PROCESSED DATA FROM
THE STRONG-MOTION RECORDS OF
THE MORGAN HILL EARTHQUAKE
OF 24 APRIL 1984

PART I.
GROUND-RESPONSE RECORDS

CALIFORNIA DEPARTMENT OF CONSERVATION
DIVISION OF MINES AND GEOLOGY
OFFICE OF STRONG MOTION STUDIES
REPORT OSMS 85-04
PROCESSED DATA FROM
THE STRONG-MOTION RECORDS OF
THE MORGAN HILL EARTHQUAKE
OF
24 APRIL 1984

PART I. GROUND-RESPONSE RECORDS

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Report No. OSMS 85-04
California Strong Motion Instrumentation Program

California Department of Conservation
Division of Mines and Geology
Office of Strong Motion Studies
630 Ber cut Drive, Sacramento, California 95814

May 1986
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<td>List of CSMIP Reports and Data Tapes</td>
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INTRODUCTION

Strong motion records were recovered from nearly fifty stations of the California Strong Motion Instrumentation Program (CSMIP) following the Morgan Hill earthquake of April 24, 1984. Twenty-six of those stations were ground-response stations. This report presents results of the digitization and processing performed on the records obtained from nineteen of these stations. The unprocessed records for the remaining stations typically had maximum accelerations of 5% g or less, as shown in the data report by Shakal et al. (1984), and were not digitized. The results for the digitization of strong-motion records obtained at CSMIP structural-response stations are presented in an accompanying Part II report (Huang et al., 1985). Strong-motion records obtained by other agencies such as the U.S. Geological Survey (USGS) are described in the paper by Brady and Shakal (1985); the digitization results obtained by the USGS for those records are given in Brady et al. (1984).

EARTHQUAKE CHARACTERISTICS

The Morgan Hill earthquake occurred on April 24, 1984 on the Calaveras fault southeast of San Jose. Hakun et al. (1984) infer that the rupture propagated from the epicenter near Halls Valley (southeast of San Jose) to the southeast, terminating in the vicinity of Morgan Hill. Most of the residential damage was confined to an unincorporated area of Morgan Hill near the southern end of Anderson Lake. A maximum intensity of VIII (MMI) was assigned to this localized area. However, MMI VII more generally characterizes the intensity of the Morgan Hill earthquake (Stover,
specific reports on the earthquake damage and other aspects of the event are included in the compilation by Bennett and Sherburne (1984), and in a special issue of Earthquake Spectra (1985).

Using the USGS seismic network data, Cockerham and Eaton (1984) estimated the earthquake origin time and hypocenter given below. The local magnitude and the seismic moment obtained by Uhrhammer and Darragh (1984) are also given.

- **Epicenter**: 37.31 N, 121.68 W (USGS)
- **Focal Depth**: 8.4 Km (USGS)
- **Magnitude**: ML = 6.2 (BRK)
- **Moment**: \( Mo = 1.1 \times 10^{25} \text{ dyne-cm} \) (BRK)

CSMIP STATIONS AND INSTRUMENTATION

The locations of the earthquake epicenter and of the 19 SMIP ground-response stations for which data are included in this report are shown on the map in Figure 1. The locations of the eight instrumented structures for which data are included in the Part II report are also shown. The 19 ground-response stations are within the distance range of 4 to 79 km from the epicenter. For reference, the stations are listed in order of code number (three-digit code on the map) in Table 1A and are listed in alphabetical order in Table 1B. For each station, coordinates, site characteristics and maximum values of ground motion are given in Table 2. Table 2 also lists the distance of the station from the epicenter and from the nearest point on the fault inferred from the aftershock zone.

The 5.9 ML Coyote Lake earthquake of August 6, 1979 also generated records at eight of the nineteen ground-response stations.
considered here. These include Halls Valley, Coyote Lake Dam (San Martin), Gilroy #1, #2, #3, #4, #6, and the Fire Station in San Juan Bautista. The records are included in the data report by Porcella et al. (1979). The processed results for these records (except for the Halls Valley record) are available in the report by Brady et al. (1981) and Porter et al. (1983). The Halls Valley record has been subsequently digitized and the processed results are available from this office.

ACCELEROMETER DIGITIZATION AND PROCESSING

The digitization results presented in this report were obtained using a computer-driven optical scanning system. This facility is patterned after the system developed at the University of Southern California (Trifunac and Lee, 1979; Lee and Trifunac, 1979). In these systems, a direct photographic negative copy of the film accelerometer is mounted on a rotating drum, which is scanned by a photodensitometer. The photodensitometer is mounted on a carriage moving perpendicular to the rotational direction of the drum. The resulting x-y array of optical density values is converted to raw time series through several trace-reconstruction steps. Baseline and other corrections are then applied to this raw data to obtain the acceleration data for further processing and spectral analysis. The subsequent post-digitization processing is similar to that first developed at the California Institute of Technology (Trifunac and Lee, 1973). To improve the instrument correction procedure at high frequencies a change of operators was made as discussed in Shakal and Ragsdale (1984). Shakal and Ragsdale (1984) also give the results of noise floor analyses which guide the selection of filter
Fig. 1. Location of major faults in the San Francisco Bay area, the Morgan Hill earthquake epicenter, and the aftershock zone (stippled). Solid circles indicate the location of CHMP ground-response stations for which digitized records are presented in this report. The stations are identified by 3-digit codes which are referenced to station names in Table IA. The solid squares indicate the location of structural-response stations for which digitized records are presented in the accompanying Part II report.
### Table 1A
Station-Code Reference Table

