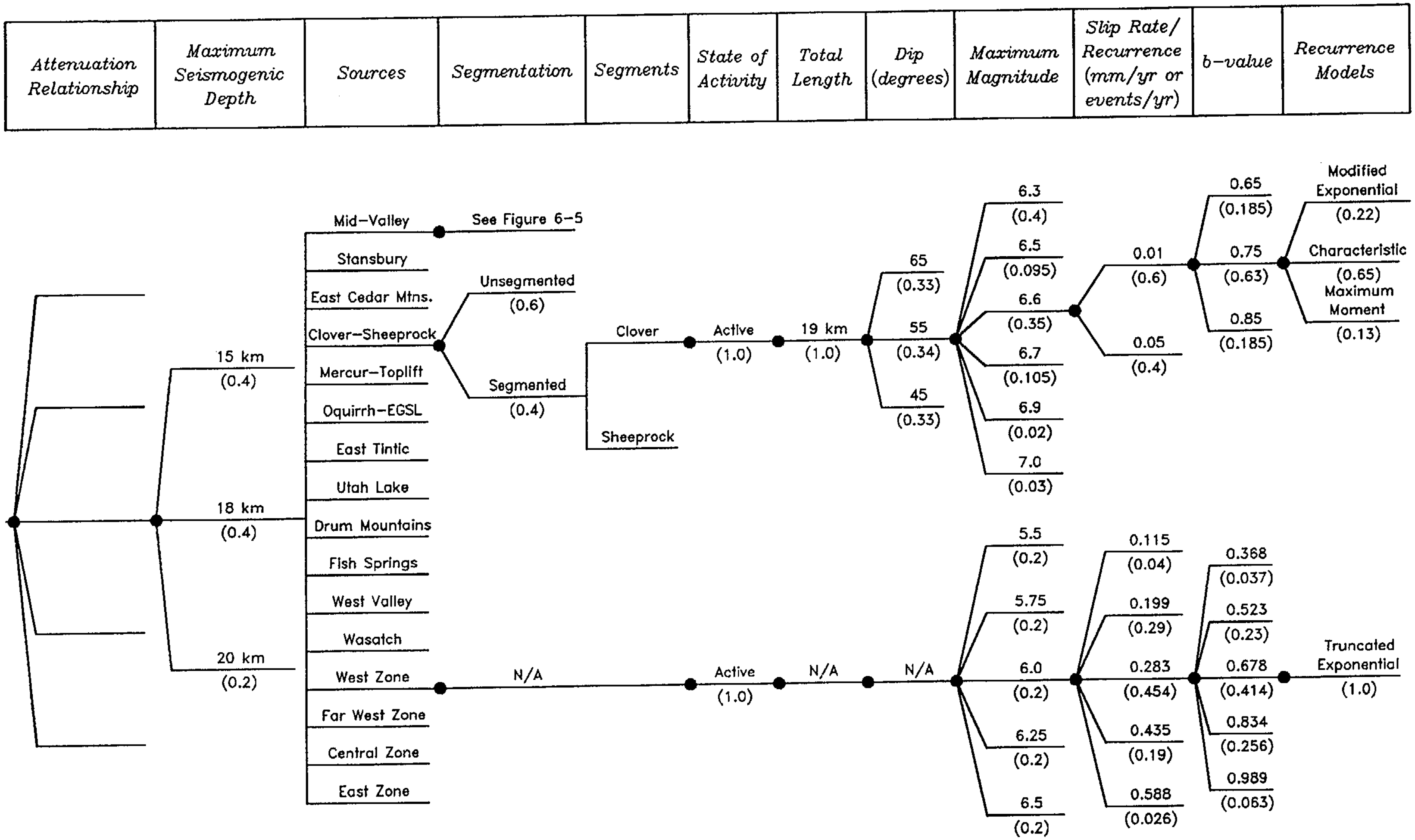
Figure 6-1



GEOMATRIX

EXAMPLE LOGIC TREE FOR ASSESSING MAGNITUDE OF PALEO EARTHQUAKES
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-2

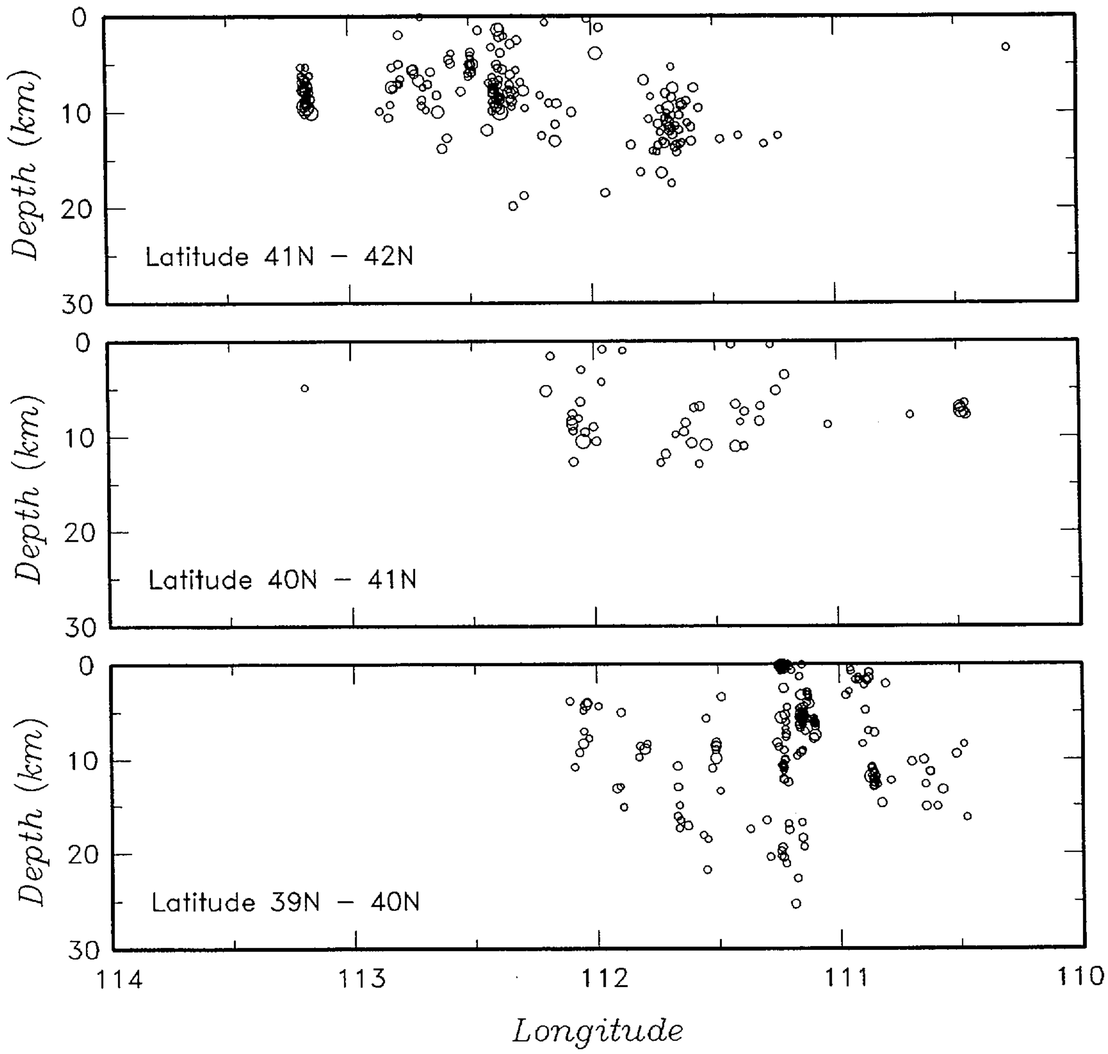


GEOMATRIX

SEISMIC HAZARD MODEL LOGIC TREE
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

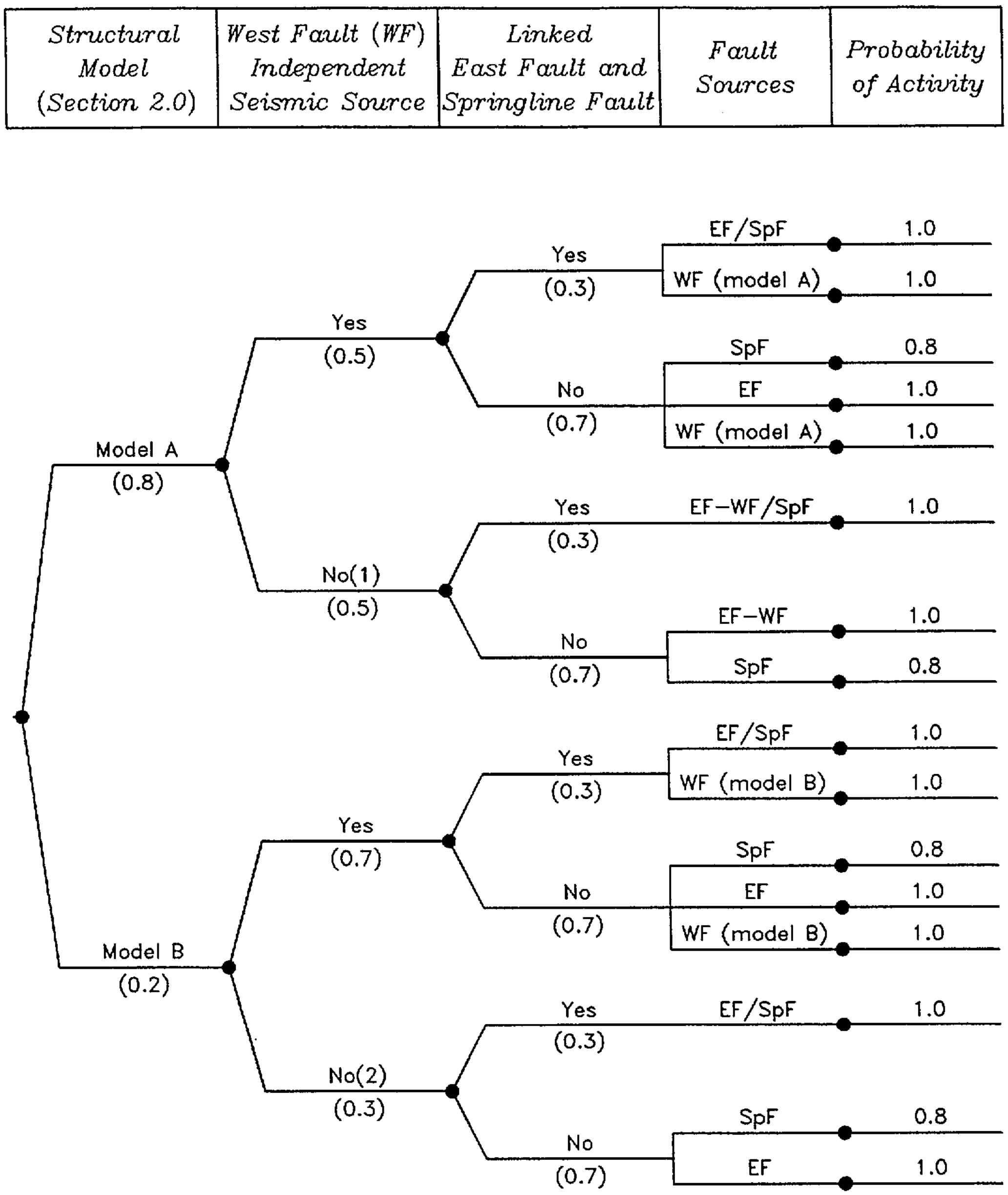
Figure 6-3



GEOMATRIX

SEISMICITY CROSS SECTIONS ALONG THE WASATCH FRONT
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-4



1. WF merges with EF above seismogenic depth. Slip rate estimate is based on combined slip rates indicated for both faults.
2. Deformation along WF is treated as secondary rupture in the hanging wall of EF.

Non-GDS

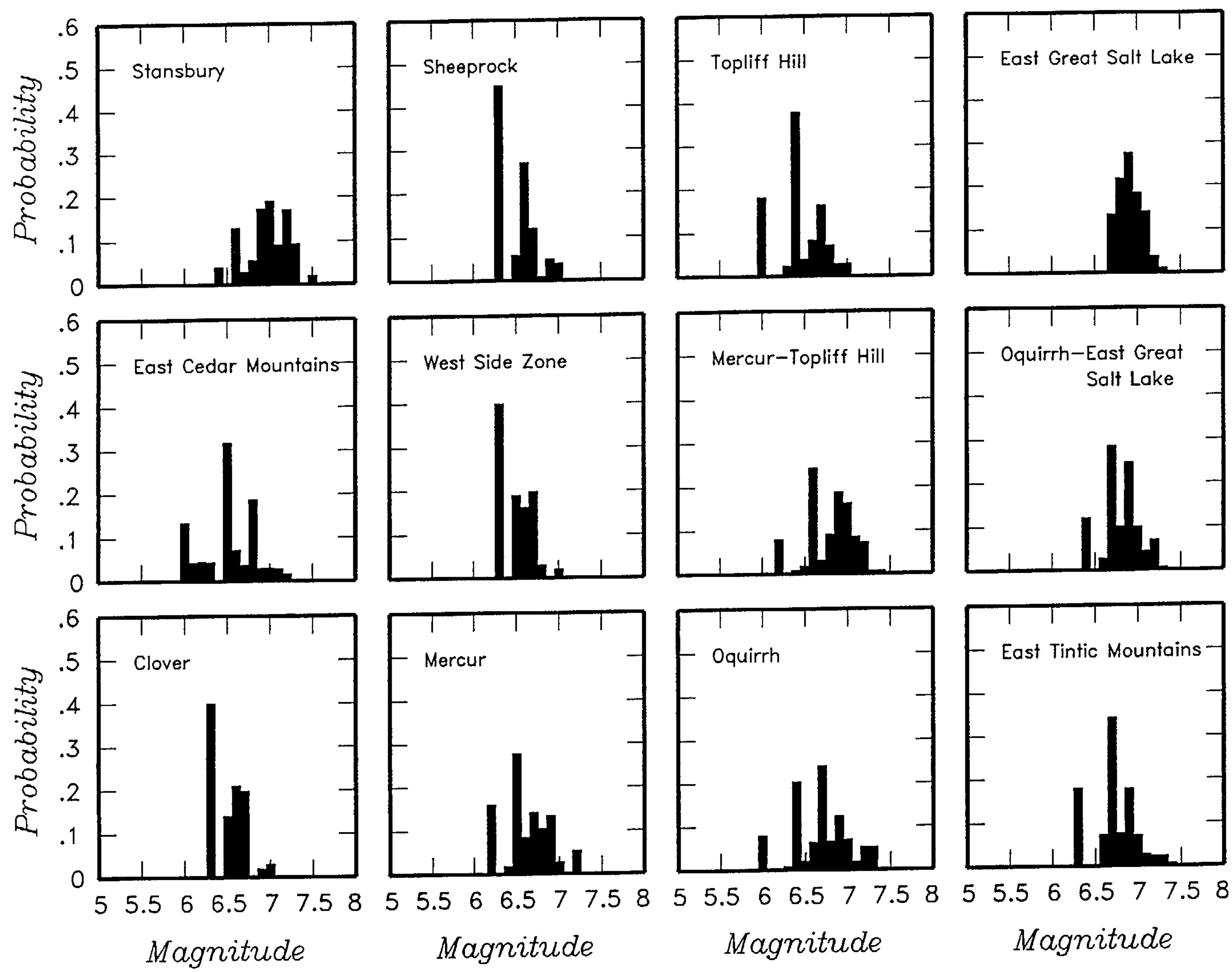
H:\yharden\fig 6-5.doc

GEOMATRIX

LOGIC TREE – MID-VALLEY FAULT SOURCES
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-5

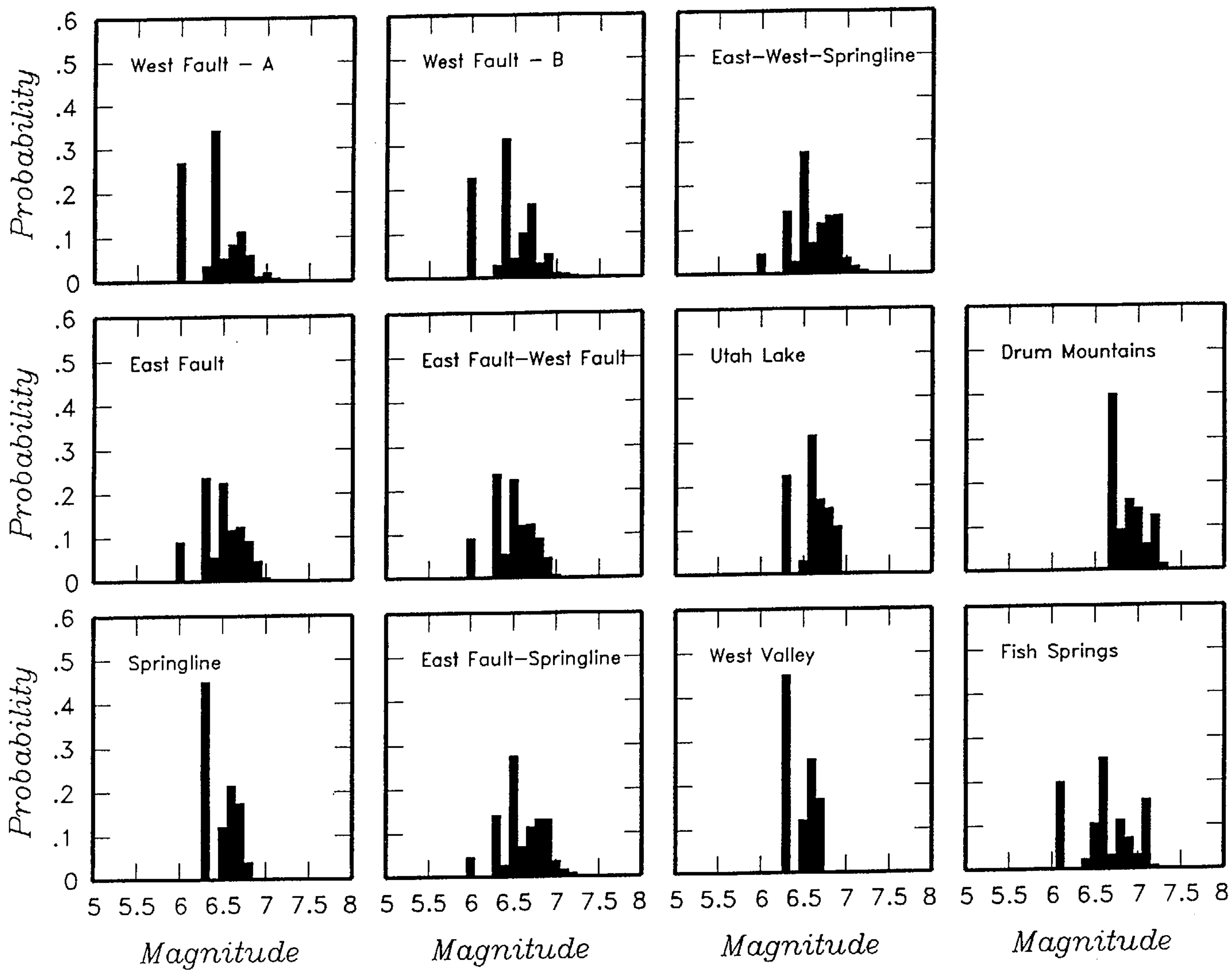


GEOMATRIX

MAXIMUM MAGNITUDE DISTRIBUTIONS FOR FAULT SOURCES
Private Fuel Storage Facility
Skull Valley, Utah
(page 1 of 3)

