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FINAL REPORT - VOLUME I of III

Fault Evaluation Study and Seismic Hazard Assessment, Revision 1

Private Fuel Storage Facility
Skull Valley, Utah

Prepared for:

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March 2001

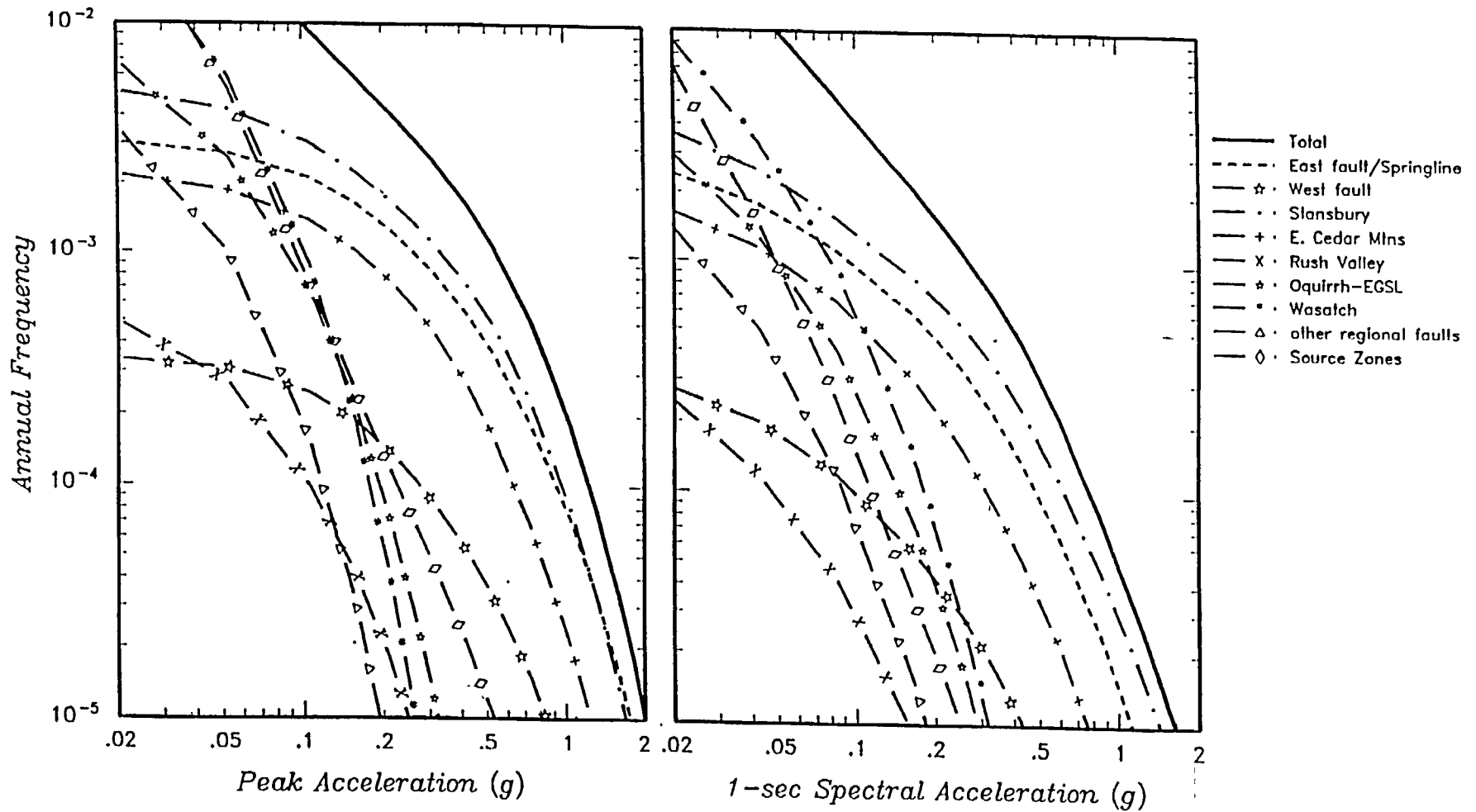
Project No. 4790.002

NUCLEAR REGULATORY COMMISSION

Docket No. _____ Official Ex. No. 185
 In the matter of PFS
 Staff _____ IDENTIFIED
 Applicant _____ RECEIVED _____
 Intervenor REJECTED _____
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 Clerk V. McDaniel

