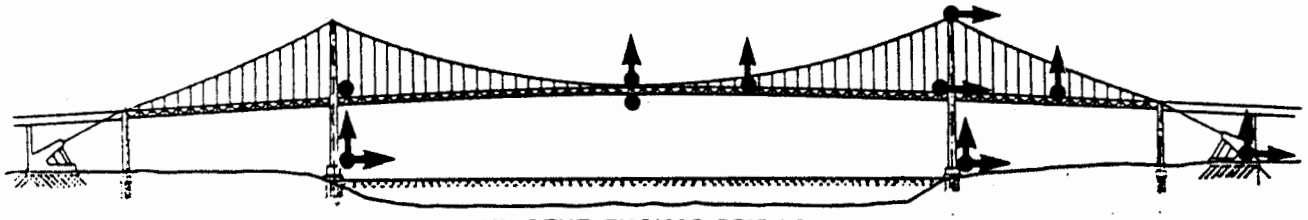
CSMIP STRONG-MOTION RECORDS FROM THE WHITTIER, CALIFORNIA EARTHQUAKE OF 1 OCTOBER 1987



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DIVISION OF MINES AND GEOLOGY
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CSMIP STRONG-MOTION RECORDS FROM THE WHITTIER, CALIFORNIA EARTHQUAKE OF 1 OCTOBER 1987

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CSMIP STRONG-MOTION RECORDS FROM THE WHITTIER, CALIFORNIA EARTHQUAKE OF 1 OCTOBER 1987

Introduction

Strong-motion records were recovered from 100 stations of the California Strong Motion Instrumentation Program (CSMIP) after the earthquake of October 1, 1987 which occurred north of Whittier, California, approximately 15 km east of downtown Los Angeles. Records were recovered from 63 CSMIP ground-response stations and 38 extensively-instrumented structures. These structures include 27 buildings, eight dams, a suspension bridge, an airport control tower and a power plant. This report includes all CSMIP data from the Whittier earthquake and supersedes the brief compilation distributed immediately after the earthquake (CDMG, 1987). In addition to the records recovered by CSMIP, records were also recovered by the U.S. Geological Survey, the University of Southern California, and other agencies. In total this set of data will be the largest ever recorded from an earthquake, exceeding that recovered in the 1971 San Fernando earthquake.

The estimated earthquake location and magnitude are (Caltech):

Epicenter: 34.058N, 118.075W. Depth: 9 km.
Origin Time: 14:42:20 GMT (07:42:20 PDT), 1 October 1987
Magnitude: 6.1 ML

Damage was moderate over a broad area and extensive in certain localized areas such as downtown Whittier. Damage studies by other organizations are still underway at this time. A preliminary report completed by the engineering firm EQE, Inc. (EQE, 1987) provides a good, early overview of damage to various types of construction in the Los Angeles area. A preliminary report by Burdick and others (1987) reviewed damage to power generating facilities. EQE estimates that the total damage will exceed $100 million.

Highlights of CSMIP Strong-Motion Data

A total of 128 strong-motion records recovered from many geologic environments and types of structures are included in this report. These 128 records contain a total of 641 channels of strong-motion data. Certain features of this large data set are of particular interest:

- Vincent Thomas Suspension Bridge. This large suspension bridge near Long Beach was instrumented with 26 sensors in 1981 with funding support from the Federal Highway Department. It was a difficult installation because sensors had to be mounted high on the towers, and cable runs back to the recorder were very long. The records obtained in the Whittier earthquake make those efforts worthwhile however. These are the first significant records ever obtained of the motions of a long-span suspension bridge during earthquake shaking. The bridge is 40 km from the epicenter, so the amplitude of motion at the base of the towers was only 8% g. The motion of the suspended deck in the side-span reached 28% g, and a preliminary calculation indicates that the deck edge moved about

10 cm vertically as the deck oscillated in torsion during the earthquake shaking. For reference, the center span of this bridge, 1500 feet in length, is approximately one third that of the San Fransisco Golden Gate Bridge, and approximately equal to the span length of the suspended sections of the Oakland Bay Bridge. The data from this earthquake can be compared with the results of an earlier study of ambient vibrations of the bridge (Abdel-Ghaffar and Housner, 1977).

- Tarzana ground-response station. The largest acceleration recorded at a CSMIP ground-response station was 62% g at Tarzana, about 45 km from the epicenter. This value is surprisingly high given that less than 45% g was recorded at close-in ground response stations. For example, Obregon Park, 10 km from the epicenter, recorded the next largest acceleration (45% g). The station at Tarzana meets current standards for good ground response installations (a light fiber-glass enclosure, or T-hut, over a 4-foot square concrete pad). The Tarzana site is located in a region of low rolling hills between the alluvial San Fernando Valley and the Santa Monica Mountains. The station is underlain by shallow (10 m or less) soil over siltstone. Because of the high acceleration, the instrument was recalibrated in the field after the earthquake; no indication of instrument malfunction was observed in the test records. In contrast to the mainshock record, the peak acceleration (9% g) in the record from the 5.5 ML aftershock is not particularly unusual.

- CSULA Administration Building. The administration building of the California State University at Los Angeles is a 9-story reinforced concrete structure located 9 km from the epicenter. The structure has a "soft first story" design very similar to the Imperial County Services Building in El Centro which suffered column failure in the 1979 Imperial Valley earthquake. The maximum acceleration in the CSULA building was about 40% g at the base and 50% g at the roof. For comparison, the 1979 Imperial County Services record had a peak value of about 35% g at the base, and 60% g at the roof. The CSULA record has less long period energy and is shorter in duration than the 1979 record. Early field reports indicate primarily architectural rather than structural damage in the building.

- Base-Isolated Rancho Cucamonga Law and Justice Center. A low-level record similar to that recorded in recent earthquakes was recorded at this building. Although the peak value for this earthquake is slightly higher at the roof (6% g) than for the 1986 Palm Springs earthquake, these levels are still too low for the base-isolation features to be effective.

- Special Network Arrays. Two southwest-northeast station alignments are included in the network of CSMIP stations which recorded this earthquake. An alignment north and west of the Los Angeles basin, called the Lake Hughes array, represents an expansion of a similar array in place in the 1971 San Fernando earthquake. Although the station spacing (10-20 km) is too great for high resolution analysis of wave propagation, the azimuthal spread of the stations should allow productive source mechanism studies. A second alignment extends northwestward across the Los Angeles basin from Palos Verdes on the coast to Mt. Wilson northeast of Pasadena. Finally, a special small array of six stations in the Leona Valley in northern Los Angeles County recorded the motion, but the motions may be too small (less than 5% g) for productive studies.

- Pacoima Dam. During the 1971 San Fernando earthquake a then-unprecedented value of 1.25 g was recorded at the upper left abutment of this concrete arch dam north of San Fernando Valley. Since the 1971 earthquake, the dam has been extensively instrumented with sensors on the crest and face of the dam. The Whittier earthquake triggered the system for the first time, and although the levels of motion are low (5% g on the crest, 6% g on the abutment), the records will allow studies of the dam response and any localized amplification effects.

- Olive View Hospital. During the 1971 earthquake the Olive View Hospital in San Fernando Valley was severely damaged. A new hospital was subsequently built at the site, and completed only last year. The structure was built to high strength requirements, and strong-motion instruments were installed by the owner at the time of construction. The records recovered during this earthquake are the first from this building, and allow analyses of its specialized structure. A peak acceleration of 20% g was recorded at the roof level.

- San Fernando Valley Buildings. Several buildings in the San Fernando Valley were instrumented with limited instrumentation during the 1971 San Fernando earthquake. Two of these buildings, one in Van Nuys and one in North Hollywood, have since been extensively instrumented by CSMIP with 16 sensors each. A peak acceleration of 20% g was recorded during the Whittier earthquake at the roof level of each building. Analysis of the detailed records from these buildings can utilize the analyses of the response of these buildings during the 1971 earthquake and also allow quantitative verification of the seismic strengthening modifications.

- Hollywood Storage Building and Lot. The Whittier earthquake is the third earthquake in the last 35 years (after Kern County, 1952 and San Fernando, 1971) to be recorded at this pair of stations first installed to provide data for soil-structure interaction studies. The amplitudes recorded during this event (21% g in the lot, 12% g in the basement) are quite similar to those from the San Fernando earthquake. The extensive instrumentation of the structure performed since the 1971 earthquake will allow a thorough study of the soil-structure interaction for the first time.

Additional Strong-Motion Data

Several agencies in addition to CSMIP have strong-motion instruments in the Los Angeles area. The largest set of instruments is the Los Angeles network of the University of Southern California (Anderson and others, 1981). This network is comprised of 80 stations located in small structures at various locations in the basin. The U.S. Geological Survey also maintains instruments of its own and of other agencies in this area, and Etheredge and Porcella (1987) have prepared a report on the data from the 52 stations of this group. In addition to these stations, smaller groups of instruments are maintained by the California Institute of Technology, Southern California Edison and other agencies.

In addition to the above networks, several other groups have collected data, and private building owners in the City of Los Angeles have instruments in their buildings, as required by the City code. It is estimated that over 200 buildings in Los Angeles have been instrumented by the building owners with at least one recorder at the roof. Some of these records have been recovered; CSMIP plans to recover the remaining records in the near future, pending arrangements with the

City and building owners. All private building records recovered by CSMIP, or sent to CSMIP by the building owners, will be included in a future CSMIP report if possible. That report, to be completed within several months, will also include records recovered at stations of the Los Angeles Department of Water and Power and the Los Angeles County Flood Control District.

Order of Data Presentation

Three complementary tables are included in this report to make cross-referencing of stations and records as convenient as possible. The CSMIP strong-motion stations in the Los Angeles vicinity are shown on the station map in Figure 1. A three-digit identification code is shown adjacent to each station on the map. This identification code and the corresponding station name are cross-referenced in Table 1, positioned opposite the station map. In Table 2, the stations are listed in alphabetical order and station parameters such as coordinates and site geology are given. The page number where the record from that station appears is also given, if the station was triggered. Finally, Table 3 list earthquake-dependent information, such as epicentral distance and peak acceleration values from the record. The page number where the accelerogram appears is again listed.

To make accessing the data from the stations more convenient, three station areas have been defined as shown on Figure 1. Area 1 is a central area including the Los Angeles basin and San Fernando Valley; Area 2 is the area to the east from Pomona to Palm Springs; and Area 3 is the region to the northwest beyond the San Fernando Valley. In Table 3 the stations are listed in approximate epicentral distance order within each of these three areas. The actual records themselves are also presented in this order in this report.

The part of the report containing the accelerograms has two main sections based on station type: ground response and structural response. The structural response section is further separated into building stations and lifeline stations. The first section contains the records from ground response stations, two records per page. The second section contains building response records, and for most buildings the presentation includes a picture of the building, a brief description of the structural system, and a schematic of the sensor layout. These are followed by one to three pages of records, depending on the number of recording instruments associated with the building. Many buildings have ground-response stations nearby to provide reference ground motion information. For convenience, a second copy of each reference-station record is included in the ground-response section. For distant stations with low amplitude records, the sensor layout is not included. By convention, the orientation of sensors in buildings is given by reference directions parallel to the principal building dimensions; the relationship of these directions to true geographic directions is given on each building record.

The third section contains copies of records from instrumented lifeline structures, including a bridge, eight dams, an airport control tower, and a power plant. The presentation follows the format used for building records; a schematic of the sensor layout at the station is presented for all significant records.

Aftershock Data

The 5.5 ML aftershock on October 4, 1987 triggered many of the same stations that recorded the main shock. Peak amplitudes are generally smaller and the records are

of shorter duration. Peak values of all records recovered from the aftershock are given in Table A1 in the Appendix. Selected records are also given in the Appendix. Most of the near-in ground-response records are shown. The structural response record from the Sears Warehouse building in Los Angeles is also included as particularly noteworthy - the peak accelerations in the structure were greater in the aftershock than in the mainshock. The record from the Tarzana station is also included because of the unusual record from the mainshock. As indicated in Table A1 there are several other records of interest from the aftershock. However, the focus of this report is the mainshock data and only selected aftershock records have been included so the report could be completed in a timely manner.

Acknowledgments

The California Strong Motion Instrumentation Program extends its appreciation to the individuals and organizations which have permitted and cooperated in the installation of seismic strong-motion equipment on their property. C. Rojahn, J. Ragsdale and R. Nutt assisted in planning sensor layouts for the structures considered in this report.

The records presented in this report were recovered at stations originally instrumented by CSMIP technicians M. Huston, H. LaGesse, R. Meneely, M. Seaton, L. Stange, C. Hallstrom and V. Steeves. Record recovery after the earthquake was performed by W. Williams, H. LaGesse, S. Rider, C. Petersen and M. Malinowski. W. Williams and R. Boylan assisted in verifying station and instrument information. M. Malinowski and S. Weaver assisted in the preparation of this report. The joint efforts of all those involved made the timely publication of these data possible.

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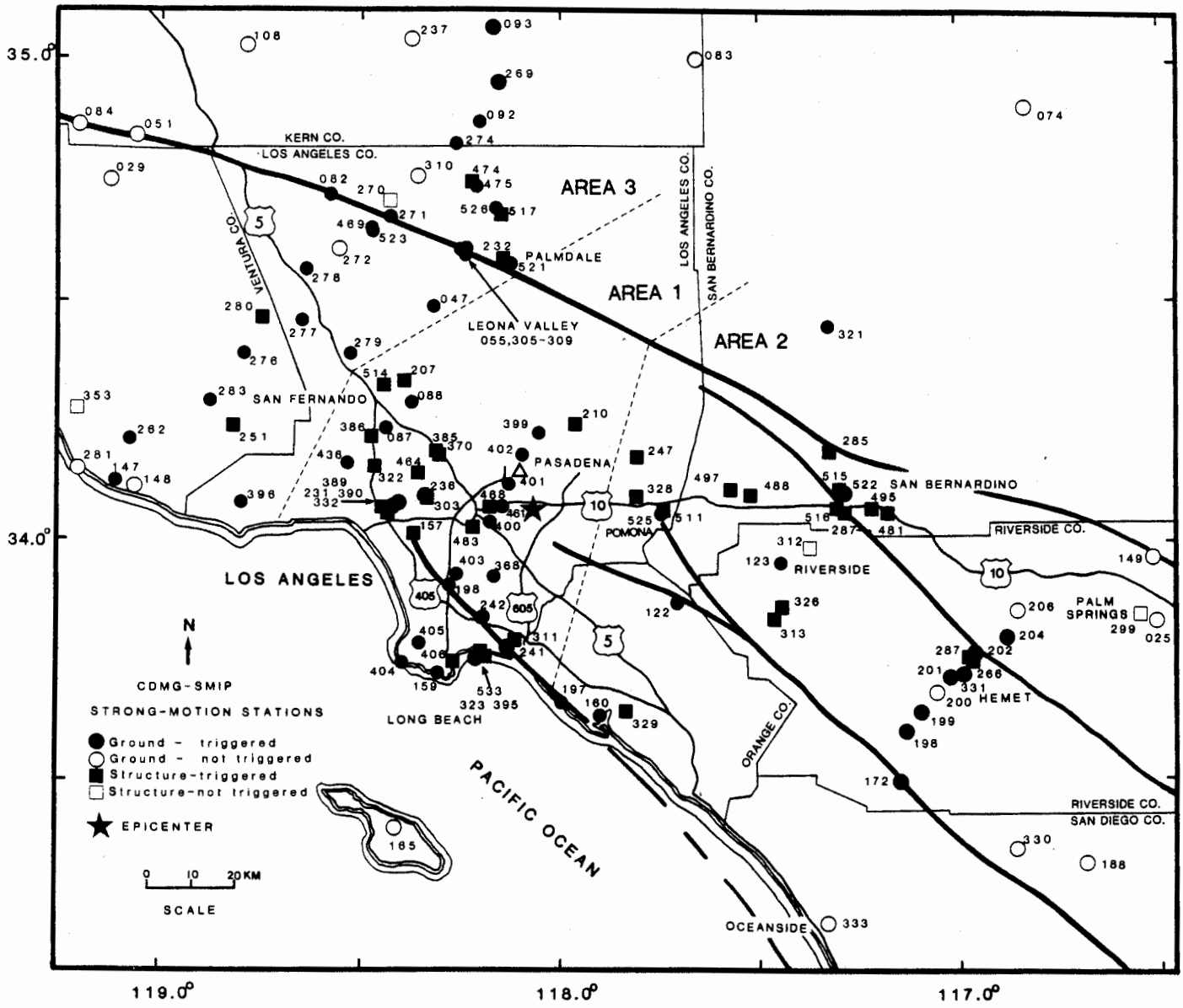


Figure 1. CSMIP strong-motion stations in the vicinity of the October 1, 1987 earthquake near Whittier. Stations are identified by a 3-digit code cross-referenced to station names in Table 1. The map has been divided into three areas for more convenient reference to stations. (★ Epicenter for mainshock; △ Epicenter of October 4 aftershock)

TABLE 1

Station-Code Reference Table

Code	Station Name
025	Palm Springs - Airport
029	Lockwood Valley - Plus Ranch
047	Vasquez Rocks Park
051	Cuddy Valley - Tubbs Ranch
055	Leona Valley #5 - Ritter Ranch
074	Yermo - Fire Station
082	Sawmill Mountain - Caltech Seismic Sta.
083	Boron
084	Mt. Able - Kern Co. Highway Maint. Sta.
087	Arleta - Nordhoff Ave Fire Station
088	Pacoima - Kagel Canyon
092	Rosamond - Airport
093	Mojave - LADWP Storage Shed
108	Wheeler Ridge - Tejon Hills Oil Field
122	Featherly Park - Park Maint. Bldg.
123	Riverside - Airport
147	Point Mugu - Naval Air Station
148	Point Mugu - Laguna Peak
149	Desert Hot Springs - Pierson Blvd Fire Sta.
157	Los Angeles - Baldwin Hills
159	San Pedro - 25th St. Fire Station
160	Newport Beach - Irvine Ave Fire Station
165	Santa Catalina Island - Airport
168	Puerta La Cruz - USFS Storage Bldg.
172	Temecula - CDF Fire Station
196	Inglewood - Union Oil Yard
197	Huntington Beach - Lake St. Fire Station
198	Murrieta Hot Springs - Collins Ranch
199	Winchester - Bergman Ranch
200	Winchester - Hidden Valley Farms
201	Winchester - Page Bros. Ranch
202	San Jacinto - Valley Cemetery
204	San Jacinto - Soboba
206	Silent Valley - Poppet Flat
207	Pacoima Dam
210	Cogswell Reservoir - Cogswell Dam
231	Los Angeles - UCLA Math-Science Bldg.
232	Palmdale - Holiday Inn
236	Los Angeles - Hollywood Storage Bldg.
237	Mojave - Oak Creek Canyon
241	Long Beach - Recreation Park
242	Long Beach - Rancho Los Cerritos
247	Big Dalton Reservoir - Big Dalton Dam
251	Wood Ranch Reservoir - Dam and Dikes
266	Hemet - City Library
267	Hemet - Valley Hospital
269	Actis - HWY 14/Backus Road
270	Fairmont Reservoir - Fairmont Dam
271	Lake Hughes #1
272	Lake Hughes #9
274	Rosamond - Godde Ranch
276	Piru
277	Castaic - Hasley Canyon
278	Castaic - Old Ridge Route
279	Newhall - LA County Fire Station
280	Lake Piru - Santa Felicia Dam
281	Port Hueneme - Naval Lab.
282	Camarillo - Fire Dept. Supply Bldg.
283	Moorpark - Ventura County Fire Dept.
285	San Bernardino - CSUSB Library
287	San Bernardino - Hilton Inn
299	Palm Springs - Desert Hospital
303	Los Angeles - Hollywood Storage Bldg. FF
305	Leona Valley #1
306	Leona Valley #2
307	Leona Valley #3
308	Leona Valley #4
309	Leona Valley #6
310	Antelope Buttes
311	Long Beach - CSULB Engineering Bldg. 1
312	Riverside - Riverside Co. Admin. Bldg.
313	Lake Mathews - Main Dam
321	Hesperia
322	Sherman Oaks - Union Bank Bldg.
323	Long Beach - Harbor Admin. Bldg.
326	Lake Mathews - Dike 1
328	Puddingstone Reservoir - Puddingstone Dam
329	Irvine - UCI Engineering Bldg.
330	Palomar Mountain - Palomar Observatory
331	Hemet - Stetson Ave Fire Station
332	Los Angeles - Century City Bullock Store
333	Oceanside B
353	Ventura - Hall of Justice
368	Downey - County Maint. Bldg.
370	Burbank - California Fed. Savings Bldg.
385	Burbank - Pacific Manor
386	Van Nuys - Holiday Inn
389	Century City - LACC North
390	Century City - LACC South
395	Long Beach - Harbor Admin. Bldg. FF
396	Malibu - Point Dume School
399	Mt. Wilson - Caltech Seismic Station
400	Los Angeles - Obregon Park
401	San Marino - Southwestern Academy
402	Altadena - Eaton Canyon Park
403	Los Angeles - 116th St. School
404	Rancho Palos Verdes - 30840 Hawthorne Blvd.
405	Rolling Hills Estates - Rancho Vista School
406	Los Angeles - Vincent Thomas Bridge
436	Tarzana - Cedar Hill Nursery
461	Alhambra - Fremont School
463	Los Angeles - Sears Warehouse
464	North Hollywood - Sheraton-Universal Hotel
466	Etiwanda - SCE Power Plant #3
468	Los Angeles - CSULA Admin. Building
469	Lake Hughes #4
474	Lancaster - Airport Control Tower
475	Lancaster - Airport FF
481	Redlands - Redlands Fed. Savings Bldg.
495	Redlands - Interstate Van Lines Warehouse
497	Rancho Cucamonga - Law & Justice Center
511	Pomona - First Federal Savings Bldg.
514	Sylmar - Olive View Medical Center
515	San Bernardino - Vanir Towers
516	San Bernardino - Sunwest Office Bldg.
517	Lancaster - Medical Office Bldg.
521	Palmdale - Holiday Inn FF
522	San Bernardino - 2nd & Arrowhead
523	Lake Hughes #4B
525	Pomona - 4th & Locust FF
526	Lancaster - Medical Office Bldg. FF
533	Long Beach - City Hall

TABLE 2

CSMIP Strong-Motion Stations - Whittier Earthquake

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Record on Page*
Actis - HWY 14/Backus Road	34.956	118.159	24269	269	Shallow(.5m?) alluvium over rhyolite	56
Alhambra - Fremont School	34.070	118.150	24461	461	Alluvium	25
Altadena - Eaton Canyon Park	34.177	118.096	24402	402	Alluvium	27
Antelope Buttes	34.758	118.361	24310	310	Weathered granite	NT
Arleta - Nordhoff Ave Fire Station	34.236	118.439	24087	087	Deep alluvium	33
Big Dalton Reservoir - Big Dalton Dam	34.170	117.808	23247	247	Igneus rock (Diorite)	157
Boron	35.002	117.650	33083	083	Alluvium	NT
Burbank - Cal. Fed. Savings Bldg.	34.185	118.308	24370	370	Alluvium	71
Burbank - Pacific Manor	34.187	118.311	24385	385	Alluvium	75
Camarillo - Fire Dept. Supply Bldg.	34.208	119.079	25282	282	Alluvium	55
Castaic - Hasley Canyon	34.459	118.650	24277	277	Shallow alluvium	49
Castaic - Old Ridge Route	34.564	118.642	24278	278		52
Century City - LACC North	34.063	118.418	24389	389	Alluvium	31
Century City - LACC South	34.062	118.416	24390	390	Alluvium	31
Cogswell Reservoir - Cogswell Dam	34.245	117.964	23210	210	Weathered crystalline rock	149
Cuddy Valley - Tubbs Ranch	34.840	119.066	25051	051	Alluvium	NT
Desert Hot Springs- Pierson Blvd Fire Station	33.962	116.509	12149	149	Alluvium	NT
Downey - County Maint. Bldg.	33.924	118.167	14368	368	Deep alluvium	27
Etiwanda - SCE Power Plant #3	34.091	117.527	23466	466		173
Fairmont Reservoir - Fairmont Dam	34.704	118.426	24270	270	Granite	NT
Featherly Park - Park Maint. Bldg.	33.869	117.709	13122	122	Alluvium	36
Hemet - City Library	33.748	116.966	12266	266	Deep alluvium	130
Hemet - Stetson Ave Fire Station	33.729	116.979	12331	331	Deep alluvium	42
Hemet - Valley Hospital	33.750	116.959	12267	267	Deep alluvium	131
Hesperia	34.448	117.327	23321	321	Alluvium	39
Huntington Beach - Lake St. Fire Station	33.662	117.997	13197	197	Sand over alluvium	37

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Record on Page*
Inglewood - Union Oil Yard	33.905	118.279	14196	196	Terrace deposits	29
Irvine - UCI Engineering Bldg.	33.645	117.840	13329	329	Soil over sandstone	123
Lake Hughes #1 Fire Station #78	34.674	118.430	24271	271	Alluvium (~300m) over granitics	50
Lake Hughes #4 Camp Mendenhall	34.650	118.478	24469	469	Weathered granite	50
Lake Hughes #4B Camp Mendenhall	34.650	118.477	24523	523	Weathered granite	51
Lake Hughes #9	34.608	118.558	24272	272	Gneiss	NT
Lake Mathews - Dike 1	33.854	117.444	13326	326		165
Lake Mathews - Main Dam	33.836	117.461	13313	313		165
Lake Piru - Santa Felicia Dam	34.460	118.753	24280	280	Sandstone, shale	170
Lancaster - Airport Control Tower	34.739	118.214	24474	474	Alluvium	171
Lancaster - Airport FF	34.739	118.214	24475	475	Alluvium	52,172
Lancaster - Medical Office Bldg.	34.688	118.157	24517	517	Alluvium	134
Lancaster - Medical Office Bldg. FF	34.688	118.156	24526	526	Alluvium	45,135
Leona Valley #1	34.594	118.242	24305	305		46
Leona Valley #2	34.595	118.243	24306	306		46
Leona Valley #3	34.596	118.243	24307	307		47
Leona Valley #4	34.598	118.242	24308	308		47
Leona Valley #5 - Ritter Ranch	34.600	118.241	24055	055	Alluvium	48
Leona Valley #6	34.604	118.244	24309	309		48
Lockwood Valley Plus Ranch	34.749	119.131	25029	029	Alluvium	NT
Long Beach - City Hall	33.768	118.195	14533	533	Terrace deposits	93
Long Beach - CSULB Engineering Bldg. 1	33.783	118.112	14311	311	Alluvium	83
Long Beach - Harbor Admin. Bldg.	33.755	118.200	14323	323	Alluvium	97
Long Beach - Harbor Admin. Bldg. FF	33.754	118.200	14395	395	Alluvium	32,101
Long Beach - Rancho Los Cerritos	33.840	118.194	14242	242	Alluvium	30
Long Beach - Recreation Park	33.778	118.133	14241	241	Terrace deposits	32

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Record on Page*
Los Angeles - 116th St. School	33.929	118.260	14403	403	Terrace deposits	28
Los Angeles - Baldwin Hills	34.009	118.361	24157	157	Fill over shale, sandstone	30
Los Angeles - Century City Bullock Store	34.058	118.417	24332	332	Alluvium	89
Los Angeles - CSULA Admin. Building	34.067	118.168	24468	468		59
Los Angeles - Hollywood Storage Bldg.	34.090	118.338	24236	236	Alluvium (130m?) over sandstone, shale	67
Los Angeles - Hollywood Storage Bldg. FF	34.090	118.339	24303	303	Alluvium (130m?) over sandstone, shale	29,70
Los Angeles - Obregon Park	34.037	118.178	24400	400	Alluvium	26
Los Angeles - Sears Warehouse	34.028	118.223	24463	463		63
Los Angeles - UCLA Math-Science Bldg.	34.069	118.442	24231	231	Alluvium	91
Los Angeles - Vincent Thomas Bridge	33.750	118.271	14406	406		139
Malibu - Point Dume School	34.077	118.800	24396	396		49
Mojave - LADWP Storage Shed	35.070	118.175	34093	093	Alluvium	56
Mojave - Oak Creek Canyon	35.042	118.377	34237	237	Alluvium	NT
Moorpark - Ventura County Fire Dept.	34.288	118.881	24283	283	Alluvium	53
Mt. Able - Kern Co. HWY Maint. Shed	34.860	119.210	25084	084	Fill (1m) over schist	NT
Mt. Wilson Caltech Seismic Station	34.224	118.057	24399	399	Quartz diorite	28
Murrieta Hot Springs - Collins Ranch	33.599	117.132	13198	198	Thin soil (1m) over weathered granite	40
Newhall - LA County Fire Department	34.390	118.530	24279	279	Alluvium	44
Newport Beach - Irvine Ave Fire Station	33.634	117.902	13160	160	Alluvium	38
North Hollywood - Sheraton-Universal Hotel	34.138	118.359	24464	464	Sandstone, shale	79
Oceanside B Fire Station #3	33.201	117.331	13333	333		NT
Pacoima Dam	34.334	118.396	24207	207	Diorite gneiss	161
Pacoima - Kagel Canyon	34.288	118.375	24088	088	Sandstone	33
Palm Springs - Airport	33.829	116.501	12025	025	Sand (3m) over alluvium	NT
Palm Springs - Desert Hospital	33.838	116.541	12299	299	Alluvium	NT

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Record on Page*
Palmdale - Holiday Inn	34.581	118.134	24232	232	Alluvium	132
Palmdale - Holiday Inn FF	34.581	118.135	24521	521	Alluvium	45,133
Palomar Mountain - Palomar Observatory	33.353	116.862	12330	330	Granite	NT
Piru	34.389	118.795	24276	276	Shallow alluvium	51
Point Mugu - Laguna Peak	34.109	119.065	25148	148	Shale	NT
Point Mugu - Naval Air Station	34.119	119.113	25147	147	Sand, alluvium	55
Pomona - First Federal Savings Bldg	34.056	117.749	23511	511		115
Pomona - 4th & Locust FF	34.056	117.748	23525	525		36,118
Port Hueneme - Naval Lab.	34.145	119.206	25281	281	Deep alluvium	NT
Puddingstone Reservoir - Puddingstone Dam	34.091	117.808	23328	328	Volcanic rock, shale	153
Puerta La Cruz - USFS Storage Bldg.	33.324	116.683	12168	168	Thin alluvium (8m?) over granite	NT
Rancho Cucamonga - Law & Justice Center	34.104	117.574	23497	497	Sand, alluvium (250m?) over granite	37,119
Rancho Palos Verdes - 30840 Hawthorne Blvd.	33.746	118.396	14404	404	Basalt, shale	35
Redlands - Interstate Van Lines	34.066	117.214	23495	495		128
Redlands - Redlands Fed. Savings	34.056	117.178	23481	481		129
Riverside - Airport	33.951	117.446	13123	123	Alluvium	38
Riverside - Riverside Co. Admin. Bldg.	33.978	117.373	13312	312	Alluvium	NT#
Rolling Hills Estates - Rancho Vista School	33.787	118.356	14405	405	Shale	34
Rosamond - Airport	34.870	118.206	24092	092	Alluvium	54
Rosamond - Godde Ranch	34.827	118.265	24274	274	Alluvium	54
San Bernardino - 2nd & Arrowhead	34.103	117.289	23522	522		39
San Bernardino - CSUSB Library	34.183	117.323	23285	285	Alluvium	124
San Bernardino - Hilton Inn	34.065	117.279	23287	287		127
San Bernardino - Sunwest Office Bldg.	34.065	117.289	23516	516		126
San Bernardino - Vanir Towers	34.104	117.292	23515	515		125

TABLE 2 (Continued)

Station Name	N.Lat.	W.Long.	Sta. No.	Code	Site Geology	Record on Page*
San Jacinto - Soboba	33.797	116.880	12204	204	Alluvium	43
San Jacinto - Valley Cemetery	33.760	116.960	12202	202	Alluvium	42
San Marino - Southwestern Academy	34.115	118.130	24401	401	Alluvium	26
San Pedro - 25th St. Fire Station	33.722	118.309	14159	159	Sandstone	34
Santa Catalina Island - Airport	33.402	118.414	14165	165	Crystalline rock	NT
Sawmill Mountain - Caltech Seismic Station	34.719	118.581	24082	082	Granite	53
Sherman Oaks - Union Bank Bldg.	34.154	118.465	24322	322	Alluvium	103
Silent Valley - Poppet Flat	33.851	116.852	12206	206	Weathered granite	NT
Sylmar - Olive View Medical Center	34.326	118.444	24514	514		35,111
Tarzana - Cedar Hill Nursery	34.160	118.534	24436	436	Shallow alluvium (10m?) over siltstone	25
Temecula- CDF Fire Station	33.496	117.149	13172	172	Alluvium	41
Van Nuys - Holiday Inn	34.221	118.471	24386	386	Alluvium	107
Vasquez Rocks Park	34.490	118.320	24047	047	Shallow alluvium (~3m) over sandstone	44
Ventura - Hall of Justice	34.270	119.210	25353	353		NT
Wheeler Ridge - Tejon Hills Oil Field	35.027	118.791	34108	108	Alluvium	NT
Winchester - Bergman Ranch	33.640	117.094	13199	199	Weathered granite	40
Winchester - Hidden Valley Farms	33.681	117.056	13200	200	Thin soil (1m) over schist,granite	NT
Winchester - Page Bros. Ranch	33.718	117.022	13201	201	Deep (200m?) alluvium	41
Wood Ranch Reservoir - Main Dam and Dikes	34.240	118.820	24251	251	Sandstone	168
Yermo - Fire Station	34.903	116.823	22074	074	Alluvium	NT

Footnote: NT - Instrument not triggered, though operational.
NT# - Instrument not triggered, probable instrument malfunction.

TABLE 3 - Strong Motion Data - Whittier Earthquake

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
---------- MAP AREA 1 ----------								
Alhambra Fremont School	24461	1-story bldg.	7	---	270 Up 180	0.40 0.20 0.30		25
San Marino Southwestern Academy 2800 Monterey Rd.	24401	1-story bldg.	8	22.3	360 Up 270	0.20 0.14 0.15		26
Los Angeles CSULA Admin. Bldg.	24468	8-story bldg. (16 sensors)	9	---	180 Up 90	0.30 0.14 0.39	0.48 0.53 0.27	59
Los Angeles Obregon Park	24400	1-story bldg.	10	22.8	360 Up 270	0.44 0.15 0.45		26
Altadena Eaton Canyon Park	24402	1-story bldg.	13	24.4	90 Up 360	0.16 0.18 0.32		27
Los Angeles Sears Warehouse	24463	5-story bldg. (13 sensors)	14	---	350 Up 260	0.14 0.09 0.18	0.18 -- 0.24	63
Downey County Maint. Bldg. 11283 S. Garfield Ave	14368	1-story bldg.	17	---	270 Up 180	0.16 0.17 0.20		27
Mt. Wilson Caltech Seismic Station	24399	Seismic Vault	19	24.0	90 Up 360	0.19 0.12 0.13		28
Los Angeles 116th St. School	14403	1-story bldg.	22	25.4	360 Up 270	0.40 0.11 0.29		28
Cogswell Reservoir Cogswell Dam	23210	Earth dam (9 sensors)	23	24.5	150 Up 60	0.06 0.06 0.08	0.13 0.14 0.17	149
Los Angeles Hollywood Storage Bldg.	24236	14-story bldg. (12 sensors)	25	---	90 Up 360	0.06 0.04 0.12	0.20 -- 0.21	67
Los Angeles Hollywood Storage Bldg. FF	24303	Instr. shltr. H	25	---	90 Up 360	0.12 0.08 0.21		29,70
Inglewood Union Oil Yard 13707 S. Broadway	14196	Instr. shltr. A	25	26.0	90 Up 360	0.23 0.07 0.27		29

TABLE 3 - Strong Motion Data - Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Burbank Cal. Fed. Savings Bldg.	24370	6-story bldg. (13 sensors)	26	---	130 Up 40	0.22 0.10 0.17	0.30 -- 0.18	71
Burbank Pacific Manor	24385	10-story bldg. (16 sensors)	26	---	40 Up 310	0.26 0.06 0.22	0.41 -- 0.54	75
Long Beach Rancho Los Cerritos	14242	Instr. shltr. H	27	26.1	90 Up 360	0.25 0.09 0.15		30
Los Angeles Baldwin Hills	24157	Instr. shltr. A	27	26.2	90 Up 360	0.17 0.11 0.15		30
Big Dalton Reservoir Big Dalton Dam	23247	Concrete dam (9 sensors)	28	26.3	293 Up 203	-- -- --	0.15 0.07 0.10	157
North Hollywood Sheraton-Universal Hotel	24464	20-story bldg. (16 sensors)	28	25.2	90 Up 360	0.09 0.07 0.11	0.13 -- 0.21	79
Long Beach CSULB Eng. Bldg. 1	14311	5-story bldg. (9 sensors)	31	---	90 Up 360	0.10 0.05 0.10	0.36 -- 0.13	83
Century City Los Angeles Country Club South	24390	Instr. shltr. H	32	30.3	90 Up 360	0.07 0.02 0.06		31
Century City Los Angeles Country Club North	24389	Instr. shltr. H	32	27.1	90 Up 360	0.10 0.04 0.08		31
Long Beach Recreation Park	14241	Instr. shltr. H	32	28.1	180 Up 90	0.05 0.05 0.06		32
Los Angeles Century City Bullock Department Store	24332	3-story bldg. (15 sensors)	32	---	51 Up 321	0.04 0.03 0.06	0.18 0.06 0.18	89
Los Angeles UCLA Math-Science Bldg.	24231	6-story bldg. (12 sensors)	34	---	90 Up 360	0.04 0.04 0.05	0.05 -- 0.14	91

TABLE 3 - Strong Motion Data, Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
Long Beach City Hall	14533	15-story bldg. (16 sensors)	34	28.3	135 Up 45	0.06 0.02 0.04	0.07 0.04 0.05	93
Long Beach Harbor Admin. Bldg.	14323	7-story bldg. (18 sensors)	36	31.3	90 Up 360	0.07 0.02 0.05	0.12 -- 0.12	97
Long Beach Harbor Admin. Bldg. FF	14395	Instr. shltr. H	36	30.4	90 Up 360	0.07 0.03 0.05		32,101
Sherman Oaks Union Bank Bldg.	24322	13-story bldg. (15 sensors)	38	---	90 Up 360	0.15 0.04 0.10	0.17 -- 0.08	103
Pacoima Kagel Canyon LA Co. Fire Sta. #74	24088	1-story bldg.	38	27.0	90 Up 360	0.16 0.06 0.16		33
Los Angeles Vincent Thomas Bridge	14406	Suspension bridge (26 sensors)	39	---	180 Up 90	0.06 0.03 0.08	0.36 0.28 0.21	139
Arleta Nordhoff Ave Fire Sta.	24087	1-story bldg.	39	---	270 Up 180	0.09 0.09 0.09		33
Rolling Hills Estates Rancho Vista School	14405	1-story bldg.	40	28.8	90 Up 360	0.02 0.02 0.02		34
Van Nuys Holiday Inn	24386	7-story bldg. (16 sensors)	41	---	360 Up 270	0.17 -- --	0.20 -- 0.20	107
Pacoima Dam	24207	Concrete arch dam (20 sensors)	43	34.9	180 Up 270	0.05 0.02 0.04	0.02 0.02 0.06	161
San Pedro 25th St. Fire Station 1414 W. 25th Street	14159	1-story bldg.	43	---	270 Up 180	0.02 0.01 0.02		34
Tarzana Cedar Hill Nursery 18320 Tarzana Dr.	24436	Instr. shltr. H	44	---	90 Up 360	0.62 0.26 0.46		25

TABLE 3 - Strong Motion Data - Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Sylmar Olive View Medical Center	24514	6-story bldg. (13 sensors)	45	28.2	90 Up 360	0.06 0.05 0.06	0.16 -- 0.20	111
Sylmar Olive View Medical Center Free Field	24514	Small 1-story bldg.	45	28.2	90 Up 360	0.05 0.04 0.06		35,114
Rancho Palos Verdes 30840 Hawthorne Blvd.	14404	1-story bldg.	46	32.2	90 Up 360	0.02 0.02 0.02		35
---------- MAP AREA 2 ----------								
Puddingstone Reservoir Puddingstone Dam	23328	Earth dam (18 sensors)	25	26.2	333 Up 243	0.07 0.07 0.06	0.19 0.10 0.09	153
Pomona First Fed. Savings Bldg.	23511	2-story bldg. (10 sensors)	30	26.2	360 Up 270	0.05 0.03 0.05	0.15 -- 0.16	115
Pomona 4th & Locust FF	23525	Instr. shltr. H	30	25.9	102 Up 12	0.06 0.06 0.07		36,118
Featherly Park Park Maint. Bldg.	13122	1-story bldg.	40	---	90 Up 360	0.08 0.05 0.08		36
Huntington Beach Lake St. Fire Sta. 530 Lake Street	13197	1-story bldg.	45	---	360 Up 270	0.04 0.03 0.05		37
Rancho Cucamonga - Law & Justice Center	23497	4-story base-isolated bldg. (16 sensors)	47	28.9	360 Up 90	0.03 0.03 0.03	0.06 0.03 0.05	119
Rancho Cucamonga Law & Justice Center Free Field	23497	Instr. shltr. D	47	28.9	360 Up 90	0.05 0.04 0.06		37,122
Newport Beach Irvine Ave Fire Sta.	13160	1-story bldg.	50	---	90 Up 360	0.03 0.02 0.03		38
Irvine UCI Engineering Bldg.	13329	8-story bldg. (12 sensors)	51	---	225 Up 135	0.03 0.02 0.03	0.05 -- 0.09	123

TABLE 3 - Strong Motion Data - Area 2 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Etiwanda SCE Power Plant #3	23466	Steam generating plant (12 sensors)	51	---	180 Up 90	0.03 0.02 0.03	0.05 0.06 0.05	173
Riverside Airport	13123	1-story bldg.	59	31.3	270 Up 180	0.06 0.05 0.05		38
Lake Mathews Dike 1	13326	Earth dam (9 sensors)	62	32.1	75 Up 345	0.05 0.03 0.07	0.05 0.04 0.06	165
Lake Mathews Main Dam	13313	Earth dam (6 sensors)	63	31.7	350 Up 260	-- -- --	0.05 0.05 0.06	165
San Bernardino CSULB Library	23285	5-story bldg. (10 sensors)	71	---	215 Up 125	0.02 0.02 0.01	0.06 -- 0.08	124
San Bernardino Vanir Towers	23515	9-story bldg. (13 sensors)	73	34.3	180 Up 90	0.03 0.02 0.03	0.03 -- 0.03	125
San Bernardino Sunwest Office Bldg.	23516	3-story bldg. (13 sensors)	73	33.4	360 Up 270	0.03 0.02 0.03	0.08 -- 0.09	126
San Bernardino 2nd & Arrowhead	23522	Instr. shltr. H	73	32.3	270 Up 360	0.04 0.02 0.02		39
San Bernardino Hilton Inn	23287	6-story bldg. (9 sensors)	74	---	180 Up 90	0.03 0.02 0.03	0.10 -- 0.07	127
Redlands Interstate Van Lines Warehouse	23495	1-story warehouse (12 sensors)	80	36.0	360 Up 90	0.02 0.01 0.03	0.08 -- 0.10	128
Hesperia	23321	1-story bldg.	81	44.4	90 Up 360	0.02 0.02 0.03		39
Redlands Redlands Fed. Savings Bldg.	23481	7-story bldg. (13 sensors)	83	36.5	180 Up 270	0.02 0.02 0.02	0.03 -- 0.02	129

TABLE 3 - Strong Motion Data - Area 2 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
Murrieta Hot Springs Collins Ranch	13198	Instr. shltr. A	101	38.0	90 Up 360	0.02 0.01 0.02		40
Winchester Bergman Ranch	13199	Instr. shltr. A	102	50.0	90 Up 360	0.03 0.03 0.02		40
Winchester Page Bros. Ranch	13201	Instr. shltr. A	105	50.3	90 Up 360	0.04 0.02 0.03		41
Temecula CDF Fire Station	13172	Instr. shltr. H	106	38.8	90 Up 360	0.02 0.02 0.03		41
Hemet Stetson Ave Fire Sta.	12331	1-story bldg.	108	39.3	360 Up 270	0.04 0.03 0.03		42
Hemet City Library	12266	1-story bldg. (6 sensors)	108	---	360 Up 270	0.05 0.04 0.04	0.09 -- 0.09	130
San Jacinto Valley Cemetery	12202	1-story bldg.	108	42.4	360 Up 270	0.03 0.02 0.04		42
Hemet Valley Hospital	12267	4-story bldg. (10 sensors)	109	---	315 Up 225	0.04 0.04 0.03	0.13 -- 0.07	131
San Jacinto Soboba Castile Cyn Rd.	12204	1-story bldg.	114	54.2	90 Up 360	0.02 0.02 0.02		43
---------- MAP AREA 3 ----------								
Vasquez Rocks Park	24047	Instr. shltr. A	53	29.0	90 Up 360	0.07 0.04 0.05		44
Newhall LA County Fire Sta.	24279	1-story bldg.	56	31.1	270 Up 180	0.06 0.03 0.05		44

TABLE 3 - Strong Motion Data - Area 3 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
Palmdale Holiday Inn	24232	4-story bldg. (9 sensors)	58	---	140 Up 50	0.04 0.02 0.03	0.17 0.04 0.05	132
Palmdale Holiday Inn FF	24521	Instr. shltr. H	58	---	272 Up 2	0.02 0.02 0.03		45,133
Leona Valley #1	24305	Instr. shltr. H	61	37.3	90 Up 360	0.02 0.02 0.02		46
Leona Valley #2	24306	Instr. shltr. H	62	38.5	90 Up 360	0.03 0.01 0.03	--	46
Leona Valley #3	24307	Instr. shltr. H	62	41.4	90 Up 360	0.02 0.02 0.03		47
Leona Valley #4	24308	Instr. shltr. H	62	41.2	90 Up 360	0.03 0.01 0.03		47
Leona Valley #5 Ritter Ranch	24055	Instr. shltr. A	62	33.1	90 Up 360	0.05 0.03 0.05		48
Leona Valley #6	24309	Instr. shltr. H	62	35.8	90 Up 360	0.05 0.02 0.04		48
Malibu Point Dume School	24396	1-story bldg.	67	33.9	270 Up 180	0.05 0.03 0.05		49
Castaic Hasley Canyon LADWP Pump House	24277	1-story bldg.	69	---	90 Up 360	0.03 0.03 0.03		49
Lancaster Medical Office Bldg. Antelope Valley Hosp.	24517	3-story bldg. (13 sensors)	70	33.5	115 Up 25	0.06 0.02 0.04	0.19 -- 0.06	134
Lancaster Medical Office Bldg. FF	24526	Instr. shltr. H	70	33.1	100 Up 10	0.06 0.03 0.06		45,135

TABLE 3 - Strong Motion Data - Area 3 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Wood Ranch Reservoir Main Dam and Dikes	24251	Earth dam (12 sensors)	72	33.6	335	--	0.05	167
					Up	--	0.02	
					245	--	0.06	
Lake Hughes #1 Fire Station #78	24271	1-story bldg.	75	35.7	90	0.03		50
					Up	--		
					360	0.04		
Lake Hughes #4 Camp Mendenhall (near water tank)	24469	Instr. shltr. A	75	41.4	90	0.03		50
					Up	0.03		
					360	0.03		
Lake Hughes #4B Camp Mendenhall	24523	Instr. shltr. A	75	36.7	113	0.03		51
					Up	0.02		
					23	0.02		
Piru	24276	Instr. shltr. H	76	44.1	90	0.03		51
					Up	0.02		
					360	0.02		
Lancaster Airport Control Tower Fox Airfield	24474	Control Tower (9 sensors)	77	32.8	60	0.03	0.08	171
					Up	0.02	--	
					330	0.02	0.08	
Lancaster Airport FF Fox Airfield	24475	Instr. shltr. H	77	34.6	90	0.02		52,172
					Up	0.02		
					360	0.03		
Castaic Old Ridge Route	24278	Small 1-story bldg.	77	---	90	0.07		52
					Up	0.03		
					360	0.07		
Lake Piru Santa Felicia Dam	24280	Earth dam (6 sensors)	77	35.2	265	0.05	0.07	170
					Up	0.02	0.04	
					175	0.04	0.06	
Moorpark Ventura Co. Fire Dept. Garage	24283	Small Garage	79	35.7	180	0.05		53
					Up	0.02		
					90	0.04		
Sawmill Mountain Caltech Seismic Sta.	24082	1-story shed	87	46.3	90	0.04		53
					Up	0.02		
					360	0.04		
Rosamond Godde Ranch	24274	Instr. shltr. H	87	37.5	90	0.05		54
					Up	0.02		
					360	0.08		

TABLE 3 - Strong Motion Data - Area 3 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Rosamond Airport	24092	1-story bldg.	91	---	90	0.04		54
					Up	0.02		
					360	0.06		
Camarillo Fire Dept. Supply Bldg. Houck St./Willis Ave.	25282	1-story bldg.	94	53.2	270	0.03		55
					Up	0.02		
					180	0.03		
Point Mugu Naval Air Station	25147	Radar dome	96	49.8	90	0.07		55
					Up	0.02		
					360	0.06		
Actis HWY 14/Backus Road	24269	Instr. shltr. H	100	50.8	90	0.06		56
					Up	0.02		
					360	0.04		
Mojave LADWP Storage Shed	34093	1-story bldg.	113	53.9	90	0.02		56
					Up	0.02		
					360	0.03		

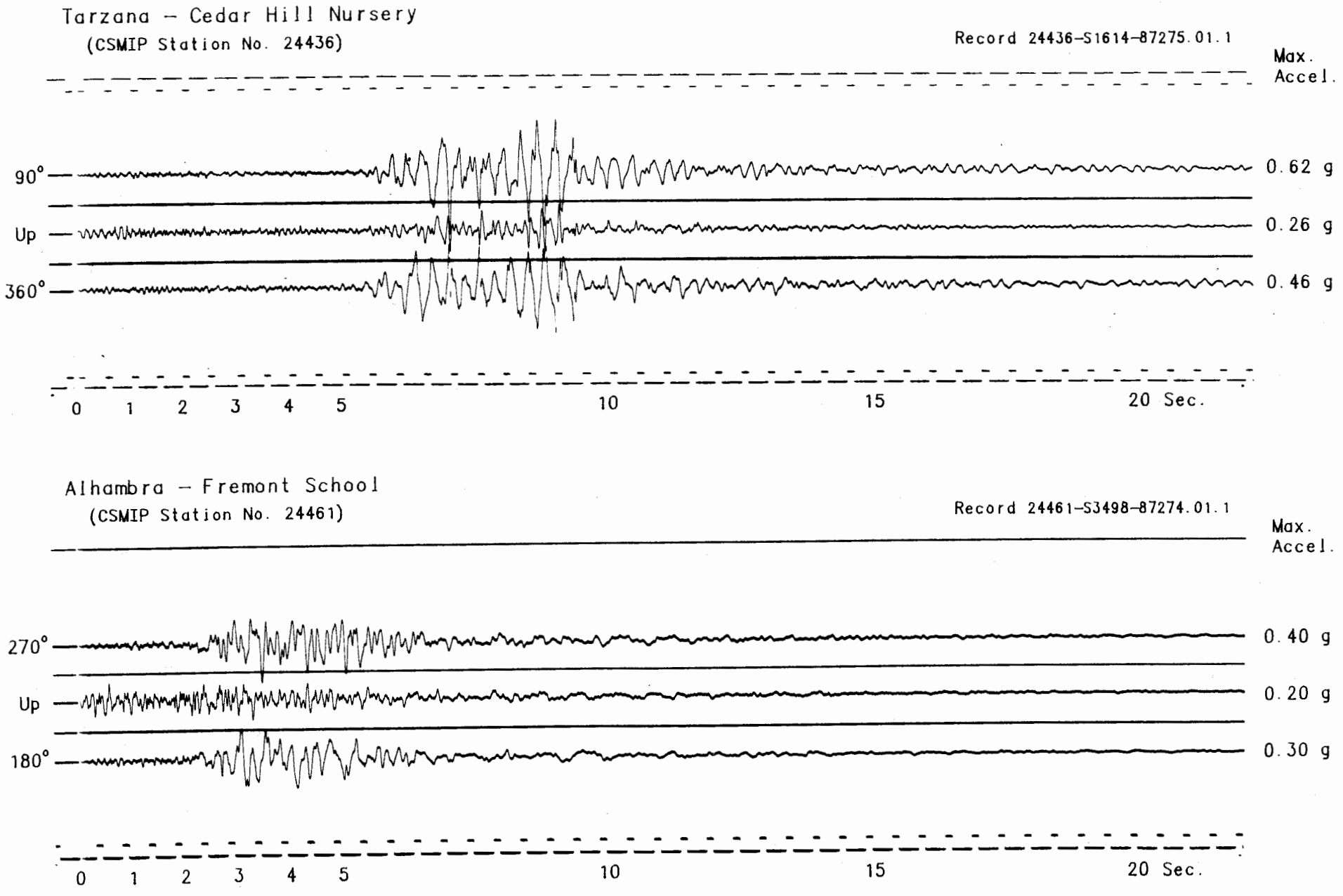
Footnotes:

* - Instrument shelter types:
Instr. shltr. A - small prefabricated metal building
Instr. shltr. D - small metal box
Instr. shltr. H - small fiberglass shelter

** - Distance given (in km) relative to the presently estimated epicenter at 34.058N, 118.075W. The distance to the nearest point on the fault is not given for this earthquake because the causative fault associated with this event is not clearly known at this time.

\# - Accelerograph trigger time, when present, in seconds after 14:42 GMT on 1 October 1987.

INDEX TO GROUND-RESPONSE RECORDS


Tarzana – Cedar Hill Nursery
(CSMIP Station No. 24436)
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Max. Accel.
90°
0.62 g
Up
0.26 g
360°
0.46 g
0 1 2 3 4 5 10 15 20 Sec.
Alhambra – Fremont School
(CSMIP Station No. 24461)
Record 24461-S3498-87274.01.1
Max. Accel.
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Up
0.20 g
180°
0.30 g
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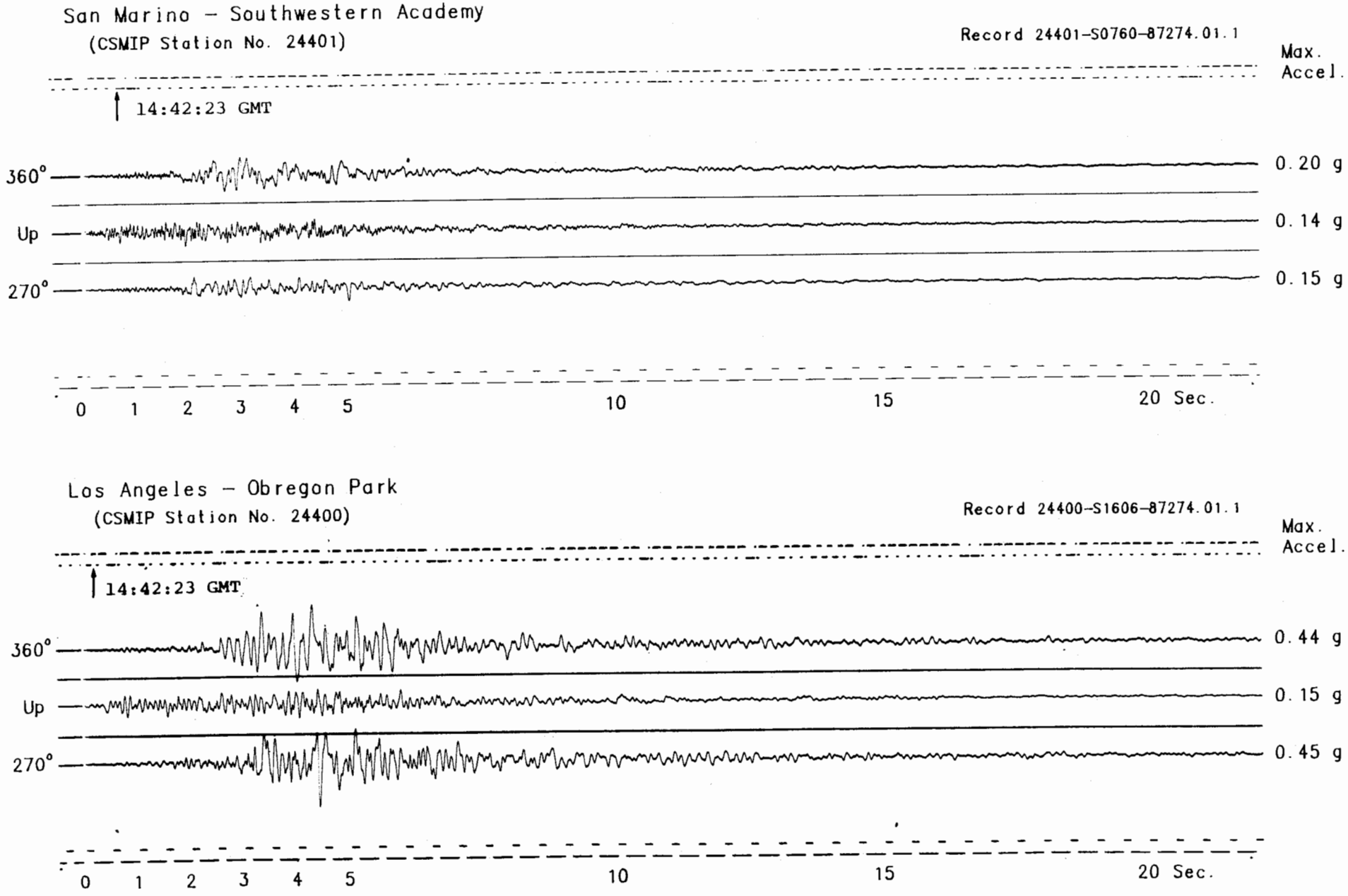
San Marino – Southwestern Academy
(CSMIP Station No. 24401)
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Up
0.14 g
270°
0.15 g
0 1 2 3 4 5 10 15 20 Sec.
Los Angeles – Obregon Park
(CSMIP Station No. 24400)
Record 24400-S1606-87274.01.1
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Up
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270°
0.45 g
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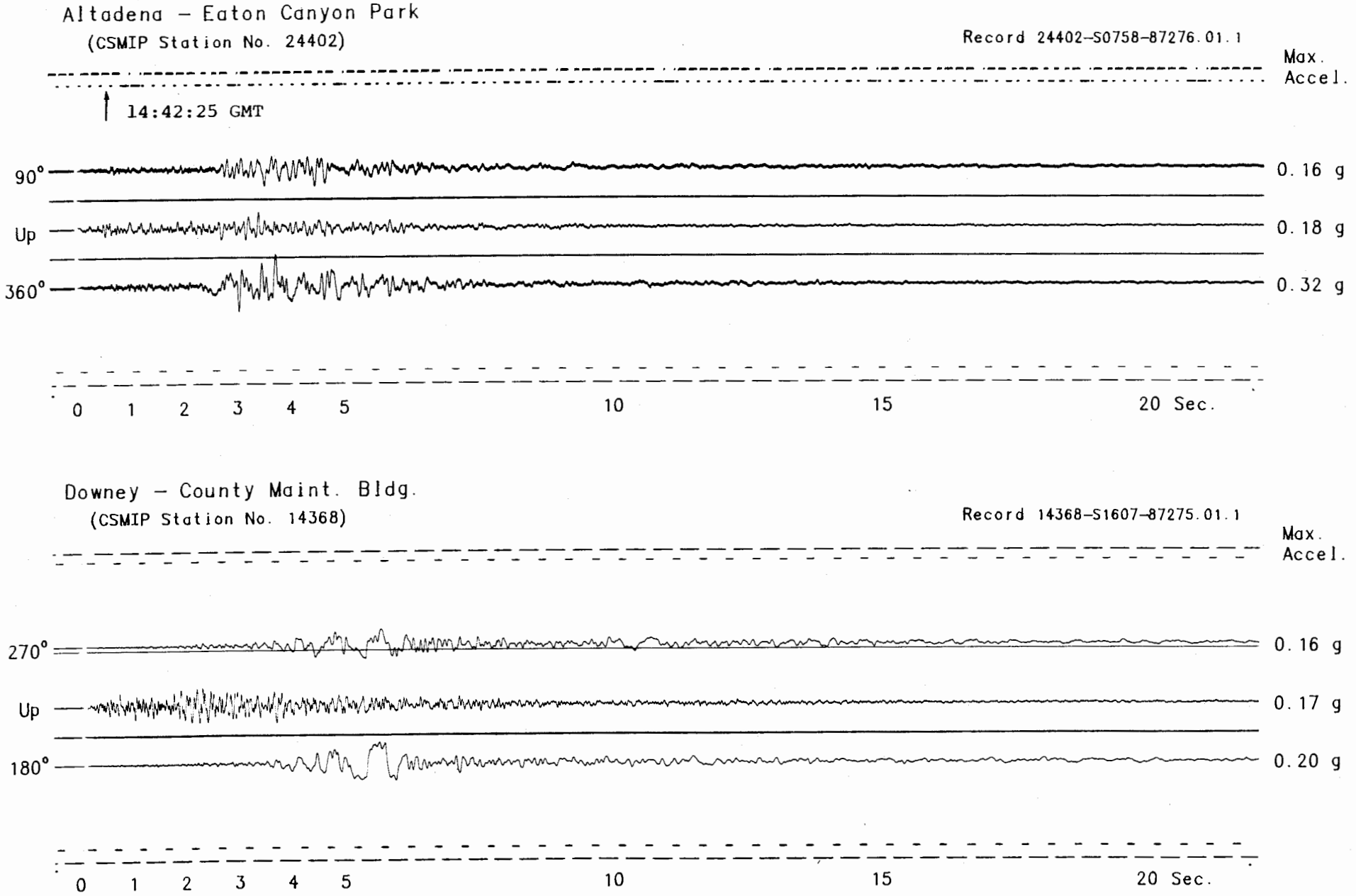
Altadena – Eaton Canyon Park
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Up
0.18 g
360°
0.32 g
0 1 2 3 4 5 10 15 20 Sec.
Downey – County Maint. Bldg.
(CSMIP Station No. 14368)
Record 14368–S1607–87275.01.1
Max. Accel.
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0.16 g
Up
0.17 g
180°
0.20 g
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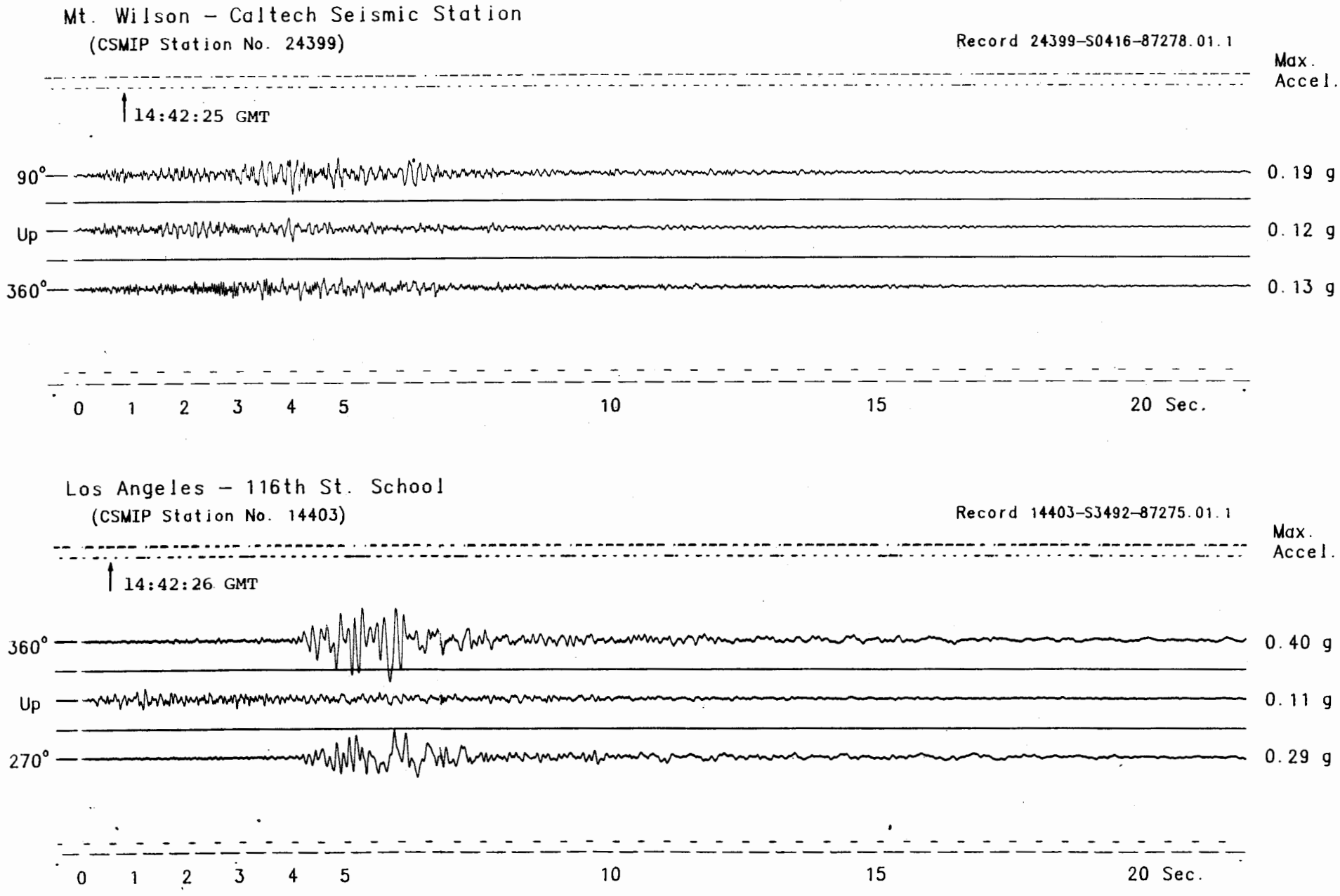
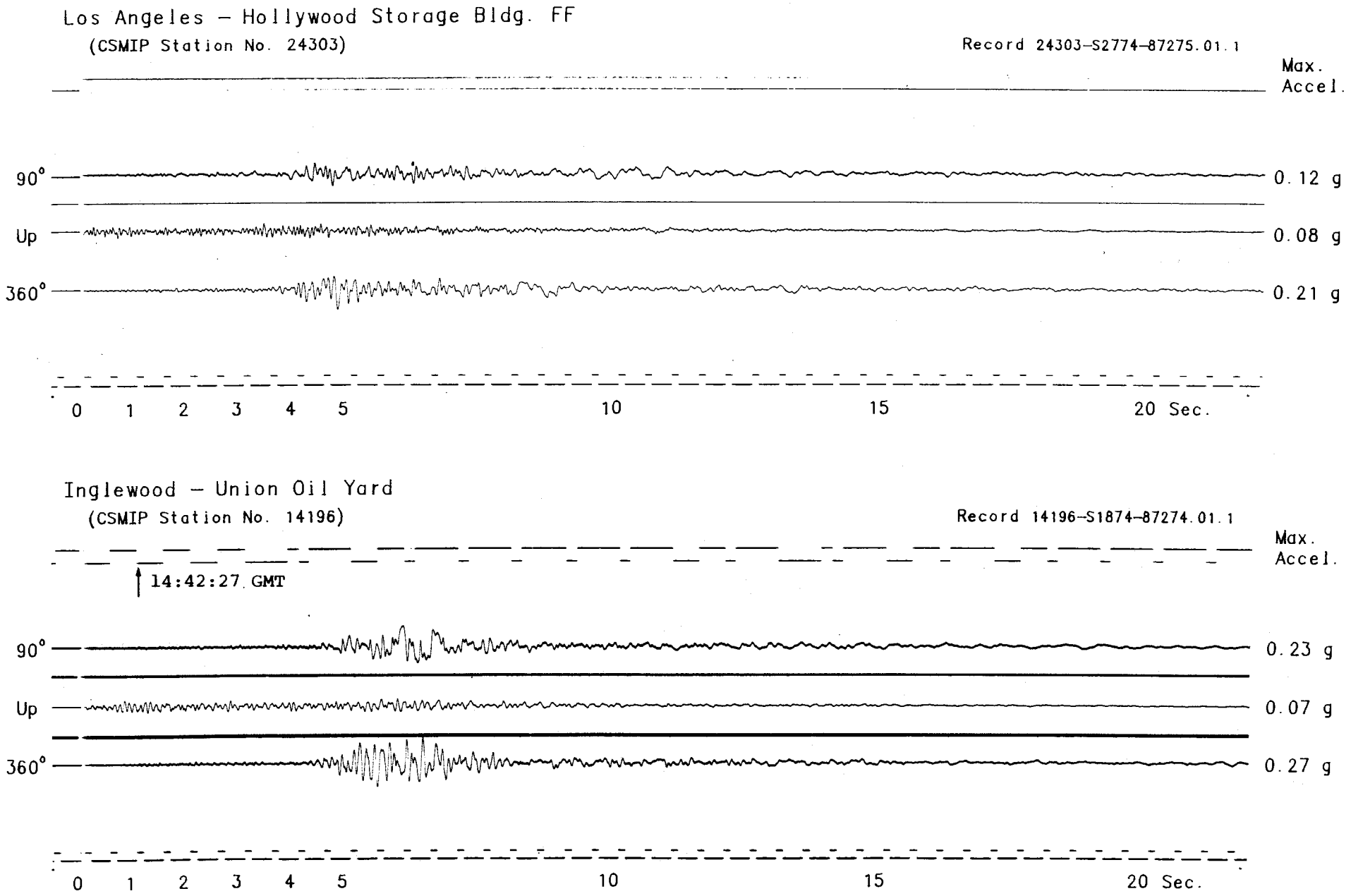
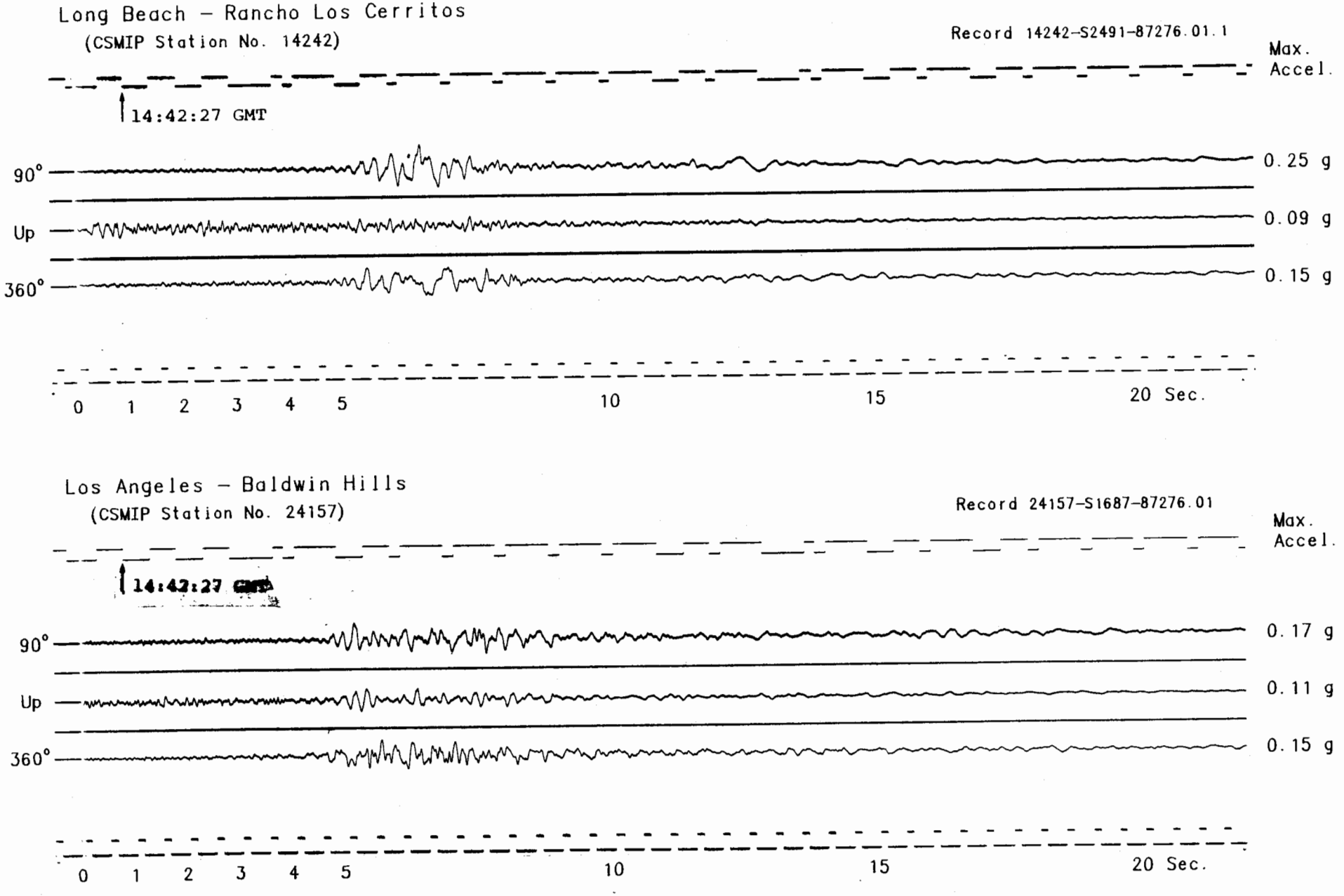
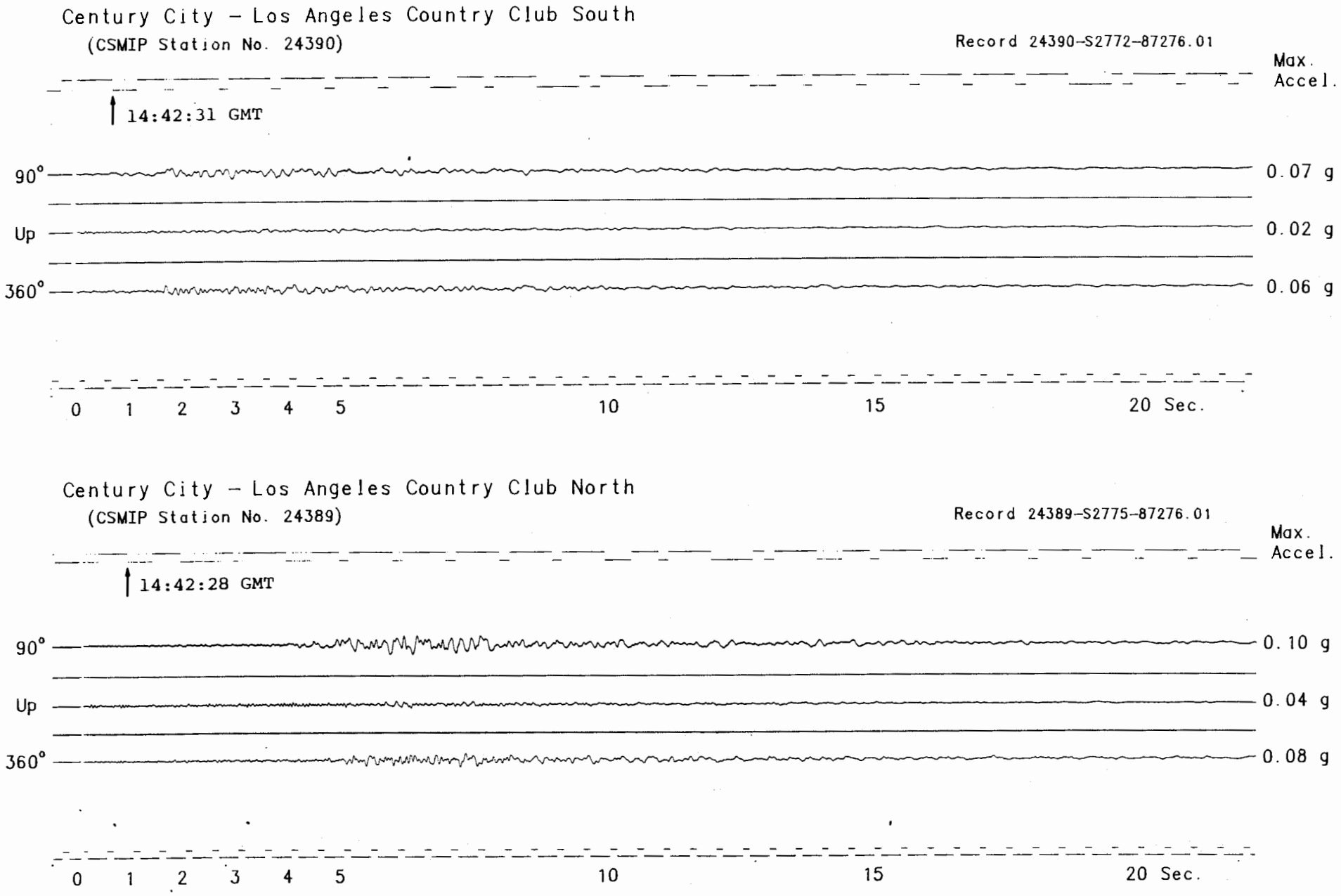
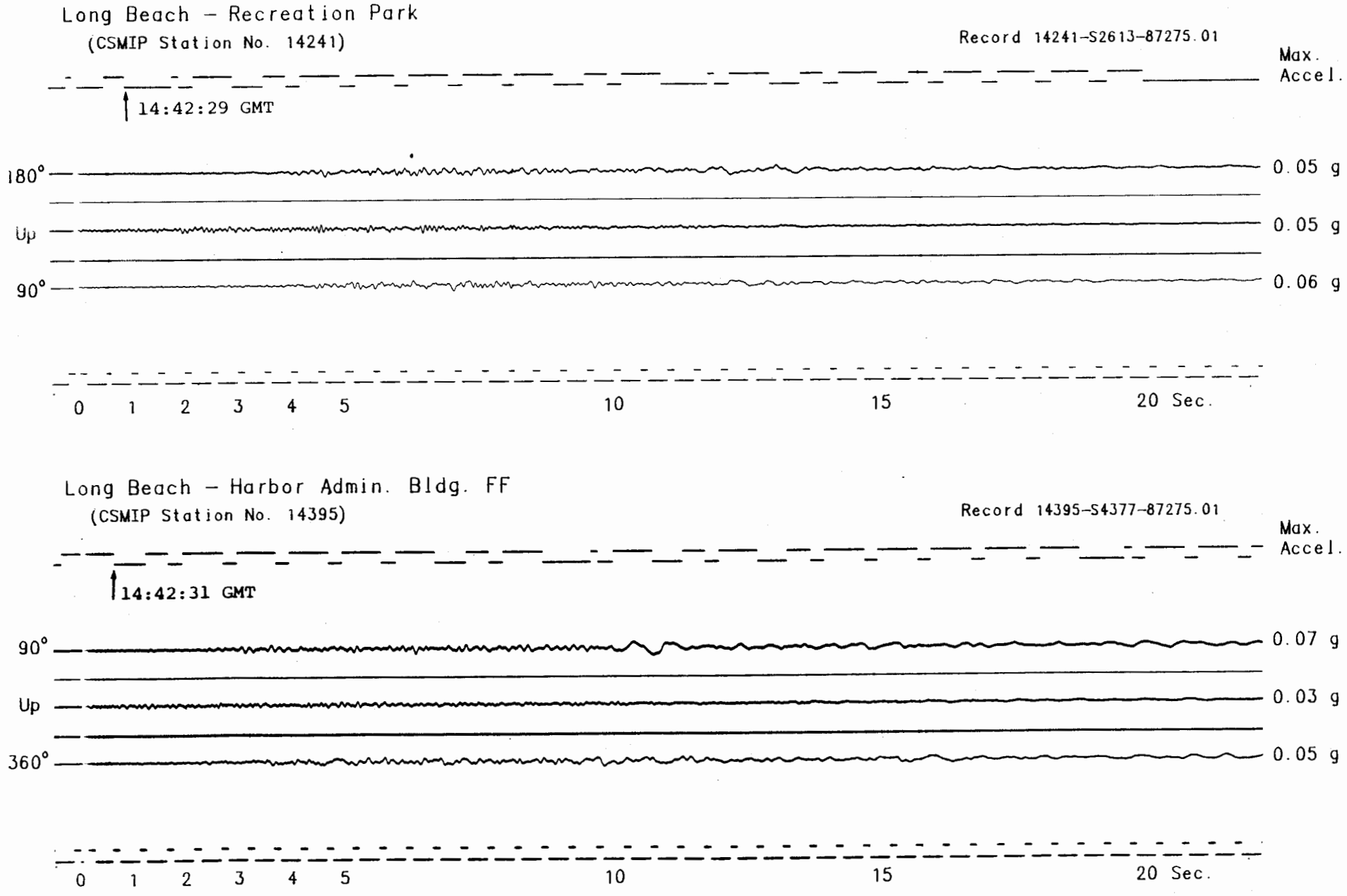
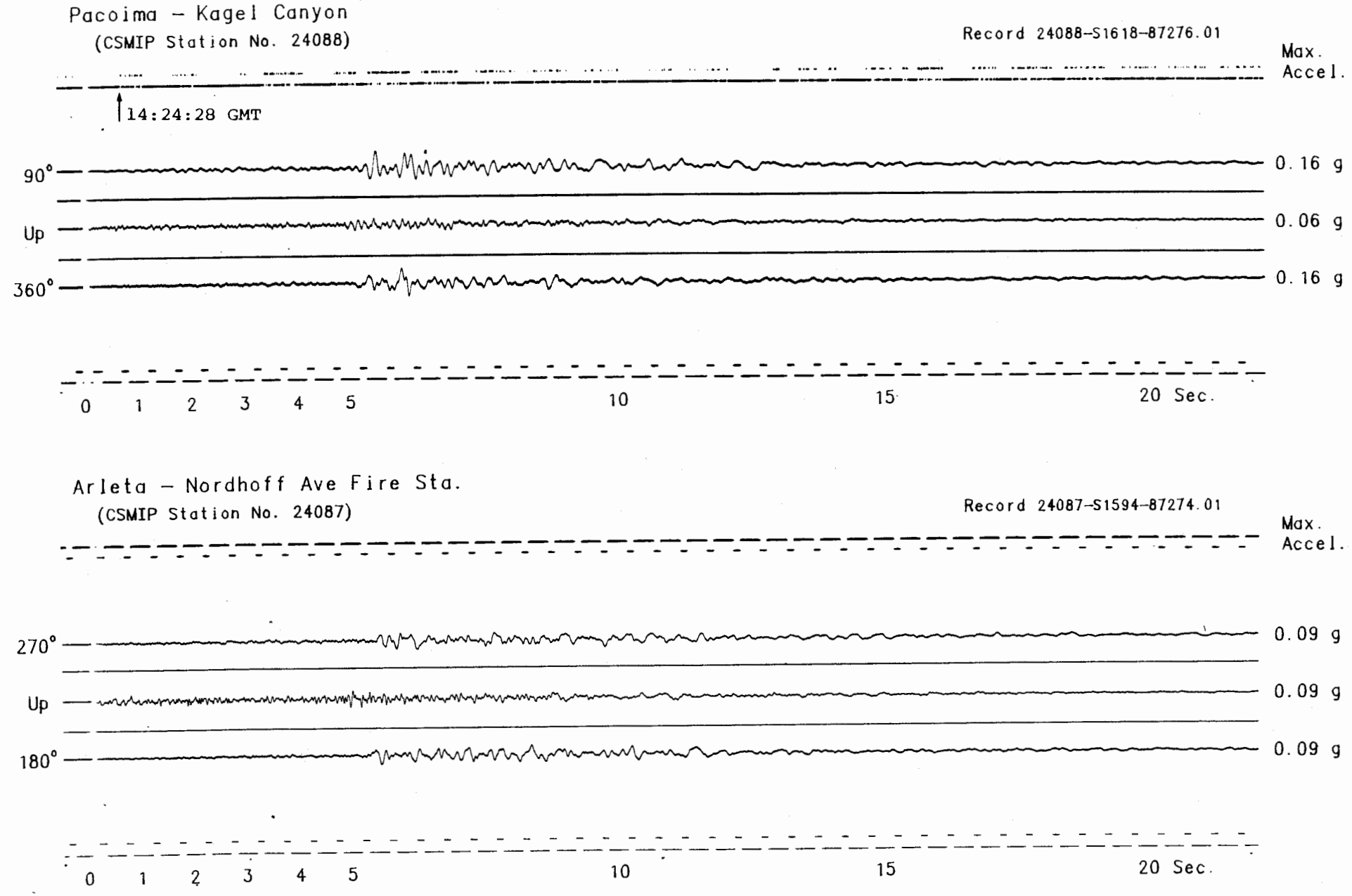

