PROCESSED CSMIP STRONG-MOTION RECORDS FROM
THE NORTH RIDGE, CALIFORNIA EARTHQUAKE
OF JANUARY 17 1994: RELEASE NO. 4

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Report No. OSMS 94-10

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April 25, 1994
INTRODUCTION

The digitized and processed records obtained from 10 CSMIP stations during the Northridge earthquake of January 17, 1994 are included in this fourth release. The stations range in distance from 18 to 70 km (epicentral). The stations are:

- Los Angeles - UCLA Grounds Sta. = 24688, 18 km
- Vasquez Rocks Park Sta. = 24047, 37 km
- Alhambra - Fremont School Sta. = 24481, 39 km
- Lake Hughes #9 Sta. = 24272, 44 km
- Mt. Wilson - Caltech Seismic Station Sta. = 24399, 45 km
- Camarillo Sta. = 25282, 50 km
- Rolling Hills Estate - Rancho Vista School Sta. = 14405, 50 km
- Point Mugu - Naval Air Station Sta. = 25347, 54 km
- Lancaster - Fox Airfield Grounds Sta. = 24475, 66 km
- Ventura - Harbor & California Sta. = 25360, 70 km

Strong-motion records were recovered from 193 CSMIP stations following the Northridge earthquake. The accelerograms, information on the earthquake and recording stations are presented in the CSMIP data report on this earthquake (Shakal and others, 1994). The results of digitizing and processing for the first release of 5 records were announced on February 4, 1994 and were included in the first release report (Darragh and others, 1994a). The results of digitizing and processing for the second release of 5 records were announced on February 24, 1994 and were included in the second release report (Darragh and others, 1994b). The results of digitizing and processing for the second release of 7 records were announced on March 15, 1994 and were included in the third release report (Darragh and others, 1994c). Details on accelerogram digitizing and processing will be presented in a forthcoming final CSMIP processed data report.

Table 1 summarizes the ground motion results for the 27 stations included in the first, second, third and fourth release reports. The coordinates, site characteristics, epicentral distance and maximum values of ground motion are given for each station in this table. Table 1 also lists the Usable Data Bandwidth.
For each ground-response station, the plots are numbered in the upper right corner of each page. The first page for each station is given below as:

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Station Name</th>
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</thead>
<tbody>
<tr>
<td>11</td>
<td>Los Angeles - UCLA Grounds</td>
</tr>
<tr>
<td>21</td>
<td>Vasquez Rocks Park</td>
</tr>
<tr>
<td>31</td>
<td>Alhambra - Fremont School</td>
</tr>
<tr>
<td>41</td>
<td>Lake Hughes #9</td>
</tr>
<tr>
<td>51</td>
<td>Mt. Wilson - Caltech Seismic Station</td>
</tr>
<tr>
<td>61</td>
<td>Camarillo</td>
</tr>
<tr>
<td>71</td>
<td>Rolling Hills Estate - Rancho Vista School</td>
</tr>
<tr>
<td>81</td>
<td>Point Mugu - Naval Air Station</td>
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<td>91</td>
<td>Lancaster - Fox Airfield Grounds</td>
</tr>
<tr>
<td>101</td>
<td>Ventura - Harbor &amp; California</td>
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</tbody>
</table>

The order of the plots for each station is as follows:

1. Phase 1 (Vol. 1) data: Uncorrected accelerations. Acceleration for the first 22 seconds is plotted with a common scaling factor for all channels; three channels are plotted on one page. This plot is followed by a 60 second plot with each channel individually scaled. In general, the processing length is 60 seconds. However, a length of 65 seconds was chosen to process late arriving energy at Camarillo and Ventura.

2. Phase 2 (Vol. 2) data: Instrument and baseline-corrected acceleration, velocity and displacement. The data for 60 seconds (in general, the full processed length) are plotted with equal scaling for all channels. The filter frequencies determined in the processing are indicated on the plots (see Usable Data Bandwidth).

3. Phase 3 (Vol. 3) data: Response spectra. The pseudo-velocity spectra (PSV), the pseudo-acceleration spectra (PSA), the displacement spectra (SD) and the Fourier amplitude spectra (FS) are presented on a tripartite logarithmic plot for each channel for 0%, 2%, 5%, 10%, and 20% dampings. The spectra are plotted for periods within the Usable Data Bandwidth.

