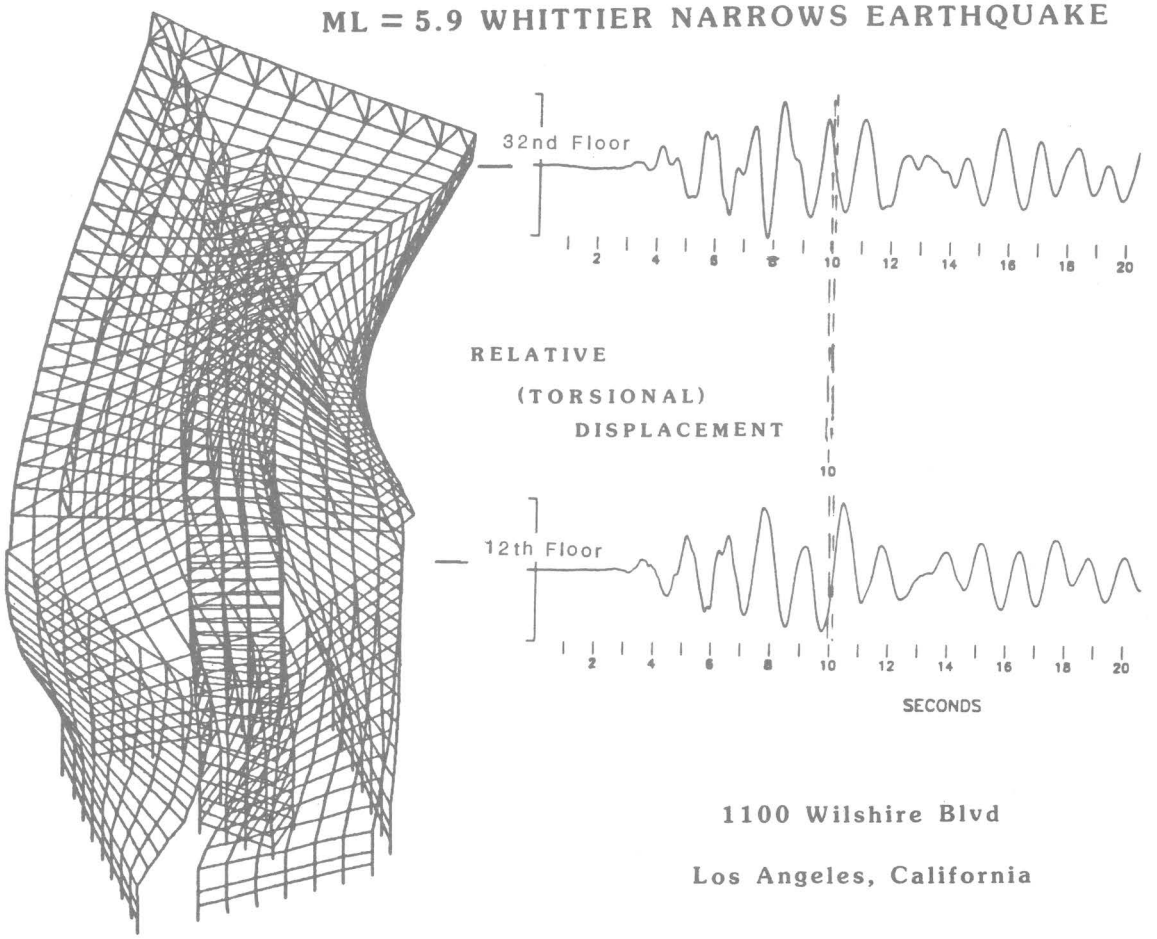
U.S. GEOLOGICAL SURVEY CIRCULAR 1044

Catalogue of U.S. Geological Survey Strong-Motion Records, 1987



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Catalogue of U.S. Geological Survey Strong-Motion Records, 1987

Compiled by RONALD L. PORCELLA and
JOSEPHINE C. SWITZER

U.S. GEOLOGICAL SURVEY CIRCULAR 1044

DEPARTMENT OF THE INTERIOR
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U.S. GEOLOGICAL SURVEY
Dallas L. Peck, Director

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Front Cover: This figure is a finite element model showing the relative displacements (rotation time history) measured at the 12th and 32d floors of the JCG Finance Corp. building at 1100 Wilshire Boulevard in Los Angeles during the M_L=5.9 Whittier Narrows earthquake (Celebi and others, 1989). The 33-story building is a 21-story triangular-in-plan tower above a 12-story rectangular-in-plan structure; a common rigid frame in the core connects the two configurations. The earthquake was recorded on 21 acceleration sensors strategically located at the basement, ground, 12th, 13th, and 32d floors so as to detect any translational, torsional, or rocking motions of the structure. These records show that the building responded in the coupled translation torsional mode; however, the torsional is a second mode such that the upper triangular tower rotated in an opposite sense when compared to the lower rectangular structure.

Reference: Celebi, M., Safak, E., and Youssef, N., 1989, Analysis of recorded responses of a unique building in Los Angeles to motions caused by the Whittier Narrows, California earthquake of October 1, 1987: U.S. Geological Survey Open-File Report 89-542, 77 p.

PREFACE

The first seismic engineering program in the United States was administered by the Seismological Field Survey (SFS) of the 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 National Earthquake Hazards Reduction Program. The current Federal seismic engineering program operates the National Cooperative Strong-Motion Network (NCSMN) with nearly 1,000 stations in 41 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 Veterans Administration, 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 NCSMN stations that had been published in that format since 1974. This report includes all accelerograms recovered during 1987. Unless otherwise noted, event data are from the "Preliminary Determination of Epicenters," published weekly by the U.S. Geological Survey.

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Catalogue of U.S. Geological Survey Strong-Motion Records, 1987

Compiled by Ronald L. Porcella *and* Josephine C. Switzer

INTRODUCTION

Nearly 550 accelerograph records were recovered from the National Cooperative Strong-Motion Network (NCSMN) during 1987. This compares with an annual average of 247 records for the period 1974 through 1986. U.S. Geological Survey NCSMN stations in California, Alaska, and Hawaii recorded 11 earthquakes of M=5.0 or greater during 1987, including the M_L=5.9 Whittier Narrows earthquake on October 1 and the M_L=6.1 Superstition Hills earthquake on November 24.

Accelerographs at 52 NCSMN stations in the Los Angeles region were triggered by the October 1 Whittier Narrows main shock and produced 358 channels of acceleration data. These data include recordings from extensively instrumented structures such as high-rise buildings in Los Angeles, Norwalk, and Newport Beach, a hospital in Loma Linda, a reservoir near Live Oak, and a base-isolated pipeline bridge across the Santa Ana River.

Maximum recorded acceleration was 0.63 *g* at the basement level of a 10-story building in Whittier. Within an epicentral distance of 25 km, 14 stations produced peak horizontal ground motions in excess of 0.15 *g* (see Etheredge and Porcella, 1987).

The M_L=5.3 Whittier Narrows aftershock on October 4, 1987, produced strong-motion records at 30 of the 52 NCSMN main-shock stations. These stations include 11 buildings, 9 dams, 4 hospitals, and 5 ground sites at epicentral distances ranging from 2 to 57 km. Significant ground motions were recorded at 6 stations within an epicentral distance of 12 km and are in the range 0.15 to 0.33 *g* (Etheredge and Porcella, 1988).

Two moderate-sized earthquakes occurred on November 24 in the northwest Imperial Valley of California. The first event (M_L=5.8) triggered accelerographs at 24 NCSMN stations; the second event (M_L=6.1) triggered instruments at 39 NCSMN stations. Six station records exceed 0.1 *g* for the first event, and 25 records from stations within 60 km contain peak horizontal ground motions in excess of 0.1 *g* (Porcella and others, 1987).

Additional magnitude 5 or greater earthquakes recorded at NCSMN stations in 1987, including the date, location, magnitude, and number of NCSMN stations triggered, are as follows: Feb. 4, Hawaii, 5.2, four records; Feb. 7, southern Calif., 5.4, one record; Feb. 14, central Calif., 5.2, two records; April 18, Alaska, 5.7, five records; July 31, northern Calif., 5.4, seven records; Nov. 11, Alaska, 7.0, four records; and Nov. 30, Alaska, 7.1, seven records.

Manuscript approved for publication, November 21, 1989.

REFERENCES

Etheredge, E., and Porcella, R., 1987, Strong-motion data from the October 1, 1987 Whittier Narrows Earthquake: U.S. Geological Survey Open-File Report 87–616, 64 p.

Etheredge, E., and Porcella, R., 1988, Strong-motion data from the Whittier Narrows aftershock of October 4, 1987: U.S. Geological Survey Open-File Report 88–38, 32 p.

Porcella, R., Etheredge, E., Maley, R., and Switzer, J., 1987, Strong-motion data from the Superstition Hills earthquakes of 0154 and 1315 (Gmt), November 24, 1987: U.S. Geological Survey Open-File Report 87–672, 56 p.

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987

[Station owners: ACOE, U.S. Army Corps of Engineers; BECH, Bechtel Power Corporation; CDOT, California Department of Transportation; CDWR, California Department of Water Resources; CIT, California Institute of Technology; DOE, U.S. Department of Energy; GLDN, U.S. Geological Survey, Golden, Colorado; JCG, JCG Finance Corporation of America; MANC, Municipality of Anchorage, Alaska; MWD, Los Angeles Metropolitan Water District; USGS, U.S. Geological Survey; VA, U.S. Veterans Administration. Instrument trigger time in minutes and seconds after the hour listed in earthquake column. Trigger time in brackets is P-wave arrival time as event occurred while instrument was in operation. S-minus trigger denotes S-wave-arrival-minus-trigger-time (S-t) or S-wave-minus-P-wave-arrival time (S-P, in brackets) interval. 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. Duration is interval between first and last peaks of acceleration greater than 0.10 g.]

