Plots To Accompany Tapes:
LONAFR1TAS29.1G (Phase 1 data)
LONAFR1TAS29.2G (Phases 2 & 3 data)

Processed Strong-Motion Data from the Loma Prieta Earthquake of 17 October 1989
Ground-Response Records

California Strong Motion Instrumentation Program (CSMIP)
Report No. OSNS 91-06

The attached plots for the records from the 44 ground-response stations are excerpted from the forthcoming CSMIP report on the processed strong-motion data from the 1989 Loma Prieta earthquake.

The plots for these ground-response stations are arranged as follows:

No.  Ground-Response Station
1.  Corralitos - Koruse Canyon Rd
2.  Capitola - Pines Station
3.  Santa Cruz - USB/Chilk Apt
4.  Santa Cruz - Mason Ave
5.  San Jose - 9th Ave
6.  Gilroy - Evergreen Cty, Pines Rd. Ridge
7.  Gilroy #1 - Gilroy College, Water Tech
8.  Gilroy #2 - Hwy 101/Pleasant Rd, Motel
9.  Gilroy #3 - Gilroy sewage Plant
10. Gilroy #4 - San Ysidro School
11. Gilroy #5 - San Ysidro
12. Gilroy #7 - Mantell Ranch
13. Upper Lake Dam - Southeast Abutment
14. Guerneville Dam - Downstream
15. Scotts Valley - Grand Park
16. Bolinas - North Street and Pine Drive
17. SARS South - Bolinas, Cienega Rd
19. Monterey - City Hall
20. Agnew - Agnew State Hospital
21. Woodside - Fire Station
22. Upper Crystal Springs Res. - Skyline

No.  Ground-Response Station
23. Upper Crystal Springs Res. - Pogoas
24. Foster City - Redwood Dunes
25. San Francisco Bay - Dunbar Bridge
26. San Francisco Int. Airport
27. San Francisco - Sierra Pt.
28. San Francisco - Diamond Heights
29. San Francisco - Rincon Hill
30. San Francisco - Telegraph Hill
31. San Francisco - Pacific Heights
32. San Francisco - Presidio
33. San Francisco - Cliff House
34. Inez Raines
35. Guerneville - Point Reyes Ranger Station
36. Point Reyes - Station San Jose
37. Petaluma - CSM Station Gravills
38. Petaluma - Mill School
39. Petaluma - EALT Station
40. Treasure Island
41. Terra Nova Island
42. Berkeley - Lawrence Berkeley Lab
43. Piedmont - Mt. Diablo Jr. High Grounds
44. Richmond - City Hall Parking Lot

The plots for each station are identified by the above numbers at the upper corner of each page. For each station four plots are presented in the following order:

1. Phase 1 (Vol. 1) data: uncorrected accelerations. Acceleration for the first 60 seconds are plotted with a common amplitude scaling factor for all channels. Three channels are plotted on one page. The full processed length is 60 seconds for most stations. The plots for the data beyond 60 seconds are also included for long duration records.

2. Phase 2 (Vol. 2) data: instrument and baseline-corrected acceleration, velocity and displacement. The data for the first 30 seconds are plotted with equal scaling for all channels unless otherwise specified. Three channels are plotted on each page. The usable frequency bandwidth of the Phase 2 data, as determined during processing, is indicated on the plots.
3. Phase 3 (Vol. 3) data: response spectra. The pseudo-velocity spectra (PSV), the pseudo-acceleration spectra (PAS), the displacement spectra (SD) for 0%, 2%, 5%, 10%, and 20% dampings are presented on a tripartite logarithmic plot for each channel. The spectra are plotted for periods within the usable data bandwidth.

4. Phase 3 (Vol. 3) data: response spectra. The absolute acceleration spectra (SA) for 0%, 2%, 5%, 10%, and 20% dampings are plotted against period with linear-linear scaling.

**DEFINITION OF USABLE DATA BANDWIDTH**

The usable data bandwidth for each record is indicated on the plots for the Phase 2 and Phase 3 data. The user should only use these data for analyses within this bandwidth. The digitized data are processed and filtered using Crisby filters. The data are first low-pass filtered by a high-frequency filter (typically with a corner frequency of 23 Hz and a roll-off termination frequency of 25 Hz), and then high-pass filtered by a low-frequency filter. The corner frequency of the low-frequency filter may be different for different records. 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 showing the usable data bandwidth with $f_L$ and $f_u$ as corner frequencies](attachment:image.png)

The usable data bandwidth is defined as the band between frequencies $f_L$ and $f_u$ where $f_L$ and $f_u$ 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.