Template = SECY-028

SECY-02



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

Project No.
 4790.002

Figure
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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 ²
<i>Mid-Valley Faults</i>								
East, West, and Springline faults	EF, WF, and SpF	EF [1.0] WF [1.0] SpF [0.8]	EF 28 [1.0]	45°W [0.33] 55°W [0.34] 65°W [0.33]	EF	EF		See Figure 6-4 for logic tree showing alternate mid-valley fault sources included in seismic hazard model
			SpF 18 [1.0]		12 [0.2] 18 [0.5] 28 [0.3]			
			EF/SpF 46 [1.0]	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.	SpF 18 [1.0]	WF		
			WF-Model A 23 [1.0]		12 [0.1] 18 [0.3] 28 [0.5] 46 [0.1]			
			WF-Model B 36 [1.0]		WF-Model A 12 [0.6] 23 [0.4]	EF-WF		
					WF-Model B 12 [0.5] 21 [0.4] 36 [0.1]	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		

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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/ ² References
						based on above distributions		
<i>Stansbury</i>	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]	<u>AD</u> 1 [0.1] 2 [0.4] 3 [0.4] 4.5 [0.1]	
<i>East Cedar Mountains</i>	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								
<i>Clover Fault</i> [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]	<u>MD</u> [0.3] 0.6 [1.0] <u>AD</u> [0.7] 0.6 [1.0]	
<i>Sheeprock</i> [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]		
<i>West Side Zone</i> [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]	<u>MD</u> [0.3] 0.6 [1.0] <u>AD</u> [0.7] 0.6 [1.0]	

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TABLE 6-2 (CONTINUED)

FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS
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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]	<u>MD</u> [0.3] 0.9 [0.5] 1.9 [0.5] <u>AD</u> [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]	<u>MD</u> [0.3] 0.9 [0.5] 1.9 [0.5] <u>AD</u> [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]	<u>MD</u> [0.3] 2.2 [0.5] 2.7 [0.5] <u>AD</u> [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]	<u>MD</u> [0.3] 0.9 [0.5]	

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FAULT SOURCES-SOURCE CHARACTERIZATION PARAMETERS AND WEIGHTS
Private Fuel Storage Facility
Skull Valley, Utah

Fault	Map Designation	Probability of Activity	Total Length (km)	Downslp Geometry	Rupture Lengths (km)	Slip Rate (mm/yr)	Single Event Displacement ^t (m)	Comments/ ^u References
(Model B [0.1])				60°W [0.33]	52 [0.2]	0.4[0.3] 0.7[0.1]	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]	<u>AD</u> [0.7] 0.9 [0.5] 1.9 [0.5]	
West Valley Fault Zone	WVZ	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]	<u>AD</u> [0.7] 2.4 [1.0] <u>MD</u> [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]	<u>MD</u> 3.3 [1.0]	
Wasatch Fault Zone	WFZ	1.0	370	45°E [0.33] 55°E [0.34] 65°E [0.33] 0.35				Seismic source model modified from Youngs and others (1987) and using recurrence data from McCalpin and Nishenko (1996)