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
3 January 1987 1309 G.m.t. Hawaii Epicenter and magnitude unknown	Honokaa, Hawaii Police Station (USGS)	20.080N 155.465W	09:17.5[4]	(2)		(1)	
3 January 1987 1801:06.2 G.m.t. Southern Calif. 33.500N, 116.480W Magnitude 3.5 ML	Pinyon Flat Observ. ANZA Array (USGS)	33.61 N 116.46 W	01:10.1	(2)		(1)	
28 April 1986- 12 January 1987 Central Calif. Epicenter and magnitude unknown	Milpitas, Forshee 759 Rivera Street (USGS)	37.450N 121.896W	(3)	0.5		(1)	
16 January 1987 1252 G.m.t. Hawaii Epicenter and magnitude unknown	Honokaa, Hawaii Police Station (USGS)	20.080N 155.465W	52:51.0[4]	(2)		(1)	
19 January 1987 0809:04.4 G.m.t. Central Calif. 37.150N, 121.582W Magnitude 4.3 ML	Anderson Dam Morgan Hill (USGS)	37.165N 121.631W	(3)	0.8			
	Downstream					(1)	
21 January 1987 1118:27.3 G.m.t. Eastern Calif. 37.442N, 118.382W Magnitude 3.4 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	18:31.7[4]	(2)		(1)	
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	18:27.7[4]	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
21 January 1987 1142:57.1 G.m.t. Eastern Calif. 37.447N, 118.382W Magnitude 3.5 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	43:01.4[4]	2.3		(*1*)	
27 January 1987 1757:11.3 G.m.t. Eastern Calif. 37.608N, 118.463W Magnitude 3.8 ML	South Hammil Valley White Mountain Ranch (USGS)	37.62 N 118.39 W	57:16.6[4]	1.4		(*1*)	
4 February 1987 0222:32.7 G.m.t. Hawaii 20.053N, 156.530W Magnitude 5.2 ML	Honokaa, Hawaii Police Station (USGS)	20.080N 155.465W	23:04.1[4]	(*2*)		(*1*)	
	Kealakekua, Hawaii Kona Hospital (USGS)	19.523N 155.879W	22:58.7[4]	(*2*)		(*1*)	
	Kapaau, Hawaii Kohala Police Station (USGS)	20.230N 155.801W	22:57.4[4]	(*2*)	102 Up 012	.06 .03 .04	--- --- ---
	Mauna Kea, Hawaii State Park (USGS)	19.752N 155.530W	23:04.2[4]	(*2*)		(*1*)	
7 February 1987 0345:14.7 G.m.t. Southern Calif. 32.390N, 115.310W Magnitude 5.4 ML	Calexico Fire Station (USGS)	32.67 N 115.49 W	45:23.3	4.3		(*1*)	
14 February 1987 0726:51.7 G.m.t. Central Calif. 36.148N, 120.335W Magnitude 5.2 ML	Coalinga Oil City (USGS)	36.229N 120.360W	26:54.3	2.2	360 Up 270	.21 .07 .26	0.4 --- 0.6
	Hidden Dam (ACOE)	37.112N 119.883W	27:22.5	(*2*)			
	Left Crest					(*1*)	
21 February 1987 1205:32.4 G.m.t. Eastern Calif. 37.510N, 118.400W Magnitude 3.1 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	05:36.8[4]	0.7		(*1*)	
21 February 1987 1302:19.6 G.m.t. Central Calif. 36.590N, 121.228W Magnitude 3.3 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	02:27.1	(*2*)		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
21 February 1987 2315:29.9 G.m.t. Southern Calif. 34.130N, 117.450W Magnitude 3.9 ML	Sycamore Forest Sta. Angeles Forest (USGS)	34.193N 117.426W	15:33.7	(*2*)		(*1*)	
25 February 1987 0615 G.m.t. Eastern Calif. Epicenter and magnitude unknown	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	15:44.2	(*2*)		(*1*)	
	McGee Creek Mammoth Lakes (USGS) CRA-1	37.550N 118.811W	15:44.2	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface					(*1*)	
	1 m downhole					(*1*)	
26 February 1987 1302:00.2 G.m.t. Eastern Calif. 37.547N, 118.890W Magnitude 3.5 ML	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	02:00.5	0.8	360 Up 270	.09 .04 .05	--- --- ---
	Note: CRA-1 failed during 26 February earthquake (1302:00.2 G.m.t.).						
27 February 1987 1624:57.7 G.m.t. Eastern Calif. 37.542N, 118.887W Magnitude 3.9 ML	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	24:58.9	(*2*)	360 Up 270	.06 .03 .05	--- --- ---
	McGee Creek Mammoth Lakes (USGS) CRA-1	37.550N 118.811W	24:58.9	(*2*)			
	166 m downhole					(*1*)	
	35 m downhole					(*1*)	
	Surface				360 Up 270	.06 .05 .06	--- --- ---
	1 m downhole					(*1*)	
1 March 1987 0911:50.3 G.m.t. Eastern Calif. 37.482N, 118.853W Magnitude 3.1 ML	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	11:52.0	(*2*)		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recove-ed during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 March 1987 0911:50.3 G.m.t. Eastern Calif. 37.482N, 118.853W Magnitude 3.1 ML--*Continued*	McGee Creek Mammoth Lakes (USGS) CRA-1	37.550N 118.811W	11:52.0	(2)			
	166 m downhole					(1)	
	35 m downhole					(1)	
	Surface					(1)	
	1 m downhole					(1)	
5 March 1987 0655:25.2 G.m.t. Central Calif. 36.578N, 121.198W Magnitude 2.8 ML	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	55:27.0	(2)		(1)	
11 December 1986-9 March 1987 Hawaii Epicenter and magnitude unknown	Waimea, Hawaii Fire Station (USGS)	20.03 N 155.66 W	(3)	(2)		(1)	
11 March 1987 1944 G.m.t. Eastern Calif. Epicenter and magnitude unknown	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	44:42.1	(2)		(1)	
	McGee Creek Mammoth Lakes (USGS) CRA-1	37.550N 118.811W	44:42.1	(2)			
	166 m downhole					(1)	
	35 m downhole					(1)	
	Surface					(1)	
	1 m downhole					(1)	
25 March 1987 0625 G.m.t. Hawaii Epicenter and magnitude unknown	Waimea, Hawaii Fire Station (USGS)	20.026N 155.664W	25:26.9[4]	(2)		(1)	
29 September 1986-31 March 1987 Central Calif. Epicenter and magnitude unknown	Livermore VA Hospital (B-62) (VA)	37.625N 121.762W	(3)	(2)			
	Basement					(1)	
	Roof (7th floor)					(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
10 April 1987 0451:46.4 G.m.t. Central Calif. 37.563N, 121.677W Magnitude 3.6 ML	Livermore VA Hospital (B-62) (VA)	37.625N 121.762W	(3)	2.0			
	Basement					(1)	
	Roof (7th floor)				125 Up 035	.05 .01 .02	--- --- ---
16 July 1986- 11 April 1987 Southern Calif. Epicenters and magnitudes unknown	ANZA Array Rarick Springs (USGS)	33.57 N 116.52 W	(3)	(2)		(1)	
	Note: One additional record[1] recovered at Rarick Springs.						
13 April 1987 0947:00.9 G.m.t. Central Calif. 36.853N, 121.435W Magnitude 2.7 ML	Hollister Damler Residence (USGS)	36.807N 121.408W	(3)	1.7		(1)	
18 April 1987 0201:38.8 G.m.t. Southern Alaska 61.374N, 150.656W Magnitude 5.7 MB	Anchorage Pacific University (USGS)	61.189N 149.801W	(3)	(2)	360 Up 270	.05 .01 .05	--- --- ---
	Anchorage Fire Station No. 2 (MANC)	61.230N 149.864W	(3)	8.6		(1)	
	Anchorage Fire Station No. 4 (MANC)	61.182N 149.848W	(3)	(2)		(1)	
	Note: 2 additional records[1] recovered at Fire Station No. 4.						
	Anchorage Fire Station No. 6 (USGS/GLDN)	61.21 N 149.75 W	01:50.3[4]	8.8		(1)	
	Anchorage Fire Station No. 7 (MANC)	61.146N 149.950W	(3)	9.0		(1)	
12 October 1986- 26 April 1987 Central Calif. Epicenter and magnitude unknown	Sunol Wilderness Regional Park (USGS)	37.515N 121.830W	(3)	0.4		(1)	
27 April 1987 1641 G.m.t. Hawaii Epicenter and magnitude unknown	Honokaa, Hawaii Police Station (USGS)	20.080N 155.465W	41:13.1[4]	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
27 April 1987 1741:24.0 G.m.t. Southern Calif. 33.060N, 115.570W Magnitude 3.5 ML	Imperial Wildlife Liquefaction Array (USGS)	33.097N 115.530W	(3)	1.6		(1)	
30 April 1987 1924:22.2 G.m.t. Central Calif. 36.840N, 121.283W Magnitude 4.1 ML	Hollister Differential Array (USGS)	36.888N 121.413W	24:25.5	2.6		(1)	
15 December 1986- 6 June 1987 Central Calif. Epicenters and magnitudes unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	(3)	(2)	310 Up 220	.06 .04 .05	--- --- ---
	Note: Five additional records[1] recovered at Webb Residence.						
6 June 1987 1623 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	23:48.4	1.1		(1)	
21 June 1987 0613 G.m.t. Hawaii Epicenter and magnitude unknown	Waimea, Hawaii Fire Station (USGS)	20.026N 155.664W	13:42.8[4]	(2)		(1)	
21 June 1987 0616:27.3 G.m.t. Eastern Calif. 37.550N, 118.793W Magnitude 3.4 ML	McGee Creek Mammoth Lakes (USGS) SMA-1	37.550N 118.811W	16:27.6	(2)		(1)	
	McGee Creek Mammoth Lakes (USGS) CRA-1	37.550N 118.811W	16:27.6	(2)			
	166 m downhole					(1)	
	35 m downhole					(1)	
	Surface					(1)	
	1 m downhole					(1)	
23 October 1986- 10 July 1987 Southern Calif. Epicenters and magnitudes unknown	Whitewater Trout Farm (USGS)	33.989N 116.655W	(3)	(2)		(1)	
	Note: Three additional records[1] recovered at Whitewater Trout Farm.						

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
12 July 1987 1937:30.9 G.m.t. Eastern Calif. 37.520N, 118.470W Magnitude 3.1 ML	Chalfant Valley Fire Station (USGS)	37.53 N 118.37 W	37:40.1[4]	(2)	360 Up 270	.05 .03 .04	--- --- ---
	Laws, Calif. Northeast Bishop (USGS)	37.402N 118.346W	37:30.7[4]	(2)		(1)	
29 July 1987 0352:32.5 G.m.t. Eastern Calif. 38.367N, 118.170W Magnitude 4.6 ML	Mina, Nevada Black Star Mine (USGS)	38.434N 118.154W	(3)	(2)		(1)	
31 July 1987 2356:58.0 G.m.t. Northern Calif. 40.415N, 124.407W Magnitude 5.5 ML	Eel River Valley Array Bunker Hill FAA (USGS)	40.498N 124.294W	57:04.2	0.7	360 Up 270	.13 .03 .09	--- --- ---
	Eel River Valley Array Butler Valley Sta. 2 (USGS)	40.79 N 123.88 W	(3)	(2)	060 Up 330	.09 .02 .07	--- --- ---
	Eel River Valley Array Centerville Beach (USGS)	40.563N 124.348W	(3)	2.6	360 Up 270	.26 .15 .24	3.5 0.3 2.7
	Eel River Valley Array College of Redwoods (USGS)	40.699N 124.200W	(3)	6.0	360 Up 270	.08 .04 .08	--- --- ---
	Eel River Valley Array Fortuna Fire Station (USGS)	40.599N 124.154W	(3)	5.4	360 Up 270	.22 .07 .08	1.5 --- ---
	Eel River Valley Array Loleta Fire Station (USGS)	40.644N 124.219W	(3)	5.5	360 Up 270	.17 .14 .13	2 peaks 0.9 0.6
	Eel River Valley Array South Bay Union School (USGS)	40.735N 124.207W	(3)	5.3	360 Up 270	.05 .04 .11	--- --- 1 peak
3 August 1987 0948:03.7 G.m.t. Eastern Calif. 38.390N, 118.060W Magnitude 4.4 ML	Mina, Nevada Black Star Mine (USGS)	38.434N 118.154W	(3)	(2)		(1)	
17 August 1987 1428:07.4 G.m.t. Central Calif. 36.555N, 121.158W Magnitude 2.8 ML	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	28:08.9	1.1	310 Up 220	.06 .03 .10	--- --- 1 peak