The values of $f_L$ and $f_u$ can be calculated from the corner frequencies ($f_{CL}$, $f_{CU}$) and the roll-off termination frequencies ($f_{CR}$, $f_{CU}$) by using the formulas $f_L = f_{CR} + 0.3 * (f_{CR} - f_{CL})$ and $f_u = f_{CL} - 0.3 * (f_{CU} - f_{CL})$. For example, the usable data bandwidth for data bandpass-filtered with ramps at 0.25 to 0.50 Hz and 23.0 to 25.0 Hz is 0.42 to 23.6 Hz.

*Note on dB: 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 $H(f) = 10^{-20}$; -20 dB corresponds to $H(f) = 0.1$; and -3 dB corresponds to $H(f) = 0.7$.**
SANTA CRUZ MTS (LA MA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
CORRALITOS – EUREKA CANYON RD.: OSMIP S/N 007
PHASE 1 ACCELERATION
RECORD ID: 57007-54809-89292.01

CHN 1: 90 DEG
MAX = 0.487 G

CHN 2: UP
MAX = 0.463 G

CHN 3: 0 DEG
MAX = 0.643 G

TIME (SEC)

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 0 DEG

TIME (SEC)
CORRALITOS - EUREKA CANYON RD. : CSMIP S/N 007

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.3 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 57007-54809-89292.01

RESPONSE SPECTRA: PSA, PSA & SD
SNAPPING VALUES: 0, 2, 5, 10, 20%
CAPITOLA – FIRE STATION: CSMIP S/N 125

SANTA CRUZ MINS (LOMA PRIETA) EARTQUAKE
OCTOBER '79, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.8 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 47125–S1679–89231.04

RESPONSE SPECTRA: PSL, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%

CHN 1: 90 DEG
FREQUENCY (HZ)

CHN 2: UP
FREQUENCY (HZ)

CHN 3: 0 DEG
FREQUENCY (HZ)
SANTA CRUZ - UCSC/LICK LAB.: CSMIP S/N 135

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.6 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 58355-S1682-B9292.04

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

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 0 DEG
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
SANTA CRUZ - UCSC/LICK LAB.: CSNIP S/N 135
PHASE 3 DATA: RESPONSE SPECTRA RECORD IS: 58195-51482-893292.04
USABLE DATA BANDWIDTH: 0.08 TO 23.6 Hz (0.04 TO 11.8 SEC)

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

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

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

PERIOD (SEC)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.28 TO 23.6 Hz
(0.04 TO 11.8 sec)

RECORD ID: 58065-51715-89292.02

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

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 0 DEG
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE  OCTOBER 17, 1989   17:04 PDT
SARATOGA - ALOMA AVE.: CSMIP S/N 065
PHASE 3 DATA: RESPONSE SPECTRA  RECORD ID: 56865-51715-89292.02
USABLE DATA BANDWIDTH: 0.08 TO 23.6 Hz (0.04 TO 11.8 SEC)

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

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

CHN 3: 0 DEG
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN JOSE - SANTA TERESA HILLS: CSMIP S/N 563
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.6 Hz
(0.04 TO 11.8 SEC)
RECORD ID: 57563-00356-89293.01

RESPONSE SPECTRA: PSV, PSF & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz
(1.04 TO 7.35 sec)
RECORD ID: 47006-S1635-89292.01

RESPONSE SPECTRA: PSV, ISA & SU
AMPING VALUES: 0, 2.5, 16.25x

CHN 1: 67 DEG
FREQUENCY (HZ)

CHN 2: UP
FREQUENCY (HZ)

CHN 3: 337 DEG
FREQUENCY (HZ)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6HZ
(0.04 TO 7.35 SEC)

RECORD ID: 47379-52602-89291.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ WTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz
(0.04 TO 7.35 SEC)
RECORD ID: 47380-02603-89291.04

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.2, 5, 10, 20%
CHN 1: 90 DEG
DAMPING VALUES: 0.2, 5, 10, 20%

CHN 2: UP
DAMPING VALUES: 0.2, 5, 10, 20%

CHN 3: 0 DEG
DAMPING VALUES: 0.2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USEABLE DATA BANDWIDTH: 6.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)
RECORD ID: 47381-52757-09291.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2.5, 10, 20%

CHN 1: 90 DEG
FREQUENCY (HZ)

CHN 2: UP
FREQUENCY (HZ)

CHN 3: 0 DEG
FREQUENCY (HZ)
SANTA CRUZ MTS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 25.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 57382-53501-89293-01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz
(0.04 TO 7.35 sec)