Mt. Wilson – Caltech Seismic Station
(CSMIP Station No. 24399)
Record 24399-S0416-87278.01.1
Max. Accel.
14:42:25 GMT
90°
0.19 g
Up
0.12 g
360°
0.13 g
0 1 2 3 4 5 10 15 20 Sec.
Los Angeles – 116th St. School
(CSMIP Station No. 14403)
Record 14403-S3492-87275.01.1
Max. Accel.
14:42:26 GMT
360°
0.40 g
Up
0.11 g
270°
0.29 g
0 1 2 3 4 5 10 15 20 Sec.

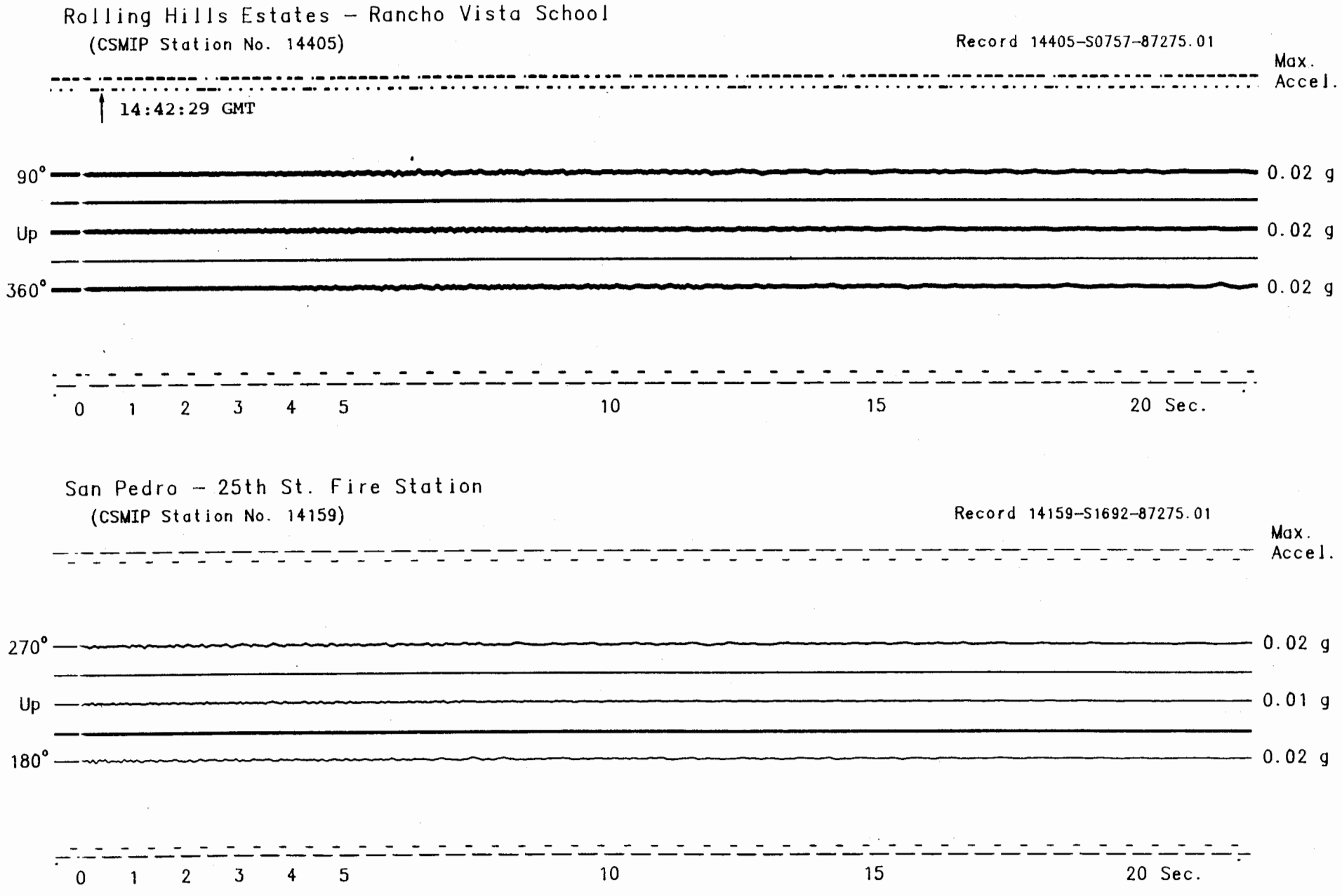

Los Angeles – Hollywood Storage Bldg. FF
(CSMIP Station No. 24303)
Record 24303–S2774–87275.01.1
Max. Accel.
90°
0.12 g
Up
0.08 g
360°
0.21 g
0 1 2 3 4 5 10 15 20 Sec.
Inglewood – Union Oil Yard
(CSMIP Station No. 14196)
Record 14196–S1874–87274.01.1
Max. Accel.
14:42:27 GMT
90°
0.23 g
Up
0.07 g
360°
0.27 g
0 1 2 3 4 5 10 15 20 Sec.

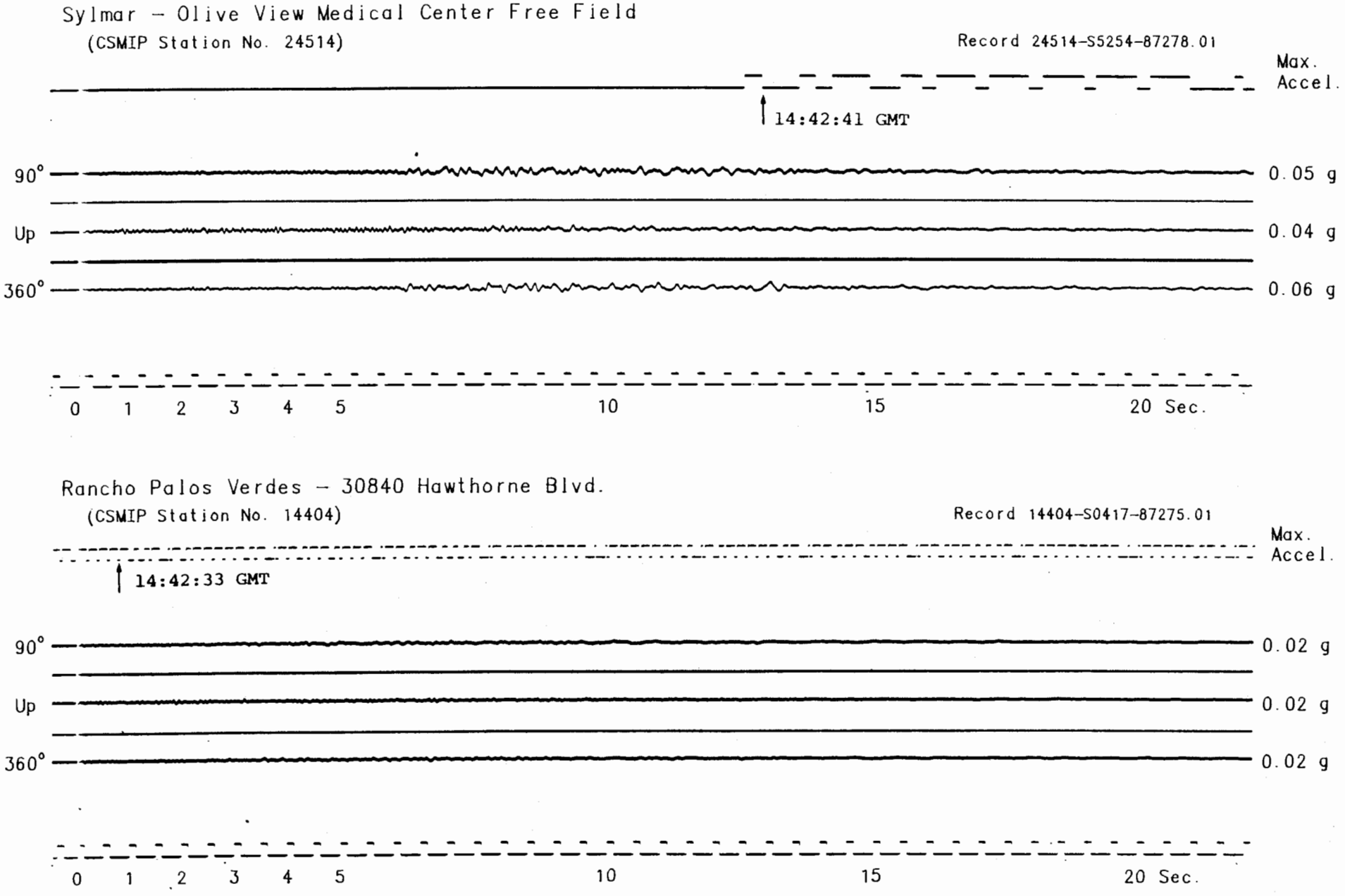

Long Beach – Rancho Los Cerritos
(CSMIP Station No. 14242)
Record 14242-S2491-87276.01.1
Max. Accel.
14:42:27 GMT
90°
0.25 g
Up
0.09 g
360°
0.15 g
0 1 2 3 4 5 10 15 20 Sec.
Los Angeles – Baldwin Hills
(CSMIP Station No. 24157)
Record 24157-S1687-87276.01
Max. Accel.
14:42:27 GMT
90°
0.17 g
Up
0.11 g
360°
0.15 g
0 1 2 3 4 5 10 15 20 Sec.

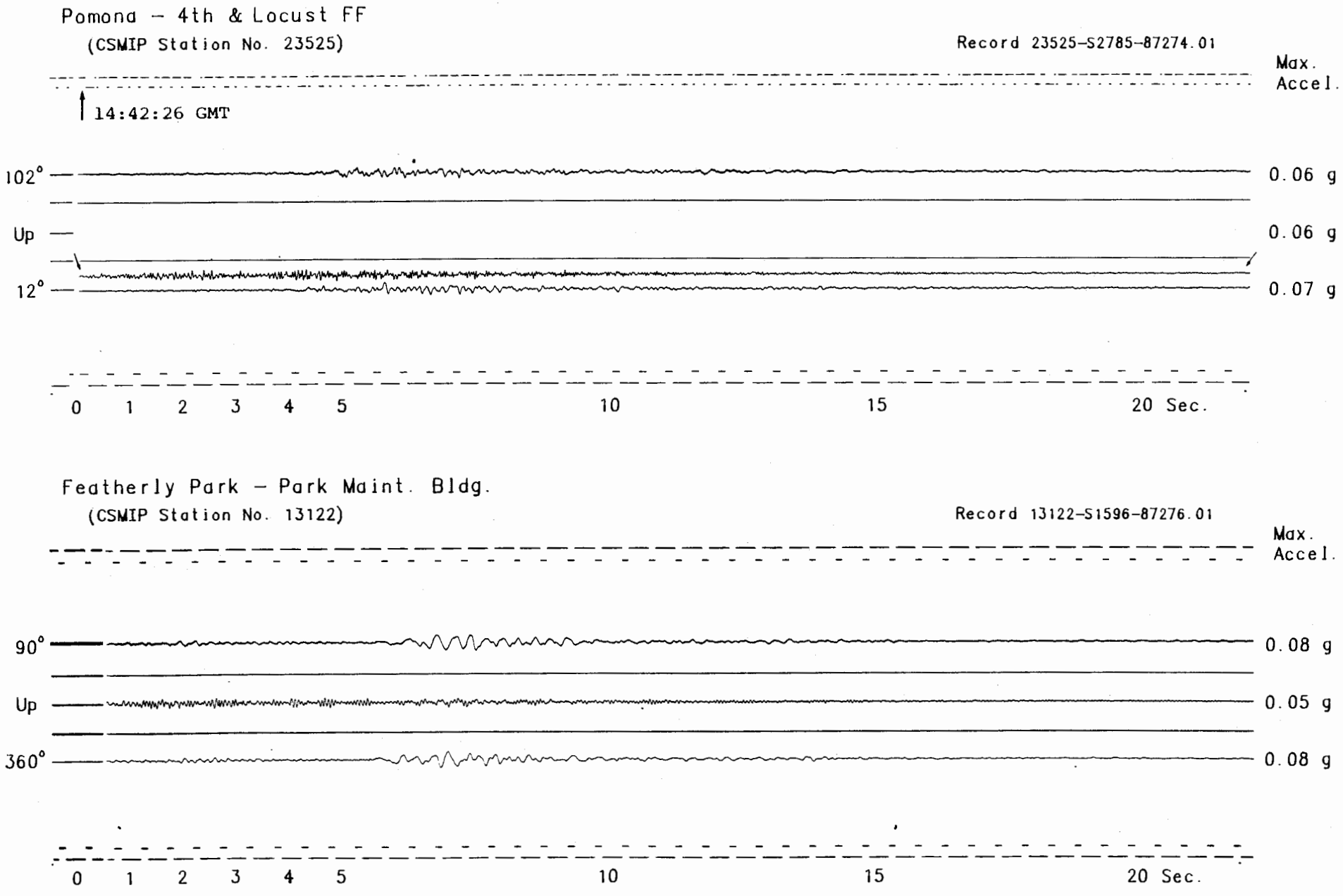

Century City – Los Angeles Country Club South
(CSMIP Station No. 24390)
Record 24390-S2772-87276.01
Max. Accel.
14:42:31 GMT
90°
0.07 g
Up
0.02 g
360°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.
Century City – Los Angeles Country Club North
(CSMIP Station No. 24389)
Record 24389-S2775-87276.01
Max. Accel.
14:42:28 GMT
90°
0.10 g
Up
0.04 g
360°
0.08 g
0 1 2 3 4 5 10 15 20 Sec.

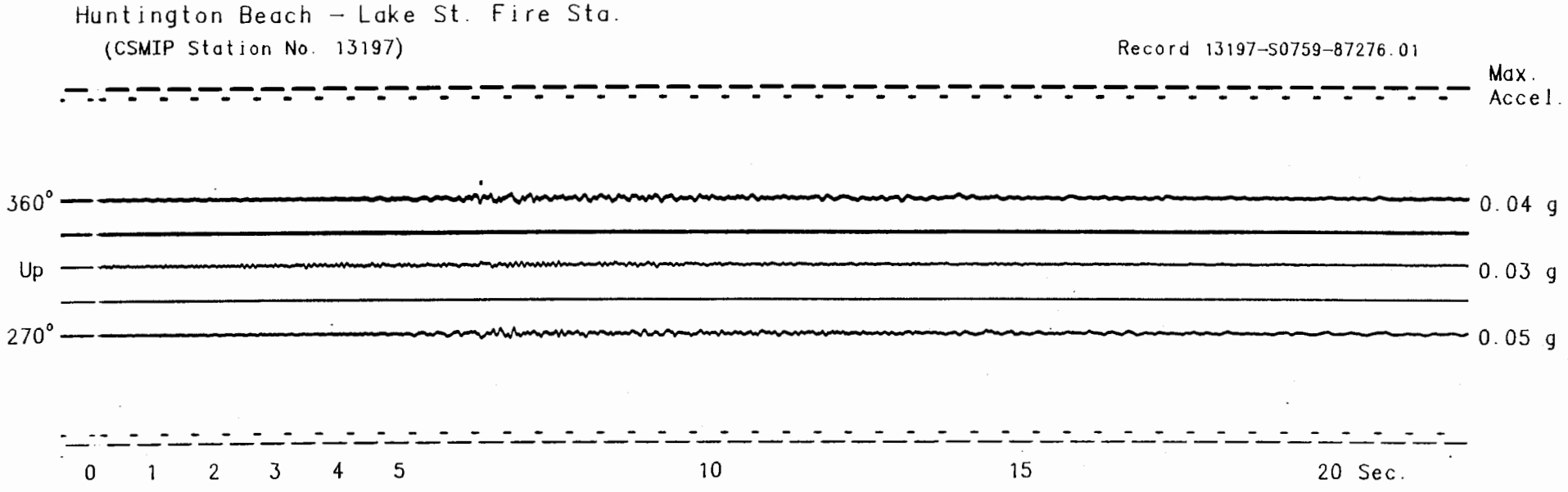

Long Beach – Recreation Park
(CSMIP Station No. 14241)
Record 14241-S2613-87275.01
Max. Accel.
14:42:29 GMT
180°
0.05 g
Up
0.05 g
90°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.
Long Beach – Harbor Admin. Bldg. FF
(CSMIP Station No. 14395)
Record 14395-S4377-87275.01
Max. Accel.
14:42:31 GMT
90°
0.07 g
Up
0.03 g
360°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.

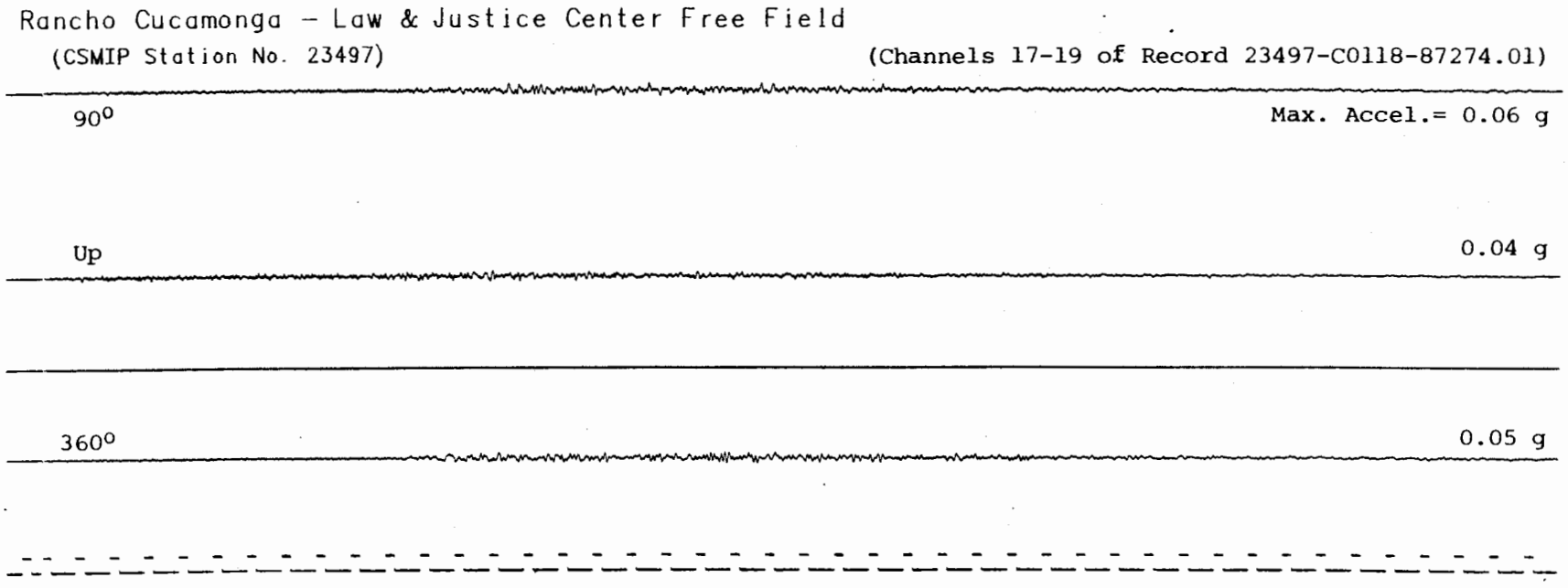

Pacoima – Kagel Canyon
(CSMIP Station No. 24088)
Record 24088–S1618–87276.01
Max. Accel.
14:24:28 GMT
90°
0.16 g
Up
0.06 g
360°
0.16 g
0 1 2 3 4 5 10 15 20 Sec.
Arleta – Nordhoff Ave Fire Sta.
(CSMIP Station No. 24087)
Record 24087–S1594–87274.01
Max. Accel.
270°
0.09 g
Up
0.09 g
180°
0.09 g
0 1 2 3 4 5 10 15 20 Sec.

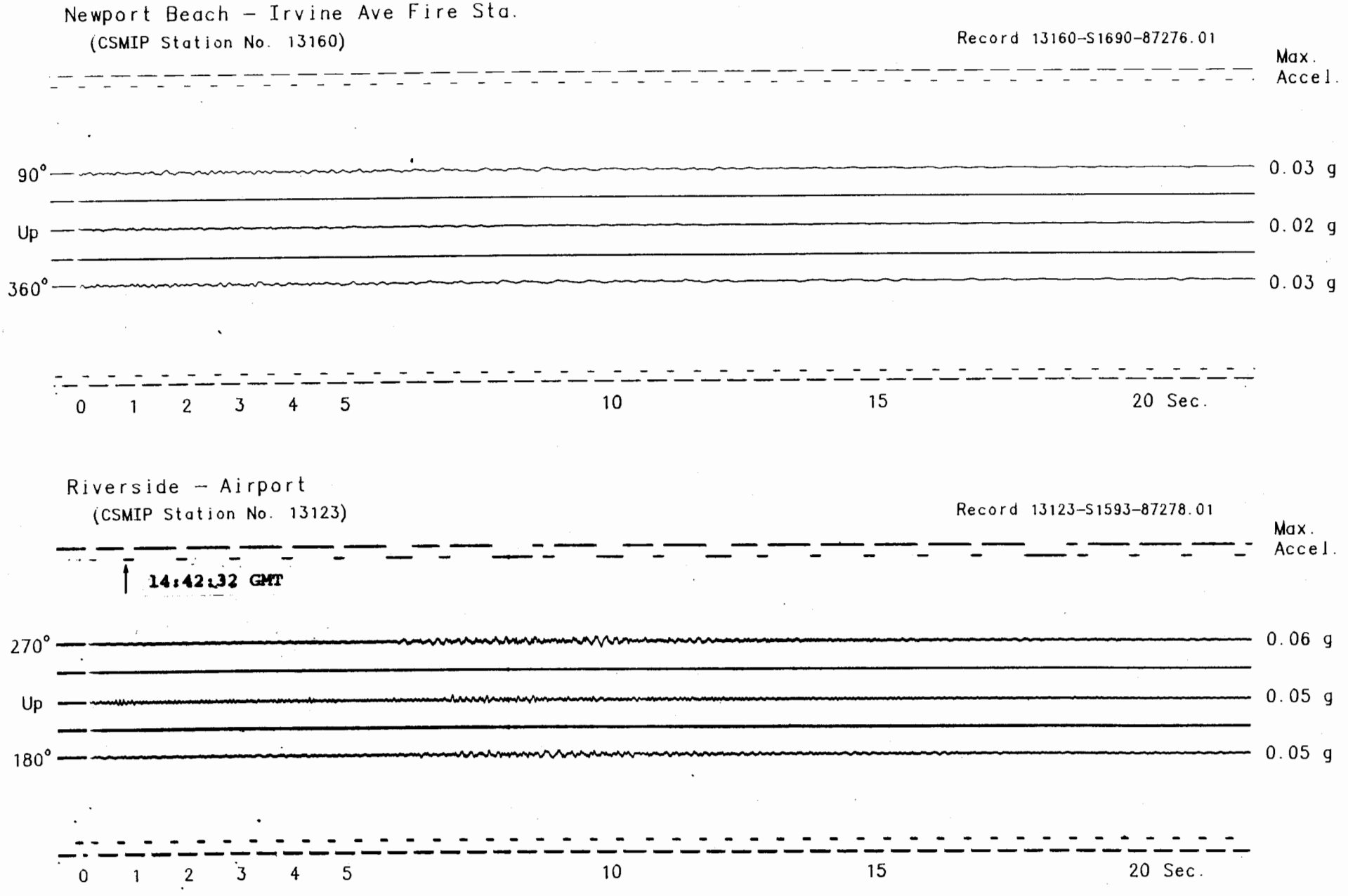

Rolling Hills Estates – Rancho Vista School
(CSMIP Station No. 14405)
Record 14405-S0757-87275.01
Max. Accel.
14:42:29 GMT
90°
0.02 g
Up
0.02 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.
San Pedro – 25th St. Fire Station
(CSMIP Station No. 14159)
Record 14159-S1692-87275.01
Max. Accel.
270°
0.02 g
Up
0.01 g
180°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.

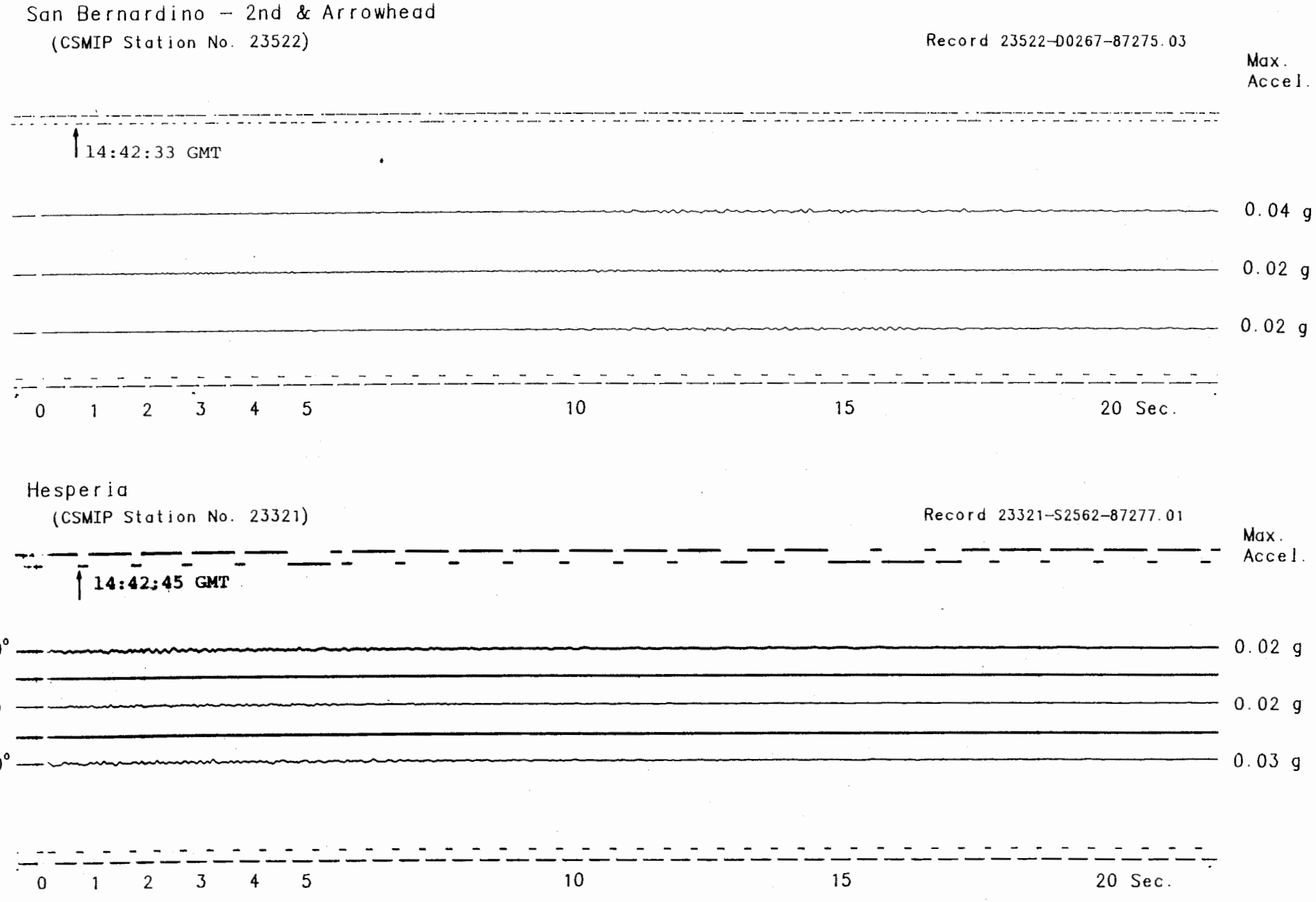

Sylmar – Olive View Medical Center Free Field
(CSMIP Station No. 24514)
Record 24514-S5254-87278.01
Max. Accel.
14:42:41 GMT
90°
0.05 g
Up
0.04 g
360°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.
Rancho Palos Verdes – 30840 Hawthorne Blvd.
(CSMIP Station No. 14404)
Record 14404-S0417-87275.01
Max. Accel.
14:42:33 GMT
90°
0.02 g
Up
0.02 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.

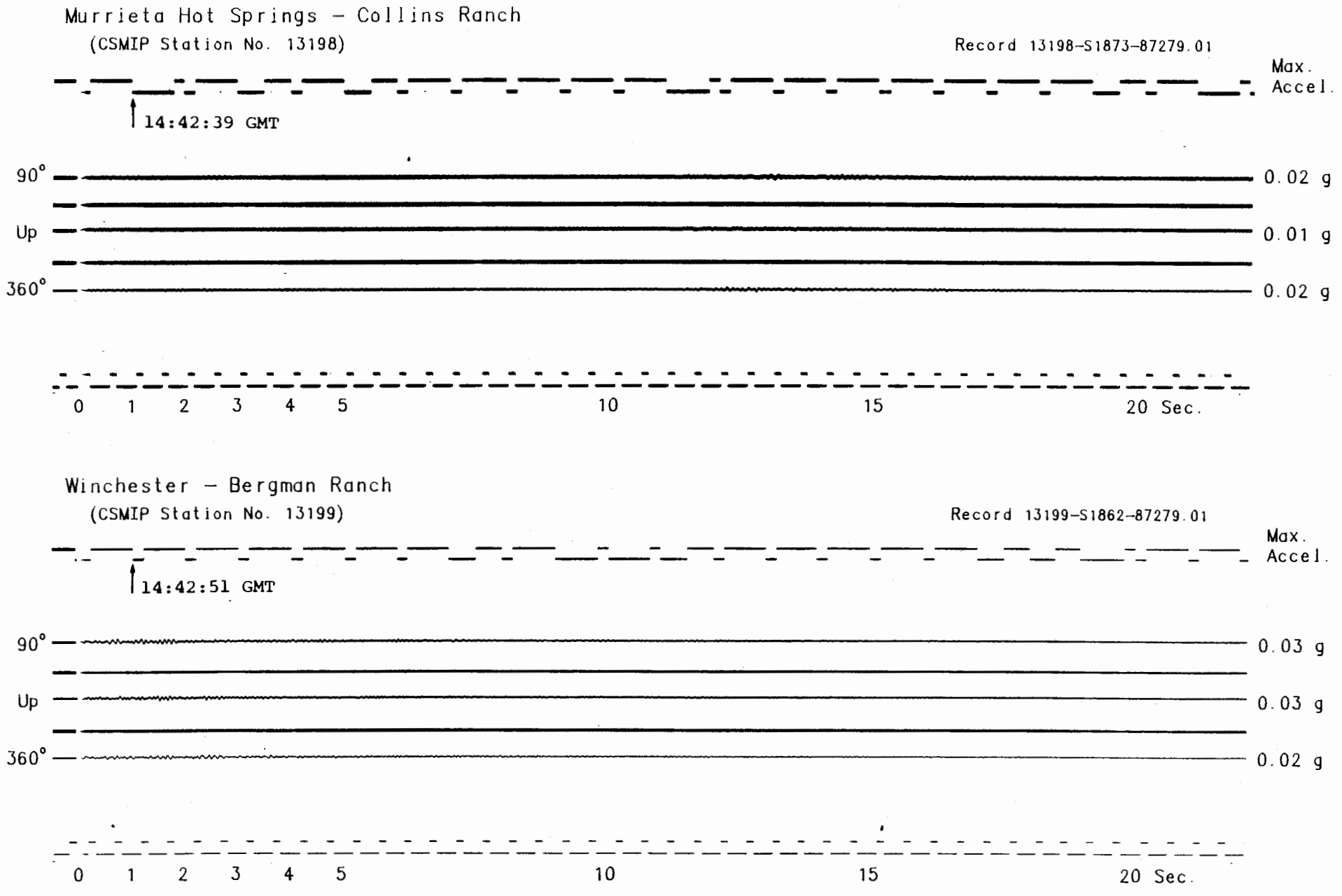

Pomona – 4th & Locust FF
(CSMIP Station No. 23525)
Record 23525-S2785-87274.01
Max. Accel.
14:42:26 GMT
102°
0.06 g
Up
0.06 g
12°
0.07 g
0 1 2 3 4 5 10 15 20 Sec.
Featherly Park – Park Maint. Bldg.
(CSMIP Station No. 13122)
Record 13122-S1596-87276.01
Max. Accel.
90°
0.08 g
Up
0.05 g
360°
0.08 g
0 1 2 3 4 5 10 15 20 Sec.

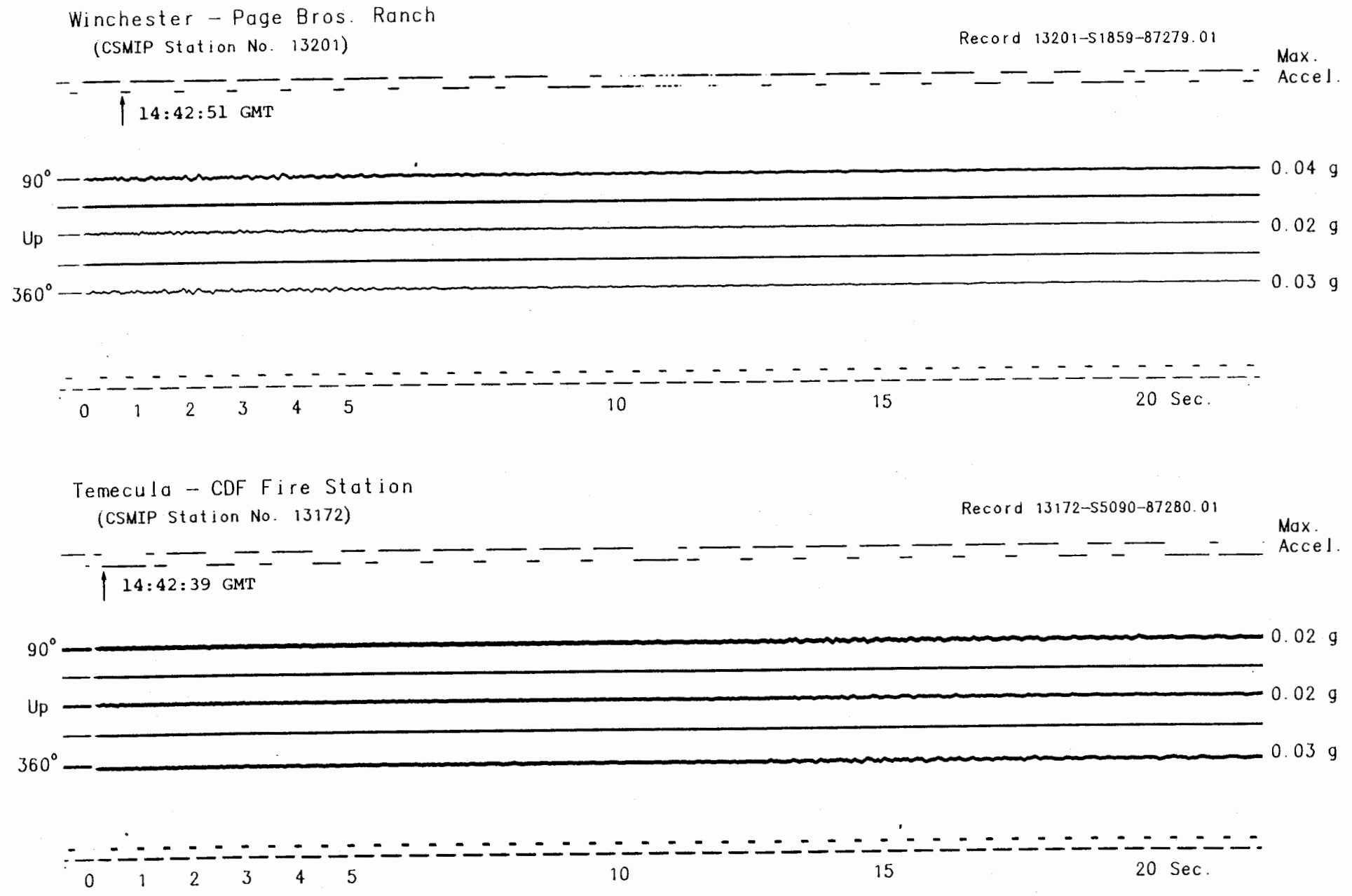

Huntington Beach – Lake St. Fire Sta.
(CSMIP Station No. 13197)
Record 13197-S0759-87276.01
Max. Accel.
360°
0.04 g
Up
0.03 g
270°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.

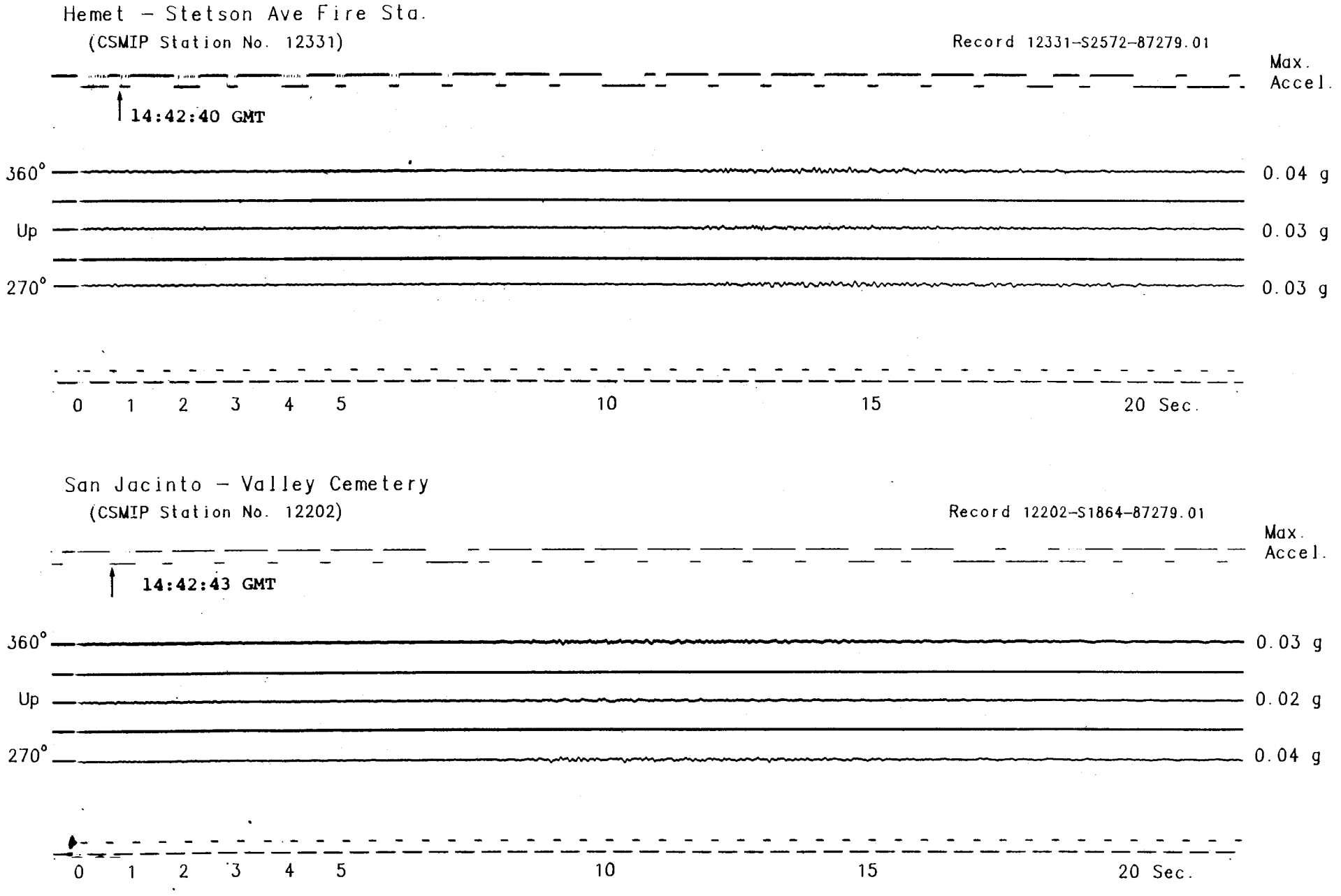

Rancho Cucamonga – Law & Justice Center Free Field
(CSMIP Station No. 23497)
(Channels 17-19 of Record 23497-C0118-87274.01)
90°
Max. Accel.= 0.06 g
Up
0.04 g
360°
0.05 g

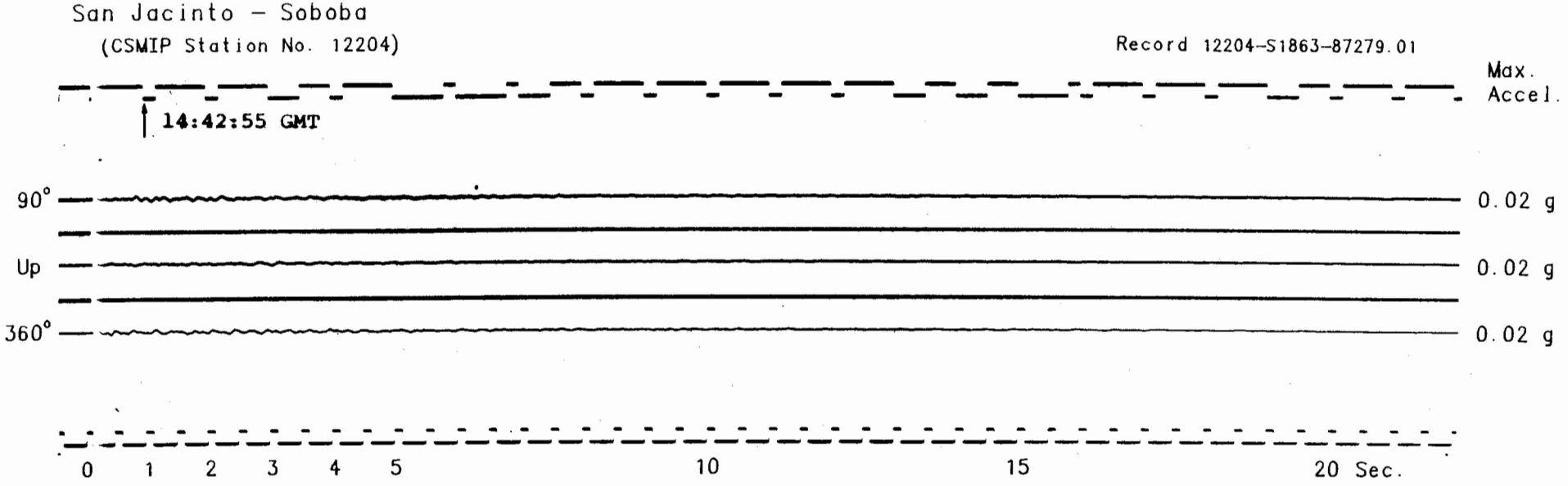

Newport Beach – Irvine Ave Fire Sta.
(CSMIP Station No. 13160)
Record 13160-S1690-87276.01
Max. Accel.
90°
0.03 g
Up
0.02 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Riverside – Airport
(CSMIP Station No. 13123)
Record 13123-S1593-87278.01
Max. Accel.
14:42:32 GMT
270°
0.06 g
Up
0.05 g
180°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.

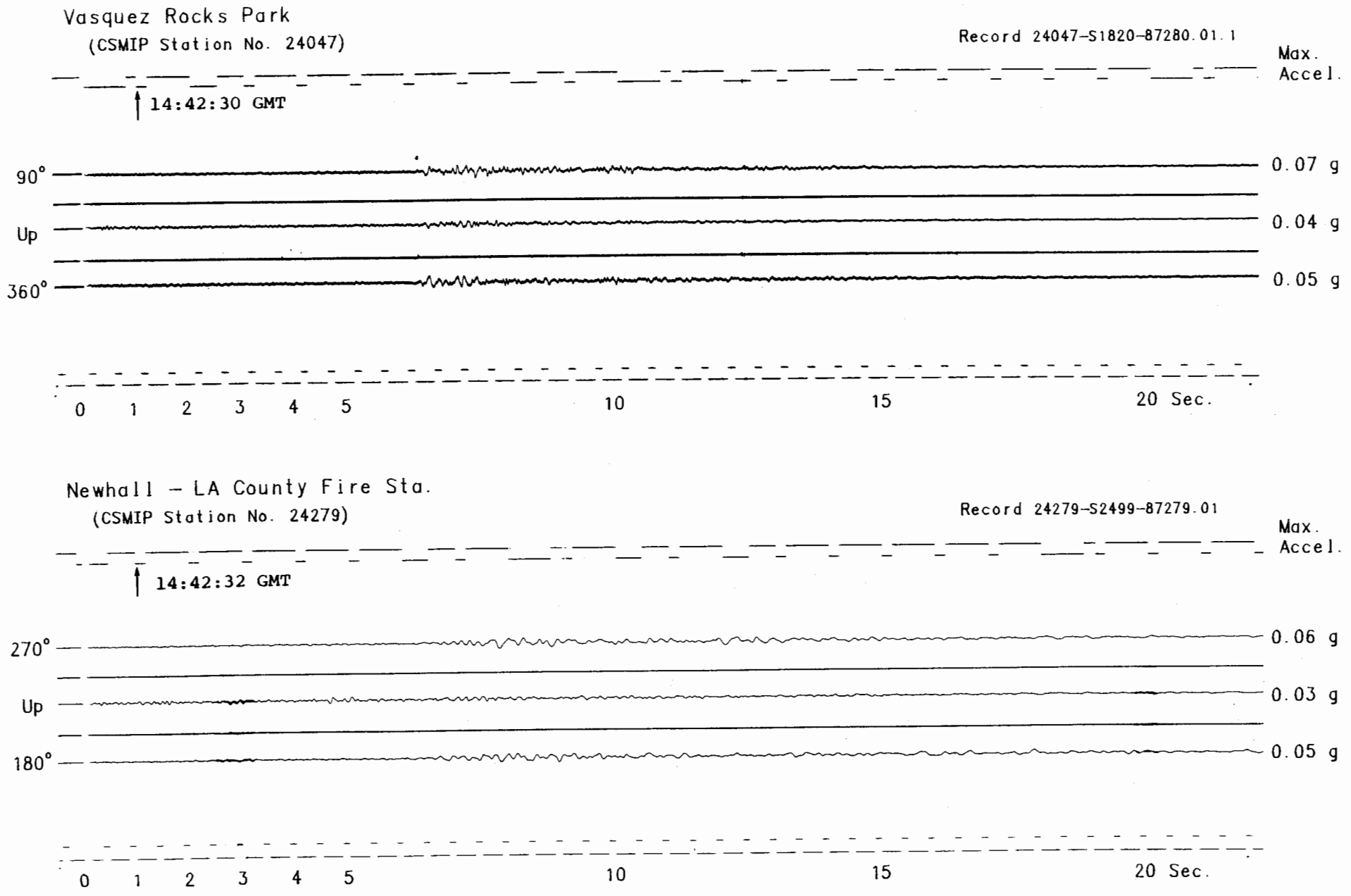

San Bernardino – 2nd & Arrowhead
(CSMIP Station No. 23522)
Record 23522-D0267-87275.03
Max. Accel.
14:42:33 GMT
270°
0.04 g
Up
0.02 g
60°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.
Hesperia
(CSMIP Station No. 23321)
Record 23321-S2562-87277.01
Max. Accel.
14:42:45 GMT
90°
0.02 g
Up
0.02 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

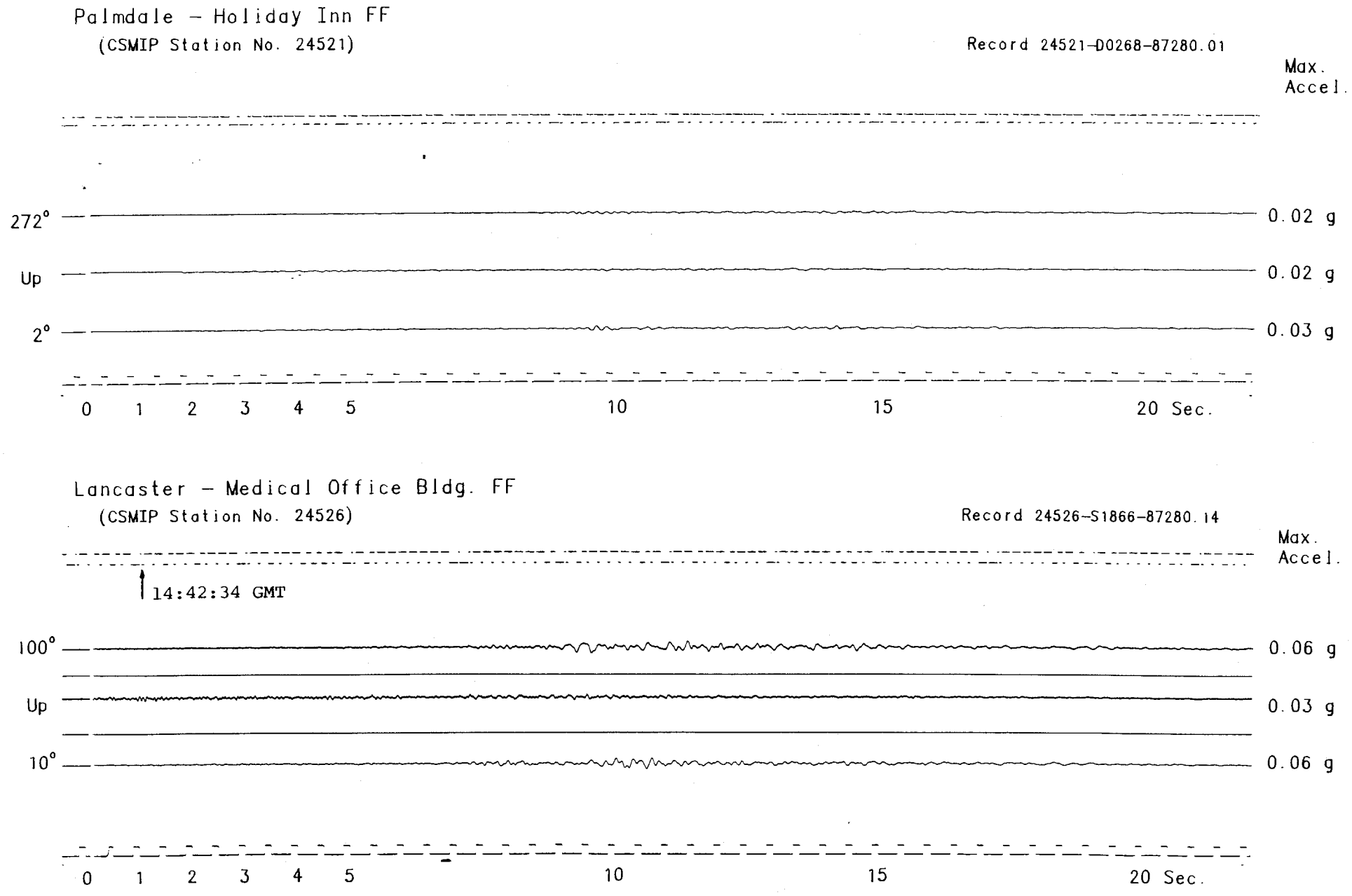

Murrieta Hot Springs – Collins Ranch
(CSMIP Station No. 13198)
Record 13198-S1873-87279.01
Max. Accel.
14:42:39 GMT
90°
0.02 g
Up
0.01 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.
Winchester – Bergman Ranch
(CSMIP Station No. 13199)
Record 13199-S1862-87279.01
Max. Accel.
14:42:51 GMT
90°
0.03 g
Up
0.03 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.

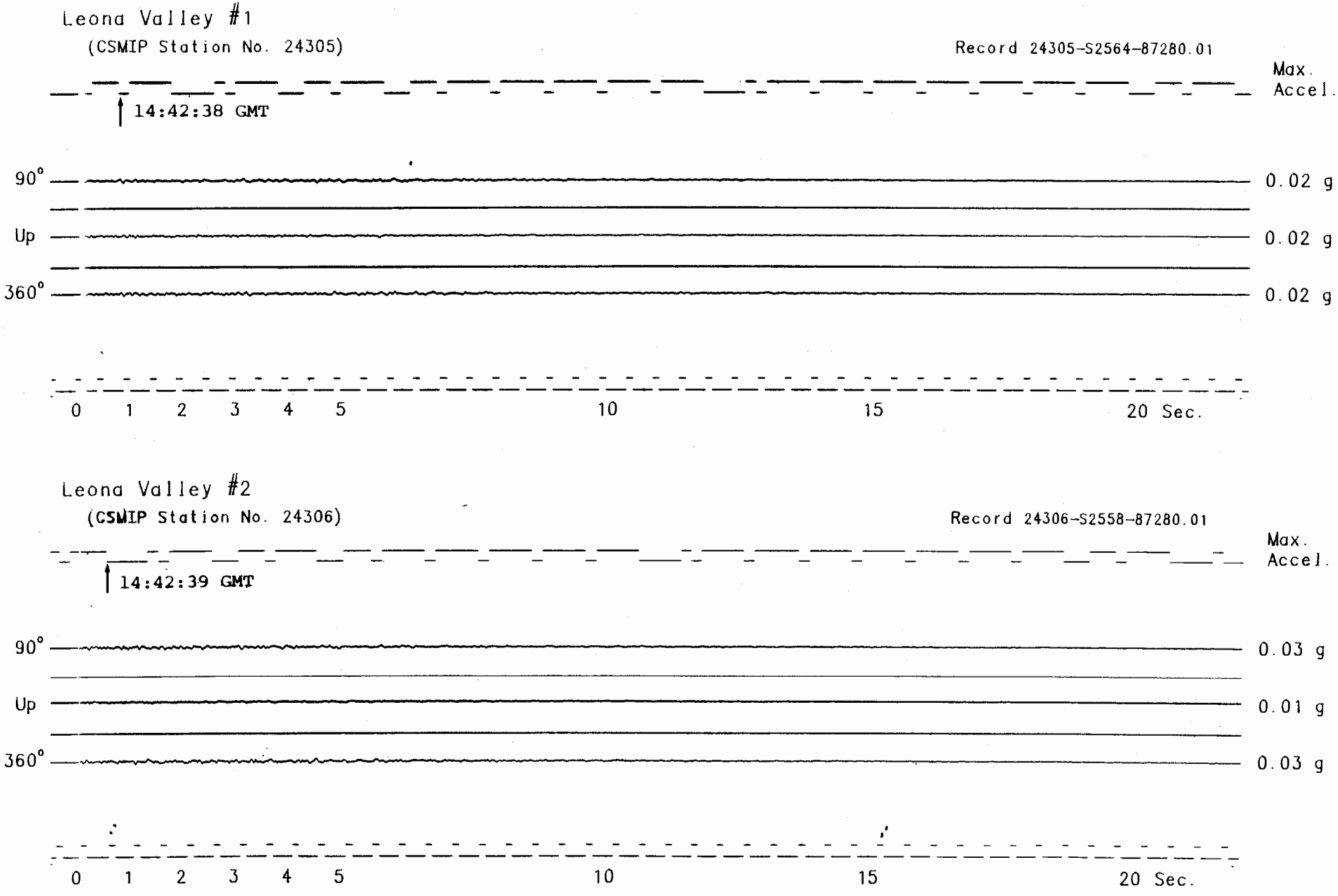

Winchester – Page Bros. Ranch
(CSMIP Station No. 13201)
Record 13201-S1859-87279.01
Max. Accel.
14:42:51 GMT
90°
Up
360°
0.04 g
0.02 g
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Temecula – CDF Fire Station
(CSMIP Station No. 13172)
Record 13172-S5090-87280.01
Max. Accel.
14:42:39 GMT
90°
Up
360°
0.02 g
0.02 g
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

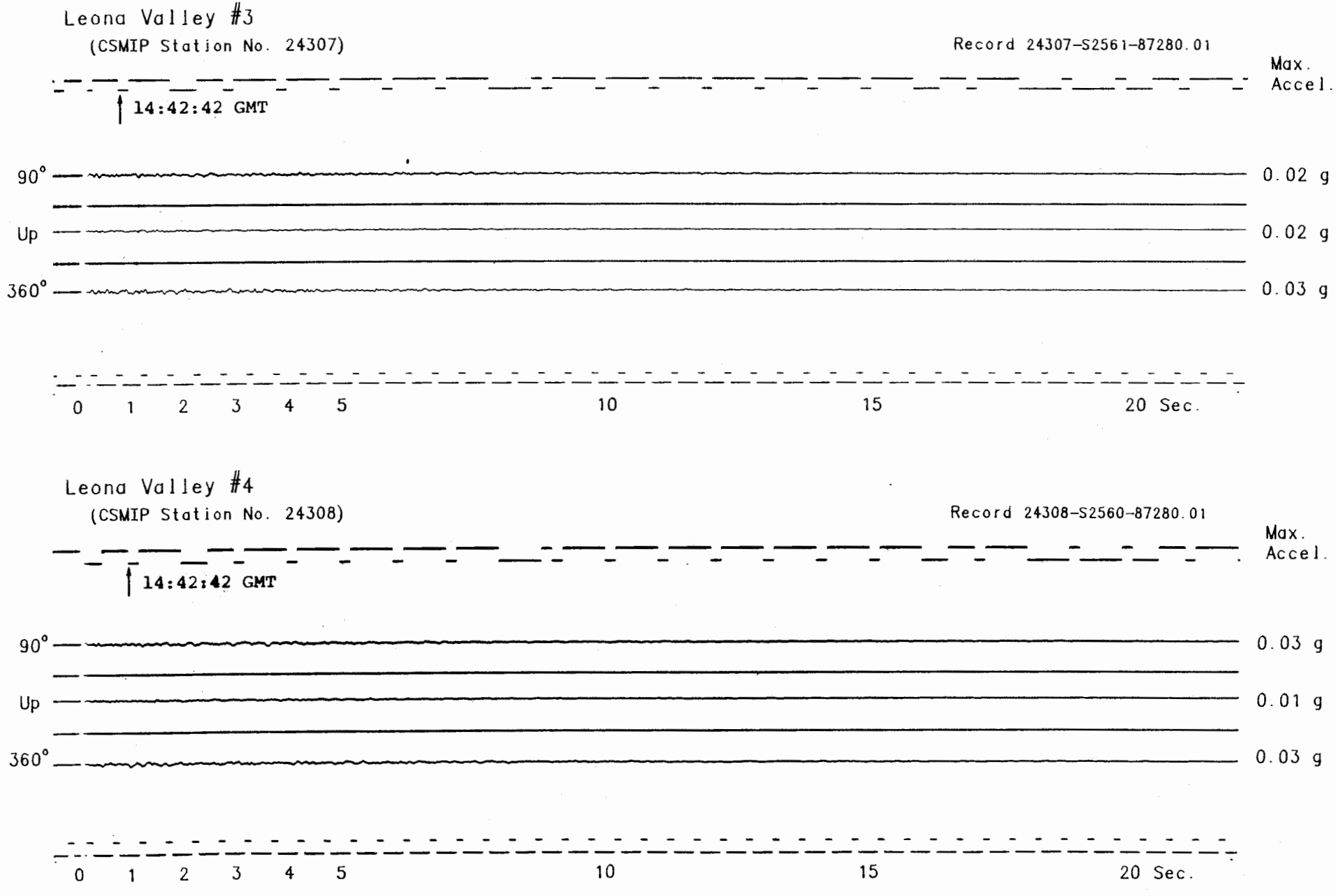

Hemet – Stetson Ave Fire Sta.
(CSMIP Station No. 12331)
Record 12331-S2572-87279.01
Max. Accel.
14:42:40 GMT
360°
0.04 g
Up
0.03 g
270°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
San Jacinto – Valley Cemetery
(CSMIP Station No. 12202)
Record 12202-S1864-87279.01
Max. Accel.
14:42:43 GMT
360°
0.03 g
Up
0.02 g
270°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.

