Catalogue of U.S. Geological Survey Strong-Motion Records, 1994

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Compiled by Josephine C. Switzer,
Walter L. Jungblut, *and* Ronald L. Porcella

U.S. GEOLOGICAL SURVEY CIRCULAR 1152

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PREFACE

The first seismic engineering program in the United States was administered by the Seismological Field Survey (SFS) of the U.S. Coast and Geodetic Survey. This program was begun in 1931 and essentially remained the responsibility of the SFS until 1973, when the U.S. Geological Survey (USGS) assimilated the program into its Earthquake Hazards Reduction Program. Currently, the National Strong-Motion Program (NSMP) operates a cooperative network containing approximately 900 accelerographs in 39 states and Puerto Rico. This network is administered by the USGS in cooperation with both private industry and numerous Federal, State, and local agencies and organizations. Major contributors include the Army Corps of Engineers, the Department of Veterans Affairs, and the Metropolitan Water District of Southern California. Primary objectives of the program are to record strong ground motions and the response of representative engineered structures during moderate to large earthquakes, and to disseminate the resultant data and information about the records, sites, and structures to the earthquake engineering research and design community.

This catalogue continues in a revised format the yearly publication "Strong-Motion Program Report, January-December [year]"; it is a continuation of the table 1 summary of accelerograms recovered at NSMP stations that had been published in that format since 1974. This report includes all strong-motion recordings recovered during 1994. Unless otherwise referenced, earthquake data and information are taken from the "Preliminary Determination of Epicenters," published weekly by the U.S. Geological Survey.

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INTRODUCTION

During January-December 1994 more than 825 accelerograph records were recovered from permanent National Strong-Motion Program (NSMP) stations operated by the U.S. Geological Survey; approximately 780 of these recordings are related to the January 17 Northridge earthquake and aftershocks. In comparison, the NSMP national network has produced an annual average of about 300 recordings for the 20-year period 1974 through 1993.

The nearly 800 Northridge accelerograms include strong-motion data from about 150 accelerographs located at nearly 100 permanent stations throughout the greater Los Angeles region. The data were recorded at more than 30 high-rise buildings, 7 major hospitals, 12 dams, 6 fire stations, 1 bridge, 7 water/power distribution facilities, and more than 60 ground sites. The data include records from two base-isolated structures: a 3-story residence in West Los Angeles and a 165-meter-long, steel-truss bridge, which supports a major water pipeline that crosses the Santa Ana River southwest of Riverside.

Maximum ground accelerations at 11 sites within a 30-km epicentral distance exceeded 0.25 *g*; Skinner Dam, northeast of Temecula, at a distance of more than 150 km, was the most distant NSMP station triggered during the main shock. Additional records were recovered from strong-motion stations operated by the California Division of Mines and Geology, the University of Southern California, the Los Angeles Department of Water and Power, the California Department of Water Resources, Southern California Edison, Caltech, and the owners of numerous large buildings, which were instrumented in accordance with the Uniform Building Code or the Los Angeles building code.

Records were also recovered from instrumentation triggered by several non-Northridge events in California: an M_L= 4.2 earthquake near Eureka on January 20, an M_L= 4.2 event near Berkeley on June 26, an M_L= 6.0 event in eastern Calif. on September 12, and an M_L= 5.0 event near Parkfield on December 20 (see table 1). Other events recorded during 1994 include an M_L= 4.1 event in Washington State on September 10, and an M_B= 5.3 earthquake on the Big Island of Hawaii on February 1. The Berkeley event of June 26 triggered 5 permanent stations, including two large structure arrays; maximum ground acceleration recorded in Berkeley was 0.12 *g*. The Hawaii earthquake of February 1 triggered accelerographs at 12 permanent stations on the Big Island; maximum ground accelerations were generally in the range 0.05-0.1 *g*.

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

[Station owners: ACOE, U.S. Army Corps of Engineers; CDWR, California Department of Water Resources; DOE, Department of Energy; MWD, Metropolitan Water District of Southern California; OWNR, building owner; USGS, U.S. Geological Survey; VA, U.S. Department of Veterans Affairs. Instrument trigger time is in minutes and seconds after the hour listed in earthquake column; *P*-wave arrival time is listed in brackets. S-minus trigger denotes *S*-wave-arrival-minus trigger-time interval (S-t), or *S*-wave-minus-*P*-wave-arrival time interval (S-P, in brackets). Direction is of case acceleration for upward trace deflection on accelerogram; horizontal components are listed as azimuth, and vertical components as "up" or "down." Maximum amplitude is peak acceleration recorded at ground level on one vertical and two orthogonal horizontal components unless otherwise noted. Numbers in parentheses refer to footnotes at end of table.]

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (*g*)
9 January 1994	Los Angeles	34.054	01:06.4	2.4		
2300:58.9 G.m.t.	Wadsworth VA Hospital	118.453				
Southern Calif.	(VA) North Ground Site				325	0.05
33.988N, 118.504W					Up	0.02
Magnitude 3.7 ML					235	0.03
10 January 1994	Los Angeles	34.054	12:06.4	2.3		
0612:03.8 G.m.t.	Wadsworth VA Hospital	118.453				
Southern Calif.	(VA) North Ground Site					(1)
33.993N, 118.492W						
Magnitude 3.1 ML						
6 July 1993-	Los Angeles	34.040	(3)	2.2		
12 January 1994	1955 1/2 Purdue Ave.	118.445				
Southern Calif.	(USGS)					
Epicenters and	Basement				235	0.04
magnitudes unknown					Up	0.02
					145	0.08
	Third floor				235	0.02
					Up	0.07
					145	0.06
					235	0 .02
					Up	0.04
					145	0.05
	Note: Two each and one each additional records[1] recovered at basement and third floor, respectively, at 1955 1/2 Purdue Ave.					
6 May 1993-	Los Angeles	33.783	(3)	(2)	360	0.01
16 January 1994	600 City Parkway West	117.896			Up	0.07
Southern Calif.	(OWNR) 11th Floor				270	0.01
Epicenters and						
magnitudes unknown			(3)	(2)	360	0.01
					Up	0.06
					270	0.01

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
17 January 1994	Los Angeles	34.072	(1)	3.9	360	0.65
1230:55.3 G.m.t.	8436 West 3rd Street	118.375			Up	0.23
Southern Calif.	(OWNR) Roof (10th level)				270	0.56
34.211N, 118.538W						
Magnitude 6.6 Ms	Los Angeles	34.185	(3)	2.8	360	0.48
(Northridge	6301 Owensmouth Ave.	118.584			Up	0.48
Earthquake)	(OWNR) Roof (12)				270	0.39
	Los Angeles	34.249	(3)	1.2	360	0.94
	Sepulveda VA Hospital	118.475			Up	0.48
	[VA] Ground				270	0.74
	Los Angeles	34.175	(3)	1.0	360	0.76
	5805 Sepulveda Blvd.	118.465			Up	0.50
	(OWNR) Roof (9)				270	0.64
	Los Angeles	34.156	(3)	3.0	120	0.37
	16000 Ventura Blvd.	118.480			Up	0.37
	(OWNR) Roof (13)				030	0.41
	Los Angeles	34.157	(3)	3.0	360	0.61
	15250 Ventura Blvd.	118.476			Up	0.43
	(OWNR) Roof (13)				270	0.27
	Jensen Filter Plant [MWD]					
	Admin. Bldg Basement	34.312	(3)	1.6	022	0.40
		118.496			Up	0.40
					292	0.62
	Generator Building	34.313	(3)	0.4	022	0.56
		118.498			Up	0.52
					292	0.98
	Reservoir Roof	34.309	(3)	1.1	022	0.65
		118.499			Up	0.51
					292	0.84
	Sepulveda Canyon	34.097	(3)	2.8	166	0.26
	Spillway Building	118.475			Up	0.16
	[MWD] Ground				076	0.43
	Topanga	34.084	(3)	0.7	360	0.34
	Fire Station	118.599			Up	0.19
	(USGS) Ground				270	0.21
	Note: Eight additional records[1] recovered at Topanga fire station.					
	Los Angeles	34.061	(3)	1.6	160	0.43
	10660 Wilshire Blvd.	118.434			Up	0.51
	(OWNR) Roof (19)				070	1.00