RECORD ID: 57383-52606-89293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2.5, 10, 20%
CHAN 1: 90 DEG
MAX = 314.3

CHAN 2: UP
MAX = -100.8

CHAN 3: 0 DEG
MAX = 205.6

TIME (SEC)
0 5 10 15 20 25 30

ACC (CM/SEC/SEC)
-600 0 600

VELOCITY (CM/SEC)
-16.4 0 16.4

DISPL (CM)
-16 0 16
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
COYOTE LAKE DAM - SOUTHWEST ABUTMENT: C5WIP S/N 217
PHASE 1 ACCELERATION
RECORD ID: 57217-S2569-B9293.02

CHN 1: 285 DEG

CHN 2: UP

CHN 3: 195 DEG

MAX = -0.486 g

MAX = -0.082 g

MAX = -0.183 g

ACCELERATION (g)

TIME (SEC)

CHN 1: 285 DEG

CHN 2: UP

CHN 3: 195 DEG

ACCELERATION (g)

TIME (SEC)
SANTA CRUZ MINE (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
COYOTE LAKE DAM - SOUTHWEST ABUTMENT: CSMIP S/N 217

PHASE 2 FILTERED DATA: ACCELERATION, VELOCITY AND DISPLACEMENT

USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz (0.04 TO 7.35 SEC) RECORD ID: 57217-52589-89293-02

CHN 1: 285 DEG

CHN 2: UP

CHN 3: 195 DEG
COYOTE LAKE DAM - SOUTHWEST ABUTMENT: CSMIP S/N 217

SANTA CRUZ MTS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 25.6 HZ
(0.04 TO 2.35 SEC)

RECORD ID: 57217-52569-049293.02

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

CHN 1: 285 DEG
FREQUENCY (Hz)

CHN 2: UP
FREQUENCY (Hz)

CHN 3: 195 DEG
FREQUENCY (Hz)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
COYOTE LAKE DAM - DOWNSTREAM: CSMIP S/N 504
PHASE 1 ACCELERATION
RECORD ID: 57504-51838-89293.01

CHN 1: 285 DEG
MAX = 0.183 G

CHN 2: UP
MAX = 0.099 G

CHN 3: 195 DEG
MAX = 0.183 G

TIME (SEC)

CHN 1: 265 DEG

CHN 2: UP

CHN 3: 195 DEG

TIME (SEC)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.24 TO 7.35 SEC)
RECORD ID: 57504-01830-B9293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING ZALUPS: 0, 2, 5, 10, 20%
CHN 1: 90 DEG
MAX = 0.11 G

0.2
0
-0.2

0 5 10 15 20 25 30
TIME (SEC)

CHN 2: UP
MAX = -0.009 G

0.2
0
-0.2

0 5 10 15 20 25 30
TIME (SEC)

CHN 3: 0 DEG
MAX = 0.13 G

0.2
0
-0.2

0 5 10 15 20 25 30
TIME (SEC)

CHN 1: 90 DEG

0.2
0
-0.2

30 35 40 45 50 55 60
TIME (SEC)

CHN 2: UP

0.2
0
-0.2

30 35 40 45 50 55 60
TIME (SEC)

CHN 3: 0 DEG

0.2
0
-0.2

30 35 40 45 50 55 60
TIME (SEC)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(1.04 TO 7.35 SEC)
RECORD ID: 57191-52496-89293, 02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ Mtns (Loma Prieta) Earthquake October 17, 1989 17:04 PDT
HOLLISTER - SOUTH STREET AND PINE DRIVE: CSNIP S/N 524
PHASE I ACCELERATION
RECORD ID: 47524-S15B5S-89291.02

CHN 1: 90 DEG
MAX = -0.177 G

CHN 2: UP
MAX = -0.198 G

CHN 3: 0 DEG
MAX = 0.370 G

TIME (SEC)

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 0 DEG
PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.04 TO 23.6 Hz
(2.04 TO 11.8 sec)
RECORD ID: 47524-51585-80291.CX

RESPONSE SPECTRA: PSV, FSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.8 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 47189-5/838-89291.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.8 HZ
(0.24 TO 7.35 SEC)

RECORD ID: 47179-J1591-89292.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.2, 5, 10, 20%
SANTA CRUZ MINS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.24 TO 23.8 HZ
(0.04 TO 2.94 SEC)

RECORD ID: 47377-S1584-B9292.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.2, 5.10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE  
OCTOBER 17, 1989 17:04 PDT  

gnew - agnew state hospital: csmip s/n 066  
phase 1 acceleration  
record id: 57066-61580-89292.02  