Project No.
4790

Figure
6-6

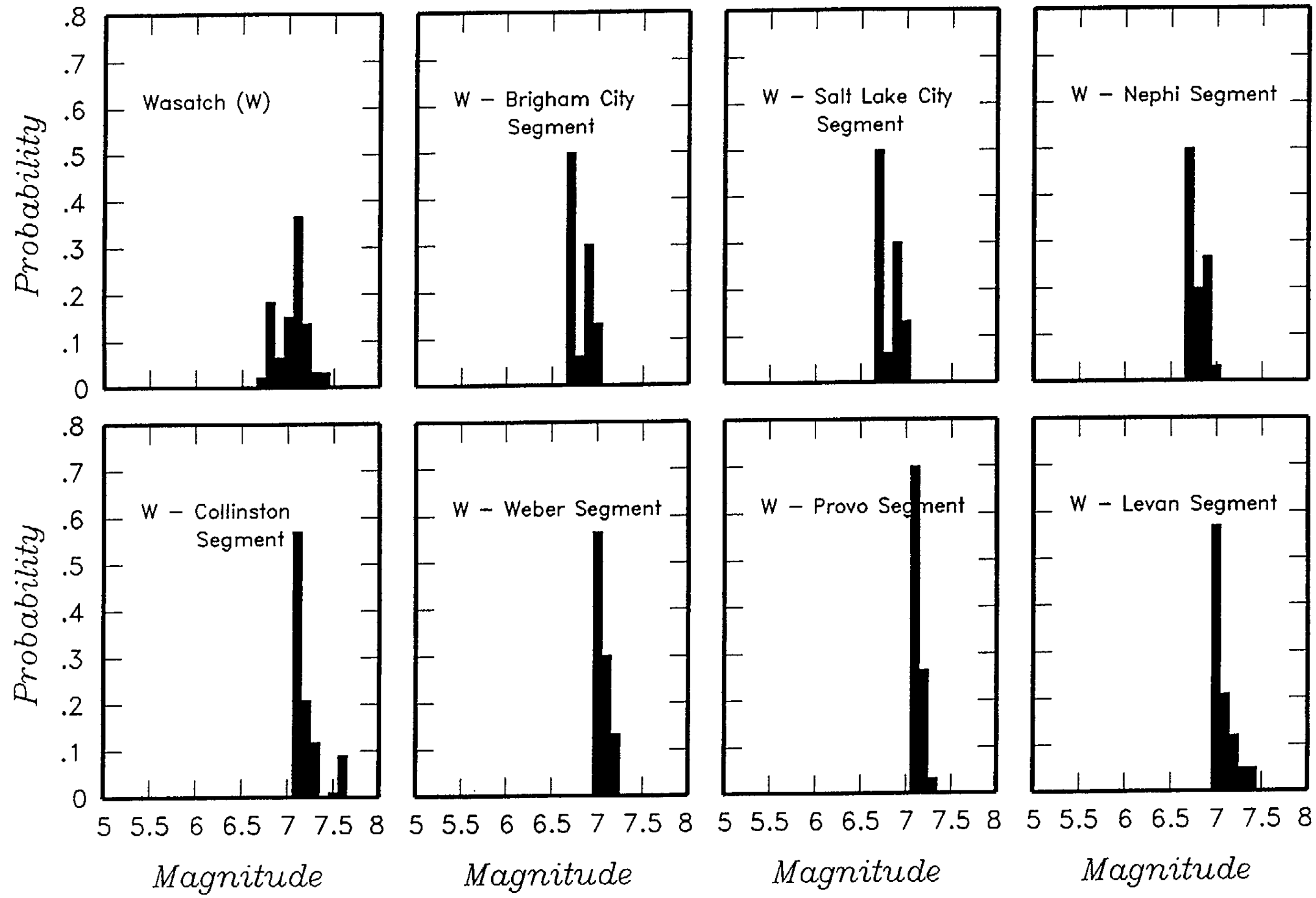


GEOMATRIX

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

Project No. 4790

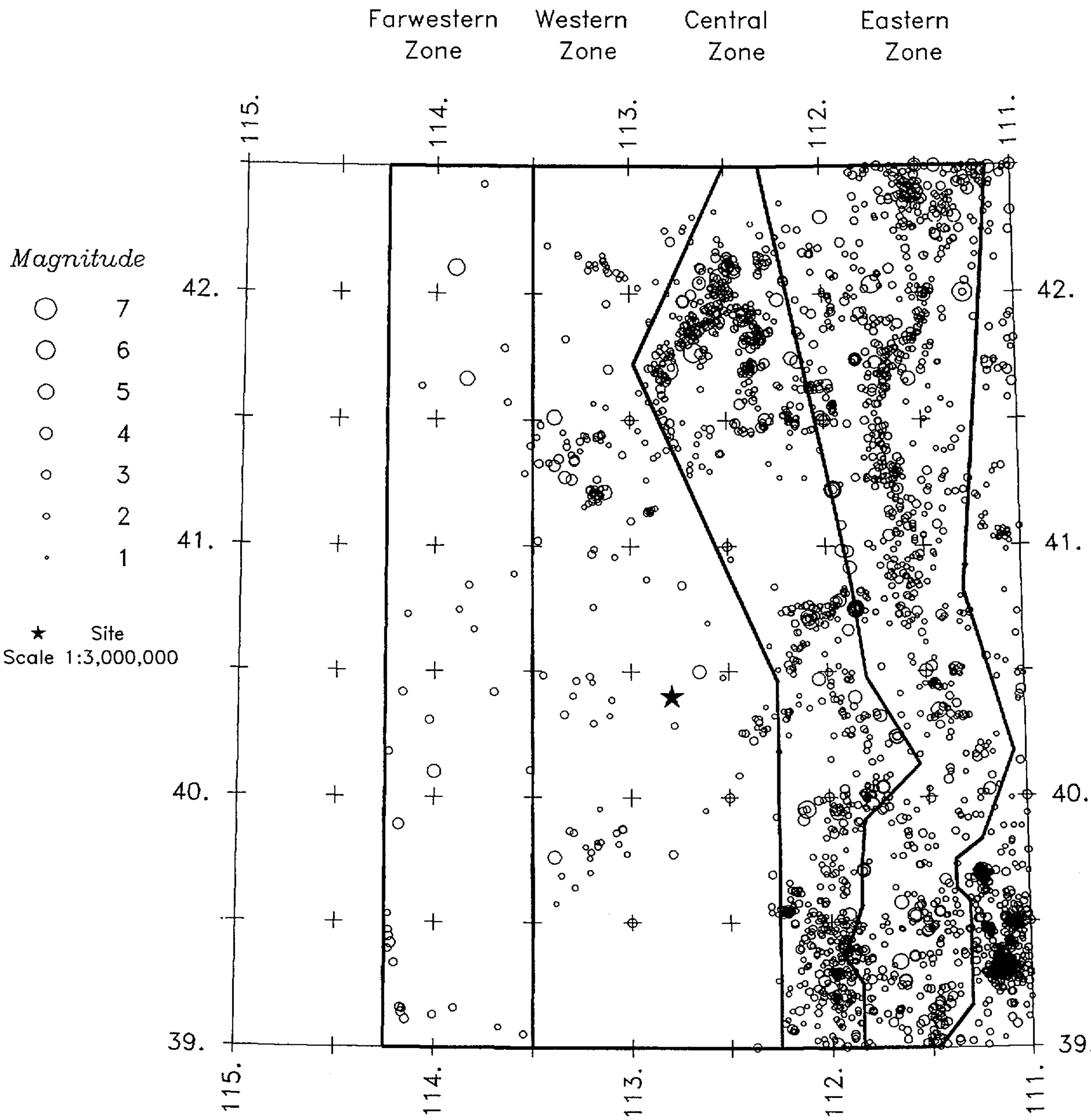
Figure 6-6



GEOMATRIX

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

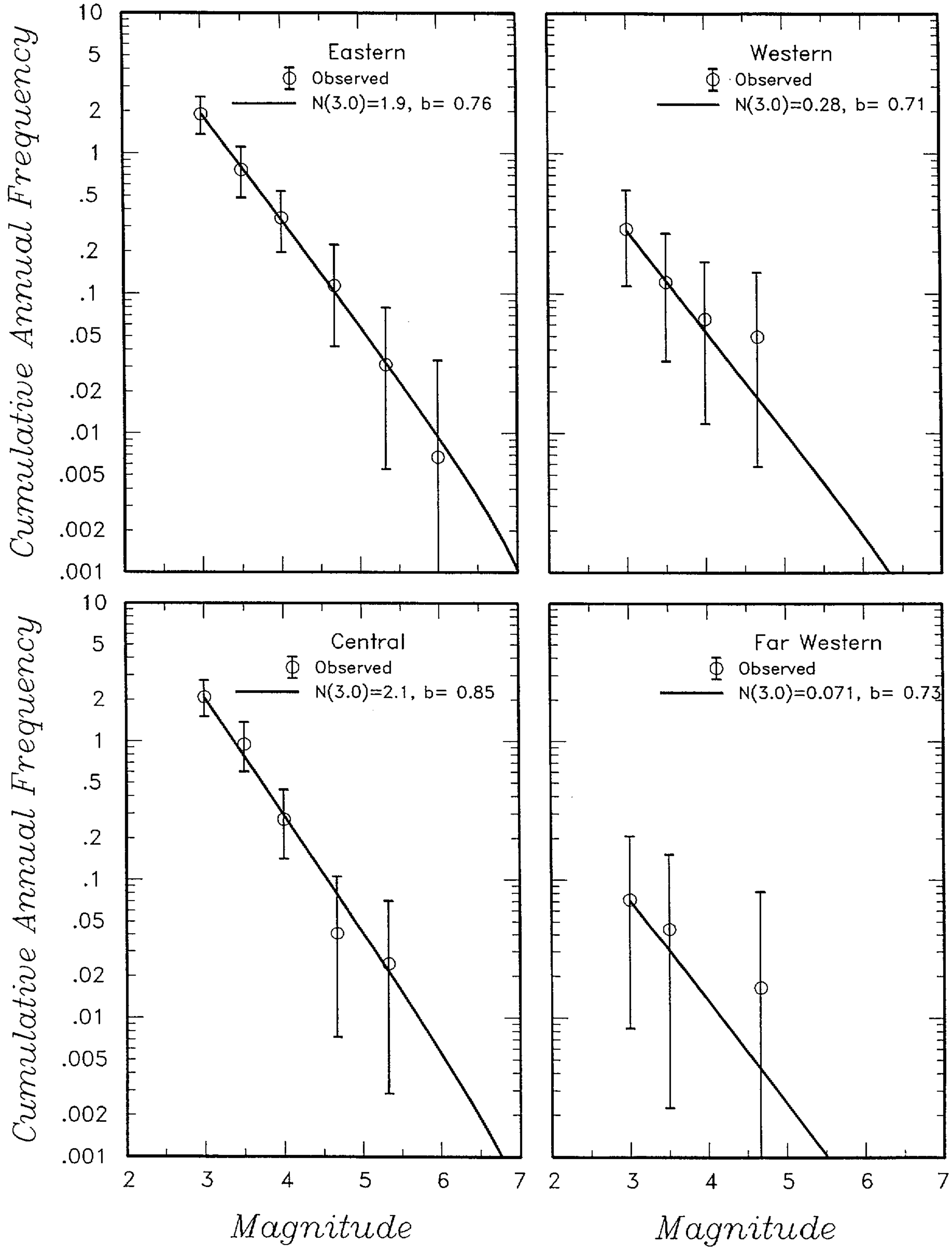
Project No.	4790
Figure	6-6



GEOMATRIX

MAP SHOWING LOCATION OF SEISMIC SOURCE ZONES AND INDEPENDENT EARTHQUAKES RECORDED FROM 1850 TO 7/1/98
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-7

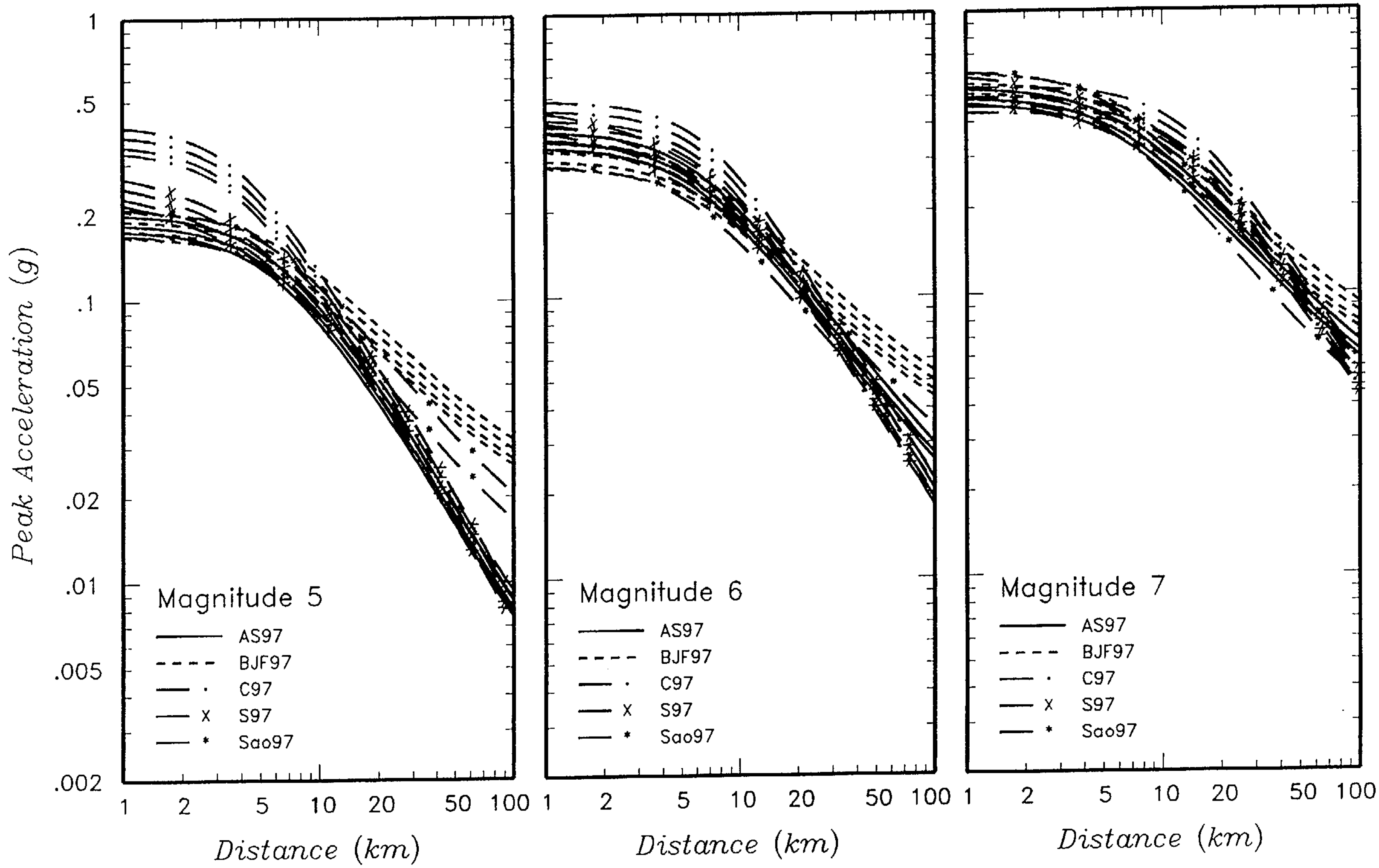


EARTHQUAKE RECURRENCE PARAMETERS FOR THE SEISMIC SOURCE ZONES
Private Fuel Storage Facility
Skull Valley, Utah