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Alphabetical List of Stations

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UCOR/Lick Elect. Lab
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<th>Epicentral Dist.</th>
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** - Distance given relative to the epicenter at 37.309 N, 121.076W. Bracketed number is the distance to the nearest point on the fault inferred from the aftershock distribution.
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<td>4.5</td>
<td>5.00 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
<td>0.046</td>
<td>-2.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
<td>0.046</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>58376</td>
<td>37.4</td>
<td>90</td>
<td>2.4</td>
<td>2.50 sec</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>90</td>
<td>0.027</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>90</td>
<td>0.027</td>
<td>-0.4</td>
<td></td>
</tr>
<tr>
<td>58375</td>
<td>37.4</td>
<td>40</td>
<td>3.7</td>
<td>5.00 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>0.044</td>
<td>-0.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>0.044</td>
<td>-0.2</td>
<td></td>
</tr>
<tr>
<td>58232</td>
<td>37.1</td>
<td>50</td>
<td>3.4</td>
<td>3.33 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50</td>
<td>0.048</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50</td>
<td>0.048</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>56012</td>
<td>37.1</td>
<td>180</td>
<td>9.2</td>
<td>5.00 sec</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>180</td>
<td>0.062</td>
<td>-2.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>180</td>
<td>0.062</td>
<td>2.0</td>
<td></td>
</tr>
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<td>180</td>
<td>0.062</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>180</td>
<td>0.062</td>
<td>-2.4</td>
<td></td>
</tr>
</tbody>
</table>

## - Volume 1 peak acceleration values.

Note: Processed record length for all accelerograms is 60 seconds.
corner frequencies in CSMP processing.

The accelerograms digitized for this report are from accelerographs having 3 channels of data recorded on a 70 mm (2.75 in) wide film. For each accelerogram, the 70 mm film contains three acceleration traces, one or two straight-line reference traces, and two time-mark traces. For some accelerograms, one of the time-mark traces contains a WWVB time code.

The sequence of steps in processing these records is summarized in the following:

1. The film record, 70 mm wide and about 60 cm (60 seconds) long, is contact-copied onto a 25 cm by 25 cm negative; three sections of the record, each approximately 22 cm (22 seconds) in length, are copied onto a single negative. To facilitate subsequent reconstruction of the original record, adjacent sections are copied so that they have an overlap of approximately 2 seconds. For further details, refer to the report by Trifunac and Lee (1979).

2. The negative containing the three sections of the accelerogram is digitized into x and y coordinates by the optical scanner. The scanner sampling rate used for these records is 200 samples per centimeter in x and y. This is nominally equal to a time step of 0.005 second (200 samples/sec) and an acceleration increment of 0.001 g.

3. The raw x,y data from the individual sections are concatenated to form continuous acceleration traces, straight-line reference traces and timing traces.

4. Vol. I Processing. The reference traces are subtracted from the acceleration traces to remove any spurious film-movement effects. The axis of zero acceleration is determined. The
time-mark traces are used to obtain an accurate time scale. The starting times of the acceleration channels are adjusted so any time phasing error from one channel to another is less than 0.02 sec (i.e., less than one time increment in the Vol. II data). The instrument sensitivities are used to scale ordinate values to accelerations.

5. Vol. II Processing. The Vol. I acceleration data are interpolated to obtain exactly 200 pts/sec sampling (100 Hz Nyquist frequency). The instrumental data are corrected to true acceleration using a simple finite-difference based instrument correction operator. A high-frequency Ormsby filter with a corner frequency of 23 Hz and a roll-off termination frequency of 25 Hz is applied. The data are then decimated to 50 pts/sec (25 Hz Nyquist). As discussed in Shakal and Ragsdale (1984), this order (instrument correction prior decimation) improves the accuracy of the instrument correction procedure at high frequencies while still using the same simple operator used in the original Caltech code (Trifunac and Lee, 1973). The acceleration data are corrected for long-period errors by using a low-frequency Ormsby filter with a ramp from 0.05 to 0.07 Hz. Velocity and displacement are integrated from acceleration and filtered using the same low-frequency Ormsby filter as for the acceleration. To prevent the introduction of spurious long-period energy through aliasing, an Ormsby filter rather than a running mean filter is used prior to the decimation associated with the long period filtering (Shakal, 1982; Shakal and Ragsdale, 1984).

6. Vol. III Processing. The response spectra for periods from 0.04 to 15 seconds and damping values of 0, 2, 5, 10 and 20 per cent of critical are calculated from the accelerations obtained in
Step 5. The Fourier amplitude spectral values are also computed for these periods. The pseudo-velocity response spectrum (PSV), the relative displacement response spectrum (SD), the pseudo-acceleration response spectrum (PSA), and the Fourier amplitude spectrum (FS) are plotted on tripartite logarithmic paper and presented in this report.