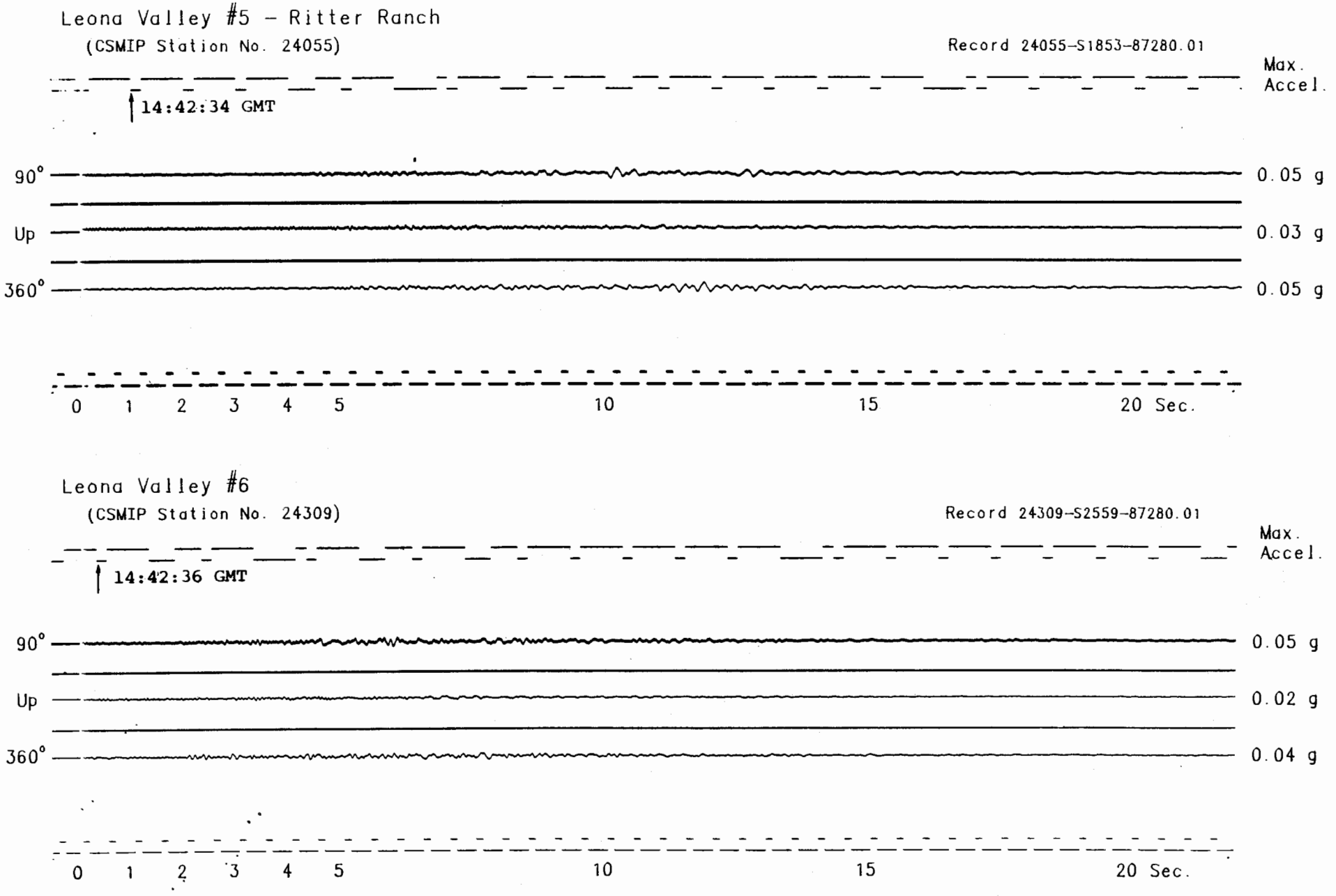

San Jacinto – Soboba
(CSMIP Station No. 12204)
Record 12204-S1863-87279.01
Max. Accel.
14:42:55 GMT
90°
0.02 g
Up
0.02 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.

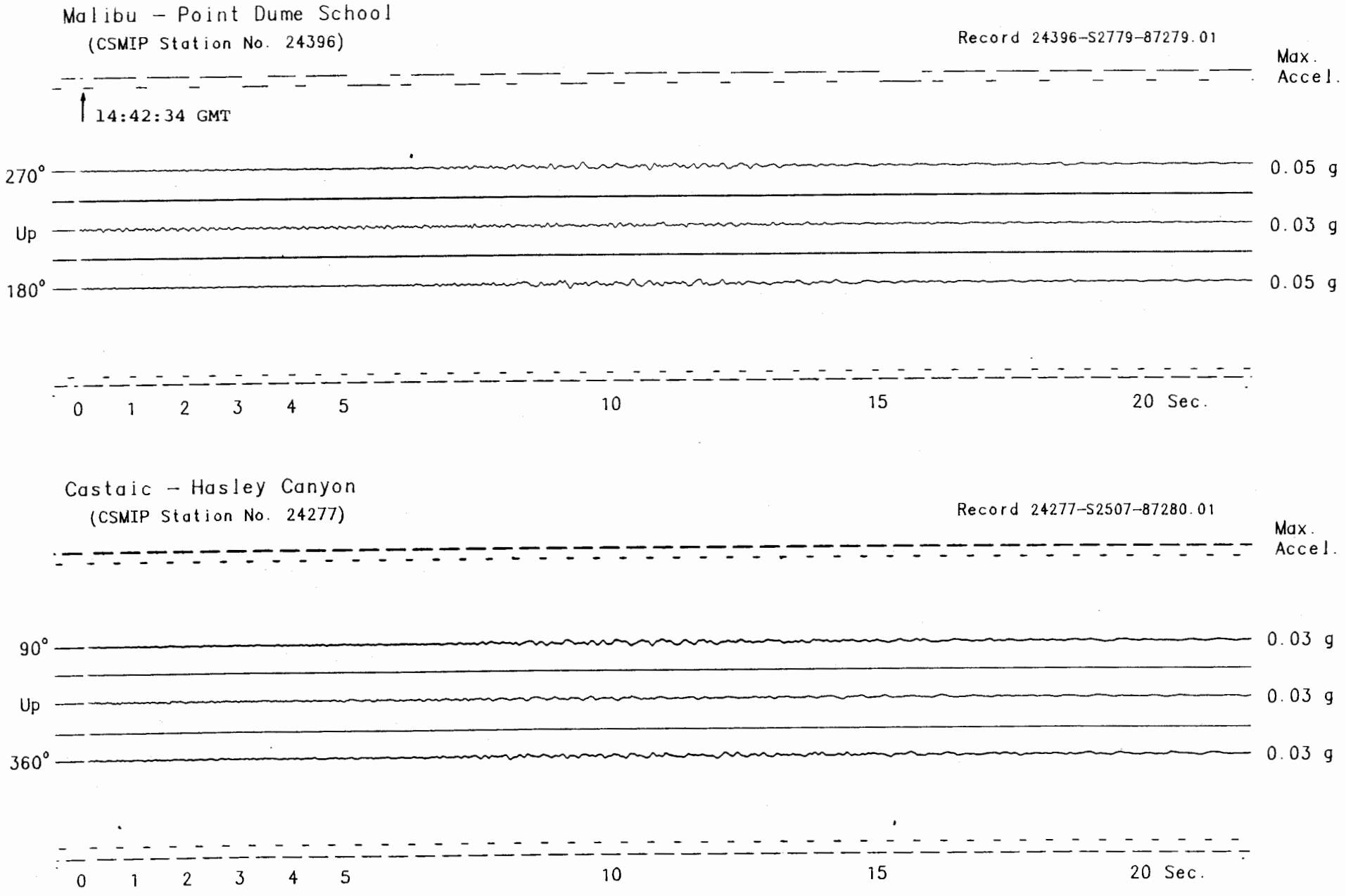

Vasquez Rocks Park
(CSMIP Station No. 24047)
Record 24047-S1820-87280.01.1
Max. Accel.
14:42:30 GMT
90°
0.07 g
Up
0.04 g
360°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.
Newhall – LA County Fire Sta.
(CSMIP Station No. 24279)
Record 24279-S2499-87279.01
Max. Accel.
14:42:32 GMT
270°
0.06 g
Up
0.03 g
180°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.

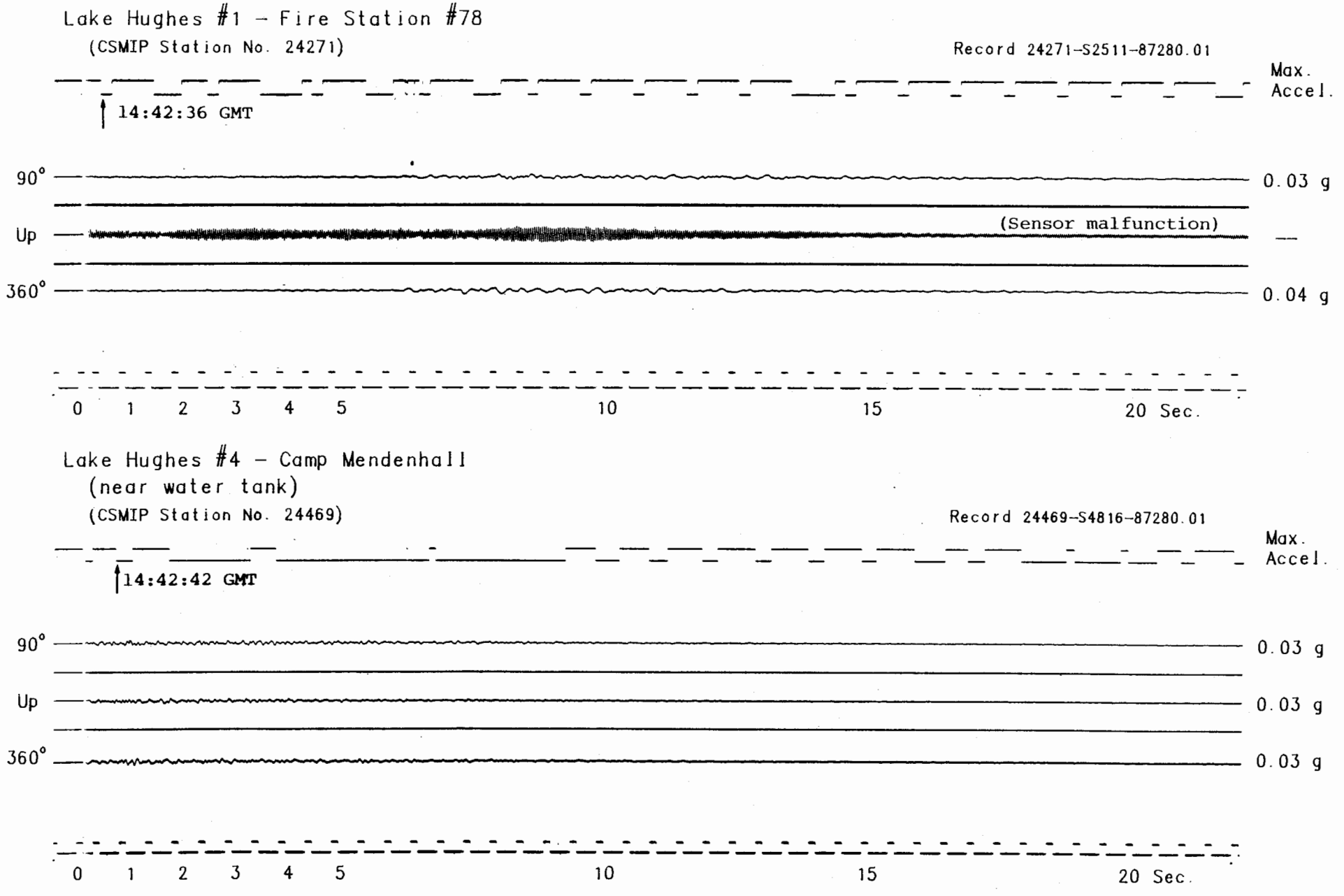

Palmdale – Holiday Inn FF
(CSMIP Station No. 24521)
Record 24521-D0268-87280.01
Max. Accel.
272°
0.02 g
Up
0.02 g
2°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Lancaster – Medical Office Bldg. FF
(CSMIP Station No. 24526)
Record 24526-S1866-87280.14
Max. Accel.
14:42:34 GMT
100°
0.06 g
Up
0.03 g
10°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.

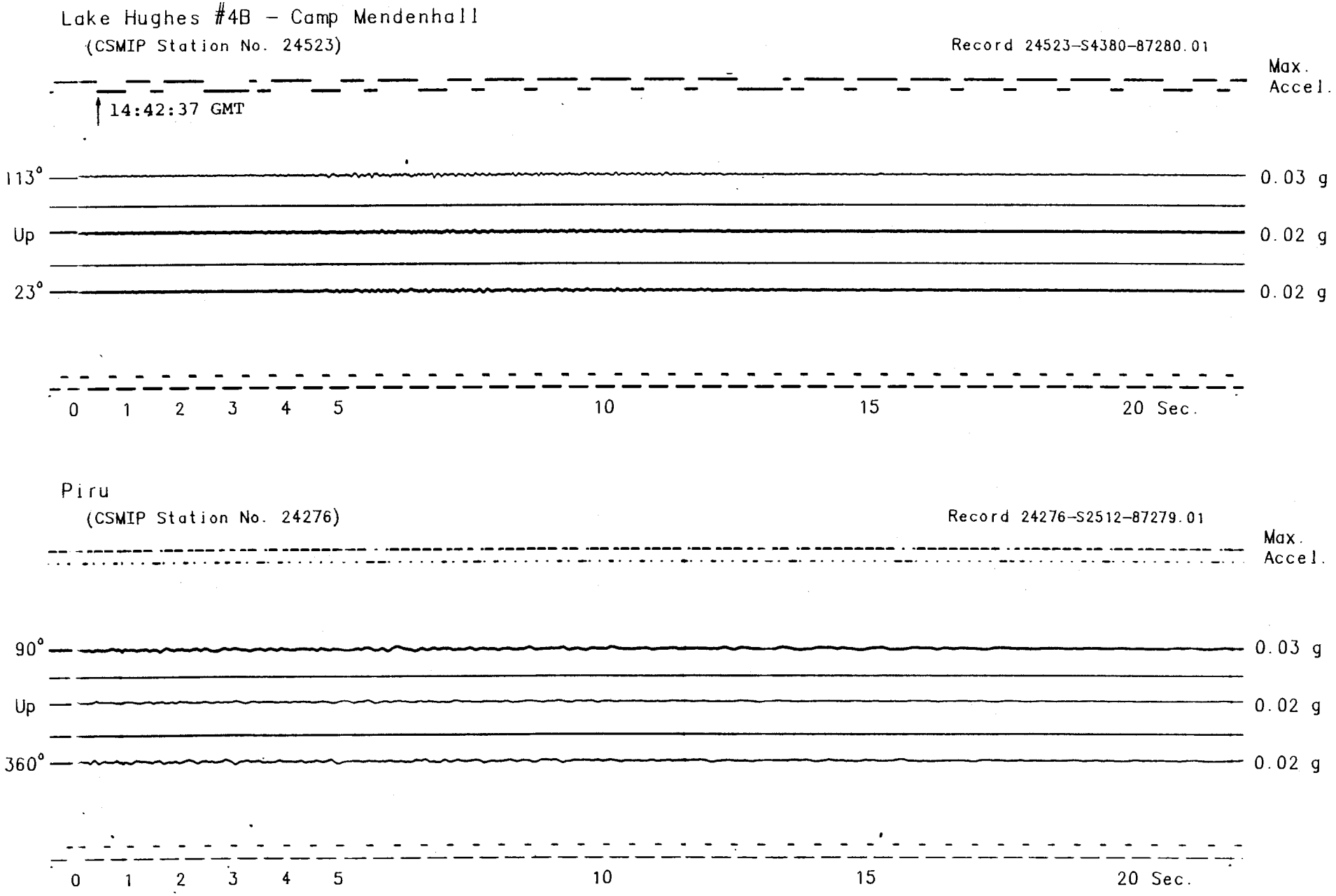

Leona Valley #1
(CSMIP Station No. 24305)
Record 24305-S2564-87280.01
Max. Accel.
14:42:38 GMT
90°
0.02 g
Up
0.02 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.
Leona Valley #2
(CSMIP Station No. 24306)
Record 24306-S2558-87280.01
Max. Accel.
14:42:39 GMT
90°
0.03 g
Up
0.01 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

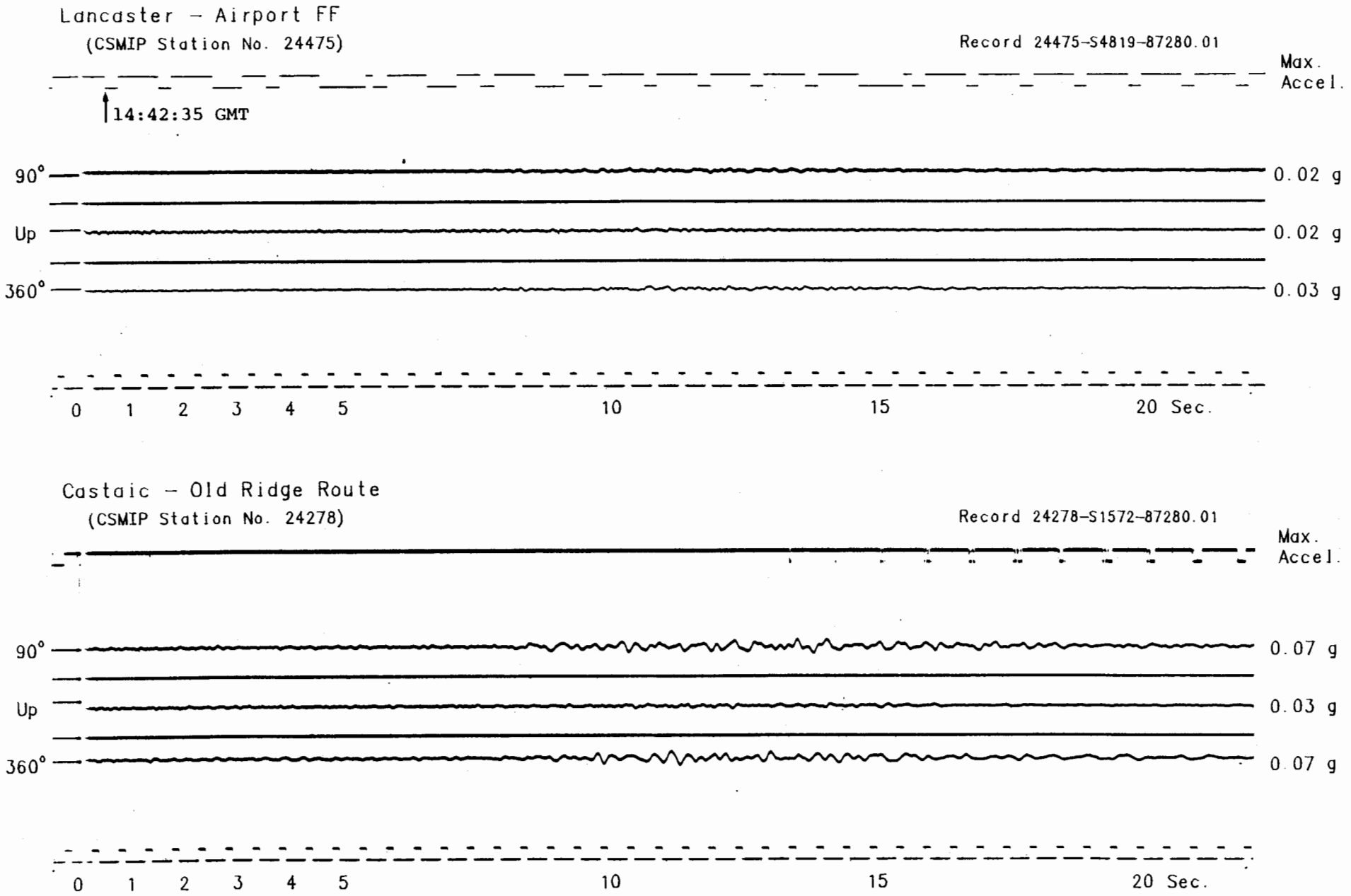

Leona Valley #3
(CSMIP Station No. 24307)
Record 24307-S2561-87280.01
Max. Accel.
14:42:42 GMT
90°
0.02 g
Up
0.02 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Leona Valley #4
(CSMIP Station No. 24308)
Record 24308-S2560-87280.01
Max. Accel.
14:42:42 GMT
90°
0.03 g
Up
0.01 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

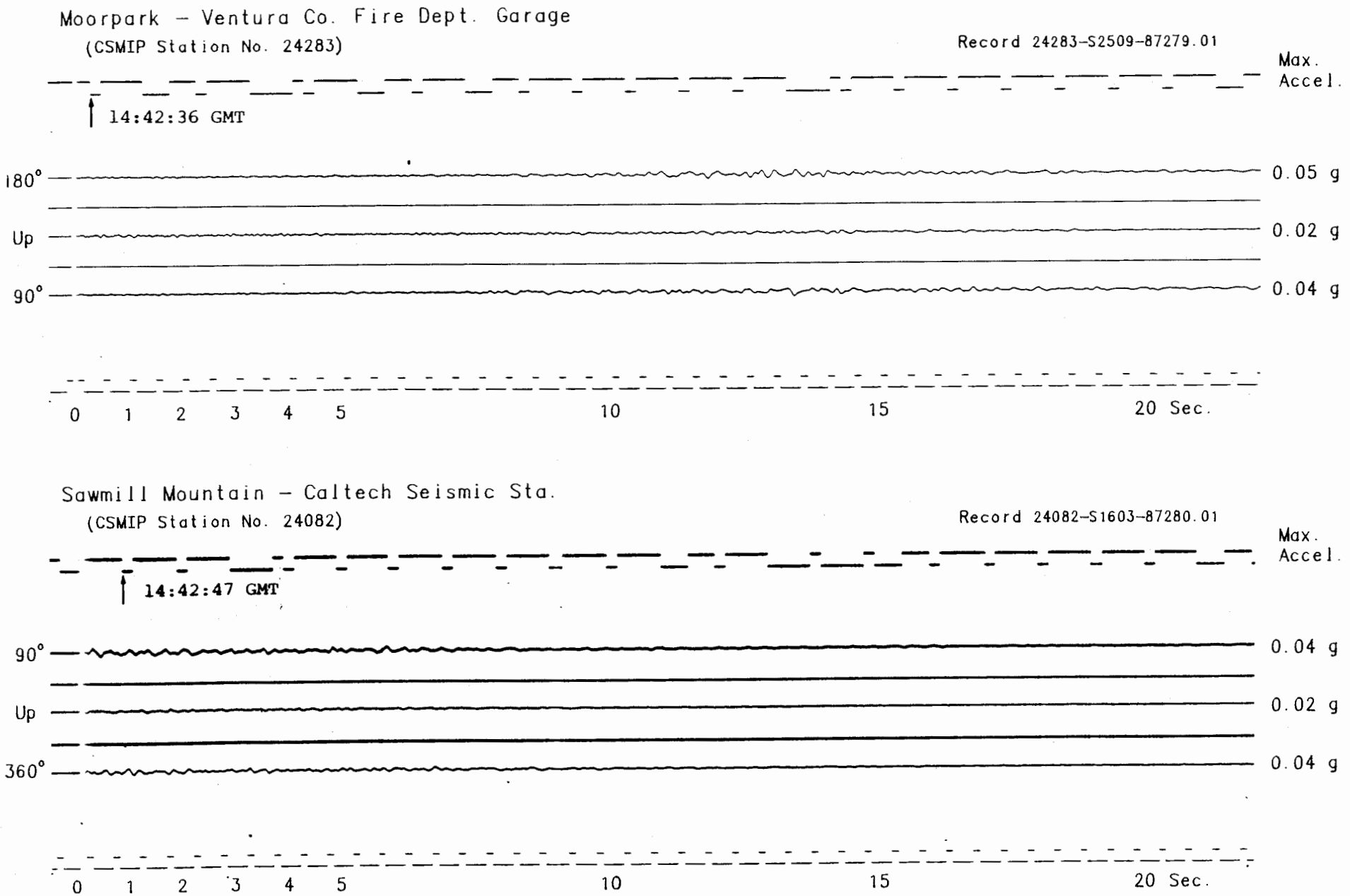

Leona Valley #5 - Ritter Ranch
(CSMIP Station No. 24055)
Record 24055-S1853-87280.01
Max. Accel.
14:42:34 GMT
90°
0.05 g
Up
0.03 g
360°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.
Leona Valley #6
(CSMIP Station No. 24309)
Record 24309-S2559-87280.01
Max. Accel.
14:42:36 GMT
90°
0.05 g
Up
0.02 g
360°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.

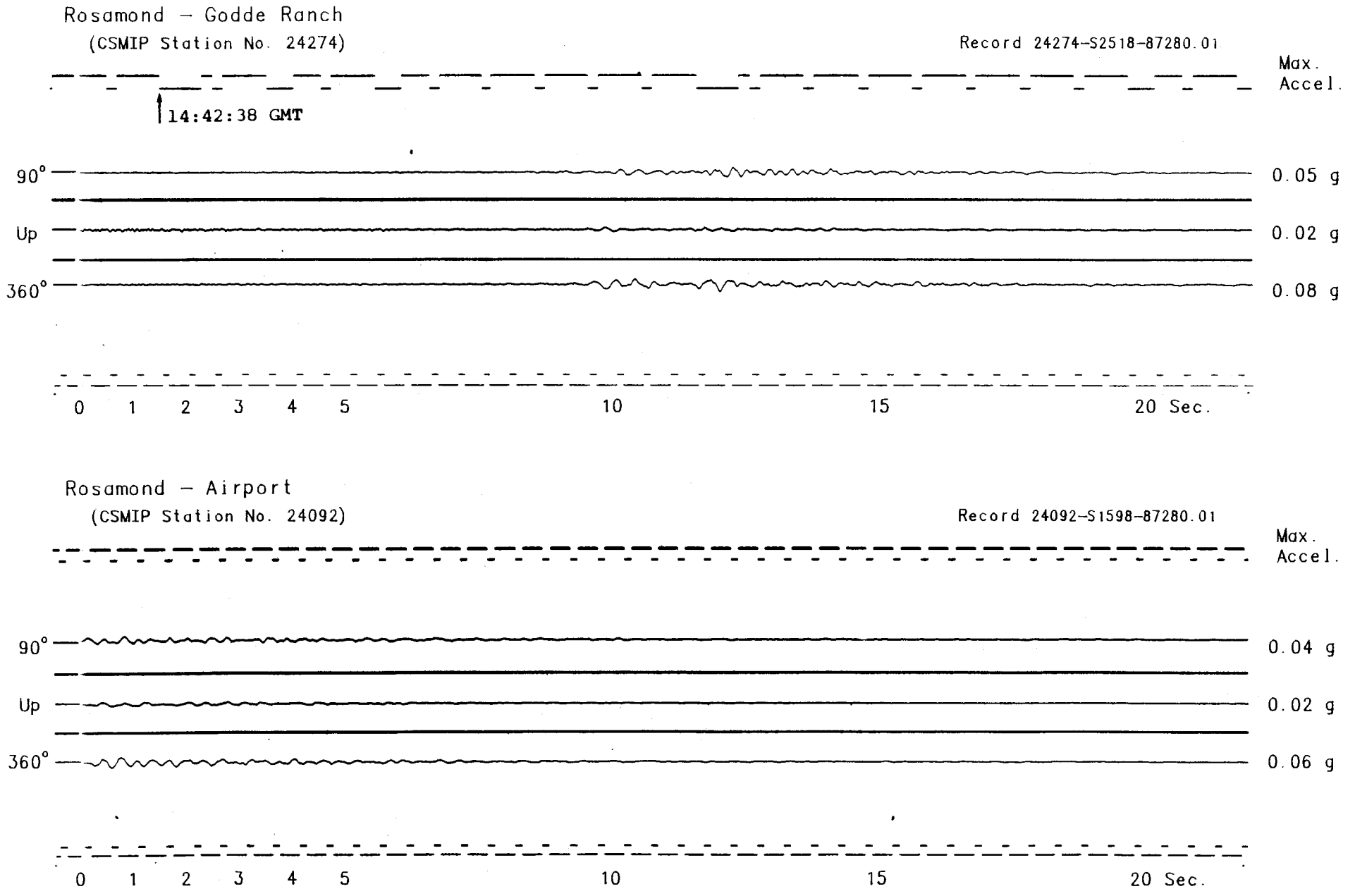

Malibu – Point Dume School
(CSMIP Station No. 24396)
Record 24396–S2779–87279.01
Max. Accel.
14:42:34 GMT
270°
0.05 g
Up
0.03 g
180°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.
Castaic – Hasley Canyon
(CSMIP Station No. 24277)
Record 24277–S2507–87280.01
Max. Accel.
90°
0.03 g
Up
0.03 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

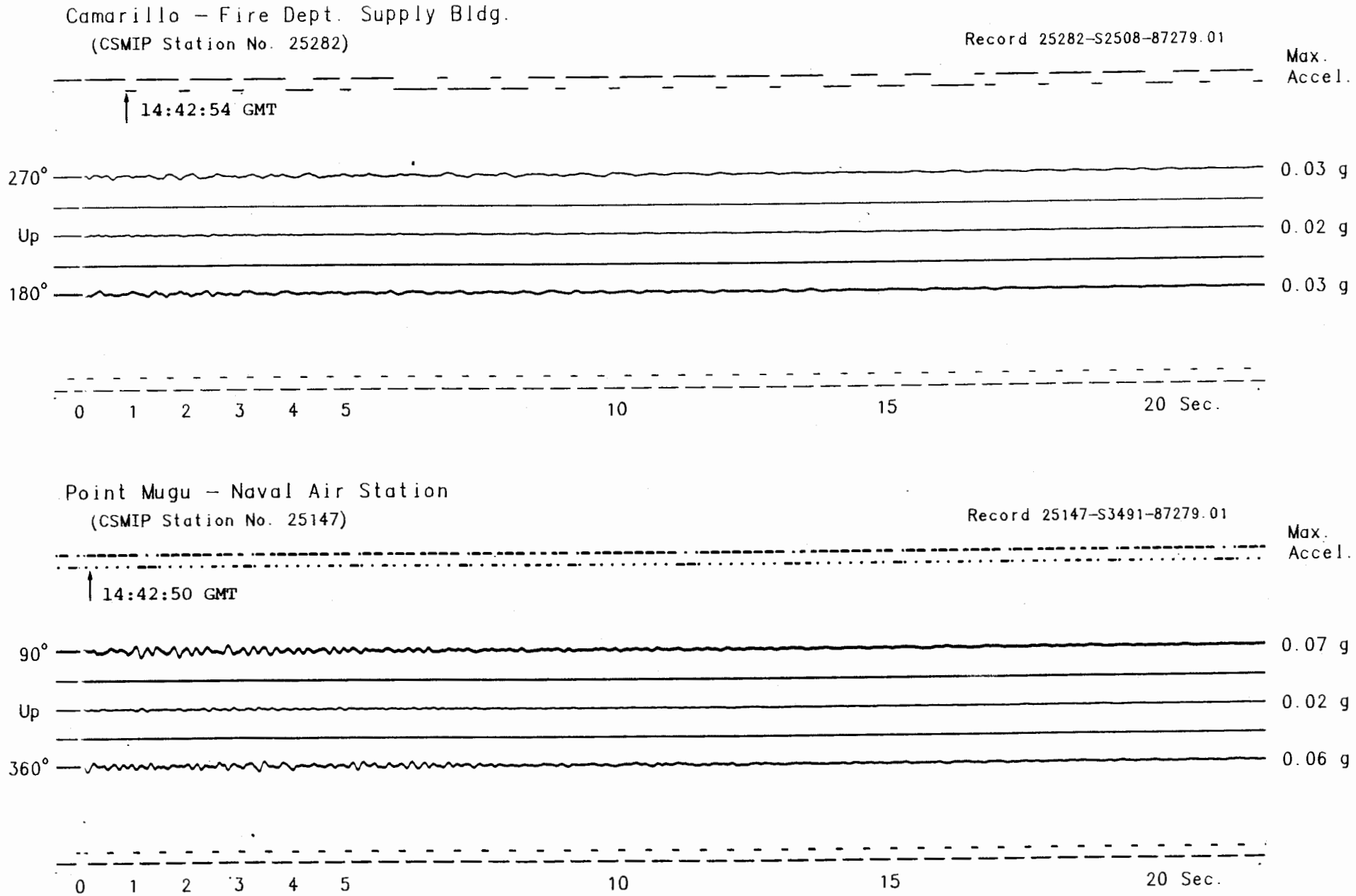

Lake Hughes #1 – Fire Station #78
(CSMIP Station No. 24271)
Record 24271-S2511-87280.01
Max. Accel.
14:42:36 GMT
90°
0.03 g
Up
(Sensor malfunction)
360°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.
Lake Hughes #4 – Camp Mendenhall
(near water tank)
(CSMIP Station No. 24469)
Record 24469-S4816-87280.01
Max. Accel.
14:42:42 GMT
90°
0.03 g
Up
0.03 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

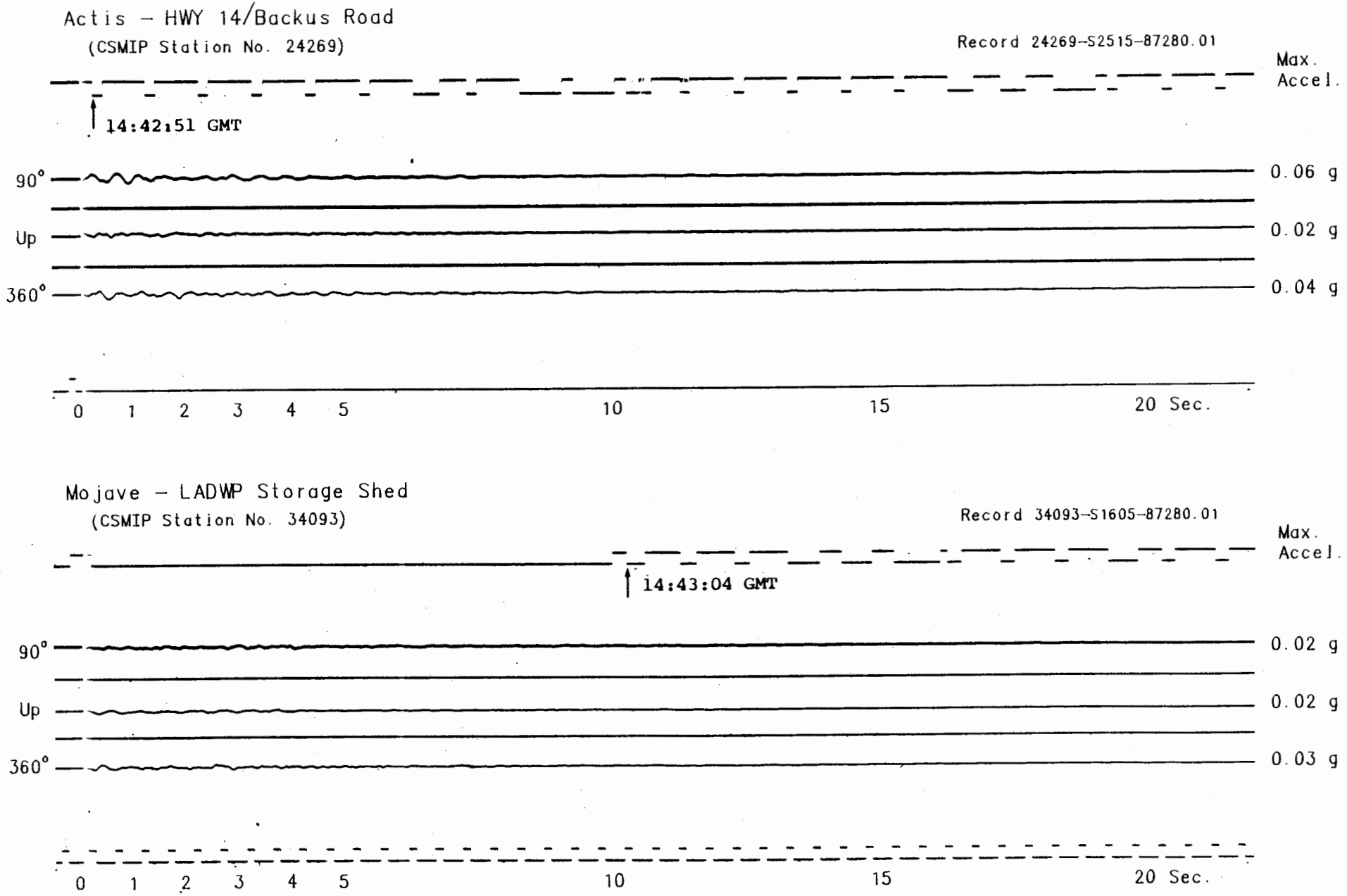

Lake Hughes #4B – Camp Mendenhall
(CSMIP Station No. 24523)
Record 24523-S4380-87280.01
Max. Accel.
14:42:37 GMT
113°
0.03 g
Up
0.02 g
23°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.
Piru
(CSMIP Station No. 24276)
Record 24276-S2512-87279.01
Max. Accel.
90°
0.03 g
Up
0.02 g
360°
0.02 g
0 1 2 3 4 5 10 15 20 Sec.


Lancaster – Airport FF
(CSMIP Station No. 24475)
Record 24475-S4819-87280.01
Max. Accel.
14:42:35 GMT
90°
0.02 g
Up
0.02 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Castaic – Old Ridge Route
(CSMIP Station No. 24278)
Record 24278-S1572-87280.01
Max. Accel.
90°
0.07 g
Up
0.03 g
360°
0.07 g
0 1 2 3 4 5 10 15 20 Sec.


Moorpark – Ventura Co. Fire Dept. Garage
(CSMIP Station No. 24283)
Record 24283-S2509-87279.01
Max. Accel.
14:42:36 GMT
180°
0.05 g
Up
0.02 g
90°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.
Sawmill Mountain – Caltech Seismic Sta.
(CSMIP Station No. 24082)
Record 24082-S1603-87280.01
Max. Accel.
14:42:47 GMT
90°
0.04 g
Up
0.02 g
360°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.


Rosamond – Godde Ranch
(CSMIP Station No. 24274)
Record 24274-S2518-87280.01
Max. Accel.
14:42:38 GMT
90°
0.05 g
Up
0.02 g
360°
0.08 g
0 1 2 3 4 5 10 15 20 Sec.
Rosamond – Airport
(CSMIP Station No. 24092)
Record 24092-S1598-87280.01
Max. Accel.
90°
0.04 g
Up
0.02 g
360°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.


Camarillo – Fire Dept. Supply Bldg.
(CSMIP Station No. 25282)
Record 25282-S2508-87279.01
Max. Accel.
14:42:54 GMT
270°
0.03 g
Up
0.02 g
180°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.
Point Mugu – Naval Air Station
(CSMIP Station No. 25147)
Record 25147-S3491-87279.01
Max. Accel.
14:42:50 GMT
90°
0.07 g
Up
0.02 g
360°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.


Actis – HWY 14/Backus Road
(CSMIP Station No. 24269)
Record 24269-S2515-87280.01
Max. Accel.
14:42:51 GMT
90°
0.06 g
Up
0.02 g
360°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.
Mojave – LADWP Storage Shed
(CSMIP Station No. 34093)
Record 34093-S1605-87280.01
Max. Accel.
14:43:04 GMT
90°
0.02 g
Up
0.02 g
360°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.

INDEX TO STRUCTURAL RESPONSE RECORDS

BUILDINGS

Los Angeles - CSULA Administration Bldg.

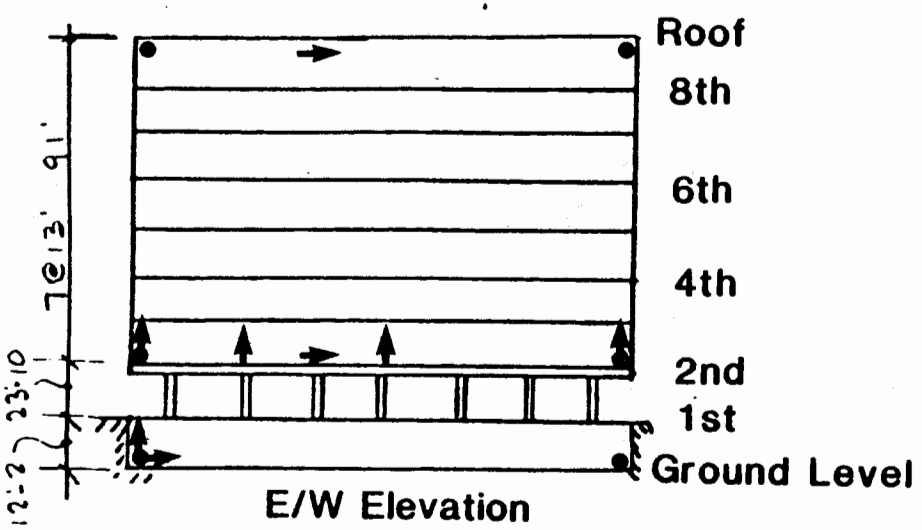
Address: Calif. State University at LA
Los Angeles, CA
No. of Stories above/below
ground: 8/1
Plan Shape: Rectangular
Base Dimensions: Irregular base shape
Typical Floor Dimensions: 154' x 63'
Design Date: 1967
Construction Date: 1969

Vertical Load Carrying System:
Concrete slabs supported by concrete beams and columns.
Lateral Force Resisting System:
Concrete shear walls except between levels 1 and 2 where composite concrete/steel columns resist lateral forces.
Foundation Type:
Spread footings and concrete caissons.

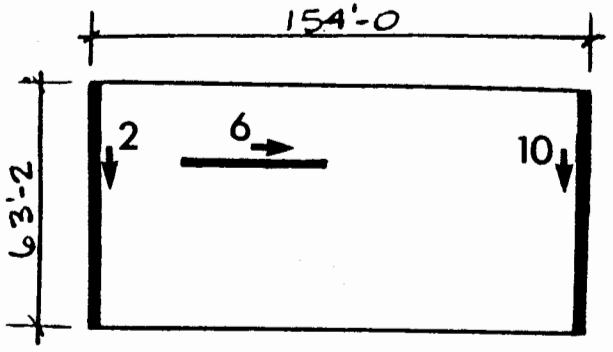
Los Angeles - CSULA Admin. Bldg.

(CSMIP Station No. 24468)

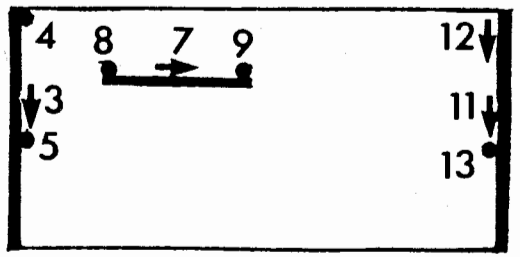
SENSOR LAYOUT



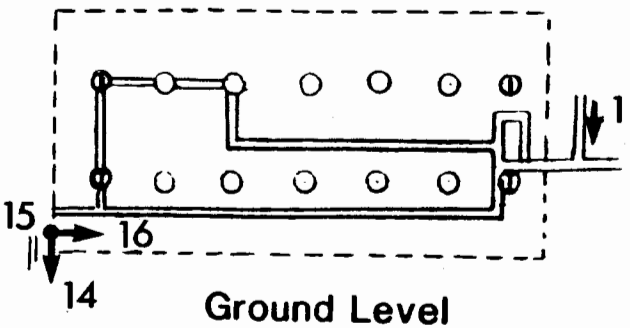
E/W Elevation



Roof Level



2nd Level

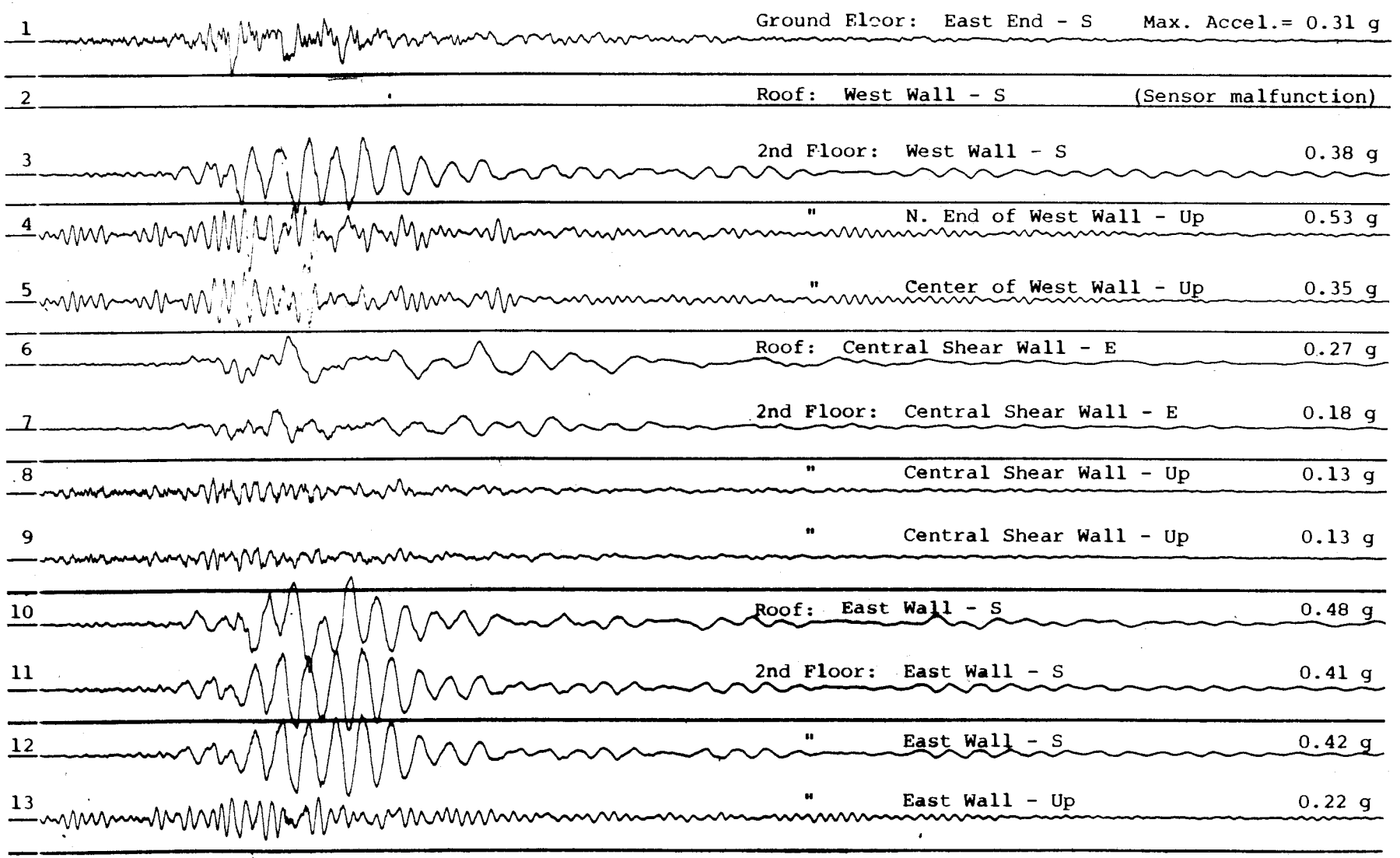


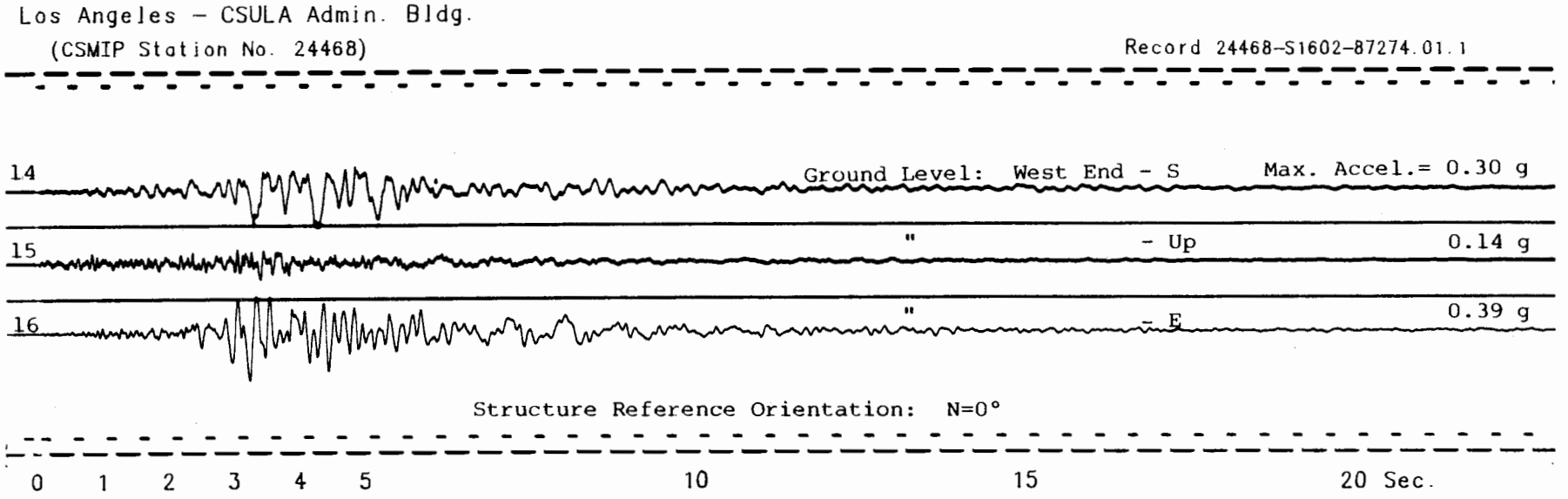
Ground Level

Structure Reference
Orientation: N= 0°

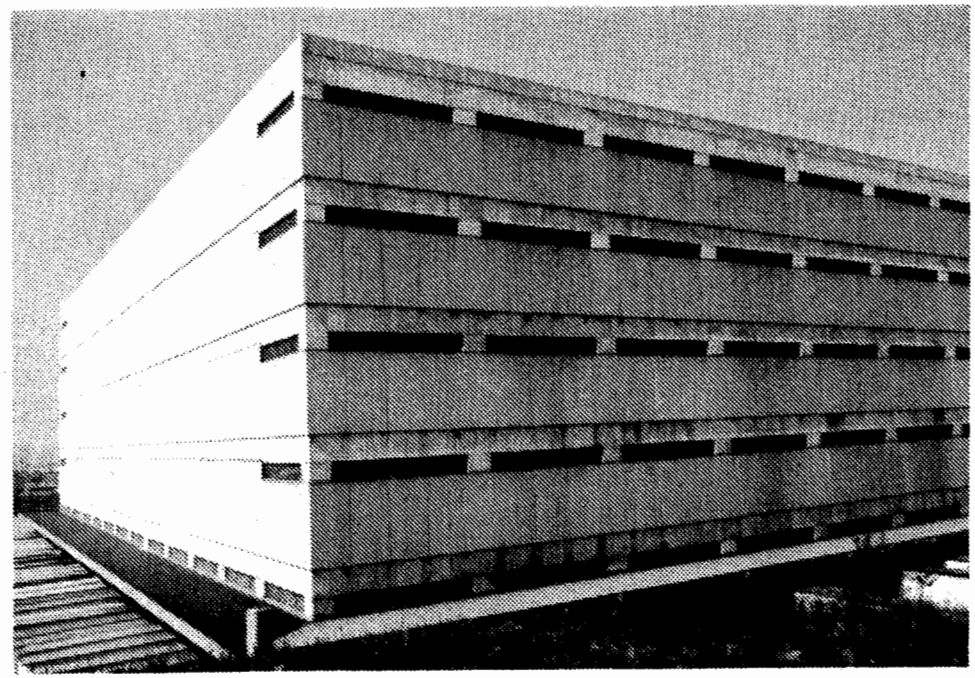
Los Angeles – CSULA Admin. Bldg.
(CSMIP Station No. 24468)

Record 24468-C0222-87274.01.1




Los Angeles – CSULA Admin. Bldg.
(CSMIP Station No. 24468)
Record 24468-S1602-87274.01.1
14
Ground Level: West End - S
Max. Accel.= 0.30 g
15
"
- Up
0.14 g
16
"
- E
0.39 g
Structure Reference Orientation: N=0°
0 1 2 3 4 5 10 15 20 Sec.

Los Angeles - Sears Warehouse



Address: 2555 East Olympic Blvd.
Los Angeles, CA
No. of Stories above/below ground: 5/1
Plan Shape: Rectangular
Base Dimensions: 360' x 280'
Typical Floor Dimensions: Same
Design Date: 1970

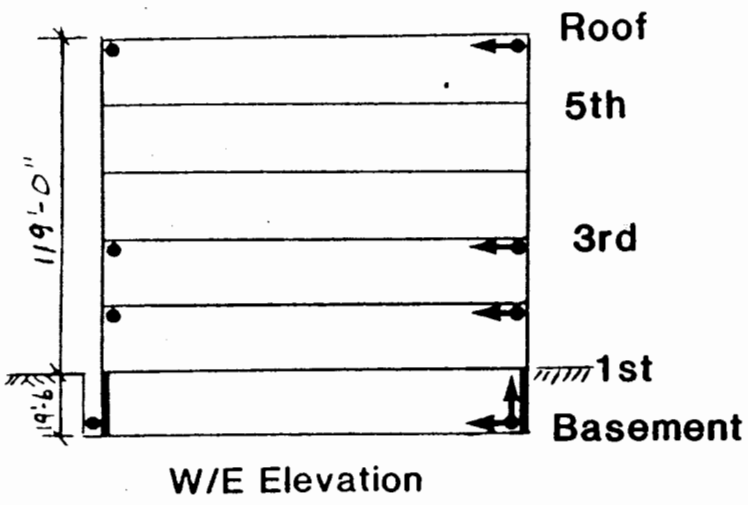
Vertical Load Carrying System:
Concrete slabs, beams and columns.
Lateral Force Resisting System:
Ductile reinforced concrete perimeter frame; basement shear walls; designed according to the 1970 Los Angeles Building Code.
Foundation Type:
Spread footings.

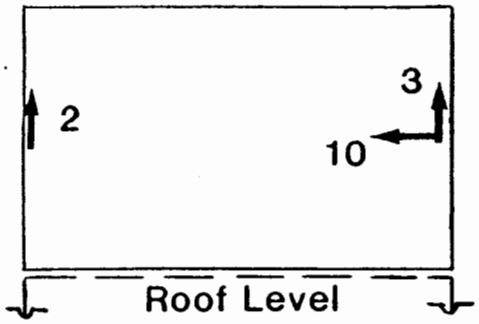
Note: This building is adjacent to a similar building; the buildings are separated by a seismic joint.

Los Angeles - Sears Warehouse

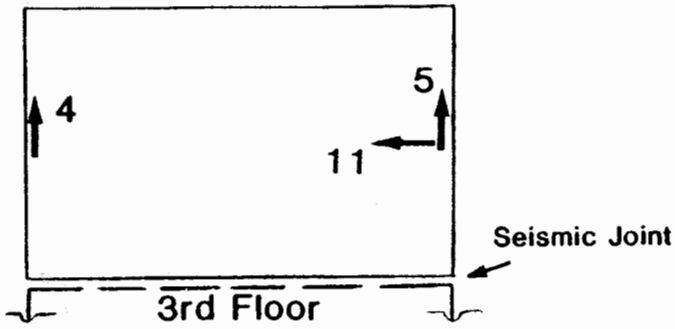
(CSMIP Station No. 24463)

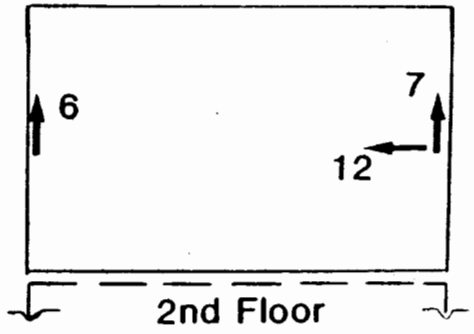
SENSOR LAYOUT

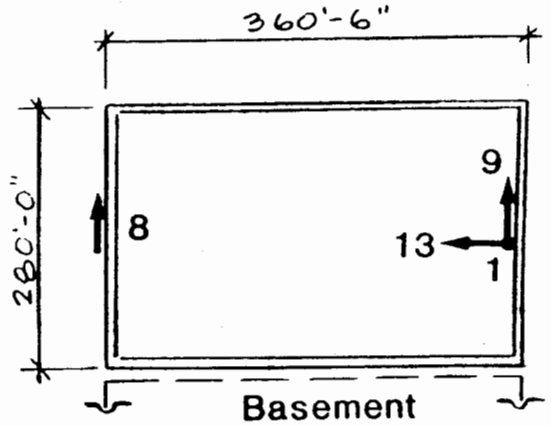




Structure Reference
Orientation: N= 350°

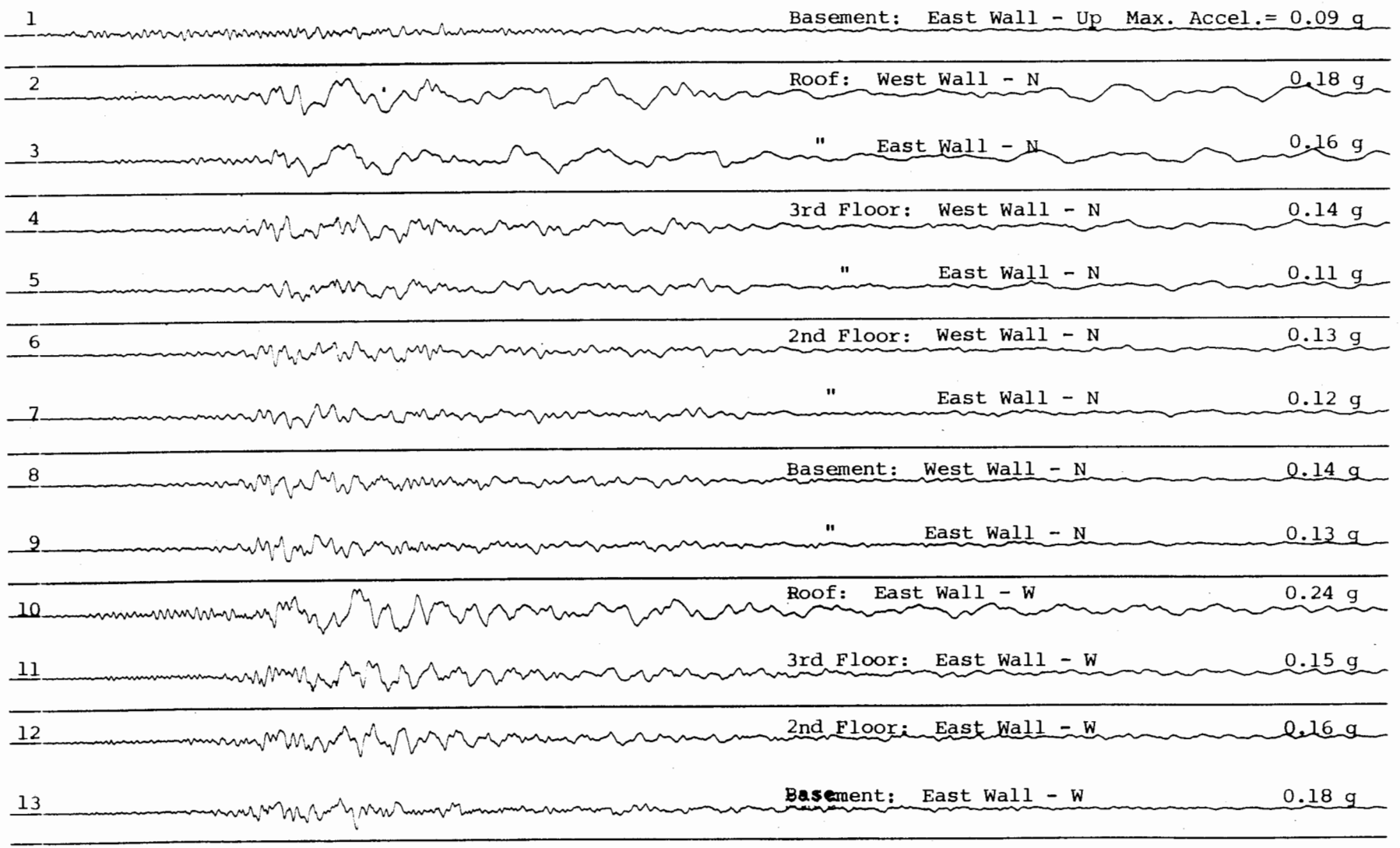






Los Angeles – Sears Warehouse
(CSMIP Station No. 24463)

Record 24463-C0218-87275.01



Structure Reference Orientation: N=350°

0 1 2 3 4 5 10 15 20 Sec.

Los Angeles - Hollywood Storage Bldg.

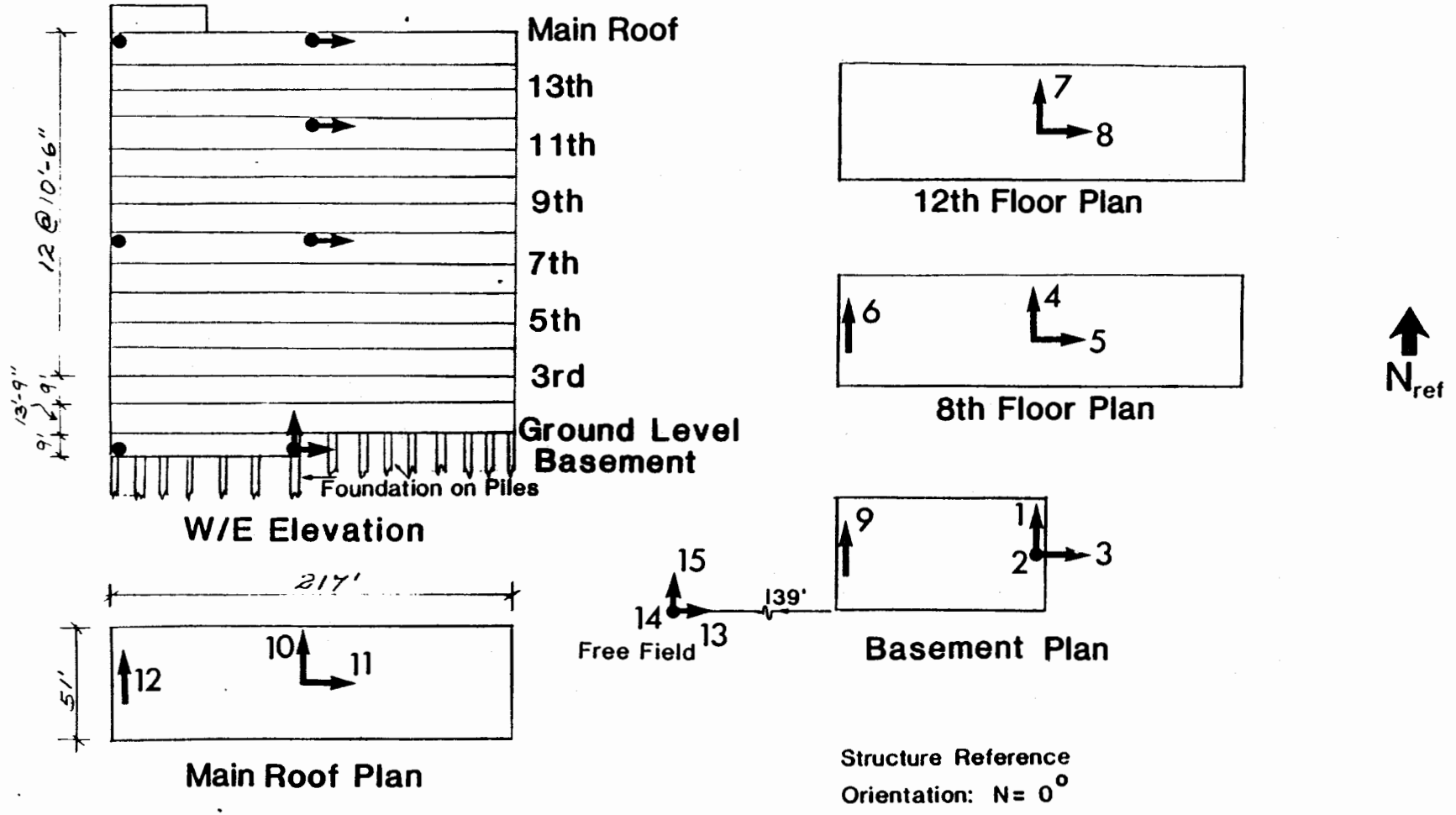
Address: 1025 N. Highland Ave.
Los Angeles, CA
No. of Stories above/below ground: 14/partial basement
Plan Shape: Rectangular
Base Dimensions: 217' x 51'
Typical Floor Dimensions: Same
Design Date: 1925

Vertical Load Carrying System:
8" thick concrete slabs supported by concrete frame.
Lateral Force resisting System:
Reinforced concrete frame in both directions.
Foundation Type:
Concrete piles.

Los Angeles – Hollywood Storage Bldg.

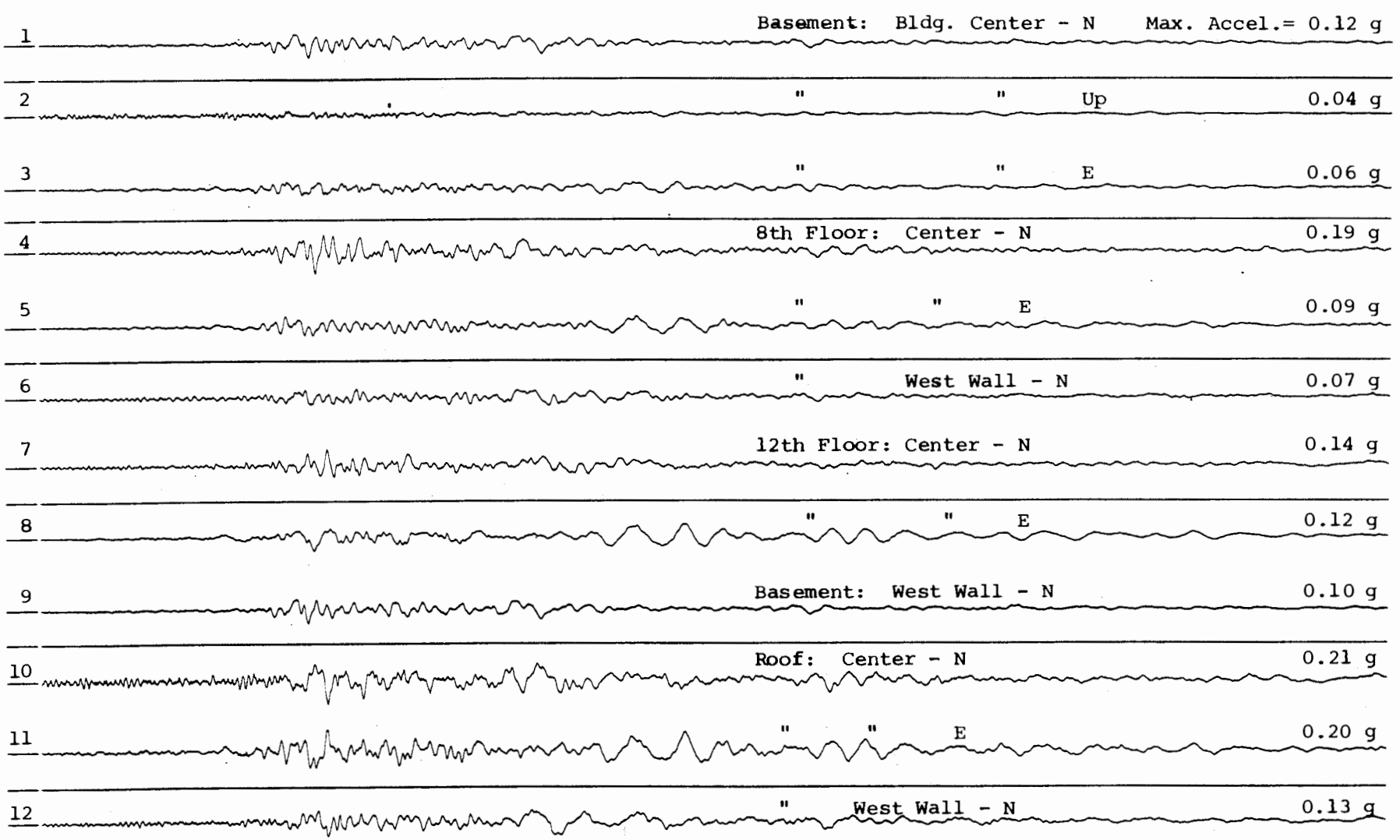
(CSMIP Station No. 24236)

SENSOR LAYOUT



Los Angeles – Hollywood Storage Bldg.
(CSMIP Station No. 24236)

Record 24236-C0124-87275.01

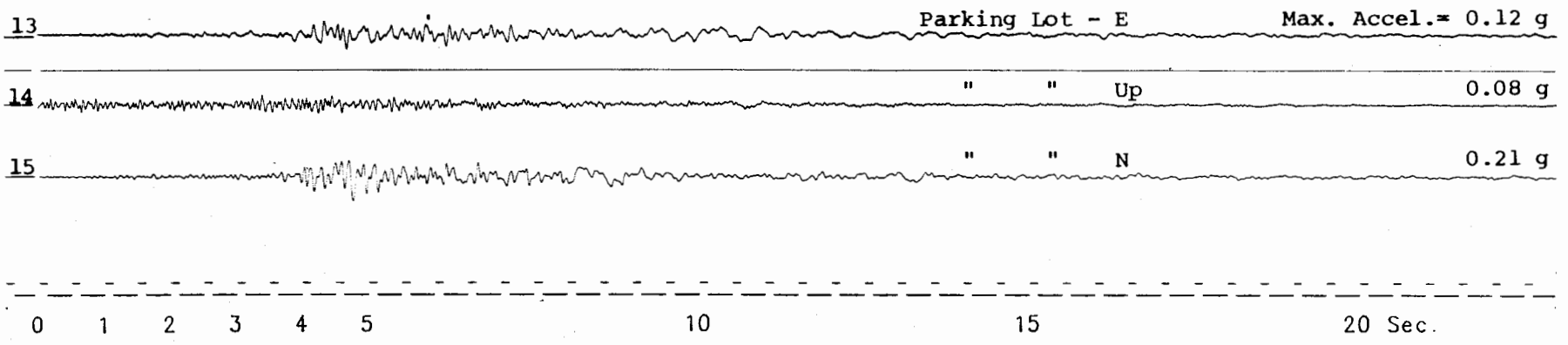


Structure Reference Orientation: N=0°

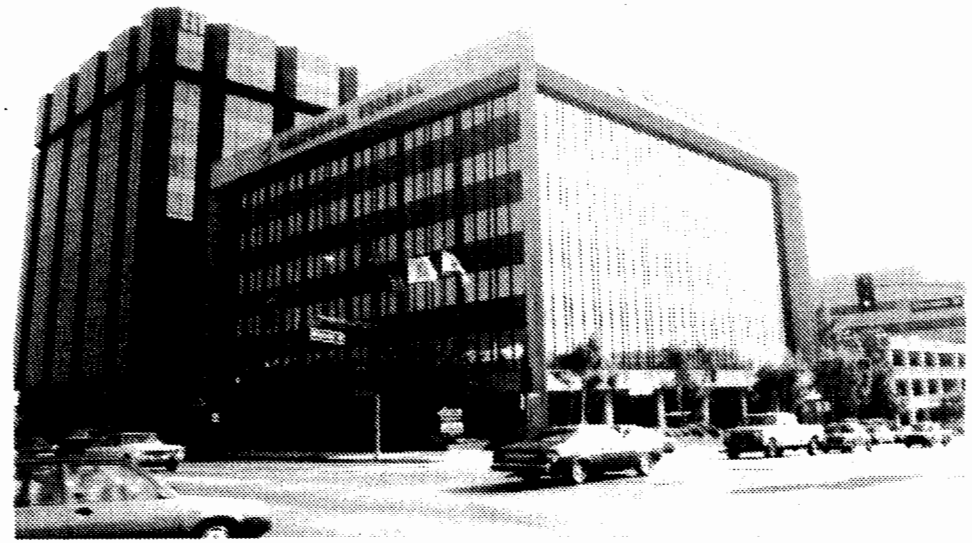
0 1 2 3 4 5 10 15 20 Sec.