GEOMATRIX

Project No. 4790

Figure 6-8

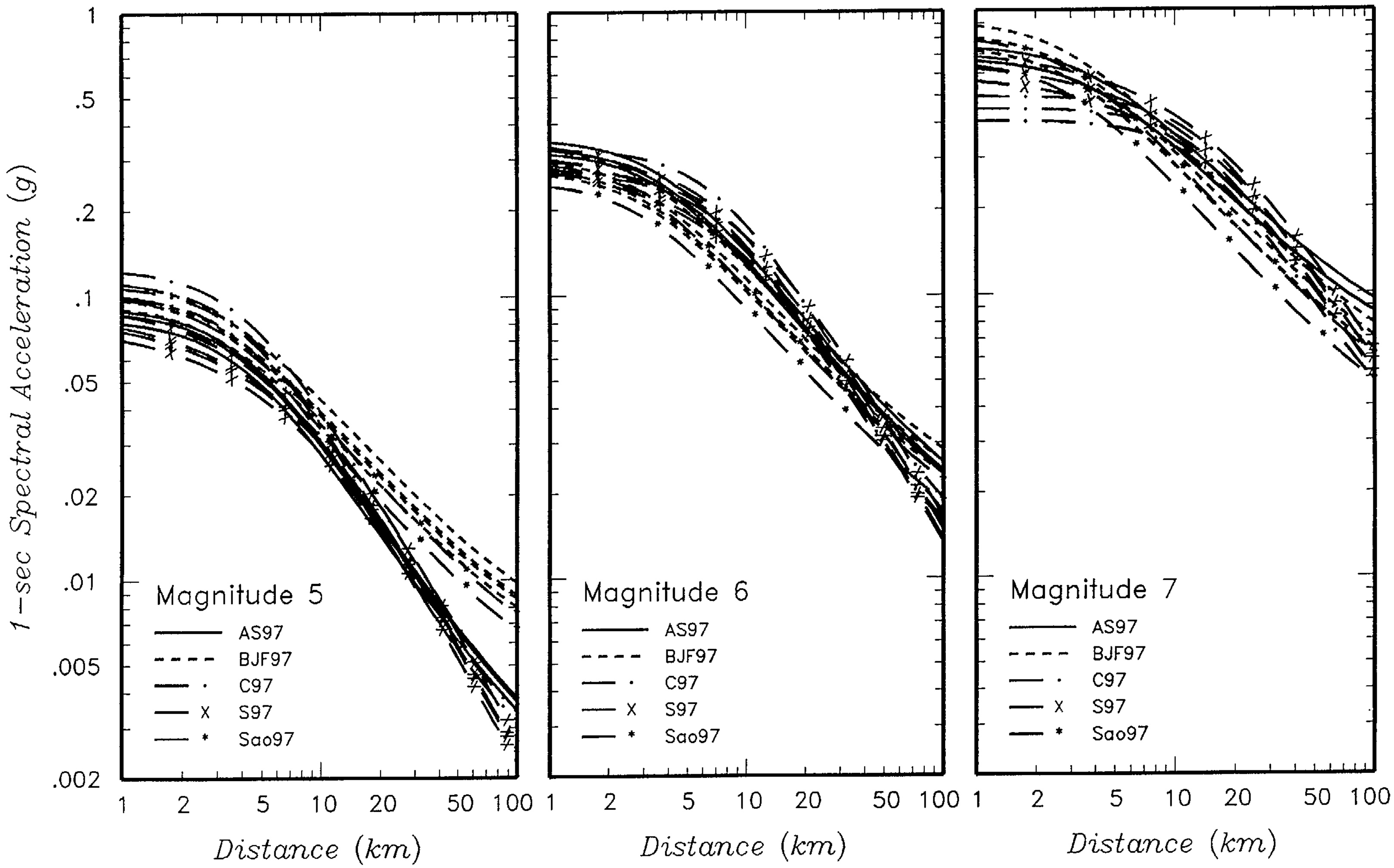


GEOMATRIX

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

Project No. 4790

Figure 6-9

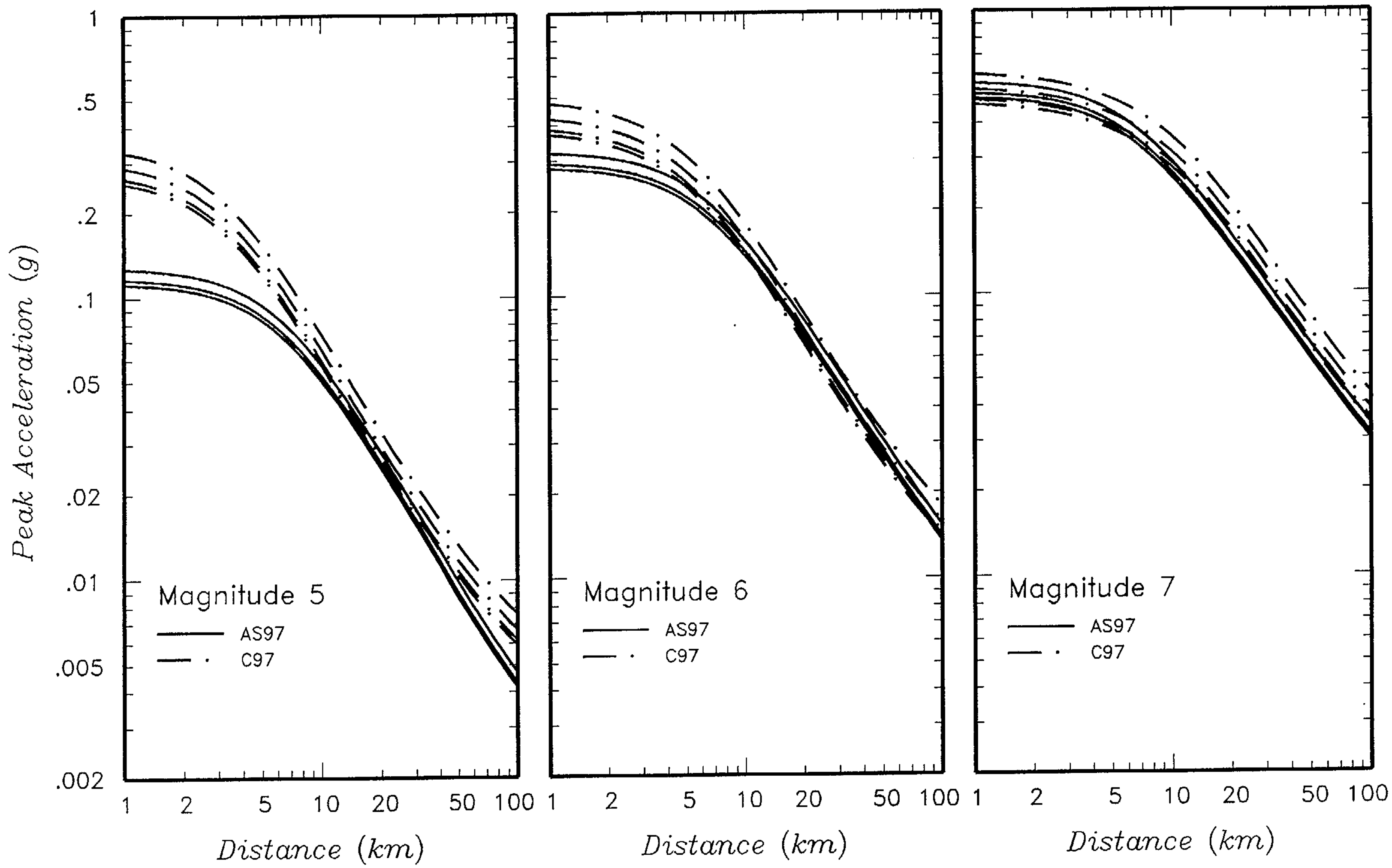


GEOMATRIX

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

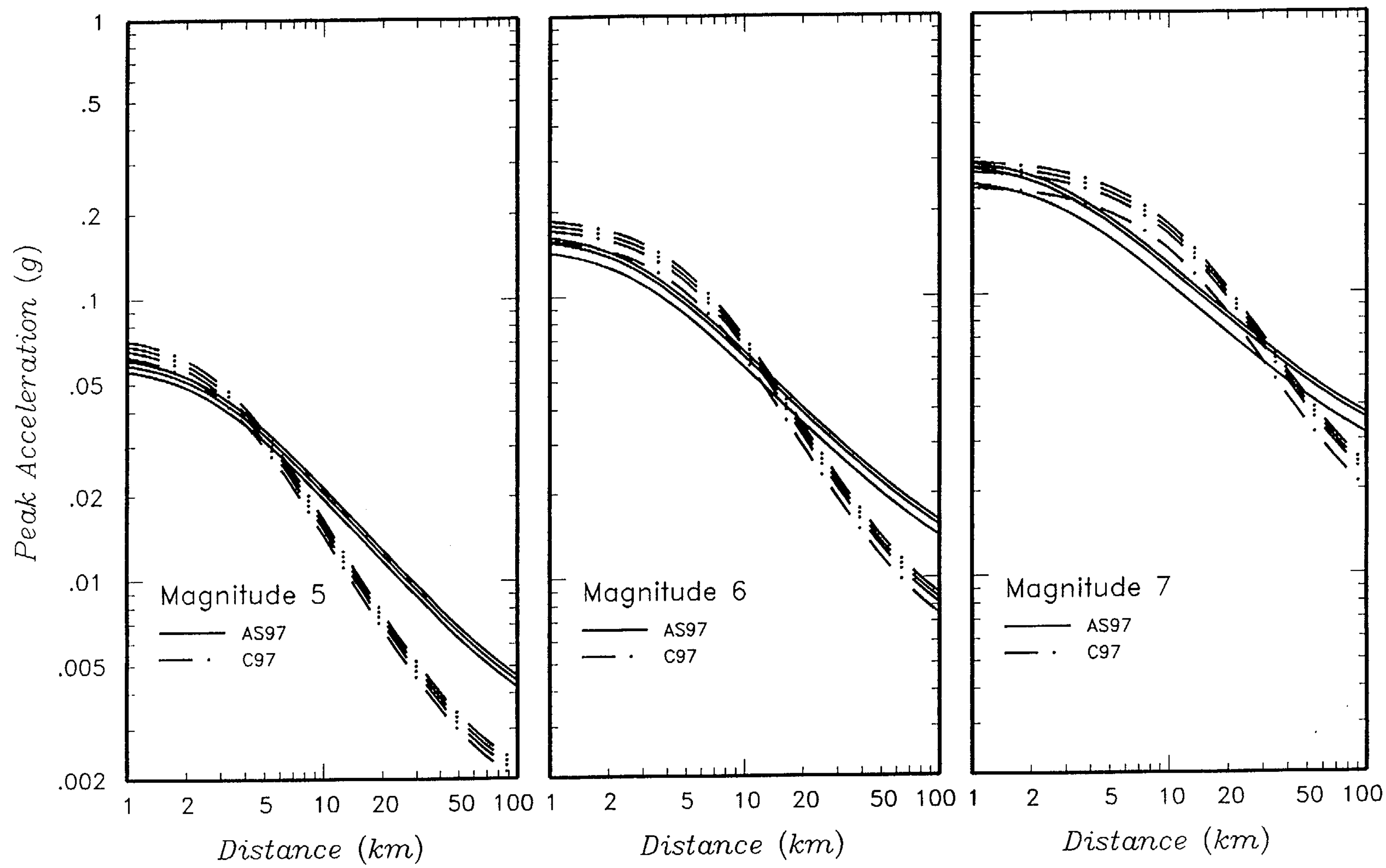
Figure 6-9



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

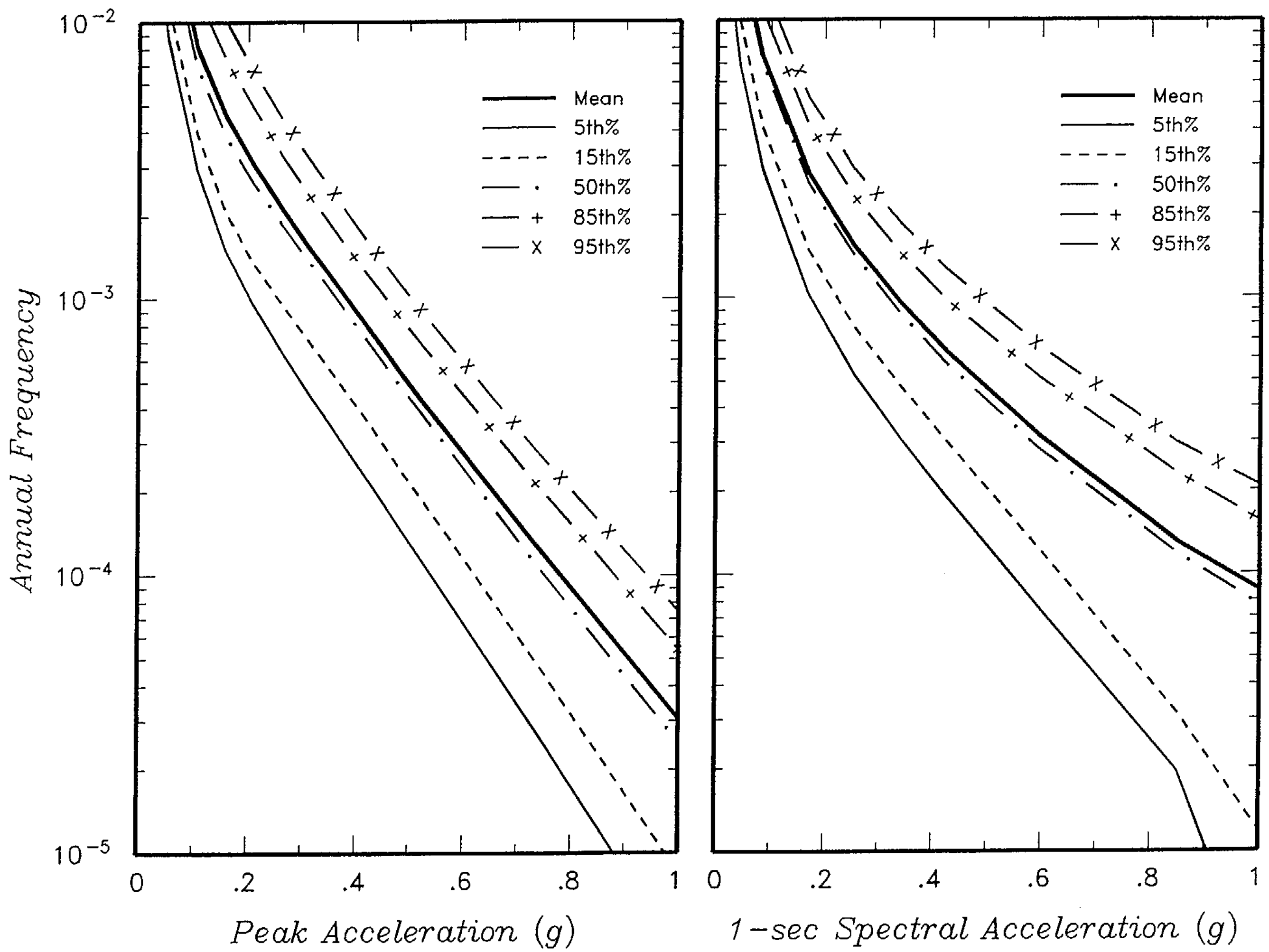


GEOMATRIX

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

Project No. 4790

Figure 6-10

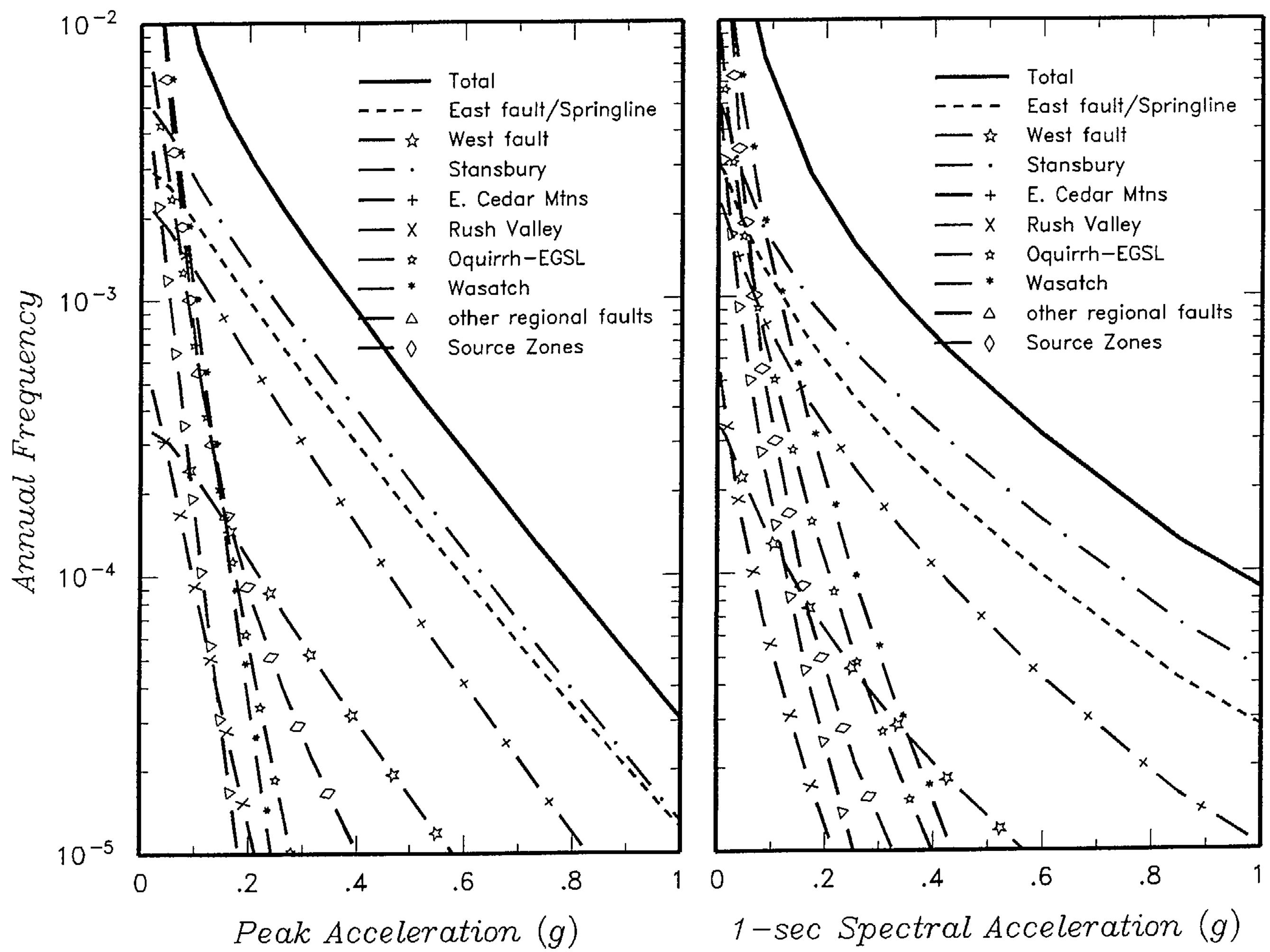


GEOMATRIX

COMPUTED TOTAL MEAN AND 5TH- TO 95TH-PERCENTILE HORIZONTAL MOTION HAZARD CURVES FOR THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-11