7. The Vol. II Processing of Step 5 is repeated, but with a new low-frequency Ormsby filter to remove long-period noise in the record. The corner frequency of the filter used depends on the signal-to-noise ratio in the record and the noise level of the digitizing system. The long-period intersection of the PSV spectrum obtained in Step 6 and the CSMIP system average noise spectrum shown in Fig. 2 (from Shakal and Ragsdale, 1984) indicates the long-period limit of useful information. An iterative procedure is used, with the filter corner being set at progressively shorter periods in order to remove the long period noise while preserving as much of the signal as possible. The final value of the filter corner used is shown by an arrow on the response spectrum plots produced in Step 6. The final acceleration, velocity and displacement time histories obtained using this filter are the Vol. II data written on a magnetic tape and presented in this report.

Note that the optimal filter corner is obtained for each accelerogram; all accelerograms from a single earthquake are not restricted to have a single filter corner frequency. However, the same filter corner is used for all channels from a single accelerogram to make channel-to-channel comparisons convenient.

As discussed above, Fig. 2 shows the average noise spectrum for the CSMIP digitization system. It is also useful to consider the
Fig. 2. Noise-level spectra (PSV, 20% damping) for the CSMIP digitization system (from Shakkal and Ragsdale, 1984).
noise characteristics in terms of actual time-domain amplitudes. Fig. 3 shows typical noise amplitudes present in acceleration, in velocity, and in displacement time histories obtained for different long-period filter cutoff settings. For example, Fig. 3 indicates that for a filter cutoff near 10 seconds, the expected noise level is near 0.002 g in acceleration, 1 cm/sec in velocity, and 1 cm in displacement.
Fig. 3. Processing noise present in a typical acceleration (left), velocity (middle) and displacement (right) record processed with a long-period filter cut-off period ranging from 0.5 sec to 15 secs (from Shkal and Ragnvald, 1984).
REFERENCES


14


DATA AVAILABILITY

The processed data for the CSMIP ground-response records presented in this report are available on two magnetic tapes, one containing Vol. I data (named MORGANHILL84-IG) and the other Vol. II and III data (MORGANHILL84-G). They are written in a standard CSMIP format similar to that of the Caltech tapes, documented in Shakal and Huang (1985). They are available in standard ASCII or EBCDIC blocked (unlabeled) tapes. These two tapes can be obtained at nominal cost from this office:

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

PLOTS OF PROCESSED DATA

Organization and Order of Plots

In this appendix, the processed data plots and related information for each station are presented in the following order:

1. Colored title page.

2. Uncorrected accelerograms (Vol. I data). The three components of the acceleration for the first 22 seconds are plotted with the same scaling factor. This is followed by another plot of the full digitized length (60 seconds) with the components individually scaled.

3. Instrument and baseline-corrected acceleration, velocity and displacement (Vol. II data). The filters used are indicated on the plots. One 22-second plot per component, plotted with equal scaling for all three components. For distant stations with longer-duration signal, this is augmented by a 60-second plot.

4. Response and Fourier amplitude spectra (Vol. III data). One spectral plot per component. The full spectrum 0.07-25.0 Hz (0.04 - 15 seconds period) is plotted, although the long-period filter has filtered out energy with periods longer than the filter limit (indicated by an arrow) in the final Vol. II processing.

17
HALLE VALLEY
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
HALLS VALLEY
UNCORRECTED ACCELEROMETER 57191-52496-84115.01  060684.1345-D84A191

CHN 1: 240 DEG
MAX = 0.314 G

CHN 2: UP
MAX = -0.110 G

CHN 3: 150 DEG
MAX = -0.158 G

ACCELERATION (G)

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
HALLS VALLEY  CHN 1: 240 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 0.8 – 16 TO 23.0 – 25.0 HZ  5.191-52496-84115.01  060884.0953-QM84A191

ACCELERATION (CMS^2/SEC)

MAX = 305.8

VELOCITY (CMS/SEC)

MAX = -39.6

DISPLACEMENT (CM)

MAX = 6.56

TIME (SEC)
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
HALLS VALLEY
CHN 1: 240 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.5-0.7 TO 23.0-25.0 HZ.
57191-52496-84115.01 060684.1457-QM84A191

RESPONSE SPECTRA: PSV, PSA & ID
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

FREQUENCY (HZ)

PSD (FS) (IN/SEC)

PSD (IN/SEC)

SD (IN)

SD (CM)

PERIOD (SEC)

26
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
HALLS VALLEY
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.5-67 TO 23.0-25.0 HZ.
57191-52496-84115.01 D60684.1457-QMS4A191

RESPONSE SPECTRA: PIV, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: TS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)

SD (IN)

SD (CM)

PSV/FS (IN/SEC)

PSH/FS (IN/SEC)

PERIOD (SEC)

27
COYOTE LAKE DAM (SAN MARTIN)
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
COYOTE LAKE DAM (SAN MARTIN)
UNCORRECTED ACCELEROMETER 57217-5249-84-16-01 081484-0804427
MAX = -1.304 G

TIME (SEC)

ACCELERATION (g)

CHN 1: 205 DEG
CHN 2: UP
CHN 3: 105 DEG

MAX = 0.601 G
MAX = 0.707 G

0 5 10 15 20

-1.4 -1.4 -1.4 -1.4
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
COYOTE LAKE DAM (SAN MARTIN)
UNCORRECTED ACCELEROMGRAM 57217-52494-84116.01 061484-1444-0284A217