Los Angeles – Hollywood Storage Bldg. FF
(CSMIP Station No. 24303)

Record 24303-S2774-87275.01.1



Burbank - California Federal Savings Bldg.



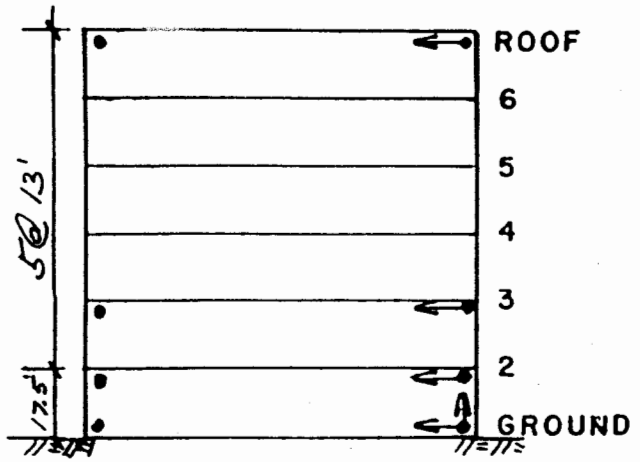
Address: 323 N. Glenoaks Blvd.
Burbank, CA
No. of Stories above/below ground: 6/0
Plan Shape: Rectangular
Base Dimensions: 120' x 120'
Typical Floor Dimensions: Same
Design Date: 1976
Construction Date: 1977

Vertical Load Carrying System:
3" thick concrete slab over metal deck supported by steel frame.
Lateral Force Resisting System:
Perimeter moment resisting steel frame.
Foundation Type:
Concrete caissons (approx. 32' long).

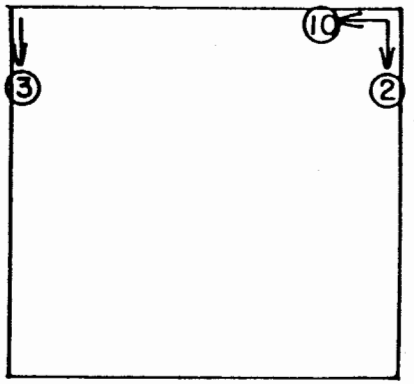
Burbank – California Federal Savings Bldg.

(CSMIP Station No. 24370)

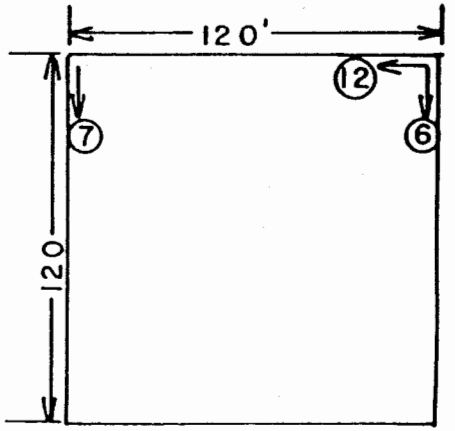
SENSOR LAYOUT



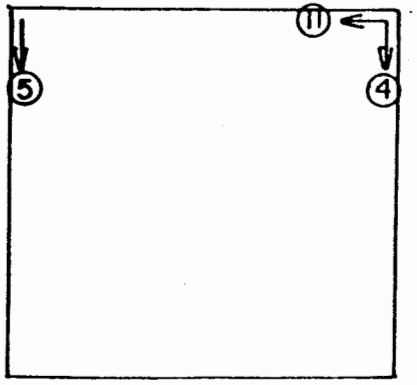
S/N ELEVATION



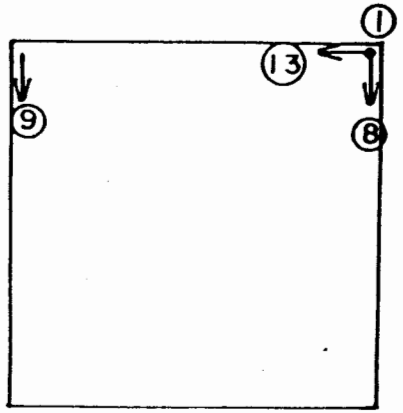
ROOF



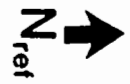
2 ND FLOOR



3 RD FLOOR



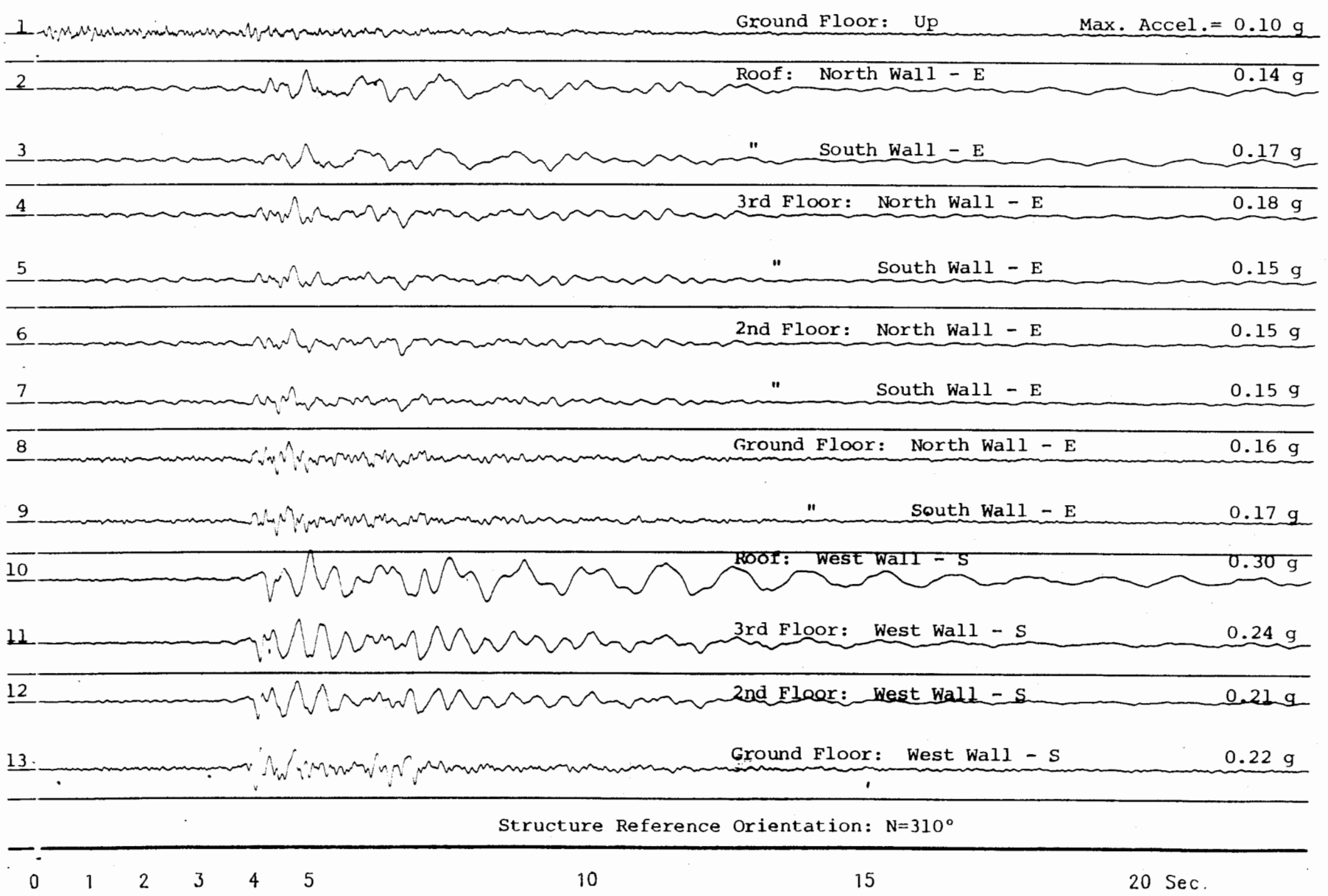
GROUND



Structure Reference
Orientation: N= 310°

Burbank – Cal. Fed. Savings Bldg.
(CSMIP Station No. 24370)

Record 24370-C0196-87274.01.1



Burbank - Pacific Manor

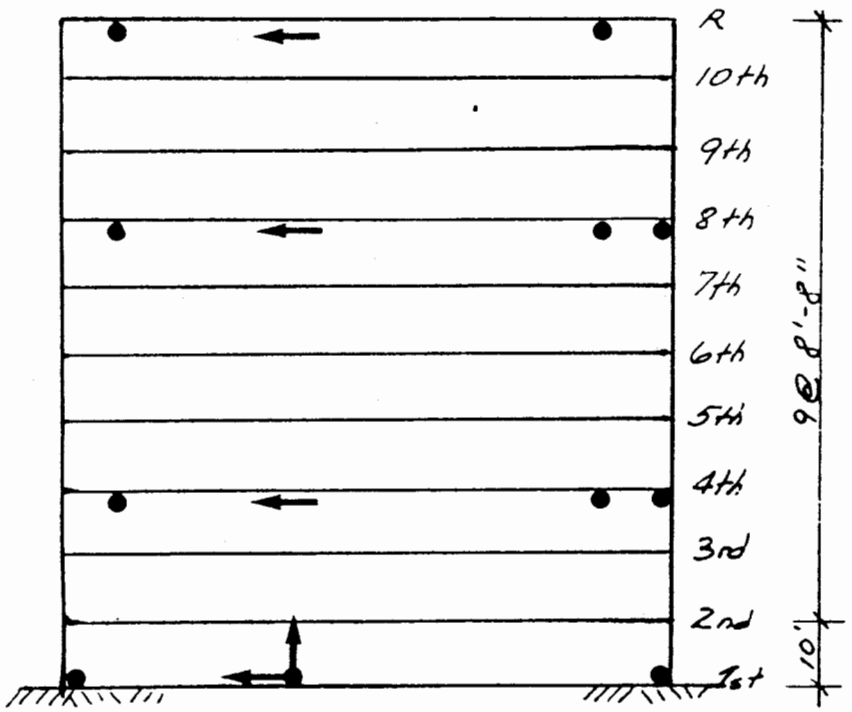
Address: 609 N. Glenoaks Blvd.
Burbank, CA
No. of Stories above/below ground: 10/0
Plan Shape: Rectangular
Base Dimensions: 215' x 75'
Typical Floor Dimensions: Same
Design Date: 1974
Construction Date: 1974

Vertical Load Carrying System:
Precast and poured-in-place concrete floor slabs supported by precast concrete bearing walls.
Lateral Force Resisting System:
Precast concrete shear walls in both directions.
Foundation Type:
Concrete caissons (25' to 35' deep) under all bearing walls.

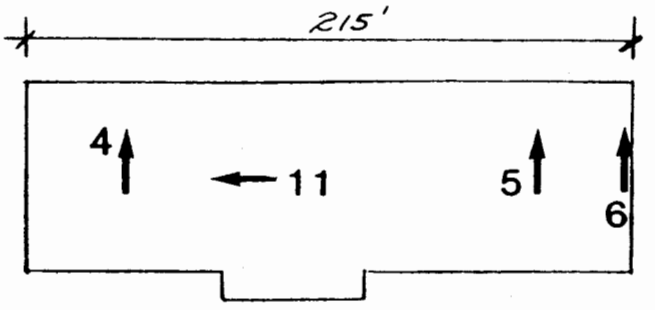
Burbank – Pacific Manor

(CSMIP Station No. 24385)

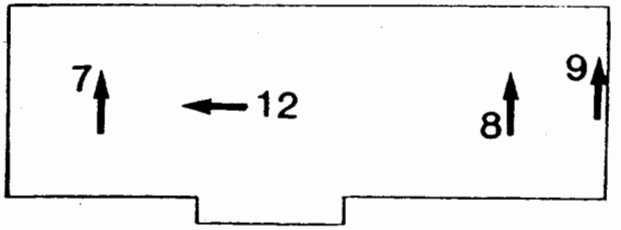
SENSOR LAYOUT



W/E Elevation

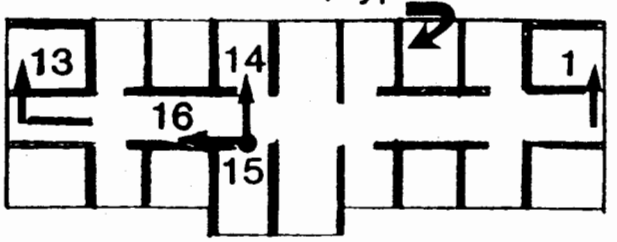


8th Floor

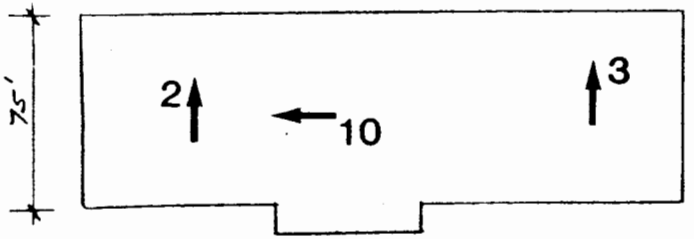


4th Floor

Shear Walls Shown
(Typical Each Floor)



1st Floor

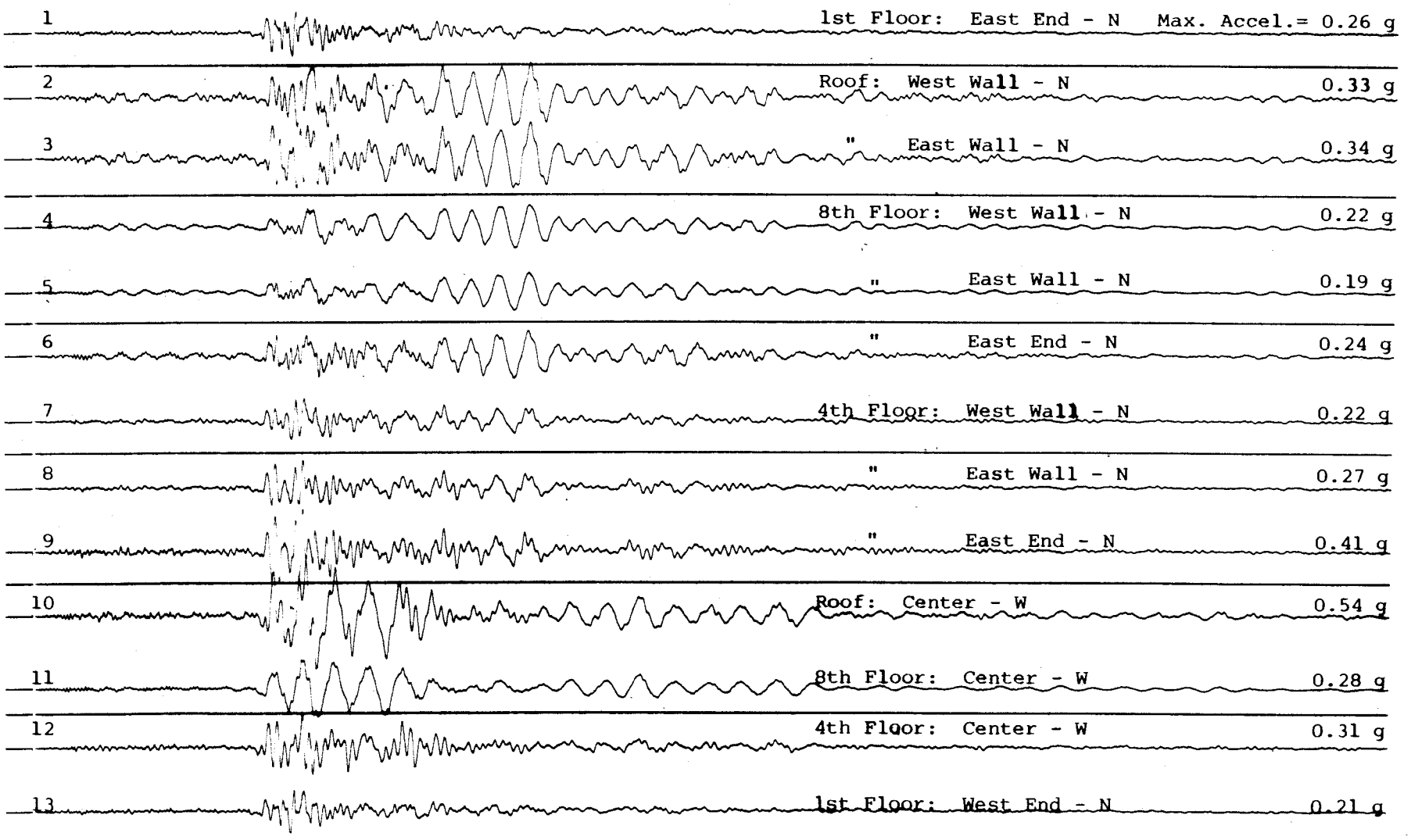


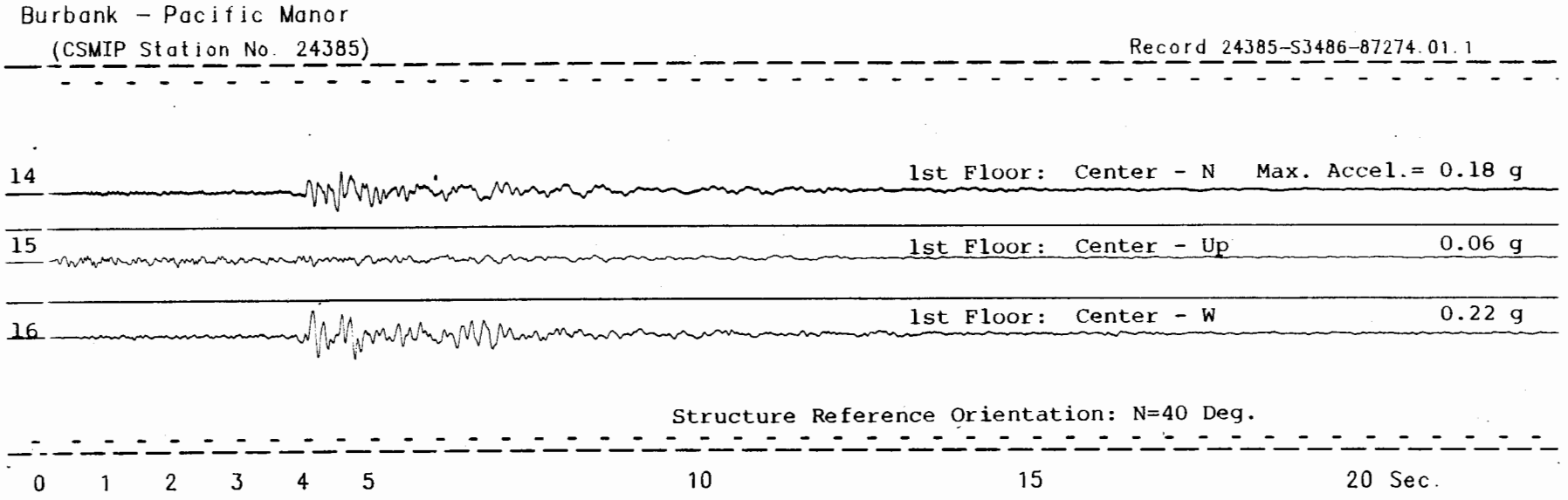
Roof Level

Structure Reference
Orientation: N= 40°

Burbank – Pacific Manor
(CSMIP Station No. 24385)

Record 24385-C0193-87274.01.1




Burbank – Pacific Manor
(CSMIP Station No. 24385)
Record 24385-S3486-87274.01.1
14
1st Floor: Center - N Max. Accel.= 0.18 g
15
1st Floor: Center - Up 0.06 g
16
1st Floor: Center - W 0.22 g
Structure Reference Orientation: N=40 Deg.
0 1 2 3 4 5 10 15 20 Sec.

North Hollywood - Sheraton-Universal Hotel

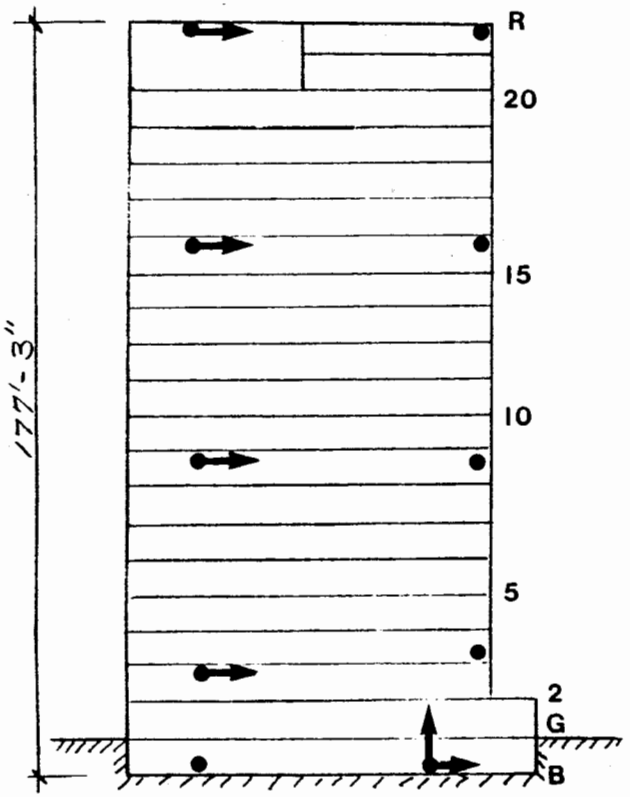
Address: 30 Universal City Plaza
North Hollywood, CA
No. of Stories above/below ground: 20/1
Plan Shape: Rectangular
Base Dimensions: 199' x 96'
Typical Floor Dimensions: 184' x 58'
Design Date: 1967
Construction Date: 1968

Vertical Load Carrying System:
4-6" thick concrete slabs supported by concrete beams and columns.
Lateral Force resisting System:
Ductile moment resisting concrete frame; designed according to the 1966 Los Angeles Building Code.
Foundation Type:
Spread footings.

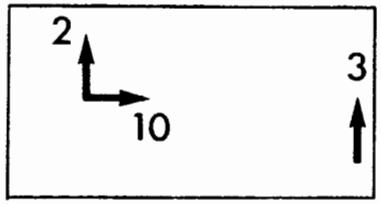
North Hollywood – Sheraton Universal Hotel

(CSMIP Station No. 24464)

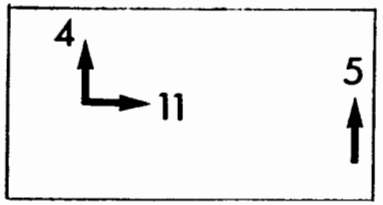
SENSOR LAYOUT



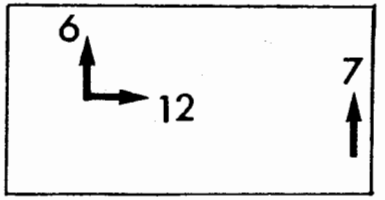
W/E Elevation



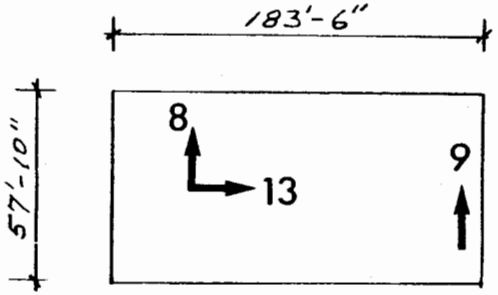
Roof



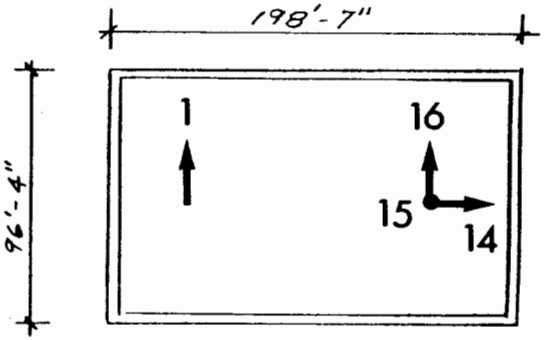
16th Floor



9th Floor



3rd Floor

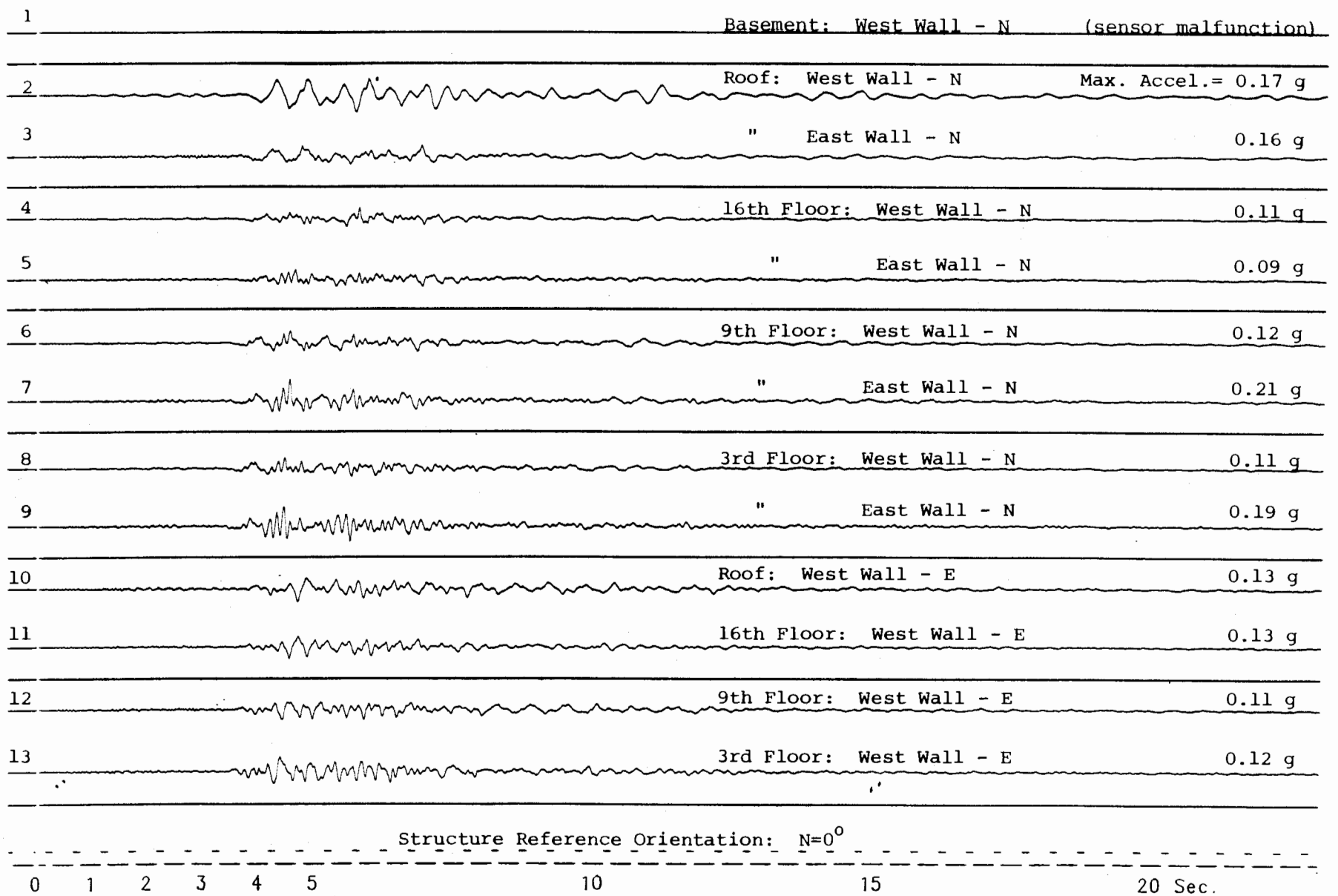


Basement

Structure Reference
Orientation: N= 0°

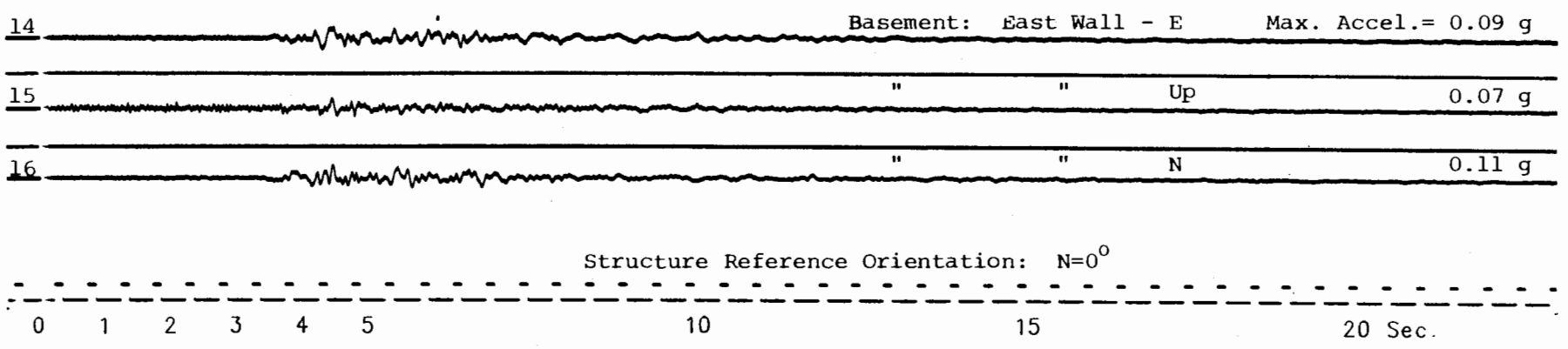
North Hollywood – Sheraton-Universal Hotel
(CSMIP Station No. 24464)

Record 24464-C0219-87274.01



North Hollywood – Sheraton-Universal Hotel
(CSMIP Station No. 24464)

Record 24464-S3485-87274.01



Long Beach - CSULB Engineering Building 1

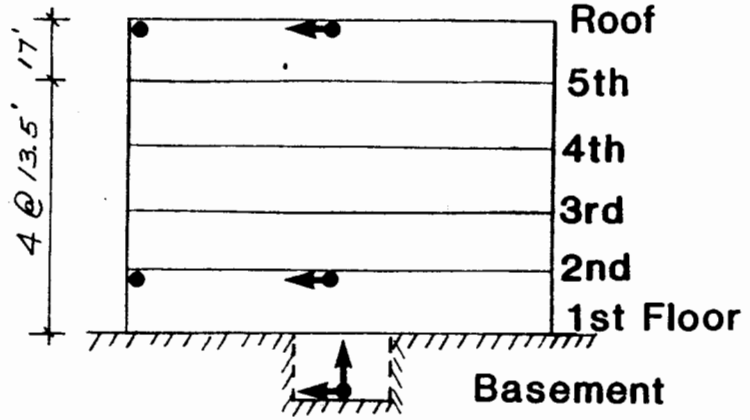
Address: Calif. State University
Long Beach, CA
No. of Stories above/below
ground: 5/partial basement
Plan Shape: Rectangular
Base Dimensions: 205' x 81'
Typical Floor Dimensions: Same
Design Date: 1968
Construction Date: 1970

Vertical Load Carrying System:
6" thick concrete slabs supported by concrete beams, columns and 12" thick concrete bearing walls.
Lateral Force Resisting System:
Concrete shear walls in both directions.
Foundation Type:
Concrete piles.

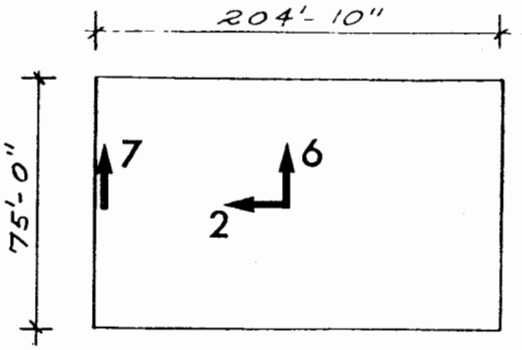
Long Beach – CSULB Engineering Bldg. 1

(CSMIP Station No. 14311)

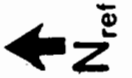
SENSOR LAYOUT

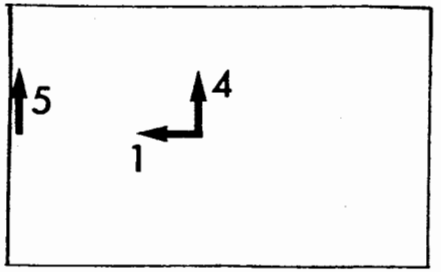


N/S Elevation

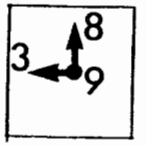


2nd Floor Plan





Roof Plan

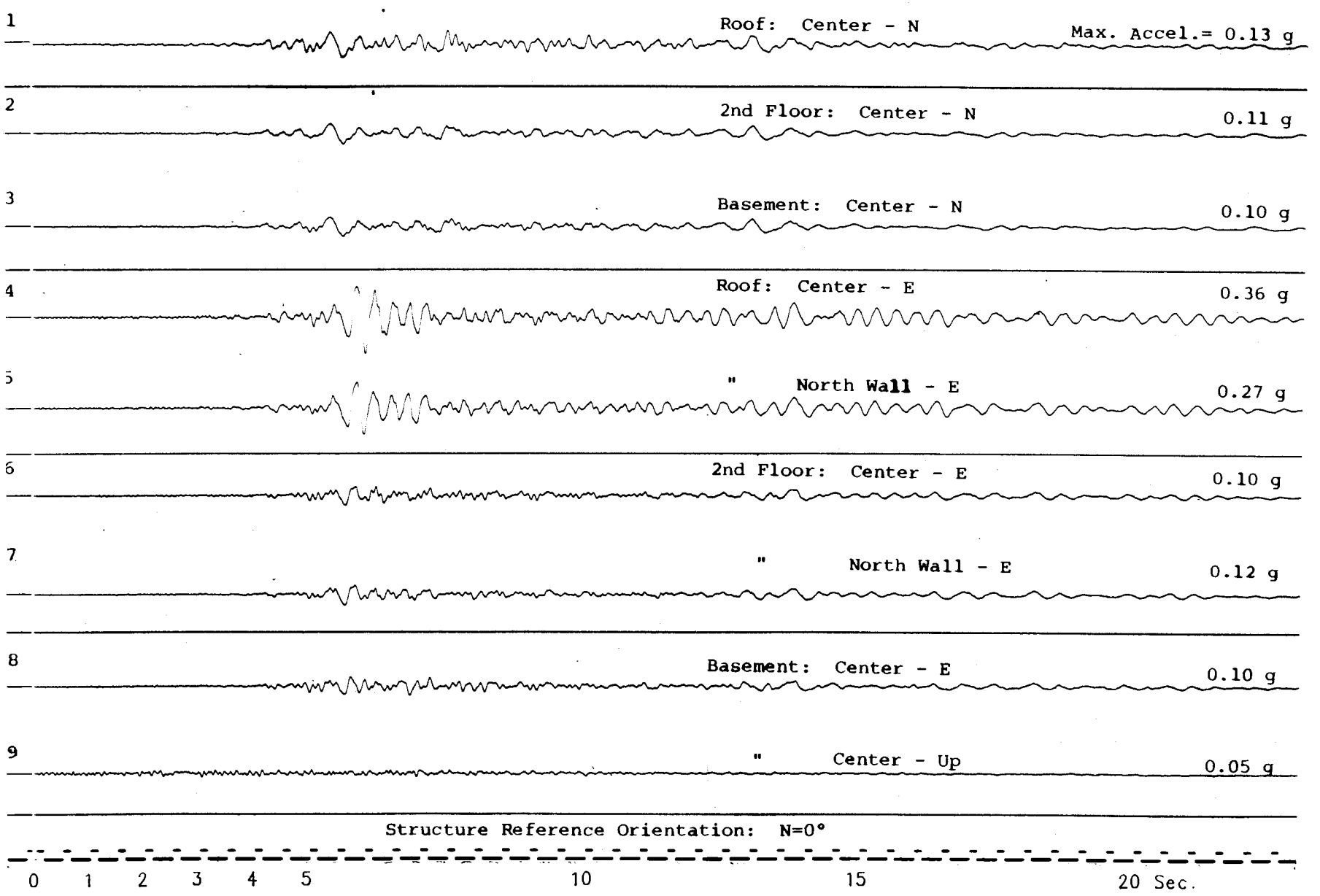


Basement Plan

Structure Reference Orientation: N= 0°

Long Beach - CSULB Eng. Bldg. 1
(CSMIP Station No. 14311)

Record 14311-C0159-87275.01



Los Angeles - Century City Bullock Department Store

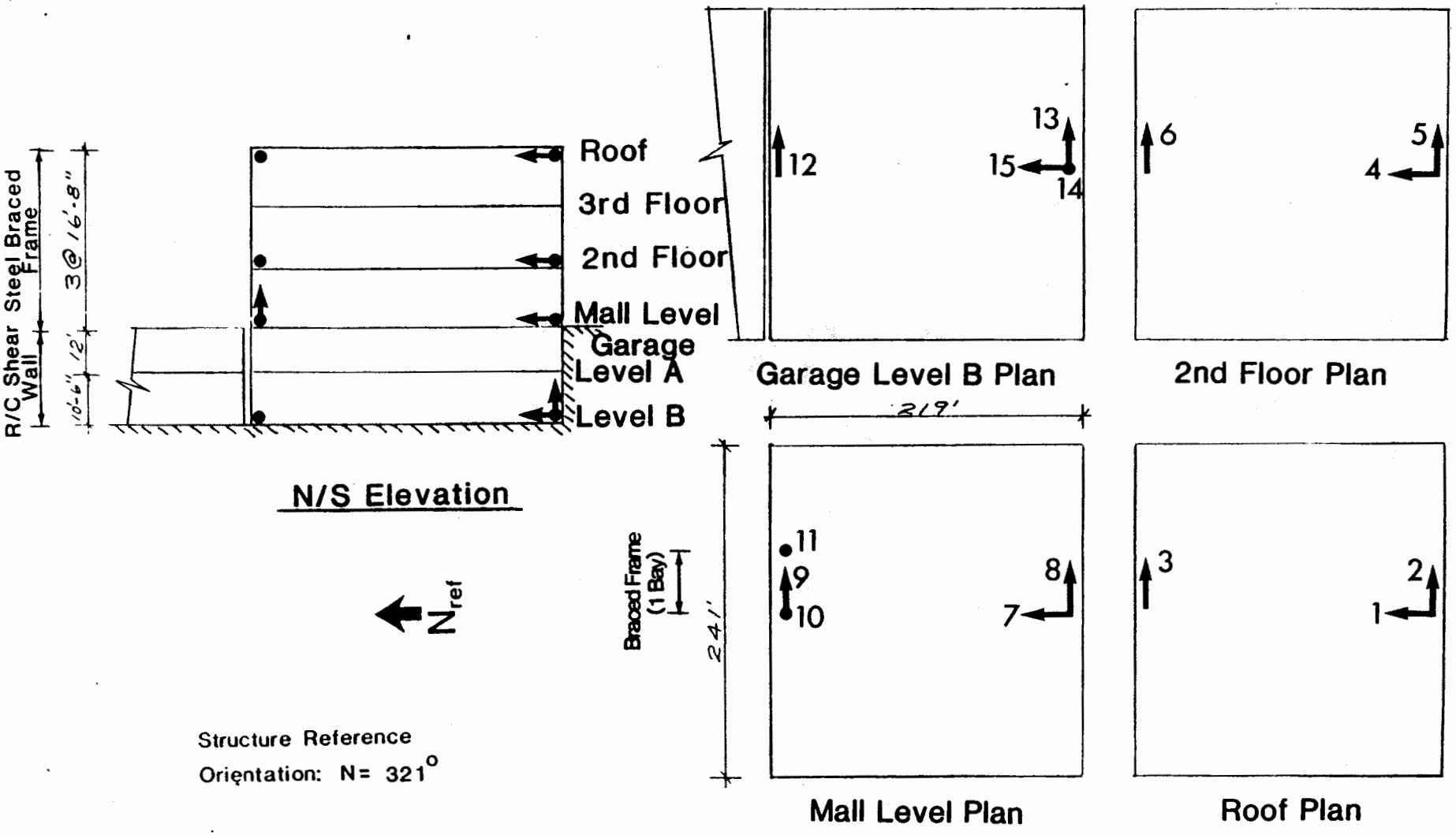
Address: 10250 Santa Monica Blvd.
Los Angeles, CA
No. of Stories above/below ground: 3/2
Plan Shape: Rectangular
Base Dimensions:
520'x227' (2-story parking garage)
Typical Floor Dimensions:
241'x219' (3-story department store)
Design Date: 1974
Construction Date: 1975-76

Vertical Load Carrying System:
Upper 3 stories: steel deck with 3 1/4" lightweight concrete slab supported by steel frame.
Lower 2 stories: 18" thick waffle slabs.
Lateral Force Resisting System:
Upper 3 stories: steel braced frame (perimeter only). Lower 2 stories: concrete shear walls.
Foundation Type:
Spread footings and drilled bell caissons.

Los Angeles – Century City Bullock Dept. Store

(CSMIP Station No. 24332)

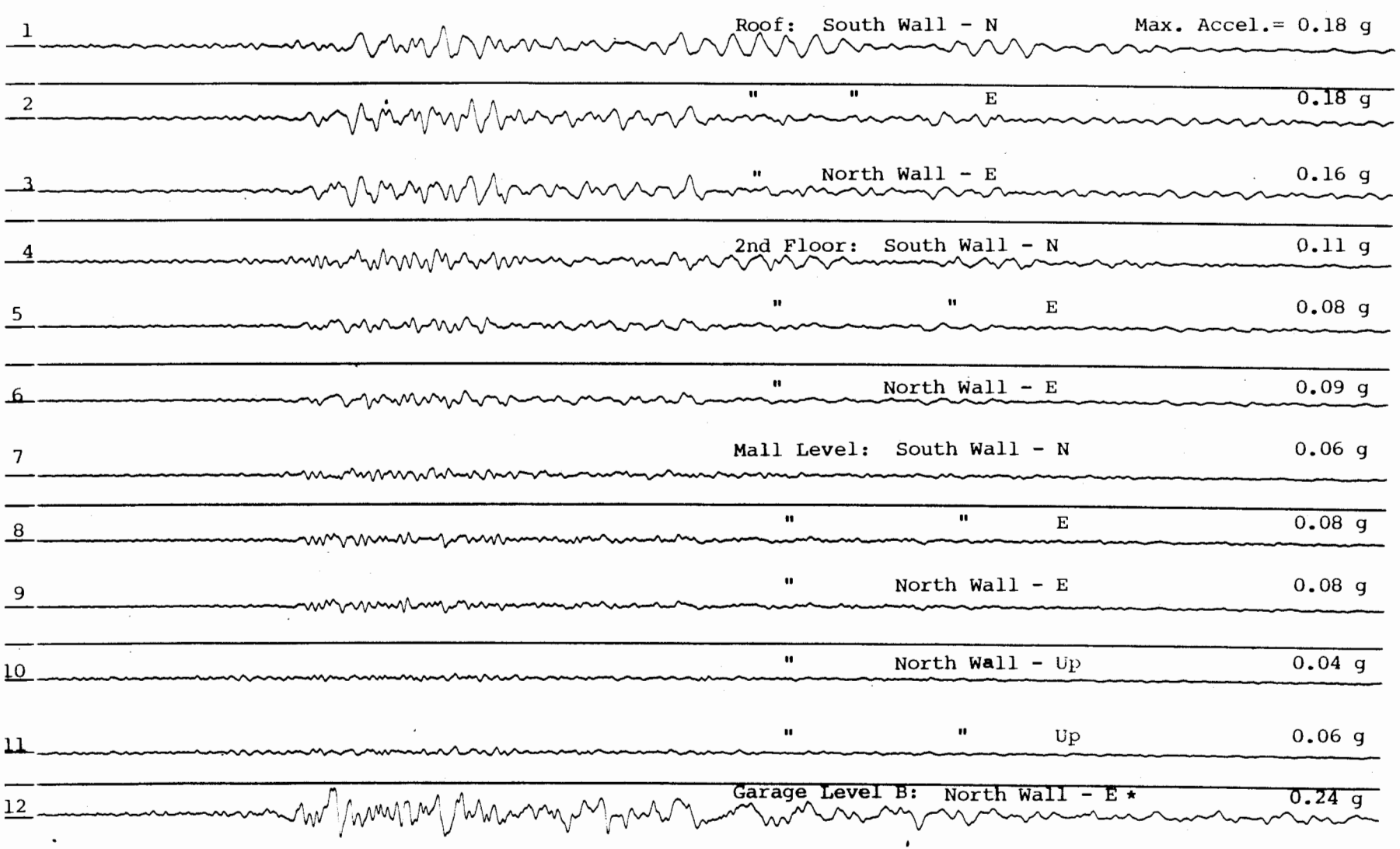
SENSOR LAYOUT



Los Angeles – Century City Bullock Department Store

(CSMIP Station No. 24332)

Record 24332-C0142-87276.01



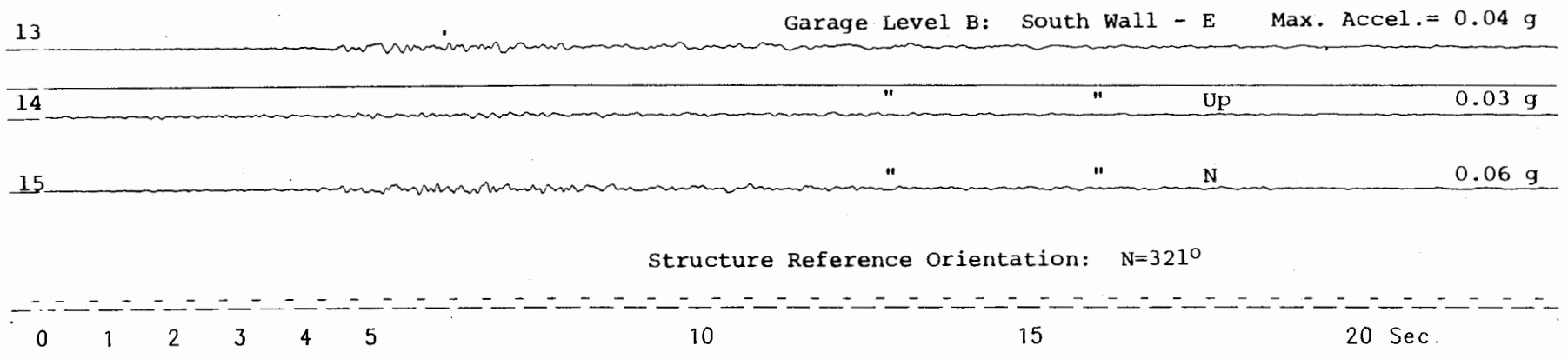
Structure Reference Orientation: N=321°

* Possible sensor malfunction

0 1 2 3 4 5 10 15 20 Sec.

Los Angeles – Century City Bullock Department Store
(CSMIP Station No. 24332)

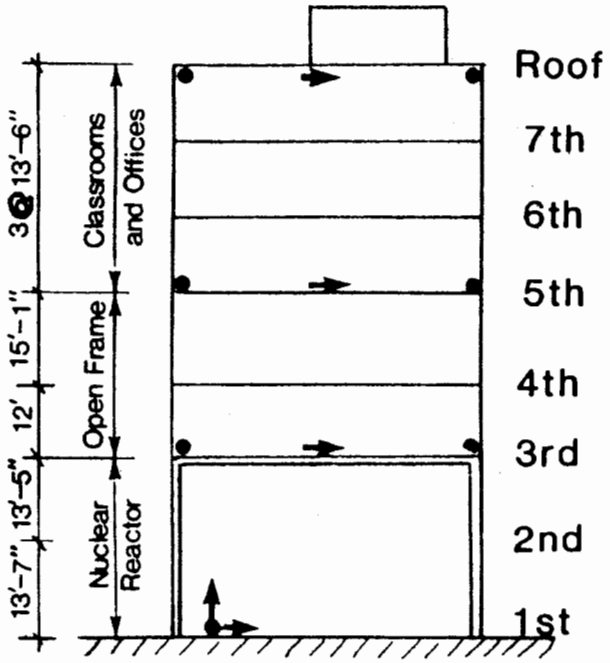
Record 24332-S2790-87276.01



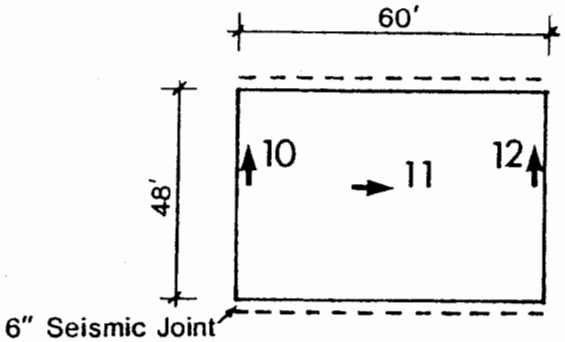
Los Angeles – UCLA Math-Science Bldg.

(CSMIP Station No. 24231)

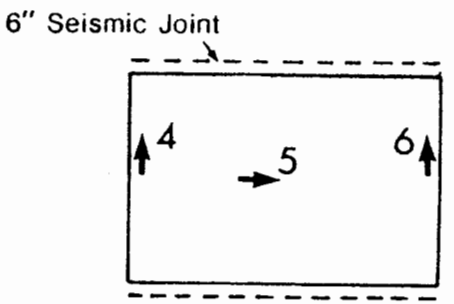
SENSOR LAYOUT



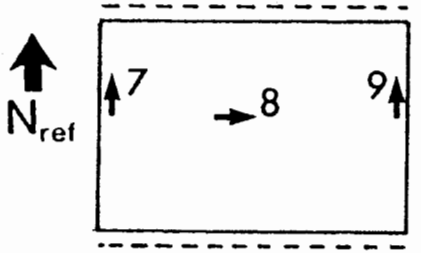
W/E Elevation



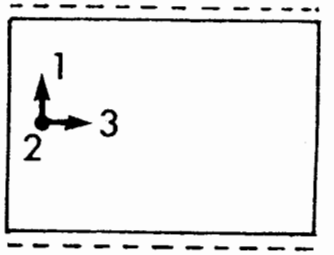
Roof Plan



3rd Floor Plan



5th Floor Plan

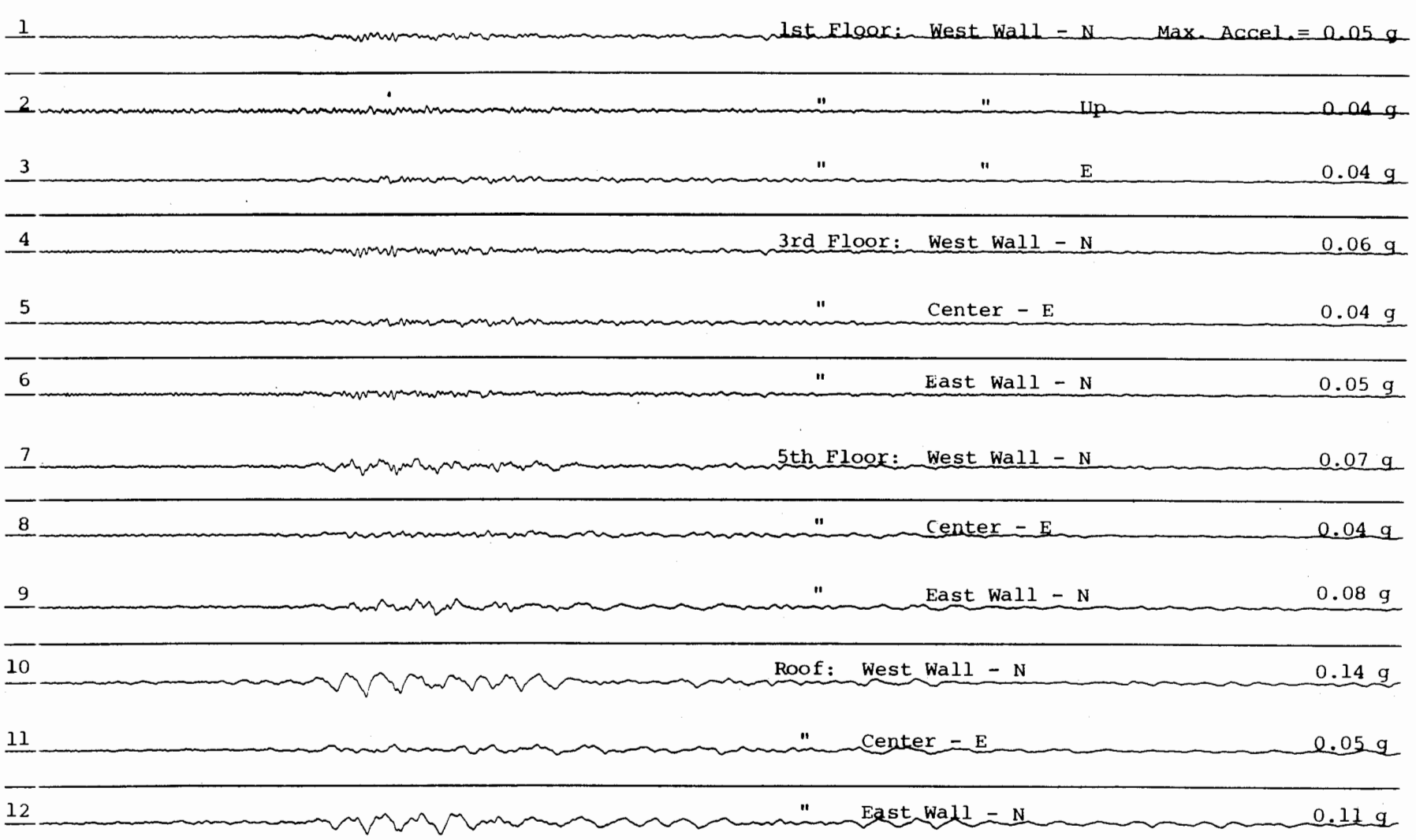


1st Floor Plan

Structure Reference
Orientation: N= 0°

Los Angeles – UCLA Math-Science Bldg.
(CSMIP Station No. 24231)

Record 24231-C0113-87276.01



Long Beach - City Hall

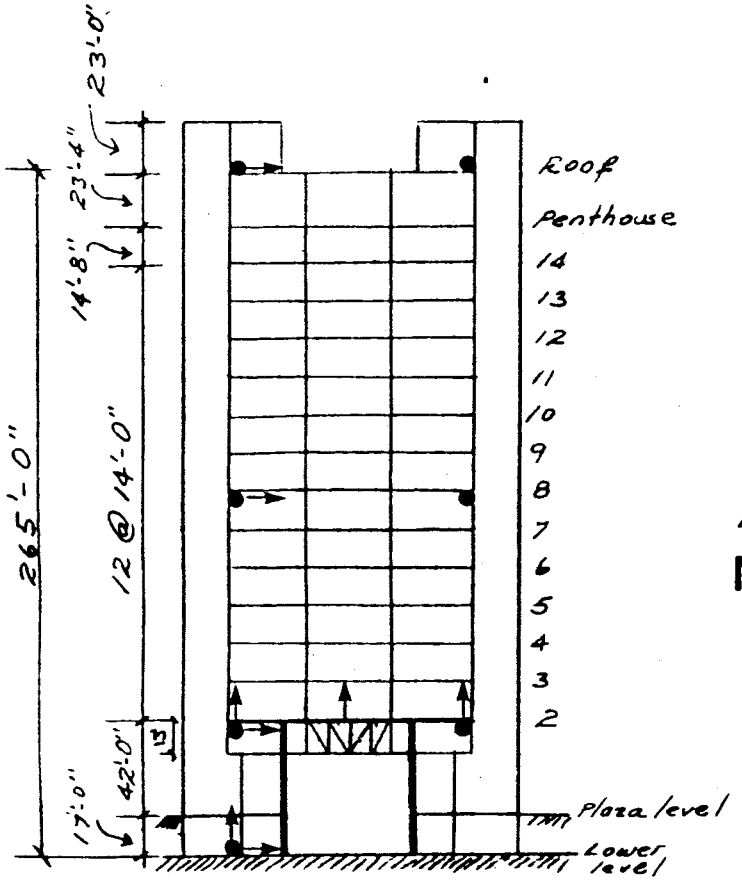
Address: 333 West Ocean Blvd.
Long Beach, CA
No. of Stories above/below ground: 15/1
Plan Shape: Square
Base Dimensions: 106' x 106'
Typical Floor Dimensions: Same
Design Date: 1973
Construction Date: 1975-76

Vertical Load Carrying System:
Concrete slab on steel deck supported by steel frame; steel frame towers on four corners of the square with precast concrete exterior panels.
Lateral Force Resisting System:
Moment resisting steel frame.
Foundation Type:
Spread footings and drilled bell caissons.

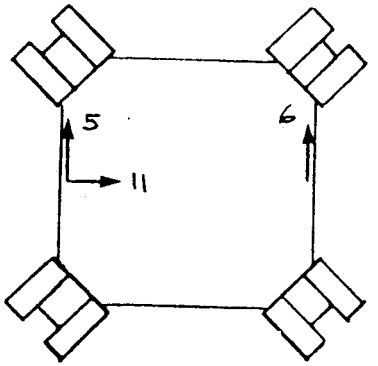
Long Beach – City Hall

(CSMIP Station No. 14533)

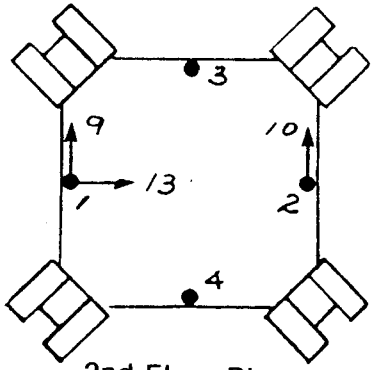
SENSOR LAYOUT



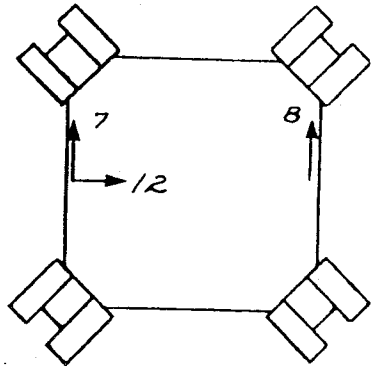
W/E Elevation



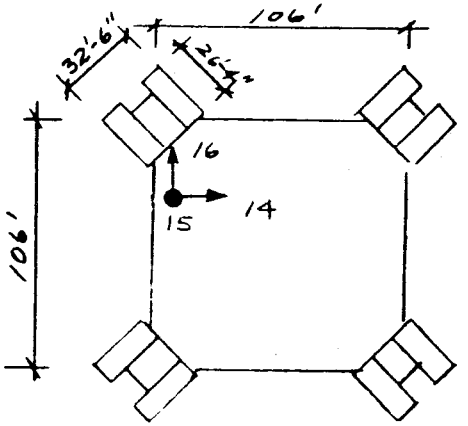
Roof Plan



2nd Floor Plan



8th Floor Plan



Lower Level Plan

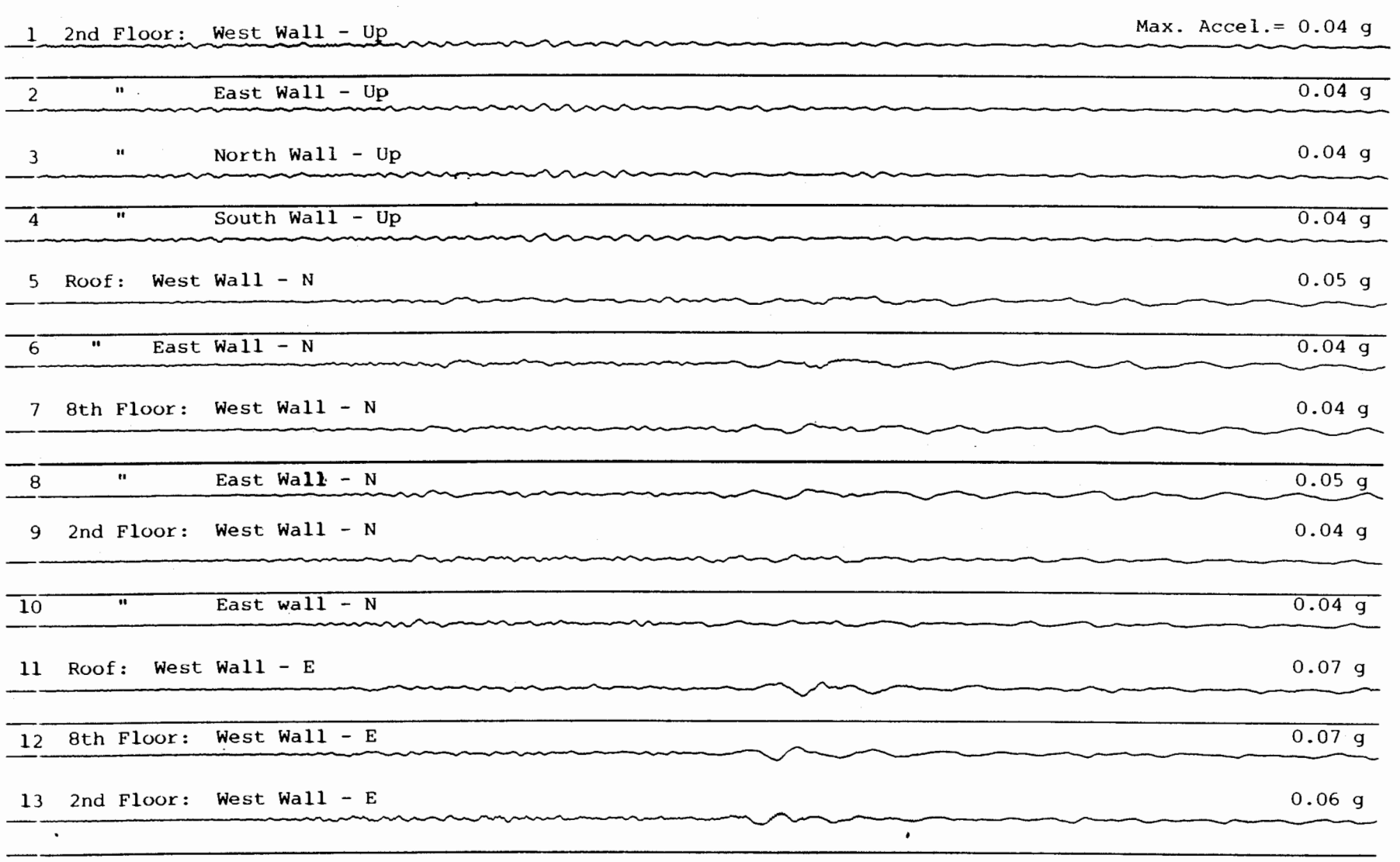
N_{ref}

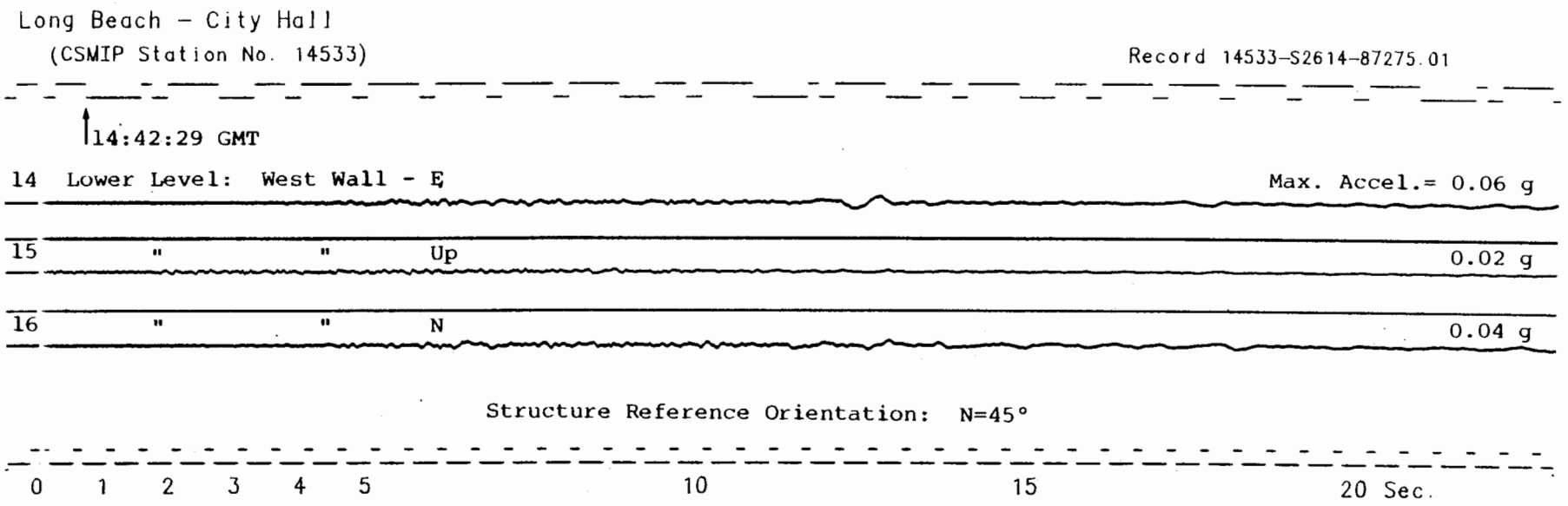
Structure Reference
Orientation: N = 45°

Long Beach – City Hall
(CSMIP Station No. 14533)

Record 14533-C0287-87275.01

14:42:29 GMT




Long Beach – City Hall
(CSMIP Station No. 14533)
Record 14533-S2614-87275.01
14:42:29 GMT
14 Lower Level: West Wall - E
Max. Accel.= 0.06 g
15 " " Up
0.02 g
16 " " N
0.04 g
Structure Reference Orientation: N=45°
0 1 2 3 4 5 10 15 20 Sec.

Long Beach - Harbor Administration Building

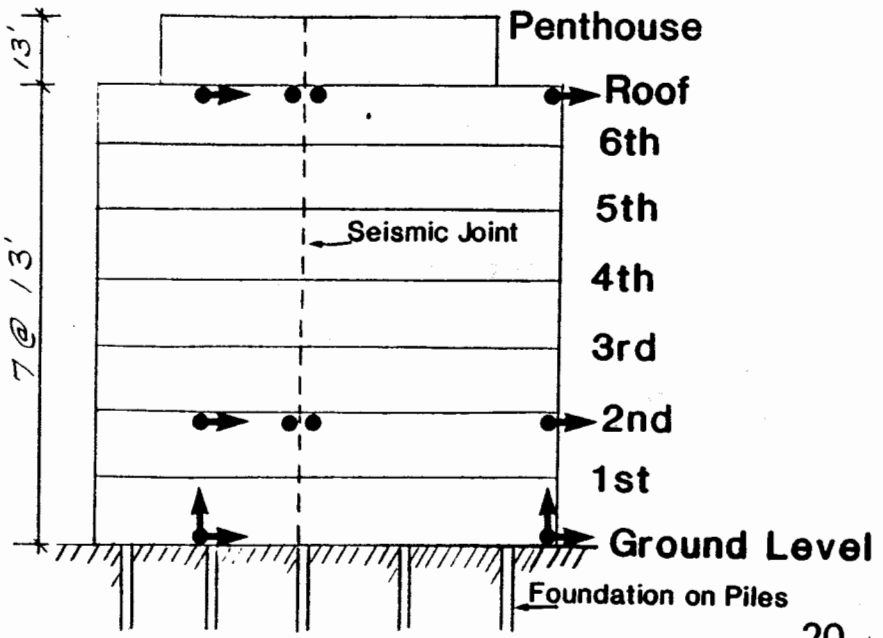
Address: 925 Harbor Plaza
Long Beach, CA
No. of Stories above/below ground: 7/0
Plan Shape: Rectangular
Base Dimensions: 220' x 75'
Typical Floor Dimensions: Same
Design Date: 1967
Construction Date: 1970

Vertical Load Carrying System:
7" thick concrete slabs supported by steel frame.
Lateral Force Resisting System:
Steel frame.
Foundation Type:
Concrete piles.