4. Phase 3 (Vol. 3) data: Response spectra. The absolute acceleration spectra (A) for 0%, 2%, 5%, 10% and 20% dampings are plotted against period with linear-linear scaling from 0 to 4 seconds.
REFERENCES


<table>
<thead>
<tr>
<th>Station No.</th>
<th>Station Name</th>
<th>Station Coordinates</th>
<th>Site Geology</th>
<th>Instrument Housing</th>
<th>Epicentral Dist. ** (km)</th>
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</thead>
<tbody>
<tr>
<td>24087</td>
<td>Arleta Northhoff Ave Fire Station</td>
<td>34.236      118.439</td>
<td>Alluvium</td>
<td>1-story bldg.</td>
<td>10</td>
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<tr>
<td>24514</td>
<td>Sylmar County Hospital Parking Lot</td>
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<tr>
<td>24088</td>
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<tr>
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<tr>
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<td>Component</td>
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<td>Peak Accel. (g)</td>
<td>Peak Velocity (cm/sec)</td>
<td>Peak Displ. (cm)</td>
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<td>24087</td>
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THE NORTHRIKE EARTHQUAKE OF JANUARY 17, 1994
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<th>Station No.</th>
<th>Station Name</th>
<th>N Lat.</th>
<th>W Long.</th>
<th>Site Geology</th>
<th>Instrument Housing</th>
<th>Epicentral Dist. ** (Km)</th>
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<td>Point Mugu Naval Air Station</td>
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### THE NORTHRIDGE EARTHQUAKE OF JANUARY 17, 1994 (continued)

<table>
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<th>Station No.</th>
<th>Trigger Time # (deg.)</th>
<th>Component</th>
<th>Peak Accel. (g)</th>
<th>Peak Velocity (cm/sec)</th>
<th>Peak Displ. (cm)</th>
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<td>0.17-23.6 Hz</td>
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<td>360</td>
<td>-0.157</td>
<td>18.2</td>
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<td>(0.04-5.88 sec)</td>
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<td>Station Name</td>
<td>N Lat.</td>
<td>W Long.</td>
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<td>Instrument Housing</td>
<td>Epicentral Dist. ** (km)</td>
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<td>Instr. shlr. H</td>
<td>70</td>
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* - Instrument shelter types:  
  Instr. shlr D - small metal box  
  Instr. shlr H - small fiberglass shelter  

** - Distance given relative to the epicenter at 34.209N, 118.541W.
<table>
<thead>
<tr>
<th>Station No.</th>
<th>Trigger Time</th>
<th>Azimuth</th>
<th>Peak Accel. (g)</th>
<th>Peak Velocity (cm/sec)</th>
<th>Peak Displ. (cm)</th>
<th>Usable Data Bandwidth</th>
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<td>UP</td>
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</tr>
<tr>
<td>25340</td>
<td>31:10.2</td>
<td>90</td>
<td>-0.054</td>
<td>7.8</td>
<td>2.6</td>
<td>0.17-23.6 Hz (0.04-5.88 sec)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UP</td>
<td>-0.027</td>
<td>-5.1</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>360</td>
<td>0.077</td>
<td>-11.9</td>
<td>3.4</td>
<td></td>
</tr>
</tbody>
</table>

# Accelerograph trigger time, when present, in minutes and seconds after 12:00:00 UTC on 17 January 1994.

## Phase 1 (Volume 1) peak acceleration values.
DEFINITION OF USABLE DATA BANDWIDTH

The filter bands for each record are indicated on the plots for the Phase 2 and Phase 3 data. In standard processing, the digitized data are processed and filtered using Ormsby filters. The data are first low-pass filtered using a high-frequency filter with a corner frequency of 23 Hz and a roll-off termination frequency of 25 Hz. Then the data are high-pass filtered using a low-frequency filter with a corner frequency of 0.07 Hz and a roll-off termination of 0.05 Hz. Therefore, the Phase 2 data is the result of the digitized data being filtered by the bandpass filter \( H(f) \) with ramps as shown in the figure:

![Diagram of filter bands]

The **Usable Data Bandwidth** is defined as the band between frequencies \( f_{UL} \) and \( f_{LU} \), where \( f_{UL} \) and \( f_{LU} \) are the -3 dB points on the high-frequency and low-frequency ramps, respectively. The value of \( H(f) \) is approximately equal to 0.7 for -3 dB (see Notes). The user should only use these data for analyses within this bandwidth.