CHN 1: 285 DEG
MAX = -1.304 G

CHN 2: UP
MAX = 0.401 G

CHN 3: 195 DEG
MAX = 0.707 G

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
COYOTE LAKE DAM (SAN MARTIN)  CHN 3: 195 DEG
INSTRUMENT-Corrected AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND:  08–16 TO 23.0–25.0 HZ.  57217-32494-04116.01  061684.0949–0W94A217

ACCELERATION (GMS/SEC^2)
MAX = 639.7

VELOCITY (GMS/SEC)
MAX = -51.9

DISPLACEMENT (GM)
MAX = -10.3

TIME (SEC)
RESPONSE SPECTRA: PSV, PSA & SD  
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
COYOTE LAKE DAM (SAN MARTIN)
CHN 1: 785 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-.07 TO 23.0-25.0 Hz.
57217-52494-84116.01  061484 1641-QMR44217

PERIOD (SEC)

FREQUENCY (HZ)

PSA (G)
SD (IN)
SD (CM)

PSV/FS (IN/SEC)

10
100
1000

10
10
10

.10
10
10

10
10
10

10
10
10
RESPONSE SPECTRA: PSA, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #7 - MANTELLI RANCH
UNCORRECTED ACCELEROMETER 57425-S2762-84118.01  061384.1036-0M84A425

CHN 1: 90 DEG
MAX = -0.114 G

CHN 2: UP
MAX = -0.454 G

CHN 3: 0 DEG
MAX = 0.194 G

ACCELERATION (G)

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #7 - MANTELLI RANCH  CHN 1: 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 15-30 TO 23.0-25.0 HZ.  57425-52762-84118.01  062284.0931-D84A425
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 23%

FREQUENCY (HZ)

PSA (G)
10
100
1000

SD (IN)
10
10
10

PSV, FS (IN/SEC)
10
10
10

SD (CM)
10
10
10

PERIOD (SEC)
10
10
10

PSV, FS (CM/SEC)
10
10
10

10
10
10

10
10
10
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
GILROY #7 - MANTILLI RANCH
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-.07 TO 23.0-25.0 Hz.
57425-52762-84118.01 061384.1147-QM844425

- RESPONSE SPECTRA: PSV, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)
GILROY #6
MORGAN HILL EARTHQUAKE    APRIL 24, 1984  13:15 PST
GILROY #6    CHN 1:  90 Deg
INSTRUMENT-Corrected AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
Filter Band:  10.0-20.0 Hz  57383-52606-84118.01  062584-1223-QM8A383

MAX = -280.4

MAX = -36.6

MAX = -5.24
MORGAN HILL EARTHQUAKE, APRIL 24, 1984 13:15 PST
GILROY #6, CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 23.0-25.0 Hz
57383-52606-84118.01 062084-1223-DM8A383

ACCELERATION (G/M SEC^2)

MAX = 409.2

VELOCITY (CM/SEC)

MAX = -14.5

DISPLACEMENT (CM)

MAX = -1.65

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #6
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAPS AT .05-.07 TO 23.0-25.0 HZ.
57383-52606-84118.01  060784.1734-QMB44383

RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #6
CHN 3: 0 DEG
ACCELEROMETER BANDPASS-FILTERED WITH ROUNDS AT .05-.07 TO 23.0-25.0 HZ.
57363-92606-84118.01  060784.1724-QDMR-R583

RESPONSE SPECTRA:  PSA, FDA & SD
- - FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES:  0, 2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)

SD (IN)

SD (CM)

PSV/FS (IN/SEC)

PSV/FS (NM/SEC)

PERIOD (SEC)

58
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #4  CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND:  10 - 20 TO 23.0 - 25.0 Hz. 57382-52758-84110.01  062084 1257 - DM84A382

MAX = 389.2

MAX = -11.0

MAX = 1.76
RESPONSE SPECTRA: PSV, PSA & SD

FOURIER AMPLITUDE SPECTRUM: FS

DAMPING VALUES: 0, 2.5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #3  CHN 2: UP
INSTRUMENT-Corrected AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 23.0-25.0 Hz.  47351-52757-84117.02  062884.1703-QM84A381

MAX = -355.5

MAX = -8.97

MAX = 1.14
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%
MORGAN HILL EARTHQUAKE, APRIL 24, 1984 13:15 PST
GILROY #2  CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 08 - 16 TO 23.0 - 25.0 HZ.  47380-52603-84116.02  600884.1043-26814380

MAX = 424.2

MAX = -0.68

MAX = -0.95

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #2
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMP S AT 0.05-0.07 TO 0-25.0 HZ.
47380-5260-02 141164 02 061086 1110-QMR4A580

RESPONSE SPECTRA: PSV, PSA & SD  -- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)

PSV, FS (G/MSEC)

PSA (G)

SD (IN)

SD (CM)

PERIOD (SEC)

PSV, FS (CM/M SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #2
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.05-.07 10 23.0-25.0 HZ.
47830-S2603-84116.02  011086.1110-0M844A38R

RESPONSE SPECTRA: PSV, PSA & SD -- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (Hz)

PSV, FS (cm/sec)

PSA (G)