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
25 August 1987 0627:26.6 GMT Southern Calif. 34.360N, 117.580W Magnitude 3.6 ML	Lone Pine Canyon (USGS)	34.32 N 117.57 W	27:28.4	1.3		(*1*)	
4 December 1986-26 August 1987 Southern Calif. Epicenters and magnitudes unknown	Diemer Filter Plant (MWD)	33.91 N 117.82 W	(*2*)	(*2*)			
	Basement					(*1*)	
	Reservoir Roof					(*1*)	
	Note: One additional record[1] recovered in the basement and on the reservoir roof at Diemer Filter Plant.						
1 September 1987 1656 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	56:43.1	(*2*)		(*1*)	
7 September 1987 1314:56.9 G.m.t. Central Alaska 64.955N, 147.929W Magnitude 4.2 ML	Fairbanks University of Alaska Duckering Hall (USGS)	64.85 N 147.82 W	(*3*)	(*2*)		(*1*)	
	Fairbanks University of Alaska Magnetic Observatory (USGS)	64.86 N 147.83 W	(*3*)	2.2		(*1*)	
14 September 1987 0712 G.m.t. Central Calif. Epicenter and magnitude unknown	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	12:52.8	(*2*)		(*1*)	
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML	Garvey Reservoir Abutment Bldg. (MWD)	34.05 N 118.11 W	(*3*)	0.2	060 Up 330	.33 .38 .47	4.6 5.0 4.3
	Whittier Narrows Dam (ACOE)	34.03 N 118.05 W	(*3*)	0.8			
	Crest				033 Up 303	.31 .19 .32	4.3 3.8 2.5
	Upstream				152 Up 062	.31 .46 .24	4.4 6.2 2.6

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML-- *Continued*	Alhambra 900 S. Fremont Ave. (USGS)	34.09 N 118.15 W	(3)	1.7			
	Basement				090 Up 360	.30 .19 .26	3.7 3.2 3.4
	6th Floor				090 Up 360	.47 .18 .37	5.2 3.8 6.0
	12th Floor				090 Up 360	.28 .29 .23	3.4 5.5 4.8
	Note: Five each additional records[1] recovered from basement, 6th and 12th floors at Alhambra.						
	Whittier 7215 Bright Ave. (USGS)	33.977N 118.036W	(3)	0.3			
	Basement				180 Up 090	.40 .26 .63	1.9 4.0 3.0
	5th Floor				180 Up 090	.61 .34 .60	3.0 4.2 6.6
	10th Floor				180 Up 090	.41 .54 .54	3.5 6.0 6.3
	Los Angeles 4407 Jasper Street (USGS)	34.081N 118.188W	(3)	(2)	130 Up 040	.33 .13 .23	2.8 2.1 2.9
	Note: Partial record, film fogged for approx. the first 3 sec. after triggering.						
	Los Angeles Bulk Mail Center (USGS)	33.99 N 118.16 W	(3)	0.9	010 Up 280	.34 .52 .46	4.3 3.8 4.2
	Vernon 4814 Loma Vista Ave. (USGS)	34.00 N 118.20 W	(3)	2.9	007 Up 277	.29 .17 .22	2.6 2.8 2.6
	Morris Dam Left Abutment (MWD)	34.17 N 117.88 W	(3)	(2)	246 Up 156	.04 .04 .05	--- --- ---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Norwalk, 12400 Imperial Highway (USGS/BECH)	33.92 N 118.07 W	(3)	2.4			
	Basement				090	.12	1 peak
					Up	.07	---
					360	.21	1.6
	4th Floor				090	.17	0.4
					Up	.12	1 peak
					360	.33	4.7
	Roof				090	.21	5.9
					Up	.18	2.8
					360	.40	6.7
	South Ground Site				090	.10	1 peak
					Up	.09	---
					360	.29	2.0
	Note: Two additional records[1] recovered at south ground site.						
	Norwalk, 12440 Imperial Highway (USGS/BECH)	33.92 N 118.07 W	42:24.7	2.8			
	Basement				090	.11	1 peak
					Up	.10	1 peak
					360	.21	1.3
	North Ground Site				090	.13	0.4
					Up	.13	0.2
					360	.24	1.3
	South Ground Site				090	.09	---
					Up	.10	1 peak
					360	.21	1.3
	Structure Array 1:						
	Ch. 1- 8th Floor (Roof) Center				090	.18	7.1
	Ch. 2- 5th Floor, Center				090	.15	5.4
	Ch. 3- 2nd Floor, Center				090	.12	2 peaks
	Ch. 4- 1st Floor, Center				090	.13	1.0
	Ch. 5- Basement, East				360	.19	0.7
	Ch. 6- 5th Floor, West-Center				360	.23	8.7
	Ch. 7- Basement, Center				Up	.05	---
	Ch. 8- Basement, Center				090	.11	0.7
	Ch. 9- Basement, Center				360	.20	0.9
	Ch. 10- 30 ft. Downhole, Bldg. Center				Up	.05	---
	Ch. 11- 30 ft. Downhole, Bldg. Center				090	.10	0.2
	Ch. 12- 30 ft. Downhole, Bldg. Center				360	.16	0.4