Notes:

1) The values of \( f_{UL} \) and \( f_{LU} \) can be calculated from the corner frequencies \( f_{UL} \) and \( f_{LU} \) used in the processing by using the formulas \( f_{UL} = f_{UL} + 0.3 \times (f_{UR} - f_{UL}) \) and \( f_{LU} = f_{LU} - 0.3 \times (f_{UR} - f_{LU}) \). For example, the Usable Data Bandwidth for data bandpass-filtered with ramps at 0.30 to 0.60 Hz and 23.0 to 25.0 Hz is 0.51 Hz to 23.6 Hz (0.042 to 2.0 seconds period).

2) It is common in signal processing to plot 20 \( \log_{10} |H(f)| \) versus frequency, and express the ordinate value in decibels (abbreviated dB). Accordingly, 0 dB corresponds to a value of \( H(f) \) equal to 1; 20 dB is equivalent to \( H(f) = 10 \), and -20 dB corresponds to \( H(f) = 0.1 \). Thus, at the -3 dB frequency point, the amplitude of the transfer function, \( |H(f)| \), is reduced to 0.7, while the power transmitted by the filter, \( |H(f)|^2 \), is reduced to 0.5.
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS
UNCORRECTED ACCELEROMETER 24688-53999-94018.02 031594.1452-094A68B

CHN 1: 90 DEG
MAX = -0.313 G

CHN 2: UP
MAX = 0.280 G

CHN 3: 360 DEG
MAX = 0.634 G

ACCELERATION (G)

TIME (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .08-.16 TO 23.0-25.0 Hz.  24688-53399-94018.02  031594.1500-GN94A68B

MAX = 260.6

ACCELERATION
(GCM/SEC/SEC)

MAX = 9.55

VELOCITY
(GCM/SEC)

MAX = 3.07

DISPLACEMENT
(GCM)

TIME (SEC)

0  10  20  30  40  50  60
NORTHridge EARTHQuake   JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS  CHN 3: 360 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .08-.16 TO 23.0-25.0 HZ.  24688-53399-94018.02  031594.1500-0N94A6BB

MAX = 464.6

MAX = 21.9

MAX = 7.33
NORTHRIEGE EARTHQUAKE - JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS
CHN 1: 90 DEG
ACCELEROMETER BANDPASSED-FILTERED WITH RAMPS AT 0-16 TO 23.0-25.0 HZ.
24688-53999-24010.02 042984.1042-0N34A688

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

FREQUENCY (HZ)

PSA (G)

SD (IN)

SD (CM)

PSF, FS (IN/SEC)

PERIOD (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS
CHI 2:  UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .06-.16 TO 23.0-25.0 HZ.
24688-53399-94019.02  042594.1042-0N944888

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

FREQUENCY (HZ)
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
LOS ANGELES - UCLA GROUNDS
CHN 3: 360 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 08.16 TO 23.0-25.0 Hz.
24688-53995-94018.02 042504.1042-0N94A588

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK
UNCORRECTED ACCELEROMETER 24047-S1820-94021.02 032194.0931-QN94A047

CHN 1: 90 DEG
MAX = 0.147 G

CHN 2: UP
MAX = 0.090 G

CHN 3: 360 DEG
MAX = -0.157 G
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK
UNCORRECTED ACCELEROMETER 24047-51820-94021.02  032194.0931-QN94A047

EUCLID 1: 90 DEG
MAX = 0.147 G

EUCLID 2: UP
MAX = 0.090 G

EUCLID 3: 360 DEG
MAX = -0.127 G

ACCELERATION (G)

TIME (SEC)
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK CHN 5: 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 HZ. 24047-S1820-94021.02 032194.1125-0944A047

MAX = 137.4

MAX = 12.0

MAX = 2.68
NORTHRI DGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 HZ. 24047-51820-94021.02 032194.1126-0N94A047

MAX = 84.0

MAX = -6.76

MAX = 1.48

TIME (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK  CHN 3: 360 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 HZ.  24047-S1820-94021.02  032194.1126-GN94A047