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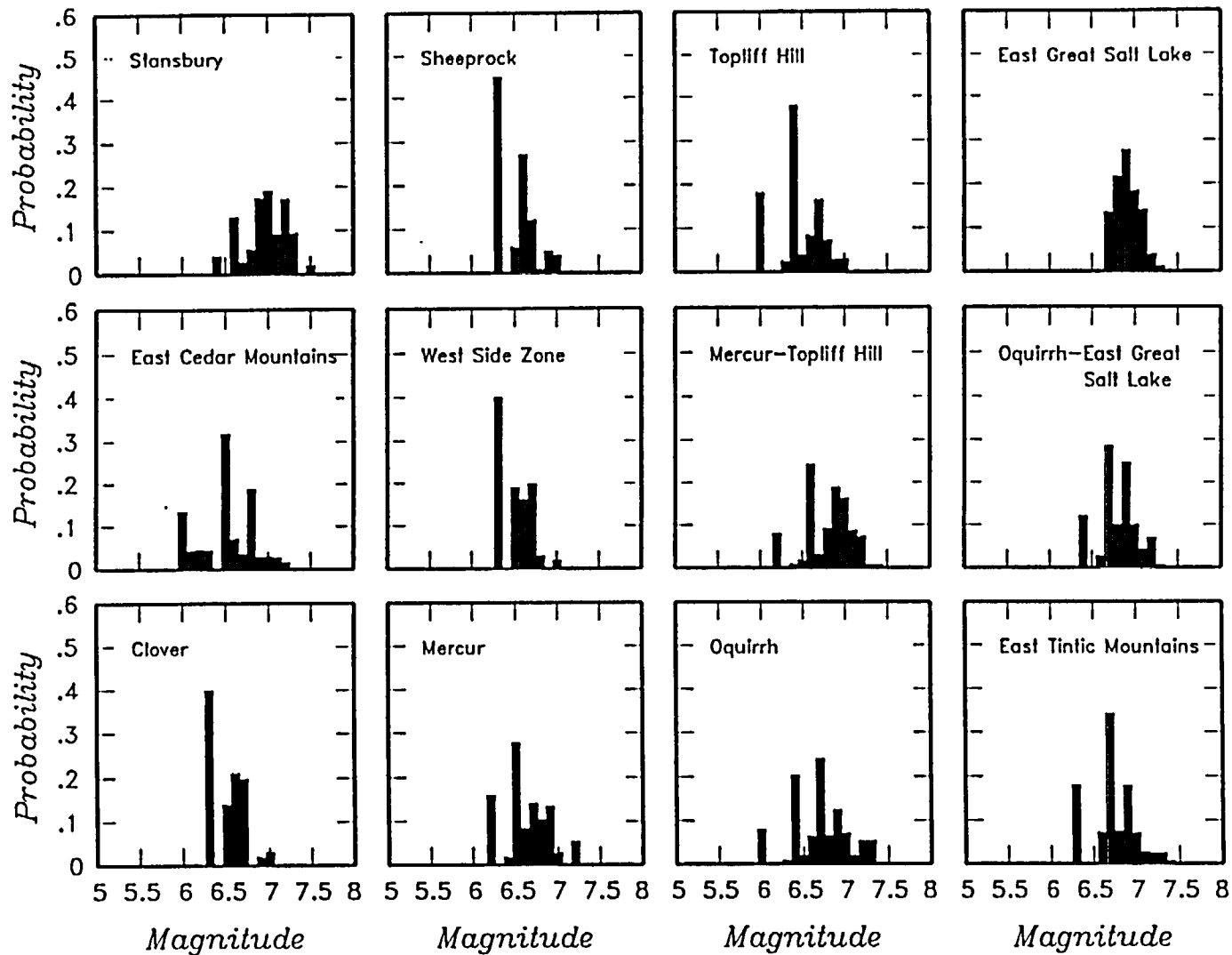
TABLE 6-2 (CONTINUED)

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/ ² References	
<i>(Unsegmented Model)</i>					35 [0.05]	0.7 [0.1]			
					45 [0.4]	0.9 [0.2]			
					65 [0.5]	1.1 [0.4]			
					100 [0.05]	1.3 [0.25]			
						1.8 [0.05]			
<i>(Segmented Model)</i>	<i>Collinston*</i>				30 [1]	0.02 [0.45]			
						0.04 [0.45]			
						0.08 [0.1]			
						40 [1]	•		
						61 [1]	•		
						46 [1]	•		
						70 [1]	•		
						43 [1]	•		
						30 [1]	0.05 [0.1]		
							0.1 [0.4]		
					0.2 [0.4]				
					0.3 [0.1]				