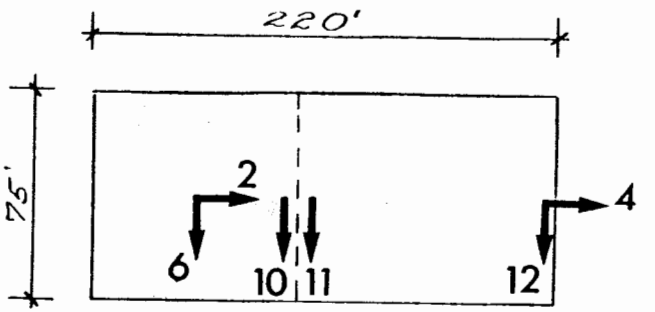
Long Beach – Harbor Admin. Bldg.

(CSMIP Station No. 14323)

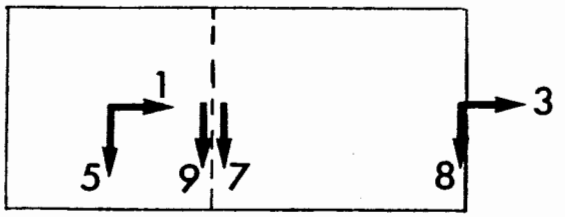
SENSOR LAYOUT



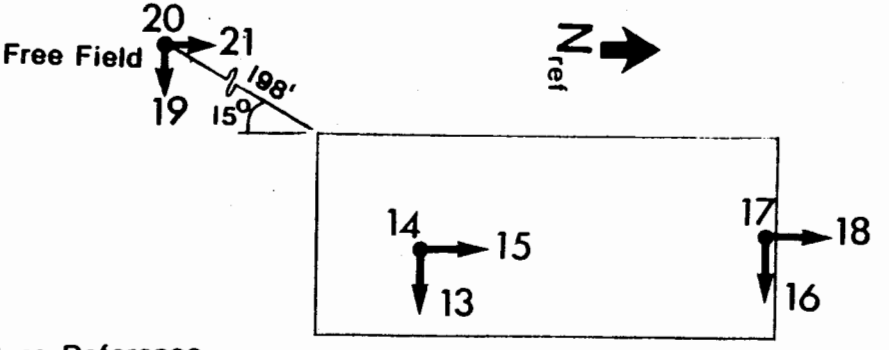
S/N Elevation



2nd Floor Plan



Roof Plan

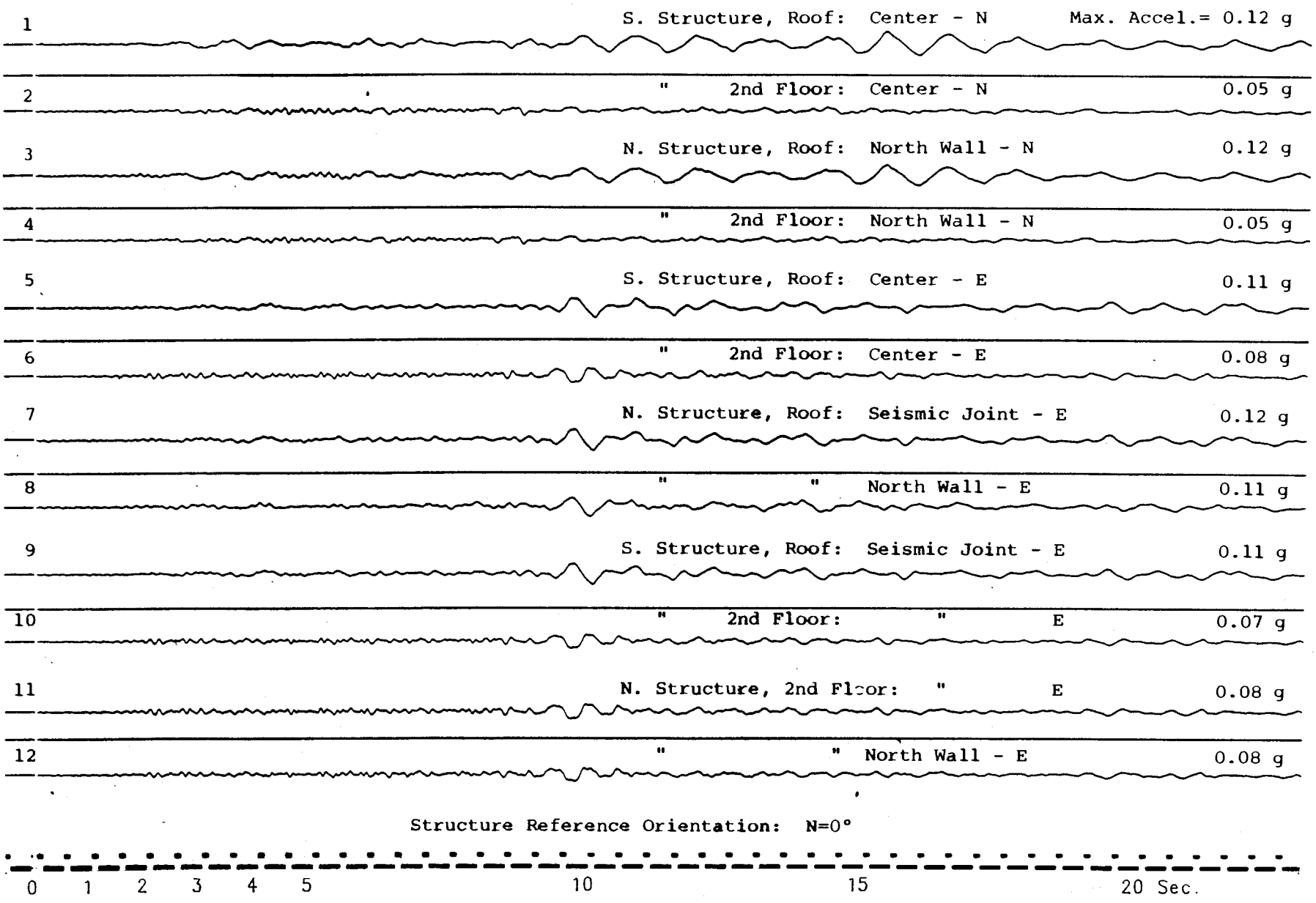


Ground Level Plan

Structure Reference
Orientation: N= 0°

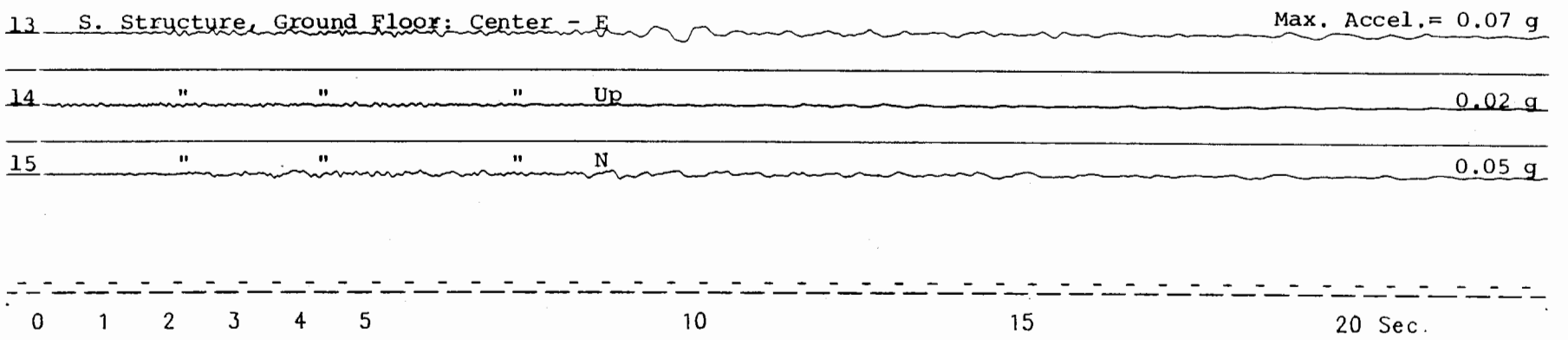
Long Beach – Harbor Admin. Bldg.
(CSMIP Station No. 14323)

Record 14323-C0154-87275.01



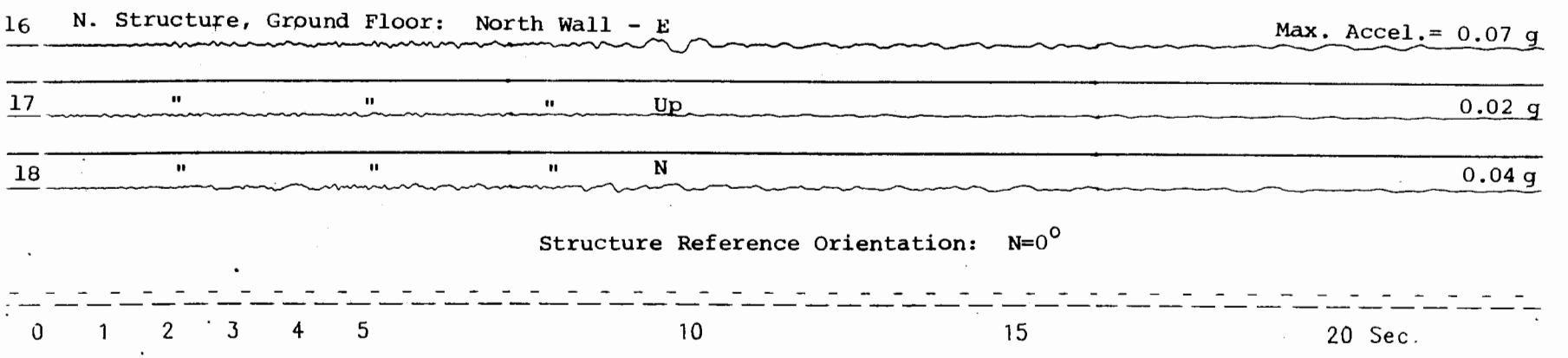
Long Beach – Harbor Admin. Bldg.
(CSMIP Station No. 14323)

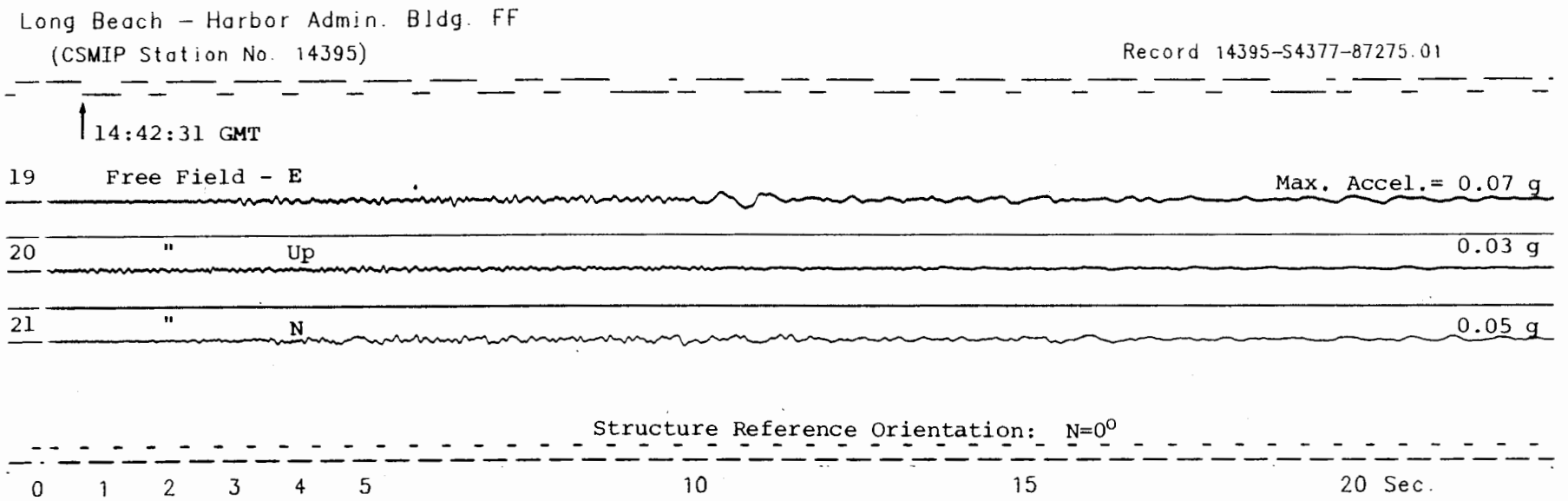
Record 14323-S2787-87275.01



Long Beach – Harbor Admin. Bldg.
(CSMIP Station No. 14323)

Record 14323-S2788-87275.01




Long Beach – Harbor Admin. Bldg. FF
(CSMIP Station No. 14395)
Record 14395-S4377-87275.01
14:42:31 GMT
19 Free Field - E
Max. Accel.= 0.07 g
20 " Up
0.03 g
21 " N
0.05 g
Structure Reference Orientation: N=0°
0 1 2 3 4 5 10 15 20 Sec.

Sherman Oaks - Union Bank Building

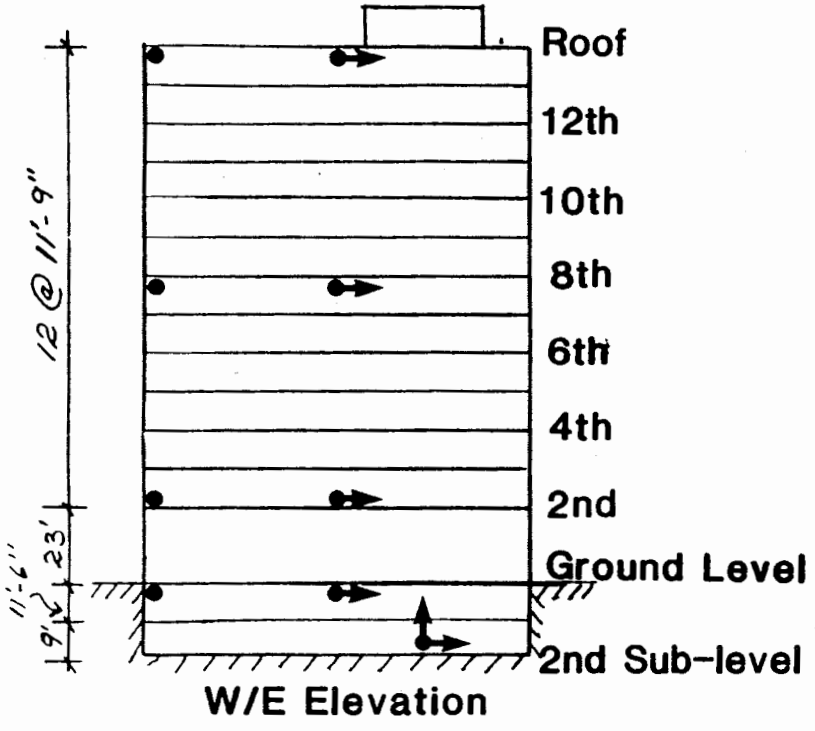
Address: 15233 Ventura Blvd
Sherman Oaks, CA
No. of Stories above/below ground: 13/2
Plan Shape: Rectangular
Base Dimensions: 209' x 125'
Typical Floor Dimensions: 193' x 75'
Design Date: 1964

Vertical Load Carrying System:
4" thick one-way concrete slabs supported by concrete beams, girders and columns.
Lateral Force Resisting System:
Moment resisting concrete frame in both directions; shear walls below first floor.
Foundation Type:
Concrete piles.

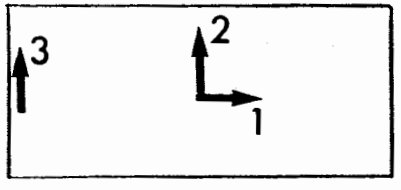
Sherman Oaks – Union Bank Bldg.

(CSMIP Station No. 24322)

SENSOR LAYOUT

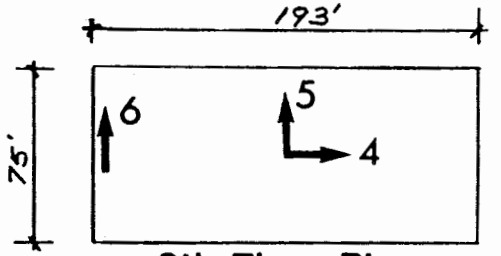


W/E Elevation

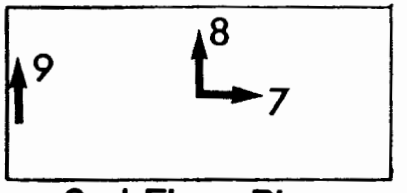


Roof Plan

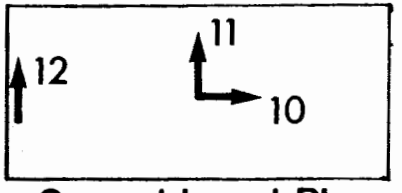
Structure Reference
Orientation: N= 0°



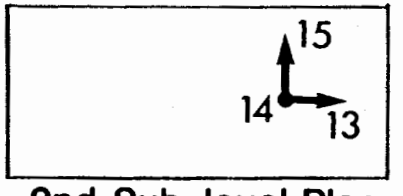
8th Floor Plan



2nd Floor Plan



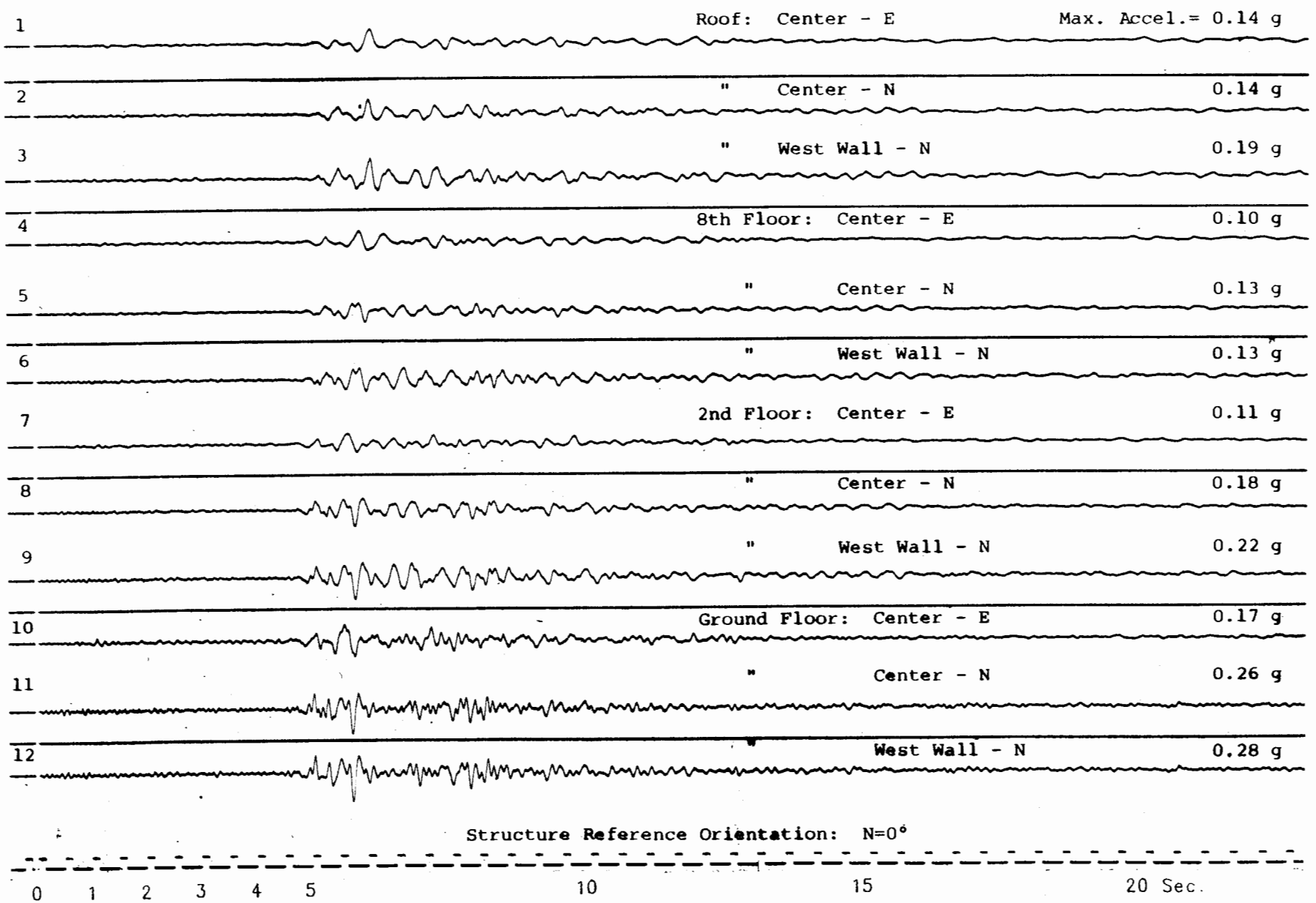
Ground Level Plan



2nd Sub-level Plan

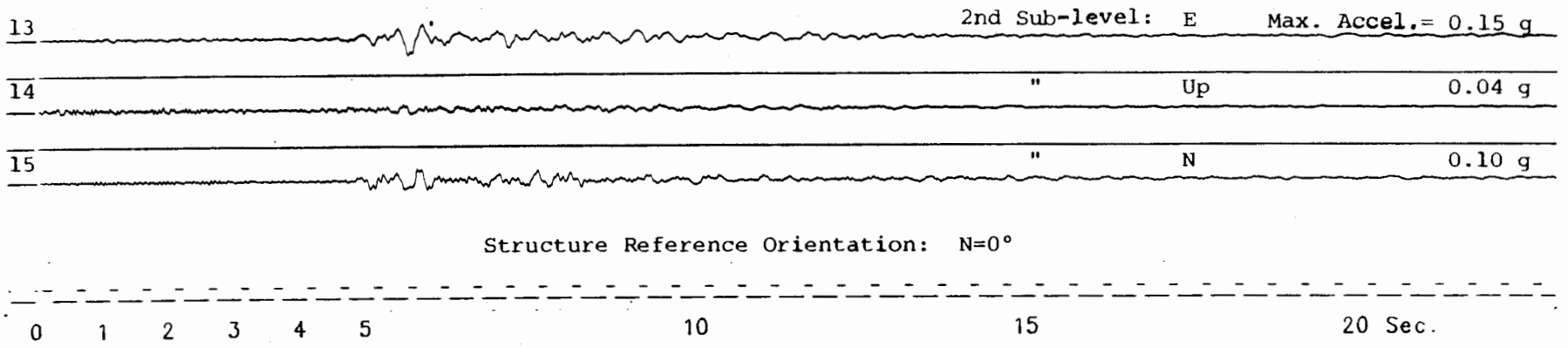
Sherman Oaks – Union Bank Bldg.
(CSMIP Station No. 24322)

Record 24322-C0160-87275.01.1



Sherman Oaks – Union Bank Bldg.
(CSMIP Station No. 24322)

Record 24322-S2789-87275.01.1



Van Nuys - Holiday Inn

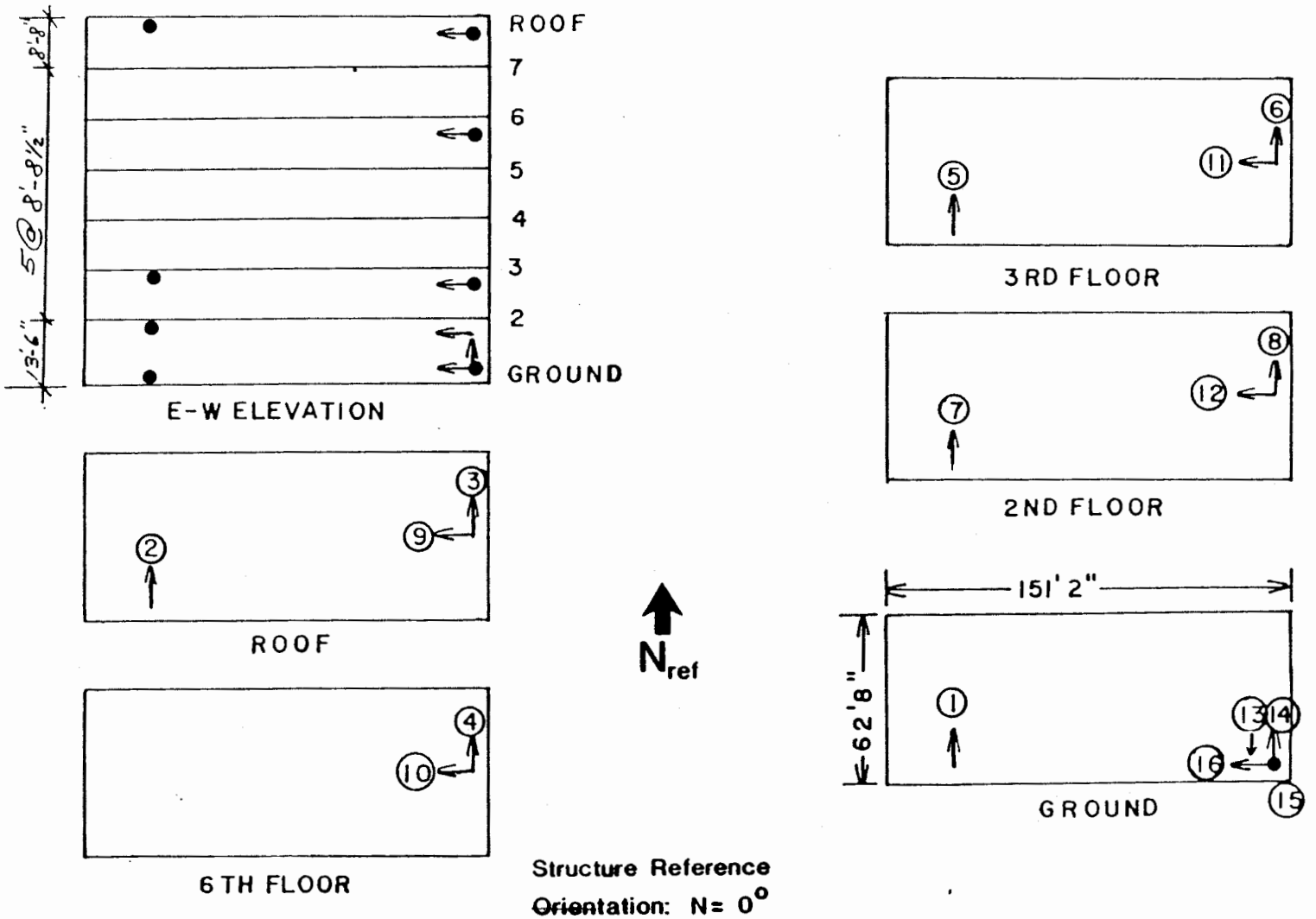
Address: 8244 Orion Ave.
Van Nuys, CA
No. of Stories above/below ground: 7/0
Plan Shape: Rectangular
Base Dimensions: 151' x 63'
Typical Floor Dimensions: Same
Design Date: 1965
Construction Date: 1966

Vertical Load Carrying System:
8 - 10" thick concrete slabs supported by concrete beams and columns.
Lateral Force Resisting System:
Moment resisting concrete frame in both directions.
Foundation Type:
Concrete friction piles.

Van Nuys – Holiday Inn

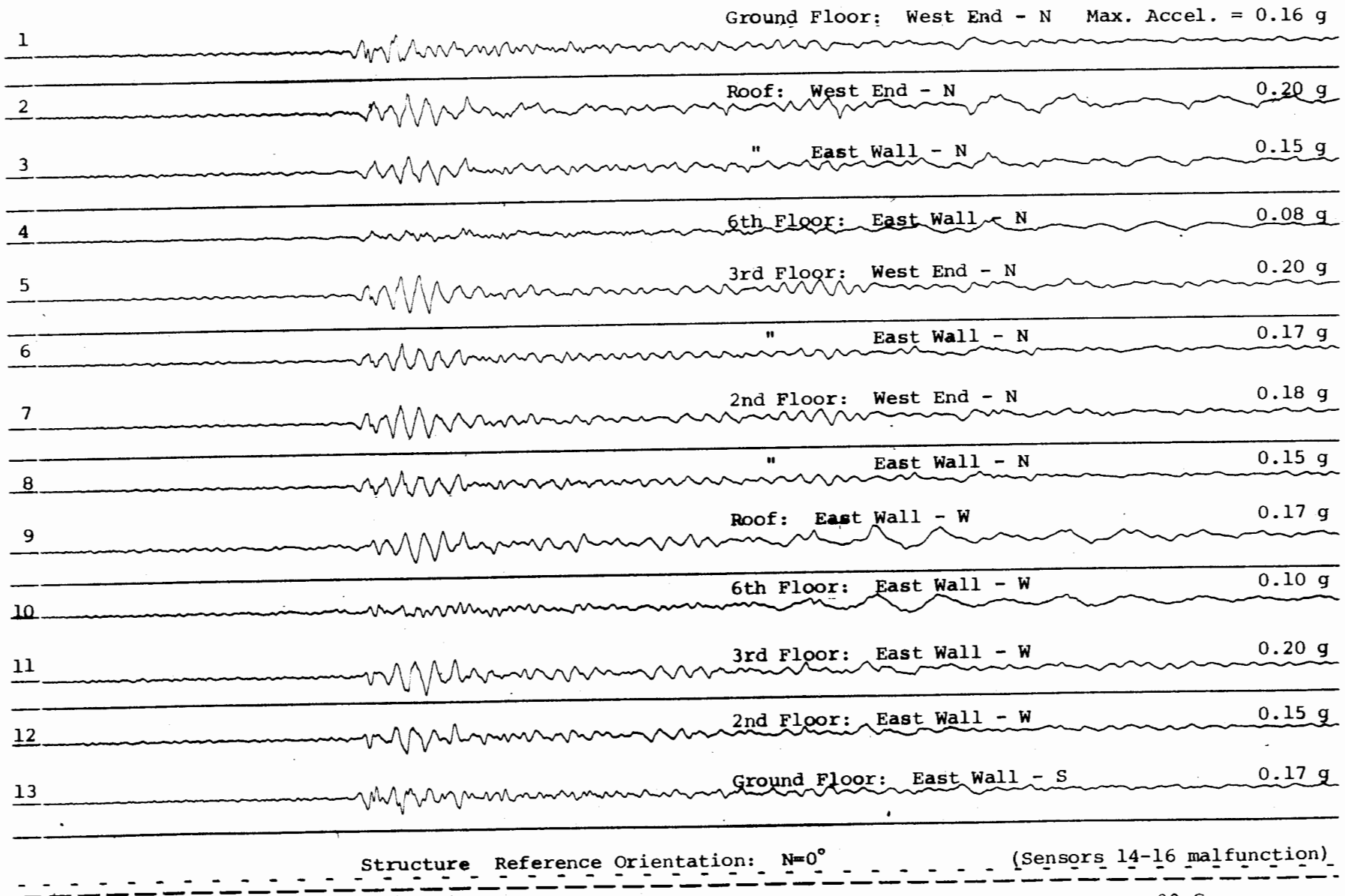
(CSMIP Station No. 24386)

SENSOR LAYOUT

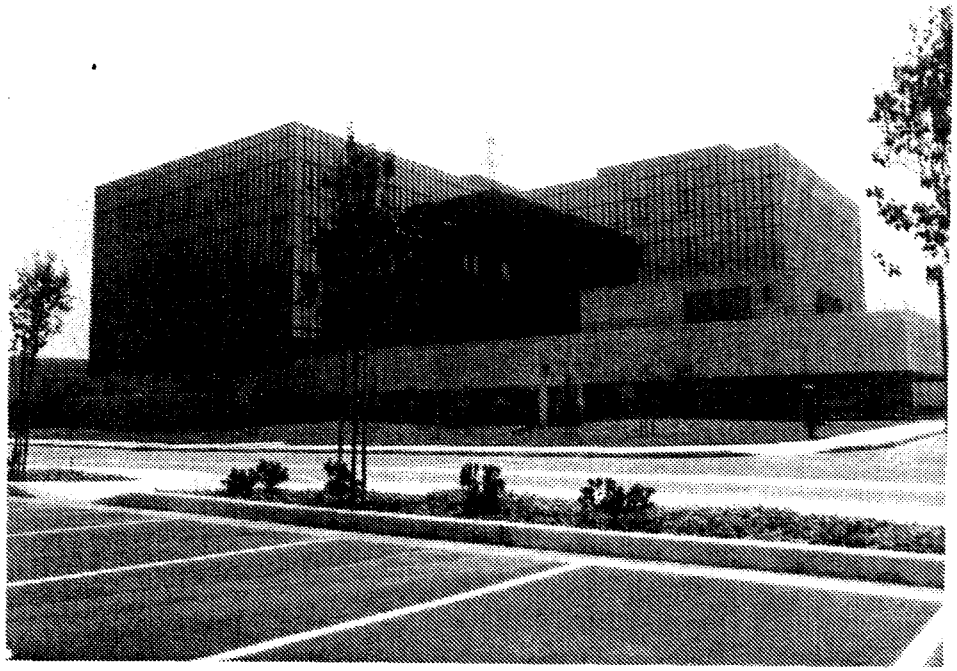


Van Nuys – Holiday Inn
(CSMIP Station No. 24386)

Record 24386-C0198-87275.01



Sylmar - Olive View Medical Center



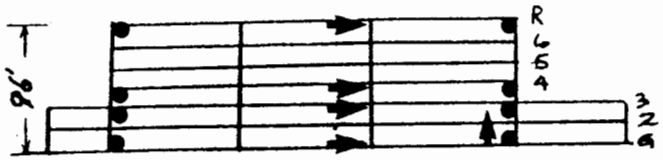
Address: 14445 Olive View Drive
Sylmar, CA
No. of Stories above/below ground: 6/0
Plan Shape:
Rectangular(lower 2 stories)
Cross-shaped(upper 4 stories)
Base Dimensions: 452' x 302'
Typical Floor Dimensions: 101' x 302'
Design Date: 1976
Construction Date: 1977-86

Vertical Load Carrying System:
Concrete slabs over metal deck supported by steel frame.
Lateral Force Resisting System:
Concrete shear walls on lower 2 stories, steel shear walls on the perimeter of upper 4 stories.
Foundation Type:
Spread footings.

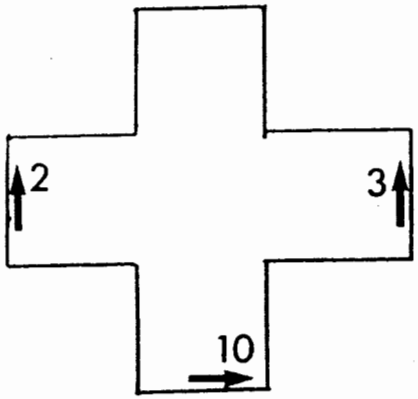
Sylmar – Olive View Medical Center

(CSMIP Station No. 24514)

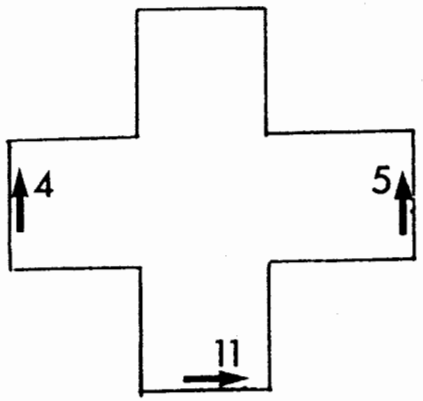
SENSOR LAYOUT



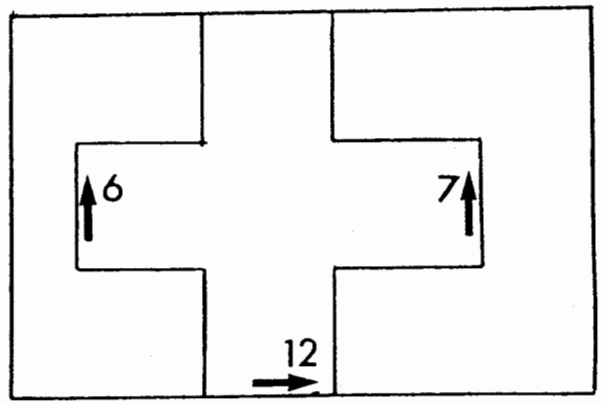
West/East Section



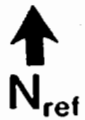
Roof Plan



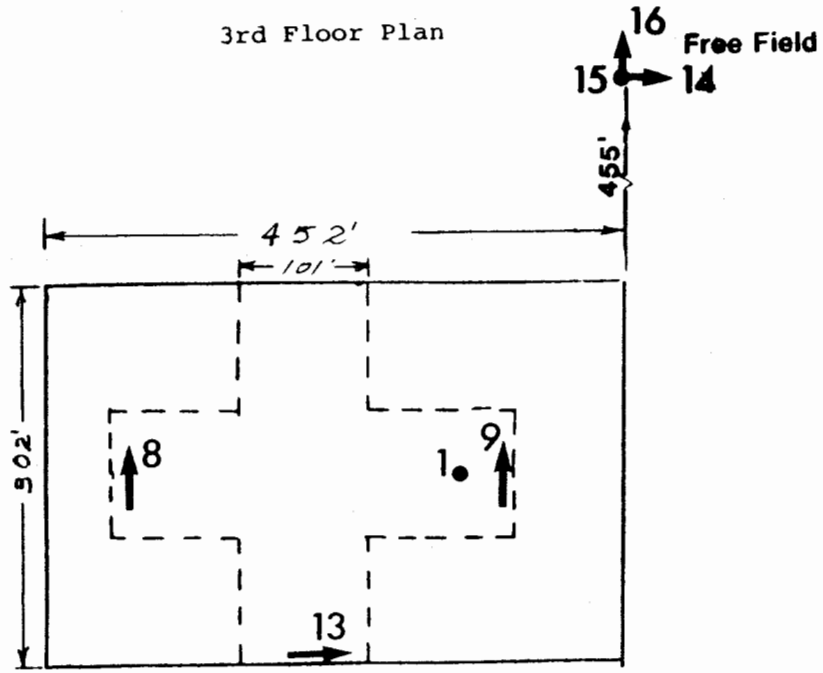
4th Floor Plan



3rd Floor Plan



Structure Reference Orientation: N = 0°

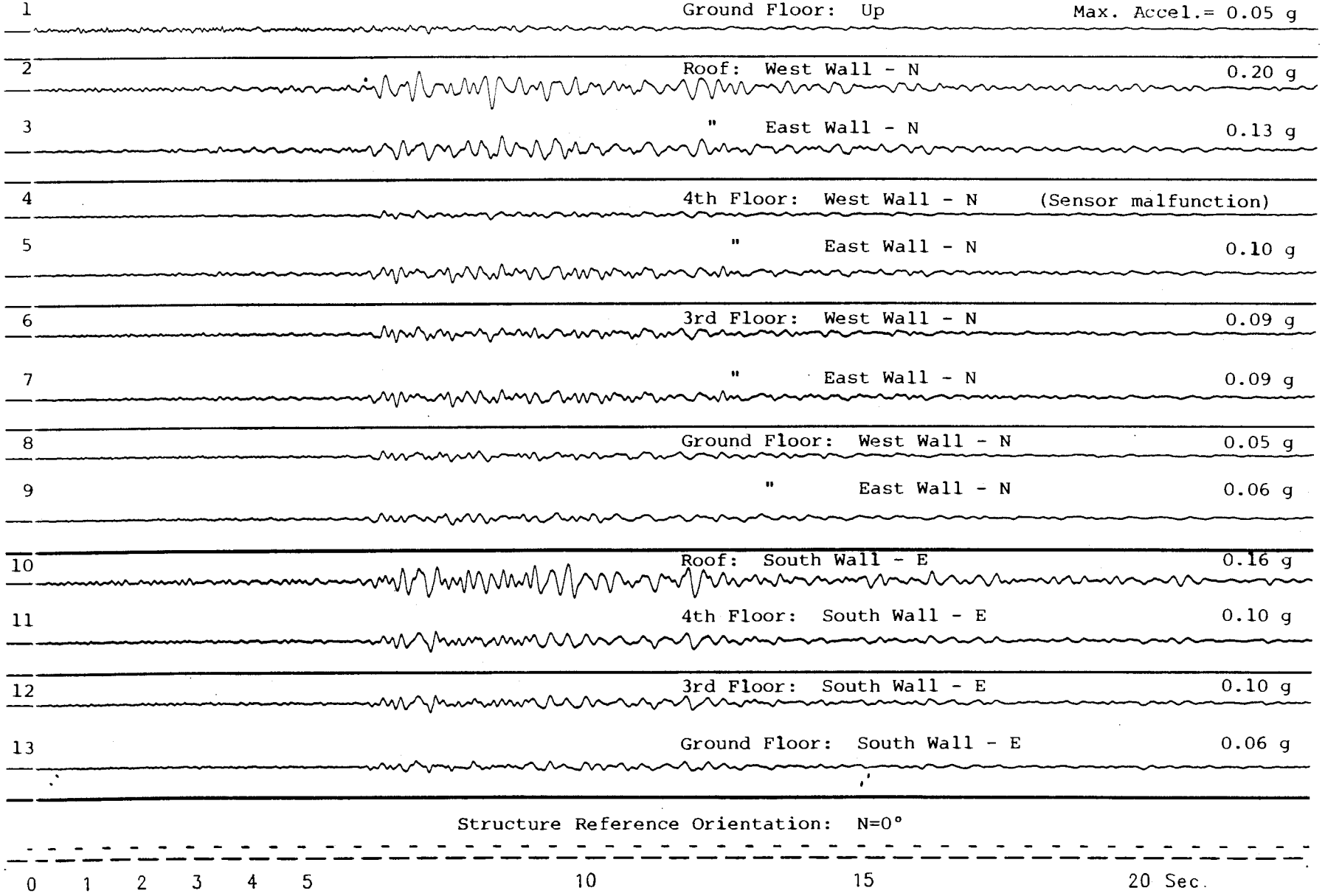


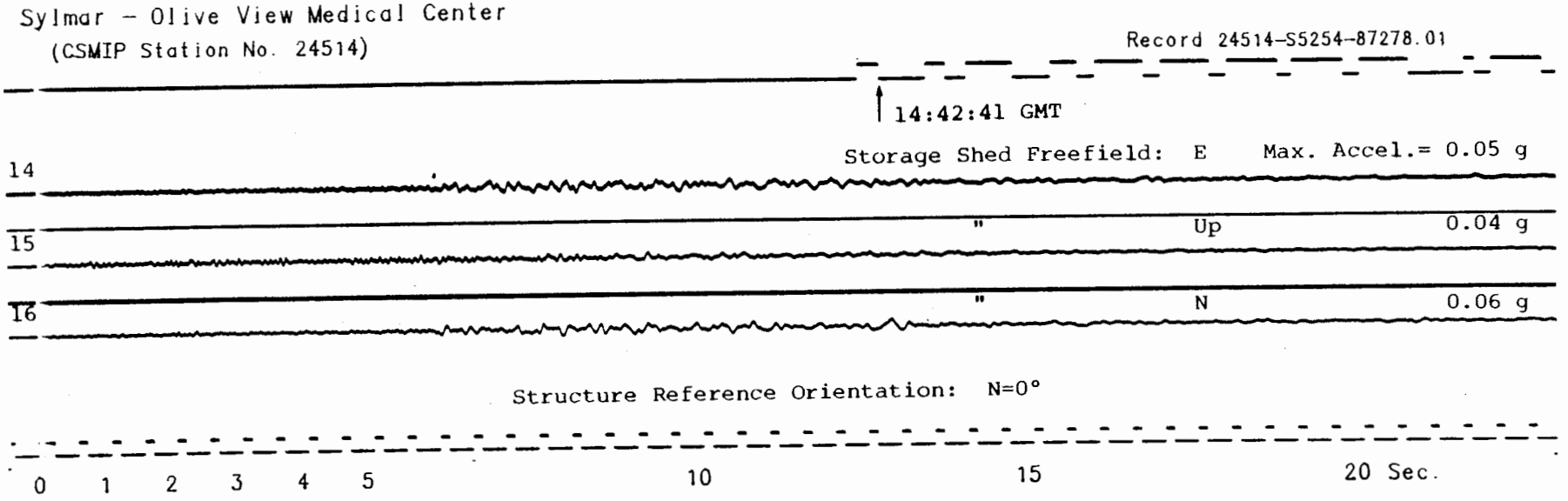
Ground Floor Plan

Sylmar – Olive View Medical Center
(CSMIP Station No. 24514)

Record 24514-C0284-87278.01

14:42:41 GMT




Sylmar – Olive View Medical Center
(CSMIP Station No. 24514)
Record 24514-S5254-87278.01
14:42:41 GMT
14
Storage Shed Freefield: E Max. Accel.= 0.05 g
15
" Up 0.04 g
16
" N 0.06 g
Structure Reference Orientation: N=0°
0 1 2 3 4 5 10 15 20 Sec.

Pomona - First Federal Savings Bldg.

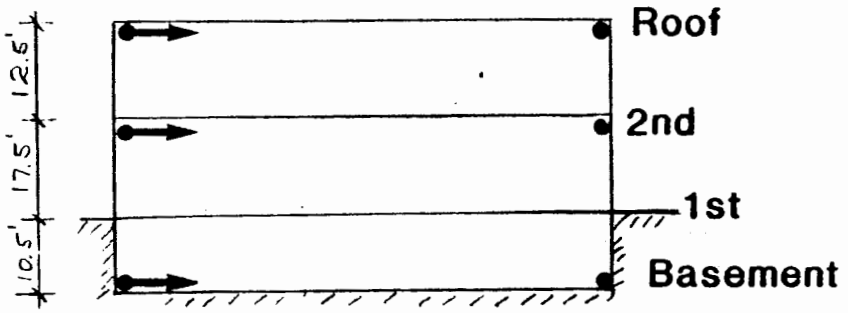
Address: 350 S. Garey Ave.
Pomona, CA
No. of Stories above/below ground: 2/1
Plan Shape: Rectangular
Base Dimensions: 120' x 100'
Typical Floor Dimensions: Same
Design Date: 1971
Construction Date: 1971

Vertical Load Carrying System:
Concrete slabs supported on concrete beams and columns.
Lateral Force Resisting System:
Perimeter moment resisting ductile concrete frame.
Foundation Type:
Cast-in-place concrete piles.

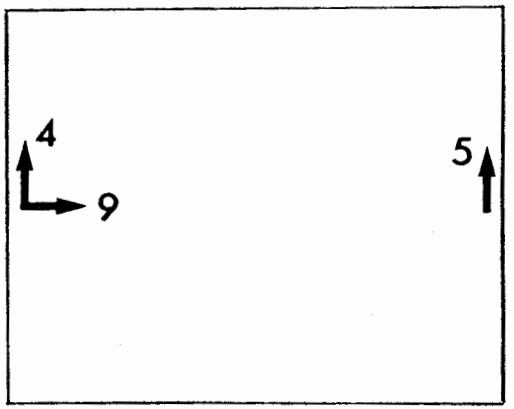
Pomona – First Federal Savings Bldg.

(CSMIP Station No. 23511)

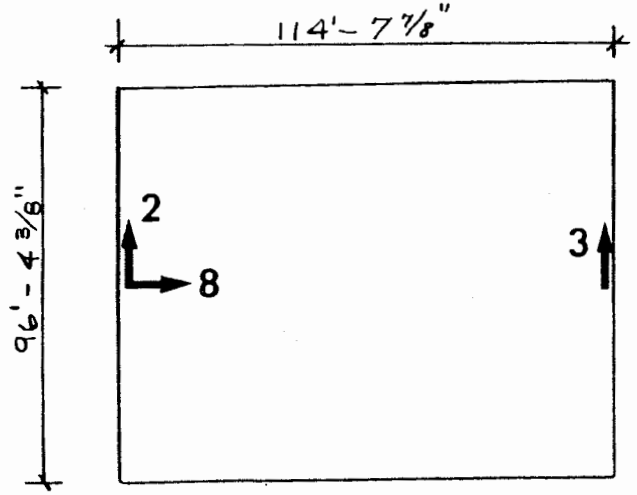
SENSOR LAYOUT



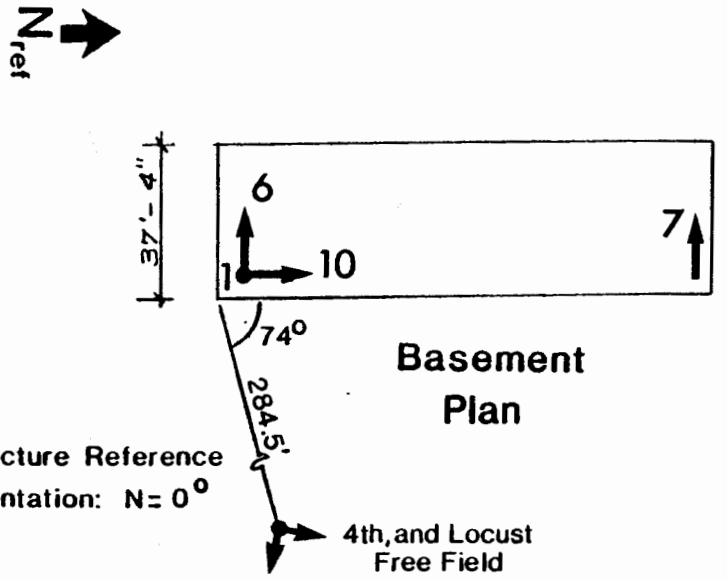
Elevation



2nd Floor Plan



Roof Plan

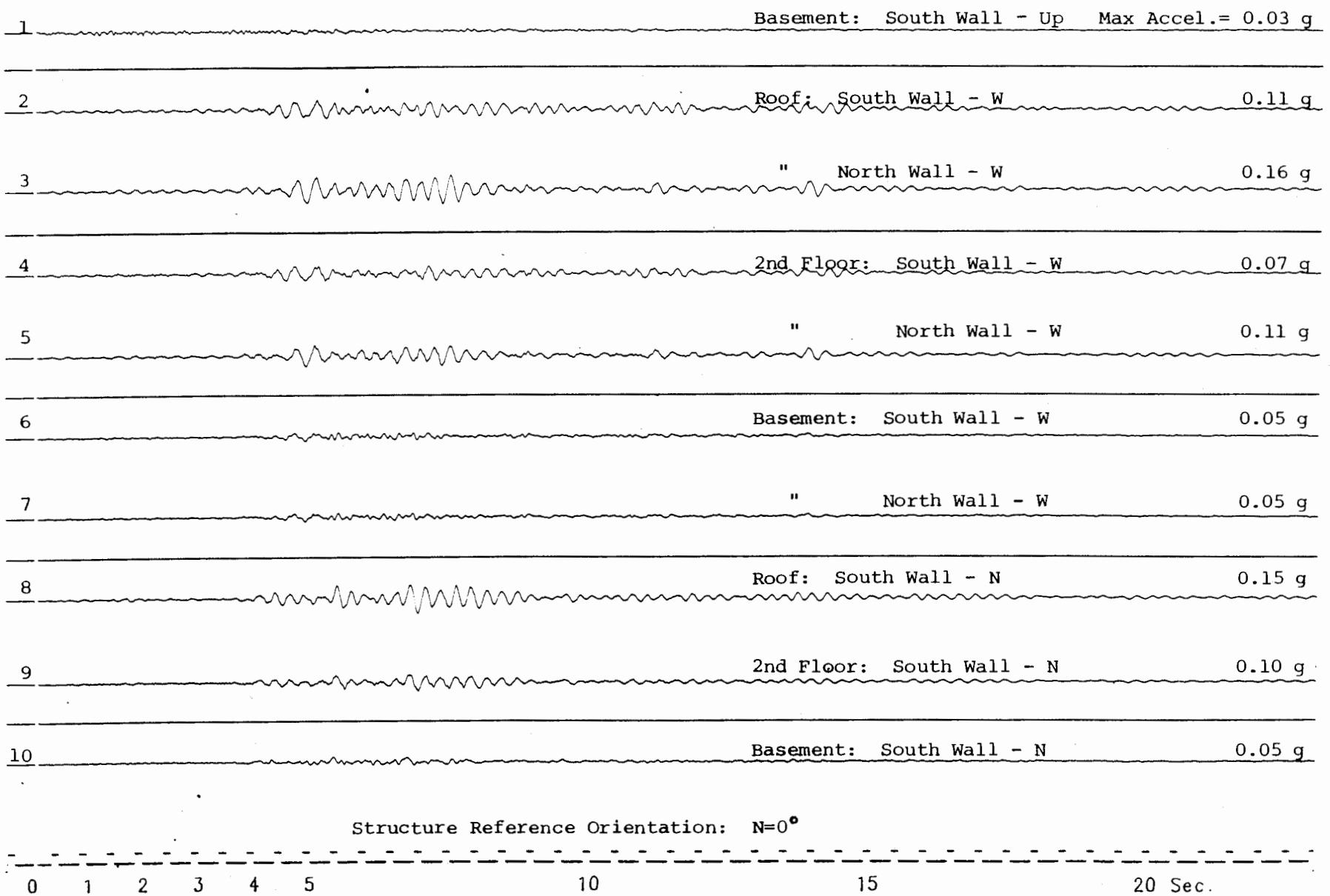


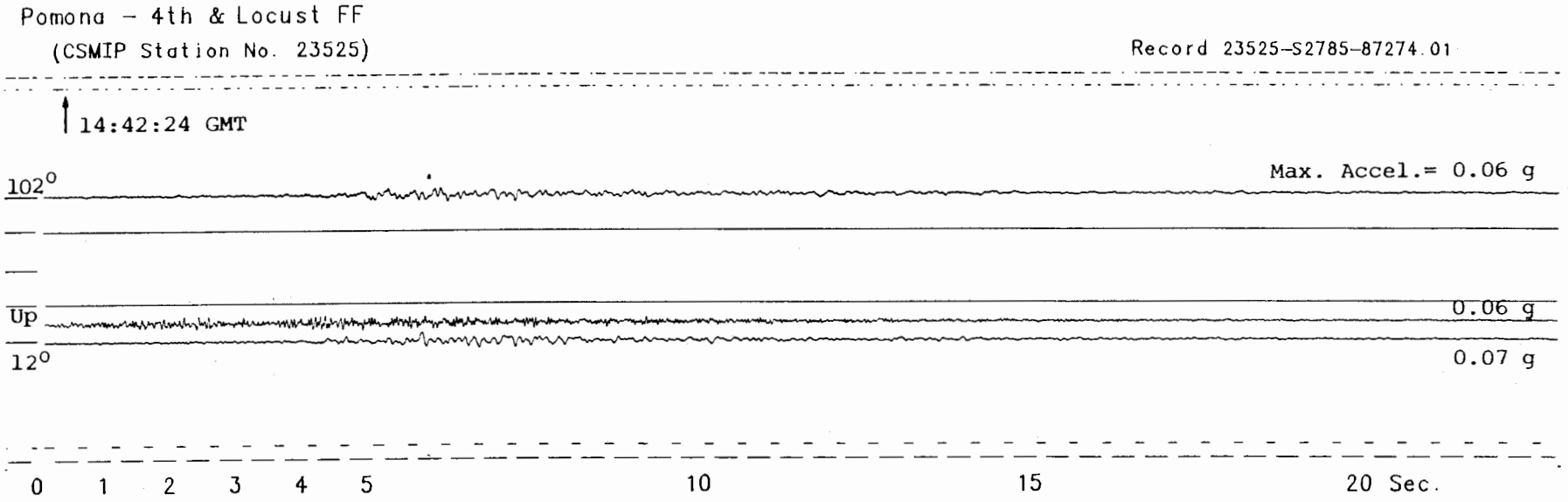
Basement Plan

Pomona – First Fed. Savings Bldg.
(CSMIP Station No. 23511)

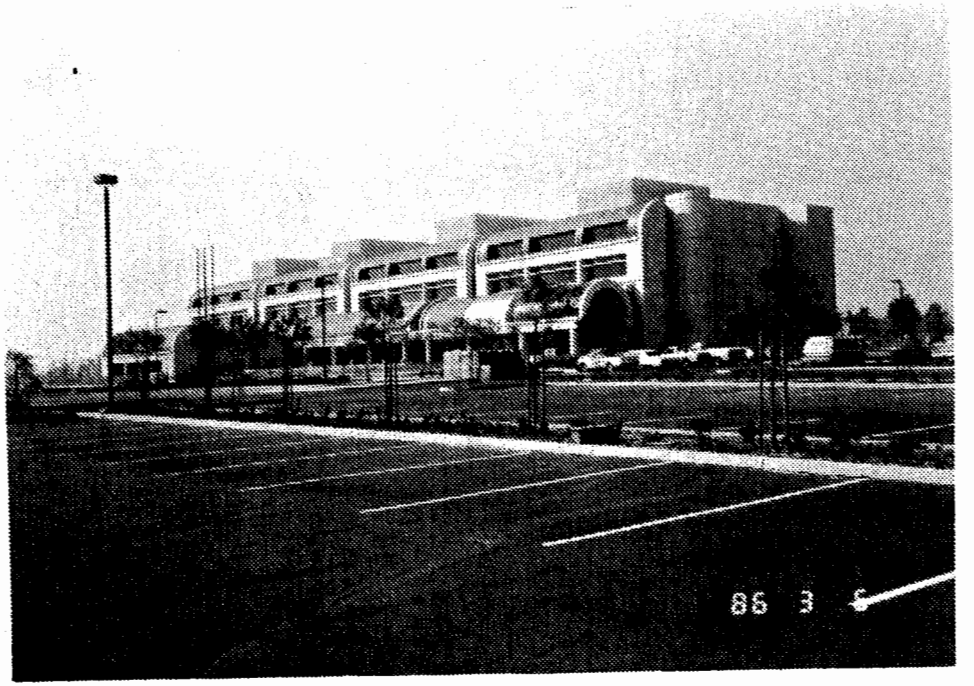
Record 23511-C0117-87274.01

14:42:27 GMT




Pomona – 4th & Locust FF
(CSMIP Station No. 23525)
Record 23525-S2785-87274.01
14:42:24 GMT
102°
Max. Accel.= 0.06 g
Up
0.06 g
12°
0.07 g
0 1 2 3 4 5 10 15 20 Sec.

Rancho Cucamonga - San Bernardino County Law and Justice Center



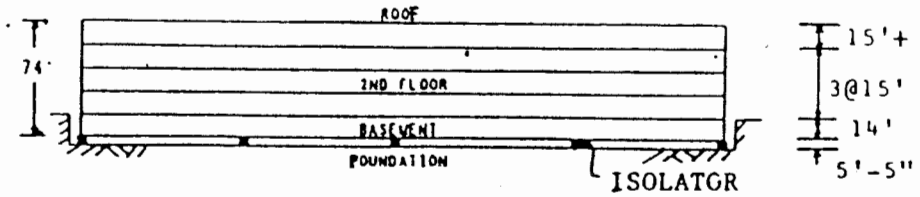
Address: 8202 Aspen Street
Rancho Cucamonga, CA
No. of Stroies above/below ground: 4/1
Plane Shape: Rectangular
Base Dimensions: 414' x 110'
Typical Floor Dimensions: Same
Design Date: 1983
Construction Date: 1985

Vertical Load Carrying System:
Concrete slabs over steel deck supported by steel beams and columns on elastomeric bearings.
Lateral Force resisting System:
Braced steel frame in upper four stories; concrete shear walls at basement; base isolated on elastomeric bearings.
Foundation Type:
Spread footings.

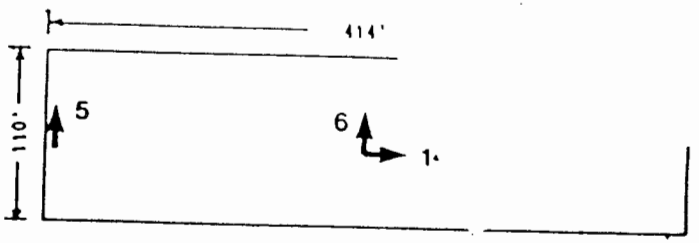
Rancho Cucamonga – Law and Justice Center

(CSMIP Station No. 23497)

SENSOR LAYOUT

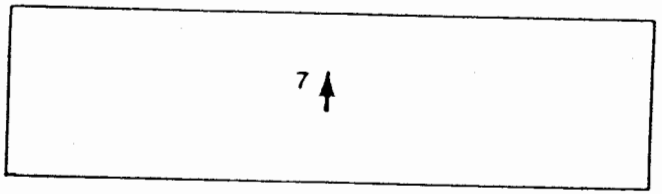


West/East Section

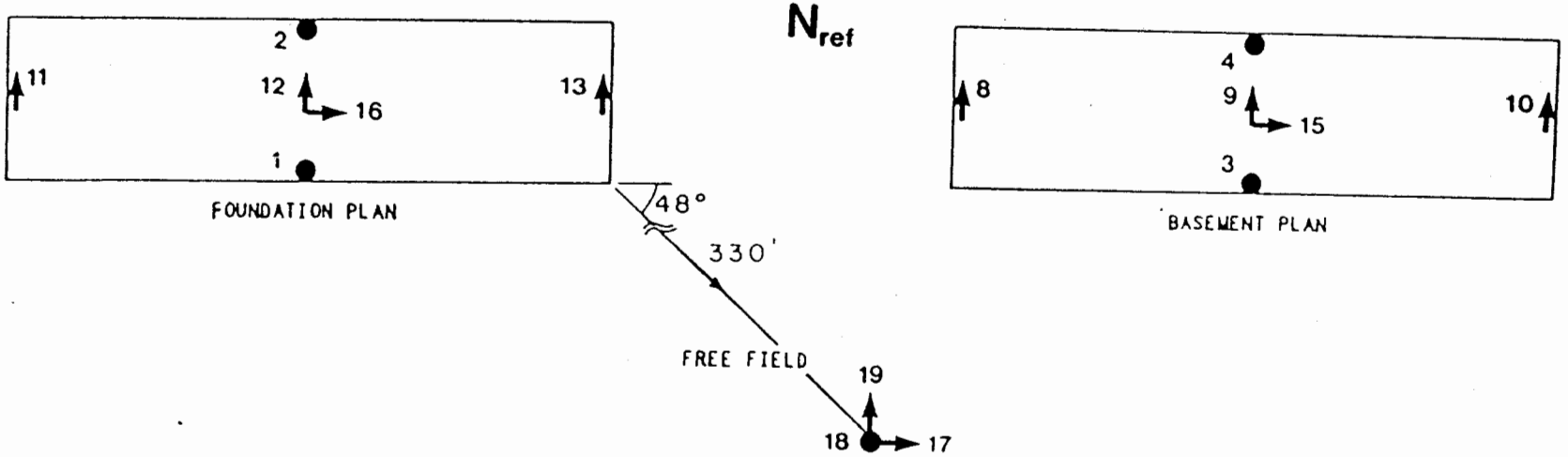


ROOF PLAN

Structure Reference
Orientation: N = 0°



2ND FLOOR PLAN



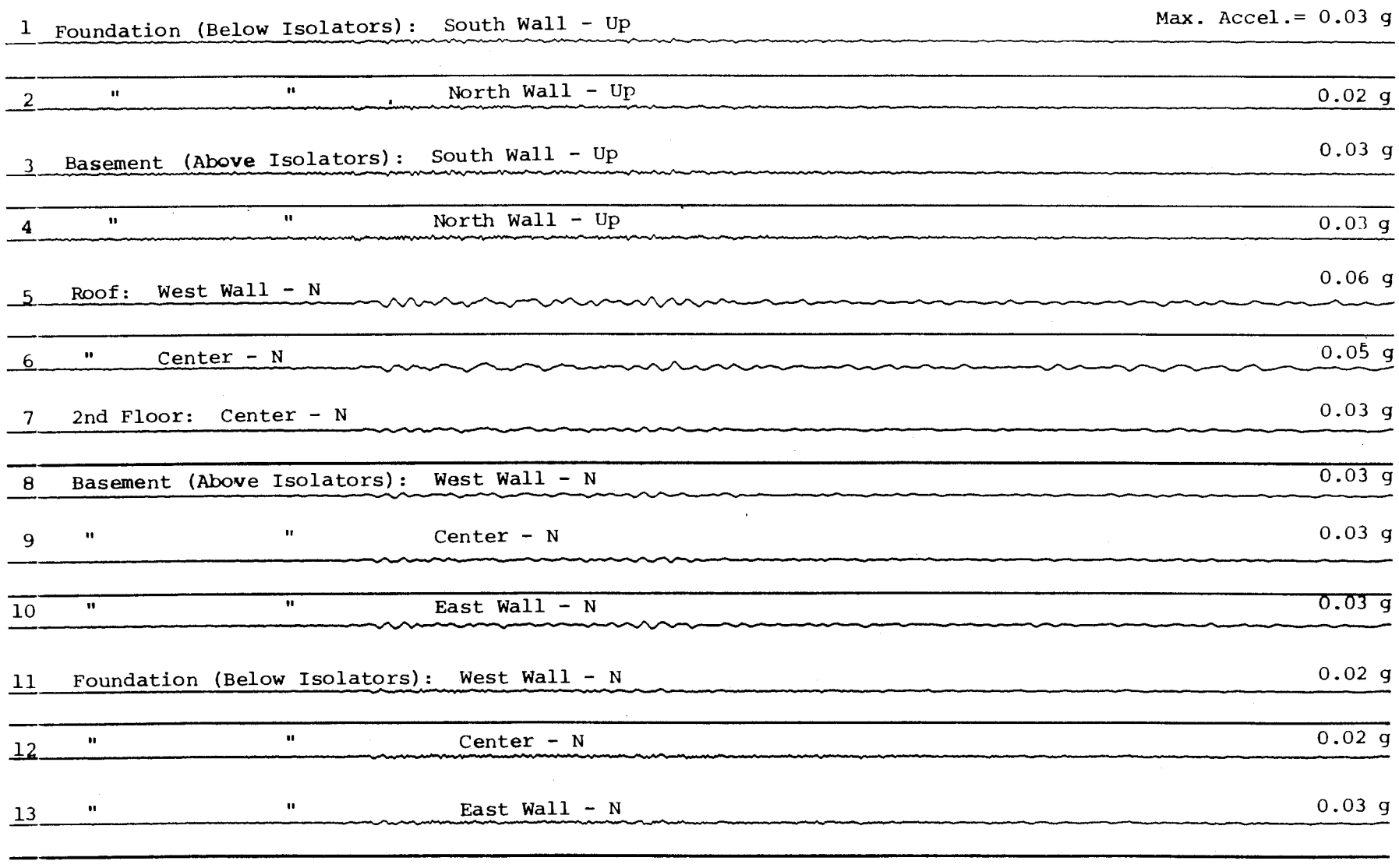
FOUNDATION PLAN

BASEMENT PLAN

Rancho Cucamonga – Law & Justice Center
(CSMIP Station No. 23497)

Record 23497-C0273-87274.11

14:42:29 GMT



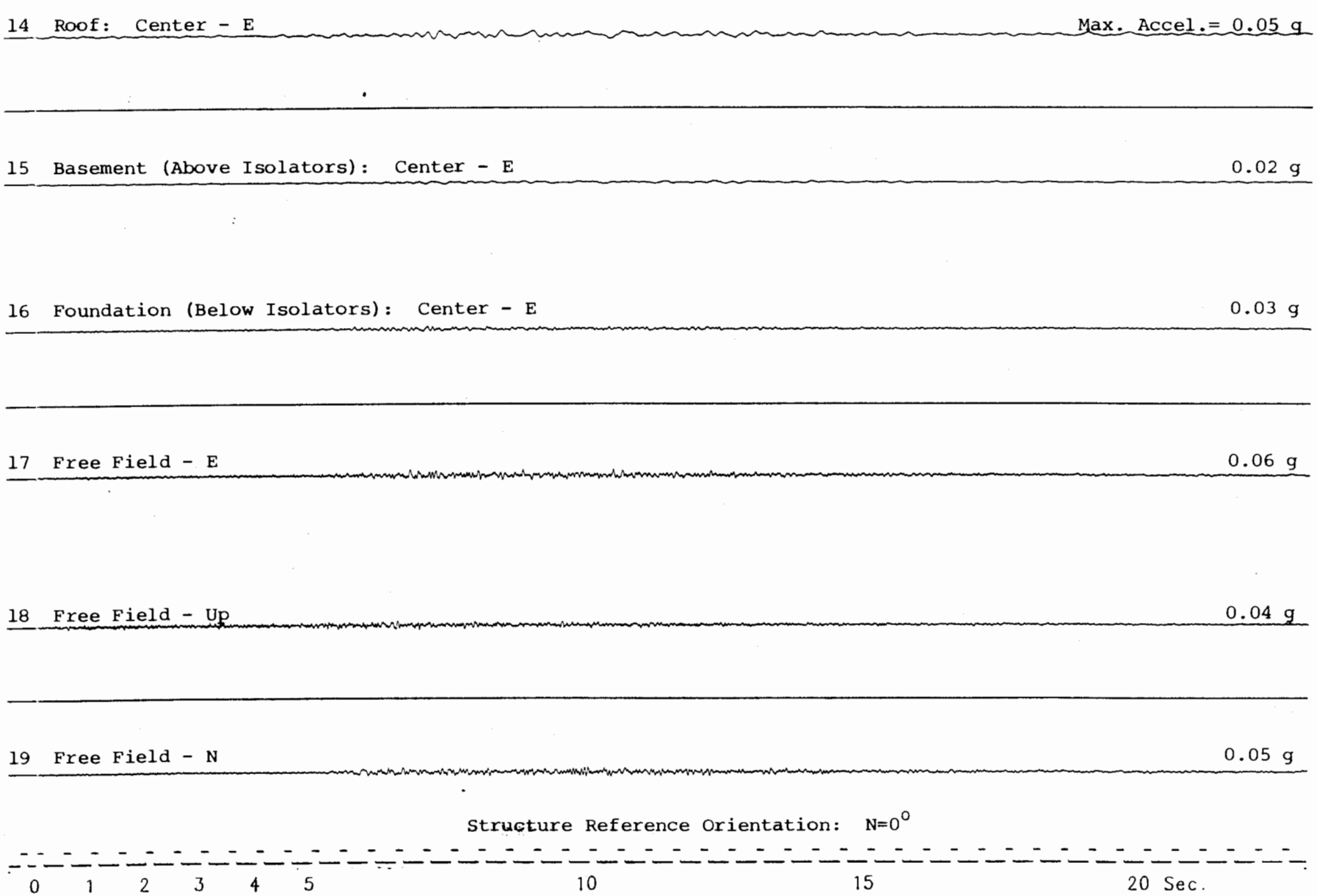
Structure Reference Orientation: N=0°

0 1 2 3 4 5 10 15 20 Sec.