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Norwalk, 12440--*Continued*						
	Structure Array 2:						
	Ch. 13- 8th Floor (Roof), East				360	.31	9.5
	Ch. 14- 5th Floor, East				360	.14	0.3
	Ch. 15- 2nd Floor, East				360	.17	0.5
	Ch. 16- 1st Floor, East				360	.18	1.1
	Ch. 17- 8th Floor (Roof), Center				360	.41	14.7
	Ch. 18- 5th Floor, Center				360	.26	---
	Ch. 19- 2nd Floor, Center				360	.30	2.1
	Ch. 20- 1st Floor, Center				360	.23	1.6
	Ch. 21- 8th Floor (Roof), West				360	.27	11.2
	Ch. 22- 5th Floor, West				360	.12	1.7
	Ch. 23- 2nd Floor, West				360	.19	0.5
	Ch. 24- 1st Floor, West				360	.22	1.4
	Note: Channel 18 failed after 2.5 sec.						
	Los Angeles 1111 Sunset Blvd. (MWD)	34.07 N 118.25 W	(3)	2.4			
	Basement				348	.16	2.2
					Up	.07	---
					258	.11	0.7
	4th Floor				348	.19	4.0
					Up	.09	---
					258	.11	1 peak
	Roof				348	.18	3.8
					Up	.22	3.8
					258	.15	1.9
	Note: Three each additional records[1] recovered from basement, 4th floor and roof at 1111 Sunset Boulevard.						
	Los Angeles Griffith Park Observ. (USGS)	34.12 N 118.30 W	(3)	2.3	360	.13	2.2
					Up	.06	---
					270	.15	2.0
	Note: One additional record[1] recovered at Griffith Park Observatory.						
	Orange County Resvr. (MWD)	33.935N 117.883W	(3)	1.2			
	Abutment				096	.23	1.7
					Up	.10	0.2
					006	.21	1.5
	Long Beach, CSULB Humanities Bldg. Basement (USGS)	33.777N 118.112W	(3)	4.5	104	.09	---
					Up	.05	---
					014	.09	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Los Angeles 1100 Wilshire Blvd. (JCG/USGS)	34.052N 118.263W	42:24.5	2.9			
	Basement 3, NE				298	.18	1.1
					Up	.07	---
					208	.12	1.3
	Basement 3, SE				298	.18	0.8
					Up	.07	---
					208	.11	0.2
	Basement 4, NW				298	.17	1.0
					Up	.08	---
					208	.11	1 peak
	Structure Array:						
	Ch. 1- 12th Floor, North				298	.13	2 peaks
	Ch. 2- 12th Floor, North				208	.24	1.2
	Ch. 3- 12th Floor, South				208	.10	0.4
	Ch. 4- 13th Floor, North				298	.14	3 peaks
	Ch. 5- 13th Floor, North				208	.26	3.2
	Ch. 6- 13th Floor, South				208	.12	2 peaks
	Ch. 7- 32nd Floor, North				298	.17	1.6
	Ch. 8- 32nd Floor, North				208	.19	5.2
	Ch. 9- 32nd Floor, South				208	.10	1 peak
	Ch. 10- Ground Floor, North				298	.17	1.8
	Ch. 11- Ground Floor, North				208	.21	1.7
	Ch. 12- Ground Floor, South				208	.15	2 peaks
	Brea Dam (ACOE)	33.889N 117.926W	(3)	4.0			
	Crest				130	.31	2.5
					Up	.14	1.7
					040	.23	2.5
	Left Abutment				130	.16	1.3
					Up	.09	---
					040	.10	1 peak
	Downstream				130	.32	1.1
					Up	.09	---
					040	.18	0.6
	Note: One additional record[1] recovered at Brea Dam crest.						
	Lawndale 15000 Aviation Blvd. (USGS)	33.895N 118.377W	(3)	4.1	360	.06	---
					Up	.04	---
					270	.06	---
	Santa Ana, Orange Cty. Engineering Bldg., Basement (USGS)	33.75 N 117.87 W	(3)	0.5	360	.09	---
					Up	.03	---
					270	.05	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML-- *Continued*	Carbon Canyon Dam (ACOE)	33.92 N 117.84 W	(3)	4.6			
	Crest				130	.17	2.4
					Up	.13	0.6
					040	.20	3.4
	Left Abutment				130	.22	1.8
					Up	.07	---
					040	.16	2.6
	Note: Three additional records[1] recovered at Carbon Canyon Dam crest.						
	Weymouth Filter Plant (MWD)	34.114N 117.778W	(3)	3.4			
	Bldg., Ground Level				017	.10	1 peak
					Up	.05	---
					287	.06	---
	Water Tank, Top				017	.15	4.6
					Up	.11	0.3
					287	.13	1.3
	Diemer Filter Plant (MWD)	33.91 N 117.82 W	(3)	4.0			
	Admin. Bldg. Basement				281	.09	---
					Up	.04	---
					191	.06	---
	Reservoir Roof				281	.11	1 peak
					Up	.17	0.3
					191	.11	1 peak
	Note: Two each additional records[1] recovered from the administration building and reservoir roof at Diemer Filter plant.						
	Palos Verdes Estates Basement (USGS)	33.801N 118.387W	(3)	1.1		(1)	
	Sepulveda Canyon Spillway Roof (MWD)	34.097N 118.478W	(3)	0.3	166	.03	---
					Up	.02	---
					076	.08	---
	Live Oak Reservoir (MWD)	34.134N 117.753W	(3)	(2)			
	Abutment				180	.04	---
					Up	.02	---
					090	.03	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Live Oak Reservoir--*Continued*						
	Structure Array:						
	Ch. 1- Center Crest				155	.07	---
	Ch. 2- Center Crest				Up	.04	---
	Ch. 3- Center Crest				245	.07	---
	Ch. 4- Left Crest				155	.09	---
	Ch. 5- Left Crest				245	.08	---
	Ch. 6- Left Slope				245	.04	---
	Ch. 7- Center Slope				155	.09	---
	Ch. 8- Center Slope				Up	.04	---
	Ch. 9- Center Slope				245	.06	---
	Ch. 10- Center Toe				155	.05	---
	Ch. 11- Center Toe				Up	.02	---
	Ch. 12- Center Toe				245	.03	---
	Long Beach VA Hospital (VA)	33.78 N 118.12 W	(*3*)	4.6			
	Basement				360	.08	---
					Up	.05	---
					270	.10	1 peak
	6th Floor				360	.17	1.2
					Up	.08	---
					270	.11	1 peak
	11th Floor				360	.26	2.1
					Up	.11	1 peak
					270	.16	2.1
	Los Angeles Wadsworth VA Hospital (VA/USGS)	34.050N 118.452W	(*3*)	0.5			
	Bldg. 500 Structure Array:						
	Ch. 1- 6th Floor, North End				235	.20	14.3
	Ch. 2- 6th Floor, North Center				235	.15	4.3
	Ch. 3- 6th Floor, Center				235	.15	3.1
	Ch. 4- 6th Floor, Center				055	.18	4.1
	Ch. 5- 6th Floor, South End				055	.25	4.0
	Ch. 6- 6th Floor, South End				325	.13	1.1
	Ch. 7- Basement, North Center				325	.07	---
	Ch. 8- Basement, North Center				235	.07	---
	Ch. 9- Basement, North Center				Down	.04	---
	North Ground Site		42:27.4	4.7	325	.07	---
					Up	.03	---
					235	.08	---
	South Ground Site		42:28.1	4.5	325	.07	---
					Up	.04	---
					235	.09	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML-- *Continued*	Los Angeles, Brentwood VA Hospital (VA)	34.058N 118.457W	(3)	4.1	285 Up 195	.04 .03 .05	--- --- ---
	San Antonio Dam (ACOE)	34.166N 117.680W	(3)	3.1			
	Crest				090 Up 360	.10 .06 .14	2 peaks --- 1.9
	Right Abutment				090 Up 360	.04 .05 .04	--- --- ---
	Downstream				090 Up 360	.07 .04 .05	--- --- ---
	Sepulveda Dam (ACOE)	34.17 N 118.47 W	(3)	4.9			
	Crest				054 Up 324	.09 .09 .14	--- --- 1 peak
	Downstream				054 Up 324	.12 .07 .15	1 peak --- 1 peak
	Note: One additional record[1] recovered at Sepulveda Dam downstream.						
	Palos Verdes Reservoir Abutment (MWD)	33.774N 118.321W	(3)	2.2		(1)	
	Sepulveda VA Hospital Ground level (VA)	34.249N 118.475W	(3)	5.7	360 Up 270	.18 .10 .22	3.0 1 peak 1.1
	Note: Two additional records[1] recovered at Sepulveda VA Hospital.						
	Valyermo Forest Sta. Ground Level (USGS)	34.44 N 117.85 W	42:29.3	4.7	300 Up 210	.04 .04 .05	--- --- ---
	Topanga Fire Station (USGS)	34.084N 118.600W	42:35.2	(2)		(1)	
	Paradise Springs Camp Ground Level (USGS)	34.40 N 117.80 W	42:34.1	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Prado Dam (ACOE)	33.89 N 117.64 W	(*3*)	5.4			
	Crest				090	.09	---
					Up	.06	---
					360	.09	---
	Left Abutment				090	.04	---
					Up	.03	---
					360	.07	---
	Downstream				090	.14	0.6
					Up	.06	---
					360	.12	1.0
	Jensen Filter Plant (MWD)	34.309N 118.499W	(*3*)	6.8			
	Administration Bldg. Basement				022	.06	---
					Up	.05	---
					292	.11	1 peak
	Generator Room				022	.09	---
					Up	.06	---
					292	.16	2 peaks
	Reservoir Roof				022	.22	1.3
					Up	.10	1 peak
					292	.31	1.6
	Note: Four each additional records[1] recovered at the administration building and generator room and 3 at the reservoir roof at Jensen Filter plant.						
	Littlerock Post Office (USGS)	34.521N 117.991W	(*3*)	5.9	300	.08	---
					Up	.07	---
					210	.07	---
	Lone Pine Canyon (USGS)	34.32 N 117.57 W	42:30.4	6.4	120	.05	---
					Up	.03	---
					030	.05	---
	Malibu Canyon Monte Nido Fire Sta. (USGS)	34.08 N 118.69 W	(*3*)	(*2*)		(*1*)	
	Palmdale Fire Station (USGS)	34.58 N 118.11 W	42:29.9	6.8		(*1*)	
	Lytle Creek Mann Residence (USGS)	34.26 N 117.50 W	42:39.7	(*2*)	315	.04	---
					Up	.02	---
					225	.05	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Newport Beach 840 Newport Center Dr. (USGS)	33.618N 117.878W	(3)	6.1			
	Structure Array:						
	Ch. 1- Tower 2, Level 1 (Garage), Center				360	.06	---
	Ch. 2- Tower 2, Level 1 (Garage), Center				Up	.02	---
	Ch. 3- Tower 2, Level 1 (Garage), Center				090	.03	---
	Ch. 4- Tower 2, Level 2 (Plaza), West End				360	.08	---
	Ch. 5- Center Building, Level 2 (Plaza), Center				360	.10	1 peak
	Ch. 6- Center Building, Level 2 (Plaza), Center				090	.06	---
	Ch. 7- Tower 2, Level 9 (Roof), South End				090	.04	---
	Ch. 8- Tower 2, Level 10 (Penthouse), Center				360	.04	---
	Ch. 9- Tower 2, Level 10 (Penthouse), Center				090	.08	---
	Ch. 10- Tower 1, Level 9 (Roof), East End				360	.04	---
	Ch. 11- Tower 1, Level 10 (Penthouse), Center				270	.04	---
	Ch. 12- Tower 1, Level 10 (Penthouse), Center				360	.06	---
	Santa Ana River Bridge (MWD/USGS)	33.968N 117.447W	(3)	2.6			
	North Abutment				175	.05	---
	Recorder Building				Up	.04	---
					085	.05	---
	Structure Array:						
	Ch. 1- North Abutment				346	.05	---
	Ch. 2- North Abutment				Down	.03	---
	Ch. 3- North Abutment				076	.04	---
	Ch. 4- Mid Span				346	.18	2.3
	Ch. 5- Mid Span				Down	.11	1 peak
	Ch. 6- Mid Span				076	.12	2 peaks
	Ch. 7- Below Bearing				346	.13	3 peaks
	Ch. 8- Below Bearing				Down	.01	---
	Ch. 9- Below Bearing				076	.06	---
	Ch. 10- Above Bearing				346	.15	2.2
	Ch. 11- Above Bearing				Down	.07	---
	Ch. 12- Above Bearing				076	.08	---
	Mathews Dam Dike Toe (MWD)	33.852N 117.451W	(3)	6.2	252	.05	---
					Up	.05	---
					162	.09	---
	Leona Valley Fire Sta. (USGS)	34.62 N 118.29 W	(3)	4.5	120	.05	---
					Up	.04	---
					030	.03	---
	Sunnymead Egg Ranch (USGS)	33.95 N 117.15 W	42:35.7	9.7		(1)	
	Malibu Kilpatrick School (USGS)	34.093N 118.836W	42:43.1	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Santa Susana (DOE)	34.23 N 118.71 W	(*3*)	(*2*)			
	Ground Station					(*1*)	
	Building 026, Ground					(*1*)	
	Building 356, 3rd Floor				325	.07	---
					Up	.03	---
					235	.07	---
	Building 462: 1st Floor					(*1*)	
	6th Floor				090	.08	---
					Up	.04	---
					360	.07	---
	Building 463, Roof				090	.07	---
					Up	.09	---
					360	.07	---
	Colton Interchange I-10/I-215 Pier Base Vault (CDOT)	34.06 N 117.30 W	(*3*)	(*2*)		(*1*)	
	San Bernardino County Government Ctr. (USGS)	34.106N 117.287W	42:36.6	5.2			
	Ground Floor, SW					(*1*)	
	Structure Array:						
	Ch. 1- 2nd Floor Level, NW				360	.04	---
	Ch. 2- 2nd Floor Level, NE				090	.03	---
	Ch. 3- 2nd Floor Level, NE				360	.04	---
	Ch. 4- 2nd Floor Level, SW				090	.02	---
	Ch. 5- 4th Floor Level, SW				090	.07	---
	Ch. 6- 4th Floor Level, NW				360	.02	---
	Ch. 7- 6th Floor Level, (Roof) NE				090	.05	---
	Ch. 8- 6th Floor Level, (Roof) NW				360	.12	1.4
	Ch. 9- 6th Floor Level, (Roof) SW				090	.05	---
	Ch. 10- Sensor Not Installed				(--)	(--)	(---)
	Ch. 11- 4th Floor Level, NE				090	.02	---
	Ch. 12- 4th Floor Level, NE				360	.07	---
	Reche Canyon Olive Dell Ranch (USGS)	34.01 N 117.22 W	42:44.8	(*2*)		(*1*)	
	Loma Linda Med. Ctr. Basement (USGS)	34.05 N 117.26 W	(*3*)	(*2*)		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442:20.0 G.m.t. Southern Calif. 34.060N, 118.080W Magnitude 5.9 ML--*Continued*	Loma Linda VA Hospital (VA/USGS)	34.049N 117.250W	(*3*)	7.8			
	Building 1 Structure Array:						
	Ch. 1- Ground Floor, Center				Down	.01	---
	Ch. 2- Ground Floor, Center				180	.03	---
	Ch. 3- Ground Floor, Center				270	.02	---
	Ch. 4- 4th Floor, Center				270	.07	---
	Ch. 5- Ground Floor, North				270	.03	---
	Ch. 6- 4th Floor, Center				180	.04	---
	Ch. 7- 4th Floor, North				270	.08	---
	Ch. 8- Ground Floor, South				180	.01	---
	Ch. 9- 4th Floor, South				270	.07	---
	North Ground Site		42:35.2	(*2*)		(*1*)	
	South Ground Site		(*3*)	(*2*)		(*1*)	
1 October 1987 1445:41.4 G.m.t. Southern Calif. 34.050N, 118.100W Magnitude 4.6 ML	Norwalk, 12440 Imperial Highway (USGS/BECH)	32.92 N 118.07 W	45:50.8	(*2*)			
	Basement					(*1*)	
	North Freefield					(*1*)	
	South Freefield					(*1*)	
	Structure Arrays 1 and 2					(*1*)	
	Los Angeles 1100 Wilshire Blvd. (JCG/USGS)	34.052N 118.263W	45:49.9	(*2*)			
	Basement 3, NE					(*1*)	
	Basement 3, SE					(*1*)	
	Basement 4, NW					(*1*)	
	Structure Array					(*1*)	
1 October 1987 1449:05.9 G.m.t. Southern Calif. 34.060N, 118.100W Magnitude 4.7 ML	Norwalk, 12440 Imperial Highway (USGS/BECH)	32.92 N 118.07 W	49:14.4	(*2*)			
	Basement					(*1*)	
	North Freefield					(*1*)	
	South Freefield					(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recove-ed during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1449:05.9 G.m.t. Southern Calif. 34.060N, 118.100W Magnitude 4.7 ML--*Continued*	Norwalk, 12440--*Continued* Structure Arrays 1 and 2					(*1*)	
	Los Angeles 1100 Wilshire Blvd. (JCG/USGS)	34.052N 118.263W	49:09.8	3.0			
	Basement 3, NE					(*1*)	
	Basement 3, SE					(*1*)	
	Basement 4, NW					(*1*)	
	Structure Array					(*1*)	
1 October 1987 1512:31.7 G.m.t. Southern Calif. 34.050N, 118.090W Magnitude 4.7 ML	Los Angeles 1100 Wilshire Blvd. (JCG/USGS)	34.052N 118.263W	12:39.8	(*2*)			
	Basement 3, NE					(*1*)	
	Basement 3, SE					(*1*)	
	Basement 4, NW					(*1*)	
	Structure Array					(*1*)	
1 October 1987 1559:53.5 G.m.t. Southern Calif. 34.050N, 118.090W Magnitude 4.0 ML	Los Angeles 1100 Wilshire Blvd. (JCG/USGS)	34.052N 118.263N	00:01.7	(*2*)			
	Basement 3, NE					(*1*)	
	Basement 3, SE					(*1*)	
	Basement 4, NW					(*1*)	
	Structure Array					(*1*)	
1 October 1987 1442-1957 G.m.t. Southern Calif. Epicenters and magnitudes unknown	Whittier 7215 Bright Avenue (USGS)	33.977N 118.036W	(*3*)	2.5			
	Basement				180	.09	---
					Up	.04	---
					090	.09	---
	5th Floor				180	.08	---
					Up	.04	---
					090	.08	---
					180	.08	---
					Up	.05	---
					090	.10	1 peak