MAX = -148.0

MAX = 19.2

MAX = -2.78
NORTHRIDGE EARTHQUAKE    JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 10-20 TO 23.0-25.0 HZ.
24047-51620-94021.02 042554.1010-GNS4A047

RESPONSE SPECTRA: PSV, PSA & SD        —— FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 23.0-25.0 Hz.
24047-51620-94021.02 042594.1010-0NS4A047

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

FREQUENCY (HZ)

PSF/FS (IN/SEC)  PSA (G)  SD (IN)  SD (CM)

PERIOD (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VASQUEZ ROCKS PARK
CHN 3: 360 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAPIDS AT .10-.20 TO 23.0-25.0 HZ.
24047-51820-84021.02  042994.1010-0894047

--- RESPONSE SPECTRA: PSV, PSA & SD --- FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
ALHAMBRA - FREMONT SCHOOL
UNCORRECTED ACCELEROMETER 24461-53498-94019.02 032594.0929-QM94A461

CHN 1: 90 DEG MAX = -0.102 G

CHN 2: UP MAX = 0.047 G

CHN 3: 360 DEG MAX = 0.083 G

ACCELERATION (G)

TIME (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
ALHAMBRA - FREMONT SCHOOL  CHN 1  90 050
INSTRUMENT-Corrected AND Bandpass-FIltEr STYLE ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .12-.24 TO 23.0-25.0 HZ.  24451-S3498-94019.02  032594.1219-QNS44461

Max = -99.1

Max = -19.9

Max = -2.45

Time (Sec)
NORTHRISE EARTHQUAKE  JANUARY 17, 1994  04:31 PST
ALHAMBRA - FREMONT SCHOOL  CHN 2: UP
INSTRUMENT-Corrected and Bandpass-Filtered Acceleration, Velocity and Displacement
FILTER BAND: .12-.24 TO 23.0-25.0 HZ. 24461-S3498-94019.02  032594.1219-0NS4A461

MAX = 24.6

MAX = 4.20

MAX = -1.04
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
ALHAMBRA - FREMONT SCHOOL
CHN 3: 360 DEG
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .12-.24 TO 23.0-25.0 Hz.
24461-53498-9A019.02  042594.1027-GN94A461

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)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
ALHAMBRA - FREMONT SCHOOL
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 12-24 TO 23.0-25.0 HZ.
24461-53459-94019.02  042594.1027-GNW44461

CHN 1: 90 DEG

DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 2: UP

DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 3: 360 DEG

DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LAKE HUGHES #9
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.07-.14 TO 23.0-25.0 HZ.
24272-52516-94024.02  042594.1223-0N64A272

RESPONSE SPECTRA: PSV, PSA & SD  —  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LAKE HUGHES #9
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.07-0.14 TO 23.0-25.0 HZ.
24272-52016-94024.02 042564.1023-01804A272

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

FREQUENCY (HZ)

PSA (G)

SD (IN, CM)

PSV, FS (IN/SEC)

PERIOD (SEC)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LAKE HUGHES #9
CHN 3: 360 DEG
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT 0.7-.14 TO 23.0-25.0 Hz.
24272-S2615-54024.02 042994.1020-0054-0001

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

FREQUENCY (HZ)

PSV, FS (IN/SEC)

PERIOD (SEC)

PSA (G)

50 (IN)

50 (CM)
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
MT. WILSON - CALTECH SEISMIC STATION
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.2-40 TO 23.0-25.0 Hz.
24399-50416-94020.02 042594.1016-0884A399

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIEDGE EARTHQUAKE  JANUARY 17, 1994  04:31 PST
MT. WILSON - CALTECH SEISMIC STATION
CHN 3: 360 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RANGES AT 20-43 TO 23.0-25.0 HZ.
24389-50416-94020.02  042594.1016-0934A399

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

FREQUENCY (HZ)

PSA (G)

SD (IN)

S6 (CM)

PSV, FS (IN/SEC)

PSV, FS (CM/SEC)

PERIOD (SEC)
NORTHridge EARTHaQuake  JANUARY 17, 1994 04:31 PST
MT. WILSON - CALTECH SEISMIC STATION
ACCELEROMGRAM BANDPASS-FILTERED WITH RANKS AT: 0.0 - 40 TO 23.0-25.0 Hz.
24399-50415-94020-02  042994.1016-0WS4A399