SS (IN)

SD (CM)

PERIOD (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #2
CHN 3: 0 DEG
ACCELEROMETER BANDPASSED FILTERED WITH Ramps AT .05-.07 TO 23.0-25.0 Hz.
47380-52603-84116.02  061086.11:10-QMB44380

RESPONSE SPECTRA: PSV, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
GILROY #1
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #1
UNCORRECTED ACCELEROMETER 47279-S2602-84122.01  053184.1146-DM84A379

CHN 1: 320 DEG
MAX = 0.100 G

CHN 2: UP
MAX = 0.096 G

CHN 3: 210 DEG
MAX = 0.073 G
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
GILROY #1 CHN 1: 320 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 20.40 TO 23.0-25.0 HZ. 47379-S2602-84122.01 062284.0900-DMB4A379

MAX = 93.3

MAX = 2.66

MAX = 0.48
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
GILROY #1
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-.07 TO 23.0-25.0 HZ.
47379-52602-84122.01  061086.1123-QM84A379

**RESPONSE SPECTRA: PSV, PSA & SD**  **SPECTRUM: FS**
DAMPING VALUES: 0, 2, 5, 10, 20%

**FREQUENCY (HZ)**

**PSA (G)**

**SD (IN)**

**SD (CM)**

**PSV, FS (IN/SEC)**

**PSV, FS (DM/SEC)**

PERIOD (SEC)

97
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
GILROY - GAVILAN COLLEGE
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.05-0.07 TO 1.0-25.0 HZ.
47006-51685-84117.01 062084.1439-DNB4ADD6

RESPONSE SPECTRA: PSV, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)

SD (IN)

SD (CM)

PSV/FS (IN/SEC)

PERIOD (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, '84  13:15 PST
GILROY - GAVILAN COLLEGE
CHN 3: 337 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-07 TO 23.0-25.0 HZ.
47006-51685-B4117.01  062084-1439-QM74AOO6

RESPONSE SPECTRA:  PSV, PSA & SD  —— FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES:  0.2, 5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNEWS - STATE HOSPITAL CHN: 1  330 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 23.0-25.0 Hz  57066-R0566-84116.01  041785.1108-0MB4A066

MAX = 31.7

MAX = 5.64

MAX = -2.28
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNESS - STATE HOSPITAL  CHN 3: 240 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 53.0-25.0 HZ.  57066-R0566-84116.01  041785.1108-QM84A066

MAX = 30.6

MAX = 5.57

MAX = 1.08
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNEWS - STATE HOSPITAL  CHN 3:  240 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND:  1.0- 20 TO 23.0-250 HZ.  57066-R0566-84116.01  041785.1108-QM84A066

-50  0  50
ACCELERATION (G's/SEC^2)

-10  0  10
VELOCITY (G's/SEC)

-4  0  4
DISPLACEMENT (G's)

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNEWS - STATE HOSPITAL
CHN 1  330 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.05-0.07 TO 0-20.0 HZ.
57086-RO566-84116.01  041585.1644-QM84A066

RESPONSE SPECTRA: PSV, PSA & SD  --  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNEWS - STATE HOSPITAL
CHN 2:  UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05 - 0.7 TO 23.0 - 25.0 CMH.
5066-R0586-84116.01  041585.1644-DW8A086

RESPONSE SPECTRA: PSV, PSA & SD  -  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)
SD (IN)
SD (CM)

PSV,FS (IN/SEC)
PSV,FS (CM/SEC)

PERIOD (SEC)
120°
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
AGNEWS - STATE HOSPITAL
CHN 3: 240 DEG
ACCELEROMETER BANDPASS-FILTERED WITH BANDS AT .05 - .07 TO 23.0 - 25.0 HZ.
51566-R0066-84116.01  541585.1644-QM44A26K

RESPONSE SPECTRA: PSV, PSA & SD  —— FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2 5.10.20%
COQUELITCHES
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
CORRALITOS  CHN 1: 310 DEG

INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 15-30 TO 23.0-25.0 Hz.  S7007-S0761-04117.02 011495.0846-0MB4A007

MAX = -105.5

MAX = -10.9

MAX = 1.34
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
CORRALITOS
CHN 1: 310 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMP AT .05-.07 TO 23.7-25.0 Hz.
57007-50641-84117.02 010785.1239-00844007

RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

FREQUENCY (HZ)

PSV, FS (IN/SEC)

PSA (G)

SD (IN)

SD (CM)

PERIOD (SEC)
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
CORRALITOS
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMP AT 0.05-0.07 TO 23.0-25.9 HZ.
57001-50761-84117.02 010795.1239-OM84A007

--- RESPONSE SPECTRA: PSV, PSA & SD --- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
FREMONT - MISSION SAN JOSE
UNCORRECTED ACCELEROMETER 57064-R0553-84115 01 083084.1654-QM84A064

CHN 1: 75 DEG  MAX = 0.026 G

CHN 2: UP  MAX = -0.021 G

CHN 3: 345 DEG  MAX = 0.023 G

ACCELERATION (g)

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
FREMONT - MISSION SAN JOSE  CHN 3: 345 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 23.0-25.0 HZ.  57064-RO553-B4115.01  035785.1327-0M84A064