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987 1442-1957 G.m.t. Southern Calif. Epicenters and magnitudes unknown--*Continued*	7215 Bright Avenue--*Continued*						
	5th floor				180	.03	---
					Up	.03	---
					090	.07	---
	10th Floor				180	.06	---
					Up	.06	---
					090	.06	---
					180	.04	---
					Up	.06	---
					090	.05	---
	Note: Three additional records[1] in basement, one from 5th floor, and two from 10th floor recovered at Whittier.						
1 October 1987 1442-2012 G.m.t. Southern Calif. Epicenters and magnitudes unknown	Whittier Narrows Dam (ACOE)	34.03 N 118.05 W	(*3*)	2.1			
	Crest				033	.10	1 peak
					Up	.04	---
					303	.09	---
					033	.13	0.2
					Up	.05	---
					303	.12	0.4
	Upstream				152	.09	---
					Up	.07	---
					062	.13	0.2
					152	.07	---
					Up	.04	---
					062	.09	---
					152	.12	1 peak
					Up	.07	---
					062	.10	1 peak
	Note: Two additional records[1] from crest and four records from upstream recovered at Whittier Narrows Dam.						
1 October 1987-2 October 1987 Southern Calif. Epicenters and magnitudes unknown	Garvey Reservoir Abutment Building (MWD)	34.05 N 118.11 W	(*3*)	2.0	060	.12	1 peak
					Up	.06	---
					330	.10	1 peak
			(*3*)	2.0	060	.15	0.2
					Up	.06	---
					330	.09	---
			(*3*)	2.0	060	.11	1 peak
					Up	.08	---
					330	.07	---
	Note: Seven additional records[1] recovered at Garvey Reservoir.						

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987-	Los Angeles	33.996N	(3)	2.6	010	.06	---
3 October 1987	Bulk Mail Facility	118.162W			Up	.02	---
Southern Calif.	(USGS)				280	.06	---
Epicenters and							
magnitudes unknown			(3)	2.6	010	.12	1 peak
					Up	.04	---
					280	.16	0.4
			(3)	2.6	010	.06	---
					Up	.05	---
					280	.07	---
	Note: 7 additional records[1] recovered at Los Angeles Bulk Mail Facility.						
1 October 1987-	Vernon	34.00 N	(3)	2.3	007	.08	---
4 October 1987	4814 Loma Vista Ave.	118.20 W			Up	.02	---
Southern Calif.	(USGS)				277	.11	0.2
Epicenters and							
magnitudes unknown	Note: One additional record[1] recovered at Vernon.						
4 October 1987	Garvey Reservoir	34.05 N	(3)	1.9	060	.19	0.3
1059:38.1 G.m.t.	Abutment Bldg.	118.11 W			Up	.13	1.6
Southern Calif.	(MWD)				330	.21	0.7
34.070N, 118.100W							
Magnitude 5.3 ML	Alhambra	34.09 N	(3)	1.9			
	900 S. Fremont Ave.	118.15 W					
	(USGS)						
	Basement				090	.15	0.3
					Up	.10	1 peak
					360	.11	2 peaks
	6th Floor				090	.24	0.4
					Up	.15	3 peaks
					360	.17	0.8
	12th Floor				090	.18	0.5
					Up	.19	2.7
					360	.13	0.8
	Whittier Narrows Dam	34.03 N	(3)	1.9			
	(ACOE)	118.05 W					
	Crest				033	.21	0.9
					Up	.09	---
					303	.25	1.1
	Los Angeles	34.081N	(3)	1.8	130	.17	1.6
	4407 Jasper Street	118.188W			Up	.10	1 peak
	(USGS)				040	.17	0.5

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 October 1987	Los Angeles	33.99 N	(3)	2.3	010	.24	0.5
1059:38.1 G.m.t.	Bulk Mail Center	118.16 W			Up	.08	---
Southern Calif.	(USGS)				280	.25	0.4
34.070N, 118.100W							
Magnitude 5.3 ML--	Whittier	33.977N	(3)	2.8			
Continued	7215 Bright Ave.	118.036W					
	USGS)						
	Basement				180	.30	0.8
					Up	.15	0.7
					090	.33	0.9
	5th Floor				180	.30	0.7
					Up	.28	3.3
					090	.58	3.4
	10th Floor						
					180	.17	0.5
					Up	.53	3.4
					090	.43	4.3
	Vernon	34.00 N	(3)	2.5	007	.15	0.5
	4814 Loma Vista Ave.	118.20 W			Up	.07	---
	(USGS)				277	.27	0.7
	Los Angeles	34.07 N	(3)	2.4			
	1111 Sunset Blvd.	118.25 W					
	(MWD)						
	Basement				348	.08	---
					Up	.05	---
					258	.08	---
	4th Floor				348	.11	1 peak
					Up	.07	---
					258	.10	1 peak
	Roof				348	.10	1 peak
					Up	.10	1 peak
					258	.08	---
	Los Angeles	34.052N	59:41.9	2.9			
	1100 Wilshire Blvd.	118.263W					
	(JCG/USGS)						
	Basement 3, NE				298	.07	---
					Up	.04	---
					208	.09	---
	Basement 3, SE				298	.08	---
					Up	.04	---
					208	.08	---
	Basement 4, NW				298	.06	---
					Up	.05	---
					208	.07	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 October 1987 1059:38.1 G.m.t. Southern Calif. 34.070N, 118.100W Magnitude 5.3 ML--*Continued*	1100 Wilshire Blvd.--*Continued*						
	Structure Array:						
	Ch. 1- 12th Floor, North				298	.09	---
	Ch. 2- 12th Floor, North				208	.11	0.3
	Ch. 3- 12th Floor, South				208	.08	---
	Ch. 4- 13th Floor, North				298	.11	1 peak
	Ch. 5- 13th Floor, North				208	.14	0.5
	Ch. 6- 13th Floor, South				208	.08	---
	Ch. 7- 32nd Floor, North				298	.08	---
	Ch. 8- 32nd Floor, North				208	.20	2.2
	Ch. 9- 32nd Floor, South				208	.08	---
	Ch. 10- Ground Floor, North				298	.11	1 peak
	Ch. 11- Ground Floor, North				208	.08	---
	Ch. 12- Ground Floor, South				208	.10	1 peak
	Los Angeles Griffith Park Observ. (USGS)	34.12 N 118.30 W	(*3*)	2.3	360	.04	---
					Up	.05	---
					270	.05	---
	Norwalk, 12400 Imperial Highway (USGS/BECH)	33.92 N 118.07 W	(*3*)	0.4			
	Basement				090	.05	---
					Up	.04	---
					360	.05	---
	4th Floor				090	.06	---
					Up	.07	---
					360	.10	1 peak
	Roof				090	.10	1 peak
					Up	.10	1 peak
					360	.08	---
	South Ground Site				090	.05	---
					Up	.10	1 peak
					360	.06	---
	Norwalk, 12440 Imperial Highway (USGS/BECH)	33.92 N 118.07 W	59:42.6	3.4			
	Basement				090	.05	---
					Up	.05	---
					360	.04	---
	North Ground Site				090	.07	---
					Up	.06	---
					360	.06	---
	South Ground Site				090	.05	---
					Up	.08	---
					360	.05	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 October 1987 1059:38.1 G.m.t. Southern Calif. 34.070N, 118.100W Magnitude 5.3 ML--*Continued*	Norwalk, 12440--*Continued*						
	Structure Array 1:						
	Ch. 1- 8th Floor (Roof), Center				090	.09	---
	Ch. 2- 5th Floor, Center				090	.07	---
	Ch. 3- 2nd Floor, Center				090	.05	---
	Ch. 4- 1st Floor, Center				090	.06	---
	Ch. 5- Basement, East				360	.05	---
	Ch. 6- 5th Floor, West-Center				360	.07	---
	Ch. 7- Basement, Center				Up	.03	---
	Ch. 8- Basement, Center				090	.05	---
	Ch. 9- Basement, Center				360	.05	---
	Ch. 10- 30 ft. Downhole, Bldg. Center				Up	.03	---
	Ch. 11- 30 ft. Downhole, Bldg. Center				090	.04	---
	Ch. 12- 30 ft. Downhole, Bldg. Center				360	.03	---
	Structure Array 2:						
	Ch. 13- 8th Floor (Roof), East				360	.08	---
	Ch. 14- 5th Floor, East				360	.04	---
	Ch. 15- 2nd Floor, East				360	.03	---
	Ch. 16- 1st Floor, East				360	.05	---
	Ch. 17- 8th Floor (Roof), Center				360	.08	---
	Ch. 18- 5th Floor, Center				360	INOP	
	Ch. 19- 2nd Floor, Center				360	.05	---
	Ch. 20- 1st Floor, Center				360	.07	---
	Ch. 21- 8th Floor (Roof), West				360	.09	---
	Ch. 22- 5th Floor, West				360	.05	---
	Ch. 23- 2nd Floor, West				360	.04	---
	Ch. 24- 1st Floor, West				360	.03	---
	Orange County Rsvr. Abutment (MWD)	33.935N 117.883W	(*3*)	3.6	096 Up 006	.06 .04 .07	--- --- ---
	Long Beach, CSULB Humanities Bldg. Bsmt. (USGS)	33.777N 118.112W	(*3*)	5.3	104 Up 076	.06 .03 .04	--- --- ---
	Lawndale 15000 Aviation Blvd. (USGS)	33.895N 118.377W	(*3*)	3.2		(*1*)	
	Brea Dam (ACOE)	33.889N 117.926W	(*3*)	4.1			
	Crest				130 Up 040	.08 .07 .19	--- --- ---
	Left Abutment				130 Up 040	.05 .05 .09	--- --- ---
	Downstream				130 Up 040	.07 .05 .13	--- --- 0.3