Rancho Cucamonga – Law & Justice Center
(CSMIP Station No. 23497)

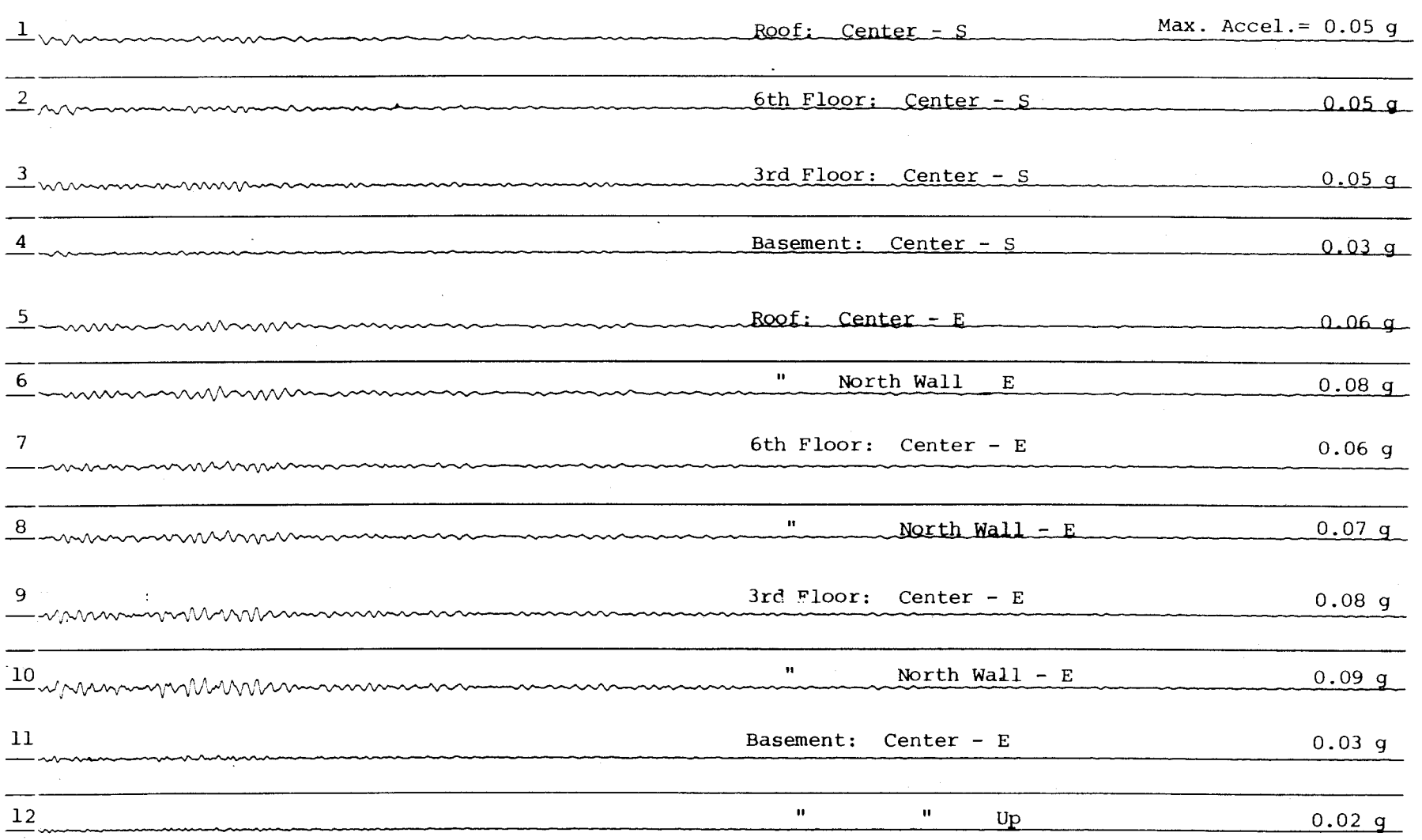
Record 23497-C0118-87274.01

14:42:29 GMT



Irvine – UCI Engineering Bldg. (8-story concrete & steel frame bldg.)
(CSMIP Station No. 13329)

Record 13329-C0137-87276.01



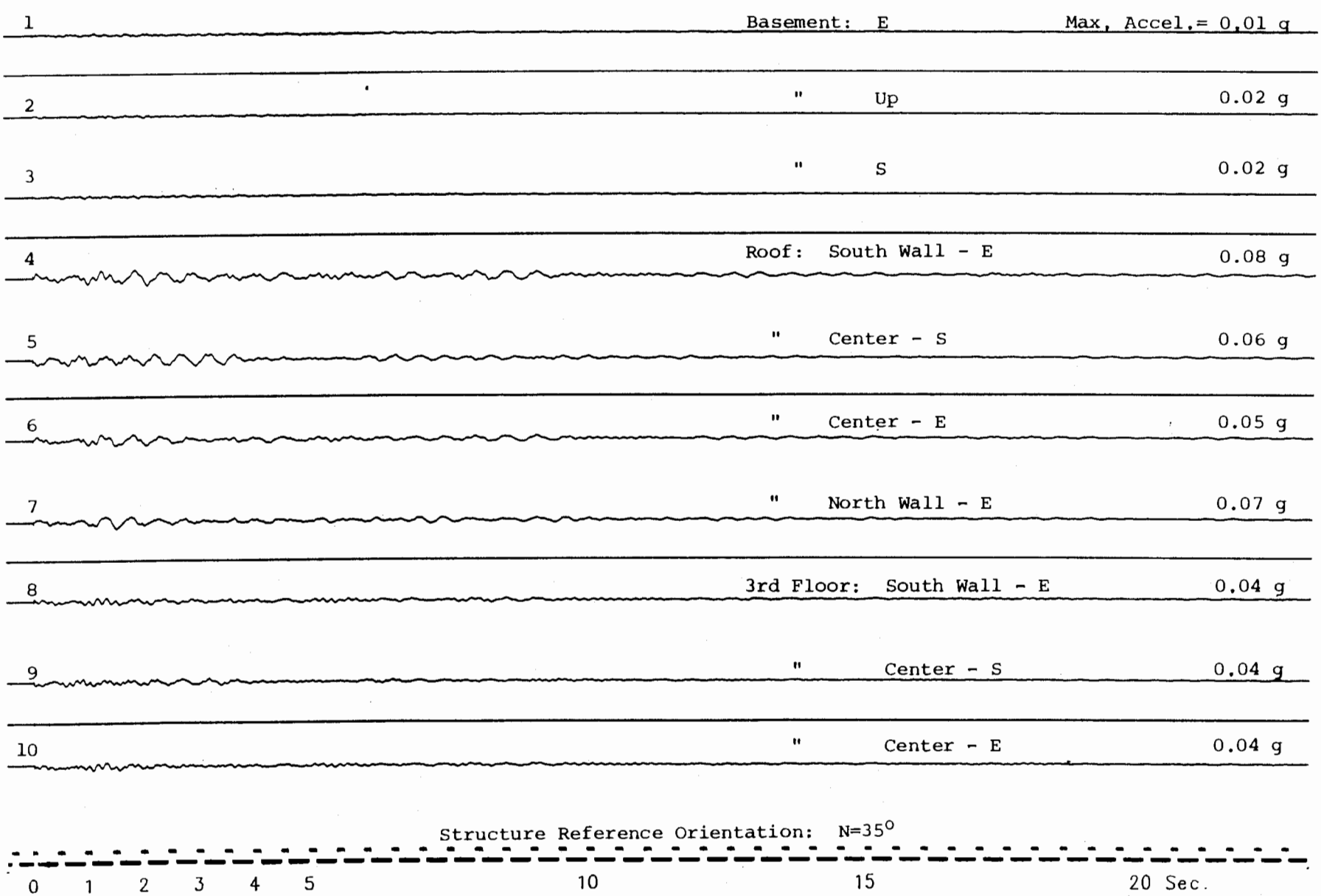
Structure Reference Orientation: N=45°

0 1 2 3 4 5 10 15 20 Sec.

San Bernardino - CSULB Library (5-story concrete frame & shear wall bldg.)

(CSMIP Station No. 23285)

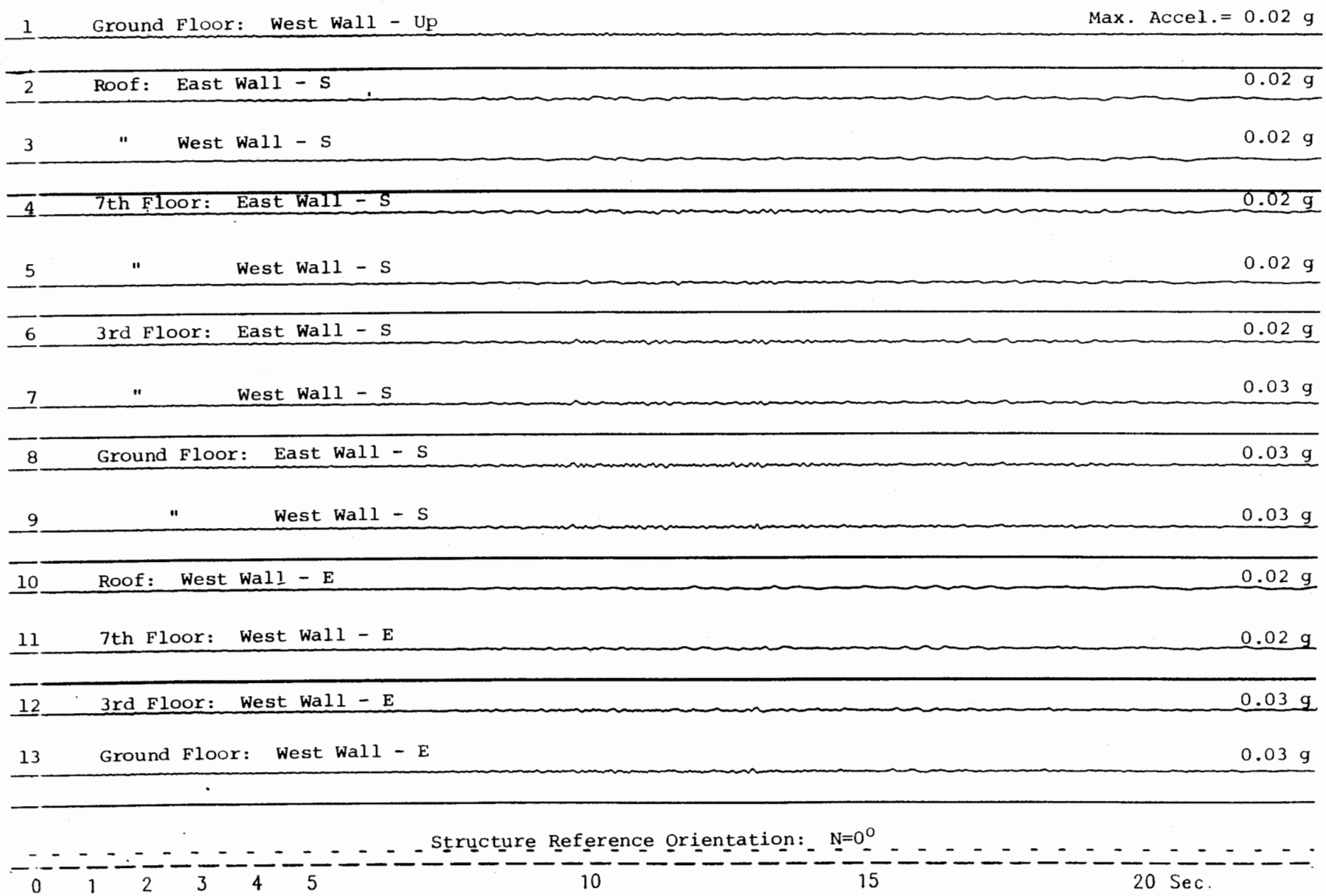
Record 23285-C0133-87275.01



San Bernardino – Vanir Towers (9-story steel frame bldg.)

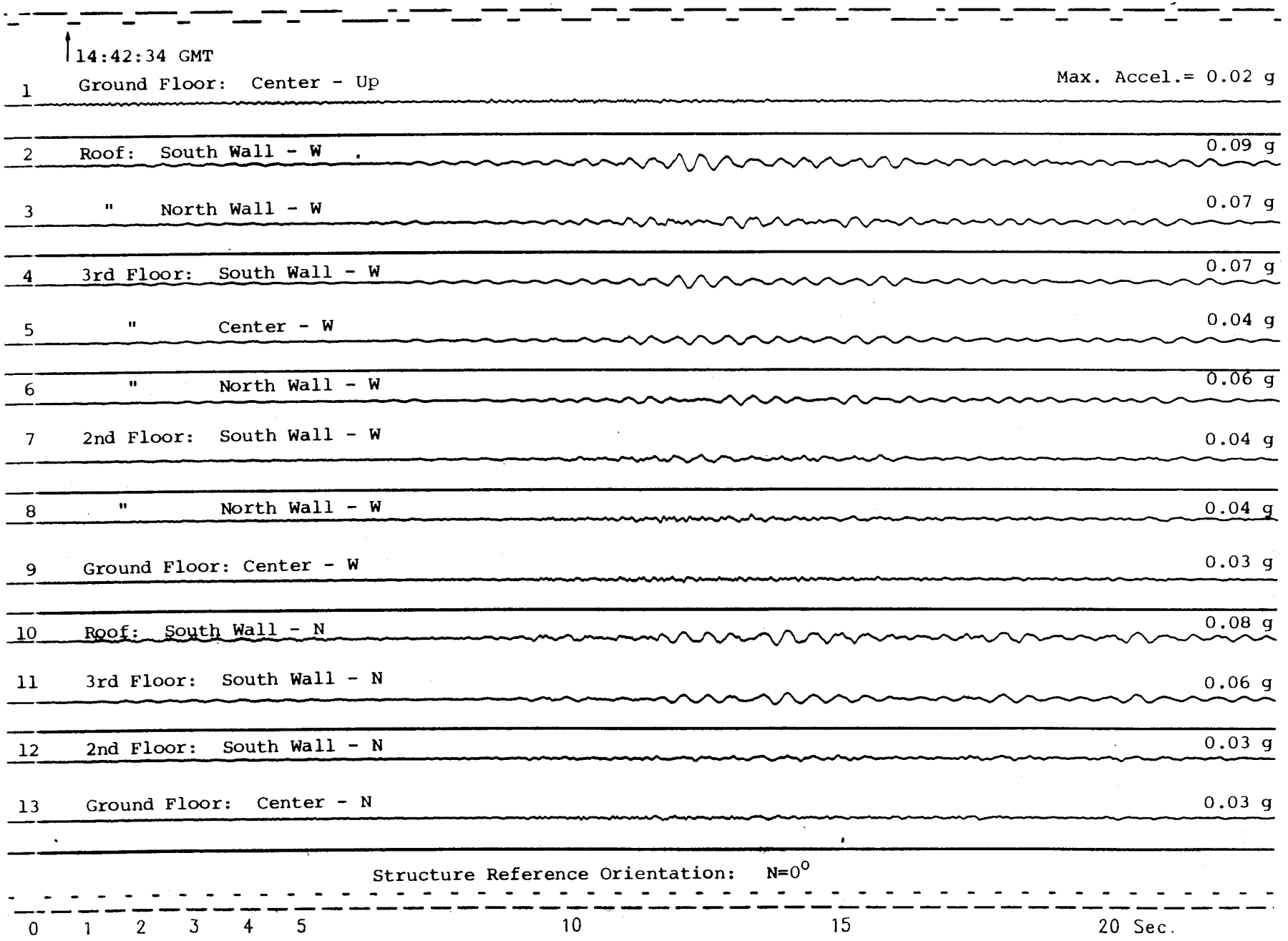
(CSMIP Station No. 23515) Record 23515-C0278-87275.01

14:42:35 GMT



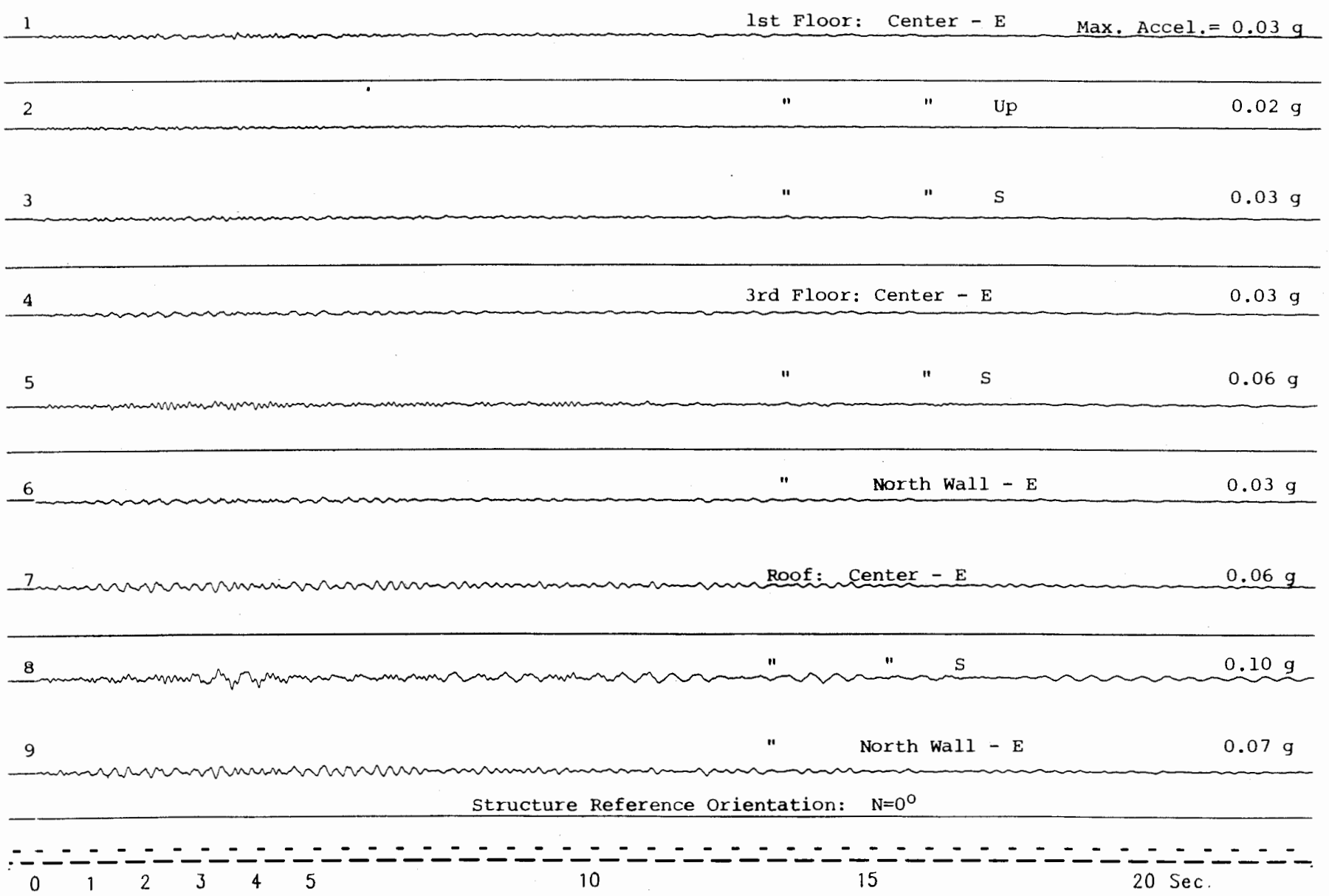
San Bernardino – Sunwest Office Bldg. (3-story perimeter steel frame bldg.)

(CSMIP Station No. 23516) Record 23516-C0277-87275.01



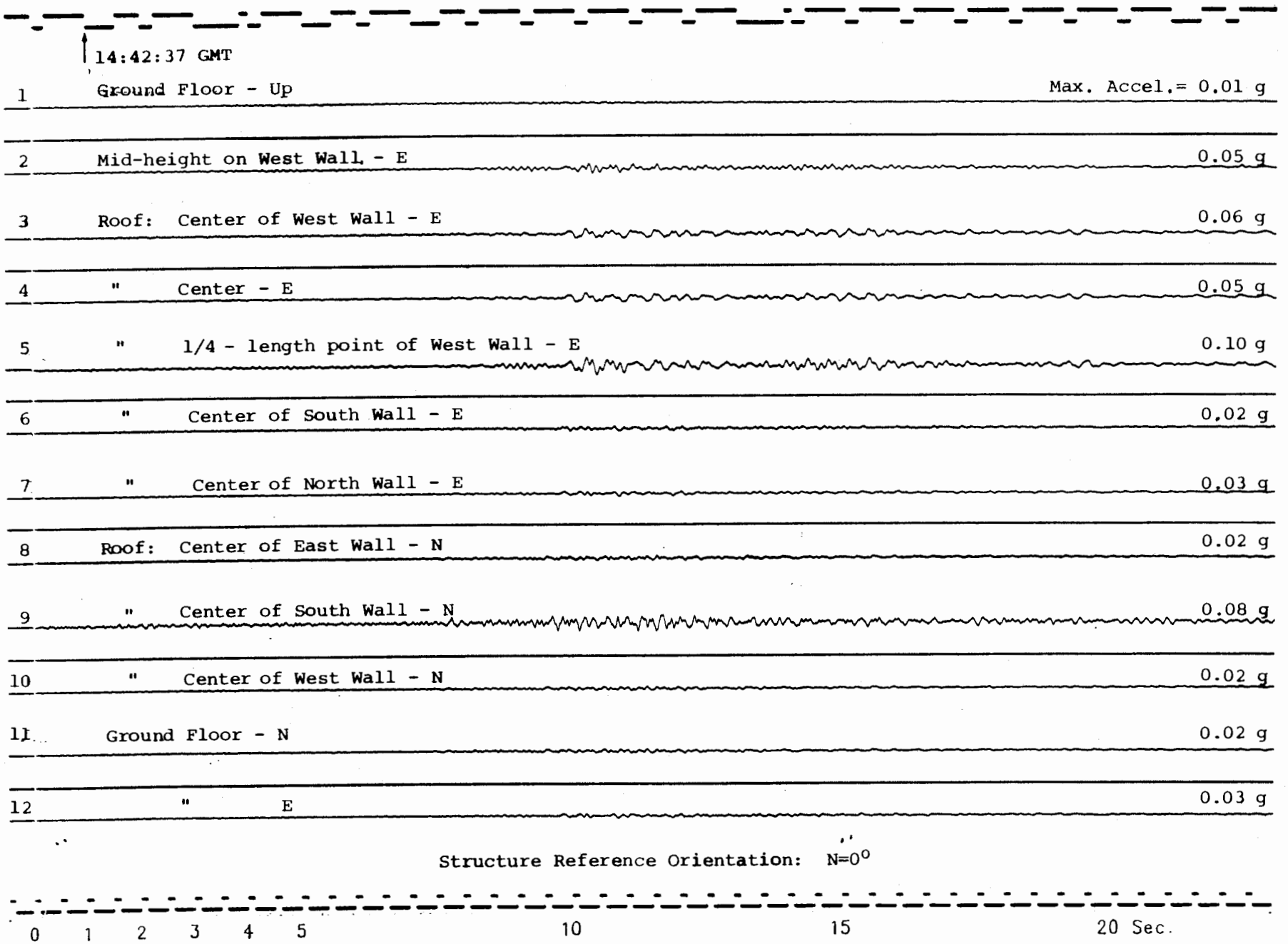
San Bernardino – Hilton Inn (6-story concrete shear wall bldg.)
(CSMIP Station No. 23287)

Record 23287-C0134-87275.01



Redlands – Interstate Van Lines Warehouse (1-story concrete tilt-up bldg.)

(CSMIP Station No. 23495) Record 23495-C0115-87275.01

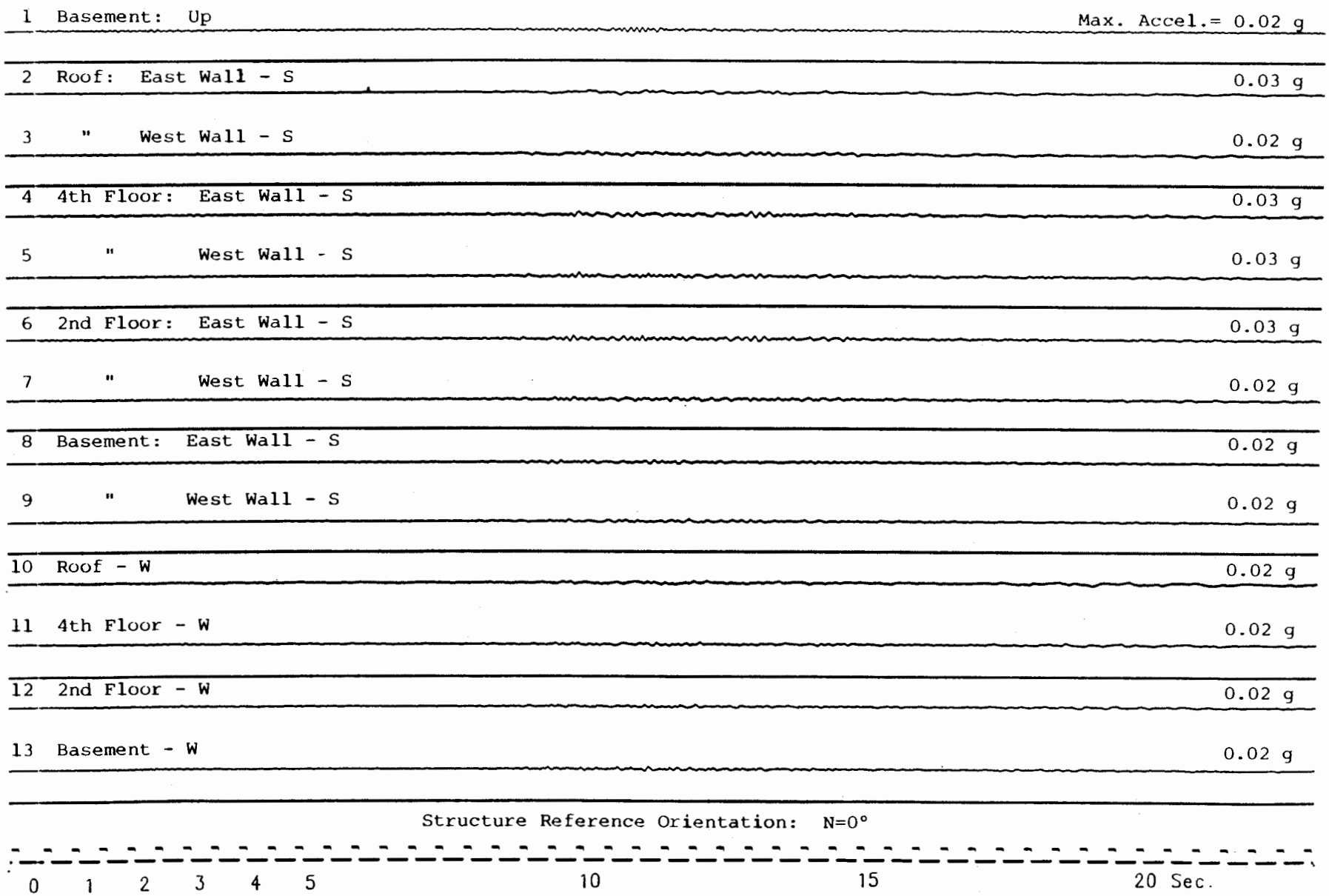


Structure Reference Orientation: N=0°

Redlands – Redlands Fed. Savings Bldg. (7-story perimeter steel frame bldg.)

(CSMIP Station No. 23481) Record 23481-C0245-87275.01

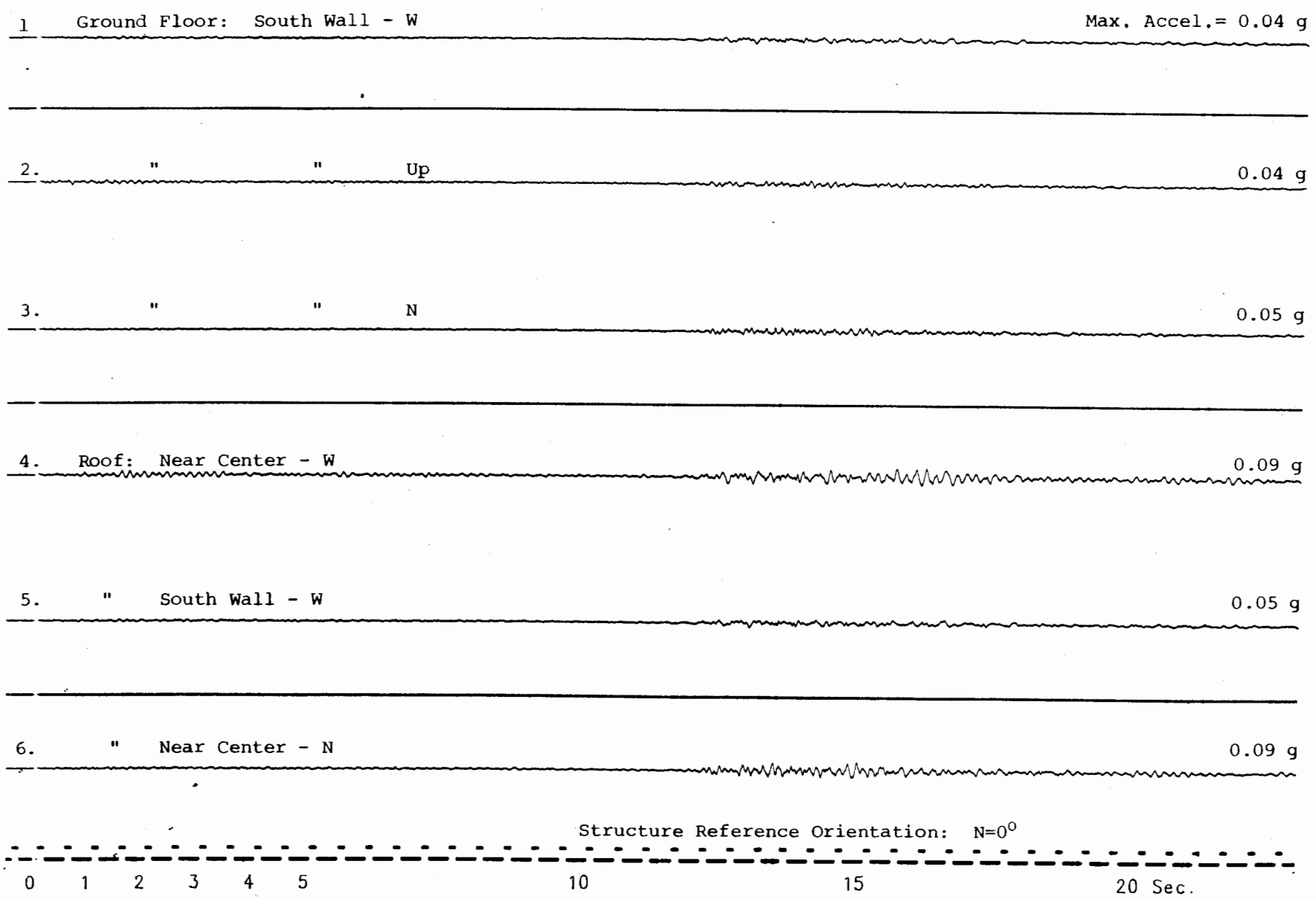
14:42:37 GMT



Hemet - City Library (1-story masonry & concrete shear wall bldg.)

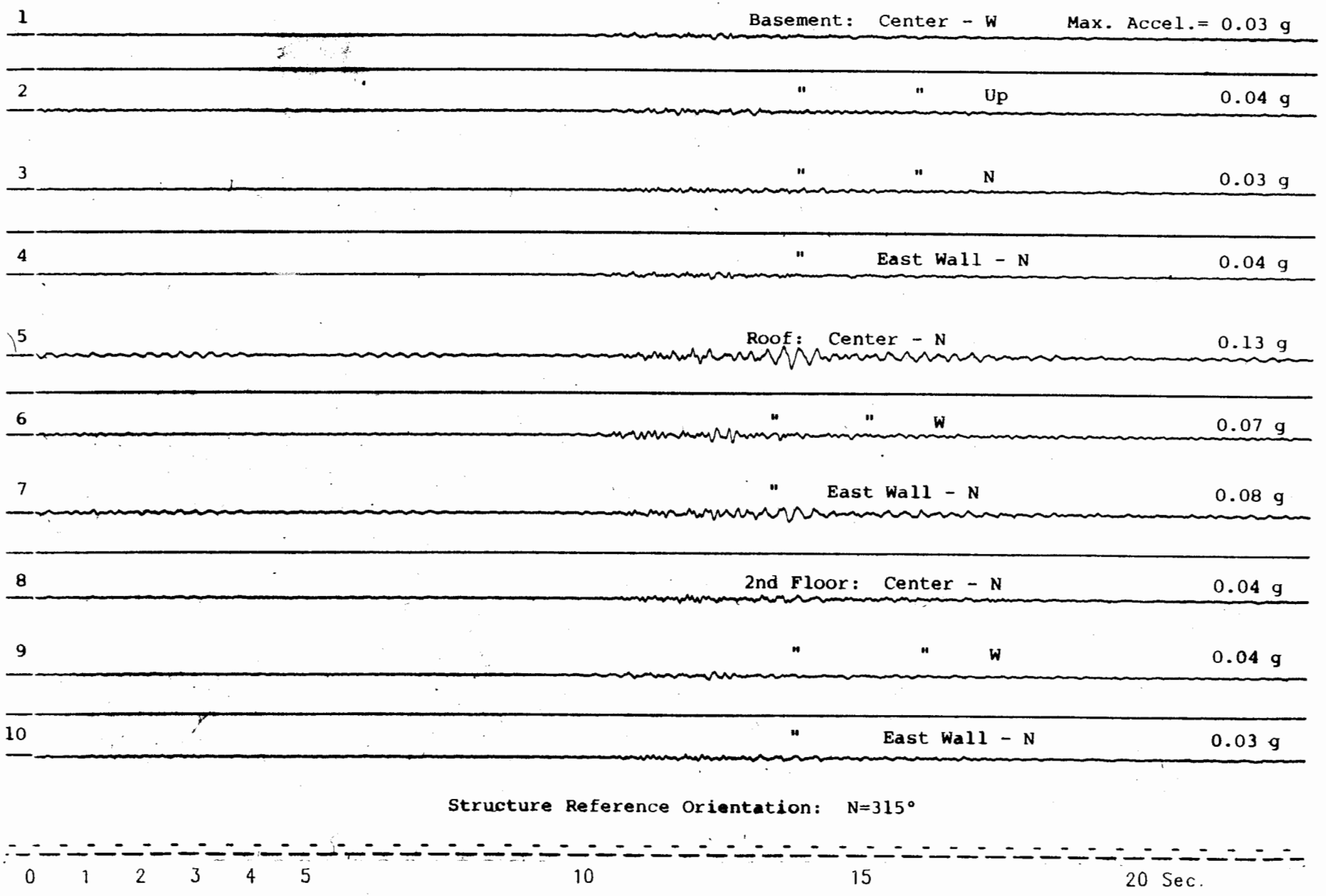
(CSMIP Station No. 12266)

Record 12266-C0111-87279.01



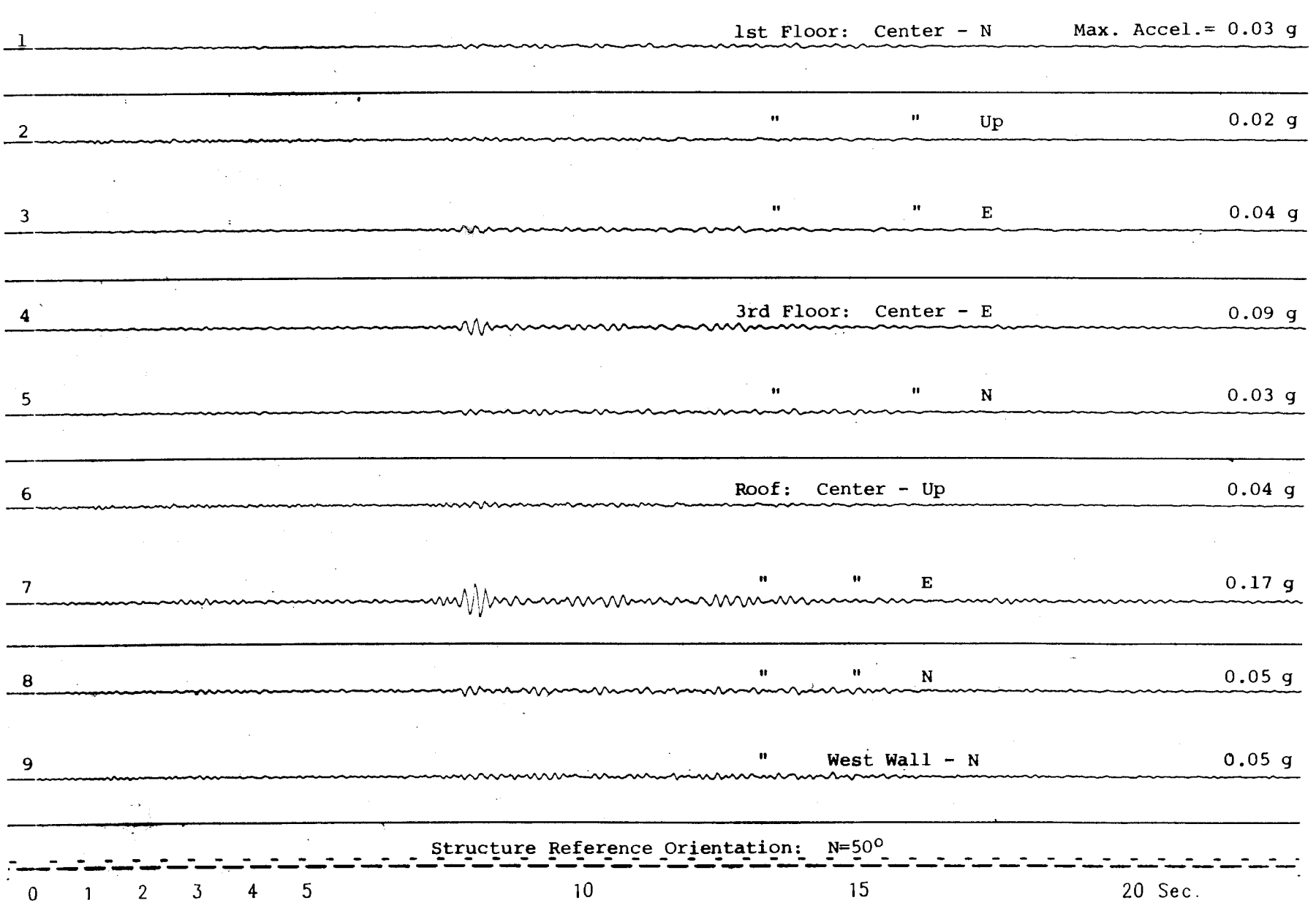
Hemet - Valley Hospital (4-story concrete shear wall bldg.)
(CSMIP Station No. 12267)

Record 12267-C0126-87279.01



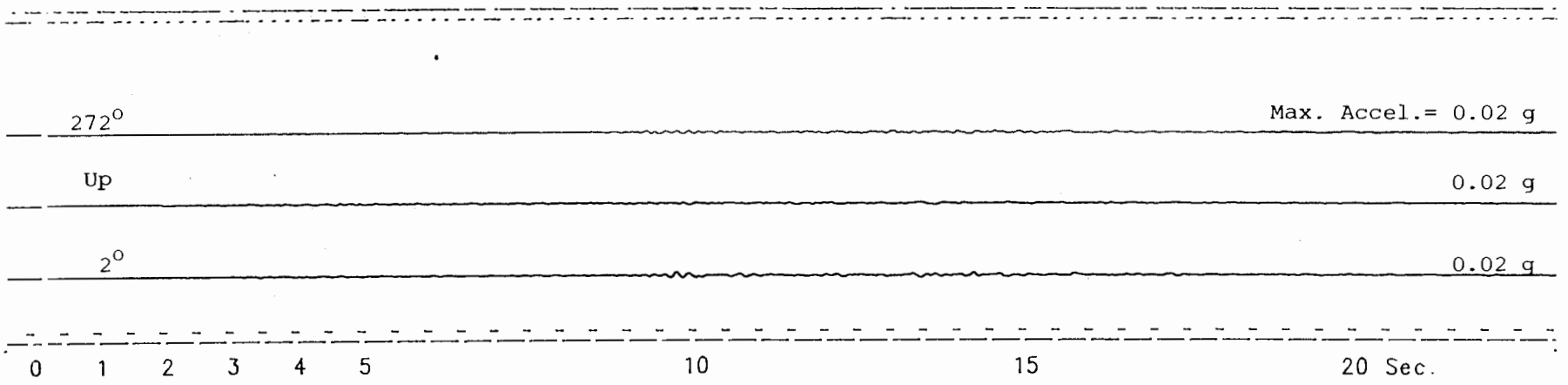
Structure Reference Orientation: N=315°

Palmdale – Holiday Inn (4-story masonry shear wall bldg.)
(CSMIP Station No. 24232) Record 24232-C0121-87280.01



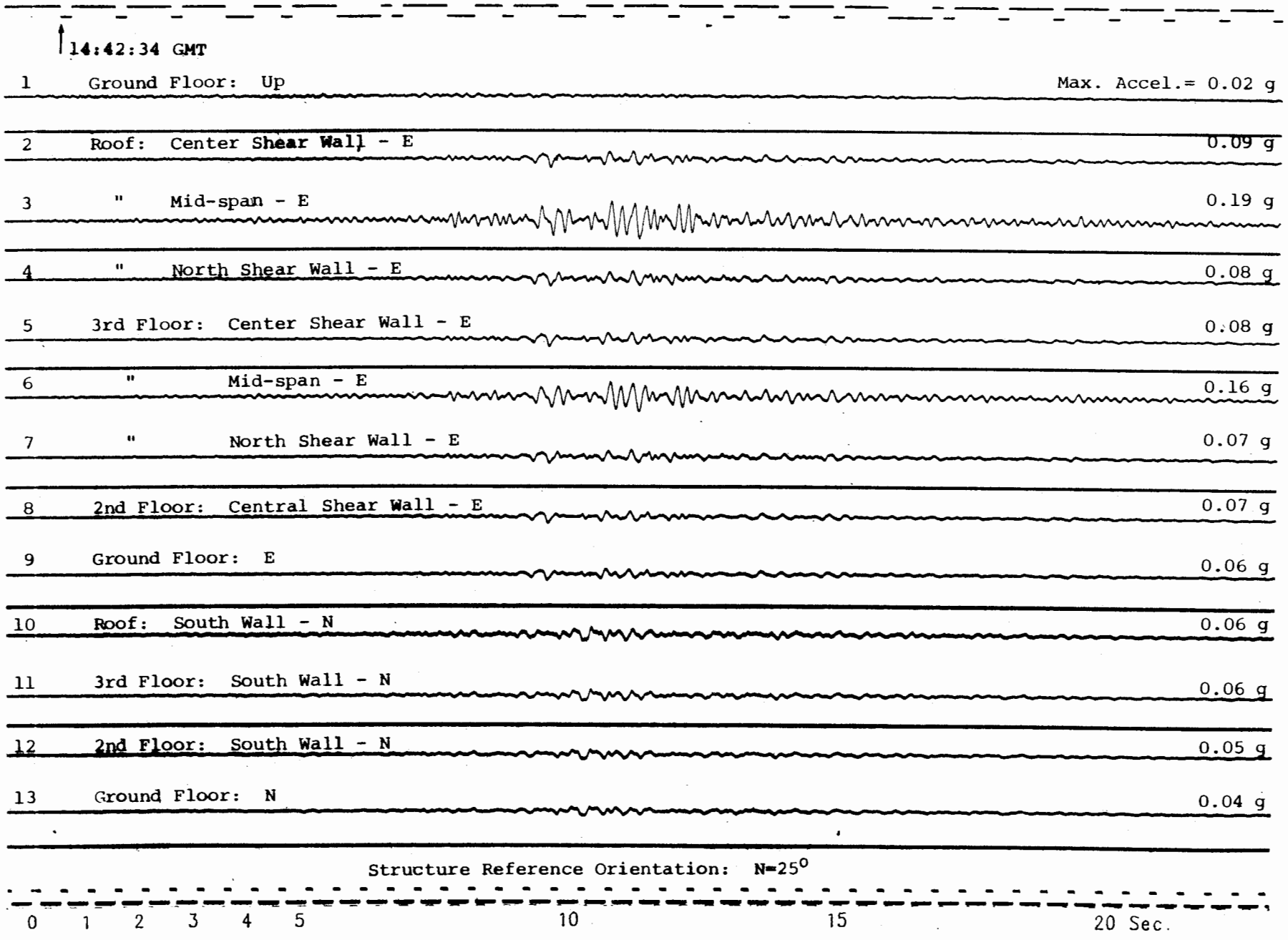
Palmdale – Holiday Inn FF
(CSMIP Station No. 24521)

Record 24521-D0268-87280.03



Lancaster – Medical Office Bldg. (3-story masonry shear wall bldg.)
Antelope Valley Hosp.
(CSMIP Station No. 24517)

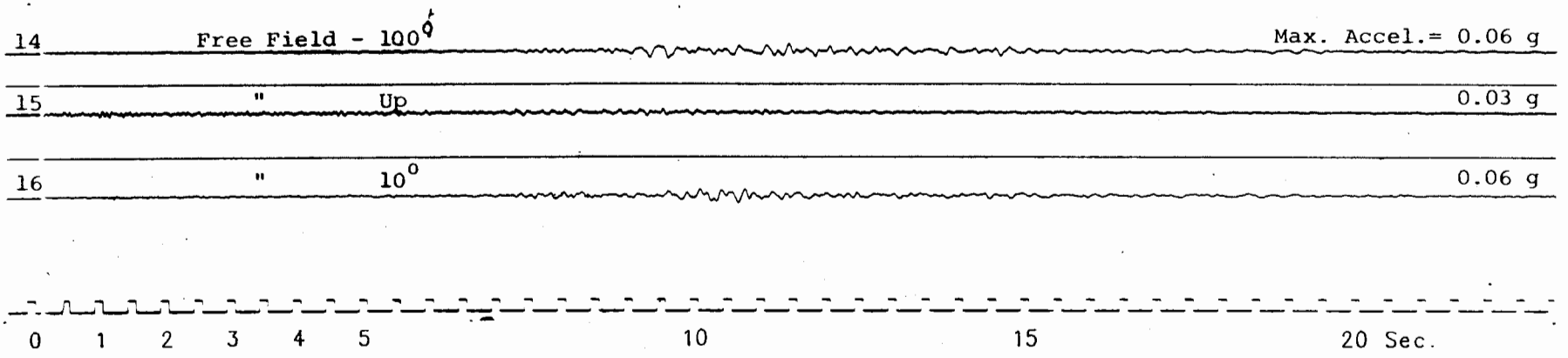
Record 24517-C0280-87280.01



Lancaster – Medical Office Bldg. FF

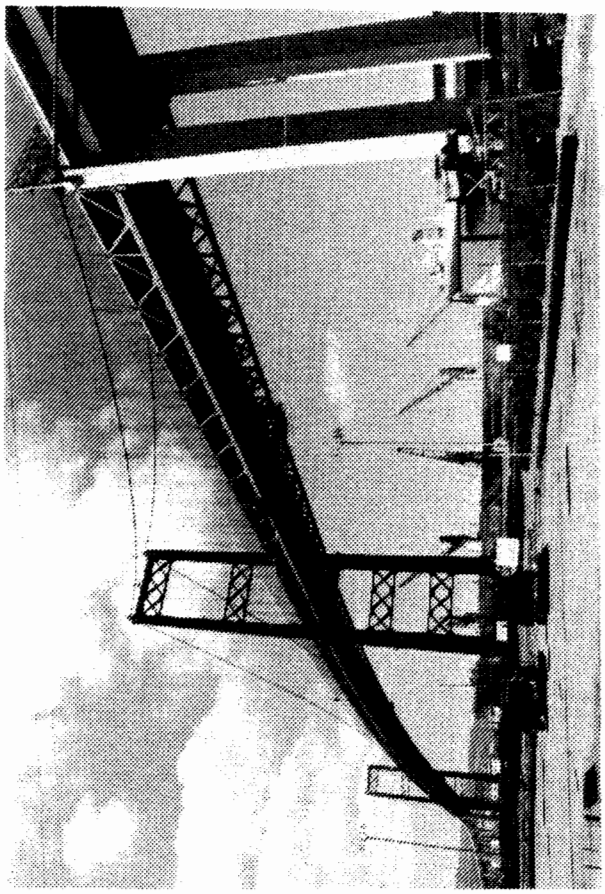
(CSMIP Station No. 24526)

Record 24526-S1866-87280.14



INDEX TO STRUCTURAL RESPONSE RECORDS

LIFELINES

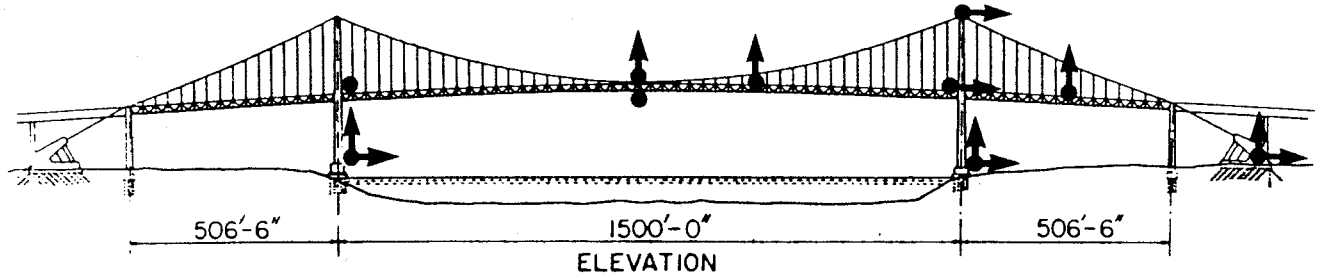


Los Angeles - Vincent Thomas Suspension Bridge

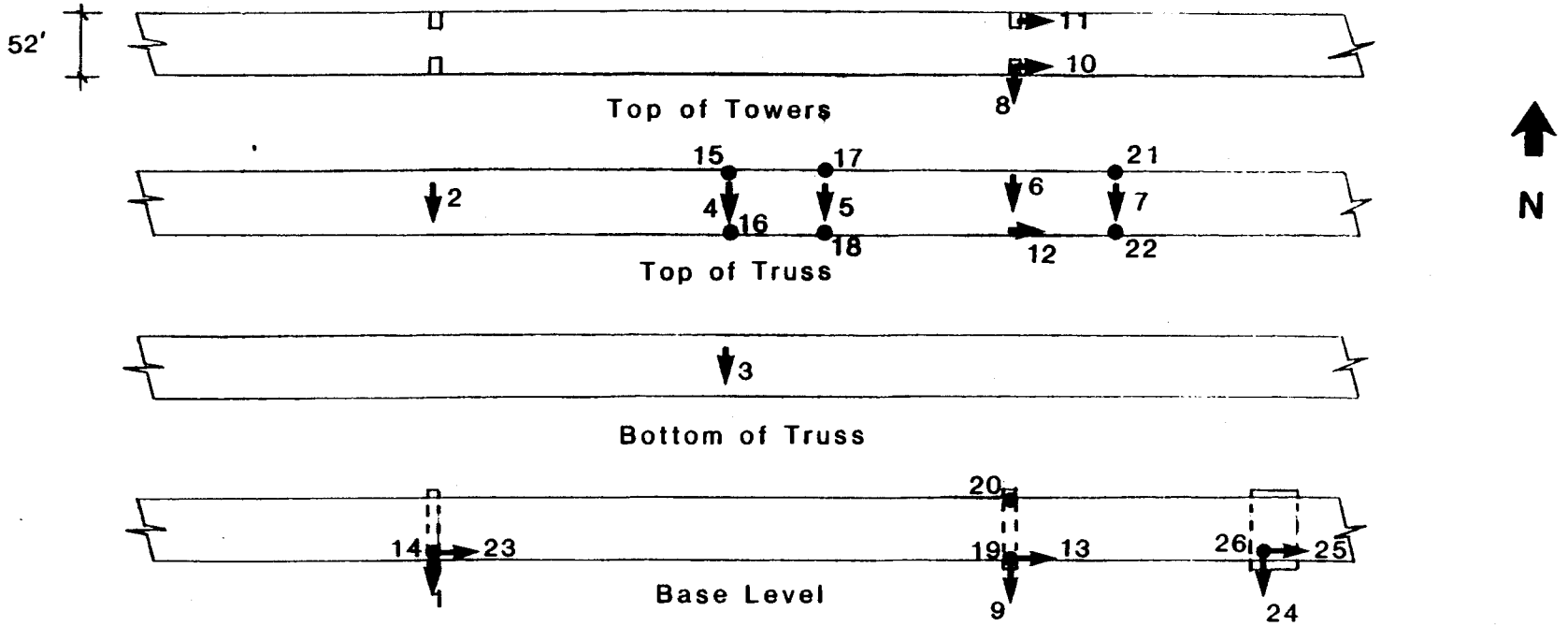
SENSOR LAYOUT

Los Angeles – Vincent Thomas Bridge

(CSMIP Station No. 14406)



ELEVATION



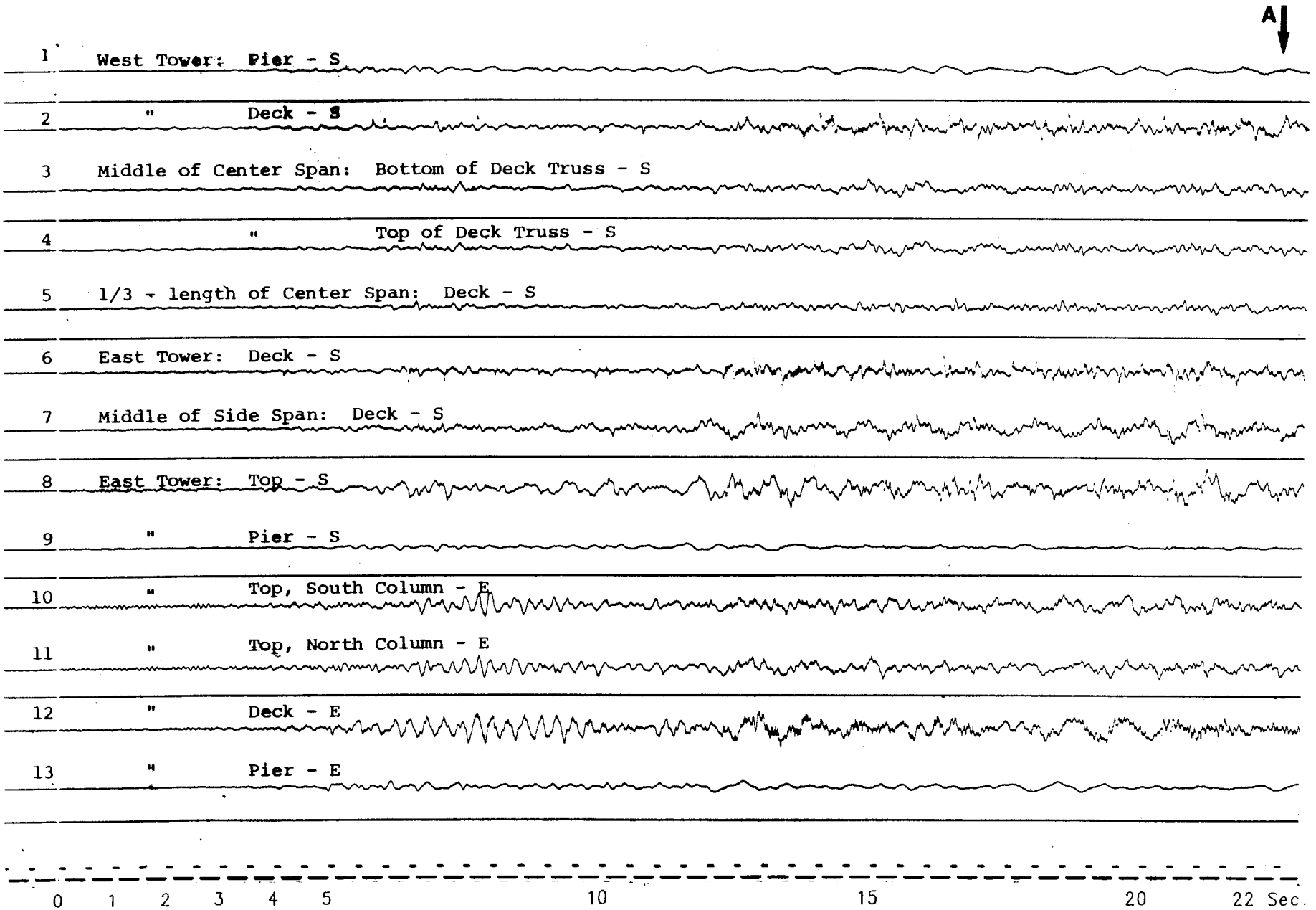
PLAN VIEWS

Los Angeles - Vincent Thomas Suspension Bridge

Address: San Pedro - Terminal Island
Los Angeles, CA
No. of Spans and Length:
1500 ft suspended center span and two 506 ft suspended side spans; 20 approach spans (150 to 230 ft).
Width: 52 ft
Design Date: 1959
Construction Date: 1964

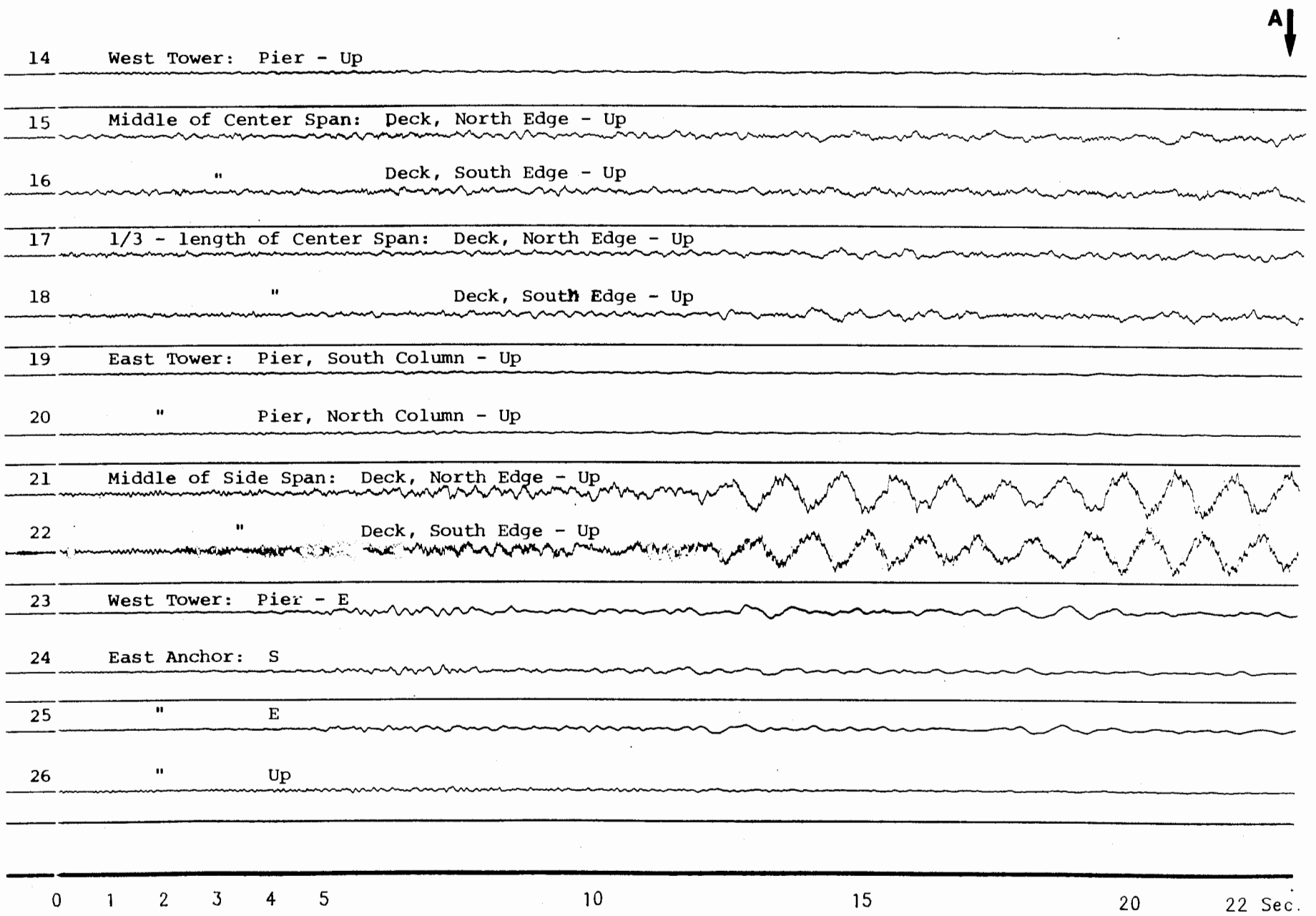
Superstructure Type:
Steel suspension for center and side spans; steel girder for approach spans. Lightweight concrete deck supported by stiffening trusses on suspended spans.
Column Type:
Steel columns, two cross-braced legs per bent.
Foundation Type:
Piles.