CHN 1: 90 DEG
DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 2: UP
DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 3: 360 DEG
DAMPING VALUES: 0, 2, 5, 10, 20%

PANEL DECIM
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
CAMARILLO
UNCORRECTED ACCELEROMETER 25282-S2506-04026.02 042594.0851-0894A282

CHN 1: 270Deg
MAX = 0.122 G

CHN 2: UP
MAX = -0.053 G

CHN 3: 180Deg
MAX = -0.127 G

ACCELERATION (G)
TIME (SEC)
NORTHRIEGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
CAMARILLO
CHN 1: 270 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.10-0.20 TO 23.0-25.0 Hz.
25282-52508-94026.02 042594.0856-0N94A282

RESPONSE SPECTRA: PSV, PSA & SD —— FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRI Called EARTQUAKE JANUARY 17, 1994 04:31 PST CAMARILLO CHN: 2 UP
ACCELEROMETER BANDPASS-_FILTERED WITH RAMPS AT .10-.20 TO 23.0-25.0 HZ,
25262-51250-94026.02 042594.0056-9IN4A222

RESPONSE SPECTRA: PSV, PSA & SD —— FOURIER AMPLITUDE SPECTRUM, FS
DAMPING VALUES: 0.2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
CAMARILLO
CHN 3: 180 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 23-25.0 HZ.
25282-52908-94026.02  042594.0856-04944282

RESPONSE SPECTRA: PSV, PSA & SD  ----  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
ROLLING HILLS ESTATES-RANCHO VISTA SCh.
CHN 1: 90 DEG
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .15-.30 TO 23.0-25.0 HZ.
14405-50757-94025.02 042594.1031-0944A05

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE    JANUARY 17, 1994 04:31 PST
ROLLING HILLS ESTATES-RANCHO VISTA SCH.
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .15-.30 TO 23.0-25.0 HZ.
14405-50757-94025.02  042594.1031-0N94A405

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

FREQUENCY (HZ)

PSV, FS (IN/SEC)

PSV, FS (CM/SEC)

SD (CM)

SD (IN)

PSA (G)

PERIOD (SEC)
NORTH RIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
POLLING HILLS ESTATES-RANCHO VISTA SCH.
CHN 3: 360 0EG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.15-0.30 TO 23.0-25.0 HZ.
14405-50757-94025.02 042594.1031-GN94A405

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2.5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
ROLLING HILLS ESTATES-RANCHO VISTA SCH.
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 15-30 TO 23.0-25.0 HZ.
14405-58757-9a029.02 942504.1031-0n44440s

CHN 1: 90 DEG

DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 2: UP

DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 3: 360 DEG

DAMPING VALUES: 0, 2, 5, 10, 20%

PERIOD (SEC)
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 64:31 PST
POINT MUGU - NAVAL AIR STATION CHN: 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: 0.15-0.30 TO 23.0-25.0 HZ 25147-53491-94026.02 031694.1549-0N94A147

MAX = 140.7

MAX = 16.2

MAX = -2.74

TIME (SEC)
NORTH RIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION  CHN 2. UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND .15-.30 TO 23.0-25.0 HZ.  25147-S3491-94026.02  031694.1549-0N94A447

MAX = -63.0

MAX = 4.26

MAX = 0.94
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION  CHN 3  360 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .15 - .30 TO 23.0 - 25.0 Hz.  25147 53491-94026.02 031694.1549-Q094A147

MAX = 174.1

MAX = -13.0

MAX = -2.08
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.15–0.30 TO 23.0–25.0 HZ.
25147-53491-94026.02  042594.0826-DN94A147

RESPONSE SPECTRA: PSV, PSA & SD  —  FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION
CHN 2: UP
ACCELEROMETER BANDPASSED FILTERED WITH RAMPS AT .15-.30 TO 23.0-25.0 HZ.
25147-53491-90026.02 042594.0826-0N94A147

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION
CHN 3: 360 DEG
ACCELEROMGRAM BANDPASS-FILTERED WITH RAMPS AT .15-.30 TO 23.0-25.0 HZ.
25147-53491-94026.02  042594.0626-QH94A147