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 October 1987 1059:38.1 G.m.t. Southern Calif. 34.070N, 118.100W Magnitude 5.3 ML-- *Continued*	Carbon Canyon Dam (ACOE)	33.92 N 117.84 W	(3)	4.2			
	Crest				130	.06	---
					Up	.04	---
					040	.07	---
	Left Abutment				130	.05	---
					Up	.03	---
					040	.05	---
	Right Abutment				130	.07	---
					Up	.03	---
					040	.05	---
	Weymouth Filter Plant (MWD)	34.114N 117.778W	(3)	(2)			
	Bldg., Ground Level					(1)	
	Water Tank, Top				017	.05	---
					Up	.04	---
					287	.07	---
	Diemer Filter Plant (MWD)	33.91 N 117.82 W	(3)	4.3			
	Admin. Bldg. Bsmt.					(1)	
	Reservoir Roof				281	.04	---
					Up	.05	---
					191	.06	---
	Sepulveda VA Hospital Ground level (VA)	34.249N 118.475W	(3)	5.4	360	.04	---
					Up	.02	---
					270	.06	---
	Long Beach VA Hospital (VA)	33.78 N 118.12 W	(3)	5.1			
	Basement				360	.06	---
					Up	.03	---
					270	.05	---
	6th Floor				360	.09	---
					Up	.05	---
					270	.10	1 peak
	11th Floor				360	.16	1.7
					Up	.07	---
					270	.17	1.2

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 October 1987 1059:38.1 G.m.t. Southern Calif. 34.070N, 118.100W Magnitude 5.3 ML-- *Continued*	Los Angeles Wadsworth VA Hospital (VA/USGS)	34.050N 118.452W	59:44.7	5.0			
	North Ground Site					(*1*)	
	Los Angeles, Brentwood VA Hospital (VA)	34.058N 118.457W	(*3*)	4.0		(*1*)	
	Sepulveda Dam (ACOE)	34.17 N 118.47 W	(*3*)	5.0			
	Crest				054	.05	---
					Up	.04	---
					324	.04	---
	Downstream				054	.04	---
					Up	.05	---
					324	.04	---
	Santa Ana, Orange Cty. Engineering Bldg., Basement (USGS)	33.75 N 117.87 W	(*3*)	(*2*)		(*1*)	
	Jensen Filter Plant (MWD)	34.309N 118.499W	(*3*)	6.4			
	Administration Bldg.					(*1*)	
	Generator Room					(*1*)	
	Reservoir Roof				022	.05	---
					Up	.02	---
					292	.07	---
	Prado Dam (ACOE)	33.89 N 117.64 W	(*3*)	5.6			
	Downstream				090	.04	---
					Up	.03	---
					360	.07	---
	Valyermo Forest Sta. Ground Level (USGS)	34.44 N 117.85 W	59:46.2	6.2		(*1*)	
	Littlerock Post Office Ground Level (USGS)	34.521N 117.991W	(*3*)	(*2*)		(*1*)	
	Palmdale Fire Station Ground Level (USGS)	34.58 N 118.11 W	59:47.8	6.5		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
1 October 1987- 4 October 1987 Southern Calif. Epicenters and magnitudes unknown	Los Angeles 4407 Jasper Street (USGS)	34.081N 118.188W	(3)	1.9	130 Up 040	.09 .04 .07	--- --- ---
			(3)	(2)	130 Up 040	.07 .06 .09	--- --- ---
			(3)	2.1	130 Up 040	.07 .03 .04	--- --- ---
	Note: Three additional records[1] recovered at 4407 Jasper Street.						
7 October 1987 2032 G.m.t. Alaska Epicenter and magnitude unknown	Guyot Hills (USGS)	60.146N 141.472W	32:15.2[4]	(2)		(1)	
22 October 1987 0348:00.3 GMT Central Calif. 37.805N, 121.743W Magnitude 4.4 ML	Livermore VA Hospital (VA)	37.625N 121.762W	(3)	2.0			
	Roof (7th floor)				125 Up 035	.11 .02 .17	1.1 --- 1.3
	Del Valle Dam (CDWR)	37.615 121.745W	(3)	(2)			
	Toe					(1)	
	Crest					(1)	
	Note: Event/record correlation questionable.						
7 November 1987 1506:01.2 G.m.t. Central Calif. 36.583N, 121.218W Magnitude 4.0 ML	Bear Valley Station 7 Pinnacles National Monument (USGS)	36.483N 121.180W	06:03.5	1.6		(1)	
	Bear Valley Station 10 Webb Residence (USGS)	36.532N 121.143W	06:03.7	1.7	310 Up 220	.06 .03 .09	--- --- ---
	Bear Valley Station 1 CDF Fire Station (USGS)	36.573N 121.184W	06:04.2	(2)		(1)	
	Bear Valley Station 6 James Ranch (USGS)	36.504N 121.101W	06:04.2	2.4		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
7 November 1987 1506:01.2 G.m.t. Central Calif. 36.583N, 121.218W Magnitude 4.0 ML-- *Continued*	Bear Valley Station 5 Callens Ranch (USGS)	36.673N 121.195W	(*3*)	2.3		(*1*)	
17 November 1987 0846:53.3 G.m.t. Southern Alaska 58.586N, 143.270W Magnitude 7.0 ML	Sunshine Point (USGS)	60.180N 142.838W	48:16.2[4]	(*2*)		(*1*)	
	Kayak Island Ridge (USGS)	59.927N 144.500W	47:37.9[4]	0.4		(*1*)	
	Guyot Hills (USGS)	60.146N 141.471W	48:20.9[4]	(*2*)		(*1*)	
	Yakutat FAA VOR Building (USGS)	59.51 N 139.65 W	(*3*)	(*2*)		(*1*)	
22 November 1987 0411:52.5 G.m.t. Northern Calif. 40.400N, 124.423W Magnitude 3.7 ML	Eel River Valley Array Centerville Naval Fac. (USGS)	40.563N 124.348W	11:58.2	4.9	360 Up 270	.05 .01 .03	--- --- ---
	Eel River Valley Array Ferndale Fire Station (USGS)	40.58 N 124.26 W	11:58.1	5.5	360 Up 270	.02 .01 .07	--- --- ---
	Eel River Valley Array Fortuna Fire Station (USGS)	40.599W 124.154W	(*3*)	(*2*)		(*1*)	
24 November 1987 0132:48.0 G.m.t. Southern Calif. 33.070N, 115.780W Magnitude 4.2 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	32:52.2	3.0		(*1*)	
24 November 1987 0154:14.5 G.m.t. Southern Calif. 33.083N, 115.775W Magnitude 6.2 Ms	Superstition Mtn. Camera Site 8 (USGS)	32.955N 115.823W	(*3*)	1.6	135 Up 045	.13 .12 .11	4.8 1-peak 2.6
	Parachute Test Site Imler Road (USGS)	32.93 N 115.70 W	54:19.2	3.3	315 Up 225	.10 .10 .13	2-peaks 1-peak 3.3
	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	54:18.8	2.5	315 Up 225	.18 .20 .13	2.4 3.9 0.8

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 0154:14.5 G.m.t. Southern Calif. 33.083N, 115.775W Magnitude 6.2 Ms-- *Continued*	Imperial Wildlife Liquefaction Array (USGS)	33.10 N 115.53 W	54:19.85	5.8			
	Channel 1 - surface				360	.13	1.4
	Channel 2 - surface				Up	.18	2.7
	Channel 3 - surface				090	.13	0.9
	Channel 4 - 7.5 m downhole				360	.08	---
	Channel 5 - 7.5 m downhole				Up	.09	---
	Channel 6 - 7.5 m downhole				090	.08	---
	Calipatria Fire Station (USGS)	33.13 N 115.52 W	(*3*)	6.0	315	.15	0.6
					Up	.18	1.6
					225	.22	0.7
	Brawley Airport Hangar (USGS)	32.988N 115.509W	54:23.8	1.6	315	.06	---
					Up	.04	---
					225	.06	---
	Plaster City Storehouse (USGS)	32.79 N 115.86 W	54:21.2	4.2	135	.05	---
					Up	.03	---
					045	.04	---
	Ocotillo Wells Burro Bend Cafe (USGS)	33.14 N 116.13 W	54:22.5	3.7	315	.03	---
					Up	.04	---
					225	.03	---
	El Centro Array 10 Community Hospital (USGS)	32.780N 115.567W	(*3*)	1.7	230	.04	---
					Up	.03	---
					140	.05	---
	El Centro Array 9 Commercial Avenue (USGS)	32.794N 115.549W	(*3*)	4.7	360	.04	---
					Up	.03	---
					270	.05	---
	El Centro Array 8 Cruickshank Road (USGS)	32.811N 115.532W	54:22.9	5.9	230	.06	---
					Up	.04	---
					140	.04	---
	El Centro Array 7 Imp. Valley College (USGS)	32.829N 115.504W	54:23.2	5.6	230	.05	---
					Up	.03	---
					140	.03	---
	El Centro Array 6 Huston Road (USGS)	32.839N 115.487W	54:23.6	5.5	230	.05	---
					Up	.02	---
					140	.05	---
	El Centro Array 5 James Road (USGS)	32.855N 115.466W	54:24.0	5.5	230	.11	1-peak
					Up	.02	---
					140	.08	---
	El Centro Diff. Array Dogwood Road (USGS)	32.796N 115.535W	54:23.7	5.5	360	.07	---
					Up	.03	---
					270	.07	---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 0154:14.5 G.m.t. Southern Calif. 33.083N, 115.775W Magnitude 6.2 Ms-- *Continued*	El Centro Array 4 Anderson Road (USGS)	32.864N 115.432W	54:30.9	*(2)*	230 Up 140	.03 .02 .02	--- --- ---
	El Centro Array 11 McCabe School (USGS)	32.752N 115.594W	54:23.7	5.2	230 Up 140	.05 .03 .04	--- --- ---
	El Centro Meadows Union School (USGS)	32.800N 115.473W	54:23.6	6.7	230 Up 140	.05 .02 .05	--- --- ---
	El Centro Array 12 Brockman Road (USGS)	32.718N 115.637W	54:28.5	1.7	230 Up 140	.05 .01 .04	--- --- ---
	Coachella Canal Station 3 (USGS)	33.51 N 115.77 W	*(3)*	6.8	135 Up 045	.04 .04 .03	--- --- ---
	Calexico Fire Station (USGS)	32.669N 115.492W	*(3)*	7.4	315 Up 225	.04 .03 .05	--- --- ---
	Coachella Canal Station 2 (USGS)	33.56 N 115.95 W	*(3)*	*(2)*	135 Up 045	.03 .02 .02	--- --- ---
	Bonds Corner (SMA) Highway 98 at 115 (USGS)	32.693N 115.338W	54:29.7	5.6	230 Up 140	.09 .02 .06	--- --- ---
	Bonds Corner (RFT) Highway 98 at 115 (USGS)	32.693N 115.338W	54:29.7	5.6	230 Up 140	.09 .02 .06	--- --- ---
	Coachella Canal Station 1 (USGS)	33.64 N 116.08 W	*(3)*	10.0	135 Up 045	.08 .05 .08	--- --- ---
24 November 1987 0157 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	57:31.9	0.7	315 Up 225	.19 .09 .10	0.2 --- 1 peak
24 November 1987 0201:46.7 G.m.t. Southern Calif. 33.070N, 115.790W Magnitude 3.8 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	01:51.3	3.4		*(1)*	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 0215:26 G.m.t. Southern Calif. 33.25N, 115.62W Magnitude 4.3 MB	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	15:31.6	(*2*)		(*1*)	
24 November 1987 0218 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	18:23.7	0.4		(*1*)	
24 November 1987 0225 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	25:15.0	0.6		(*1*)	
24 November 1987 0225:52.0 G.m.t. Southern Calif. 33.080N, 115.780W Magnitude 3.5 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	[25:53.2]	[1.8]	315 Up 225	.05 .03 .05	--- --- ---
24 November 1987 0226 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	[26:34.5]	[1.4]		(*1*)	
24 November 1987 0249 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	49:30.2	0.5		(*1*)	
24 November 1987 0253:00.7 G.m.t. Southern Calif. 33.040N, 115.810W Magnitude 4.7 ML	El Centro Parachute Test Site (USGS)	32.93 N 115.70 W	53:04.8	3.2		(*1*)	
24 November 1987 0321:10.3 G.m.t. Southern Calif. 33.170N, 115.660W Magnitude 3.0 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	21:12.8	0.5	315 Up 225	.05 .03 .04	--- --- ---
24 November 1987 0323:24.7 G.m.t. Southern Calif. 33.180N, 115.650W Magnitude 3.2 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	23:26.5	0.2		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 0324:13.8 G.m.t. Southern Calif. 33.180N, 115.660W Magnitude 3.4 ML	Salton Sea Wildlife Refuge	33.18 N 115.62 W	[24:14.7]	[1.7]		(*1*)	
24 November 1987 0404:36.8 G.m.t. Southern Calif. 33.180N, 115.650W Magnitude 3.6 ML	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	04:37.7	1.1	315 Up 225	.13 .09 .12	2 peaks --- 0.1
24 November 1987 0623:23.1 G.m.t. Southern Calif. 33.020N, 115.810W Magnitude 4.0 ML	Imperial Wildlife Liquefaction Array (USGS)	33.01 N 115.53 W	23:28.8	4.9		(*1*)	
24 November 1987 0155-1315 G.m.t. Southern Calif. Epicenters and magnitudes unknown	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	(*3*)	(*2*)	135 Up 045	.05 .03 .03	--- --- ---
			(*3*)	0.1	135 Up 045	.12 .07 .07	1 peak --- ---
	Note: Four additional records[1] recovered at Superstition Mountain Camera Site 8.						
24 November 1987 0400-1315 G.m.t. Southern Calif. Epicenter and magnitude unknown	Calipatria Fire Station (USGS)	33.13 N 115.52 W	(*3*)	5.0		(*1*)	
24 November 1987 1315:56.4 G.m.t. Southern Calif. 33.010N, 115.840W Magnitude 6.6 Ms	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	15:57.8	0.1	135 Up 045	.91 .65 .73	16.5 16.9 15.8
	Salton Sea, POE Poe Rd. (Temp.) (CIT)	33.097N 115.751W	16:00.7	2.6	180 Up 090	.33 .51 .54	14.8 17.3 18.1
	Parachute Test Site Imler Road (USGS)	32.93 N 115.70 W	16:01.2	2.5	315 Up 225	.53 .45 .49	11.3 14.5 13.7
	Salton Sea, KNB Kornbloom Rd. (Temp.) (CIT)	33.125N 115.665W	16:02.6	0.8	180 Up 090	.19 .18 .15	7.6 1.5 8.8
	Plaster City Storehouse (USGS)	32.79 N 115.86 W	16:01.2	3.6	135 Up 045	.19 .11 .15	10.4 1-peak 2.5