ACCELERATION (G/SEC/SEC)
MAX = 20.3

VELOCITY (CM/SEC)
MAX = 3.42

DISPLACEMENT (CM)
MAX = -1.08
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
FREMONT - MISSION SAN JOSE
CYN 3: 345 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RPMPS AT 0.05-0.7 TO 23.0-25.0 HZ.
57064-R0553-84115.01 083184 1753-QWB4A064

RESPONSE SPECTRA: PSA, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)
SD (IN)
SD (CM)

PSA (IN/SEC)

PERIOD (SEC)

PSA (GM/SEC)

10

100

1000

10

1

10

100
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
CAPITOLA  CHN 2:  UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND:  15-30 TO 23.0-25.0 HZ.  47125-51679-84117.01  060686 1439-QM84A125

MAX = -40.8

MAX = -2.20

MAX = -0.35

TIME (SEC)
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
CAPITOLA
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-.07 TO 23.0-25.0 HZ.
47125-51679-84117.01 B10885-1546-DWM84A125

RESPONSE SPECTRA: PSA, PSA & SD
FOURIER Amplitude Spectrum: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

FREQUENCY (HZ)

PERIOD (SEC)

PSD (IN/SEC)

PSD (CM/SEC²)

PSD (IN/SEC²)
RESPONSE SPECTRA: PSV, PSA & SD

FOURIER AMPLITUDE SPECTRUM: FS

DAMPING VALUES: 0, 2, 5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SANTA CRUZ
UNCORRECTED ACCELEROMGRAM 56135-51682-84117.01  082384.1137-QM84A135

CHN 1: 50 DEG
MAX = 0.040 G

CHN 2: UP
MAX = 0.033 G

CHN 3: 320 DEG
MAX = 0.076 G

TIME (SEC)

ACCELERATION (g)
WORGE HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SANTA CRUZ  CHN 1: 50 DEG.
INSTRUMENT-CORRECTED AND BANDBPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND:  20.40 TO 23.0-25.0 HZ.  S8135-51682-84117.01  091984.0847-0W4A135

MAX = -37.7

MAX = -1.85

MAX = -0.26
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SANTA CRUZ
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05-.07 TO 23.0-25.0 HZ.
S#135-51682-84117-01  082484.1236-DMB4A135

RESPONSE SPECTRA: PSV, PSA & SD  --- FOURIER AMPLITUDE SPECTRUM: TS
DAMPING VALUES: 0.2, 5.12, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SANTA CRUZ
CHN 3: 320 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.05-0.07 TO 23.0-25.8 HZ.
58135-51682-84177.01  082484.1236-DM84A135

RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN JUAN BAUTISTA
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SAN JUAN BAUTISTA   CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASSED-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23 0-25.0 HZ.  47126-51678-84117.01  0606686.1453-DMB4A126

ACCELERATION (G/SEC/SEC)

VELLOCITY (C/SEC)

DISPLACEMENT (CM)

MAX = 50.4

MAX = 2.37

MAX = 0.75

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SAN JUAN BAUTISTA  CHN 3:  213 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 HZ.  47126-51678-84117.01  060686.1453-QM048A126

MAX = 42.9

MAX = 4.51

MAX = -1.22
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
HAYWARD - APEL # 1E CHN 1: 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 20-40 TO 23.0-25.0 Hz. S8376-S2605-84116.01 122684.1139-DW4A376

MAX = 25.8

MAX = -2.44

MAX = 0.45

TIME (SEC)
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
HAYWARD – APEEL # 1E  CHN 2: Up
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 0.040 TO 23.0–25.0 HZ.  S8576-52605-84116.01  122684.1139-DW84A376

MAX = 13.8

MAX = -1.01

MAX = 0.24
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
HAYWARD - APEEL # 1E  CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 20-40 TO 23.0-25.0 Hz.  58376-S2605-84116.01  060686.1510-QMB4A376

MAX = 13.8

MAX = -1.01

MAX = 0.24
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
HAYWARD - APEL # 1E CHN 3: 0 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 0.04 TO 25.0 HZ. SB376-52605-04116-01 122684.1139-0184A376

**Acceleration (g)**
- Max = -39.9

**Velocity (cm/s)**
- Max = -2.42

**Displacement (cm)**
- Max = 0.38

**Time (sec)**
0 5 10 15 20
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
HAYWARD  -  APEEL # 1E
CHN 1:  90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .05- .07 TO 25.0-25.0 HZ.
58376-52605-B4116.01  091284.1617-QMB4A376

RESPONSE SPECTRA:  PSV, PSA & SD  —  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES:  0.2, 5, 10, 20%
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5.10, 20%
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
REDWOOD CITY - APEL #1 CHN 1: 40 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 23.0-25.0 HZ  58375-51819-84124:02  030185.1152-QM84A375

Max = -41.6

Max = -3.70

Max = -0.75

TIME (SEC)
SAN FRANCISCO INTERNATIONAL AIRPORT
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
SAN FRANCISCO – INT. AIRPORT  CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION–VELOCITY AND DISPLACEMENT
FILTER BAND: 15–30 TO 23.0–25.0 Hz  58223-R0488-84122.01  040385.0921–DM84A223

MAX = 14.9

MAX = 0.85

MAX = 0.24

TIME (SEC)
RESPONSE SPECTRA: PSV, PSA & SD
- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%