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Santa Susana Energy Tech. Eng. Ctr. [DOE]					
	Bldg. 026, Ground	34.232	(3)	(2)	325	0.32
		118.710			Up	0.27
					235	---
	Bldg. 462, 1st Floor	34.230	(3)	(2)	090	0.24
		118.712			Up	0.23
					360	0.34
	Bldg. 462, 6th Floor	34.230	(3)	(2)	090	0.41
		118.712			Up	0.40
					360	0.60
	Bldg. 463, Roof	34.230	(3)	(2)	090	0.41
		118.713			Up	0.66
					360	0.76
	Freefield	34.231	(3)	(2)	090	0.29
		118.713			Up	0.16
					360	0.23
	Los Angeles	34.063	(3)	3.1	285	0.16
	Brentwood VA Hospital	118.463			Up	0.14
	[VA] Ground				195	0.18
	Note: Four additional records[1] recovered at Brentwood VA hospital.					
	Los Angeles	34.058	(3)	5.0	070	0.14
	10920 Wilshire Blvd.	118.443			Up	0.24
	(OWNR) 19th Level				340	0.17
	Note: Two additional records[1] recovered at 10920 Wilshire Blvd., 19th level.					
	Los Angeles	34.060	(3)	3.2	252	0.40
	10751 Wilshire Blvd.	118.438			Up	0.39
	(OWNR) Roof (12)				162	0.30
	Note: Thirty-one additional records[1] recovered at 10751 Wilshire Blvd., roof.					
	Los Angeles	34.054	31:00.6	3.6	325	0.26
	Wadsworth VA Hospital	118.453			Up	0.17
	(USGS) North Ground Site				235	0.26
			[32.01.2]	[4.3]	325	0.07
					Up	0.06
					235	0.07
	Los Angeles	34.044	(3)	4.0	226	0.27
	12121 Wilshire Blvd.	118.467			Up	0.37
	(OWNR) Roof (15)				136	0.32
	Note: Twelve additional records[1] recovered at 12121 Wilshire Blvd., roof.					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	34.050	31:01.1	3.8	325	0.39
	Wadsworth VA Hospital	118.448			Up	0.14
	(USGS) South Ground Site				235	0.30
			[32:02.2]	[4.0]	325	0.09
					Up	0.02
					235	0.03
	Los Angeles	34.053	(3)	2.6		
	Wadsworth VA Hospital	118.452				
	(VA) Structure Array					
	Ch. 1 - 6th Floor, North				235	0.56
	2 - 6th Floor, North-center				235	0.44
	3 - 6th Floor, Center				235	0.46
	4 - 6th Floor, Center				055	0.46
	5 - 6th Floor, South				055	0.46
	6 - 6th Floor, South				335	0.49
	7 - Basement, North-center				325	0.21
	8 - Basement, North-center				235	0.22
	9 - Basement, North-center				Down	0.09
	Los Angeles	34.059	(3)	4.0	320	0.31
	2029 Century Park East	118.413			Up	0.46
	(OWNR) 43rd Floor				230	0.32
	Note: Eleven additional records[1] recovered at 2029 Century Park East, 43rd floor.					
	Malibu Canyon	34.078	31:00.2	3.2	360	0.20
	Monte Nido Fire Station	118.693			Up	0.13
	(USGS) Ground				270	0.17
			[32:01.3]	[5.0]		(1)
	Los Angeles	34.057	(3)	2.8	330	0.43
	2121 Ave. of the Stars	118.414			Up	0.63
	(OWNR) Roof (36)				240	0.37
	Los Angeles	34.071	(3)	4.3	335	0.55
	444 S. San Vicente	118.374			Up	0.31
	(OWNR) Roof (12)				245	0.64
	Los Angeles	34.106	(3)	2.0	360	0.36
	2005 N. Highland Ave.	118.336			Up	0.21
	(OWNR) Roof (8)				270	0.42
	Los Angeles	34.063	(3)	4.8	028	0.24
	600 S. Commonwealth	118.284			Up	0.22
	(OWNR) 19th Floor				298	0.17
	Los Angeles	34.098	(3)	0.8	090	0.84
	1526 N. Edgemont St.	118.294			Up	0.27
	(OWNR) Roof (8)				360	0.78

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	34.040	(3)	4.1		
	1955 1/2 Purdue Ave.	118.445				
	(USGS)					
	Basement				235	0.44
					Up	0.16
					145	0.39
	1st Level				235	0.50
					Up	0.48
					145	0.49
	3rd Level				235	0.63
					Up	0.46
					145	0.46
	Los Angeles	34.118	(3)	3.3	360	0.18
	Griffith Observatory	118.299			Up	0.15
	(USGS) Ground				270	0.29
	Note: Two additional records[1] recovered at Griffith Observatory.					
	Los Angeles	34.063	(3)	4.1	180	0.42
	4929 Wilshire Blvd.	118.337			Up	0.31
	(OWNR) Roof (11)				090	0.34
	Note: Thirteen additional records[1] recovered at 4929 Wilshire Blvd., roof.					
	Los Angeles	34.060	(3)	4.8	360	0.12
	695 S. Vermont Ave.	118.290			Up	0.19
	(OWNR) 18th Floor				270	0.11
	Note: Four additional records[1] recovered at 695 S. Vermont Ave. , 18th floor.					
	Los Angeles	34.052	31:03.4	3.7	298	0.13
	1100 Wilshire Blvd.	118.263			Up	0.09
	(USGS) Bsmt. 3 NE				208	0.15
	Los Angeles	34.052	31:03.4	3.7	298	0.14
	1100 Wilshire Blvd.	118.263			Up	0.07
	(USGS) Bsmt. 3 SE				208	0.10
	Los Angeles	34.053	(3)	5.3	083	0.11
	333 South Hope St.	118.252			Up	0.18
	(OWNR) 55th Floor				353	0.11
	Note: Nine additional records[1] recovered at 333 South Hope St., 55th floor.					
	Los Angeles	34.049	(3)	5.0	045	0.19
	500 S. Grand Ave.	118.252			Up	0.17
	(OWNR) 25th Level				315	0.17
	Note: Four additional records[1] recovered at 500 S. Grand Ave., 25th level.					
	Los Angeles	34.052	31:03.4	3.7	298	0.11
	1100 Wilshire Blvd.	118.263			Up	0.06
	(USGS) Bsmt. 4 NW				208	0.12

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	34.052	31:03.3	3.7		
	1100 Wilshire Blvd.	118.263				
	(USGS) Structure Array					
	Ch. 1 - 12th Floor North				298	0.16
	2 - 12th Floor North				208	0.22
	3 - 12th Floor South				208	0.16
	4 - 13th Floor North				298	0.16
	5 - 13th Floor North				208	0.28
	6 - 13th Floor South				208	0.16
	7 - 32nd Floor North				298	0.14
	8 - 32nd Floor North				208	0.35
	9 - 32nd Floor South				208	0.16
	10 - Ground Floor North				298	0.18
	11 - Ground Floor North				208	0.11
	12 - Ground Floor South				208	0.19
	Los Angeles	34.067	(3)	3.7		
	1111 Sunset Blvd.	118.248				
	[MWD]					
	Basement				348	0.13
					Up	0.06
					258	0.13
	4th Floor				348	0.17
					Up	0.09
					258	0.18
	Roof (8)				348	0.23
					Up	0.16
					258	0.23
	Note: One each additional record[1] recovered at 1111 Sunset Blvd., basement, 4th floor, and roof.					
	Los Angeles	34.050	(3)	4.2	045	0.15
	520 S. Grand Ave.	118.252			Up	0.13
	(OWNR) 11th Level				315	0.24
	Note: Four additional records[1] recovered at 520 S. Grand Ave., 11th level.					
	Los Angeles	34.039	(3)	5.2	307	0.13
	1150 South Hill Street	118.259			Up	0.15
	(OWNR) 10th Floor				217	0.08
	Note: Four additional records[1] recovered at 1150 South Hill St., 10th floor.					
	Burbank	34.152	(3)	3.2	360	0.56
	3601 W. Olive Ave	118.337			Up	0.81
	(OWNR) Roof (9)				270	0.52
	Lawndale	33.895	(3)	3.7	360	0.18
	15000 Aviation Blvd.	118.377			Up	0.09
	(USGS) Ground				270	0.13