RESPONSE SPECTRA: PSV, PSA & SD —— FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTH RIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
POINT MUGU - NAVAL AIR STATION
ACCELEROMETER BANDPASS-FILTERED WITH RANPS AT 15-30 TO 23.0-25.0 Hz.
254147-55461-99-000-002 042584-000-000-4NH444147

CHN 1: 90 DEG

DAMPING VALUES: 0, 2.5, 10, 20%

CHN 2: UP

DAMPING VALUES: 0, 2.5, 10, 20%

CHN 3: 360 DEG

DAMPING VALUES: 0, 2.5, 10, 20%
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LANCASTER - FOX AIRFIELD GROUNDS  CHN 2: UP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .15-.30 TO 23.0-25.0 HZ.  24475-S4819-94026.02  032894.1446-00944475

MAX = 47.1

MAX = 3.98

MAX = 0.90
NORTHRIDGE EARTHQUAKE  
JANUARY 17, 1994 04:31 PST  
LANCASTER - FOX AIRFIELD GROUNDS  CHN 3  360 DEG  
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT  
FILTER BAND: .15- .30 TO 23.0-25.0 HZ.  24475-S4819-94026.02  032894.1446-QN94A475

MAX = 79.8

MAX = 6.98

MAX = -1.54

ACCELERATION (G)

VELOCITY (G)

DISPLACEMENT (G)

TIME (SEC)

0  10  20  30  40  50  60
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
LANCASTER - FOX AIRFIELD GROUNDS
CHN 1: 90 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 0.15-30 TO 23.0-25.0 HZ.
24475-S4019-94026.02 042594.0955-GN94A475

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

FREQUENCY (HZ)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LANCASTER - FOX AIRFIELD GROUNDS
CHN 2: UP
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 15-30 TO 23.0-25.0 HZ.
24475-54819-94026.02  042594.0955-0944A475

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)
NORTHRIEDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
LANCASTER - FOX AIRFIELD GROUNDS
CHN 3: 360 3EG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .15-.30 TO 23.0-25.0 HZ.
24475-54819-94026.02  042594.9955-0N94A475

--- 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 (IN/SEC)

PERIOD (SEC)
NORTHRIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
VENTURA - HARBOR & CALIFORNIA
UNCORRECTED ACCELEROMETER 25340-52770-94025.06 032494.1157-QN94A340

ACCELERATION (G)

CHN 1: 90 DEG
MAX = -0.054 G

CHN 2: UP
MAX = -0.027 G

CHN 3: 360 DEG
MAX = 0.077 G

TIME (SEC)

0 10 20 30 40 50 60
NORTHRIDGE EARTHQUAKE   JANUARY 17, 1994 04:31 PST
VENTURA - HARBOR & CALIFORNIA   CHN 1: 90 DEG
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 Hz.   25340-S2770-94025.06   042594.0919-QN94A340

MAX = -53.0

MAX = 7.82

MAX = 2.58

TIME (SEC)

ACCELERATION (G/SEC/SEC)

VELOCITY (G/SEC)

DISPLACEMENT (CM)
NORTHRIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VENTURA - HARBOR & CALIFORNIA  CHN 2  LP
INSTRUMENT-CORRECTED AND BANDPASS-FILTERED ACCELERATION, VELOCITY AND DISPLACEMENT
FILTER BAND: .10-.20 TO 23.0-25.0 Hz.  25340-S2770-94025.06  042594.0919-0N544340

MAX = -24.7

MAX = -5.09

MAX = 2.59
NORTHRIIDGE EARTHQUAKE JANUARY 17, 1994 04:31 PST
VENTURA - HARBOR & CALIFORNIA

ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT .10-.20 TO 23.0-25.0 HZ.
25340-52770-94025.06 042594.0925-0N94A340

RESPONSE SPECTRA: PSV, PSA & SD — FOURIER AMPLITUDE SPECTRUM: FS
DAMPING VALUES: 0, 2, 5, 10, 20%
NORTH RIDGE EARTHQUAKE  JANUARY 17, 1994 04:31 PST
VENTURA - HARBOR & CALIFORNIA
CHN 3: 360 DEG
ACCELEROMETER BANDPASS-FILTERED WITH RAMPS AT 10-20 TO 23.0-25.0 HZ,
25340-52770-94025.06 042994.0925-3NS4A340

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