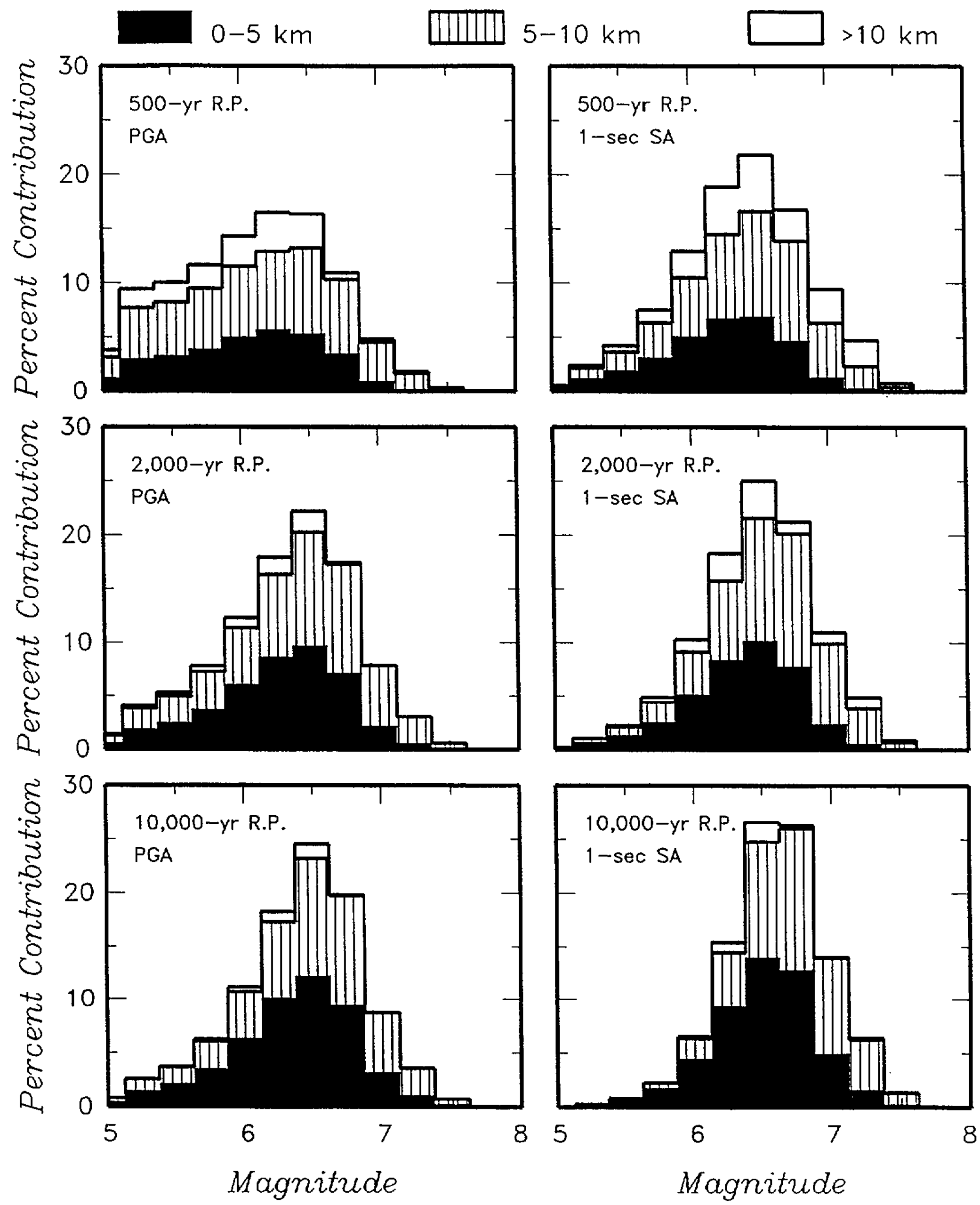


GEOMATRIX

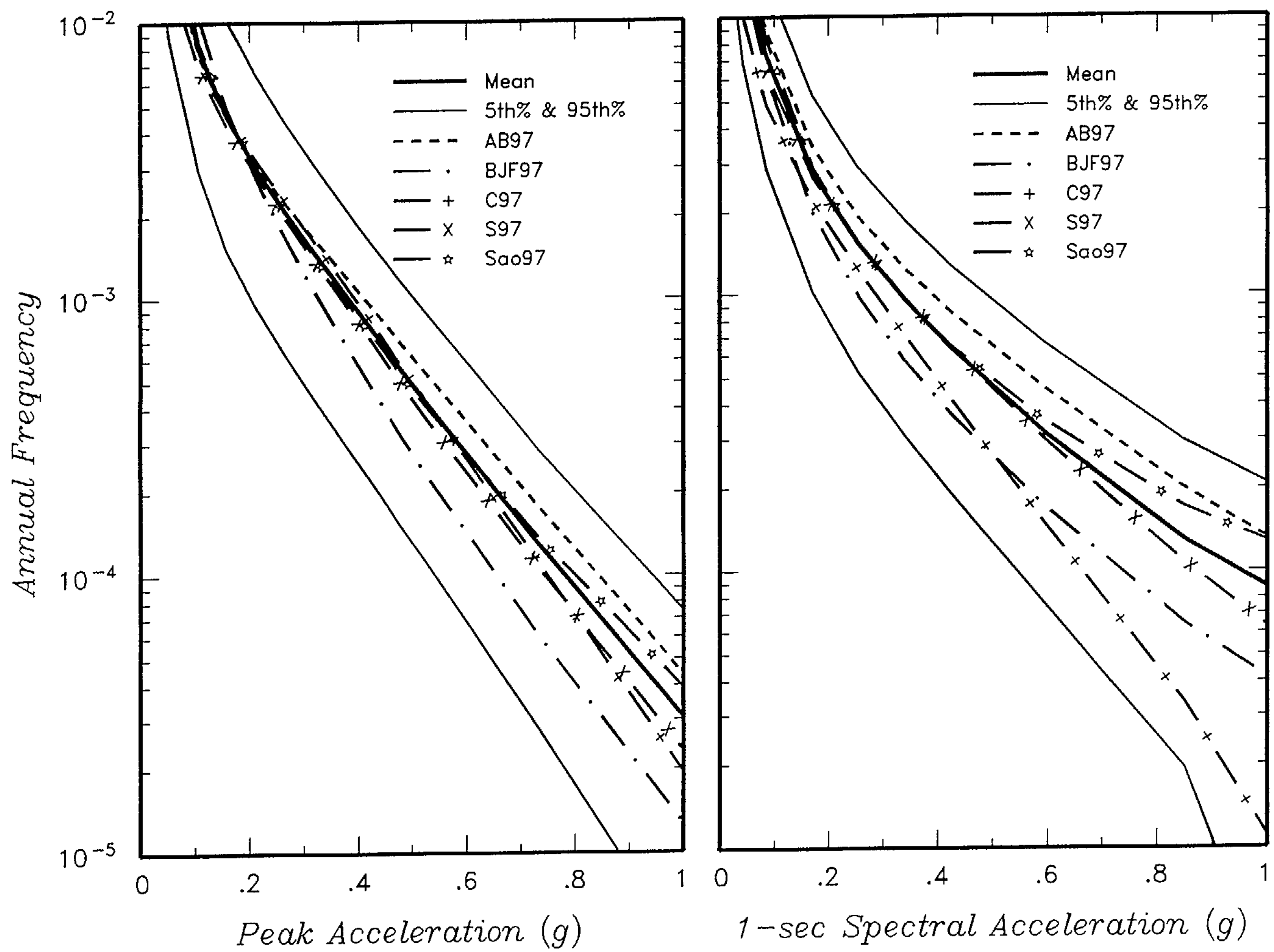
CONTRIBUTIONS OF INDIVIDUAL SOURCES TO TOTAL MEAN HAZARD FOR HORIZONTAL MOTION AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-12



GEOMATRIX	RELATIVE CONTRIBUTION OF EVENTS IN VARIOUS MAGNITUDE INTERVALS SEPARATED BY DISTANCE TO TOTAL MEAN HAZARD FOR HORIZONTAL MOTION AT THE CTB SITE. Private Fuel Storage Facility Skull Valley, Utah	Project No. 4790 Figure 6-13

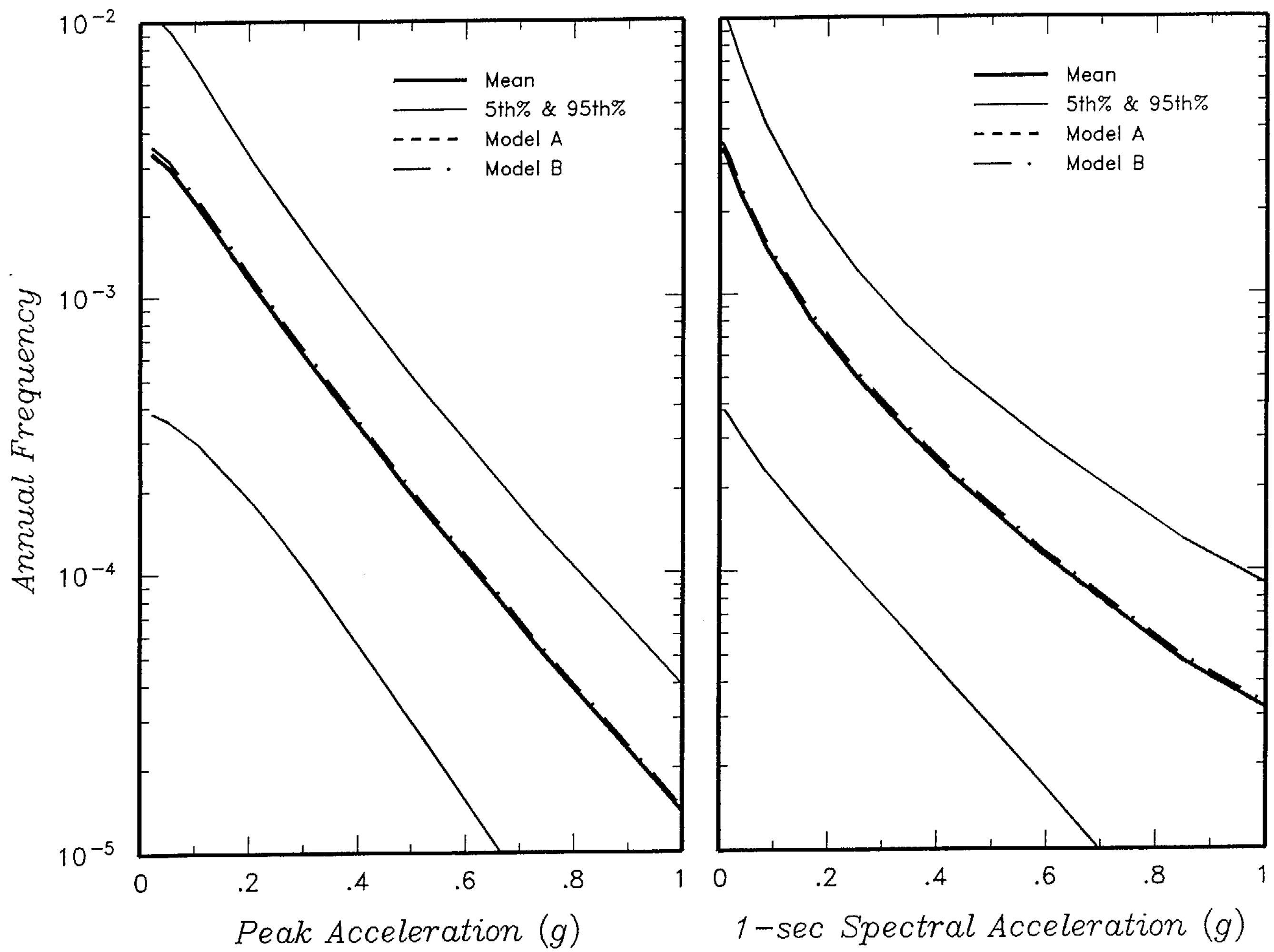


GEOMATRIX

EFFECT OF CHOICE OF ATTENUATION RELATIONSHIP ON MEAN HAZARD FOR HORIZONTAL MOTION AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-14

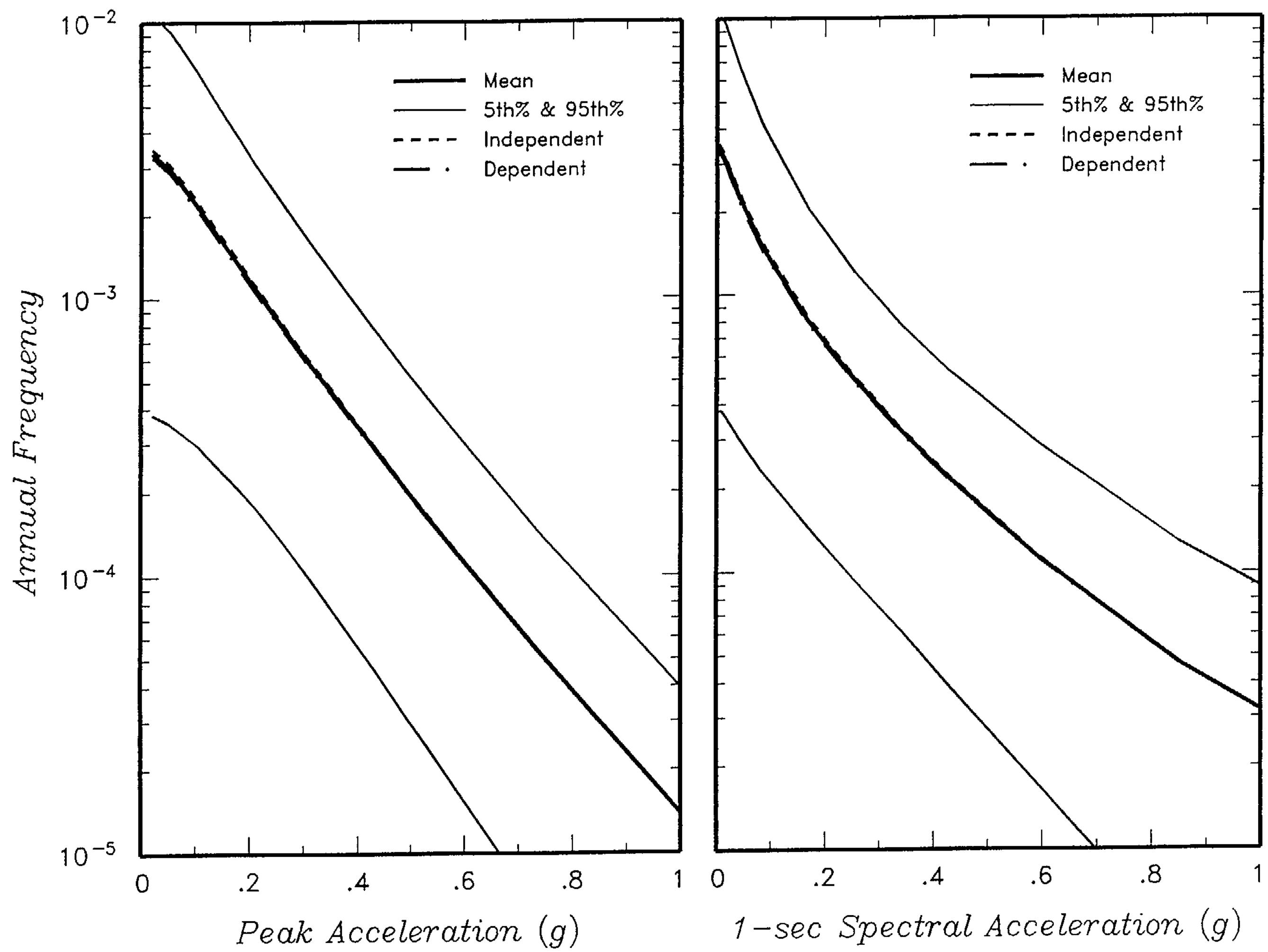


GEOMATRIX

EFFECT OF ALTERNATIVE MODELS FOR THE SKULL VALLEY FAULTS ON MEAN HAZARD FOR HORIZONTAL MOTION FROM THESE FAULTS AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-15