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 199*

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	33.946	(3)	3.4	270	0.14
	6101 Century Blvd.	118.391			Up	0.10
	(OWNR) 15th Level				180	0.18
	Note: Three additional records[1] recovered at 6101 Century Blvd., 15th level.					
	Los Angeles	33.945	(3)	5.2	090	0.16
	5250 Century Blvd.	118.372			Up	0.22
	(OWNR) Roof (8)				360	0.15
	Note: Three additional records[1] recovered at 5250 Century Blvd., roof.					
	Los Angeles	34.052	(3)	5.5	120	0.38
	255 E. Temple St.	118.237			Up	0.29
	(OWNR) 21st Level				030	0.33
	Note: Eight additional records[1] recovered at 255 E. Temple St., 21st level.					
	Pasadena (Analog)	34.136	(3)	5.1	360	0.16
	535 S. Wilson Ave.	118.127			Up	0.10
	(USGS) Ground				270	0.15
	Pasadena (Digital)	34.136	(3)	(2)	360	0.19
	535 S. Wilson Ave.	118.127			Up	0.11
	(USGS) Ground				270	0.15
	Los Angeles	33.996	(3)	5.1	360	0.27
	Bulk Mail Facility (Bell)	118.162			Up	0.09
	(USGS) Ground				270	0.16
	Alhambra	34.085	31:04.2	4.5		
	900 South Fremont Ave.	118.149				
	(USGS) Structure Array					
	Ch. 1 - 12th Floor Center				360	0.11
	2 - 12th Floor Center				090	0.16
	3 - 12th Floor North end				090	0.13
	4 - 6th Floor Center				090	0.24
	5 - 6th Floor Center				360	0.15
	6 - 6th Floor North end				090	0.20
	7 - 2nd Floor Center				090	0.60
	8 - 2nd Floor Center				360	0.39
	9 - 2nd Floor North end				090	0.40
	10 - Basement Center				360	0.13
	11 - Basement Center				Up	0.10
	12 - Basement Center				090	0.19
	Los Angeles	33.855	(3)	5.4	360	0.14
	19191 S. Vermont	118.291			Up	0.10
	(OWNR) Roof (11)				270	0.22
	Chantry Flat	34.196	(3)	(2)	290	0.20
	Forest Station, Heliport	118.021			Up	0.12
	(USGS) Ground				020	0.26

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Garvey Reservoir	34.050	(3)	3.2		
	[MWD]	118.114				
	Crest				114	0.16
					Up	0.08
					024	0.18
	Abutment Building				114	0.14
					Up	0.07
					024	0.12
	Whittier Narrows Dam	34.020	(3)	(2)		
	[ACOE]	118.053				
	Crest				028	0.19
					Up	0.07
					118	0.21
	Upstream (Baseyard)				360	0.22
					Up	0.08
					090	0.15
	Leona Valley	34.620	(3)	4.2	120	0.05
	Fire Station	118.290			Up	0.06
	(USGS) Ground				030	0.07
	Note: Four additional records[1] recovered at Leona Valley fire station.					
	Palos Verdes Reservoir	34.774	(3)			
	[MWD]	118.321				
	Abutment Bldg.			3.5	210	0.15
					Up	0.10
					120	0.12
	Crest			6.1	210	0.12
					Up	0.07
					120	0.15
	Whittier	33.977	(3)	6.5		
	7215 Bright Ave.	118.036				
	[USGS]					
	Basement				180	0.15
					Up	0.07
					090	0.12
	5th Floor				180	0.30
					Up	0.10
					090	0.15
	10th Floor				180	0.18
					Up	0.12
					090	0.24

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Morris Dam	34.173	(3)	2.6	246	0.04
	Left abutment	117.879			Up	0.03
	[MWD]				156	0.03
	Littlerock	34.526	(3)	7.2	300	0.13
	Post Office	117.995			Up	0.08
	(USGS) Ground				210	0.18
	Long Beach VA Hospital	33.778	(3)	6.1		
	[VA]	118.118				
	Basement				360	0.07
					Up	0.04
					270	0.05
	6th Floor				360	0.15
					Up	0.06
					270	0.11
	11th Floor				360	0.20
					Up	0. 08
					270	0.21
	Ground Site				360	0.07
					Up	0.03
					270	0.07
	Valyermo Forest Station	34.439	(3)	6.5	300	0.08
	(USGS) Ground	117.900			Up	0.05
					210	0.07
	Norwalk	33.917	(3)	4.5		
	12400 Imperial Highway	118.067				
	(USGS)					
	North Ground Site				090	0.08
					Up	0.06
					360	0.08
	South Ground Site		(3)	3.8	090	0.06
					Up	0.06
					360	0.09
	Norwalk	33.917	(3)	5.3		
	12440 Imperial Highway	118.065				
	(USGS)					
	North Ground Site				090	0.06
					Up	0.06
					360	0.08
	Basement				090	0.06
					Up	0.04
					360	0.06

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	12440 Imperial Highway					
	Structure Array 1		31:10.3	5.5		
	Ch. 1 - 9th Level (Roof), Center				090	0.14
	2 - 6th Level, Center				090	0.11
	3 - 3rd Level, Center				090	0.08
	4 - 2nd Level, Center				090	0.07
	5 - 1st Level (Bsmt.), East end				180	0.06
	6 - 6th Level, West Center				180	0.11
	7 - 1st Level (Bsmt.), Center				Up	0.14
	8 - 1st Level (Bsmt.), Center				090	---
	9 - 1st Level (Bsmt.), Center				180	0.07
	10 - Downhole (30 ft.), Center				Up	0.03
	11 - Downhole (30 ft.), Center				090	---
	12 - Downhole (30 ft.), Center				180	0.06
	Structure Array 2					
	Ch. 13 - 9th Level (Roof), East end				180	0.14
	14 - 6th Level, East end				180	0.09
	15 - 3rd Level, East end				180	0.05
	16 - 2nd Level, East end				180	0.06
	17 - 9th Level, (Roof) Bldg Center				180	0.18
	18 - 6th Level, Bldg Center				180	0.13
	19 - 3rd Level, Bldg Center				180	0.09
	20 - 2nd Level, Bldg Center				180	0.08
	21 - 9th Level, (Roof) West end				180	0.12
	22 - 6th Level, West end				180	0.08
	23 - 3rd Level, West end				180	0.06
	24 - 2nd Level, West end				180	0.07
	Brea Dam	33.890	(3)	5.5		
	[ACOE]	117.925				
	Crest				132	0.14
					Up	0.09
					042	0.23
	Left Abutment				132	0.08
					Up	0.08
					042	0.10
	Downstream				132	0.19
					Up	0.05
					042	0.12
	Orange County Reservoir	33.936	(3)	6.4		
	[MWD]	117.884				
	Crest				090	0.20
					Up	0.09
					360	0.19
	Abutment	33.935			090	0.11
		117.883			Up	0.05
					360	0.11

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Weymouth Filter Plant	34.114	(3)	5.2		
	[MWD]	117.778				
	Ground Site				017	0.05
					Up	0.04
					287	0.05
	Tank Top				017	0.16
					Up	0.11
					287	0.11
	Carbon Canyon Dam	33.914	(3)	8.0		
	[ACOE]	117.839				
	Crest				131	0.11
					Up	0.08
					041	0.19
	Left Abutment				131	0.11
					Up	0.03
					041	0.10
	Right Abutment				131	0.14
					Up	0.06
					041	0.14
	Paradise Springs Camp	34.400	(3)	7.4	120	0.06
	(USGS) Ground	117.800			Up	0.03
					030	0.05
	Live Oak Reservoir	34.140	(3)	(2)	180	0.04
	Abutment	117.749			Up	0.01
	[MWD]				090	0.03
	Diemer Filter Plant	33.913	(3)	4.5		
	[MWD]	117.819				
	Admin. Bldg. Basement				281	0.07
					Up	0.04
					191	0.12
	Reservoir Roof				281	0.06
					Up	0.05
					191	0.11
	Huntington Beach	33.697	31:13.4	6.1	360	0.12
	18401 Springdale	118.023			Up	0.02
	(USGS) Ground				270	0.11
	Orange	33.789	(3)	9.1	360	0.16
	200 S. Manchester Ave.	117.894			Up	0.16
	(OWNR) Roof (9)				270	0.11

Note: Three additional records[1] recovered at 200 S. Manchester Ave., roof.