CHN 1: 90 DEG
MAX = 0.163 G

CHN 2: UP
MAX = 0.098 G

CHN 3: 0 DEG
MAX = 0.172 G

TIME (SEC)

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 0 DEG

TIME (SEC)
AGNEW - AGNEWS STATE HOSPITAL: CSMIP S/N 066

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 22.6 HZ
(0.04 TO 11.8 SEC)

RECORD IDs: 57066-51589-8922V.02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.7, 5, 10, 20%
WOODSIDE - FIRE STATION: CSMIP S/N 127

SANTA CRUZ WTSR (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58127-51673-89292.0:

RESPONSE SPECTRA: PSA, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
UPPER CRYSTAL SPRINGS RES.  - SKYLINE: CSMIP S/N 373

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989  17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.8 HZ
(0.04 TO 7.35 SEC)

RECORD ID: D9373-S2758-B9293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
UPPER CRYSTAL SPRINGS RES. – PULGAS: CSMIP S/N 378

SANTA CRUZ MNTS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
[0.04 TO 7.35 SEC]

RECORD ID: 58338-52601-89292.02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
FOSTER CITY - REDWOOD SHORES: CSMIP S/N 375

SANTA CRUZ MINS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.6 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 58375-51819-89291.02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 1, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
SAN FRANCISCO BAY - DUNBARON BRIDGE: CSMIP S/N 596
PHASE 1 ACCELERATION
RECORD ID: 08596-56220-00208.03

CHN 1: 357 DEG
WEST END FREE FIELD
MAX = -0.134 g

CHN 2: UP
WEST END FREE FIELD
MAX = 0.065 g

CHN 3: 267 DEG
WEST END FREE FIELD
MAX = -0.121 g

CHN 1: 357 DEG
WEST END FREE FIELD

CHN 2: UP
WEST END FREE FIELD

CHN 3: 267 DEG
WEST END FREE FIELD

TIME (SEC)

ACCELERATION (g)
SAN FRANCISCO BAY - DUMBARTON BRIDGE: CSMIP S/N 596

SANTA CRUZ MNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.25 TO 23.8 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 585836-68202-00204.R00

RESPONSE SPECTRA: PSV,PSA & SD
DAMPING VALUES: 0, 2.5, 10, 20%

CHN 1: 357 DEG
WEST END FREE FIELD
FREQUENCY (HZ)

CHN 2: 357 DEG
WEST END FREE FIELD
FREQUENCY (HZ)

CHN 3: 357 DEG
WEST END FREE FIELD
FREQUENCY (HZ)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58223-51846-83291.02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN FRANCISCO - SIERRA PT. CSMIP S/N 539

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.17 TO 23.6 HZ
(0.04 TO 5.86 SEC)

RECORD ID: 58539-59446-89294.01

RESPONSE SPECTRA: PSA, PSA & SD
DAMPING VALUES: 0, 1.5, 10, 20%
SAN FRANCISCO - DIAMOND HEIGHTS: CSMIP S/N 130

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.8 HZ
(0.04 TO 7.35 SEC)

RECORD ID: DB130-51675-89294.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2.5, 10, 20%
SAN FRANCISCO - RINCON HILL: CSMIP S/N 151

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58151-51708-89293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN FRANCISCO - TELEGRAPH HILL: CSMIP S/N 133

SANTA CRUZ MINS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58133-51674-89293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN FRANCISCO - PACIFIC HEIGHTS: CSMIP S/N 131

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58131-51683-9293.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SAN FRANCISCO - PRESIDIO: CSMIP S/N 222

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA

USABLE DATA BANDWIDTH: 0.14 TO 73.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 5B222-54810-89293.01

RESPONSE SPECTRA: PSA, PSA & SD

DAMPING VALUES: 0.2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz
(0.04 TO 7.35 sec)
RECORD ID: 58132-51609-89294.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE  
OCTOBER 17, 1989 17:04 PDT  
POINT BONITA: CSWIP S/N 043  
PHASE 1 ACCELERATION  
RECORD ID: 58043-54807-89297.01

CHN 1: 297 DEG  
MAX = 0.074 G

CHN 1: UP  
MAX = -0.034 G

CHN 3: 207 DEG  
MAX = -0.072 G

CHN 1: 297 DEG

CHN 2: UP

CHN 3: 207 DEG

TIME (SEC)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USEABLE DATA BANDWIDTH: 0.17 TO 23.6 HZ
(0.04 TO 5.98 SEC)