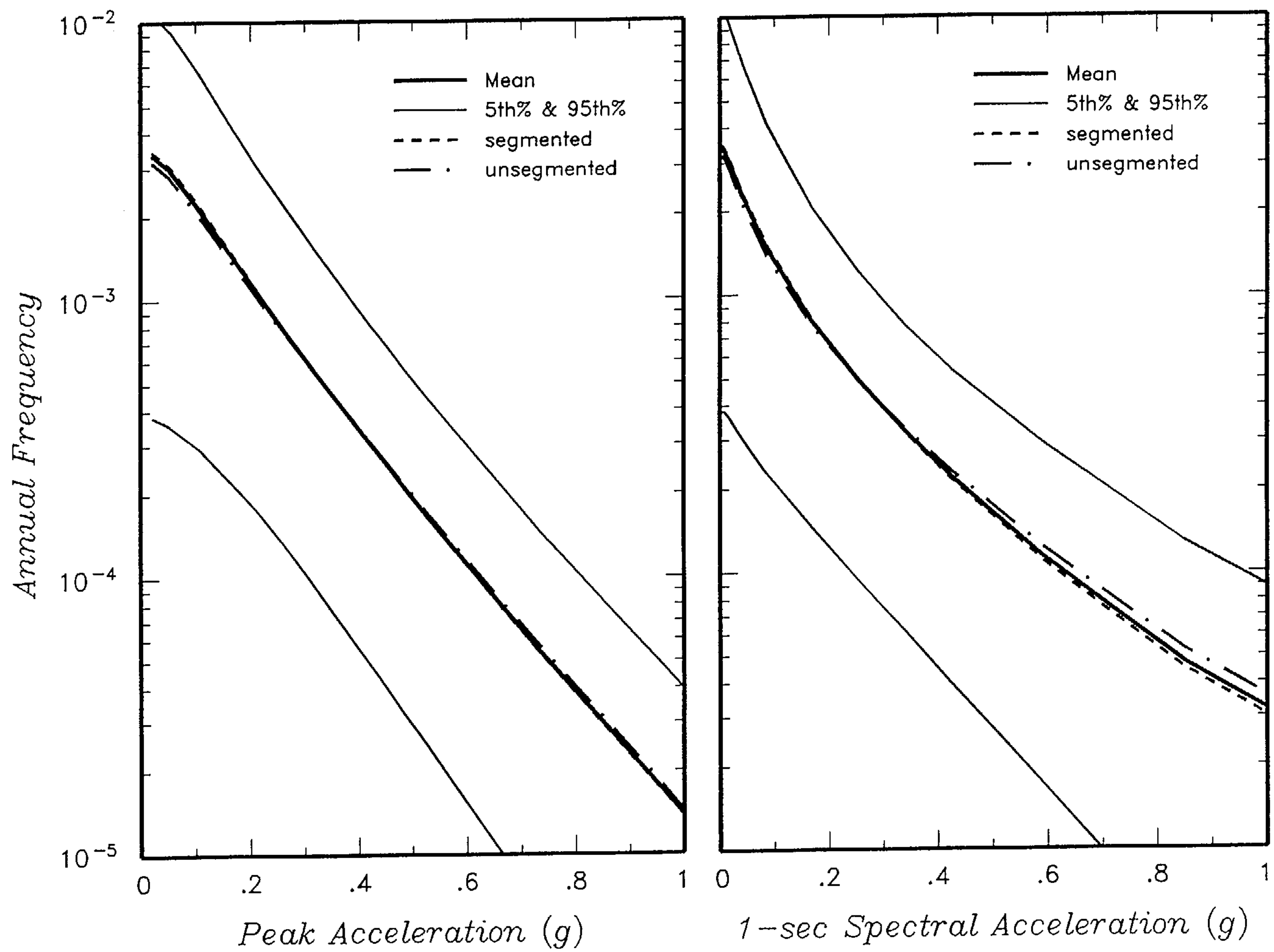


GEOMATRIX

EFFECT OF INDEPENDENCE ON THE WEST FAULT ON MEAN HAZARD FOR HORIZONTAL MOTION FROM THE SKULL VALLEY FAULTS AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-16

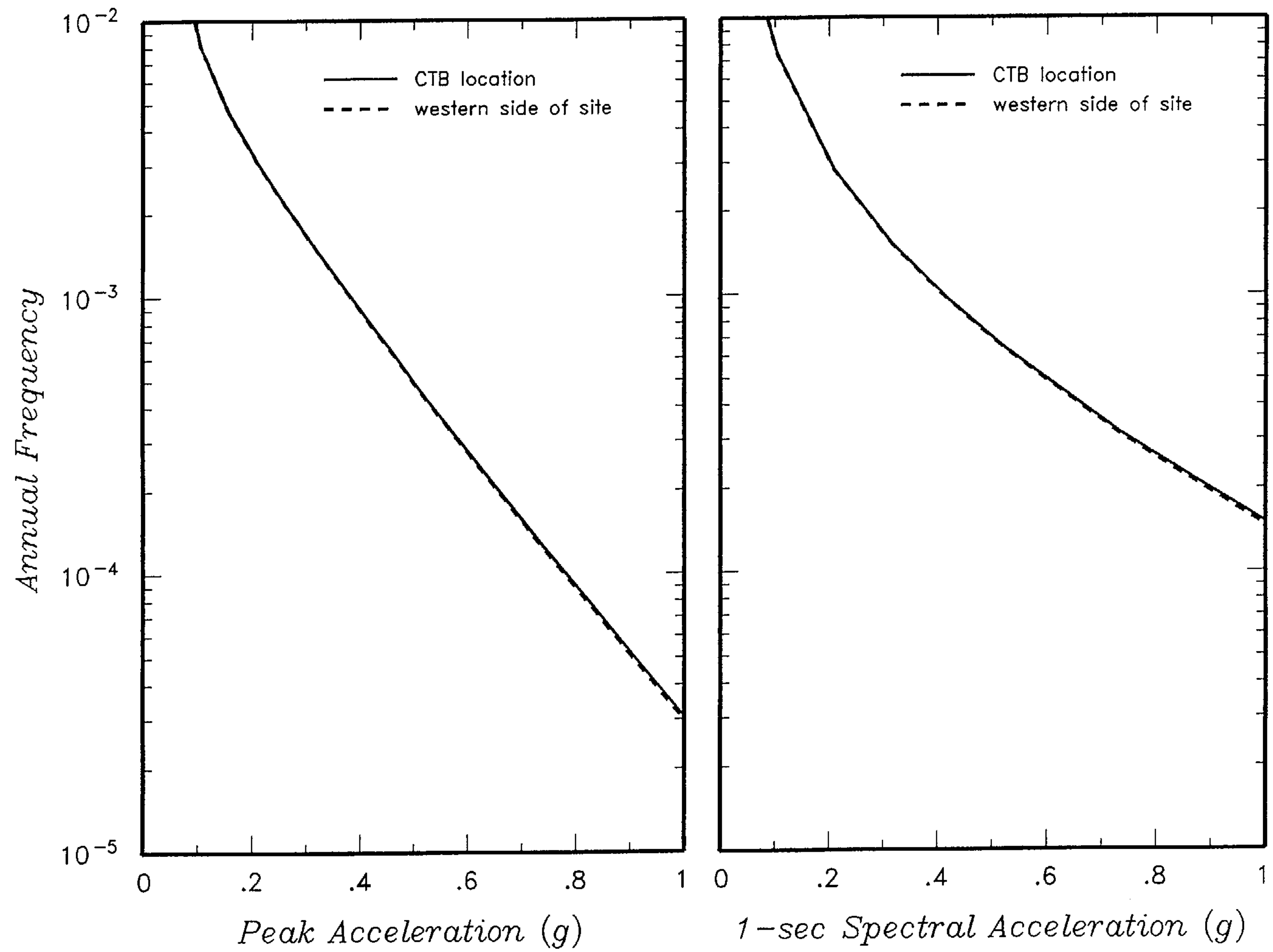


1

GEOMATRIX

EFFECT OF SEGMENTATION MODELS FOR THE EAST/SPRINGLINE FAULTS ON MEAN HAZARD FOR HORIZONTAL MOTION FROM THE SKULL VALLEY FAULTS AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-17

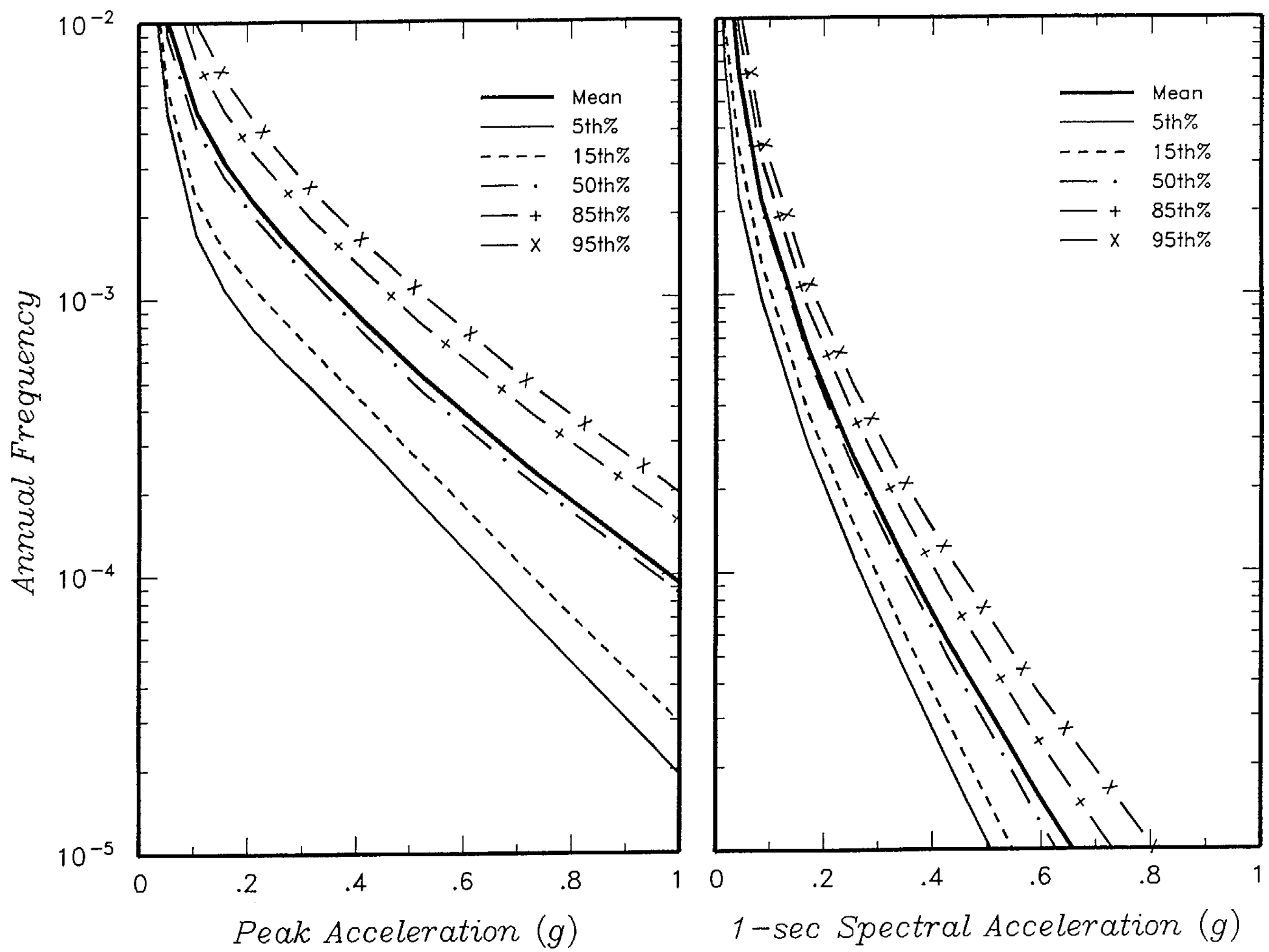


GEOMATRIX

COMPARISON OF TOTAL MEAN HAZARD FOR HORIZONTAL MOTION AT THE CTB LOCATION AND WESTERN SIDE OF SITE AREA.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

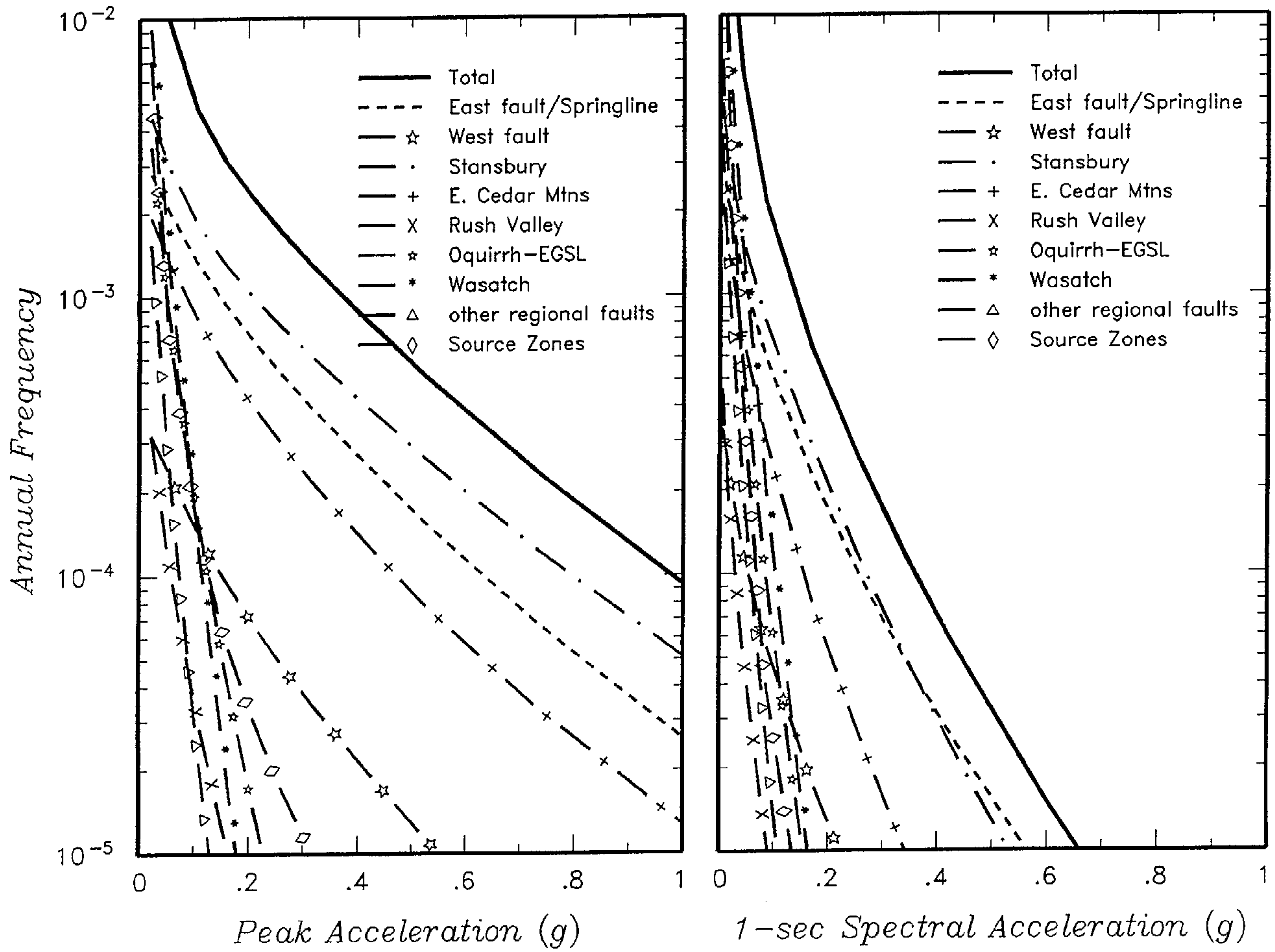
Figure 6-18



GEOMATRIX

COMPUTED TOTAL MEAN AND 5TH- TO 95TH-PERCENTILE VERTICAL MOTION HAZARD CURVES FOR THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

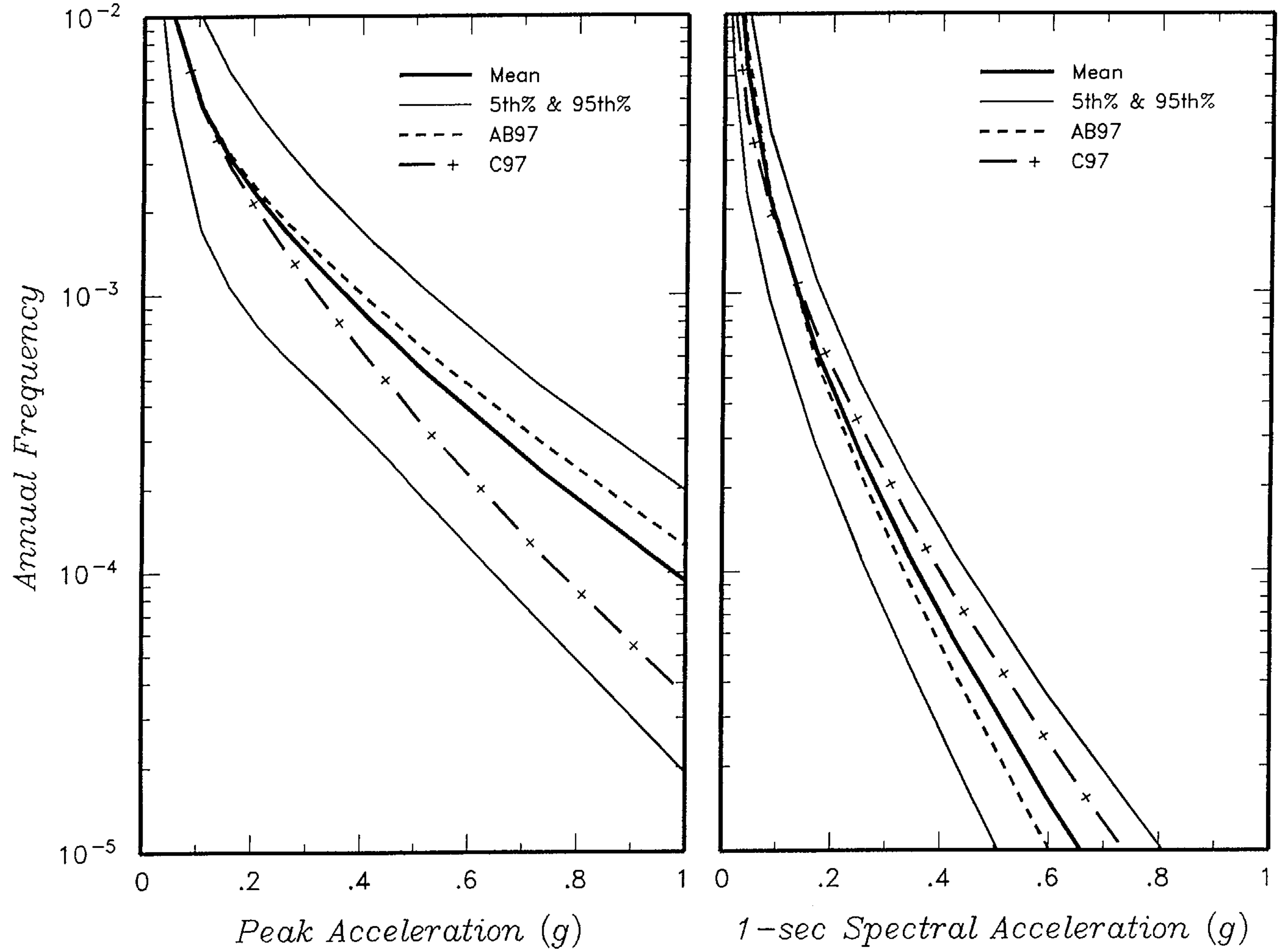
Project No.	Figure
4790	6-19



GEOMATRIX

CONTRIBUTIONS OF INDIVIDUAL SOURCES TO TOTAL MEAN HAZARD FOR VERTICAL MOTION AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-20