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Orange	33.787	(3)	9.8	360	0.04
	333 City Blvd. West	117.894			Up	0.10
	(OWNR) 22nd Level				270	0.06
	Note: One additional record[1] recovered at 333 City Blvd. West, 22nd level.					
	Orange	33.783	(3)	9.5	360	0.11
	600 City Parkway West	117.896			Up	0.10
	(OWNR) 11th Floor				270	0.14
	Note: One additional record[1] recovered at 600 City Parkway West, 11th floor.					
	Orange	33.782	(3)	9.6	360	0.11
	505 City Parkway West	117.896			Up	0.11
	(OWNR) 11th Floor				270	0.08
	Note: Two additional records[1] recovered at 505 City Parkway West, 11th floor.					
	San Antonio Dam	34.156	(3)	5.9	090	0.05
	Downstream	117.675			Up	0.03
	[ACOE]				360	0.09
	Santa Ana	33.751	(3)	5.5	360	0.08
	400 Civic Center Drive	117.870			Up	0.03
	(USGS) Basement				270	0.06
	Costa Mesa Fire Station #4	33.658	(3)	7.4	360	0.08
	2300 Placentia Ave.	117.931			Up	0.04
	(USGS) Ground				270	0.05
	Wrightwood	34.360	31:11.8	9.3	360	0.08
	Post Office	117.629			Up	0.03
	(USGS) Ground				270	0.07
	Costa Mesa	33.677	(3)	6.2	360	0.09
	John Wayne Airport	117.869			Up	0.03
	(USGS) Ground				270	0.07
	Irvine	33.682	(3)	5.7		
	2603 Main Street	117.842				
	(OWNR)					
	Ground				360	0.06
					Up	0.03
					270	0.11
	7th Level				360	0.11
					Up	0.07
					270	0.11
	13th Level				360	0.10
					Up	0.08
					270	0.09

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Irvine	33.656	(3)	6.0	060	0.07
	19900 MacArthur Blvd.	117.859			Up	0.02
	(USGS) Basement				330	0.04
	Structure Array					
	Ch. 1 - Roof NE corner				060	0.18
	2 - Roof SW corner				060	0.17
	3 - 7th Floor NE				060	0.13
	4 - 7th Floor SW				060	0.13
	5 - 1st Floor South side				060	0.07
	6 - Roof, SW corner				330	0.11
	7 - 7th Floor, SW				330	0.12
	8 - 1st Floor West side				330	0.07
	9 - 1st Floor South side				330	0.06
	10 - 7th Floor SW corner				Down	0.14
	11 - 1st Floor West side				Down	0.01
	12 - 1st Floor South side				Down	0.03
	Irvine	33.682	(3)	9.2	360	0.11
	2601 Main Street	117.842			Up	0.07
	(OWNR) 13th Level				270	0.11
	Note: One additional record[1] recovered at 2601 Main St., 13th level.					
	Newport Beach	33.600	(3)	6.0	360	0.03
	800 Marguerite	117.866			Up	0.02
	(USGS) Ground				270	0.05
	Newport Beach	33.618	(3)	8.2		
	800-840 Newport Center Dr.	117.878				
	(USGS) Structure Array					
	Ch. 1 - Tower 2 Level 1 Center				020	0.06
	2 - Tower 2 Level 1 Center				Up	0.02
	3 - Tower 2 Level 1 Center				110	0.04
	4 - Tower 2 Level 2 West				110	0.09
	5 - Middle Building Level 2				020	0.11
	6 - Middle Building Level 2				110	0.10
	7 - Tower 2, Level 9 South				110	0.07
	8 - Tower 2, Level 10 Center				020	0.05
	9 - Tower 2, Level 10 Center				110	0.07
	10 - Tower 1, Level 9 East				110	0.06
	11 - Tower 1, Level 10 Center				020	0.06
	12 - Tower 1, Level 10 Center				110	0.04
	Lytle Creek	34.251	(3)	7.2	360	0.08
	Mt. Lakes Resort	117.490			Up	0.03
	(USGS) Ground				270	0.07
	Mills Filter Plant	33.920	(3)	(2)	360	0.02
	[MWD] Ground	117.320			Up	0.02
					270	0.02

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Prado Dam	33.890	(3)	6.4		
	[ACOE]	117.641				
	Crest				090	0.09
					Up	0.07
					360	0.10
	Downstream				090	0.20
					Up	0.06
					360	0.18
	Left Abutment				090	0.06
					Up	0.04
					360	0.14
	San Joaquin Reservoir	33.620	(3)	6.5		
	[MWD]	117.842				
	Crest				087	0.04
					Up	0.02
					357	0.04
	Left Abutment				087	0.12
					Up	0.07
					357	0.14
	Riverside	33.968	(3)	(2)		
	Santa Ana River Bridge	117.447				
	(MWD) North Abutment				166	0.05
					Up	0.03
					076	0.04
	Riverside	33.968	(3)	(2)		
	Santa Ana River Bridge	117.447				
	(MWD) Structure Array					
	Ch. 1 - North abutment				346	0.04
	2 - North abutment				Down	0.02
	3 - North abutment				076	0.03
	4 - Pier 7-8, mid-span				346	0.16
	5 - Pier 7-8, mid-span				Down	0.12
	6 - Pier 7-8, mid-span				076	0.11
	7 - Pier 8, below bearing				346	0.09
	8 - Pier 8, below bearing				Down	0.02
	9 - Pier 8, below bearing				076	0.03
	10 - Pier 8 above bearing				346	0.11
	11 - Pier 8 above bearing				Down	0.02
	12 - Pier 8 above bearing				076	0.17
	Lake Mathews Dam	33.852	(3)	3.5	252	0.03
	Dike Toe	117.451			Up	0.03
	[MWD]				162	0.05
	San Bernardino Array	34.235	(3)	6.5	360	0.05
	Devore Water Department	117.407			Up	0.02
	(USGS) Ground				270	0.07

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	San Bernardino Array	34.134	(3)	(2)	360	0.03
	Rialto Fire Station	117.368			Up	0.03
	(USGS) Ground				270	0.03
	San Bernardino Array	34.086	(3)	5.4	360	0.05
	San Bernardino Valley Coll	117.309			Up	0.03
	(USGS) Ground				270	0.07
	San Bernardino Array	34.183	31:25.0	4.3	360	0.05
	North "F" Street	117.295			Up	0.02
	(USGS) Ground				270	0.06
	San Bernardino	34.106	31:33.3	(2)	090	0.04
	385 N. Arrowhead Ave.	117.287			Up	0.02
	(USGS) Ground Level				360	0.05
	San Bernardino	34.106	31:34.5	(2)	360	0.04
	385 N. Arrowhead Ave.	117.287			Up	0.02
	(USGS) East Ground Site				270	0.04
	San Bernardino	34.106	31:33.3	(2)		
	385 N. Arrowhead Ave.	117.287				
	(USGS) Structure Array					
	Ch. 1 - 2nd Floor NW				360	0.07
	2 - 2nd Floor NE				090	0.07
	3 - 2nd Floor NE				360	0.08
	4 - 2nd Floor SW				090	0.07
	5 - 4th Floor SW				090	0.14
	6 - 4th Floor NW				360	0.11
	7 - Roof (6th) NE				090	0.15
	8 - Roof (6th) NW				360	0.25
	9 - Roof (6th) SW				090	0.21
	10 - Roof (6th) NE				360	0.21
	11 - 4th Floor NE				090	0.10
	12 - 4th Floor NE				360	0.15
	San Bernardino Array	34.080	(3)	(2)	360	0.02
	Mill Creek Ranger Station	117.114			Up	0.02
	(USGS) Ground				270	0.03
	Loma Linda University	34.050	(3)	(2)	360	0.04
	Medical Center	117.263			Up	0.02
	(USGS) Ground				270	0.04
	Loma Linda VA Hospital	34.051	(3)	10.8	360	0.05
	North Ground Site	117.248			Up	0.02
	[VA]				270	0.05
	Loma Linda VA Hospital	34.049	(3)	10.6	360	0.04
	South Ground Site	117.250			Up	0.03
	[VA]				270	0.05