RECORD ID: 58043-54807-89197.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.17 TO 27.6 Hz
(0.04 TO 1.88 SEC)
RECORD ID: 68003-S1816-B3297.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0.2, 5, 10, 20%

CHN 1: 90 DEG

CHN 2: UP

CHN 3: 3 DEG

FREQUENCY (HZ)
P S(PSV) (PSA) SD (IN)

FREQUENCY (HZ)
P S(PSV) (PSA) SD (IN)

FREQUENCY (HZ)
P S(PSV) (PSA) SD (IN)
SANTA CRUZ MINS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 POT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 2.6 HZ
(0.04 TO 7.35 SEC)
RECORD ID: 57064-51815-80292.02

RESPONSE SPECTRA: PV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz
(0.04 TO 7.35 sec)
RECORD ID: J6393-51847-89721.02

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTS (LOMA PRIETA) EARTHQUAKE  OCTOBER 17, 1989  17:04 PDT
HAYWARD — MUIR SCHOOL:  C5WIP 5/N 393
PHASE 3 DATA:  RESPONSE SPECTRA  RECORD ID:  58395-51847-8929-02
USABLE DATA SAMPLING:  0.14 TO 23.8 HZ (0.04 TO 7.35 SEC)

CHN 1: 90 DEG
DAMPING VALUES:  0.2, 5, 10, 20%

CHN 2:  UP
DAMPING VALUES:  0.2, 5, 10, 20%

CHN 3:  0 DEG
DAMPING VALUES:  0.2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 25.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58498-55089-R9299.03

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

CHN 1: 310 DEG
FREQUENCY (HZ)

CHN 2: UP
FREQUENCY (HZ)

CHN 3: 220 DEG
FREQUENCY (HZ)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989  17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.08 TO 23.8 HZ
(0.04 TO 11.8 SEC)

RECORD ID: 58117-52598-89296.0

RESPONSE SPECTRA: PSV, PSA & SD
SAMPLING VALUES: 0, 2, 5, 10, 20%
YERBA BUENA ISLAND: CSMIP S/N 163

SANTA CRUZ MTNS (LGMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58163-61720-89296.01

RESPONSE SPECTRA: PSV, PSA & SD
DAMPING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
YERBA BUENA ISLAND: CSWIP S/N 163
PHASE 3 DATA: RESPONSE SPECTRA  RECORD ID: 58163-51720-89296.01
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz (0.04 TO 7.35 SEC)

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

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

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

PERIOD (SEC)
SAN FRANCISCO (LOMA PRIETA) EARTHQUAKE OCTOBER 17, 1989 17:04 PDT
BERKELEY - LAWRENCE BERKELEY LAB: CSMIP S/N 471

PHASE 2 FILTERED DATA: ACCELERATION, VELOCITY AND DISPLACEMENT
USABLE DATA BANDWIDTH: 0.14 TO 23.6 Hz (0.04 TO 7.35 SEC) RECORD ID: 58471-55150-89297.01

CHN 1: 90 DEG

MAX = -14.4

CHN 2: UP

MAX = -38.0

CHN 3: 0 DEG

MAX = 47.7

TIME (sec)
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58471-55150-89297.01

RESPONSE SPECTRA: PSV, PSA & SD
SAMPLING VALUES: 0, 2, 5, 10, 20%
SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE  OCTOBER 17, 1989  17:04 PDT
BERKELEY - LAWRENCE BERKELEY LAB: CSWIP S/N 471
PHASE 3 DATA: RESPONSE SPECTRA  RECORD ID: 58471-SS132-B99397-01
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ (0.04 TO 7.35 SEC)

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

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

CHN 3: 0 DEG
DAMPING VALUES: 0, 2, 5, 10, 20%
PIEDMONT - PIEDMONT JR. HIGH GROUNDS: CSMIP S/N 338

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.14 TO 23.6 HZ
(0.04 TO 7.35 SEC)

RECORD ID: 58338-52791-89293.01

RESPONSE SPECTRA: PSA, PSA & SD
DAMPING VALUES: 0, 1.5, 10, 20%
RICHMOND - CITY HALL PARKING LOT: CSMIP S/N 505

SANTA CRUZ MTNS (LOMA PRIETA) EARTHQUAKE
OCTOBER 17, 1989 17:04 PDT

PHASE 3 DATA: RESPONSE SPECTRA
USABLE DATA BANDWIDTH: 0.17 TO 22.9 HZ
(0.04 TO 5.88 SEC)

RECORD ID: 58505-94831-89297.01

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