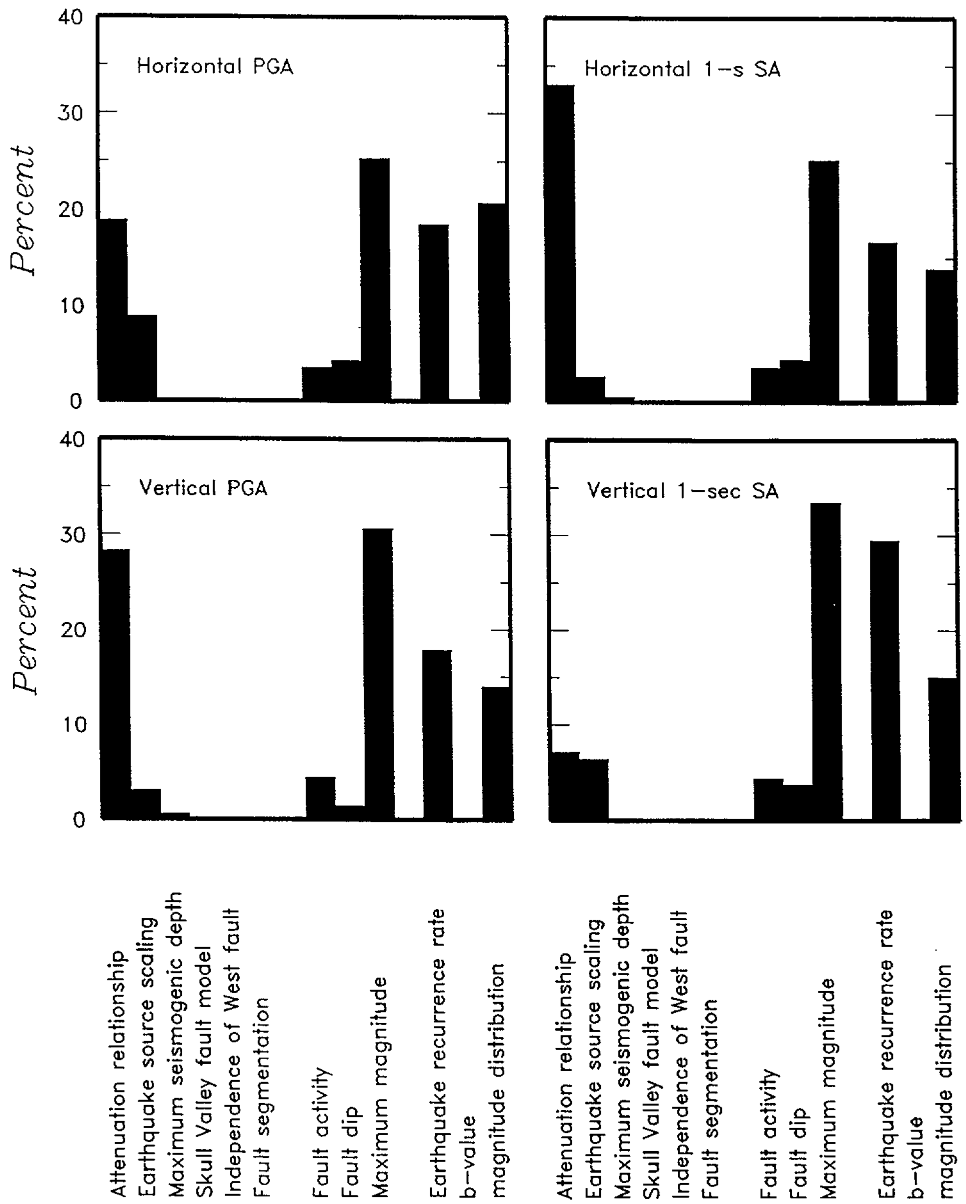


GEOMATRIX

EFFECT OF CHOICE OF ATTENUATION RELATIONSHIP ON MEAN HAZARD FOR VERTICAL MOTION AT THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure **6-21**



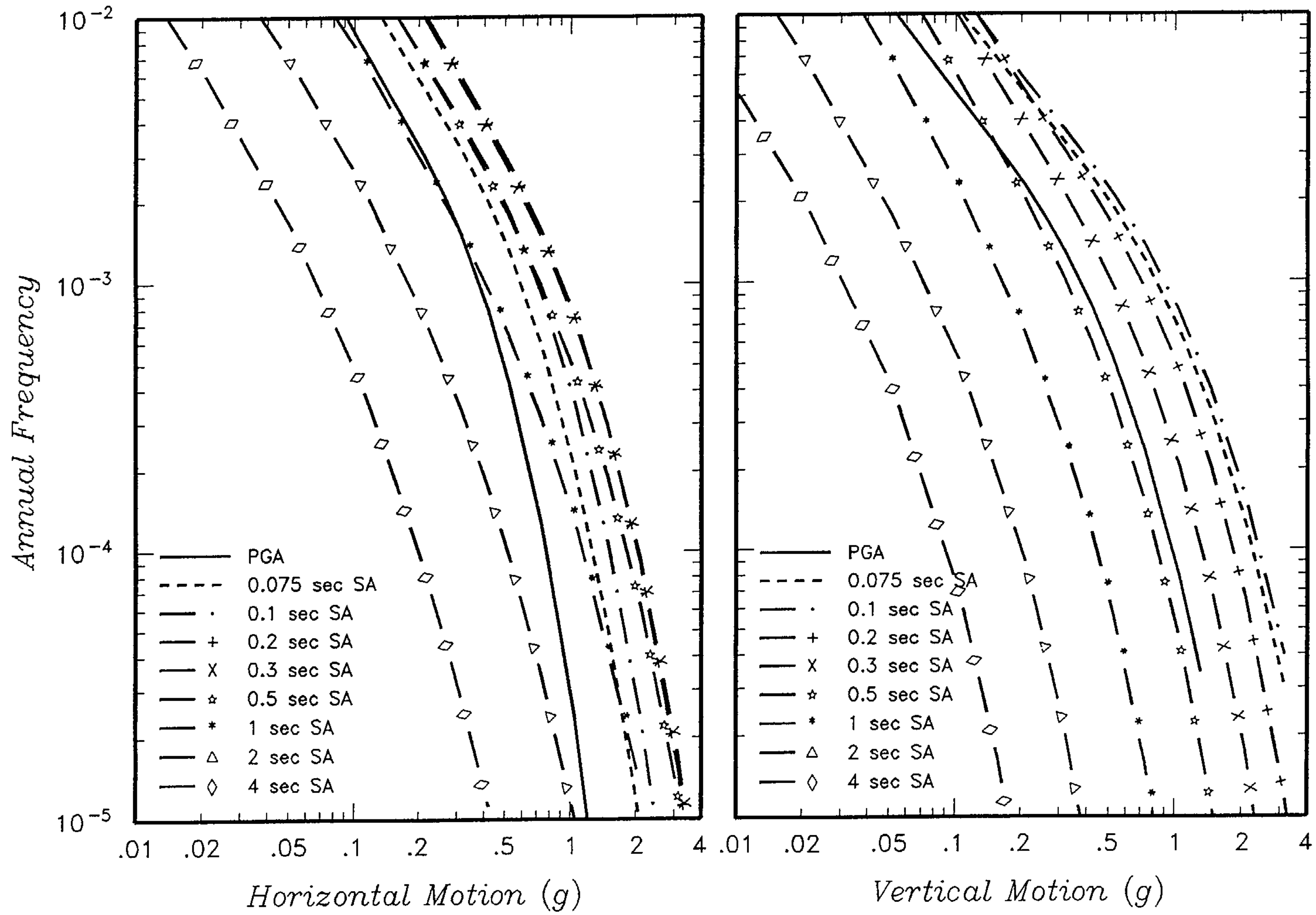
GEOMATRIX

RELATIVE CONTRIBUTION OF THE UNCERTAINTY IN THE COMPONENTS OF THE SEISMIC HAZARD MODEL TO THE TOTAL UNCERTAINTY IN THE HAZARD AT THE CTB SITE.

Private Fuel Storage Facility
Skull Valley, Utah

Project No.
4790

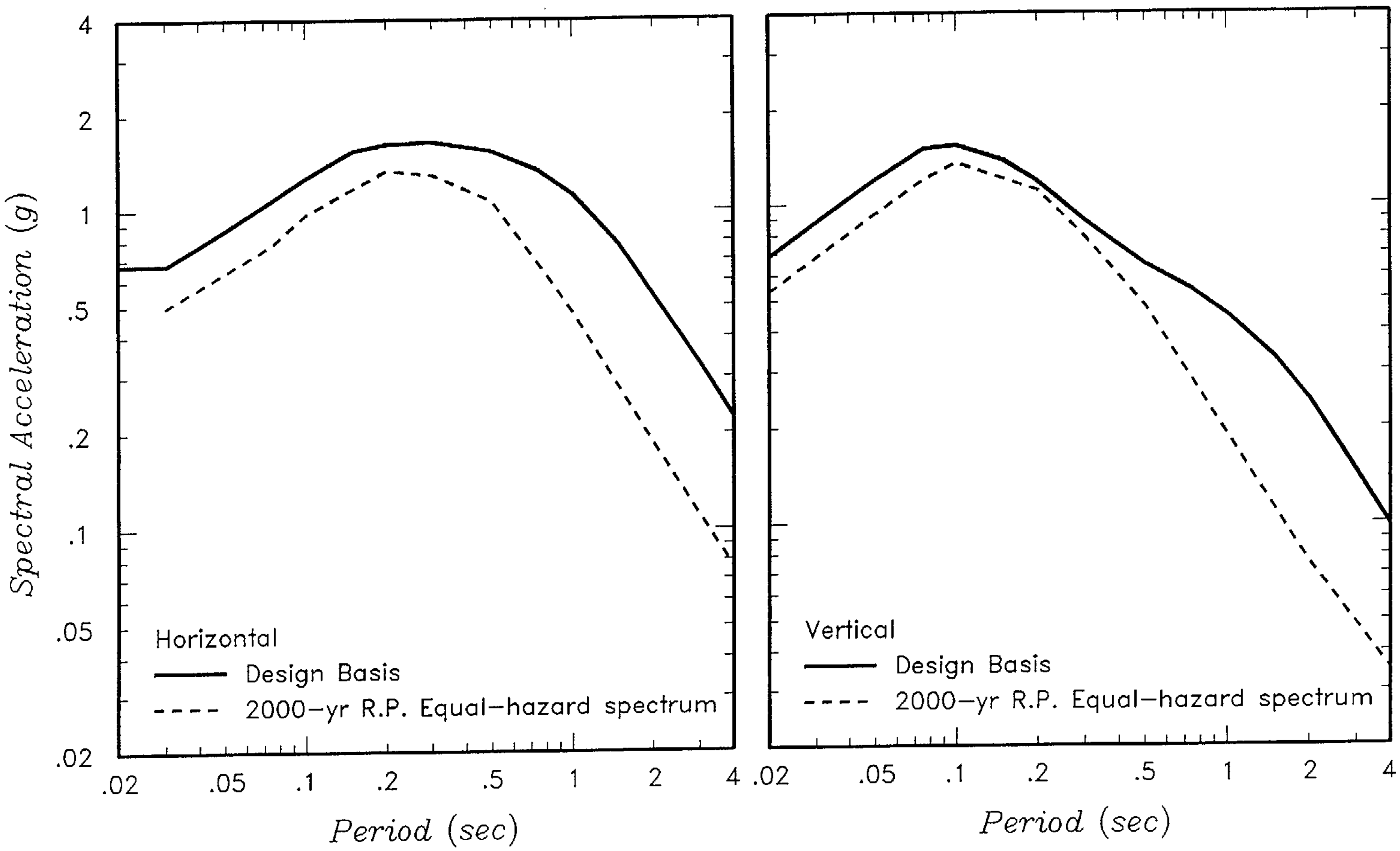
Figure
6-22



GEOMATRIX

MEAN SEISMIC HAZARD CURVES FOR HORIZONTAL AND VERTICAL MOTIONS FOR THE CTB SITE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	6-23



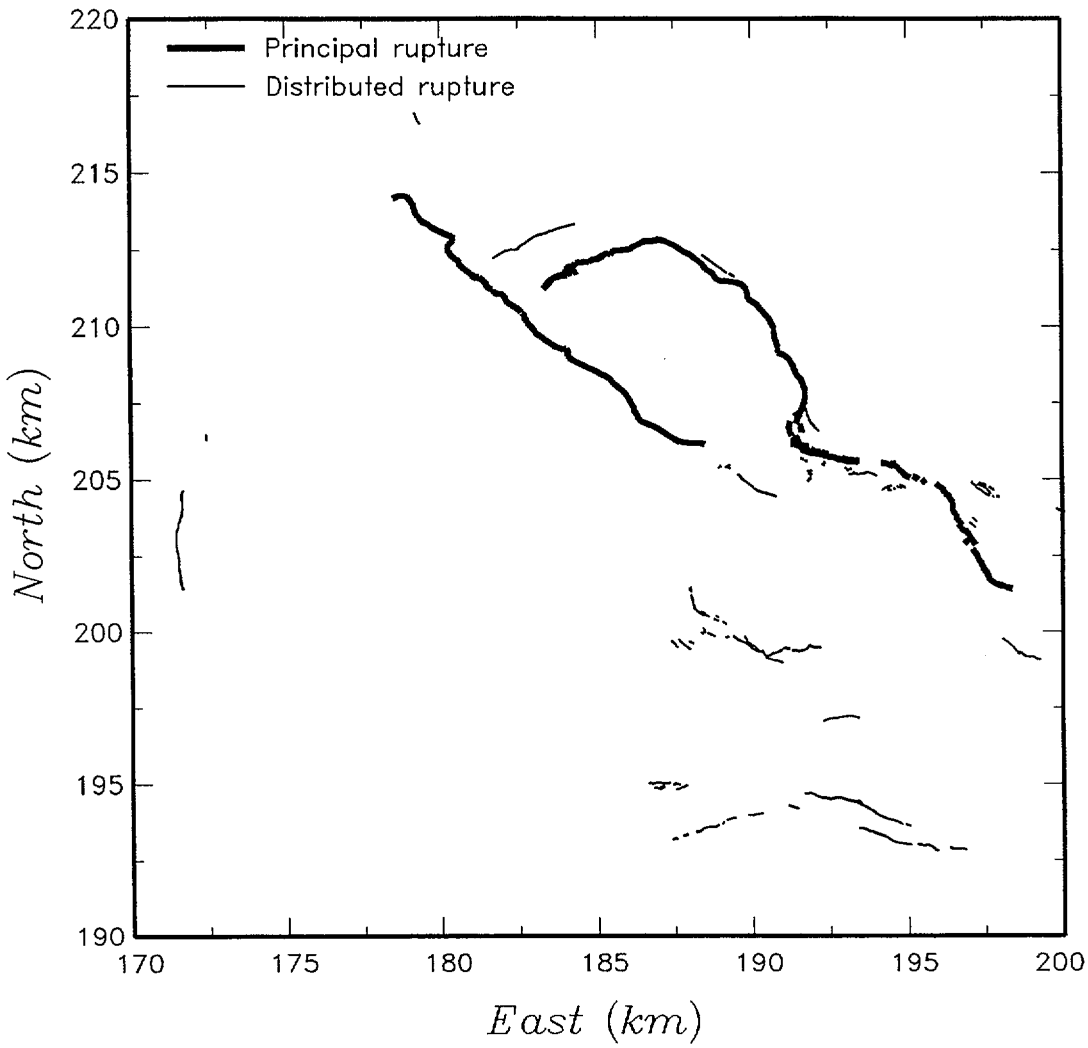
GEOMATRIX

COMPARISON OF 2,000-YEAR RETURN PERIOD EQUAL-HAZARD SPECTRA WITH THE DESIGN BASIS RESPONSE SPECTRA.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 6-24

Non-GDS



GEOMATRIX

EXAMPLE OF PRINCIPAL AND DISTRIBUTED RUPTURE (1959 HEBGEN LAKE MONTANA **M** 7.4 EARTHQUAKE).
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	7-1