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Loma Linda VA Hospital	34.050	(3)	10.5		
	[VA] Structure Array	117.249				
	Ch. 1 - Ground Floor Center				Down	0.02
	2 - Ground Floor Center				180	0.05
	3 - Ground Floor Center				270	0.04
	4 - 4th Floor Center				270	0.16
	5 - Ground Floor North				270	0.05
	6 - 4th Floor Center				180	0.10
	7 - 4th Floor North				270	0.16
	8 - Ground Floor South				180	0.03
	9 - 4th Floor South				270	0.13
	Reche Canyon	34.004	(3)	(2)	330	0.02
	Olive Dell Ranch	117.223			Up	0.01
	(USGS) Ground				240	0.02
	Skinner Dam	33.575	(3)	(2)		
	[MWD]	117.081				
	Finished Water Reservoir				354	0.03
	Crest				Up	0.03
					084	0.03
	Left Abutment				178	0.01
					Up	0.01
					088	0.02
	Structure Array					
	Ch. 1 - Center crest				180	0.05
	2 - Center crest				Up	0.02
	3 - Center crest				270	0.08
	4 - Left crest				180	0.05
	5 - Left crest				270	0.05
	6 - Left slope				270	0.04
	7 - Center slope				180	0.03
	8 - Center slope				Up	0.02
	9 - Center slope				270	0.04
	10 - Center toe				180	0.02
	11 - Center toe				Up	0.02
	12 - Center toe				270	0.03
	Maricopa Array #2	35.040	(3)	(2)	040	0.03
	[CDWR] Ground	119.429			Up	0.01
					310	0.02
	Note: One additional record[1] recovered at Maricopa Array #2.					
	Maricopa Array #3	35.078	(3)	12.1	040	0.03
	[CDWR] Ground	119.401			Up	0.02
					310	0.04
	Note: One additional record[1] recovered at Maricopa Array #3					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Maricopa Array #4	35.131	(3)	12.0	040	0.03
	[CDWR] Ground	119.368			Up	0.01
					310	0.03
	Note: One additional record[1] recovered at Maricopa Array #4.					
	Buena Vista Pumping Plant	35.160	31:36.4	(2)	105	0.02
	Basement level (1)	119.344			Up	0.01
	[CDWR]				015	0.02
	Buena Vista Pumping Plant	35.160	31:36.4	(2)	105	0.02
	Ground level (4)	119.344			Up	0.01
	[CDWR]				015	0.02
	Buena Vista Pumping Plant	35.158	(3)	10.8	105	0.03
	Freefield	119.351			Up	0.01
	[CDWR]				015	0.04
17 January 1994-	Jensen Filter Plant	34.312				
18 January 1994	(MWD)	118.496				
Southern Calif.	Admin. Bldg. Basement		(3)	(2)	022	0.07
Epicenters and					Up	0.03
Magnitudes unknown					292	0.06
			(3)	2.3	022	0.06
					Up	0.05
					292	0.05
			(3)	1.6	022	0.04
					Up	0.03
					292	0.07
			(3)	1.6	022	0.07
					Up	0.09
					292	0.09
	Note: Thirty-two additional records[1] recovered at JFP admin. building, basement.					
	Generator Bldg.		(3)	(2)	022	0.12
					Up	0.04
					292	0.16
			(3)	(2)	022	0.06
					Up	0.03
					292	0.04
			(3)	(2)	022	0.07
					Up	0.03
					292	0.06
			(3)	1.2	022	0.05
					Up	0.05
					292	0.09

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
			(3)	1.3	022	0.07
					Up	0 .02
					292	0 .04
			(3)	1.8	022	0 .06
					Up	0.02
					292	0.07
			(3)	1.5	022	0.09
					Up	0.08
					292	0.06
			(3)	1.3	022	0.11
					Up	0.08
					292	0.19
			(3)	1.8	022	0.06
					Up	0.05
					292	0.06
	Note: Twenty-three additional records[1] recovered at JFP generator building.					
	Reservoir Roof		(3)	(2)	022	0.07
					Up	0.04
					292	0.08
			(3)	1.7	022	0.07
					Up	0 .06
					292	0 .08
			(3)	(2)	022	0 .08
					Up	0.08
					292	0.09
			(3)	1.9	022	0.12
					Up	0.07
					292	0.09
			(3)	3.2	022	0.12
					Up	0.04
					292	0.13
			(3)	1.7	022	0.06
					Up	0.05
					292	0.07
			(3)	1.2	022	0.08
					Up	0.04
					292	0.07
			(3)	1.9	022	0.09
					Up	0.03
					292	0.04

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 199[4]

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
			(3)	2.2	022	0.28
					Up	0.16
					292	0.15
			(3)	1.6	022	0.14
					Up	0.14
					292	0.08
			(3)	2.0	022	0.12
					Up	0.06
					292	0.20
			(3)	1.8	022	0.09
					Up	0.11
					292	0.12
			(3)	1.5	022	0.08
					Up	0.04
					292	0.05
			(3)	1.7	022	0.12
					Up	0.06
					292	0.23
			(3)	1.6	022	0.10
					Up	0.35
					292	0.28
			(3)	2.1	022	0.06
					Up	0.09
					292	0.17
	Note: Twenty-eight additional records[1] recovered at JFP reservoir roof.					
17 January 1994-	Los Angeles	34.185	(3)	2.8	360	0.08
20 January 1994	6301 Owensmouth Ave.	118.584			Up	0.13
Southern Calif.	(OWNR) Roof (12)				270	0.03
Epicenters and magnitudes unknown			(3)	2.8	360	0.06
					Up	0.09
					270	0.04
			(3)	3.0	360	0.08
					Up	0.09
					270	0.02
			(3)	3.0	360	0.08
					Up	0.08
					270	0.07
	Note: 32 additional records[1] recovered at 3601 Owensmouth Ave., roof.					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Sepulveda	34.249	(3)	1.4	360	0.15
	VA Hospital, Bldg. #40	118.475			Up	0.13
	(VA)				270	0.09
			(3)	1.8	360	0.10
					Up	0.04
					270	0.11
			(3)	2.0	360	0.08
					Up	0.02
					270	0.11
			(3)	2.2	360	0.09
					Up	0.02
					270	0.06
			(3)	2.1	360	0.07
					Up	0.03
					270	0.06
			(3)	2.3	360	0.11
					Up	0.02
					270	0.10
			(3)	1.8	360	0.07
					Up	0.05
					270	0.07
			(3)	0.8	360	0.12
					Up	0.02
					270	.07
			(3)	2.5	360	0.09
					Up	0 .03
					270	0.06
	Note: 25 additional records[1] recovered at Sepulveda VA hospital, Bldg. #40.					
	Los Angeles	34.175	(3)	2.3	360	0.23
	5805 Sepulveda Blvd.	118.465			Up	0.11
	(OWNR) Roof (9)				270	0.14
			(3)	2.2	360	0.06
					Up	0.03
					270	0.03
			(3)	2.6	360	0.07
					Up	0.12
					270	0.05
			(3)	2.9	360	0.07
					Up	0.05
					270	0.04