Los Angeles – Vincent Thomas Bridge
(CSMIP Station No. 14406) (Channels 1–13, 0–22 secs) Record 14406-C0200-87275.03



Los Angeles – Vincent Thomas Bridge
(CSMIP Station No. 14406) (Channels 14–26, 0–22 secs)

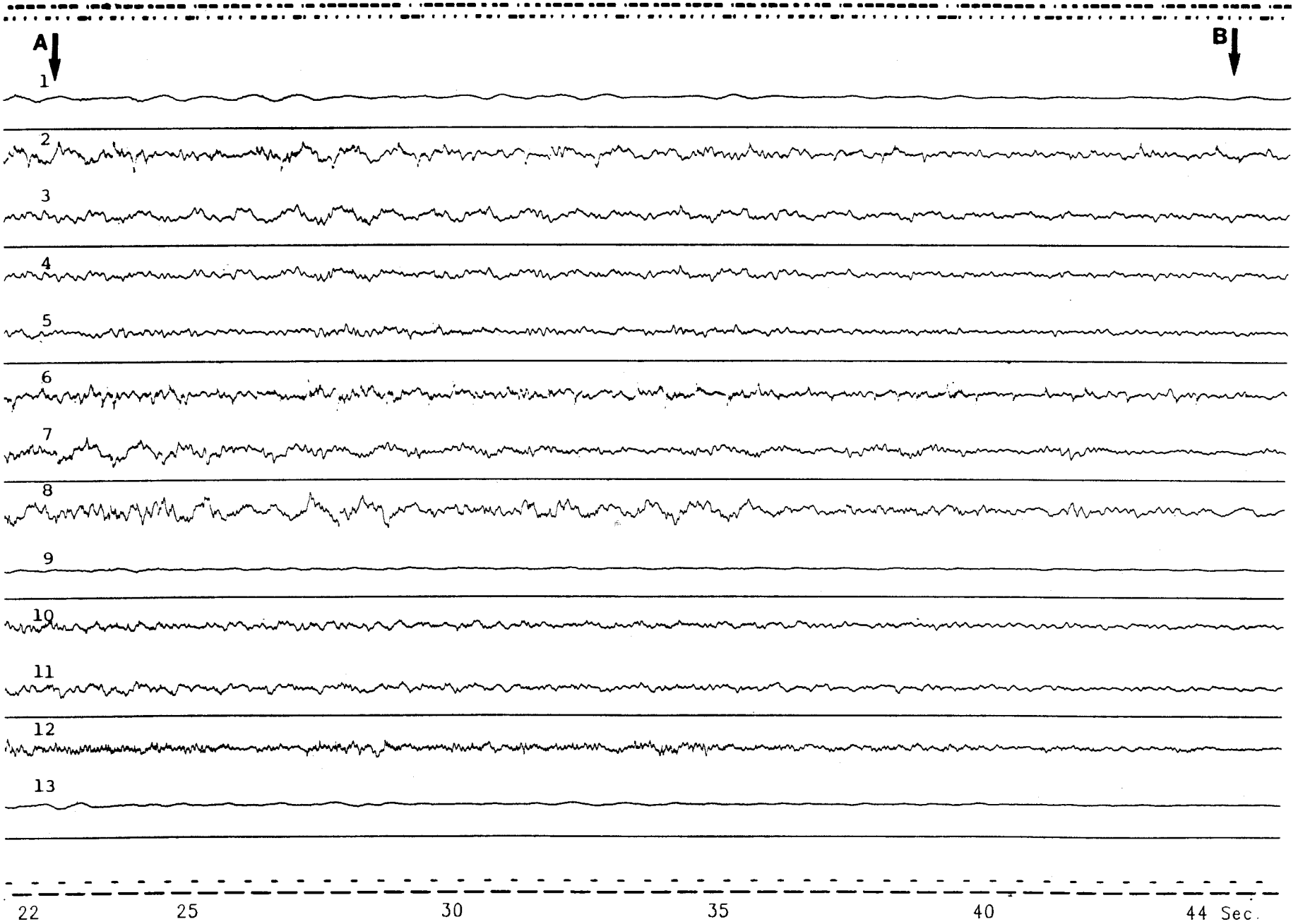
Record 14406-C0201-87275.03



Los Angeles – Vincent Thomas Bridge

(CSMIP Station No. 14406) (Channels 1–13, 22–44 secs)

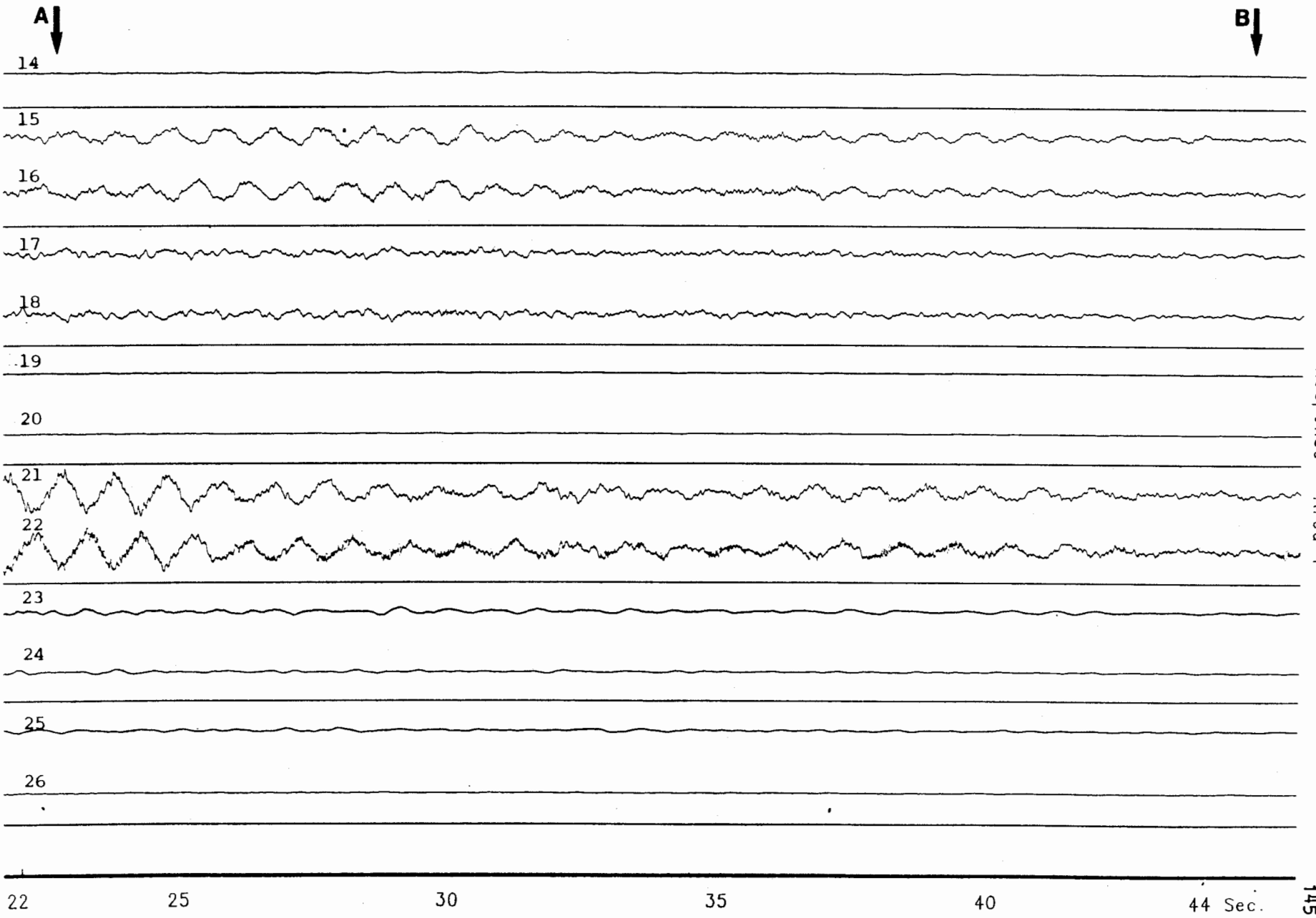
Record 14406–C0200–87275.03



Los Angeles – Vincent Thomas Bridge

(CSMIP Station No. 14406) (Channels 14–26, 22–44 secs)

Record 14406-C0201-87275.03

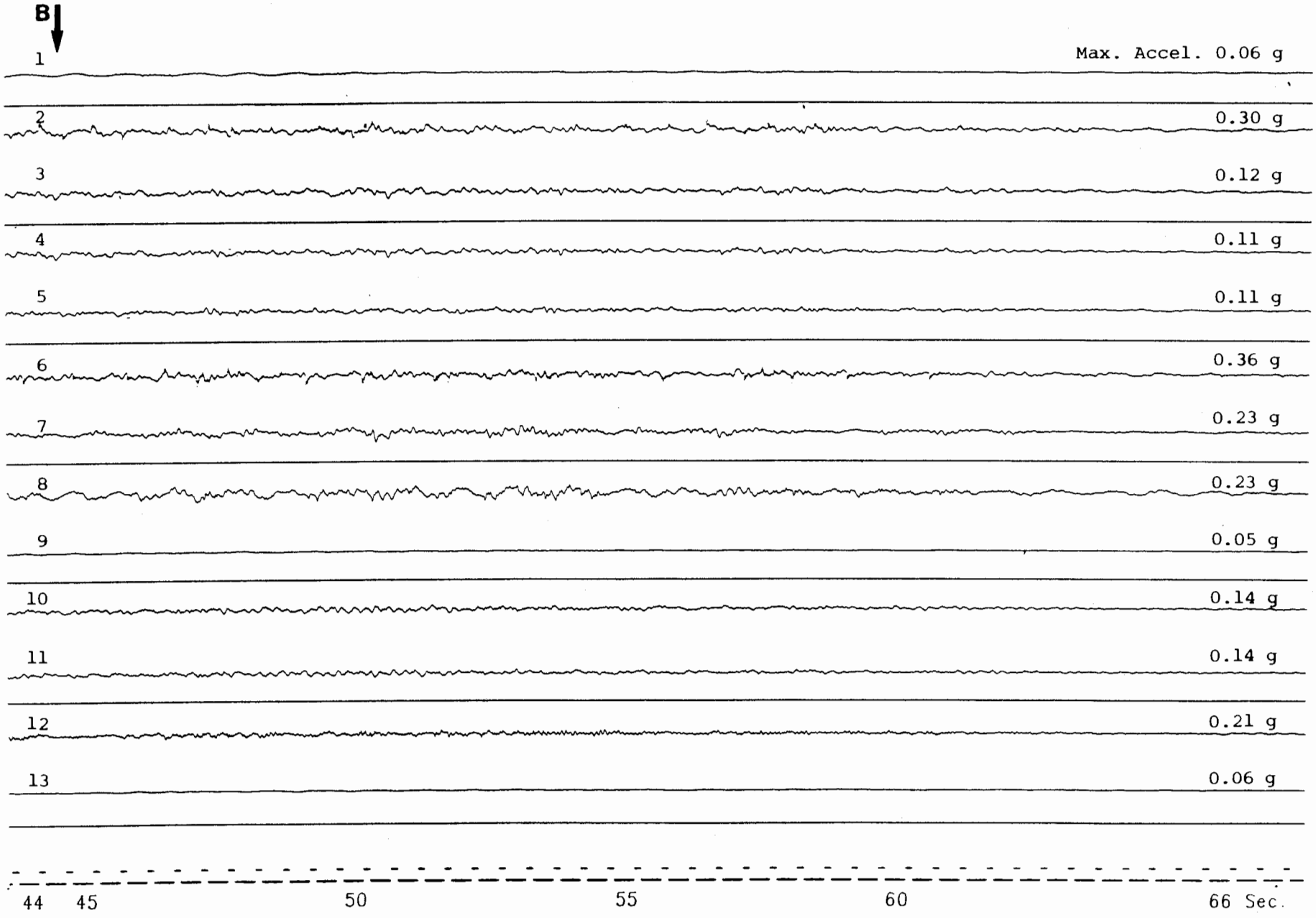


Structural Response – Area 1

Los Angeles – Vincent Thomas Bridge

(CSMIP Station No. 14406) (Channels 1–13, 44–66 secs)

Record 14406–C0200–87275.03



Los Angeles – Vincent Thomas Bridge

(CSMIP Station No. 14406) (Channels 14–26, 44–66 secs)

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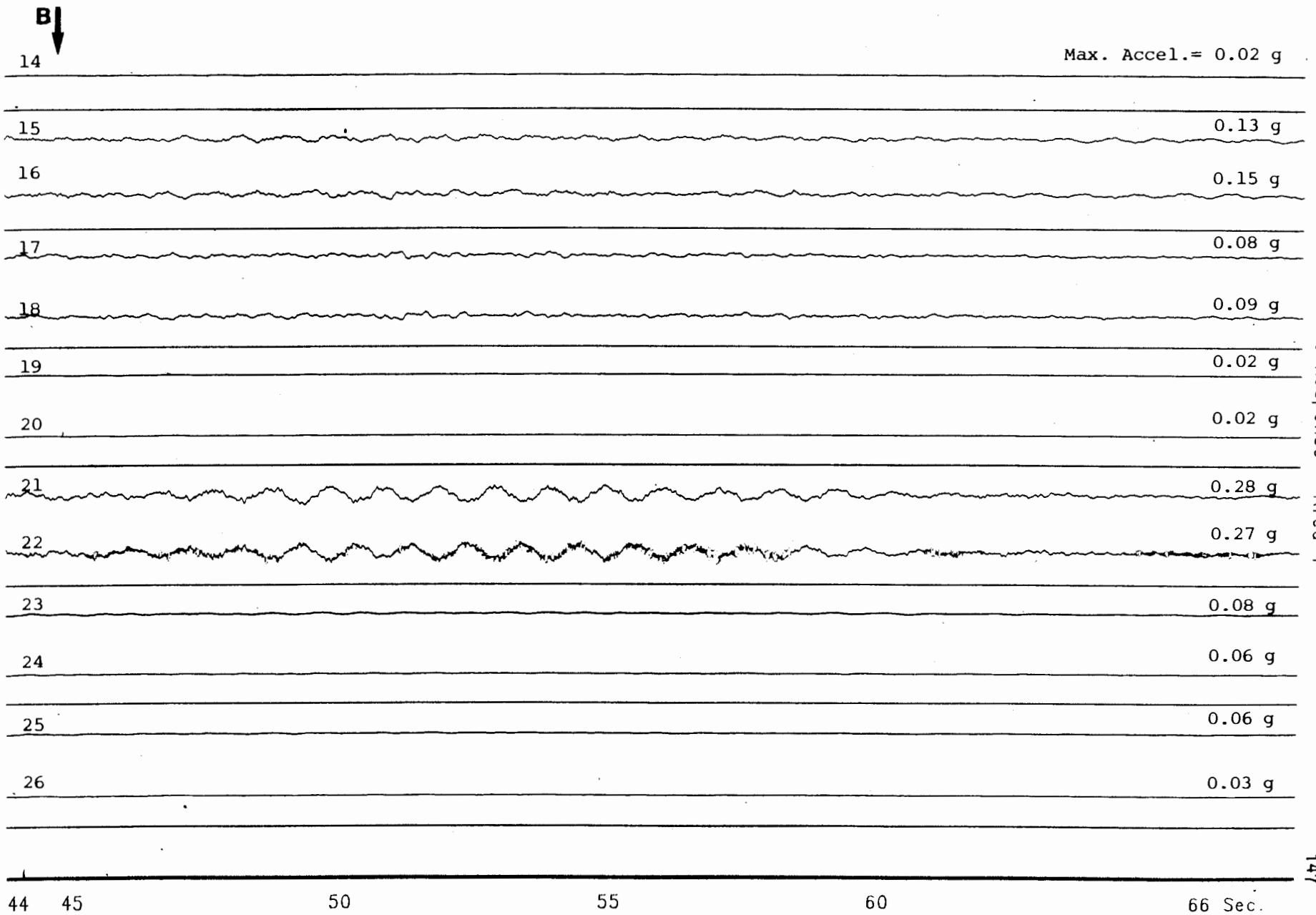
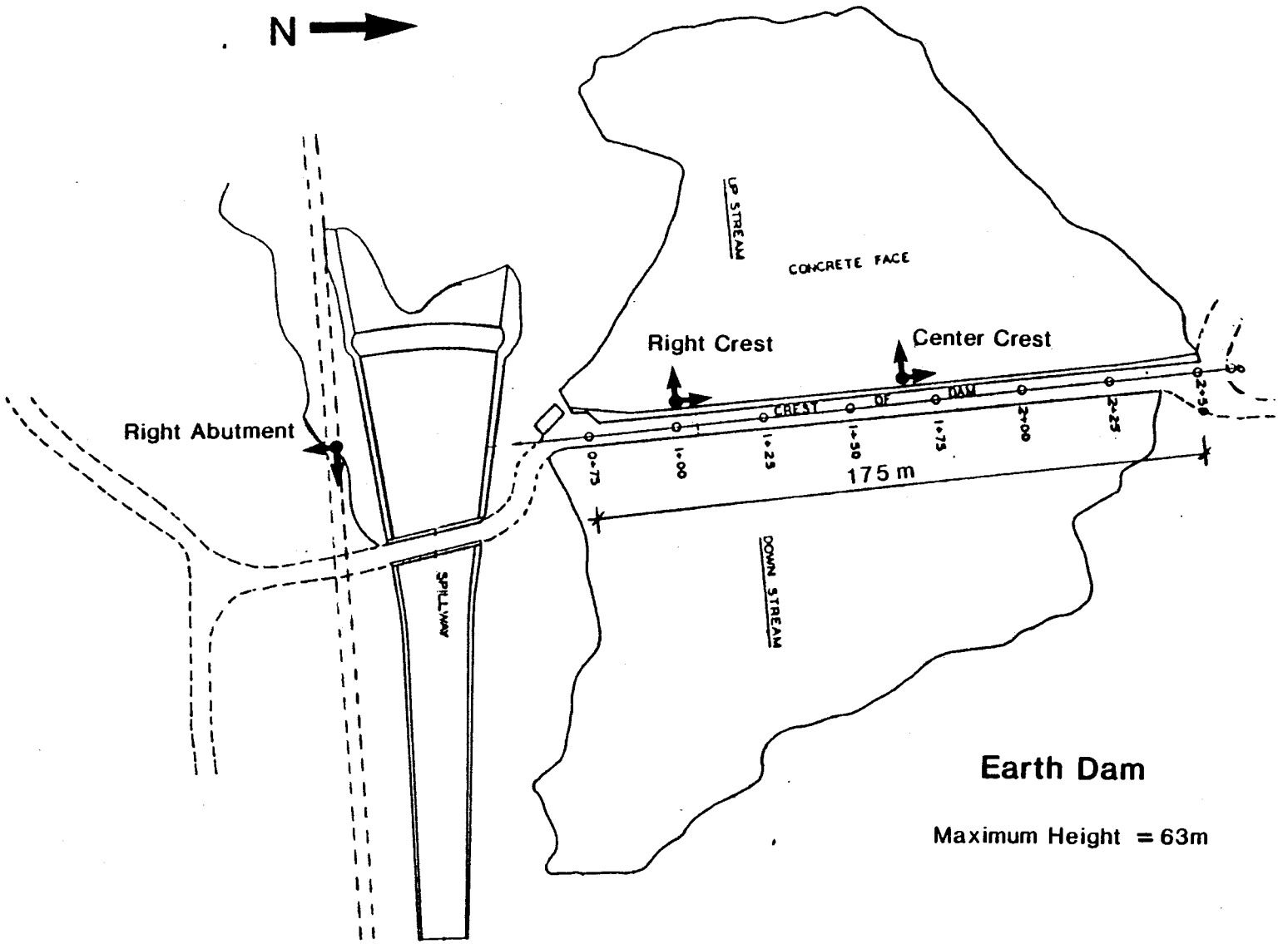


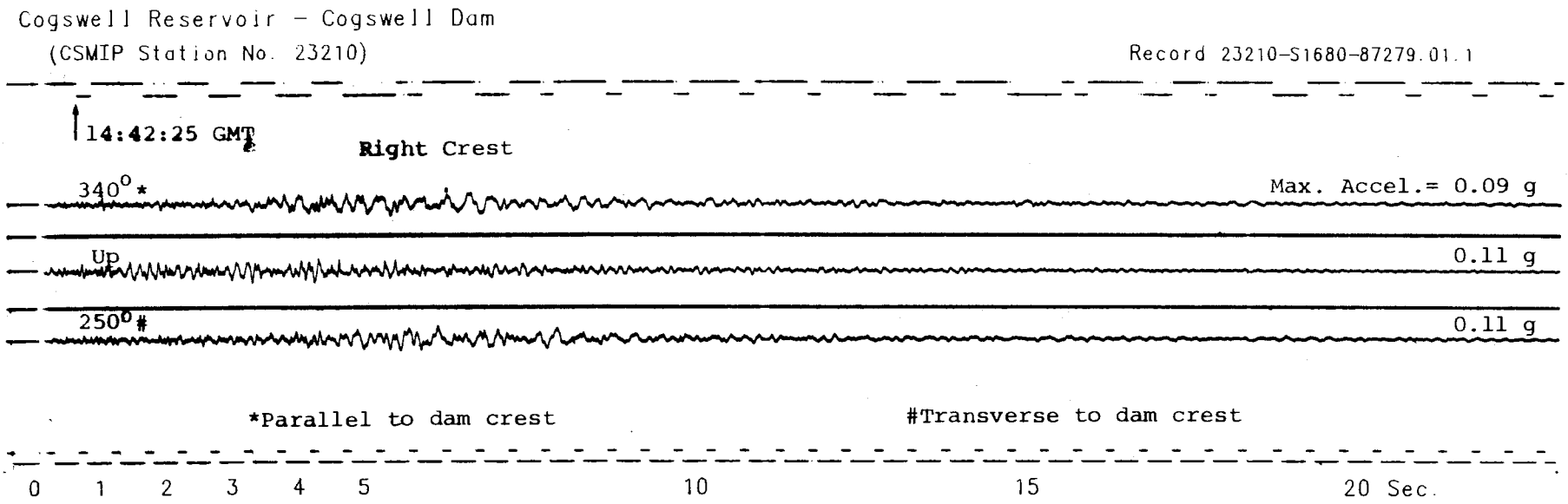
Structural Response – Area 1

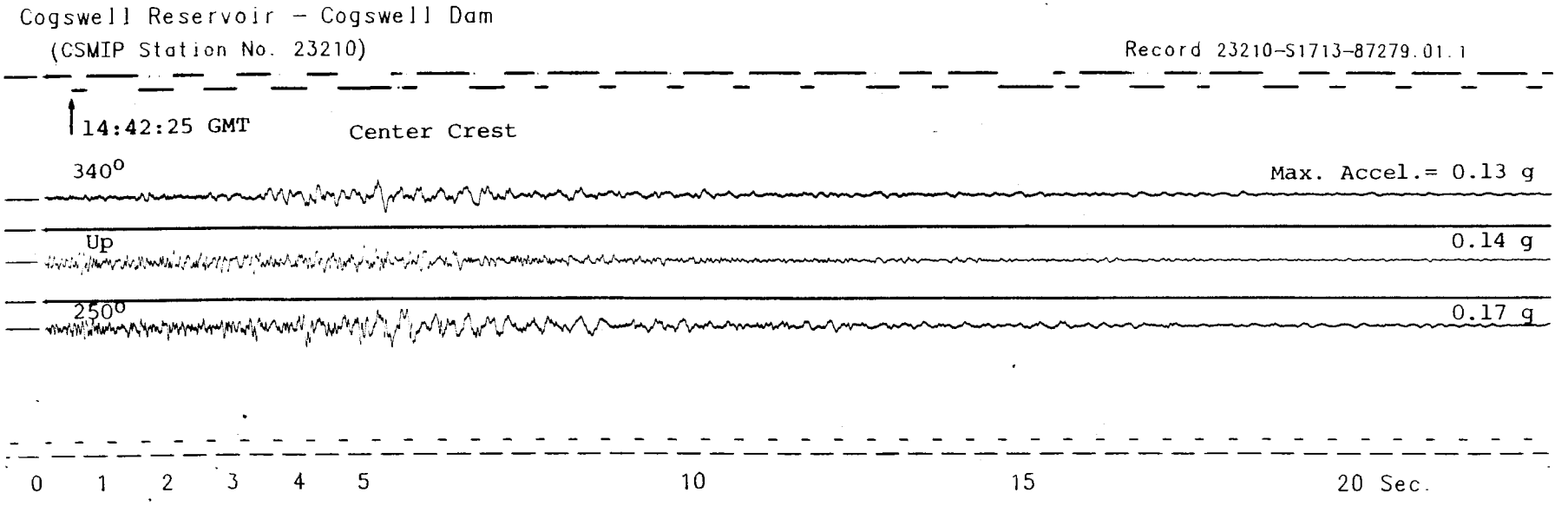
Cogswell Reservoir – Cogswell Dam

(CSMIP Station No. 23210)

SENSOR LAYOUT

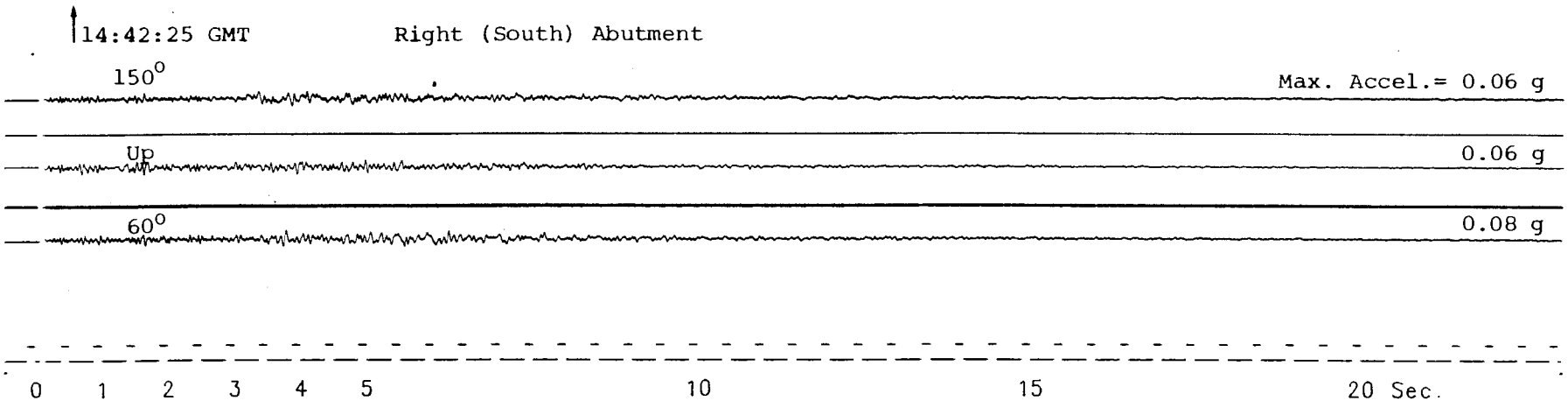



Cogswell Reservoir – Cogswell Dam
(CSMIP Station No. 23210)
Record 23210-S1680-87279.01.1
14:42:25 GMT
Right Crest
340° *
Max. Accel.= 0.09 g
Up
0.11 g
250° #
0.11 g
*Parallel to dam crest
#Transverse to dam crest
0 1 2 3 4 5 10 15 20 Sec.


Cogswell Reservoir – Cogswell Dam
(CSMIP Station No. 23210)
Record 23210-S1713-87279.01.1
14:42:25 GMT
Center Crest
340°
Max. Accel.= 0.13 g
Up
0.14 g
250°
0.17 g
0 1 2 3 4 5 10 15 20 Sec.

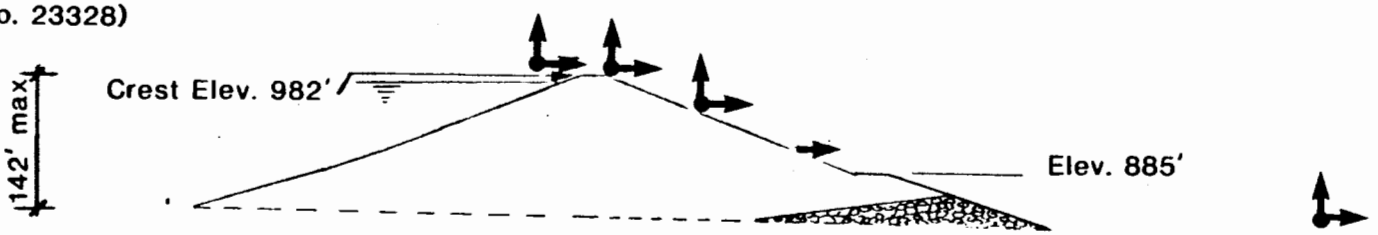
Cogswell Reservoir – Cogswell Dam
(CSMIP Station No. 23210)

Record 23210-S1867-87279.02.1



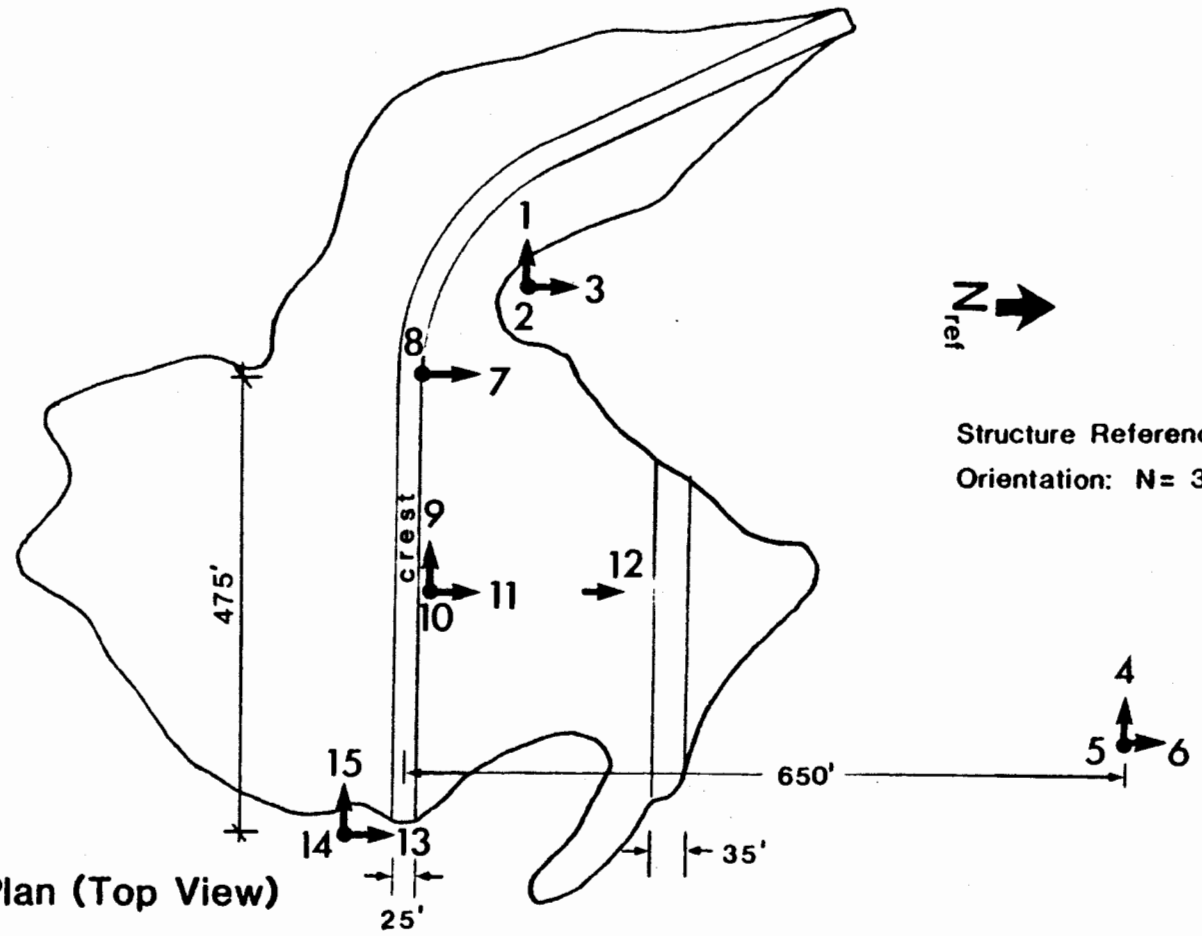
Puddingstone Reservoir – Puddingstone Dam

(CSMIP Station No. 23328)



S/N Section

SENSOR LAYOUT



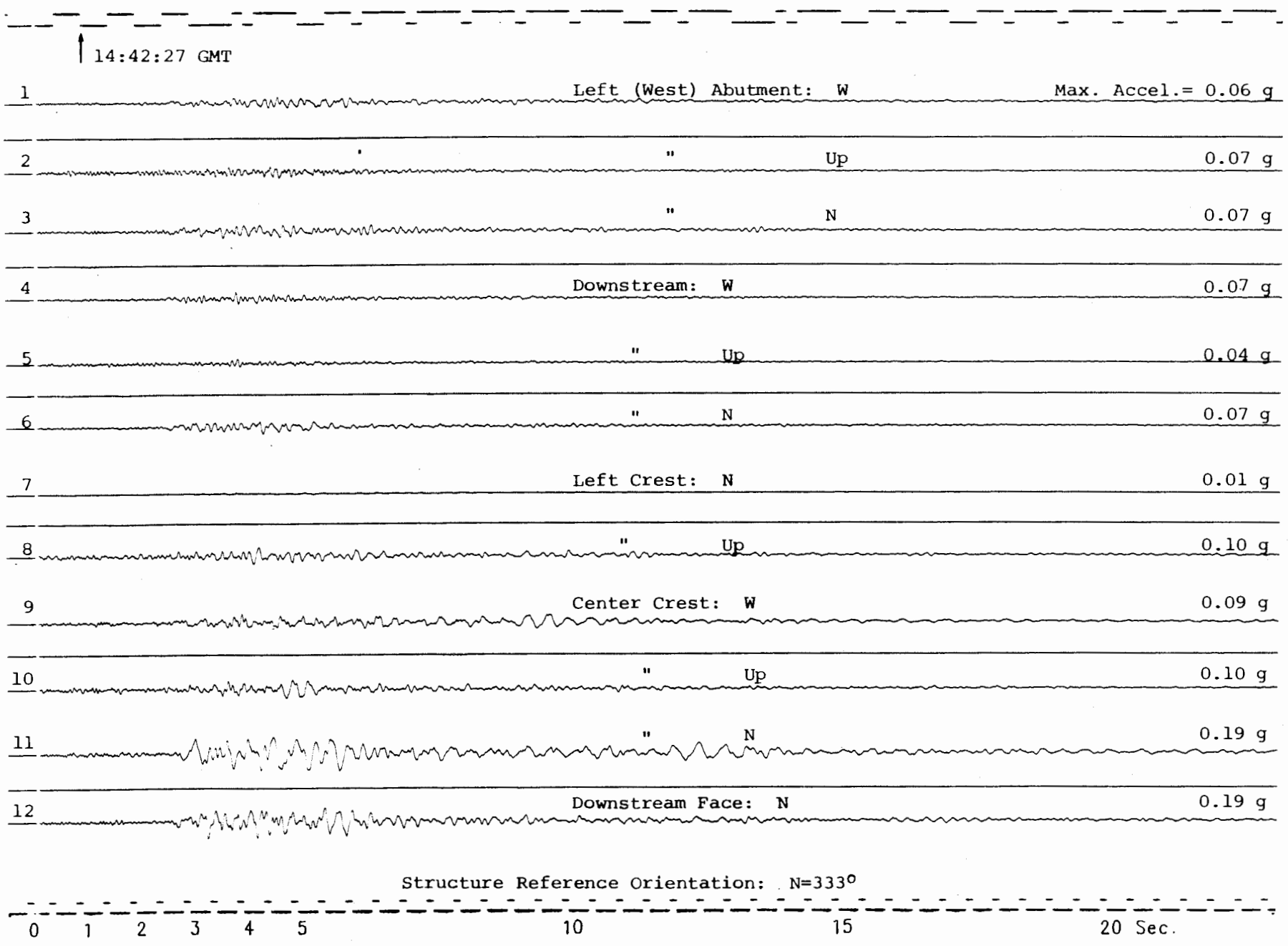
Structure Reference
Orientation: N= 333°

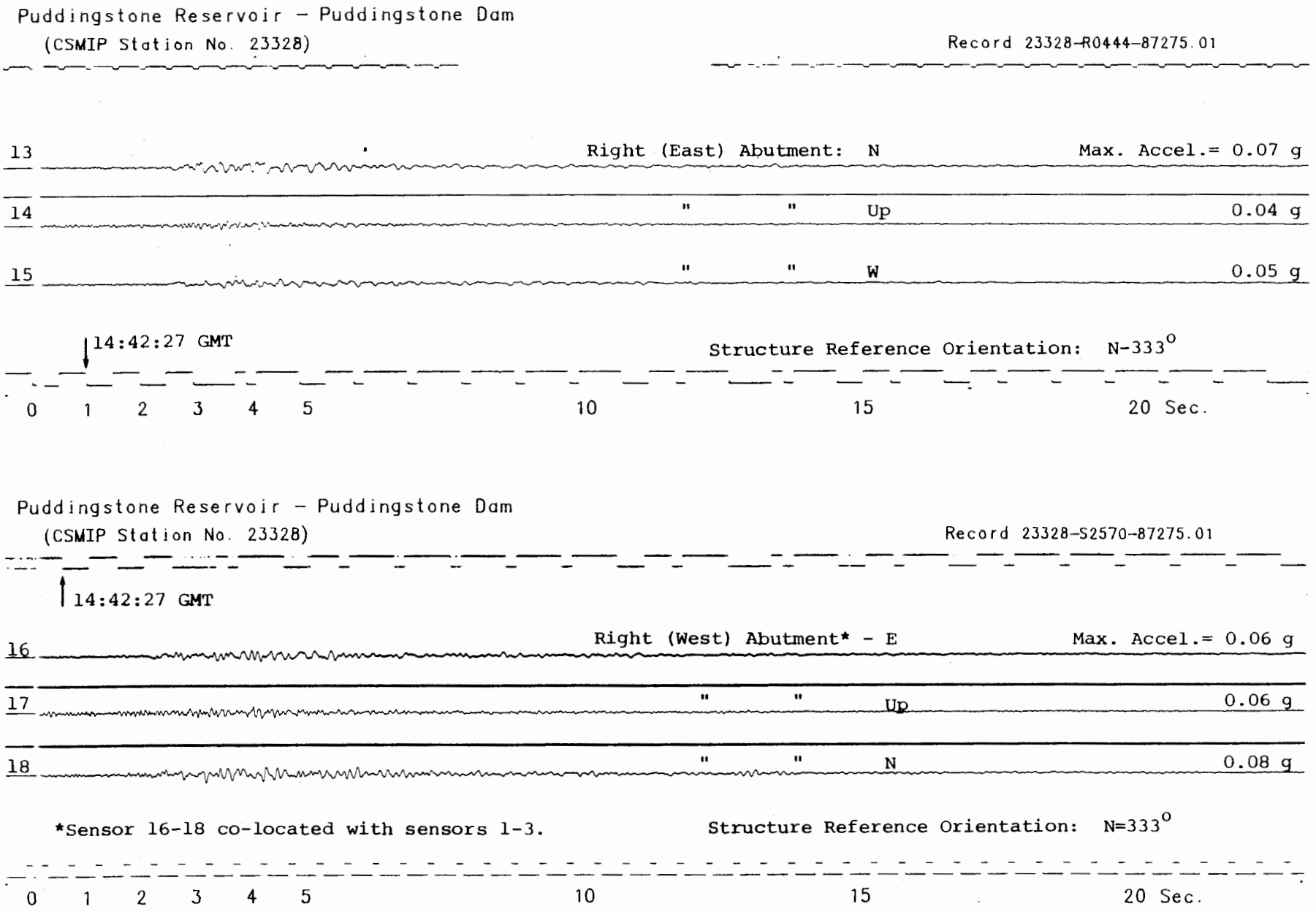
Earth Dam

Plan (Top View)

Puddingstone Reservoir – Puddingstone Dam
(CSMIP Station No. 23328)

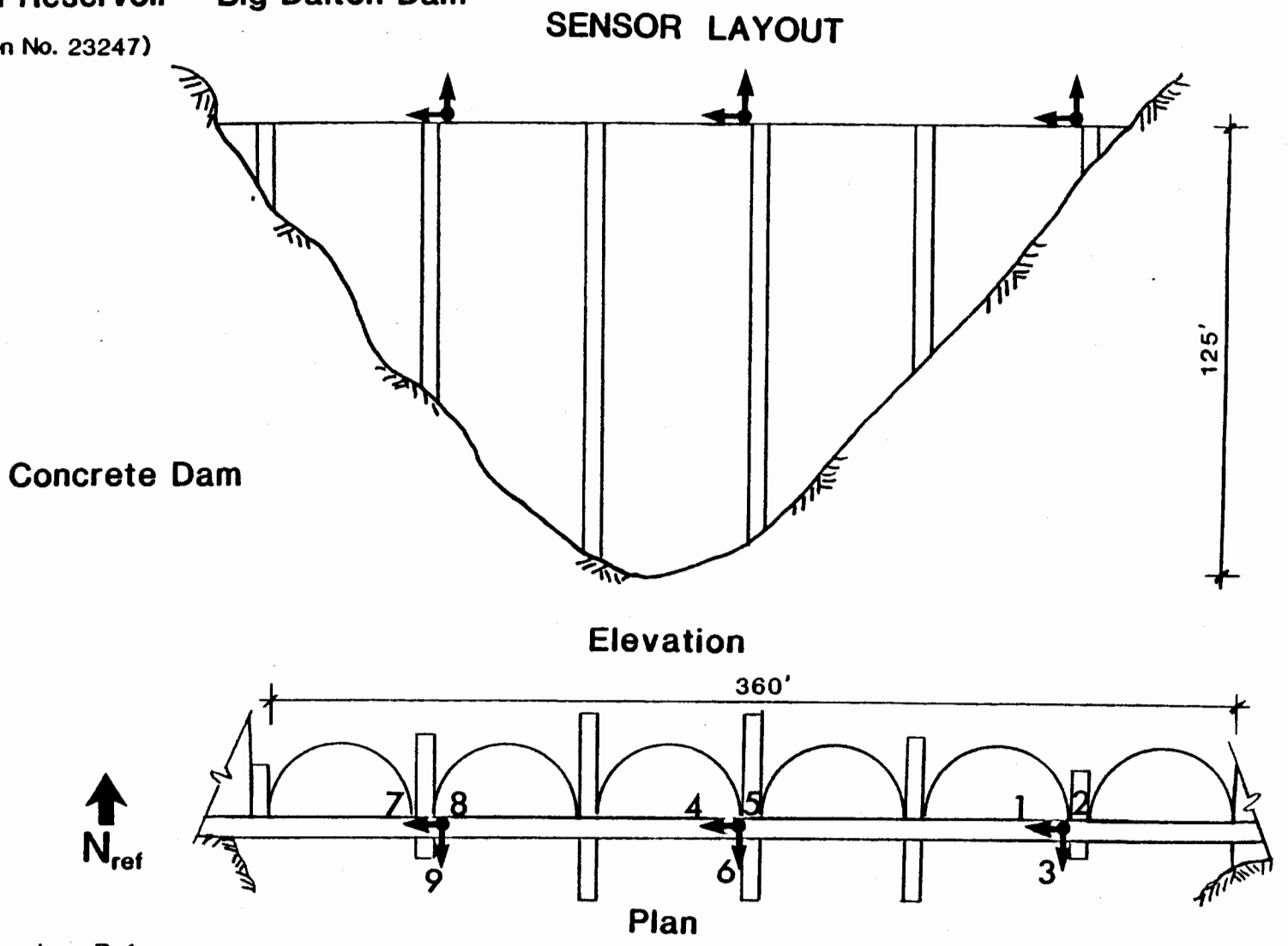
Record 23328-C0172-87275.02



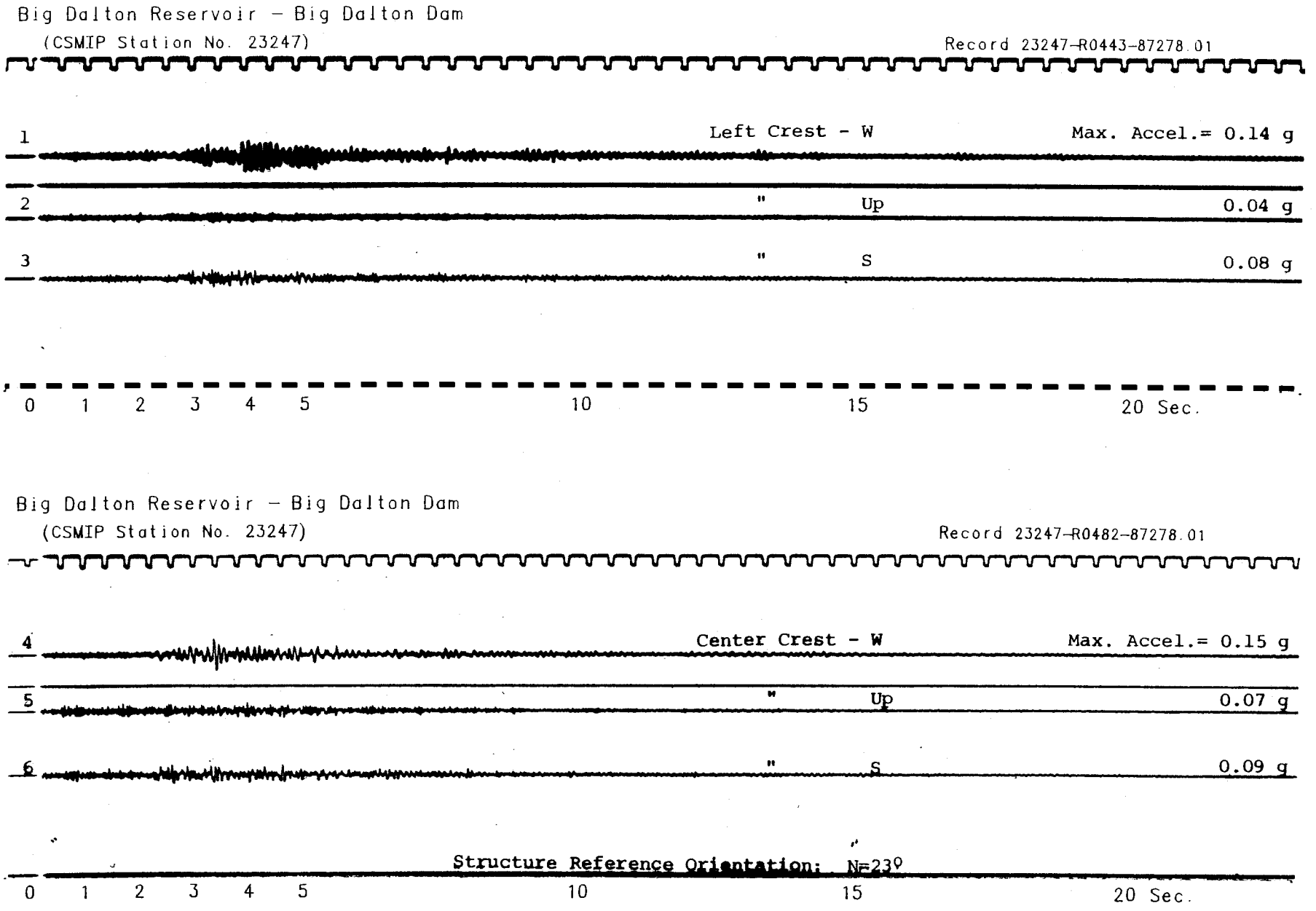

Puddingstone Reservoir - Puddingstone Dam
(CSMIP Station No. 23328)
Record 23328-R0444-87275.01
13
Right (East) Abutment: N
Max. Accel.= 0.07 g
14
" " Up
0.04 g
15
" " W
0.05 g
14:42:27 GMT
Structure Reference Orientation: N-333°
0 1 2 3 4 5 10 15 20 Sec.
Puddingstone Reservoir - Puddingstone Dam
(CSMIP Station No. 23328)
Record 23328-S2570-87275.01
14:42:27 GMT
16
Right (West) Abutment* - E
Max. Accel.= 0.06 g
17
" " Up
0.06 g
18
" " N
0.08 g
*Sensor 16-18 co-located with sensors 1-3.
Structure Reference Orientation: N=333°
0 1 2 3 4 5 10 15 20 Sec.

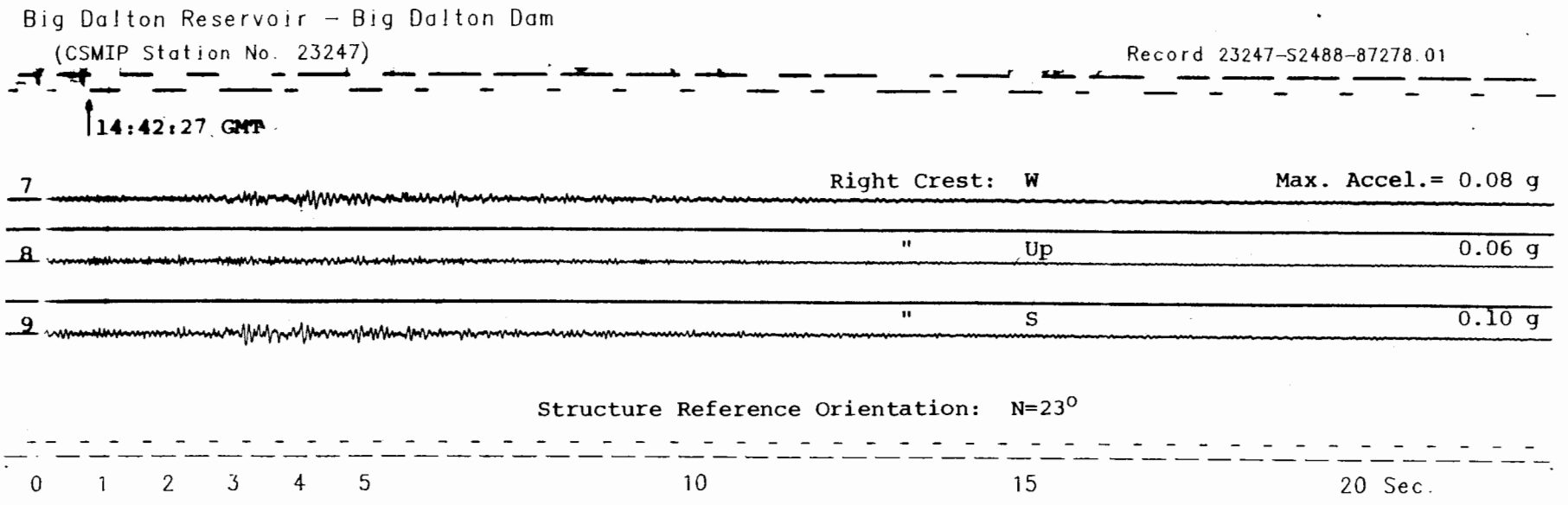
Big Dalton Reservoir – Big Dalton Dam

(CSMIP Station No. 23247)



Structure Reference
Orientation: N= 23°

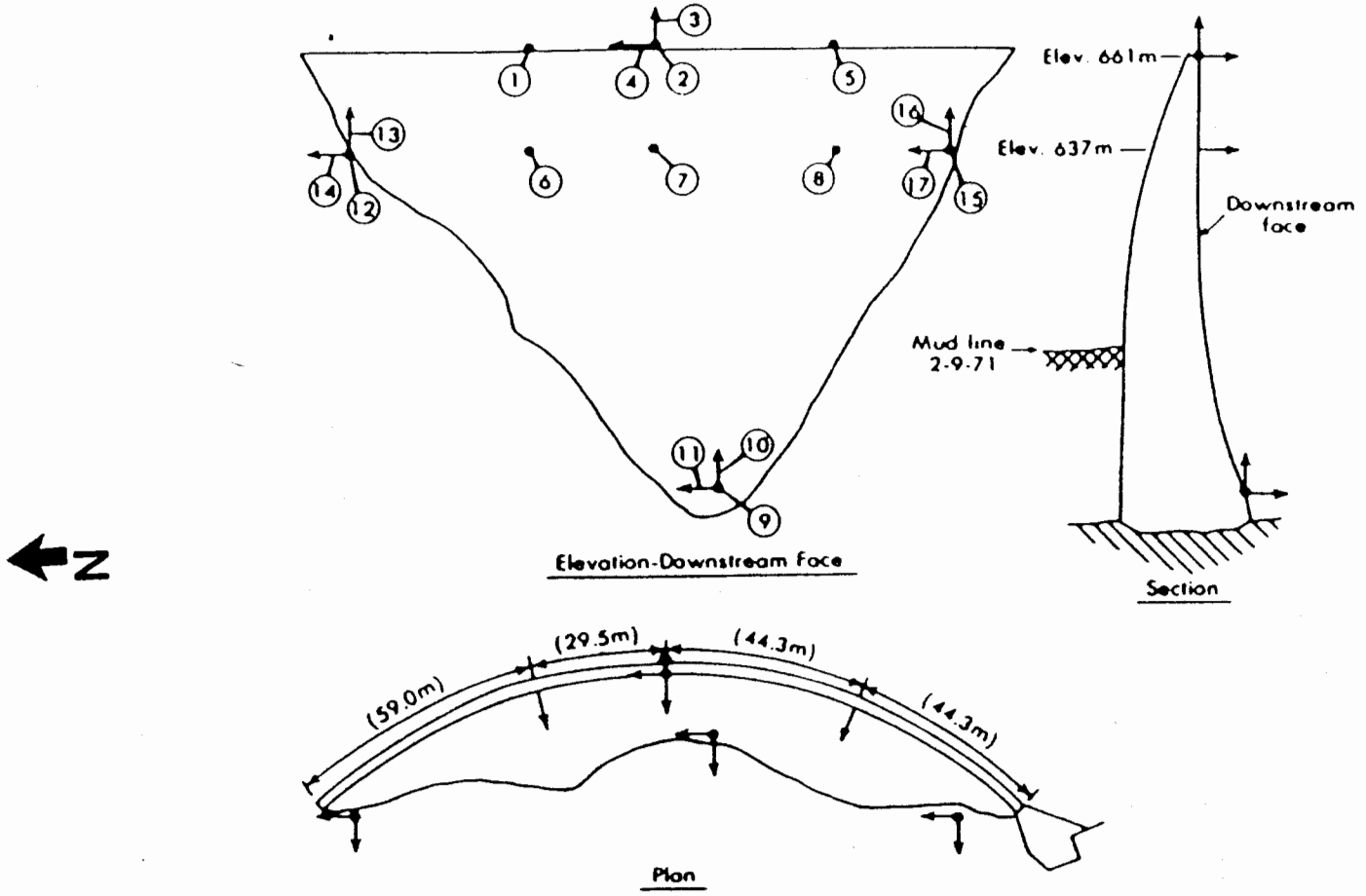

Big Dalton Reservoir – Big Dalton Dam
(CSMIP Station No. 23247)
Record 23247-R0443-87278.01
1
Left Crest - W
Max. Accel.= 0.14 g
2
"
Up
0.04 g
3
"
S
0.08 g
0 1 2 3 4 5 10 15 20 Sec.
Big Dalton Reservoir – Big Dalton Dam
(CSMIP Station No. 23247)
Record 23247-R0482-87278.01
4
Center Crest - W
Max. Accel.= 0.15 g
5
"
Up
0.07 g
6
"
S
0.09 g
Structure Reference Orientation: N=23°
0 1 2 3 4 5 10 15 20 Sec.


Big Dalton Reservoir – Big Dalton Dam
(CSMIP Station No. 23247)
Record 23247-S2488-87278.01
14:42:27 GMT
7
Right Crest: W
Max. Accel.= 0.08 g
8
" Up
0.06 g
9
" S
0.10 g
Structure Reference Orientation: N=23°
0 1 2 3 4 5 10 15 20 Sec.

Pacoima Dam

(CSMIP Station No. 24207)

SENSOR LAYOUT



Pacoima Dam
(CSMIP Station No. 24207)

Record 24207-C0157-87278.01

14:42:35 GMT

1	Crest: Right 1/6 - length Point - T*	Max. Accel.= 0.05 g
2	Crest: Center - T	0.06 g
3	" " Up	0.02 g
4	" " R*	0.02 g
5	Crest: Left 1/4 - length Point - T	0.06 g
6	80% Height: Right 1/6 - length Point - T	0.02 g
7	" Center - T	(Sensor malfunction)
8	" Left 1/4 - length Point - T	0.02 g
9	Dam Base: T	0.01 g
10	" Up	0.01 g
11	" R	0.01 g

* R,T = Radial, Transverse to Dam Crest

0 1 2 3 4 5 10 15 20 Sec.

Pacoima Dam
(CSMIP Station No. 24207)

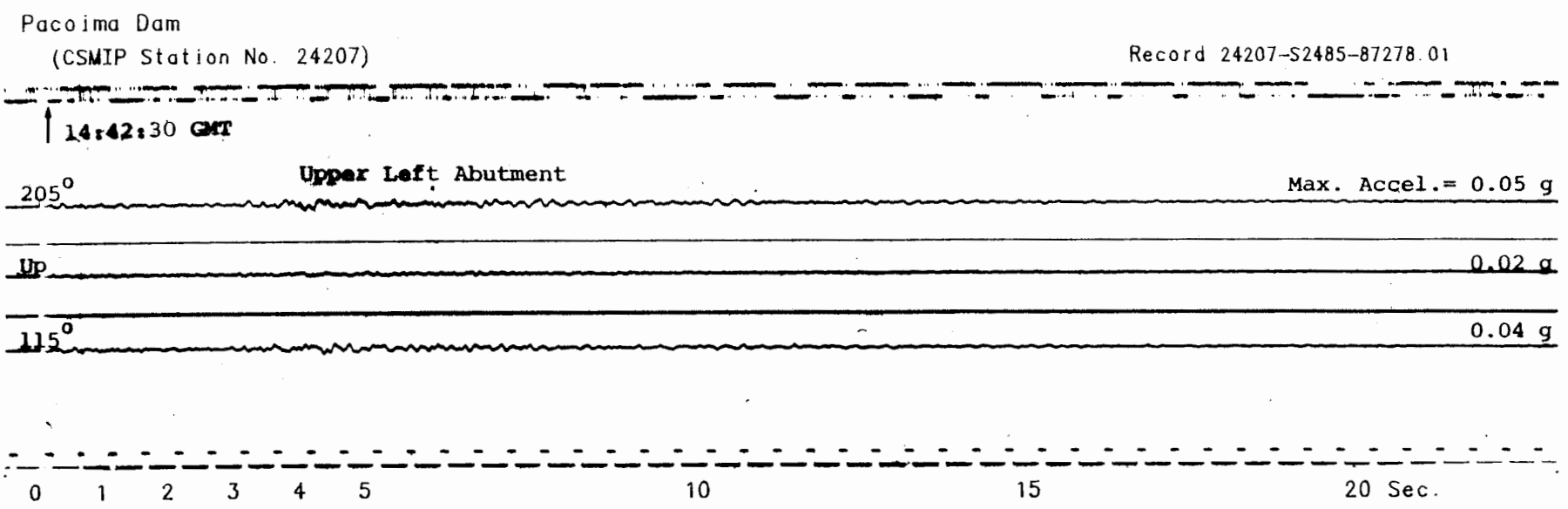
Record 24207-C0140-87278.01

14:42:35 GMT

12	Right (North)Abutment:	W	Max. Accel.= 0.02 g
13	"	Up	(Sensor malfunction)
14	"	N	0.02 g
15	Left (South)Abutment:	W	0.02 g
16	"	Up	0.01 g
17	"	N	0.02 g

(Sensor 18 to be installed; Sensors 19-21 malfunctioned)

0 1 2 3 4 5 10 15 20 Sec.

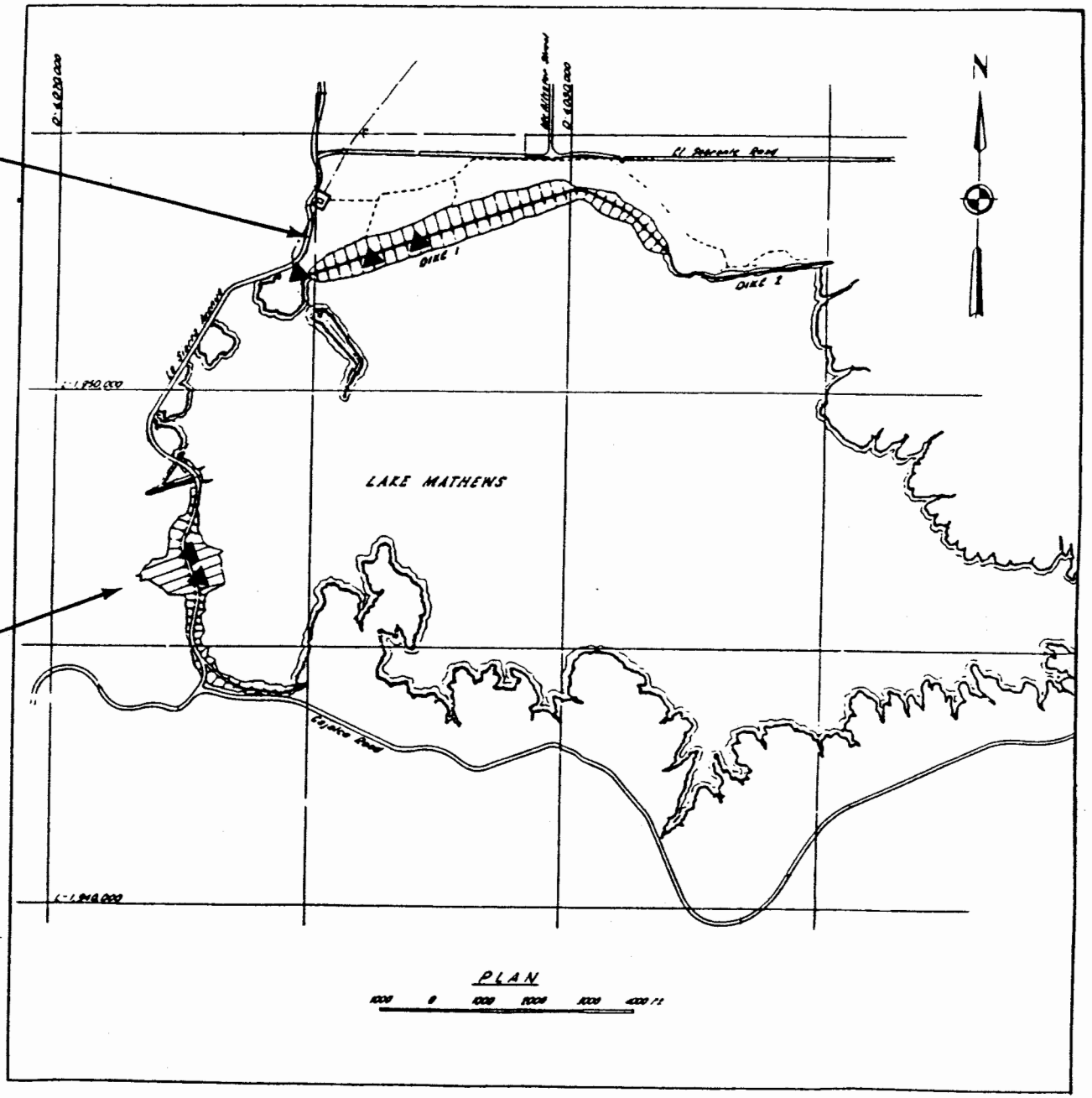

Pacoima Dam
(CSMIP Station No. 24207)
Record 24207-S2485-87278.01
14:42:30 GMT
205°
Upper Left Abutment
Max. Accel.= 0.05 g
Up
0.02 g
115°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.

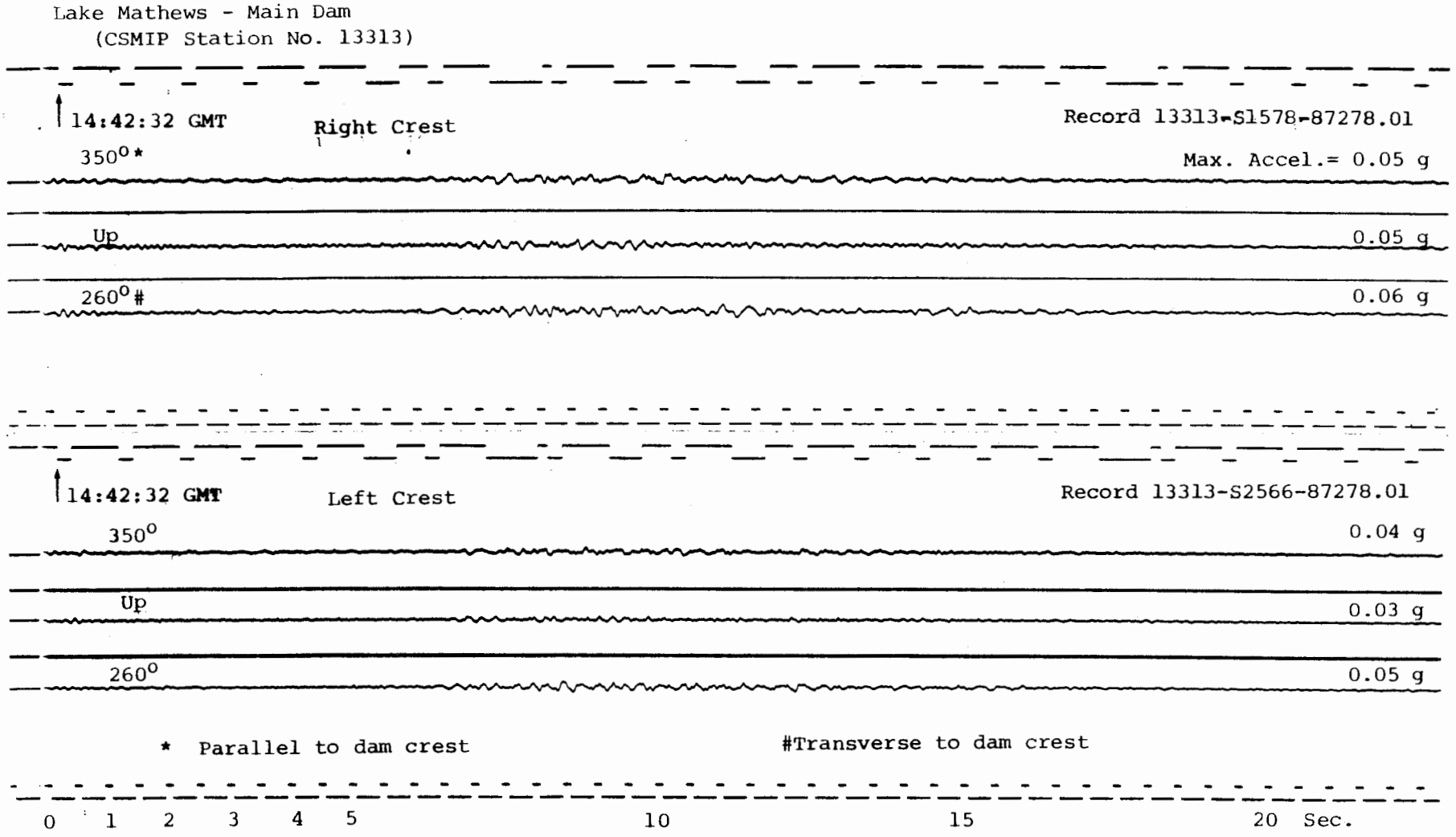
Lake Mathews – Main Dam and Dike 1

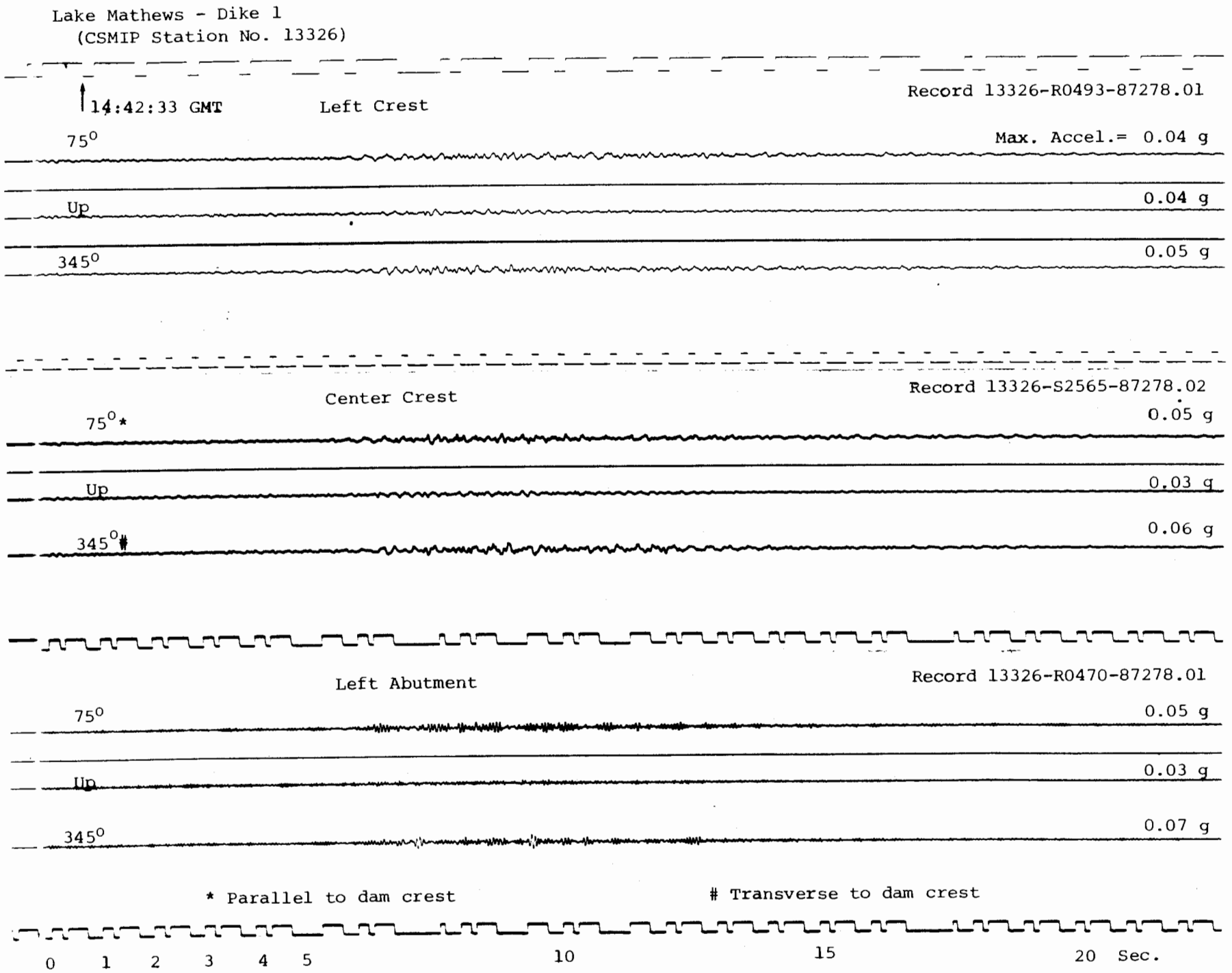
Lake Mathews - Dike 1
(CSMIP Station No. 13326)
3 triaxial accelerographs
Earthen dike, crest length
approximately 5700 feet,
height approx. 120 feet

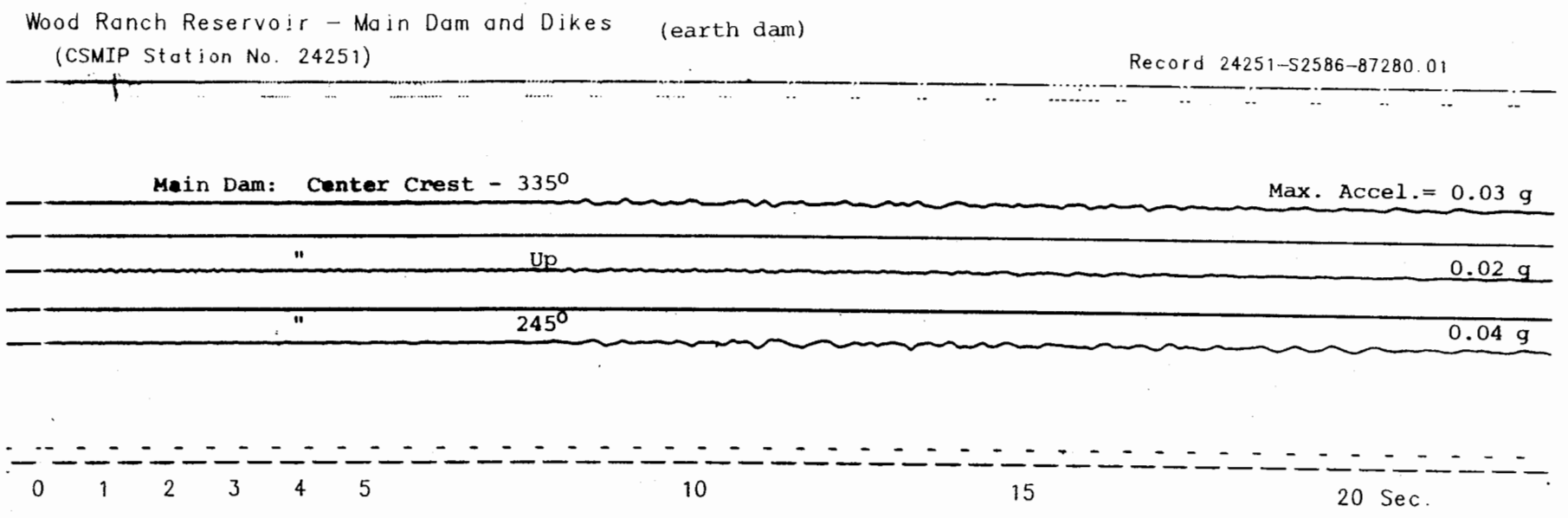
Lake Mathews - Main Dam
(CSMIP Station No. 13313)
2 triaxial accelerographs
Earthen dam, crest length
approximately 1000 feet,
height approx. 200 feet

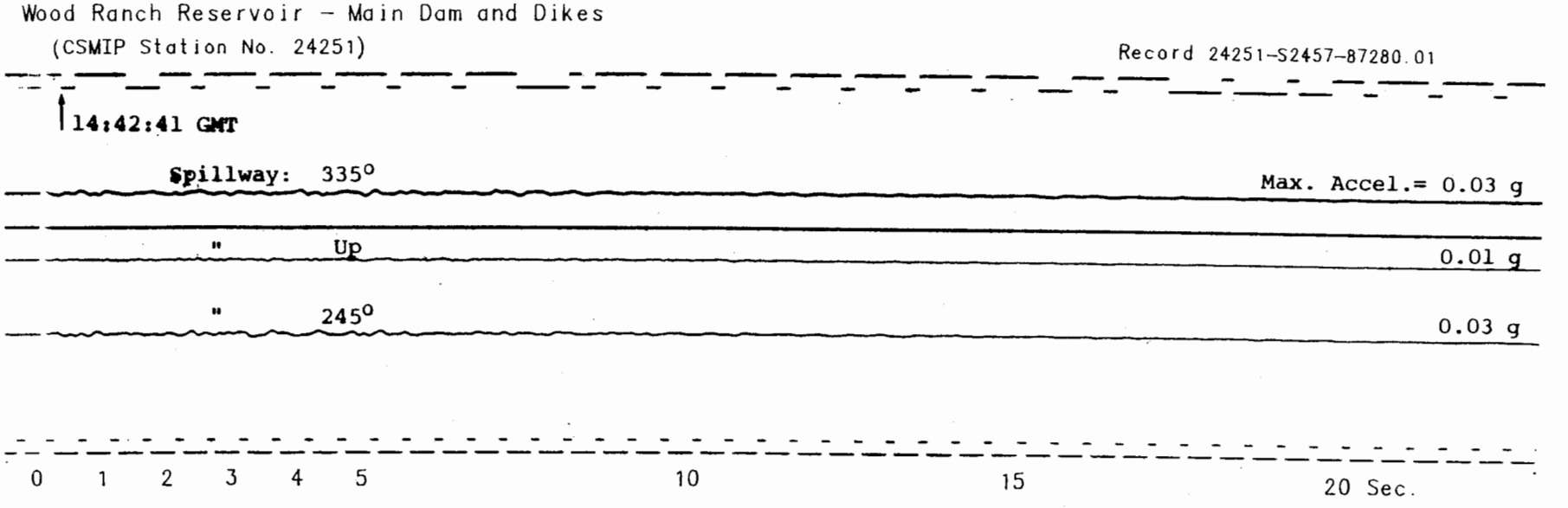
▲ - locations of triaxial accelerographs

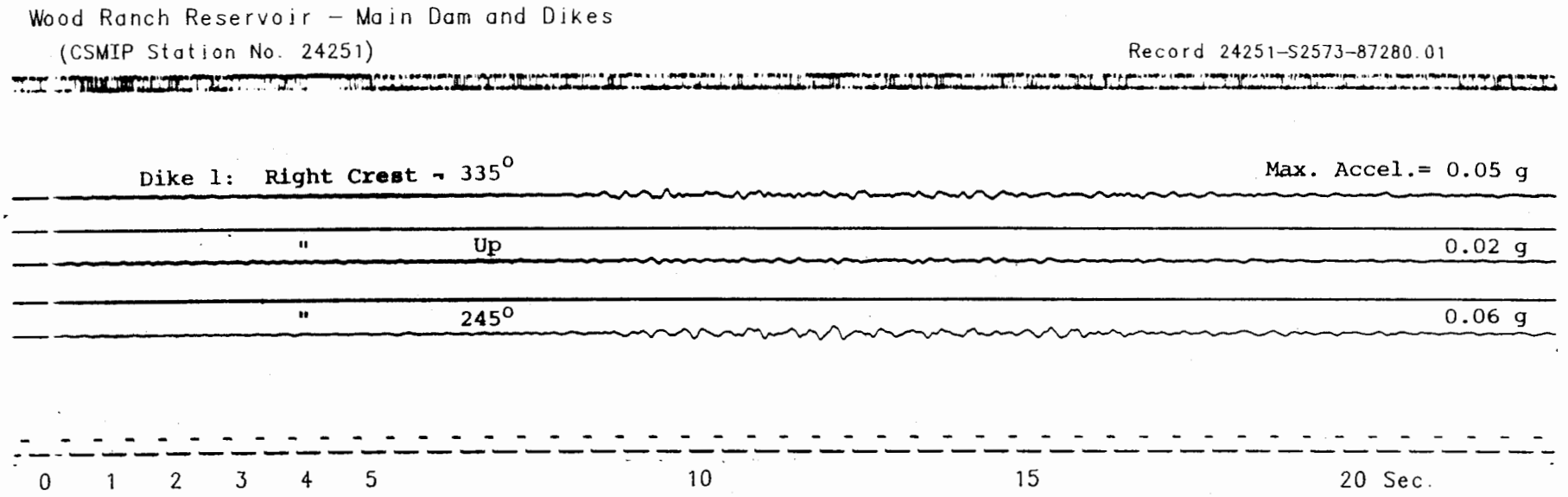


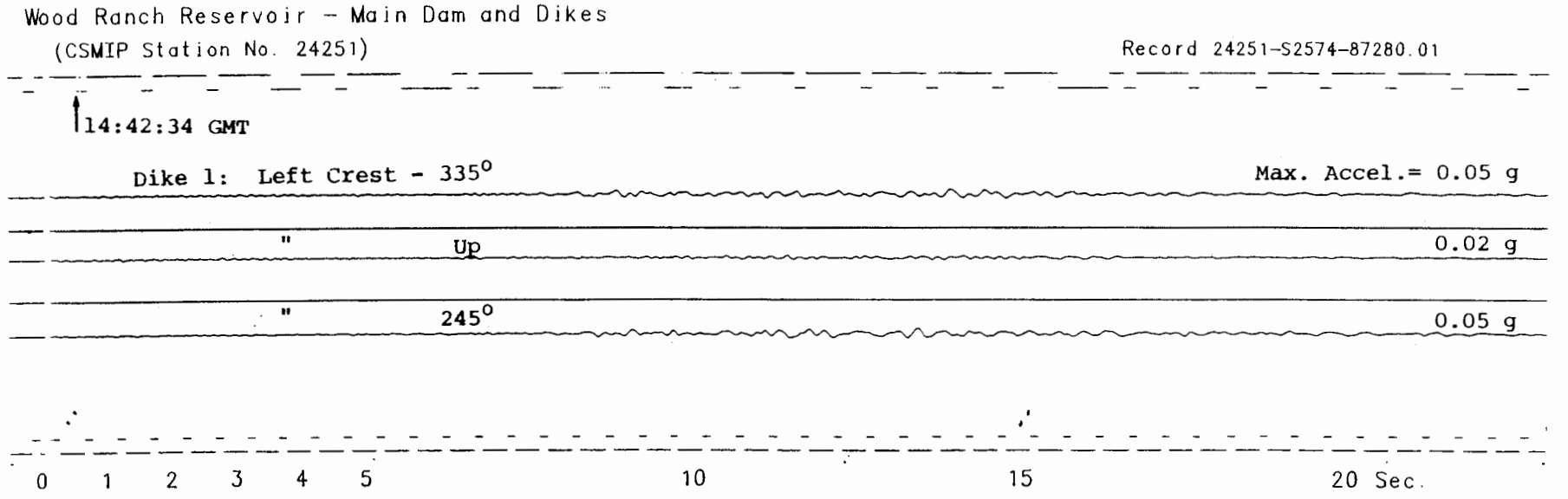

Lake Mathews - Main Dam
(CSMIP Station No. 13313)
14:42:32 GMT
Right Crest
Record 13313-S1578-87278.01
350° *
Max. Accel.= 0.05 g
Up
0.05 g
260° #
0.06 g
14:42:32 GMT
Left Crest
Record 13313-S2566-87278.01
350°
0.04 g
Up
0.03 g
260°
0.05 g
* Parallel to dam crest
#Transverse to dam crest
0 1 2 3 4 5 10 15 20 Sec.