FREQUENCY (HZ)

PSA (G)
SD (IN)
SD (CM)

PSV, FS (IN/SEC)

PERIOD (SEC)

223
LOS BANOS
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
LOS BANOS
UNCORRECTED ACCELEROMETER 56012-52780-84123.01  010985.1515-0M84A012

CHN 1: 180 DEG  MAX = 0.062 G

CHN 2: UP  MAX = -0.011 G

CHN 3: 90 DEG  MAX = 0.053 G

ACCELERATION (G)

TIME (SEC)
MORGAN HILL EARTHQUAKE   APRIL 24, 1984    13:15 PST
LOS BANDS  CHN 1: 180 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10.0-20 TO 23.0-25.0 Hz.  96012-52780-84123.01  011485.0952-DMB4A012

MAX = 60.4

MAX = -19.17

MAX = -2.34

TIME (SEC)
MORGAN HILL EARTHQUAKE APRIL 24, 1984 13:15 PST
LOS BANOS CHN 3 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 10-20 TO 20.0-25.0 Hz
MAX = 50.6
MAX = 7.24
MAX = -2.35
RESPONSE SPECTRA: PSV, PSA & SD
FOURIER AMPLITUDE SPECTRUM: TS
DAMPING VALUES: 0.2, 5, 10, 20%
MORGAN HILL EARTHQUAKE  APRIL 24, 1984  13:15 PST
LOS BANDS
CHN 3: 90 DEG
ACCELEGRAM BANDPASS-FILTERED WITH RAMPS AT 0.05-0.07 TO 23.0-25.0 HZ.
S5012-52780-84123.01  010985.1618-QM84A012

RESPONSE SPECTRA: PSV, PSA & SD  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0.2, 5, 10, 20%

FREQUENCY (HZ)

PSV FS [IN/SEC]

PSA (G)

SD (IN)

SD (CM)

PERIOD (SEC)

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# 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:**

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<td>I. Earthquake Data Reports:</td>
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<td><strong>Selected Accelerograms from the Redlands, California Earthquake of October 2, 1985 (Including first records from a Base-Isolated Building)</strong></td>
<td>OSMS 85-02</td>
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<td><strong>CSMIP Strong-Motion Records from the Bishop, California Earthquake of 23 November 1984</strong></td>
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<td><strong>Strong-Motion Records Recovered from the Mammoth Lakes, California, Earthquake of 30 September 1981</strong></td>
<td>OSMS 81-10.1</td>
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<td><strong>Strong-Motion Records Recovered from the Westmorland, California, Earthquake of 25 April 1981</strong></td>
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<td><strong>Strong-Motion Records Recovered from the Trinidad-Offshore, California, Earthquake of 25 April 1981</strong></td>
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<td><strong>Strong-Motion Records from the Livermore Earthquakes of 24 and 26 January 1980</strong></td>
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<td><strong>Compilation of Strong-Motion Records and Preliminary Data from the Imperial Valley Earthquake of 15 October 1979</strong></td>
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<td><strong>Compilation of Strong-Motion Records Recovered from the Bishop, California, Earthquake of 4 October 1978</strong></td>
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Compilation of Strong-Motion Records Recovered from the Santa Barbara Earthquake of 13 August 1978

Catalog of Strong Motion Accelerograph Records Recovered by Office of Strong Motion Studies During 1982

Catalog of Strong Motion Accelerograph Records Recovered by Office of Strong Motion Studies before January 1, 1982

II. Processed Data Reports:

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

Processed Data from Strong-Motion Records of the Morgan Hill Earthquake of 24 April 1984: Part I Ground-Response Records

Processed Data from Strong-Motion Records of the Morgan Hill Earthquake of 24 April 1984: Part II Structural-Response Records

Processed Data from the Strong-Motion Records of the Imperial Valley Earthquake of 15 October 1979, Final Results

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 1973

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)

Processed Data from the Strong-Motion Records of the Santa Barbara Earthquake of 13 August 1978. Final Results (in three volumes)

III. Other Reports:

Standard Tape Format of CSMIF Strong-Motion Data Tapes

California Strong-Motion Instrumentation Program: Construction and Installation Notes for a Ground-Response Station.

There is a nominal charge for these reports.