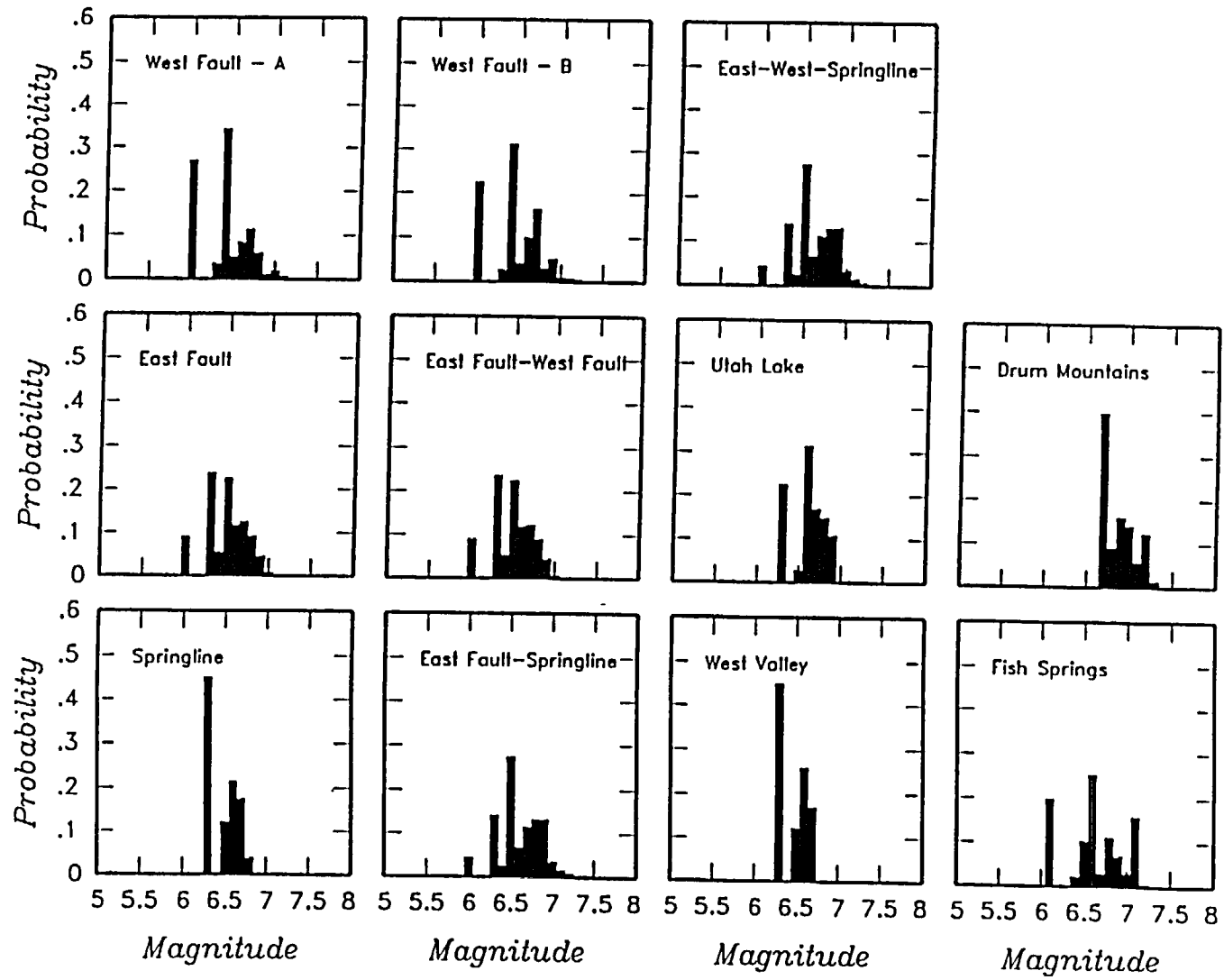
¹ MD = maximum displacement; AD = average displacement
² Frequency of events based on recurrence intervals from McCaig and Nishenko (1995).