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
			(3)	1.1	360	0.06
					Up	0.05
					270	0.09
	Note: 25 additional records[1] recovered at 5805 Sepulveda Blvd., roof.					
	Los Angeles	34.156	(3)	(2)	120	0.08
	16000 Ventura Blvd.	118.480			Up	0.08
	(OWNR) Roof (13)				030	0.09
			(3)	2.1	120	0.04
					Up	0.06
					030	0.02
			(3)	0.5	120	0.03
					Up	0.07
					030	0.03
	Note: 27 additional records[1] recovered at 16000 Ventura Blvd., roof.					
	Los Angeles	34.058	(3)	3.7	070	0.05
	10920 Wilshire Blvd.	118.443			Up	0.08
	(OWNR) 19th level				340	0.04
	Note: Ten additional records[1] recovered at 10920 Wilshire Blvd., 19th level.					
	Los Angeles	34.157	(3)	2.5	360	0.15
	15250 Ventura Blvd.	117.476			Up	0.09
	(OWNR) Roof (13)				270	0.04
			(3)	3.0	360	0.06
					Up	0.05
					270	0.03
	Note: Eleven additional records[1] recovered at 15250 Ventura Blvd., roof.					
17 January 1994 1239:39.8 G.m.t. Southern Calif. 34.261N, 116.534W Magnitude 4.5 ML	Los Angeles Wadsworth VA Hospital (VA)	34.054 118.453				
	North Ground Site		39:44.6	3.9		(1)
	Note: Five additional records[1] recovered at Wadsworth VA north ground site.					
17 January 1994 1756:08.2 G.m.t. Southern Calif. 34.228N, 118.573W Magnitude 4.6 ML	Malibu Canyon Monte Nido Fire Station (USGS)	34.078 118.693	56:15.7	(2)		(1)
17 January 1994 2333:30.6 G.m.t. Southern Calif. 34.326N, 118.698W Magnitude 5.6 ML	Malibu Canyon Monte Nido Fire Station (USGS)	34.078 118.693	33.40.3	(2)		(1)

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
17 January 1994 - 18 January 1994 Southern Calif. Epicenters and magnitudes unknown	Sepulveda Canyon Spillway Roof (MWD)	34.097 118.475	(3)	2.5	166	0.07
					Up	0.04
					076	0.20
			(3)	(2)	166	0.08
					Up	0.03
					076	0.09
			(3)	(2)	166	0.03
					Up	0.02
					076	0.06
	Note: Seven additional records[1] recovered at Sepulveda Canyon spillway roof.					
17 January 1994- 18 January 1994 Southern Calif. Epicenters and magnitudes unknown	Santa Susana ETEC (DOE)	34.230 118.712				
	Building 463, Roof		(3)	2.2	090	0.04
					Up	0.10
					360	0.05
			(3)	(2)	090	0.03
					Up	0.07
					360	0.05
			(3)	2.5	090	0.06
					Up	0.07
					360	0.04
			(3)	2.1	090	0.27
					Up	0.25
					360	0.20
			(3)	(2)	090	0.08
					Up	0.21
					360	0.11
	Note: Four additional records[1] recovered at Santa Susana Building 463 roof.					
	Freefield		(3)	2.0	090	0.18
					Up	0.03
					360	0.13
	Note: Eight additional records[1] recovered at Santa Susana freefield.					
	Building 462, 1st Floor		(3)	2.0	090	0.16
					Up	0.05
					360	0.19
			(3)	(2)	090	0.05
					Up	0.05
					360	0.07
	Note: Five additional records[1] recovered at Santa Susana building 462, first floor.					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Building 462, 6th Floor		(3)	2.1	090	0.16
					Up	0.12
					360	0.14
			(3)	(2)	090	0.14
					Up	0.08
					360	0.08
	Note: Seven additional records[1] recovered at Santa Susana building 462, sixth floor.					
	Building 026, Ground Level		(3)	2.0	325	0.05
					Up	0.03
					235	---
			(3)	1.9	325	0.18
					Up	0.06
					235	---
			(3)	0.6	325	0.08
					Up	0.06
					235	---
	Note: Nine additional records[1] recovered at Santa Susana building 026, ground level.					
17 January 1994-	Los Angeles	34.072	(3)	1.6	360	0.12
4 March 1994	8436 West 3rd Street	118.375			Up	0.10
Southern Calif.	(OWNR) Roof (10th level)				270	0.26
Epicenters and magnitudes unknown			(3)	3.0	360	0.05
					Up	0.03
					270	0.05
	Note: Seventeen additional records[1] recovered at 8436 West 3rd Street, 10th level.					
20 January 1994	Eel River Valley Array	40.563	42:41.4	6.1		(1)
1541:33.2 G.m.t.	Centerville Beach	124.348				
Northern Calif.						
40.496N, 124.828W						
Magnitude 4.2ML						
1 February 1994	Hilo, Hawaii	19.720	(4)	(2)	352	0.05
1001:54.5 GMT	Hilo Hospital	155.120			Up	0.01
Hawaii	(USGS) Ground				262	0.08
19.244N, 155.288W						
Magnitude 5.3 MB	Hilo, Hawaii	19.731	(4)	(2)	090	0.03
	USDA Laboratory	155.100			Up	0.03
	(USGS) Ground				360	0.05
	Honokaa, Hawaii	20.080	(4)	(2)	110	0.04
	Honokaa Police Dept.	155.465			Up	0.05
	(USGS) Ground				020	0.05

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Honomolino, Hawaii	19.169	(4)	0.9	360	0.06
	MacFarms	155.169			Up	0.02
	(USGS) Ground				270	0.06
	Kohala, Hawaii	20.230	(4)	(2)	280	0.03
	Kohala-Kapaau Police Sta.	155.801			Up	0.02
	(USGS) Ground				190	0.02
	Kealakekua, Hawaii	19.523	(4)	(2)	360	0.03
	Kona Hospital	155.879			Up	0.02
	(USGS) Ground				270	0.02
	Laupahoehoe, Hawaii	19.987	(4)	(2)	360	0.05
	Laupahoehoe Post Office	155.236			Up	0.03
	(USGS) Ground				270	0.07
	Mauna Kea Summit	19.826	(4)	(2)	270	0.05
	UKIRT Observatory	155.473			Up	0.03
	(USGS) Ground				180	0.03
	Mauna Kea State Park	19.752	(4)	6.5	360	0.09
	Visitors Center	155.530			Up	0.04
	(USGS) Ground				270	0.04
	Mauna Loa Weather Sta.	19.539	(4)	6.1	360	0.04
	NOAA Observatory	155.580			Up	0.05
	(USGS) Ground				270	0.04
	Waimea, Hawaii	20.026	(4)	(2)	360	0.04
	Waimea Fire Station	155.664			Up	0.08
	(USGS) Ground				270	0.07
	Waiohina, Hawaii	19.070	(4)	1.5	360	0.07
	K'au Baseyard	155.615			Up	0.05
	(USGS) Ground				270	0.11
21 August 1993- 2 March 1994 Southern Calif. Epicenter and magnitude unknown	San Bernardino Array	34.105	(3)	(2)	360	0.05
	Fire Station No. 1	117.281			Up	0.02
	(USGS) Ground				270	0.04
28 April 1993- 2 March 1994 Southern Calif. Epicenter and magnitude unknown	San Jacinto	33.821	(3)	(2)	360	0.03
	San Jacinto Tunnel,	116.967			Up	0.03
	West Portal				270	0.02
	(USGS) Ground					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
10 June 1993-	San Bernardino Array	34.192	(3)	(2)	360	0.03
8 March 1994	Sycamore Forest Station	117.427			Up	0.01
Southern Calif.	(USGS) Ground				270	0.03
Epicenter and magnitude unknown						
20 March 1994	Alhambra	34.085	(3)	(2)		
2120:12.2 GMT	900 S. Fremont	118.149				
Southern Calif.	(USGS) Structure Array					
34.231N,118.475W						
Magnitude 5.3 ML	Ch. 1 - 12th Floor, Center				360	0.03
Northridge	Ch. 2 - 12th Floor , Center				090	0.01
Aftershock	Ch. 3 - 12th Floor, North end				090	0.01
	Ch. 4 - 6th Floor, Center				090	0.02
	Ch. 5 - 6th Floor, Center				360	0.03
	Ch. 6 - 6th Floor, North end				090	0.04
	Ch. 7 - 2nd Floor, Center				090	0.03
	Ch. 8 - 2nd Floor, Center				360	0.01
	Ch. 9 - 2nd Floor, North end				090	0.03
	Ch. 10 - Basement, Center				360	0.04
	Ch. 11 - Basement, Center				Up	0.02
	Ch. 12 - Basement, Center				090	0.03
	Jensen Filter Plant	34.312				
	(MWD)	118.496				
	Admin. Bldg.					
	Basement		(3)	1.7	022	0.22
					Up	0.08
					292	0.28
	Generator Bldg.					
	Ground level		(3)	1.1	022	0.17
					Up	0.11
					292	0.32
	Reservoir roof		(3)	1.5	022	0.28
					Up	0.14
					292	0.48
	Los Angeles	34.063	(3)	3.5	285	0.07
	Brentwood VA Hospital	118.463			Up	0.04
	(VA) Ground				195	0.05
	Los Angeles	34.118	(3)	1.1	360	0.03
	Griffith Observatory	118.299			Up	0 .04
	(USGS) Ground				270	0.07
	Los Angeles	34.249	(3)	3.2	360	0.35
	Sepulveda VA Hospital	118.453			Up	0.22
	(VA) Ground				270	0.11