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<td>Santa Barbara earthquake of 13 August 1978; Vol. 1, 2, and 3 data.</td>
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<td>IMPERIAL79</td>
<td>Imperial Valley earthquake of 15 October 1979 (County Services Bldg. and other CSNIP stations); Vol. 1, 2, and 3 data.</td>
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<td>Coyote Lake earthquake of 6 August 1979, San Juan Bautista overpass and nearest free-field station; Vol. 1, 2, and 3 data.</td>
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<td>MAMMOTH80B</td>
<td>Mammoth Lakes earthquakes of 25 May 1980 at 12:45 and 13:36 PDT; Vol. 1, 2, and 3 data.</td>
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<td>MAMMOTH80C</td>
<td>Mammoth Lakes earthquakes of 26 May 1980 at 11:56 PDT and 27 May 1980 at 07:51 PDT; Vol. 1, 2, and 3 data.</td>
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<td>WESTMOR81</td>
<td>Westmorland earthquake of 26 April 1981; Vol. 1, 2, and 3 data.</td>
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<td>Coalinga earthquake of 2 May 1983, 16:43 PDT; Vol. 2 and 3 data for 47 records.</td>
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<td>COALING83AS</td>
<td>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.</td>
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<td>COALING83AS-1</td>
<td>Uncorrected acceleration data (Vol. 1) for the Coalinga aftershock records included on the tape.</td>
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<td>RIOSEL80X3</td>
<td>Processed data from the Highway 101 Overpass at Rio Dell for the earthquakes of 6 Nov 1980 (5.9ML Trinidad-Offshore); 16 Dec 1982 (4.4ML Rio Dell); and 24 Aug 1983 (5.5ML Cape Mendocino Offshore); Vol. 1, 2, and 3 data.</td>
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<tr>
<td>MAMMOTH83</td>
<td>Mammoth Lakes earthquakes of 7 Jan 1983 at 01:38 and 03:24 GMT; Vol. 1, 2, and 3 data.</td>
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<td>Morgan Hill earthquake of 24 April 1984; Vol. 1 data for 19 ground-response records.</td>
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<td>MORGANHILL84-O</td>
<td>Morgan Hill earthquake of 24 April 1984; Vol. 2 and 3 data for 19 ground-response records.</td>
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<td>Morgan Hill earthquake of 24 April 1984; Vol. 2 and 3 data for 9 structural-response records.</td>
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<td>REDLAND595</td>
<td>Redlands earthquake of 2 October 1985; Vol. 1, 2 and 3 data for the Law &amp; Justice Building at Rancho Cucamonga.</td>
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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
610 Berout Drive
Sacramento, CA 95814

Phone: (916) 322-3105

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PROCESSED ACCELEROMETERS ON CSMIP DATA TAPES:

Tape: SANTABARB78
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)
Milan, 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/Holcomb Road Overpass, 13 channels

Tape: COYOTET79A
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: COYOTET79B
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: COYOTET79C
Coyote Lake Earthquake of 6 Aug 1979, 10:05 PDT, ML=5.9(BRK)
Halls Valley, 3 channels

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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, 1 channel
Mammoth Lakes - High School Gym, 8 channels

Tape: MAMMOTH80B
Mammoth Lakes Earthquake of 26 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 56 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),3.9(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: WESTMO81
Westmorland Earthquake of 26 Apr 1981, 05:09 PDT, ML=5.7(CIT),6.3(BRK)
Westmorland, 3 channels
Niland, 3 channels
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<thead>
<tr>
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* Tape COALINGAB83 contains the Vol. 2 and 3 data for the listed seismograms; the corresponding Vol. 1 data are on tapes COALINGAB83-IA and COALINGAB83-IB.
COCALINGA83AS, COCALINGA83AS-I **

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

Event #2: 8 May 1983, 19:49 PDT, ML=5.1(BMK)
- Coalinga - Sulphur Baths, 3 channels
- Coalinga - CHF, 3 channels
- Antioch 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(BMK)

Event #4: 9 July 1983, 00:41 PDT, ML=5.3(BMK)

Event #5: 21 July 1983, 19:40 PDT, ML=4.0(BMK)

Event #6: 21 July 1983, 20:41 PDT, ML=5.0(BMK)

Event #7: 25 July 1983, 15:31 PDT, ML=5.1(BMK)

Event #8: 9 Sept 1983, 02:16 PDT, ML=5.2(BMK)

Event #9: 11 Sept 1983, 04:40 PDT, ML=4.3(BMK)

For each of events #3 through #9:
- Coalinga - Sulphur Baths, 3 channels
- Coalinga - CHF, 3 channels

** Vol. 1 data are on tape COCALINGA83AS-I; Vol. 2 and 3 data are on tape COCALINGA83AS.

Tape: ROGUL8083

Trinidad Offshore Earthquake of 8 Nov 1980, 02:27 PST, ML=6.9(BMK)
- Rio Dell - Highway 101/Painter Street Overpass, 20 channels

- Rio Dell - Highway 101/Painter Street Overpass, 20 channels

Cape Mendocino Offshore Earthquake of 24 Aug 1983, 06:36 PDT, ML=5.5(BMK)
- Rio Dell - Highway 101/Painter Street Overpass, 20 channels

Tape: MAMMOTH83

Mammoth Lakes Earthquake of 6 Jan 1983, 17:38 PST, ML=5.2(BMK)
- Convict Creek, 3 channels

Mammoth Lakes Earthquake of 6 Jan 1983, 19:28 PST, ML=5.4(BMK)
- Convict Creek, 3 channels

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

Balls Valley, 3 channels
Coyote Lake Dam (San Martín), 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
Agnew - State Hospital, 3 channels
Redwood City - AFEEL #1, 3 channels
San Francisco - International Airport, 3 channels
Fremont - Mission San Jose, 3 channels
Hayward - AFEEL #1E, 3 channels

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

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
Holister - Goliath 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 MORGANHILL84-0 and MORGANHILL84-S.

Tape: BEDLANDS85

Redlands Earthquake of 2 Oct 1985, 16:44 PDT, ML=4.8(CCT)
Rancho Cucamonga - Law & Justice Building (base-isolated), 16 channels plus 3 free field channels

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