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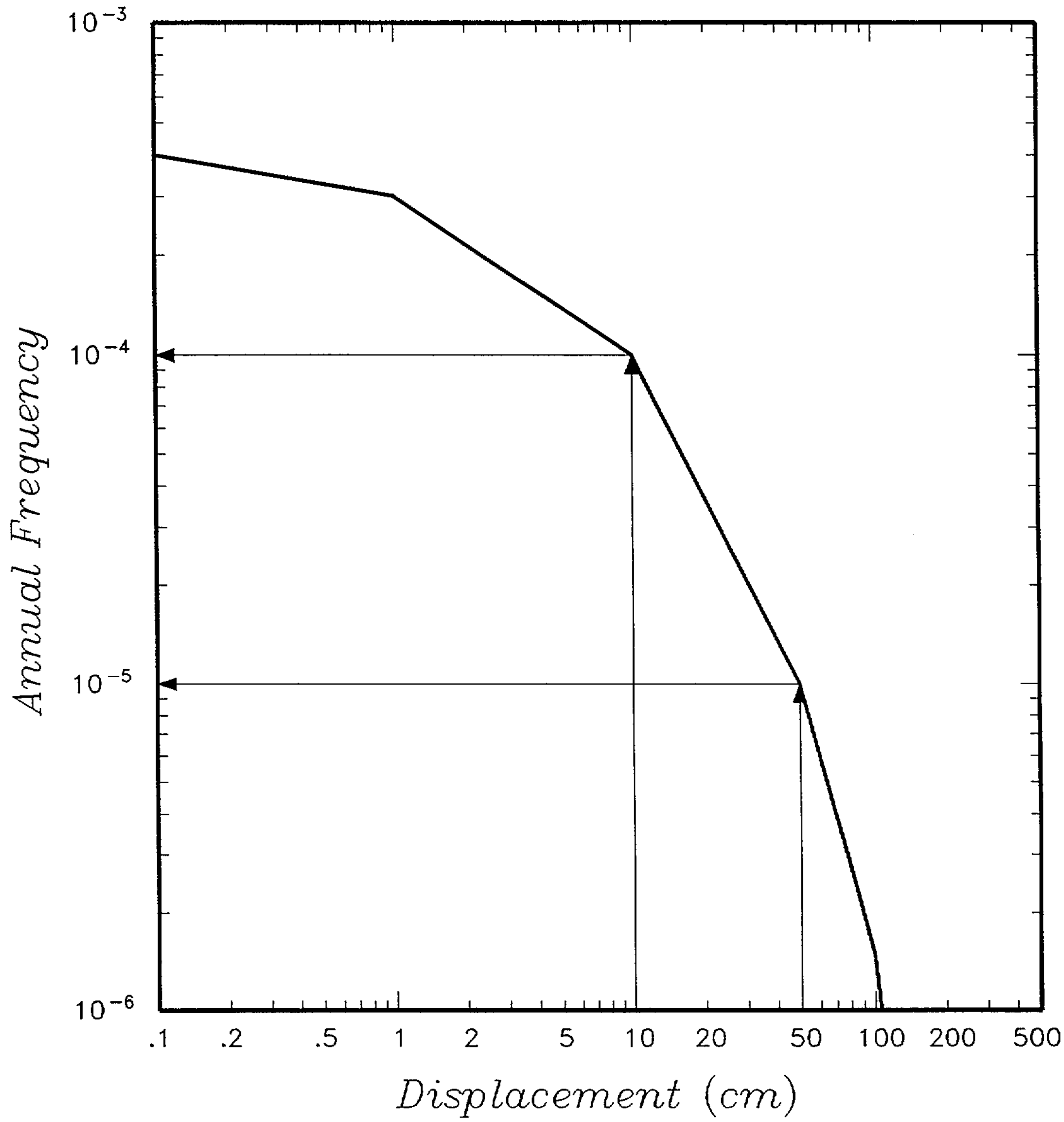

Non-GDS

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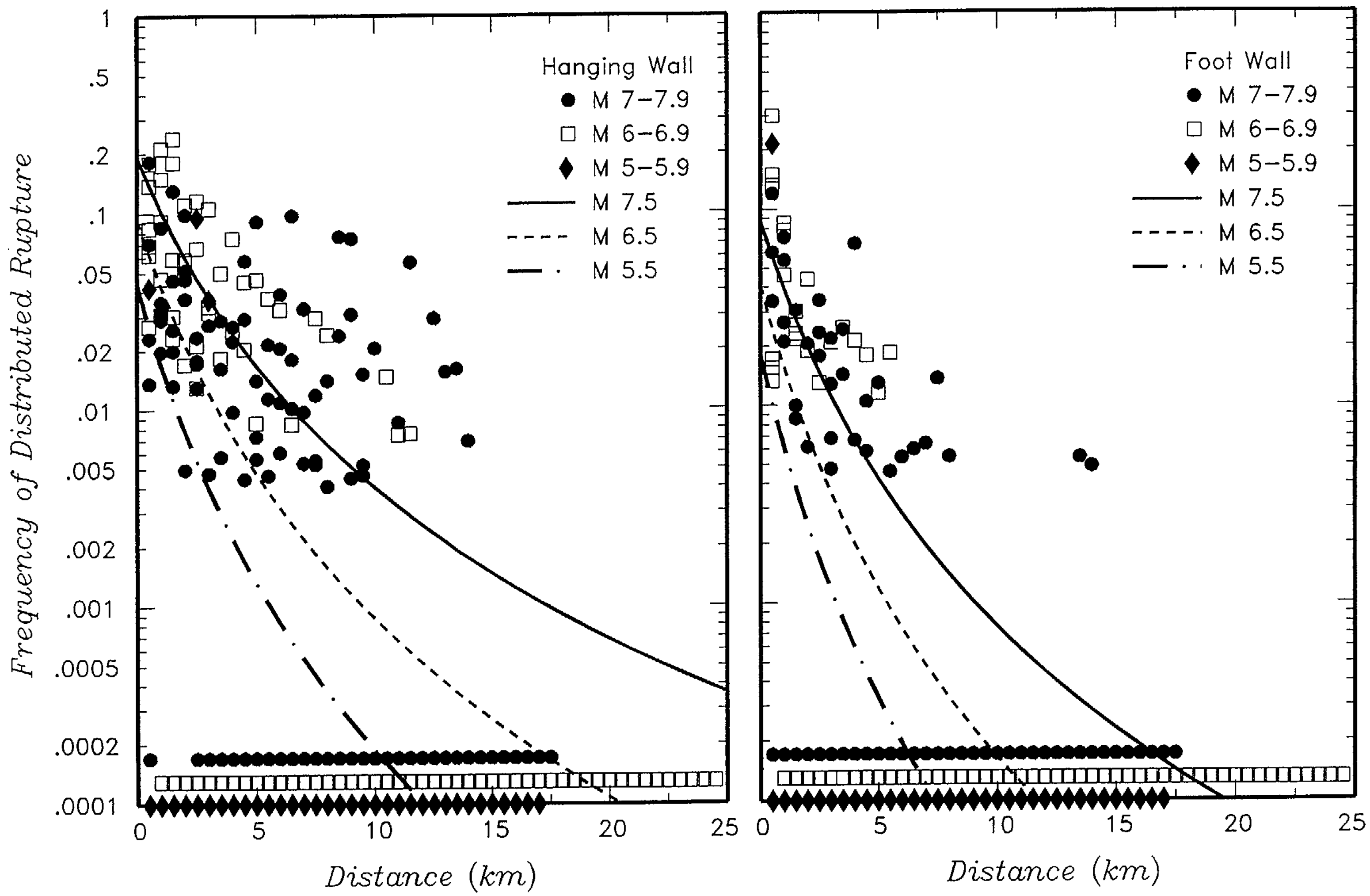
GEOMATRIX

EXAMPLE DISPLACEMENT HAZARD CURVE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.
4790

Figure
7-2

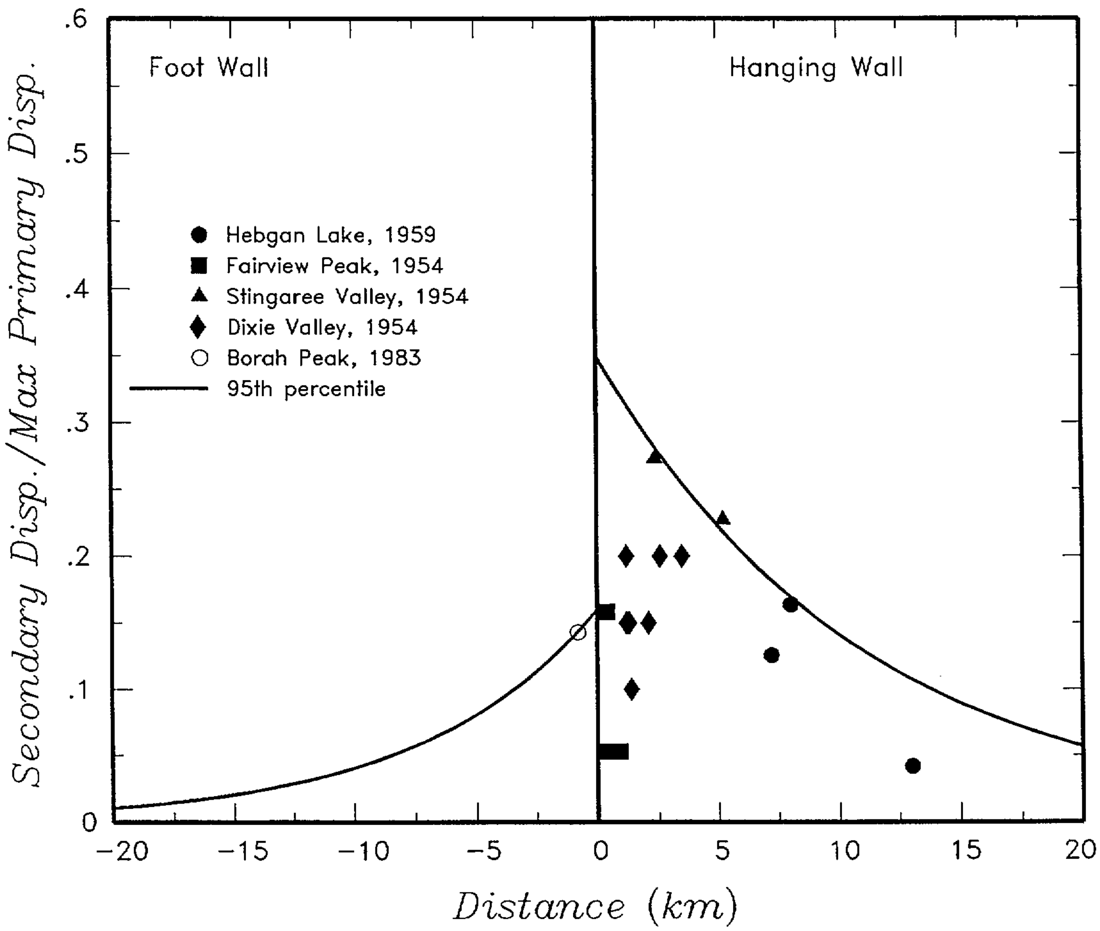


GEOMATRIX

PROBABILITY OF OCCURRENCE OF DISTRIBUTED FAULTING AS A FUNCTION OF EARTHQUAKE MAGNITUDE AND DISTANCE TO PRINCIPAL RUPTURE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 7-3



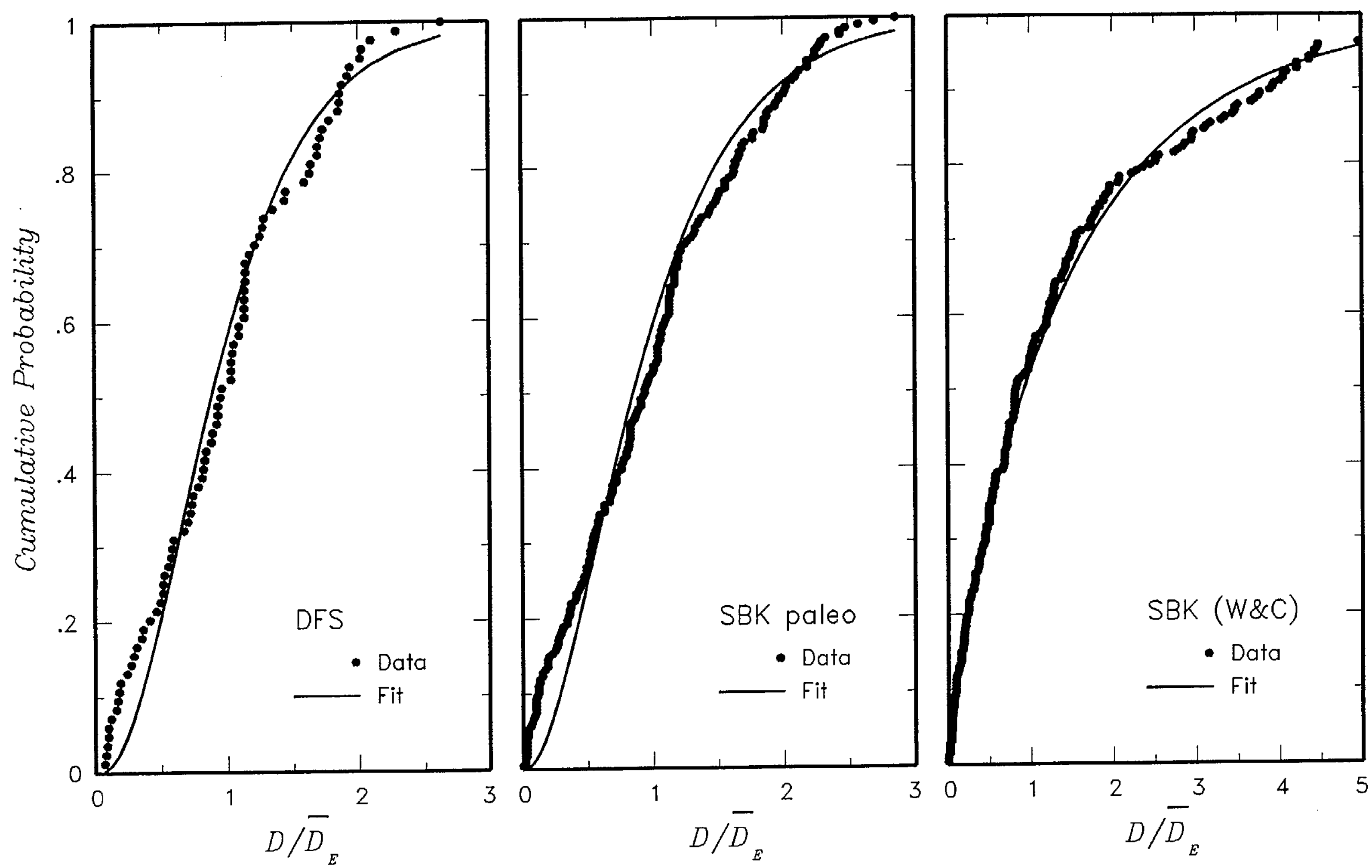
from CRWMS M&O (1998)

GEOMATRIX

CURVE DEFINING THE 95TH PERCENTILE OF THE DISTRIBUTION OF DISPLACEMENT ON A DISTRIBUTED RUPTURE AS A FRACTION OF THE MAXIMUM DISPLACEMENT ON THE PRINCIPAL RUPTURE.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 7-4



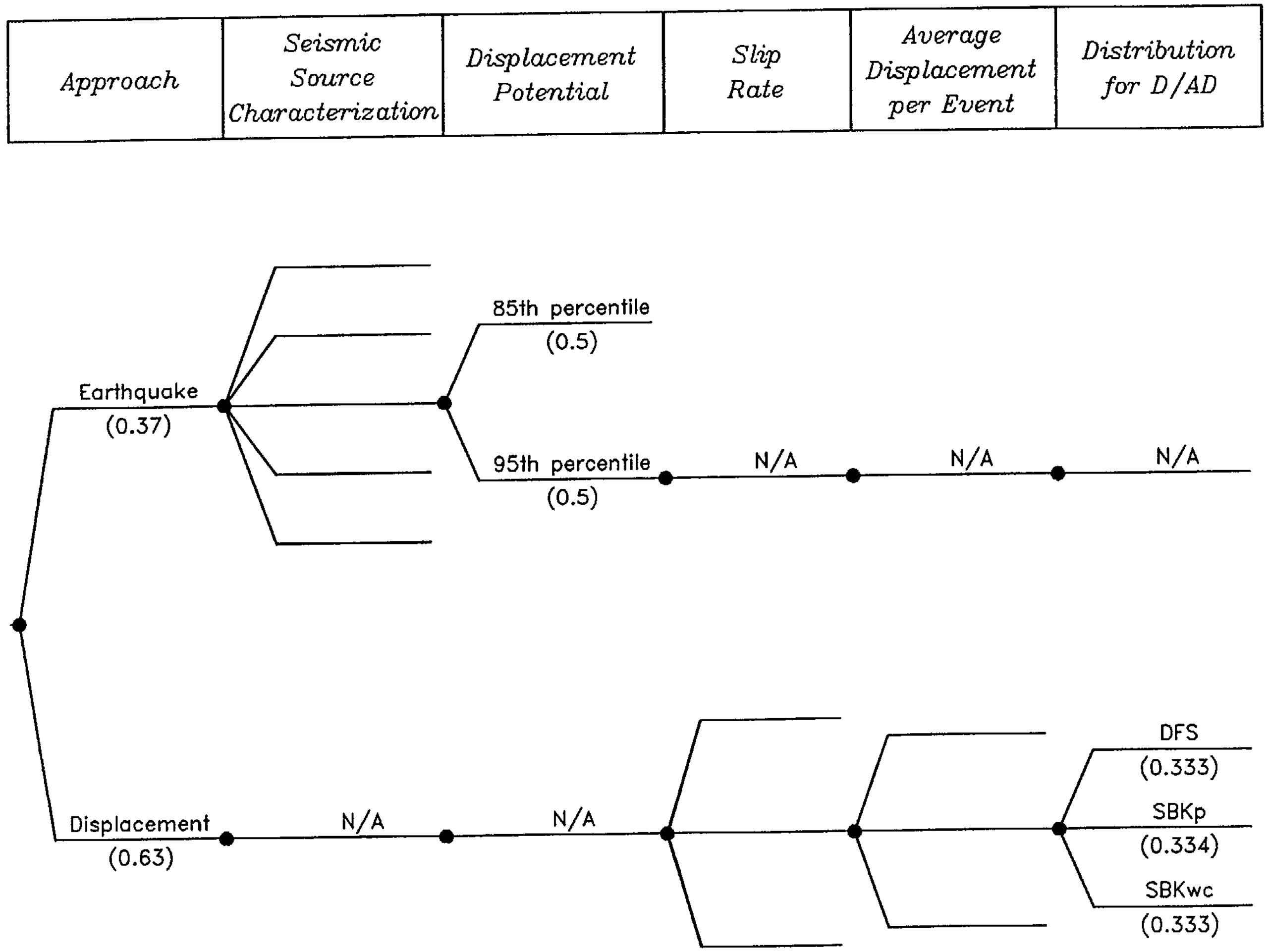
from CRWMS M&O (1998)