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	34.040	(3)			
	1955 1/2 Perdue Ave.	118.445				
	(USGS)					
	Basement			3.2	235	0.13
					Up	0.05
					145	0.15
	First Floor			3.5	235	0.10
					Up	0.11
					145	0.10
	Third Floor			3.5	235	0.08
					Up	0.14
					145	0.11
	Los Angeles	34.067	(3)			
	1111 Sunset Blvd.	118.248				
	(MWD)					
	Basement			(2)	348	0.02
					Up	0.02
					258	0.02
	Fourth Floor			(2)	348	0.02
					Up	0.02
					258	0.02
	Roof (8th)			(2)	348	0.04
					Up	0.05
					258	0.03
	Los Angeles	34.053	(3)	3.7		
	Wadsworth VA Hospital	118.452				
	(VA) Structure Array					
	Ch. 1 - 6th Floor, North				235	0.11
	Ch. 2 - 6th Floor, North-center				235	0.09
	Ch. 3 - 6th Floor, Center				235	0.09
	Ch. 4 - 6th Floor, Center				055	0.11
	Ch. 5 - 6th Floor, South				055	0.12
	Ch. 6 - 6th Floor, South				335	0.07
	Ch. 7 - Basement, North-center				325	0.06
	Ch. 8 - Basement, North-center				235	0.05
	Ch. 9 - Basement, North-center				Down	0.02
	Los Angeles	34.054	(3)	3.2	325	0.07
	Wadsworth VA Hospital	118.453			Up	0.04
	(VA) North Ground Site				235	0.11
	Los Angeles	34.050	(3)	(2)	325	0.07
	Wadsworth VA Hospital	118.448			Up	0.03
	(VA) South Ground Site				235	0.07

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Lon. °W)	Egri er time	S-minus tri er (s)	Direction (az)	Maximum amplitude (g)
	Los Angeles	34.052	(3)	(2)		
	1100 Wilshire Blvd.	118.263				
	(USGS) Structure Array					
	Ch. 1 - 12th Floor North				298	0.02
	Ch. 2 - 12th Floor North				208	0.03
	Ch. 3 - 12th Floor South				208	0.02
	Ch. 4 - 13th Floor North				298	0.02
	Ch. 5 - 13th Floor North				208	0.04
	Ch. 6 - 13th Floor South				208	0.02
	Ch. 7 - 32nd Floor North				298	0.01
	Ch. 8 - 32nd Floor North				208	0.04
	Ch. 9 - 32nd Floor South				208	0.02
	Ch. 10 - Ground Floor North				298	0.04
	Ch. 11 - Ground Floor North				208	0.03
	Ch. 12 - Ground Floor South				208	0.03
	Los Angeles	34.052	(3)	(2)	298	0.02
	1100 Wilshire Blvd.	118.263			Up	0.02
	(USGS) Basement 3 NE				208	0.04
	Los Angeles	34.052	(3)	(2)	298	0.03
	1100 Wilshire Blvd.	118.263			Up	0.03
	(USGS) Basement 3 SE				208	0.02
	Los Angeles	34.052	(3)	(2)	298	0.02
	1100 Wilshire Blvd.	118.263			Up	0.01
	(USGS) Basement 4 NW				208	0.02
	Pasadena (Analog)	34.136	(3)	1.9	360	0.03
	535 S. Wilson Ave.	118.127			Up	0.03
	(USGS) Ground				270	0.04
	Sepulveda Canyon	34.097	(3)	2.4	166	0.11
	Spillway Building	118.475			Up	0.09
	(MWD) Ground				076	0.19
18 January 1994-	Santa Susana					
24 March 1994	Energy Tech. Eng. Ctr.					
Southern Calif.	(DOE)					
Epicenters and						
magnitudes unknown	Bldg. 026, Ground	34.232	(3)	(2)	325	0.01
		118.710			Up	0.01
					235	--
				(2)	325	0.02
					Up	0.03
					235	--
				2.7	325	0.02
					Up	0.01
					235	--

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
				(2)	325	0.02
					Up	0.01
					235	--
				(2)	325	0.09
					Up	0.05
					235	--
				(2)	325	0.02
					Up	0.01
					235	--
				1.7	325	0.05
					Up	0.04
					235	--
				(2)	325	0.04
					Up	0.04
					235	--
	Bldg. 462, 1st Floor	34.230	(3)	(2)	090	0.03
		118.712			Up	0.03
					360	0.04
				2.5	090	0.02
					Up	0.02
					360	0.03
				1.4	090	0.11
					Up	0.04
					360	0.10
				(2)	090	0.05
					Up	0.02
					360	0.05
	Bldg. 462, 6th Floor	34.230	(3)	(2)	090	0.10
		188.712			Up	0.06
					360	0.05
				2.5	090	0.03
					Up	0.03
					360	0.02
				1.6	090	0.10
					Up	0.06
					360	0.07
				(2)	090	0.05
					Up	0.04
					360	0.04

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Bldg. 463, Roof	34.230	(3)	(2)	090	0.09
		118.713			Up	0.11
					360	0.06
	Freefield	34.231	(3)	(2)	090	0.03
		118.713			Up	0.02
					360	0.03
				2.5	090	0.03
					Up	0.02
					360	0.02
				1.4	090	0.10
					Up	0.04
					360	0.07
				(2)	090	0.02
					Up	0.02
					360	0.04
6 April 1994	Loma Linda VA Hospital	34.050	(3)	3.3		
1901:04.0 GMT	Structure Array	117.249				
Southern Calif.	(VA)					
34.192N, 117.095W	Ch. 1 - Ground Floor, Center				Down	0.02
Magnitude 4.8 ML	Ch. 2 - Ground Floor, Center				180	0.03
	Ch. 3 - Ground Floor, Center				270	0.02
	Ch. 4 - 4th Floor, Center				270	0.07
	Ch. 5 - Ground Floor, North				270	0.04
	Ch. 6 - 4th Floor, Center				180	0.05
	Ch. 7 - 4th Floor, North				270	0.09
	Ch. 8 - Ground Floor, South				180	0.03
	Ch. 9 - 4th Floor, South				270	0.06
	San Bernardino	34.106				
	385 N. Arrowhead Ave.	117.287				
	(USGS) Structure Array		1901:08.2	3.4		
	Ch. 1 - 2nd Floor, NW				360	0.02
	Ch. 2 - 2nd Floor, NE				090	0.03
	Ch. 3 - 2nd Floor, NE				360	0.03
	Ch. 4 - 2nd Floor, SW				090	0.02
	Ch. 5 - 4th Floor, SW				090	0.03
	Ch. 6 - 4th Floor, NW				360	0.02
	Ch. 7 - Roof (6th), NE				090	0.04
	Ch. 8 - Roof (6th), NW				360	0.05
	Ch. 9 - Roof (6th), SW				090	0.04
	Ch. 10 - Roof (6th), NE				360	0.04
	Ch. 11 - 4th Floor, NE				090	0.02
	Ch. 12 - 4th Floor, NE				360	0.03