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recove-ed during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 1315:56.4 G.m.t. Southern Calif. 33.010N, 115.840W Magnitude 6.6 Ms-- *Continued*	Ocotillo Wells Burro Bend Cafe (USGS)	33.14 N 116.13 W	16:04.0	2.9	315 Up 225	.11 .09 .08	1-peak --- ---
	Salton Sea Wildlife Refuge USGS)	33.18 N 115.62 W	16:02.6	3.5	315 Up 225	.15 .17 .14	9.2 12.1 11.6
	Imperial Wildlife Liquefaction Array (USGS)	33.097N 115.530W	16:03.45	5.1			
	Channel 1 - surface				360	.21	13.2
	Channel 2 - surface				Up	.44	10.4
	Channel 3 - surface				090	.19	5.9
	Channel 4 - 7.5 m downhole				360	.16	1.9
	Channel 5 - 7.5 m downhole				Up	.11	1 peak
	Channel 6 - 7.5 m downhole				090	.08	1 peak
	Brawley Airport Hangar (USGS)	32.988N 115.509W	16:14.1	3.8	315 Up 225	.15 .13 .15	9.5 3.6 2.4
	Calipatria Fire Station (USGS)	33.13 N 115.52 W	(3)	5.0	315 Up 225	.32 .21 .24	10.7 10.8 10.8
	El Centro Array 13 Strobel Residence (USGS)	32.709N 115.683W	16:04.7	5.0	230 Up 140	.19 .07 .17	0.8 --- 0.7
	El Centro Array 10 Community Hospital (USGS)	32.780N 115.567W	(3)	4.3	230 Up 140	.27 .07 .22	7.6 --- 9.3
	El Centro Array 11 McCabe School (USGS)	32.752N 115.594W	16:04.8	5.8	230 Up 140	.32 .13 .21	15.7 6.9 9.4
	El Centro Array 9 Commercial Avenue (USGS)	32.794N 115.549W	(3)	4.6	360 Up 270	.30 .15 .20	3.6 2.6 2.8
	El Centro Array 8 E. Cruickshank Road (USGS)	32.811N 115.532W	16:04.9	5.3	230 Up 140	.35 .21 .33	10.1 4.9 10.1
	El Centro Array 12 Brockman Road (USGS)	32.718N 115.637W	(3)	5.4	230 Up 140	.27 .08 .19	2.0 --- 2.0

Note: Instrument malfunction, partial record (approx. 10 seconds).

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 1315:56.4 G.m.t. Southern Calif. 33.010N, 115.840W Magnitude 6.6 Ms-- *Continued*	El Centro Array 7 Imp. Valley College (USGS)	32.829N 115.504W	16:04.7	5.6	230 Up 140	.20 .18 .26	3.6 0.5 2.9
	El Centro Diff. Array Dogwood Road USGS)	32.796N 115.535W	16:07.2	3.5	360 Up 270	.29 .14 .23	13.4 3.4 11.7
	El Centro Array 6 Huston Road (USGS)	32.839N 115.487W	16:04.9	4.2	230 Up 140	.16 .14 .19	2.4 2.0 0.7
	El Centro Array 5 James Road (USGS)	32.855N 115.466W	16:05.5	5.9	230 Up 140	.19 .11 .20	3.9 1-peak 2.6
	El Centro Meadows Union School (USGS)	32.800N 115.473W	16:05.4	6.2	230 Up 140	.27 .12 .26	8.7 1-peak 9.3
	El Centro Array 4 Anderson Road (USGS)	32.864N 115.432W	16:06.6	5.2	230 Up 140	.10 .12 .11	1-peak 1-peak 0.8
	Borrego Springs Scripps Clinic (USGS)	33.210N 116.330W	16:08.1	6.9	315 Up 225	.06 .05 .06	--- --- ---
	El Centro Array 3 Pine Union School (USGS)	32.894N 115.380W	16:06.5	7.1	230 Up 140	.11 .08 .11	1.8 --- 1 peak
	El Centro Array 2 Keystone Road (USGS)	32.916N 115.366W	16:06.3	6.9	230 Up 140	.12 .05 .10	0.9 --- 1-peak
	El Centro Array 1 Borchard Ranches (USGS)	32.960N 115.319W	16:13.5	7.1	230 Up 140	.09 .06 .09	--- --- ---
	Calexico Fire Station (USGS)	32.669N 115.492W	16:06.5	7.2	315 Up 225	.21 .10 .21	10.5 6.0 11.7
	Coachella Canal Station 3 (USGS)	33.51 N 115.77 W	(3)	6.1	135 Up 045	.09 .05 .08	--- --- ---
	Bonds Corner Highway 98 at 115 (USGS) (SMA)	32.693N 115.338W	16:08.5	8.2	230 Up 140	.28 .09 .28	9.9 --- 9.4
	Bonds Corner Highway 98 at 115 (USGS) (RFT)	32.693N 115.338W	16:08.5	8.2	230 Up 140	.27 .08 .29	9.8 --- 9.5

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 1315:56.4 G.m.t. Southern Calif. 33.010N, 115.840W Magnitude 6.6 Ms-- *Continued*	Coachella Canal Station 2 (USGS)	33.56 N 115.95 W	(3)	(2)	135 Up 045	.04 .03 .04	--- --- ---
	Rancho de Anza Anza-Borrego Park (USGS)	33.35 N 116.40 W	16:19.1	(2)	135 Up 045	.06 .03 .06	--- --- ---
	Coachella Canal Station 1 (USGS)	33.64 N 116.08 W	(3)	9.6	135 Up 045	.08 .05 .09	--- --- ---
	Terwilliger Valley Anza Array (USGS)	33.48 N 116.59 W	(3)	(2)	135 Up 045	.02 .01 .02	--- --- ---
	Chihuahua Anza Array (USGS)	33.38 N 116.68 W	16:26.1	(2)	360 Up 270	.02 .01 .03	--- --- ---
	Pinyon Flat Observ. Anza Array (USGS)	33.61 N 116.46 W	16:24.95	(2)	135 Up 045	.01 .01 .01	--- --- ---
	Indio So. Calif. Gas Co. (USGS)	33.747N 116.214W	16:16.0	8.4	315 Up 225	.03 .03 .04	--- --- ---
	Tule Canyon Anza Array (USGS)	33.47 N 116.64 W	(3)	(2)	360 Up 270	.03 .02 .02	--- --- ---
	Cahuilla Valley Anza Array (USGS)	33.512N 116.798W	16:30.8	(2)	360 Up 270	.05 .01 .04	--- --- ---
	Garner Valley Anza Array (USGS)	33.615N 116.626W	16:27.5	(2)	360 Up 270	.02 .01 .02	--- --- ---
	Thousand Palms Post Office (USGS)	33.82 N 116.40 W	(3)	(2)	135 Up 045	.02* .02* .03*	--- --- ---
	Note: Event/record correlation questionable.						
	N. Palm Springs Post Office (USGS)	33.924N 116.543W	16:20.6	(2)	300 Up 210	.02 .01 .02	--- --- ---
24 November 1987 1318 G.m.t. Southern Calif. Epicenter and magnitude unknown	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	18:11.9	1.0	315 Up 225	.21 .18 .16	0.5 0.7 0.3