GEOMATRIX

ALTERNATIVE DISTRIBUTIONS FOR THE RATIO $D/\bar{D}_E$ USED IN THE DISPLACEMENT APPROACH.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.
4790

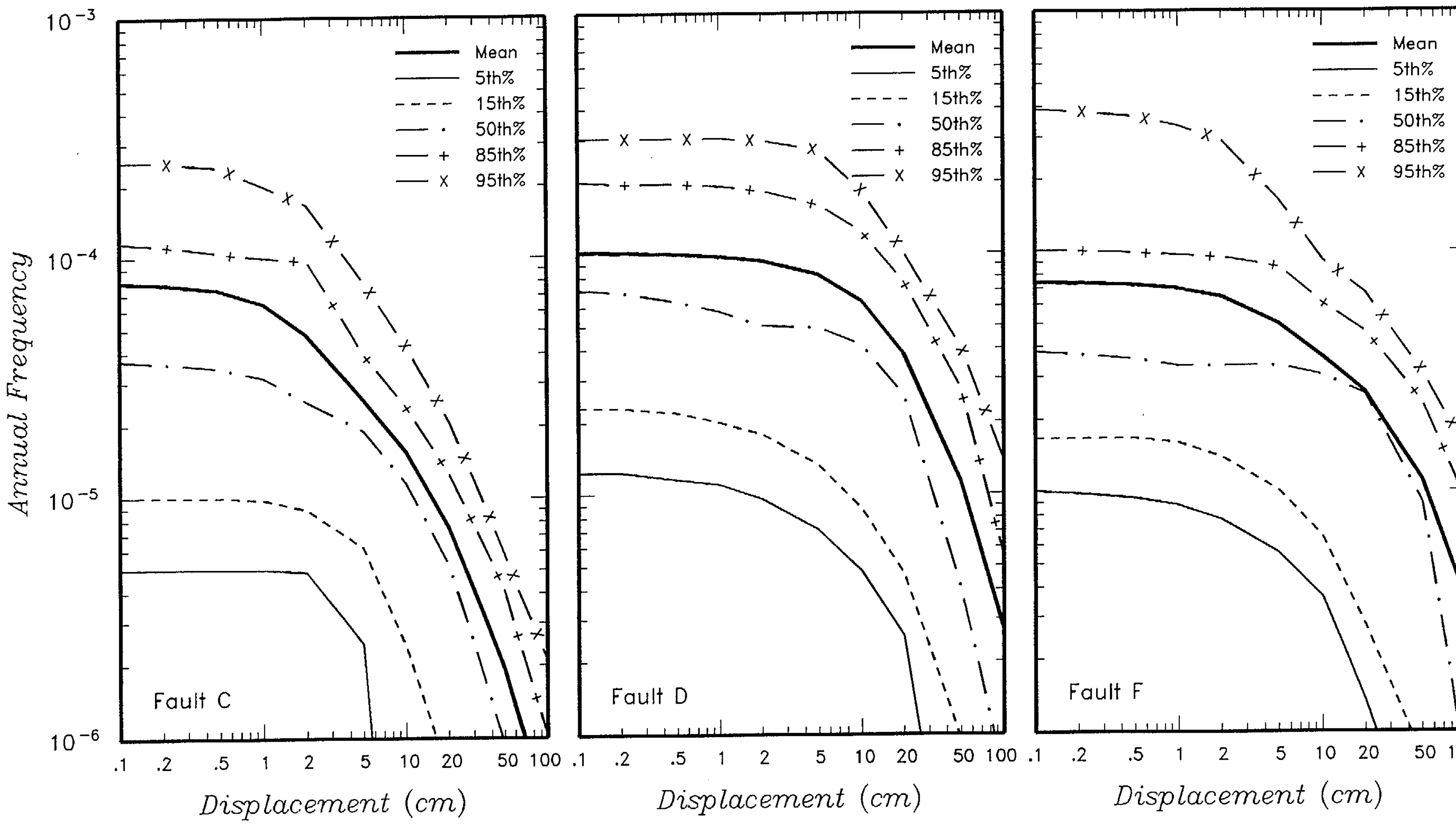
Figure
7-5



GEOMATRIX

LOGIC TREE FOR PROBABILISTIC DISPLACEMENT HAZARD CHARACTERIZATION.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	4790
Figure	7-6

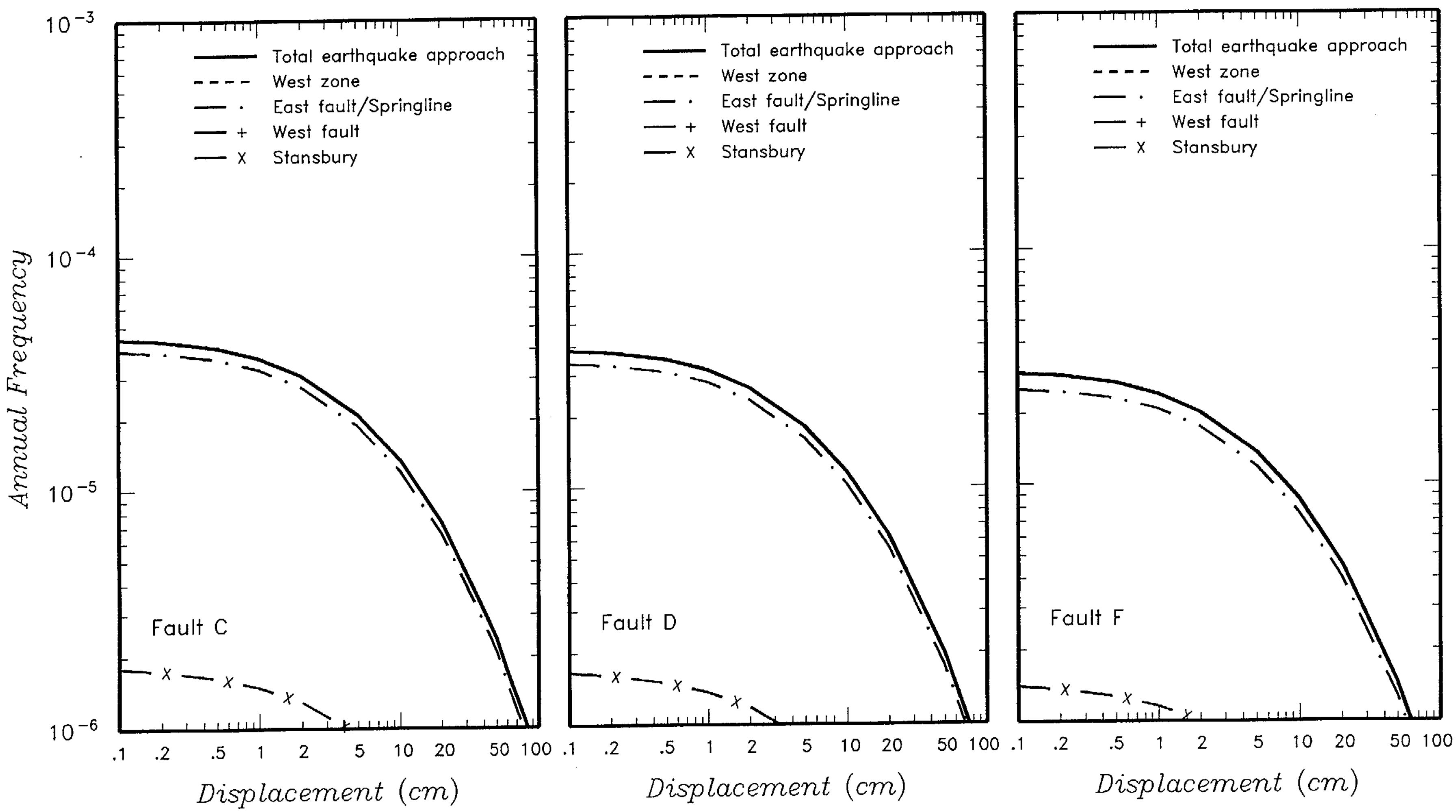


GEOMATRIX

COMPUTED TOTAL MEAN AND 5TH- TO 95TH-PERCENTILE DISPLACEMENT HAZARD CURVES.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 7-7

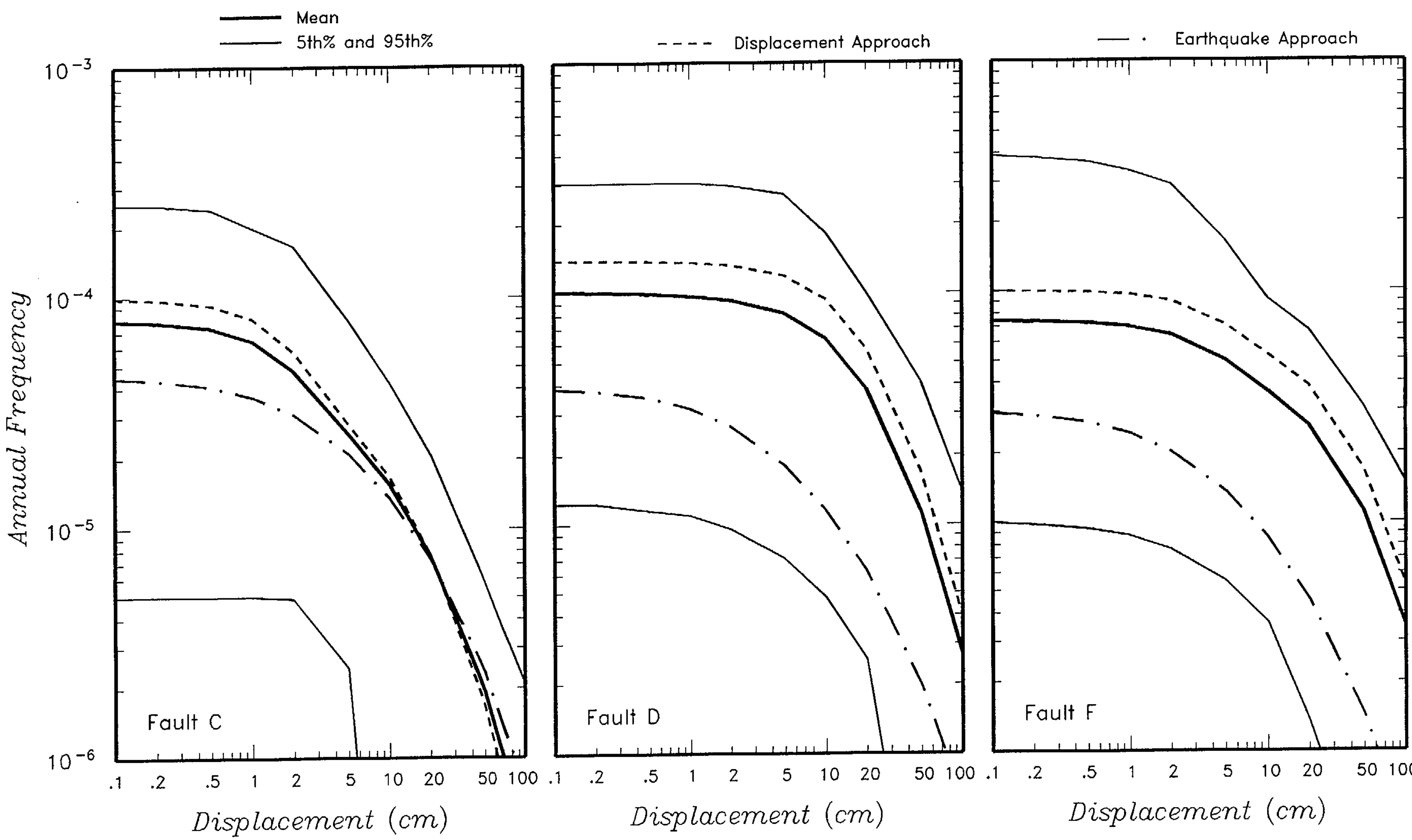


GEOMATRIX

CONTRIBUTIONS OF INDIVIDUAL SOURCES TO TOTAL MEAN HAZARD FOR THE EARTHQUAKE APPROACH.
Private Fuel Storage Facility
Skull Valley, Utah

Project No. 4790

Figure 7-8

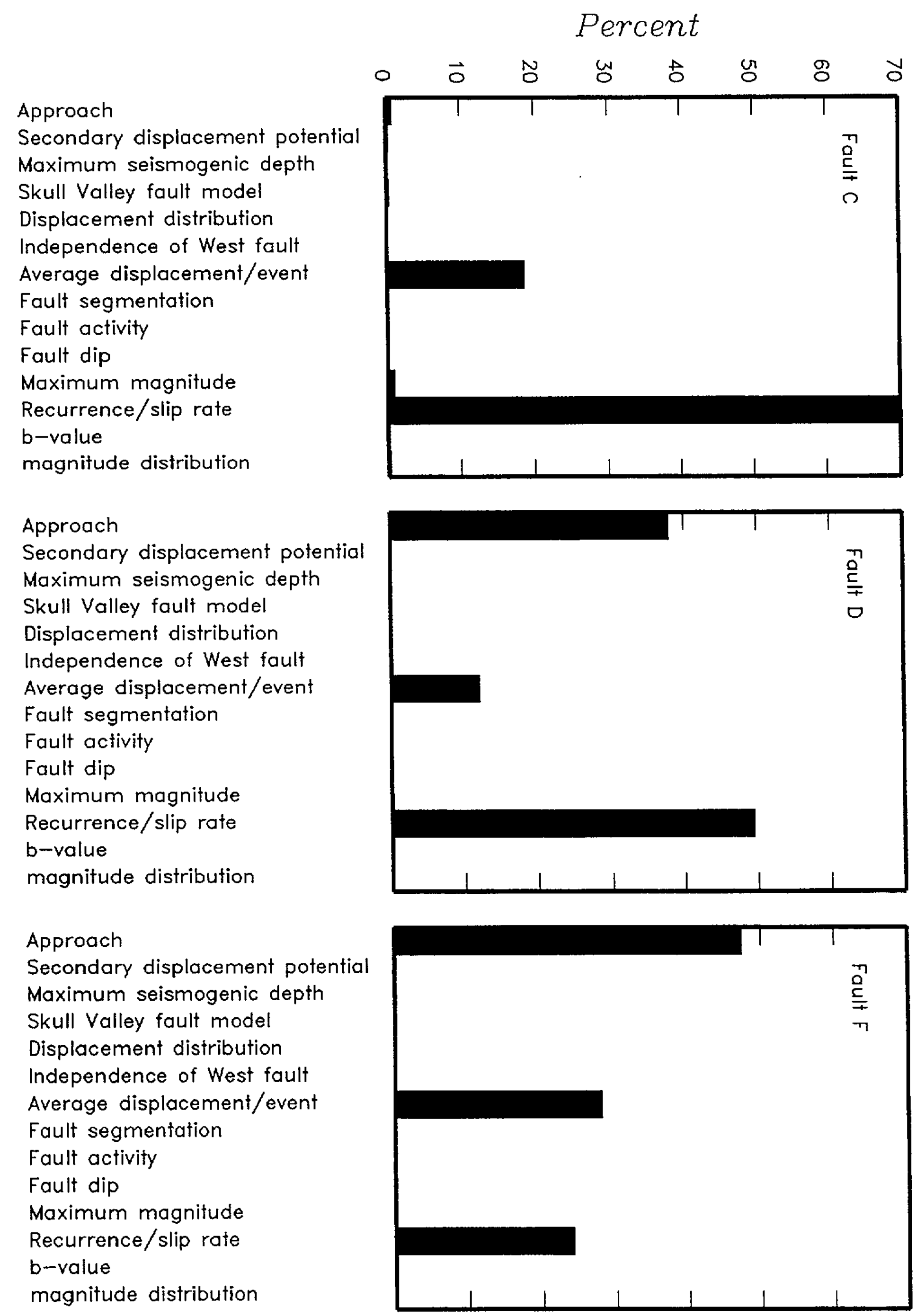


GEOMATRIX

EFFECT OF APPROACH ON MEAN DISPLACEMENT HAZARD.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.
4790

Figure
7-9



GEOMATRIX

RELATIVE CONTRIBUTION OF THE UNCERTAINTY IN THE COMPONENTS OF THE DISPLACEMENT HAZARD MODEL TO THE TOTAL UNCERTAINTY IN THE HAZARD.
Private Fuel Storage Facility
Skull Valley, Utah

Project No.	Figure
4790	7-10

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED:

PLATE 1:

PLAN MAP OF SITE INVESTIGATIONS PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

WITHIN THIS PACKAGE...OR, BY SEARCHING USING THE DRAWING NUMBER:

PLATE 1

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

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PLATE 2:
MAP OF SOUTH WALL TRENCH T-1
PRIVATE FUEL STORAGE FACILITY
SKULL VALLEY, UTAH

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PLATE 2

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PLATE 3:

MAP OF NORTH WALL TRENCH T-2 PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

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PLATE 3

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PLATE 4: CROSS-SECTION D-D' SHOWING STRATIGRAPHY INFERRED FROM BOREHOLE DATA ACROSS SITE PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

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PLATE 4

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PLATE 5:

TOPOGRAPHIC PROFILES-STANSBURY CROSS-VALLEY BAR PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

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PLATE 5

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PLATE 6:
QUARTERNARY FAULTS AND SUPPORTING DATA SKULL VALLEY, UTAH PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

WITHIN THIS PACKAGE...OR, BY SEARCHING USING THE DRAWING NUMBER:
PLATE 6

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PLATE 7:

MAP SHOWING QUARTERNARY FAULTS IN THE PFSF SITE REGION PRIVATE FUEL STORAGE FACILITY SKULL VALLEY, UTAH

WITHIN THIS PACKAGE...OR, BY SEARCHING USING THE DRAWING NUMBER:

PLATE 7

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