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
22 May 1992-	Coalinga	36.168	(3)	2.6	360	0.04
7 April 1994	Burnett Construction	120.357			Up	0.05
Central Calif.	(USGS) Ground				270	0.05
Epicenters and						
magnitudes unknown				2.4	360	0.04
					Up	0.03
					270	0.04
7 April 1994-	Coalinga	36.168	(3)	3.5	360	0.02
27 May 1994	Burnett Construction	120.357			Up	0.02
Central Calif.	(USGS) Ground				270	0.04
Epicenter and						
magnitude unknown						
8 July 1993-	San Antonio Dam	34.157	(3)	7.3	090	0.09
3 June 1994	Crest	117.676			Up	0.11
Southern Calif.	(ACOE)				360	0.36
Epicenter and						
magnitude unknown						
24 February 1993	Carson City	39.185	(4)	(2)	180	0.03
15 July 1994	W. Nevada Comm. College	119.790			Up	0.02
Eastern Calif.	(USGS) Ground				090	0.02
Epicenter and						
magnitude unknown						
26 June 1994	Great Western Savings	37.870				
0842: 50.2 GMT	2168 Shattuck Ave.	122.270				
Central Calif.	(USGS)					
37.917N, 122.289W						
Magnitude 4.2 ML	Basement, East		(4)	0.9	261	0.12
					Up	0.04
					171	0.09
	Basement, West		(4)	0.9	261	0.09
					Up	0.05
					171	0.08
	Structure Array		(4)	1.0		
	Ch. 1 - 13th Floor, East Core				171	0.13
	Ch. 2 - 13th Floor, East Core				261	0.09
	Ch. 3 - 13th Floor, Center				171	0.13
	Ch. 4 - 13th Floor, Roof West Core				171	0.12
	Ch. 5 - 13th Floor, Roof West Core				081	0.10
	Ch. 6 - 13th Floor, Southwest				081	0.08
	Ch. 7 - 13th Floor, Southwest				171	0.11
	Ch. 8 - 4th Floor, Southwest				171	0.15
	Ch. 9 - 4th Floor, Southwest				081	0.16
	Ch. 10 - 4th Floor, West Core				081	0.13
	Ch. 11 - 4th Floor, West Core				171	0.08
	Ch. 12 - 4th Floor, East Core				171	0.10

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Berkeley	37.870	(3)	1.1	135	0.07
	Univ. of California	122.260			Up	0.02
	Haviland Hall				045	0.06
	(USGS)					
	Berkeley	37.870	(3)	1.3	135	0.04
	Univ. of California	122.240			Up	0.03
	Strawberry Canyon				045	0.06
	(USGS)					
	Emeryville	37.844				
	6363 Christie Ave.	122.295				
	(USGS)					
	Ground Site, South		(4)	(2)	135	0.02
					Up	0.08
					045	0.03
	Structure Array 1:		(3)	(2)		
	Ch. 1 - Roof (31st), West Wing				350	0.02
	Ch. 2 - Roof (31st), South Wing				050	0.02
	Ch. 3 - Roof (31st), North Wing				290	0.02
	Ch. 4 - Roof (31st), Central Core				350	0.02
	Ch. 5 - Roof (31st), Central Core				260	0.02
	Ch. 6 - 21st Floor, Central Core				350	0.02
	Ch. 7 - 21st Floor, West Wing				350	0.02
	Ch. 8 - 21st Floor, South Wing				050	0.02
	Ch. 9 - 21st Floor, North Wing				290	0.01
	Ch. 10 - 13th Floor, Central Core				350	0.02
	Ch. 11 - 13th Floor, Central Core				260	0.02
	Ch. 12 - 21st Floor, Central Core				260	0.02
	Structure Array 2:		(3)	(2)		
	Ch. 1 - 13th Floor, West Wing				350	0.03
	Ch. 2 - 13th Floor, South Wing				050	0.02
	Ch. 3 - 13th Floor, North Wing				290	0.01
	Ch. 4 - Ground Floor, West Wing				Up	0.06
	Ch. 5 - Ground Floor, South Wing				Up	0.05
	Ch. 6 - Ground Floor, Central Core				Up	0.04
	Ch. 7 - Ground Floor, North Wing				260	0.02
	Ch. 8 - Ground Floor, North Wing				Up	0.04
	Ch. 9 - Ground Floor, North Wing				350	0.02
	Ch. 10 - Ground Site, North				350	0.03
	Ch. 11 - Ground Site, North				Up	0.08
	Ch. 12 - Ground Site, North				260	0.03
	Richmond Bulk Mail	37.884	(3)	(2)	057	0.02
	2501 Rydin Rd.	122.302			Up	0.02
	(USGS)				327	0.02

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
10 September 1994	Hanson Dam	47.282				
0743:11.3 GMT	(ACOE)	121.791				
Washington						
47.186N, 121.959W	Crest		(3)	1.2	050	0.05
Magnitude 4.1 ML					Up	0.05
					320	0.07
	Left Abutment		(3)	(2)	050	0.02
					Up	0.04
					320	0.04
	Toe		(3)	2.7	050	0.02
					Up	0.02
					320	0.03
	Mud Mountain Dam	47.140	(3)	(2)	314	0.04
	(ACOE)	121.930			Up	0.02
					224	0.04
12 September 1994	Buchannan Dam	37.217				
1223:43.2 GMT	(ACOE)	119.983				
Calif. - Nev. Border						
38.819N, 119.652W	Center Crest		(3)	(2)	340	0.02
Magnitude 6.0 ML					Up	0.01
					250	0.02
	Left Crest		(3)	(2)	360	0.02
					Up	0.01
					270	0.02
	Hidden Dam	37.112				
	(ACOE)	119.883				
	Center Crest		(3)	(2)	100	0.02
					Up	0.01
					010	0.01
20 December 1994	Parkfield Liquefaction Array	35.797				
1027:47.1	(USGS)	120.337				
Central Calif.						
35.917N, 120.465W	Ground Site		(3)	1.2	315	0.05
Magnitude 5.0 ML					Up	0.04
					225	0.09
	Accelerometer/Piezometer Array 1:		(3)	3.3		
	Ch. 1 - Downhole, 38.5 ft.				315	0.05
	Ch. 2 - Downhole, 38.5 ft.				Up	0.02
	Ch. 3 - Downhole, 38.5 ft.				225	0.03
	Ch. 4 - Downhole, 9 ft.				315	0.07
	Ch. 5 - Downhole, 9 ft.				Up	0.03
	Ch. 6 - Downhole, 9 ft.				225	0.06
	Note: Channels 7 - 12 are downhole piezometers.					

Table 1. National Strong-Motion Program Accelerograph Records Recovered During 1994

Earthquake	Station Name (Owner)	Coordinates (Lat. °N Long. °W)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)
	Accelerometer/Piezometer Array 2:		(3)	3.3		
	Ch. 1 - Downhole, 98.5 ft.				315	0.05
	Ch. 2 - Downhole, 98.5 ft.				Up	0.02
	Ch. 3 - Downhole, 98.5 ft.				225	0.05
	Ch. 4 - Downhole, 14.0 ft.				315	0.06
	Ch. 5 - Downhole, 14.0 ft.				Up	0.02
	Ch. 6 - Downhole, 14.0 ft.				225	0.06
	Ch. 7 - Surface				315	0.10
	Ch. 8 - Surface				Up	0.06
	Ch. 9 - Surface				225	0.10
	Note: Channels 10 - 12 are downhole piezometers.					
	Coalinga	36.168	(3)	(2)	360	0.02
	Burnett Construction	120.357			Up	0.01
	(USGS) Ground				270	0.01

1 Less than 0.05 *g* at ground level or less than 0.10 *g* at non-ground-level stations.
2 Questionable or indeterminable.
3 WWVB time code illegible, or instrument not equipped with a radio reciever; correlation of accelerogram with event may be questionable or identity of event unknown.
4 Contains internal clock for event correlation only (accuracy is widely variable).

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