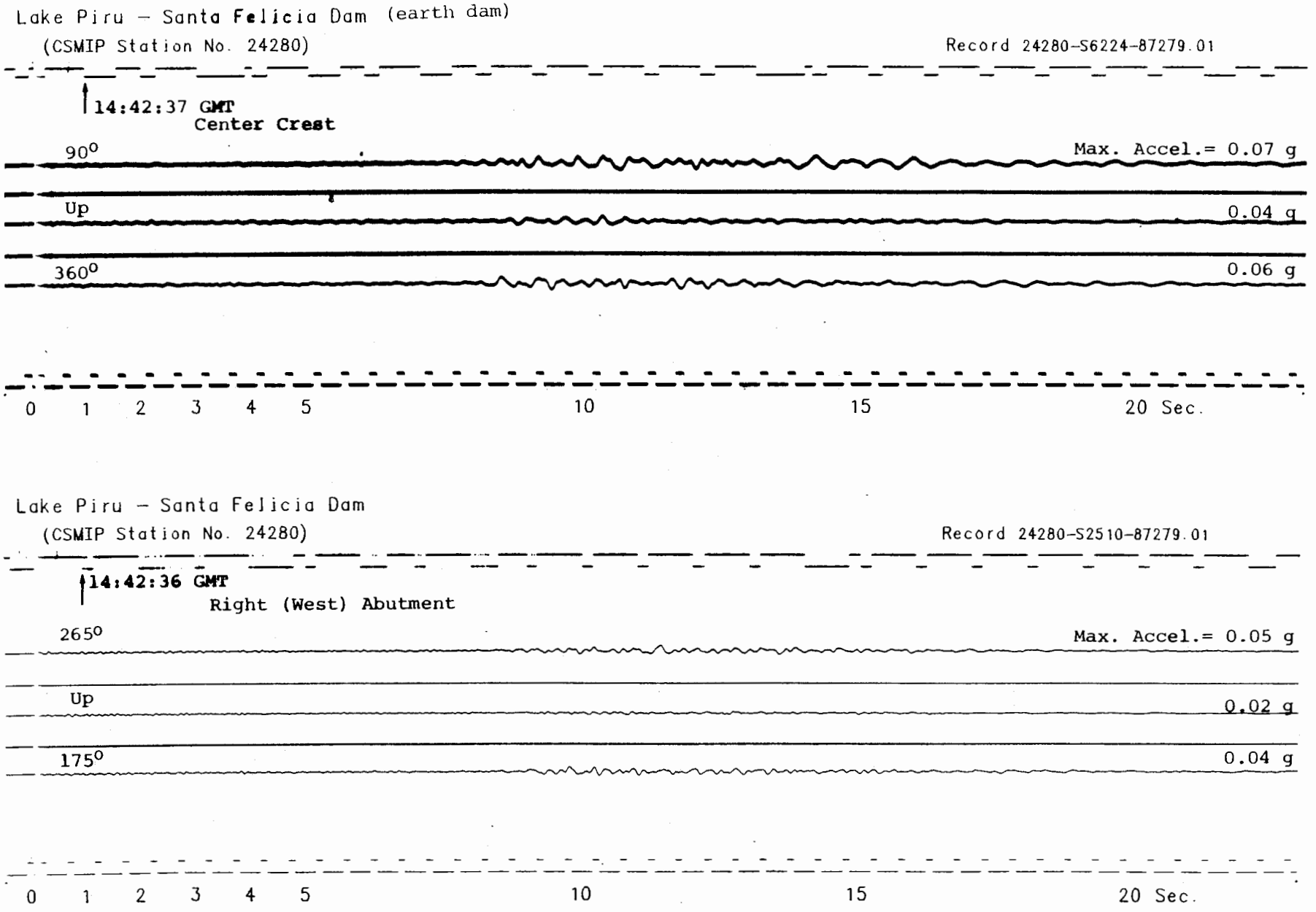

Lake Mathews - Dike 1
(CSMIP Station No. 13326)
14:42:33 GMT
Left Crest
Record 13326-R0493-87278.01
75°
Max. Accel.= 0.04 g
Up
0.04 g
345°
0.05 g
Center Crest
Record 13326-S2565-87278.02
75°*
0.05 g
Up
0.03 g
345°#
0.06 g
Left Abutment
Record 13326-R0470-87278.01
75°
0.05 g
Up
0.03 g
345°
0.07 g
* Parallel to dam crest
# Transverse to dam crest
0 1 2 3 4 5 10 15 20 Sec.


Wood Ranch Reservoir – Main Dam and Dikes (earth dam)
(CSMIP Station No. 24251)
Record 24251-S2586-87280.01
Main Dam: Center Crest - 335°
Max. Accel.= 0.03 g
" Up
0.02 g
" 245°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.


Wood Ranch Reservoir – Main Dam and Dikes
(CSMIP Station No. 24251)
Record 24251-S2457-87280.01
14:42:41 GMT
Spillway: 335°
Max. Accel.= 0.03 g
" Up
0.01 g
" 245°
0.03 g
0 1 2 3 4 5 10 15 20 Sec.


Wood Ranch Reservoir – Main Dam and Dikes
(CSMIP Station No. 24251)
Record 24251-S2573-87280.01
Dike 1: Right Crest - 335°
Max. Accel.= 0.05 g
" Up
0.02 g
" 245°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.

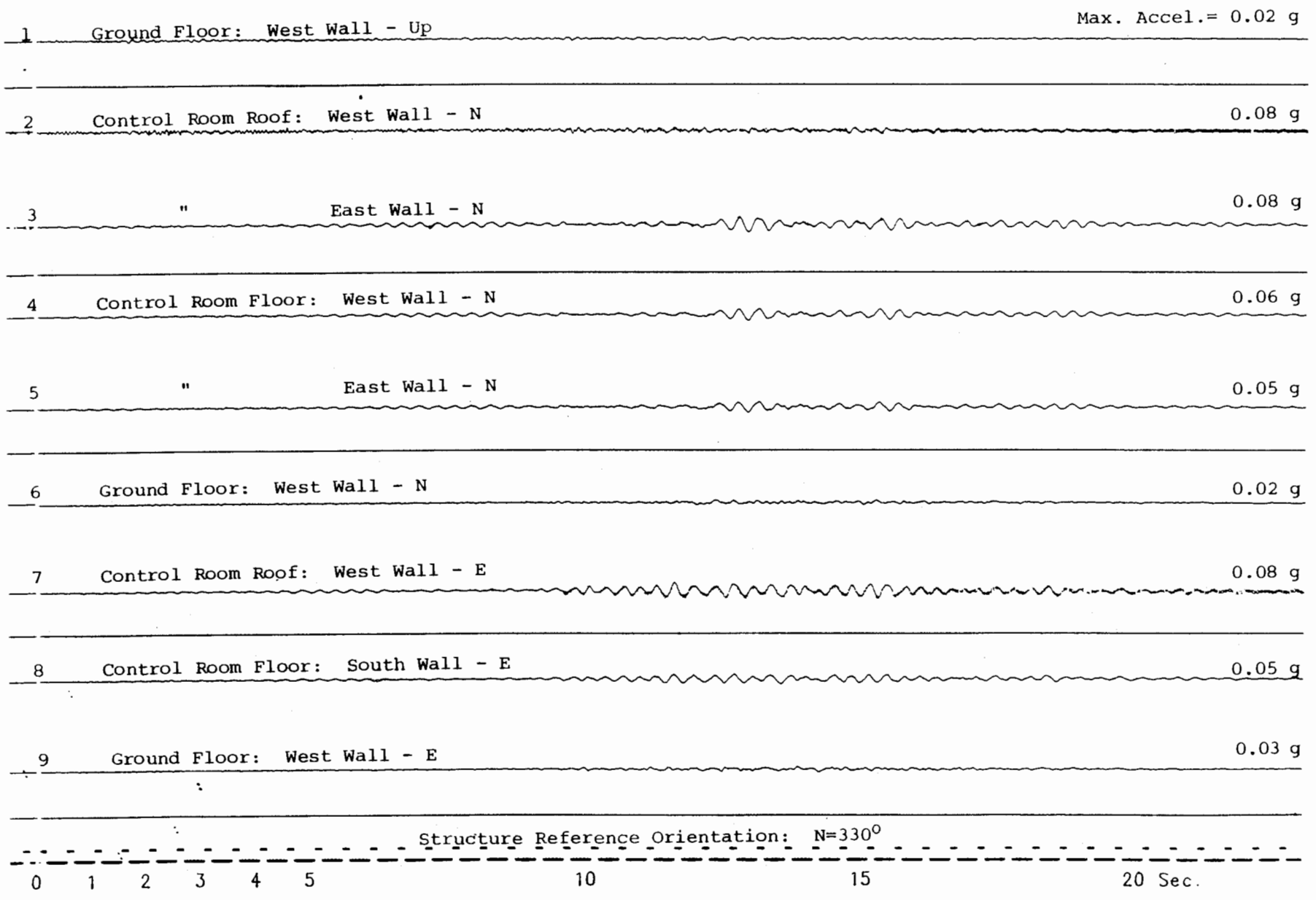

Wood Ranch Reservoir – Main Dam and Dikes
(CSMIP Station No. 24251)
Record 24251-S2574-87280.01
14:42:34 GMT
Dike 1: Left Crest - 335°
Max. Accel.= 0.05 g
" Up
0.02 g
" 245°
0.05 g
0 1 2 3 4 5 10 15 20 Sec.


Lake Piru – Santa Felicia Dam (earth dam)
(CSMIP Station No. 24280)
Record 24280-S6224-87279.01
14:42:37 GMT
Center Crest
90°
Max. Accel.= 0.07 g
Up
0.04 g
360°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.
Lake Piru – Santa Felicia Dam
(CSMIP Station No. 24280)
Record 24280-S2510-87279.01
14:42:36 GMT
Right (West) Abutment
265°
Max. Accel.= 0.05 g
Up
0.02 g
175°
0.04 g
0 1 2 3 4 5 10 15 20 Sec.

Lancaster – Airport Control Tower (5-story braced steel frame structure)
(CSMIP Station No. 24474)

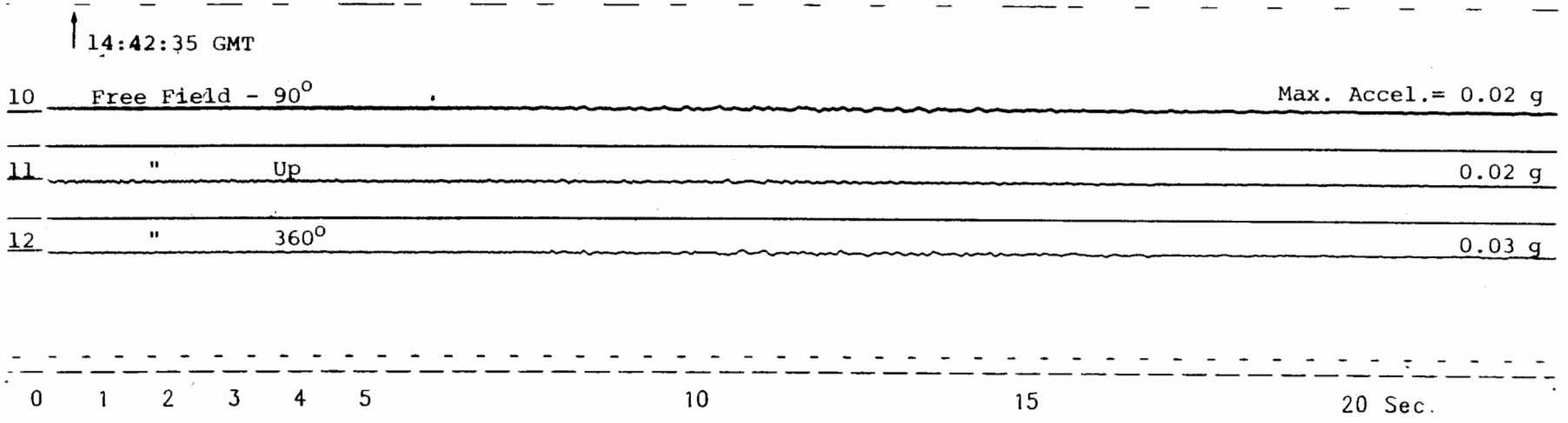
Record 24474-C0116-87280.01

14:42:33 GMT



Lancaster – Airport FF
(CSMIP Station No. 24475)

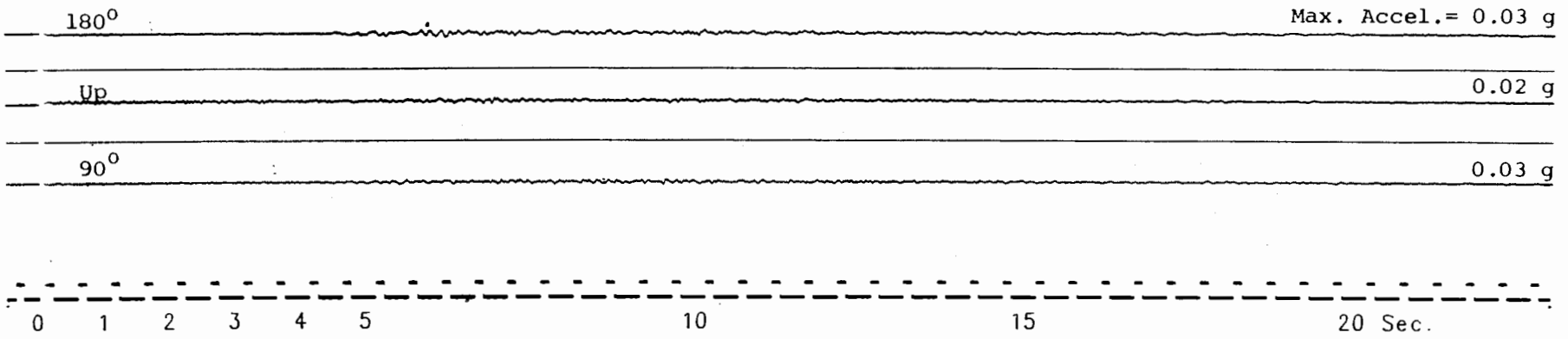
Record 24475-S4819-87280.01



Etiwanda – SCE Power Plant #3
(CSMIP Station No. 23466)

Record 23466-S3494-87276.02

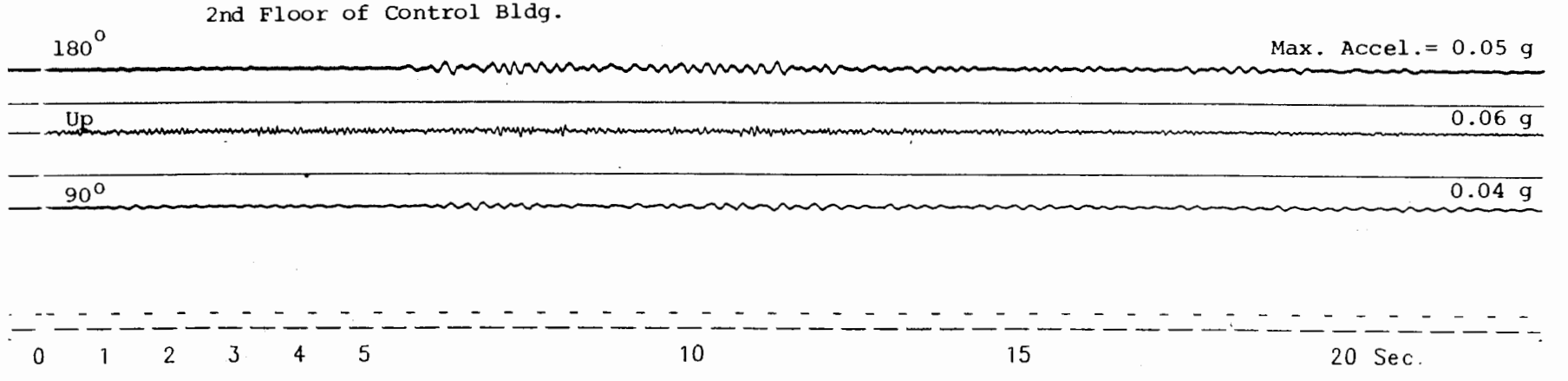
Ground Floor of Control Bldg.



Etiwanda – SCE Power Plant #3
(CSMIP Station No. 23466)

Record 23466-S3497-87276.10

2nd Floor of Control Bldg.

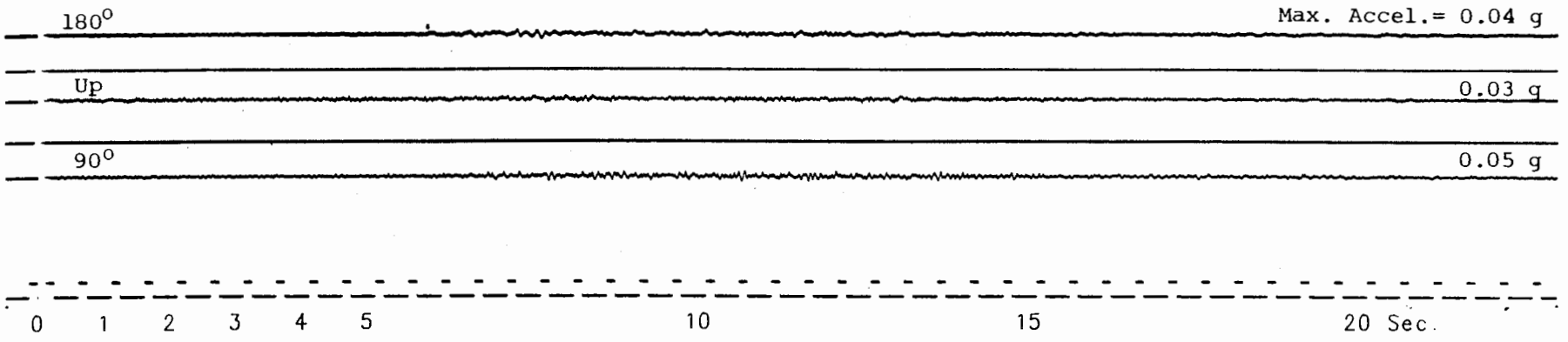


Etiwanda – SCE Power Plant #3

(CSMIP Station No. 23466)

Record 23466-S3500-87276.06

2nd Floor of Boiler Frame



(Instrument at top of Boiler Frames malfunctioned.)

Appendix

CSMIP Strong Motion Data from the 5.5 ML Aftershock of 4 October 1987

TABLE A1 - Strong Motion Data - Aftershock of 4 October 1987

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Max. Acceleration Comp.	Grnd. (g)	Struct. (g)	Pg.
---------- MAP AREA 1 ----------								
Alhambra Fremont School	24461	1-story bldg.	5	39.9	270 Up 180	0.22 0.24 0.18		181
San Marino Southwestern Academy 2800 Monterey Rd.	24401	1-story bldg.	6	40.0	360 Up 270	0.21 0.09 0.18		181
Los Angeles CSULA Admin. Bldg.	24468	8-story bldg. (16 sensors)	7	---		##		
Los Angeles Obregon Park	24400	1-story bldg.	8	41.0	360 Up 270	0.33 0.09 0.35		182
Altadena Eaton Canyon Park	24402	1-story bldg.	12	42.2	90 Up 360	0.20 0.14 0.30		182
Los Angeles Sears Warehouse	24463	5-story bldg. (13 sensors)	12	---	350 Up 260	0.24 0.08 0.12	0.35 -- 0.18	186
Downey County Maint. Bldg. 11283 S. Garfield Ave	14368	1-story bldg.	17	---	270 Up 180	0.06 0.07 0.06		183
Mt. Wilson Caltech Seismic Station	24399	Seismic Vault	18	41.9	90 Up 360	0.16 0.09 0.15		183
Los Angeles 116th St. School	14403	1-story bldg.	22	43.4	360 Up 270	0.14 0.05 0.15		184
Los Angeles Hollywood Storage Bldg.	24236	14-story bldg. (12 sensors)	22	---	90 Up 360	0.04 0.03 0.07	0.08 -- 0.13	
Los Angeles Hollywood Storage Bldg. FF	24303	Instr. shltr. H	22	---	90 Up 360	0.06 0.05 0.08		

TABLE A1 - Strong Motion Data - Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Cogswell Reservoir Cogswell Dam	23210	Earth dam (9 sensors)	23	42.5	150 Up 60	0.04 0.03 0.04	0.09 0.07 0.10	
Inglewood Union Oil Yard 13707 S. Broadway	14196	Instr. shltr. A	25	43.9	90 Up 360	0.14 0.07 0.12		184
Burbank Cal. Fed. Savings Bldg.	24370	6-story bldg. (13 sensors)	23	---	130 Up 40	0.12 0.05 0.09	0.10 -- 0.06	
Burbank Pacific Manor	24385	10-story bldg. (16 sensors)	23	---	40 Up 310	0.12 0.03 0.09	0.31 -- 0.23	
Los Angeles Baldwin Hills	24157	Instr. shltr. A	25	43.7	90 Up 360	0.14 0.05 0.07		185
North Hollywood Sheraton-Universal Hotel	24464	20-story bldg. (16 sensors)	25	42.7	90 Up 360	0.04 0.02 0.04	0.07 -- 0.06	
Long Beach Rancho Los Cerritos	14242	Instr. shltr. H	27	44.4	90 Up 360	0.06 0.07 0.05		
Los Angeles Century City Bullock Department Store	24332	3-story bldg. (15 sensors)	29	---	51 Up 321	0.04 0.02 0.04	0.23 0.03 0.12	
Century City Los Angeles Country Club North	24389	Instr. shltr. H	30	51.6	90 Up 360	0.02 0.01 0.02		
Long Beach CSULB Eng. Bldg. 1	14311	5-story bldg. (9 sensors)	32	---	90 Up 360	0.06 0.02 0.05	0.20 -- 0.07	
Los Angeles UCLA Math-Science Bldg.	24231	6-story bldg. (12 sensors)	32	---	90 Up 360	0.02 0.02 0.02	0.02 -- 0.04	

TABLE A1 - Strong Motion Data, Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Long Beach City Hall	14533	15-story bldg. (16 sensors)	35	45.9	135 Up 45	0.02 0.01 0.02	0.03 0.04 0.02	
Pacoima Kagel Canyon LA Co. Fire Sta. #74	24088	1-story bldg.	35	49.6	90 Up 360	0.06 0.03 0.04		
Long Beach Harbor Admin. Bldg.	14323	7-story bldg. (18 sensors)	36	52.4	90 Up 360	0.03 0.01 0.02	0.03 -- 0.05	
Long Beach Harbor Admin. Bldg. FF	14395	Instr. shltr. H	36	52.0	90 Up 360	0.03 0.02 0.02		
Arleta Nordhoff Ave Fire Sta.	24087	1-story bldg.	36	---	270 Up 180	0.02 0.04 0.02		
Van Nuys Holiday Inn	24386	7-story bldg. (16 sensors)	38	---	360 Up 270	0.04 0.02 0.05	0.03 -- 0.06	
Tarzana Cedar Hill Nursery 18320 Tarzana Dr.	24436	Instr. shltr. H	41	---	90 Up 360	0.09 0.07 0.08		185
---------- MAP AREA 2 ----------								
Temecula CDF Fire Station	13172	Instr. shltr. H	109	70.9	90 Up 360	0.02 0.01 0.02		
Hemet Valley Hospital	12267	4-story bldg. (10 sensors)	111	---	315 Up 225	0.01 0.01 0.01	0.01 -- 0.03	
---------- MAP AREA 3 ----------								
Vasquez Rocks Park	24047	Instr. shltr. A	51	53.1	90 Up 360	0.07 0.03 0.07		
Palmdale Holiday Inn FF	24521	Instr. shltr. H	57	---	272 Up 2	0.01 0.01 0.01		

TABLE A1 - Strong Motion Data, Area 1 (Continued)

Station Name	No.	Structure Type,Size*	Epicenter Dist.**	Trigger Time#	Comp.	Max. Acceleration Grnd. (g)	Struct. (g)	Pg.
Lake Hughes #4B	24523	Instr.	73	59.6	113	0.02		
Camp Mendenhall		shltr. A			Up	0.01		
					23	0.01		

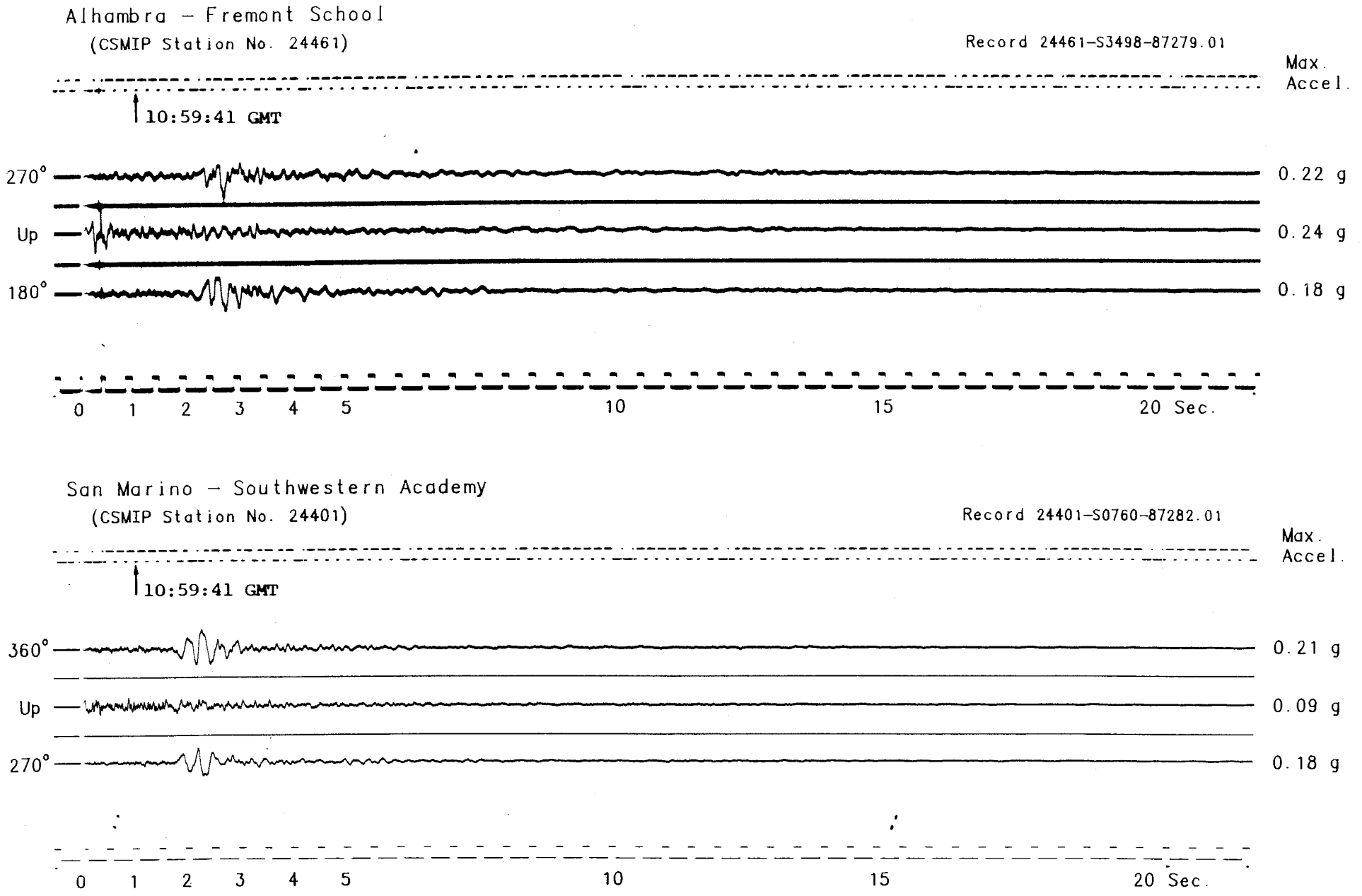
Footnotes:

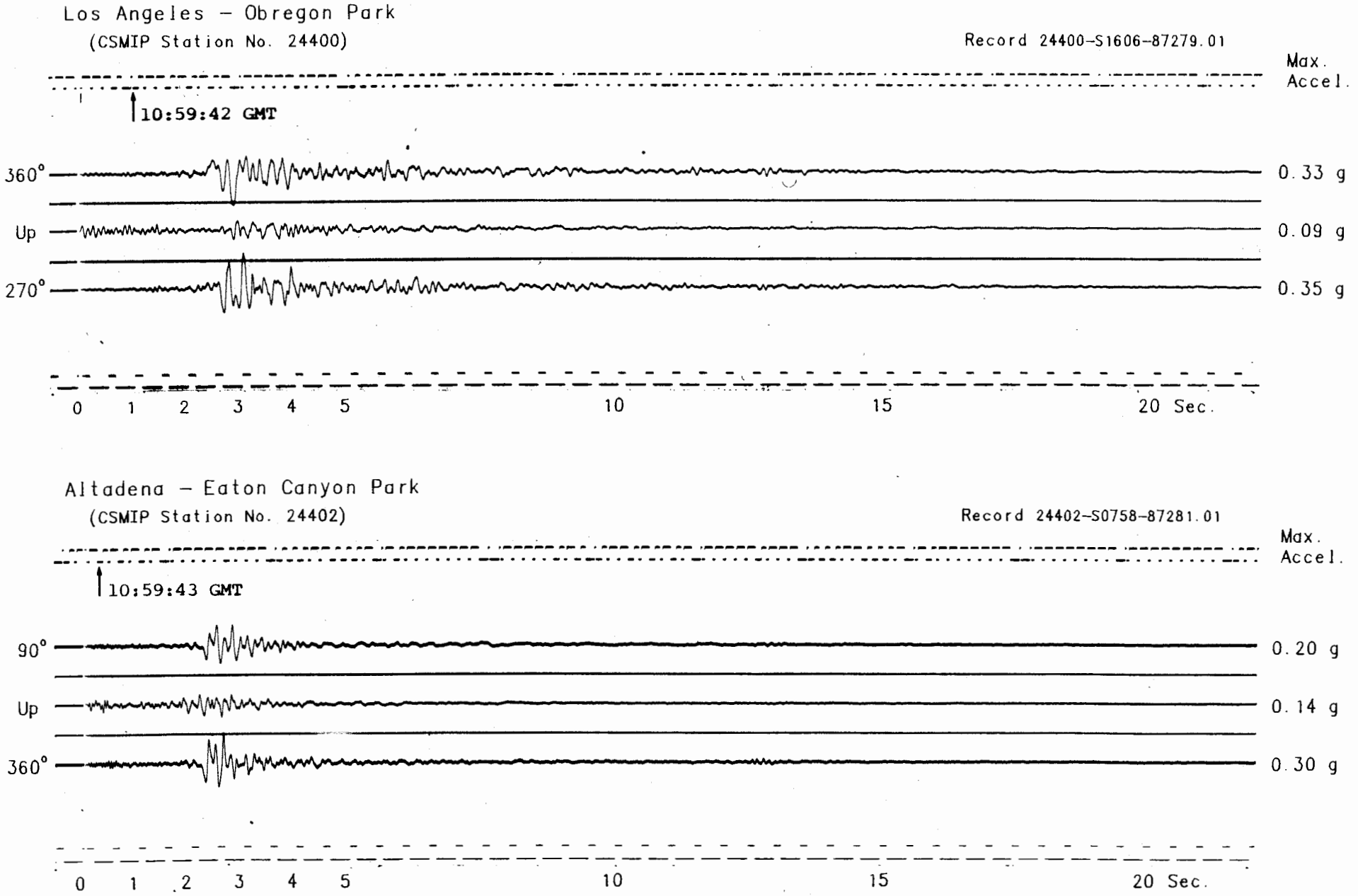
* - Instrument shelter types:
Instr. shltr. A - small prefabricated metal building
Instr. shltr. H - small fiberglass shelter

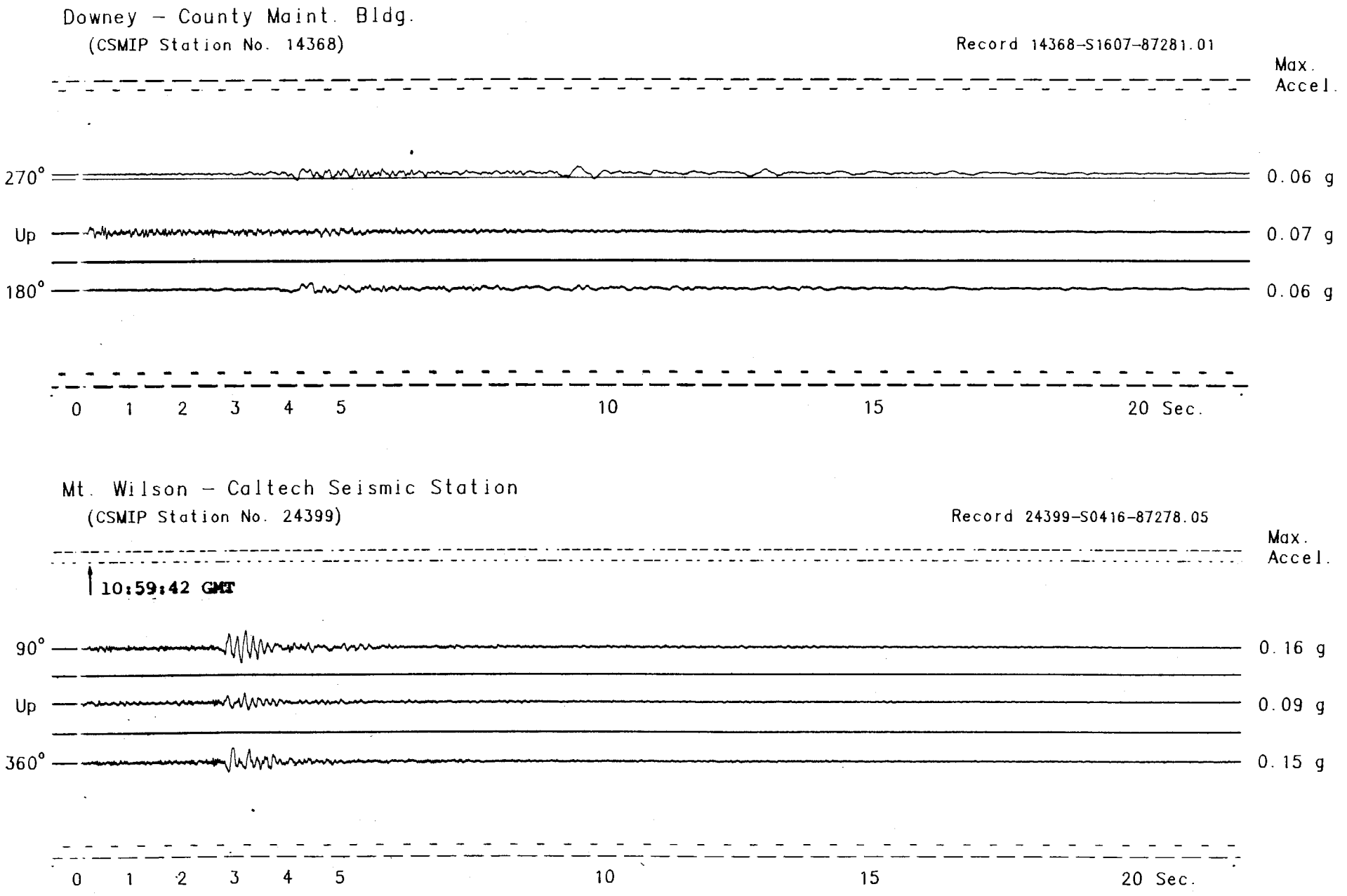
** - Distance given (in km) relative to the presently estimated epicenter at 34.070N, 118.098W.

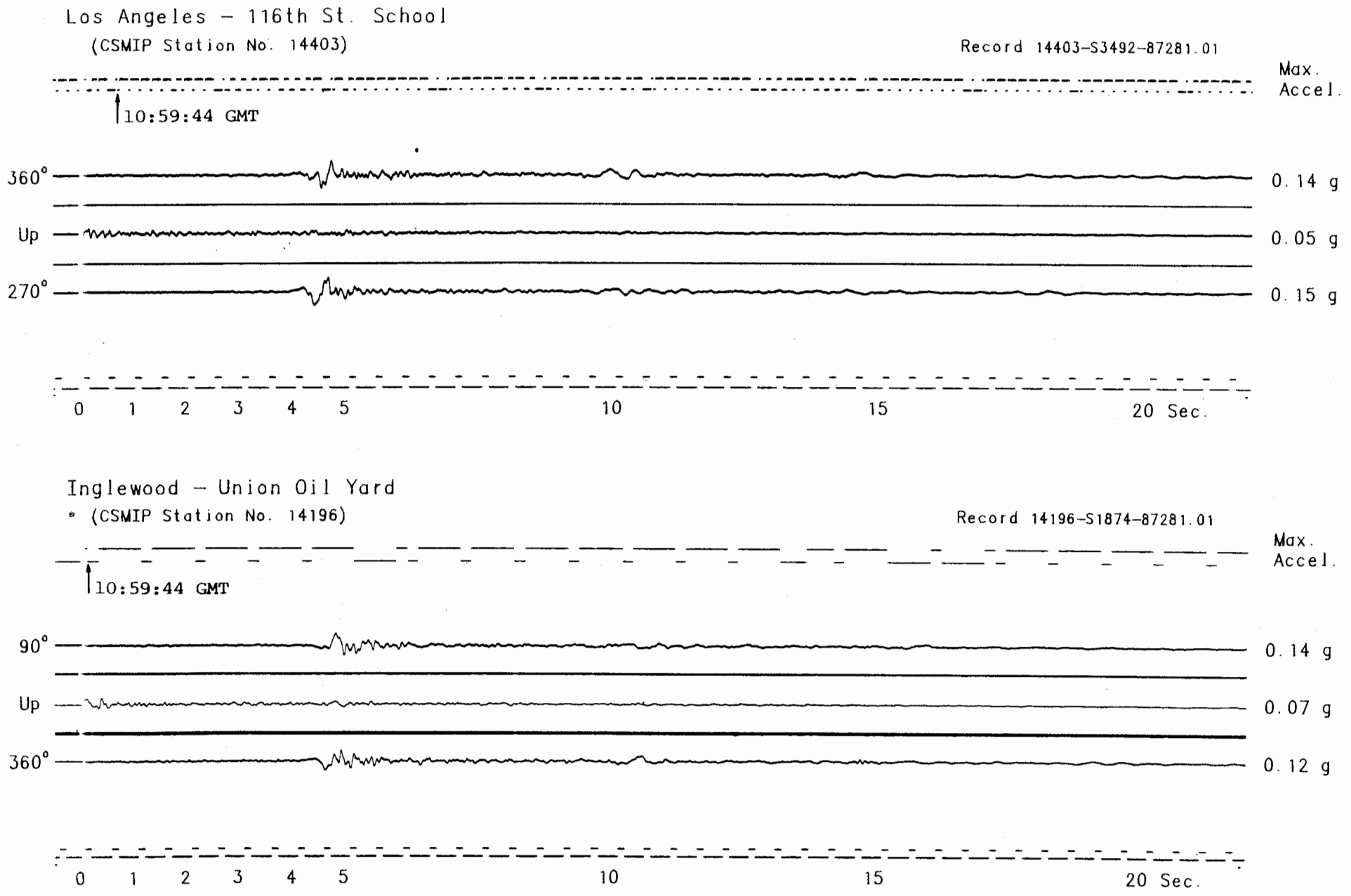
\# - Accelerograph trigger time, when present, seconds after 10:59 GMT on 4 October 1987.

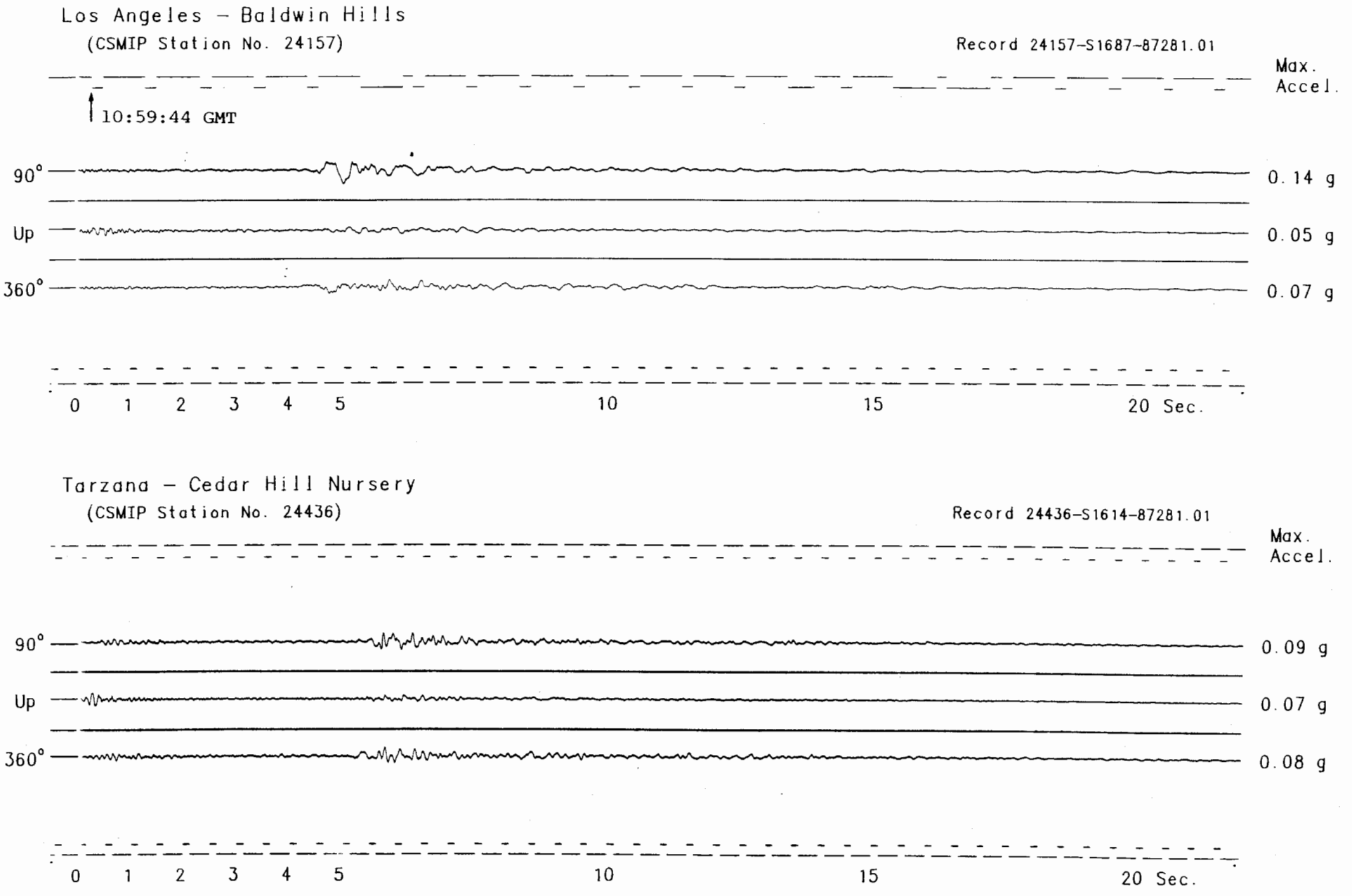
- Instrument not triggered, instrument malfunction.


Alhambra – Fremont School
(CSMIP Station No. 24461)
Record 24461-S3498-87279.01
Max. Accel.
10:59:41 GMT
270°
0.22 g
Up
0.24 g
180°
0.18 g
0 1 2 3 4 5 10 15 20 Sec.
San Marino – Southwestern Academy
(CSMIP Station No. 24401)
Record 24401-S0760-87282.01
Max. Accel.
10:59:41 GMT
360°
0.21 g
Up
0.09 g
270°
0.18 g
0 1 2 3 4 5 10 15 20 Sec.


Los Angeles – Obregon Park
(CSMIP Station No. 24400)
Record 24400-S1606-87279.01
Max. Accel.
10:59:42 GMT
360°
0.33 g
Up
0.09 g
270°
0.35 g
0 1 2 3 4 5 10 15 20 Sec.
Altadena – Eaton Canyon Park
(CSMIP Station No. 24402)
Record 24402-S0758-87281.01
Max. Accel.
10:59:43 GMT
90°
0.20 g
Up
0.14 g
360°
0.30 g
0 1 2 3 4 5 10 15 20 Sec.

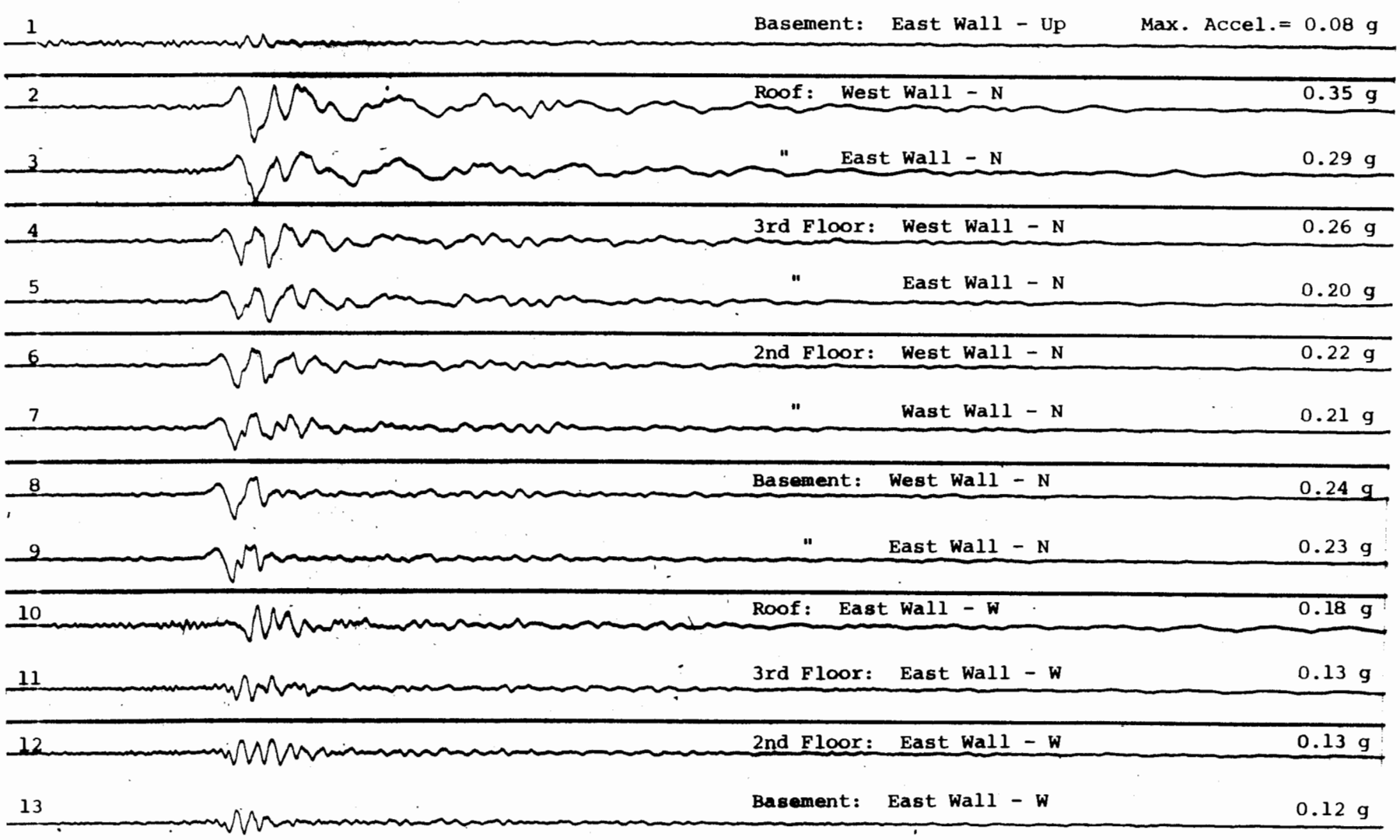

Downey – County Maint. Bldg.
(CSMIP Station No. 14368)
Record 14368-S1607-87281.01
Max. Accel.
270°
0.06 g
Up
0.07 g
180°
0.06 g
0 1 2 3 4 5 10 15 20 Sec.
Mt. Wilson – Caltech Seismic Station
(CSMIP Station No. 24399)
Record 24399-S0416-87278.05
Max. Accel.
10:59:42 GMT
90°
0.16 g
Up
0.09 g
360°
0.15 g
0 1 2 3 4 5 10 15 20 Sec.


Los Angeles – 116th St. School
(CSMIP Station No. 14403)
Record 14403-S3492-87281.01
Max. Accel.
10:59:44 GMT
360°
0.14 g
Up
0.05 g
270°
0.15 g
0 1 2 3 4 5 10 15 20 Sec.
Inglewood – Union Oil Yard
(CSMIP Station No. 14196)
Record 14196-S1874-87281.01
Max. Accel.
10:59:44 GMT
90°
0.14 g
Up
0.07 g
360°
0.12 g
0 1 2 3 4 5 10 15 20 Sec.


Los Angeles – Baldwin Hills
(CSMIP Station No. 24157)
Record 24157-S1687-87281.01
Max. Accel.
10:59:44 GMT
90°
0.14 g
Up
0.05 g
360°
0.07 g
0 1 2 3 4 5 10 15 20 Sec.
Tarzana – Cedar Hill Nursery
(CSMIP Station No. 24436)
Record 24436-S1614-87281.01
Max. Accel.
90°
0.09 g
Up
0.07 g
360°
0.08 g
0 1 2 3 4 5 10 15 20 Sec.

Los Angeles – Sears Warehouse
(CSMIP Station No. 24463)

Record 24463-C0218-87281.01



List of CSMIP Reports and Data Tapes

LIST OF CSMIP REPORTS AND DATA TAPES

California Department of Conservation
Division of Mines and Geology
Office of Strong Motion Studies
California Strong Motion Instrumentation Program (CSMIP)

AVAILABLE REPORTS:

Title	Number
I. Earthquake Data Reports:	
CSMIP Strong-Motion Records from the Chalfant Valley, California Earthquakes of July and August 1986 (in press)	OSMS 86-06
CSMIP Strong-Motion Records from the Palm Springs, California Earthquake of 8 July 1986	OSMS 86-05
Selected Accelerograms from the Redlands, California Earthquake of October 2, 1985 (Including first records from a Base-Isolated Building)	OSMS 85-02
CSMIP Strong-Motion Records from the Bishop, California Earthquake of 23 November 1984	OSMS 84-12
CDMG Strong-Motion Records from the Morgan Hill, California Earthquake of 24 April 1984	OSMS 84-7
Preliminary Summary of CDMG Strong-Motion Records from the 2 May 1983 Coalinga, California, Earthquake	OSMS 83-5.2
Strong-Motion Records from the Mammoth Lakes, California Earthquake of 6 January 1983	OSMS 83-1.1
Strong-Motion Records Recovered from the Mammoth Lakes, California, Earthquake of 30 September 1981	OSMS 81-10.1
Strong-Motion Records Recovered from the Westmorland, California, Earthquake of 25 April 1981	OSMS 81-5.1
Strong-Motion Records Recovered from the Trindad-Offshore, California, Earthquake of 8 November 1980	OSMS 80-11.1
Strong-Motion Records from the Livermore Earthquakes of 24 and 26 January 1980	PR 28
Strong-Motion Records from the Mammoth Lakes Earthquakes of May 1980	PR 27
Compilation of Strong-Motion Records and Preliminary Data from the Imperial Valley Earthquake of 15 October 1979	PR 26
Compilation of Strong-Motion Records from the Coyote Lake Earthquake of 6 August 1979	PR 25
Compilation of Strong-Motion Records Recovered from the Bishop, California, Earthquake of 4 October 1978	OSMS 78-7.1

Title	Number
Compilation of Strong-Motion Records Recovered from the Santa Barbara Earthquake of 13 August 1978	PR 22
Catalog of Strong Motion Accelerograph Records Recovered by Office of Strong Motion Studies During 1982	SR 154A
Catalog of Strong Motion Accelerograph Records Recovered by Office of Strong Motion Studies before January 1, 1982	SR 154
II. Processed Data Reports:	
Processed Strong Motion Data from the Palm Springs Earthquake of 8 July 1986; Part I Ground-Response Records	OSMS 87-01
Processed Strong Motion Data from the San Salvador Earthquake of October 10, 1986	OSMS 86-07
Processed Data from the Strong-Motion Record Obtained at a Base-Isolated Building in Rancho Cucamonga, California during the Redlands Earthquake of 2 October 1985	OSMS 86-01
Processed Data from Strong-Motion Records of the Morgan Hill Earthquake of 24 April 1984: Part I Ground-Response Records	OSMS 85-04
Processed Data from Strong-Motion Records of the Morgan Hill Earthquake of 24 April 1984: Part II Structural-Response Records	OSMS 85-05
Processed Data from the Strong-Motion Records of the Imperial Valley Earthquake of 15 October 1979. Final Results	SP 65
Processed Data from the San Juan Bautista 101/156 Separation Bridge and the San Juan Bautista Freefield Records from the Coyote Lake Earthquake 6 August 1979	SP 64
Processed Data from the Gilroy Array and Coyote Creek Records, Coyote Lake, California, Earthquake 6 August 1979 (Note: Does not include San Juan Bautista records)	PR 24
Processed Data from the Strong-Motion Records of the Santa Barbara Earthquake of 13 August 1978. Final Results (in three volumes)	SR 144
III. Other Reports:	
Standard Tape Format of CSMIP Strong-Motion Data Tapes	OSMS 85-03
California Strong-Motion Instrumentation Program: Construction and Installation Notes for a Ground-Response Station.	OSMS 85-01

There is a nominal charge for these reports.

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AVAILABLE STRONG-MOTION DATA TAPES:

Tape Name	Description
SANTBARB78	Santa Barbara earthquake of 13 August 1978; Vol. 1, 2, and 3 data.
IMPERIAL79	Imperial Valley earthquake of 15 October 1979 (County Services Bldg. and other CSMIP stations); Vol. 1, 2, and 3 data.
COYOTE79A	Coyote Lake earthquake of 6 August 1979, Gilroy Array stations; Vol. 1, 2, and 3 data.
COYOTE79B	Coyote Lake earthquake of 6 August 1979, San Juan Bautista overpass and nearest free-field station; Vol. 1, 2, and 3 data.
COYOTE79C	Coyote Lake earthquake of 6 August 1979, Halls Valley station; Vol. 1, 2, and 3 data.
MAMMOTH80A	Mammoth Lakes earthquakes of 25 May 1980 at 09:34 and 09:49 PDT; Vol. 1, 2, and 3 data.
MAMMOTH80B	Mammoth Lakes earthquakes of 25 May 1980 at 12:45 and 13:36 PDT; Vol. 1, 2, and 3 data.
MAMMOTH80C	Mammoth Lakes earthquakes of 26 May 1980 at 11:58 PDT and 27 May 1980 at 07:51 PDT, Vol. 1, 2, and 3 data.
WESTMOR81	Westmorland earthquake of 26 April 1981; Vol. 1, 2, and 3 data.
COALINGA83	Coalinga earthquake of 2 May 1983, 16:43 PDT; Vol. 2 and 3 data for 47 records.
COALINGA83-IA	Coalinga earthquake of 2 May 1983, Vol. 1 data for first 22 records.
COALINGA83-IB	Coalinga earthquake of 2 May 1983, Vol. 1 data for remaining 25 records.
COALINGA83AS	Vol. 2 and 3 data for eight aftershocks of the Coalinga 2 May 1983 earthquake. The aftershocks occurred between 8 May and 11 September 1983, and were of magnitude (ML) 4.3 - 6.0.
COALINGA83AS-I	Uncorrected acceleration data (Vol. 1) for the Coalinga aftershock records included on the tape COALINGA83AS.
RIODEL8083	Processed data from the Highway 101 Overpass at Rio Dell for the earthquakes of: 8 Nov 1980 (6.9ML Trinidad-Offshore); 16 Dec 1982 (4.4ML Rio Dell) and 24 Aug 1983 (5.5ML Cape Mendicino Offshore); Vol. 1, 2, and 3 data.
MAMMOTH83	Mammoth Lakes earthquakes of 7 Jan 1983 at 01:38 and 03:24 GMT; Vol. 1, 2, and 3 data.

Tape Name	Description
MORGANHILL84-IG	Morgan Hill earthquake of 24 April 1984; Vol. 1 data for 19 ground-response records.
MORGANHILL84-G	Morgan Hill earthquake of 24 April 1984; Vol. 2 and 3 data for 19 ground-response records.
MORGANHILL84-IS	Morgan Hill earthquake of 24 April 1984; Vol. 1 data for 9 structural-response records.
MORGANHILL84-S	Morgan Hill earthquake of 24 April 1984; Vol. 2 and 3 data for 9 structural-response records.
REDLANDS85	Redlands earthquake of 2 October 1985; Vol. 1, 2 and 3 data for the Law & Justice Building at Rancho Cucamonga.
HOLLISTER86	Hollister earthquake of 26 January 1986; Vol. 1, 2 and 3 data.
MTLEWIS86	Mt. Lewis earthquake of 31 March 1986; Vol. 1, 2 and 3 data.
SANSALVADOR86	San Salvador earthquake of October 10, 1986; Vol. 1, 2 and 3 data.
PALMSPRINGS86-IG	Palm Springs earthquake of 8 July 1986; Vol. 1 data for 18 ground-response records.
PALMSPRINGS86-G	Palm Springs earthquake of 8 July 1986; Vol. 2 and 3 data for 18 ground-response records.

Footnotes:

Vol. 1 data - uncorrected accelerations.
Vol. 2 data - instrument and baseline-corrected acceleration, velocity, and displacement.
Vol. 3 data - Response and Fourier amplitude spectra.

The magnetic tapes are provided at cost. Included with each tape is a copy of either the processed data report (if available) or the plots of the data.

Requests for the reports and data tapes and/or for additional information should be addressed to:

Office of Strong Motion Studies
California Division of Mines and Geology
630 Bercut Drive
Sacramento, CA 95814

Phone: (916) 322-3105

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PROCESSED ACCELEROGRAMS ON CSMIP DATA TAPES:

Tape: SANTBARB78

Santa Barbara Earthquake of 13 Aug 1978, 15:54 PDT, ML=5.1(CIT)

UCSB Goleta Free Field, 3 channels
Santa Barbara - UCSB North Hall, 9 channels
Santa Barbara - Freitas Building, 9 channels
Ventura - Holiday Inn, 15 channels

Tape: IMPERIAL79

Imperial Valley Earthquake of 15 Oct 1979, 16:17 PDT, ML=6.6(CIT)

Niland, 3 channels
Westmorland, 3 channels
Westmorland, aftershock record, 3 channels
El Centro - Imperial County Services Bldg. Free Field, 3 channels
El Centro - Imperial County Services Building, 13 channels
El Centro - Highway 8/Meloland Road Overpass, 13 channels

Tape: COYOTE79A

Coyote Lake Earthquake of 6 Aug 1979, 10:05 PDT, ML=5.9(BRK)

Gilroy #1, 3 channels
Gilroy #2, 3 channels
Gilroy #3, 3 channels
Gilroy #4, 3 channels
Gilroy #6, 3 channels
Coyote Lake Dam (San Martin), 3 channels

Tape: COYOTE79B

Coyote Lake Earthquake of 6 Aug 1979, 10:05 PDT, ML=5.9(BRK)

San Juan Bautista - Fire Station, 3 channels
San Juan Bautista - Highway 101/156 Overpass, 12 channels

Tape: COYOTE79C

Coyote Lake Earthquake of 6 Aug 1979, 10:05 PDT, ML=5.9(BRK)

Halls Valley, 3 channels

Tape: MAMMOTH80A

Mammoth Lakes Earthquake of 25 May 1980, 09:34 PDT, ML=6.1(BRK),6.4(CIT)

Convict Creek, 3 channels
Long Valley Dam, 22 channels
Mammoth Lakes - High School Gym, 10 channels

Aftershock at 25 May 1980, 09:36 PDT, ML=unknown

Mammoth Lakes - High School Gym, 10 channels

Mammoth Lakes Earthquake of 25 May 1980, 09:49 PDT, ML=6.0(BRK),5.8(CIT)

Convict Creek, 3 channels
Long Valley Dam, 3 channels
Mammoth Lakes - High School Gym, 4 channels

Tape: MAMMOTH80B

Mammoth Lakes Earthquake of 25 May 1980, 12:45 PDT, ML=6.1(BRK),6.5(CIT)

Convict Creek, 3 channels
Long Valley Dam, 19 channels

Mammoth Lakes Earthquake of 25 May 1980, 13:36 PDT, ML=5.7(BRK),5.5(CIT)

Convict Creek, 3 channels
Long Valley Dam, 19 channels

Aftershock approx 58 seconds after 25 May 1980, 13:36 Event, ML=unknown

Convict Creek, 3 channels

Tape: MAMMOTH80C

Mammoth Lakes Earthquake of 26 May 1980, 11:58 PDT, ML=5.7(BRK),4.9(CIT)

Convict Creek, 3 channels
Long Valley Dam, 9 channels

Mammoth Lakes Earthquake of 27 May 1980, 07:51 PDT, ML=6.2(BRK),6.3(CIT)

Convict Creek, 3 channels
Long Valley Dam, 22 channels
Bishop - Paradise Lodge, 3 channels
Benton, 3 channels

Tape: WESTMOR81

Westmorland Earthquake of 26 Apr 1981, 05:09 PDT, ML=5.7(CIT),6.3(BRK)

Westmorland, 3 channels
Niland, 3 channels

Coalinga Earthquake of 2 May 1983, 16:42 PDT, ML=6.5(BRK)

Cantua Creek School, 3 channels
Slack Canyon, 3 channels
Parkfield - Vineyard Canyon 2E, 3 channels
Parkfield - Vineyard Canyon 1E, 3 channels
Parkfield - Vineyard Canyon 1W, 3 channels
Parkfield - Vineyard Canyon 2W, 3 channels
Parkfield - Vineyard Canyon 3W, 3 channels
Parkfield - Vineyard Canyon 4W, 3 channels
Parkfield - Vineyard Canyon 5W, 3 channels
Parkfield - Vineyard Canyon 6W, 3 channels
Parkfield - Gold Hill 3E, 3 channels
Parkfield - Gold Hill 2E, 3 channels
Parkfield - Gold Hill 1W, 3 channels
Parkfield - Gold Hill 2W, 3 channels
Parkfield - Gold Hill 3W, 3 channels
Parkfield - Gold Hill 4W, 3 channels
Parkfield - Gold Hill 5W, 3 channels
Parkfield - Gold Hill 6W, 3 channels
Parkfield - Stone Corral 4E, 3 channels
Parkfield - Stone Corral 3E, 3 channels
Parkfield - Stone Corral 2E, 3 channels
Parkfield - Stone Corral 1E, 3 channels
Parkfield - Cholame 3E, 3 channels
Parkfield - Cholame 2E, 3 channels
Parkfield - Cholame 1E, 3 channels
Parkfield - Cholame 2WA, 3 channels
Parkfield - Cholame 3W, 3 channels
Parkfield - Cholame 4W, 3 channels
Parkfield - Cholame 4A W, 3 channels
Parkfield - Cholame 5W, 3 channels
Parkfield - Cholame 6W, 3 channels
Parkfield - Cholame 8W, 3 channels
Parkfield - Cholame 12W, 3 channels
Parkfield - Fault Zone 16, 3 channels
Parkfield - Fault Zone 15, 3 channels
Parkfield - Fault Zone 14, 3 channels
Parkfield - Fault Zone 12, 3 channels
Parkfield - Fault Zone 11, 3 channels
Parkfield - Fault Zone 10, 3 channels
Parkfield - Fault Zone 9, 3 channels
Parkfield - Fault Zone 8, 3 channels
Parkfield - Fault Zone 7, 3 channels
Parkfield - Fault Zone 6, 3 channels
Parkfield - Fault Zone 4, 3 channels
Parkfield - Fault Zone 3, 3 channels
Parkfield - Fault Zone 2, 3 channels
Parkfield - Fault Zone 1, 3 channels

* Tape COALINGA83 contains the Vol. 2 and 3 data for the listed accelerograms; the corresponding Vol. 1 data are on tapes COALINGA83-IA and COALINGA83-IB.

Tapes: COALINGA83AS, COLINGA83AS-I **

Records from 8 aftershocks of the Coalinga Earthquake of 2 May 1983

Event #2: 8 May 1983, 19:49 PDT, ML=5.1(BRK)

Coalinga - Sulphur Baths, 3 channels
Coalinga - CHP, 3 channels
Anticline Ridge - Palmer Ave., 3 channels
Oil Fields - Skunk Hollow, 3 channels
Harris Ranch, 3 channels

Event #3: 10 June 1983, 20:10 PDT, ML=5.1(BRK)
Event #4: 9 July 1983, 00:41 PDT, ML=5.3(BRK)
Event #5: 21 July 1983, 19:40 PDT, ML=6.0(BRK)
Event #6: 21 July 1983, 20:43 PDT, ML=5.0(BRK)
Event #7: 25 July 1983, 15:31 PDT, ML=5.1(BRK)
Event #8: 9 Sept 1983, 02:16 PDT, ML=5.3(BRK)
Event #9: 11 Sept 1983, 04:48 PDT, ML=4.3(BRK)

For each of events #3 through #9:

Coalinga - Sulphur Baths, 3 channels
Coalinga - CHP, 3 channels

** Vol. 1 data are on tape COALINGA83AS-I; Vol. 2 and 3 data are on tape COALINGA83AS.

Tape: RIODEL8083

Trinidad Offshore Earthquake of 8 Nov 1980, 02:27 PST, ML=6.9(BRK)

Rio Dell - Highway 101/Painter Street Overpass, 18 channels

Rio Dell Earthquake of 15 Dec 1982, 22:53 PST, ML=4.4(BRK)

Rio Dell - Highway 101/Painter Street Overpass, 15 channels

Cape Mendocino Offshore Earthquake of 24 Aug 1983, 06:36 PDT, ML=5.5(BRK)

Rio Dell - Highway 101/Painter Street Overpass, 15 channels

Tape: MAMMOTH83

Mammoth Lakes Earthquake of 6 Jan 1983, 17:38 PST, ML=5.2(BRK)

Convict Creek, 3 channels

Mammoth Lakes Earthquake of 6 Jan 1983, 19:24 PST, ML=5.4(BRK)

Convict Creek, 3 channels

Tapes: MORGANHILL84-G, MORGANHILL84-IG ***

Ground-response records from the Morgan Hill Earthquake of
24 Apr 1984, 13:15 PST, ML=6.2(BRK)

Halls Valley, 3 channels
Coyote Lake Dam (San Martin), 3 channels
Gilroy #7 - Mantelli Ranch, 3 channels
Gilroy #6, 3 channels
Gilroy #4, 3 channels
Gilroy #3, 3 channels
Gilroy #2, 3 channels
Gilroy #1, 3 channels
Gilroy - Gavilan College, 3 channels
Corralitos, 3 channels
Capitolas, 3 channels
Santa Cruz, 3 channels
San Juan Bautista - Fire Station, 3 channels
Los Banos, 3 channels
Agnews - State Hospital, 3 channels
Redwood City - APEEL #1, 3 channels
San Francisco - International Airport, 3 channels
Fremont - Mission San Jose, 3 channels
Hayward - APEEL #1E, 3 channels

Tapes: MORGANHILL84-S, MORGANHILL84-IS ***

Structural-response records from the Morgan Hill Earthquake of
24 Apr 1984, 13:15 PST, ML=6.2(BRK)

San Jose - Town Park Apartment Towers, 13 channels
San Jose - Great Western Savings Bldg., 13 channels
San Jose - Santa Clara County Bldg., 22 channels
Saratoga - West Valley College Gym, 11 channels
Watsonville - Telephone Bldg., 13 channels
Hollister - Glorietta Warehouse, 13 channels
South San Francisco - Kaiser Medical Center, 11 channels
San Juan Bautista - Highway 101/156 Overpass, 10 channels

*** Vol. 1 data are on tapes MORGANHILL84-IG and MORGANHILL84-IS; Vol. 2 and 3 data are on tapes MORGANHILL84-G and MORGANHILL84-S.

Tape: REDLANDS85

Redlands Earthquake of 2 Oct 1985, 16:44 PDT, ML=4.8(CIT)

Rancho Cucamonga - Law & Justice Building (base-isolated),
16 channels plus 3 free field channels

Tape: HOLLISTER86

Hollister Earthquake of 26 January 1986, 11:21 PST, ML=5.5(BRK)

SAGO South - Tunnel, 3 channels
SAGO South - Surface, 3 channels
Hollister - Glorietta Warehouse, 13 channels

Tape: MTLEWIS86

Mt. Lewis Earthquake of 31 March 1986, 03:56 PST, ML=5.8(BRK)

Halls Valley, 3 channels
San Jose - Santa Clara County Bldg., 22 channels
San Jose - Great Western Savings Bldg., 13 channels
San Jose - Town Park Apartment Towers, 13 channels

Tape: SANSALVADOR86

San Salvador Earthquake of 10 October 1986, 17:49 GMT, MS=5.4(CIG)

National Geographical Institute (IGN), 3 channels
Geotechnical Investigation Center (CIG), 3 channels
Institute Urban Construction (IVU), 2 channels
Hotel Camino Real (HCR) - Basement, 3 channels
Hotel Camino Real (HCR) - 2nd Floor, 3 channels
Hotel Camino Real (HCR) - Roof, 1 channel
Centro Americana University (UCA), 3 channels
Hotel Sheraton (HSH), 3 channels

Tapes: PALMSPRINGS86-G, PALMSPRINGS86-IG ****

Ground-response records from the Palm Springs Earthquake of
8 July 1986, 02:20 PDT, ML=5.6(CIT)

Desert Hot Springs, 3 channels
Palm Springs - Airport, 3 channels
Silent Valley - Poppet Flat, 3 channels
San Jacinto - Soboba, 3 channels
San Jacinto - Valley Cemetery, 3 channels
Hemet - Stetson Ave Fire Station, 3 channels
Winchester - Page Bros. Ranch, 3 channels
Winchester - Hidden Valley Farms, 3 channels
Winchester - Bergman Ranch, 3 channels
Murrieta Hot Springs - Collins Ranch, 3 channels
Landers - Fire Station, 3 channels
Joshua Tree - Fire Station, 3 channels
Indio - Coachella Canal, 3 channels
Temecula - CDF Fire Station, 3 channels
Puerta La Cruz, 3 channels
Riverside - Airport, 3 channels
Hesperia, 3 channels
Rancho Cucamonga - Law & Justice Center Free Field, 2 channels

**** Vol. 1 data are on tape PALMSPRINGS86-IG; Vol. 2 and 3 data are on tapes PALMSPRINGS86-G.