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 1324 G.m.t. Southern Calif. Epicenter and magnitude unknown	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	24:41.7	(*2*)	135 Up 045	.11 .05 .05	1 peak --- ---
24 November 1987 1330 G.m.t. Southern Calif. Epicenter and magnitude unknown	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	30:04.3	(*2*)		(*1*)	
24 November 1987 1332:59.8 G.m.t. Southern Calif. 32.990N, 115.870W Magnitude 4.2 ML	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	33:07.4	(*2*)	135 Up 045	.06 .03 .06	--- --- ---
	Two additional records[1] recovered at Superstition Mountain Camera Site 8.						
24 November 1987 1334:39.9 G.m.t. Southern Calif. 32.940N, 115.760W Magnitude 4.8 ML	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	34:41.8	1.4	135 Up 045	.12 .12 .11	0.5 1 peak 1 peak
	El Centro Parachute Test Site (USGS)	32.93 N 115.70 W	34:42.4	1.9	315 Up 225	.16 .08 .09	0.3 --- ---
	Plaster City Storehouse (USGS)	32.79 N 115.86 W	34:43.7	2.6		(*1*)	
	El Centro Array 8 Cruickshank Road (USGS)	32.811N 115.532W	34:45.5	4.4		(*1*)	
	El Centro Array 7 Imp. Valley College (USGS)	32.829N 115.504W	34:45.7	4.5		(*1*)	
	El Centro Array 11 MaCabe School (USGS)	32.752N 115.594W	34:45.9	4.3		(*1*)	
	Salton Sea Wildlife Refuge (USGS)	33.18 N 115.62 W	34:46.0	4.5		(*1*)	
	El Centro Array 6 Huston Road (USGS)	32.839N 115.487W	34:46.4	4.3		(*1*)	
	El Centro Array 4 Anderson Road (USGS)	32.86 N 115.32 W	34:46.7	5.3		(*1*)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
24 November 1987 1334:39.9 G.m.t. Southern Calif. 32.940N, 115.760W Magnitude 4.8 ML--*Continued*	Imperial Wildlife Liquefaction Array (USGS)	33.097N 115.530W	(*3*)	5.4		(*1*)	
24 November 1987-25 November 1987 Southern Calif. Epicenter and magnitude unknown	Calipatria Fire Station (USGS)	33.13 N 115.52 W	(*3*)	5.4	315 Up 225	.09 .02 .03	--- --- ---
	Brawley Airport Hangar (USGS)	32.988N, 115.509W	(*3*)	1.1	315 Up 225	.08 .02 .09	--- --- ---
24-25 Nov. 1987 1316-0230 G.m.t. Southern Calif. Epicenters and magnitudes unknown	Salton Sea, KNB Kornbloom (Temp.) (CIT)	33.125N 115.665W	(*3*)	1.7	180 Up 090	.07 .02 .06	--- --- ---
	Note: One additional record[1] recovered at Salton Sea, KNB.						
24-25 Nov. 1987 1316-0346 G.m.t. Southern Calif. Epicenters and magnitudes unknown	Salton Sea, POE Poe Road (Temp.) (CIT)	33.097N 115.751W	(*3*)	0.7	180 Up 090	.07 .05 .05	--- --- ---
			(*3*)	3.0	180 Up 090	.06 .03 .08	--- --- ---
			(*3*)	2.1	180 Up 090	.05 .02 .04	--- --- ---
			(*3*)	3.1	180 Up 090	.05 .06 .05	--- --- ---
			(*3*)	(*2*)	180 Up 090	.06 .01 .06	--- --- ---
			(*3*)	1.8	180 Up 090	.04 .03 .09	--- --- ---
			(*3*)	1.5	180 Up 090	.35 .17 .14	0.6 0.3 0.3
	Note: Five additional records[1] recovered at Salton Sea, POE.						

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
25 November 1987 0346:51.7 G.m.t. Southern Calif. 33.010N, 115.850W Magnitude 3.4 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	46:54.5[4]	2.8		(1)	
25 November 1987 0430:17.8 G.m.t. Southern Calif. 32.980N, 115.820W Magnitude 3.4 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	30:20.0[4]	2.4	360 Up 270	.04 .03 .05	--- --- ---
25 November 1987 1354:09.9 G.m.t. Southern Calif. 32.980N, 115.820W Magnitude 4.2 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	54:12.1[4]	2.4	360 Up 270	.09 .11 .14	--- 1 peak 0.1
25 November 1987 1501:37.9 G.m.t. Southern Calif. 33.030N, 115.780W Magnitude 3.2 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	01:38.9[4]	2.1		(1)	
26 November 1987 0156:27.5 G.m.t. Southern Calif. 32.990N, 115.820W Magnitude 3.7 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	56:30.0[4]	2.4		(1)	
26 November 1987 1739:01.9 G.m.t. Southern Calif. 33.030N, 115.890W Magnitude 4.3 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	39:05.6[4]	3.1		(1)	
25 November 1987- 27 November 1987 Southern Calif. Epicenters and magnitudes unknown	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	(3)	0.5 0.7 	135 Up 045 135 Up 045	.07 .04 .04 .17 .10 .10	--- --- --- 0.7 1 peak 1 peak
	Note: Four additional records[1] recovered at Superstition Mountain Camera Site 8						
27 November 1987 0010 G.m.t. Southern Calif. Epicenter and magnitude unknown	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	10:48.6[4]	2.1	360 Up 270	.06 .02 .04	--- --- ---

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
27 November 1987 0110:10.5 G.m.t. Southern Calif. 33.000N, 115.820W Magnitude 4.7 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	10:12.5[4]	2.2	360 Up 270	.09 .07 .08	--- --- ---
27 November 1987 0615 G.m.t. Southern Calif. Epicenter and magnitude unknown	El Centro, Parachute Test Base (Temp.) (USGS)	33.041N 116.068W	15:49.9[4]	(2)	135 Up 045	.10 .08 .10	1 peak --- 1 peak
27 November 1987 0922:57.6 G.m.t. Southern Calif. 33.000N, 115.810W Magnitude 4.1 ML	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	22:59.1	1.0	135 Up 045	.07 .04 .04	--- --- ---
	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	22:59.5[4]	2.0	360 Up 270	.06 .07 .05	--- --- ---
	El Centro, Parachute Test Base (Temp.) (USGS)	33.041N 116.068W	23:04.5[4]	(2)		(1)	
28 November 1987 0039:10.9 G.m.t. Southern Calif. 32.980N, 115.810W Magnitude 4.2 ML	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	39:11.3	0.8	135 Up 045	.07 .06 .07	--- --- ---
	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	39:12.9[4]	2.2	360 Up 270	.10 .09 .12	0.2 --- 0.1
	Superstition Mountain Base (Temp) (USGS)	32.960N 115.816W	39:12.9[4]	(2)	025 Up 295	.04 .03 .11	--- --- 1 peak
	El Centro Parachute Test Site (USGS)	32.929N 115.700W	39:16.1	(2)		(1)	
	El Centro, Parachute Test Base (Temp.) (USGS)	32.926N 115.695W	39:16.2[4]	(2)		(1)	
30 November 1987 1923:19.5 G.m.t. Gulf of Alaska 58.679N, 142.786W Magnitude 7.1 ML	Bancas Point (USGS)	59.953N 139.635W	24:53.4[4]	(2)	360 Up 270	.05 .02 .06	--- --- ---
	Middleton Island (USGS)	59.443N 146.332W	23:30.0[4]	(2)		(1)	
	Mt. Hamilton (USGS)	60.337N 144.261W	24:32.8[4]	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
30 November 1987 1923:19.5 G.m.t. Gulf of Alaska 58.679N, 142.786W Magnitude 7.1 ML-- *Continued*	Guyot Hills (USGS)	60.146N 141.471W	24:31.9[4]	(2)	360 Up 270	.03 .05 .06	--- --- ---
	Kayak Island Ridge USGS)	59.927N 144.500W	23:57.6[4]	(2)		(1)	
	Sunshine Point (USGS)	60.180N 142.838W	24:43.6[4]	(2)		(1)	
	Yakutat FAA VOR Building (USGS)	59.51 N 139.65 W	(3)	8.1	360 Up 270	.12 .05 .14	10 --- 10.3
30 November 1987 1954 G.m.t. Southern Calif. Epicenter and magnitude unknown	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	54:50.6[4]	2.2		(1)	
2 December 1987 0403:05.6 G.m.t. Southern Calif. 33.126N, 115.830W Magnitude 4.6 ML	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	03:07.3	0.5	135 Up 045	.08 .05 .07	--- --- ---
	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	03:08.1[4]	2.3	360N Up 270	.07 .06 .08	--- --- ---
	Superstition Mountain Base (Temp.) (USGS)	32.960N 115.816W	03:08.7[4]	(2)	025 Up 295	.05 .03 .09	--- --- ---
	El Centro, Parachute Test Base (Temp.) (USGS)	32.926N 115.695W	03:14.1[4]	(2)		(1)	
3 December 1987 1345:57.9 G.m.t. Southern Calif. 33.000N, 115.790W Magnitude 3.1 ML	Superstition Hills East (Temp.) (USGS)	33.005N 115.729W	45:59.8[4]	(2)		(1)	
3 December 1987 1904:36.5 G.m.t. Southern Calif. 33.010N, 115.870W Magnitude 3.8 ML	Superstition Mountain Base (Temp.) (USGS)	32.960N 115.816W	04:40.0[4]	(2)		(1)	
	Superstition Mountain Camera Site 8 (USGS)	32.955W 115.823W	(3)	(2)		(1)	

Table 1. Catalogue of National Cooperative Strong-Motion Network accelerograph records recovered during 1987—Continued

Earthquake	Station name (owner)	Station location (°)	Trigger time	S-minus trigger (s)	Direction (az)	Maximum amplitude (g)	Duration (s)
4 December 1987 0525 G.m.t. Southern Calif. Epicenter and magnitude unknown	Superstition Mountain Camera Site 8 (USGS)	32.955N 115.823W	25:56.4	(2)		(1)	
10 July 1987- 8 December 1987 Southern Calif. Epicenters and magnitudes unknown	Cabazon Post Office (USGS)	33.92 N 116.78 W	(3)	(2)		(1)	
	Whitewater Canyon Trout Farm (USGS)	33.99 N 116.66 W	(3)	(2)		(1)	
	Note: One additional record[1] recovered at Whitewater Canyon Trout Farm.						
8 December 1987 1845:33.2 G.m.t. Southern Calif 33.000N, 115.860W Magnitude 3.4 ML	Superstition Mountain Base (Temp.) (USGS)	32.960N 115.816W	45:36.6[4]	(2)		(1)	
2 September 1987- 14 December 1987 Southern Calif. Epicenter and magnitude unknown	San Diego VA Hospital (VA)	32.87 N 117.23 W	(3)	(2)			
	Basement					(1)	
15 December 1987 1823:46.0 G.m.t. Central Calif. 35.370N, 118.770W Magnitude 4.1 ML	Isabella Dam (ACOE)	35.647N 118.483W	23:53.7[4]	(2)			
	Main Dam Mid-dam					(1)	

[1] Less than 0.05 g.

[2] Questionable or undeterminable.

[3] WWVB time code illegible, or instrument not equipped with a radio receiver; correlation of accelerogram with event may be questionable.

[4] Internal clock time in minutes and seconds after hour listed in column one; accuracy is variable.

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