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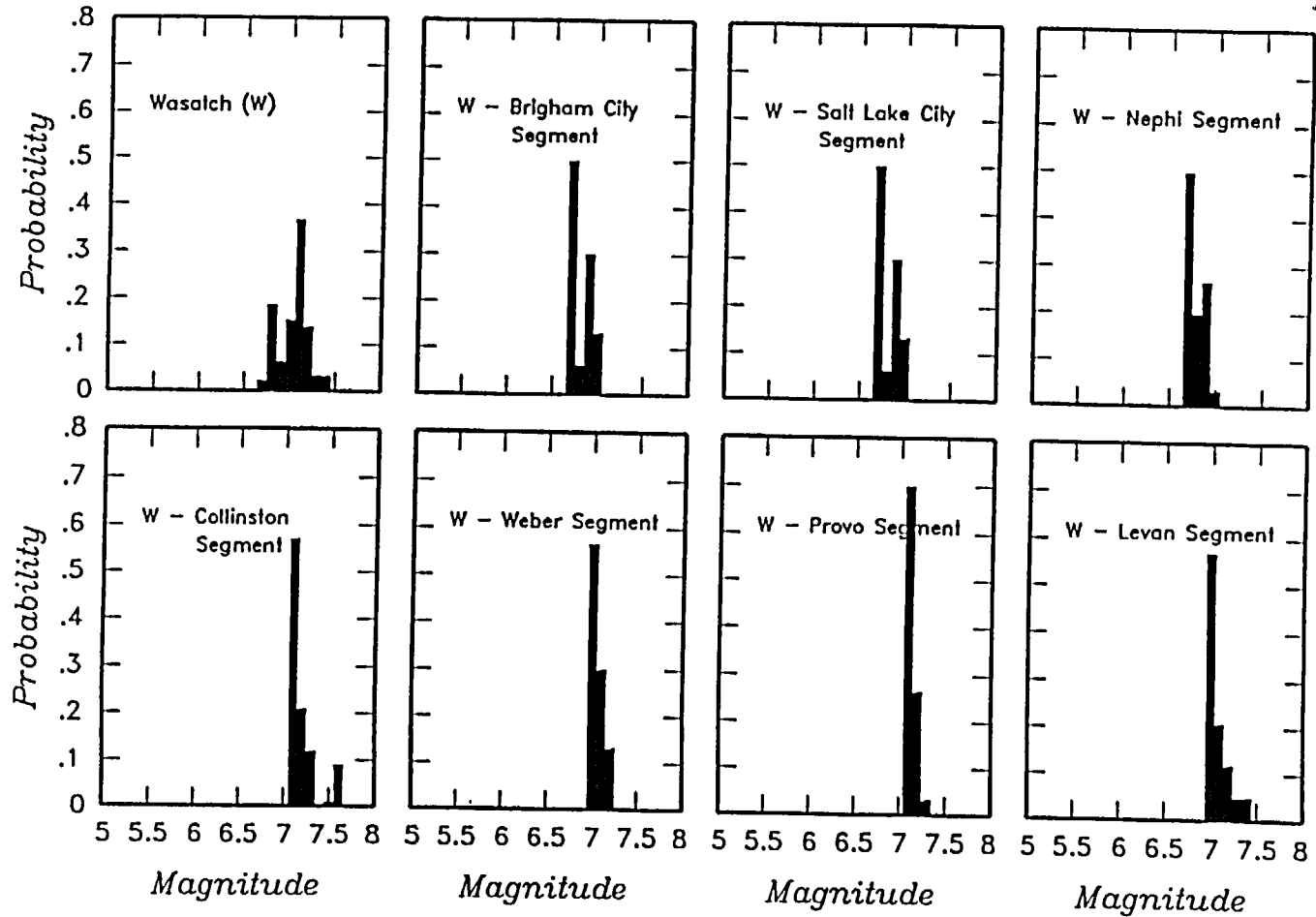
MAXIMUM MAGNITUDE DISTRIBUTIONS FOR FAULT SOURCES
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 Skull Valley, Utah
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MAXIMUM MAGNITUDE DISTRIBUTIONS FOR FAULT SOURCES
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