SPECIAL REPORT 144
PROCESSED DATA FROM
THE STRONG-MOTION RECORDS
OF THE SANTA BARBARA EARTHQUAKE
OF
13 AUGUST 1978
FINAL RESULTS
1979
IN THREE VOLUMES

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North Hall is a three-story reinforced concrete and masonry office building (Figure 9) constructed in 1960 at the University of California, Santa Barbara, Goleta, California. In 1975 the building was found to be unsafe for seismic loading and reinforced concrete shear walls were added. The building is located 12.75 km from the epicenter of the 13 August 1978 Santa Barbara earthquake, at an epicenter-station azimuth of 290.40°.

The building (Figures 10 and 11) is rectangular with plan dimensions of 34 ft. 0 in. by 240 ft. 0 in. and the overall height is 33 ft. 0 in. The lateral load resisting system in both directions is composed of the originally constructed full height masonry shear walls and the added full height reinforced concrete shear walls. During a structural engineering review of all campus buildings, it was found that the building was originally designed for 1/10th the 1958 code seismic force, and reinforced concrete shear walls were added in both directions. The vertical load carrying system includes a 2.5 in. concrete slab, pan joists and floor beams supported by concrete columns, masonry columns and masonry walls. The foundation is concrete caissons under walls and columns tied with horizontal grade beams.

Remote accelerometers were placed at the roof, third floor and ground floor at the locations shown in Figures 10 and 11. All accelerations were recorded simultaneously on 7 in. wide film at a central recorder located on the ground floor. The building was instrumented in accordance with the procedures developed at the U.S. Geological Survey (Rojahn and Matthiesen, 1977) together with considerations of the ambient vibration studies of this particular structure.

The digitized uncorrected accelerograms, corrected acceleration, velocity, displacement plots and spectra are shown on pages 6 through 80. Peak north-south (NS) corrected accelerations were 1.0 g at the roof, 0.66 g at the third floor and 0.40 g at the ground floor. Peak east-west (EW) corrected accelerations were 0.55 g at the third floor and 0.27 g at the ground floor. In general, the NS accelerations were greater than EW accelerations at all levels. Visible damage to the structure was limited to fine cracks in the reinforced concrete shear walls.
### Table III

**Recorder Information, UCSB North Hall Building**

- **Instrument type:** Kinematrico CRA-1
- **Serial number:** 115
- **Installed:** 7 November 1975

**Film installed:** 3 August 1978  
**Recovered:** 14 August 1978

#### Galvanometer Angles

<table>
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<th>Trace#</th>
<th>Orientation (floor/loc)</th>
<th>Sensitivity † (mm/g)</th>
<th>Zero Signal A°</th>
<th>Deflection for + 1 g B°+</th>
<th>Deflection for - 1 g B°-</th>
<th>Period (sec)</th>
<th>Crit. Damp %</th>
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<td>5.85</td>
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<td>N (grnd/w end)</td>
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<td>5.74</td>
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* Trace numbers coincide with accelerometer numbers on Figures 10 and 11.

† Sensitivities which may be used prior to taking into account the oblique-angle recording geometry.
Figure 9. UCSB South Hall Building showing south view (a) and west view (b) of the structure.
Accelerometers 1, 2, 3, and 4 are attached to the ground floor slab. Vertical starter and recorder are located adjacent to accelerometers 1, 2, and 3.

Figure 10. North Hall Plan and Elevation
Accelerometers ②, ③, ④, and ⑤ are attached to the top of the third floor slab.

Accelerometer ⑦ is attached to the underside of a roof joist.

Figure 11. North Hall Plans
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DME 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 1
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMETER IS BAND PASS FILTERED BETWEEN .200 - .500 AND 23.00 - 25.00 CYC/SEC
• PEAK VALUES ACCEL= 395.9 CM/SEC/SEC, VELOCITY=- 34.37 CM/SEC, DISPL= 5.590 CM

ACCELEROMETER
CH/SEC/SEC

VELOCITY
CH/SEC

DISPLACEMENT
CH

TIME - SECONDS
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 2
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF 0.02000 SEC
ACCELEROMETER IS BAND PASS FILTERED BETWEEN 0.200 - 5.000 AND 23.00 - 25.00 CYC/SEC
- PEAK VALUES ACCEL=105.6 CM/SEC/SEC, VELOCITY=7.140 CM/SEC, DISPL=1.340 CM
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 3
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMETER IS BAND PASS FILTERED BETWEEN .200 - .500 AND 23.00 - 25.00 CYC/SEC
- PEAK VALUES ACCEL=269.0 CM/SEC/SEC, VELOCITY=-21.27 CM/SEC, DISPL=-2.590 CM

TIME - SECONDS

-400 -40 -4
0 0 0
400 40 4

ACCELERATION CM/SEC/SEC

VELOCITY CM/SEC

DISPLACEMENT CM
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 4
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMGRAM IS BAND PASS FILTERED BETWEEN .200 - .500 AND 23.00 - 25.00 CYC/SEC
- PEAK VALUES ACCEL=-351.3 CM/SEC/SEC. VELOCITY=-34.26 CM/SEC. DISPL=5.340 CM

Graphs showing acceleration, velocity, and displacement over time.
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
OMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 5
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEGRAM IS BAND PASS FILTERED BETWEEN 0.200 - 0.500 AND 23.00 - 25.00 CYC/SEC
- PEAK VALUES ACCEL=676.7 CM/SEC/SEC, VELOCITY=-45.01 CM/SEC, DISPL=6.690 CM

ACCELERATION
CM/SEC/SEC

VELOCITY
CM/SEC

DISPLACEMENT
CM

TIME - SECONDS
0 5 10 15 20 25 30 35 40
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMC 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 6
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMETER IS BAND PASS FILTERED BETWEEN .200 -.500 AND 23.00-25.00 CYC/SEC
PEAK VALUES ACCEL=561.0 CM/SEC/SEC, VELOCITY=25.64 CM/SEC, DISPL=2.850 CM
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT

SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 7
DATA IS PLOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMGRAM IS BAND PASS FILTERED BETWEEN .200 - .500 AND 23.00 - 25.00 CYC/SEC
* PEAK VALUES ACCEL=971.8 CM/SEC/SEC, VELOCITY=-54.43 CM/SEC, DISPL=-7.470 CM
CORRECTED ACCELERATION, VELOCITY, DISPLACEMENT
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 8
DATA IS PlOTTED AT EQUAL TIME INCREMENTS OF .02000 SEC
ACCELEROMETER IS BAND PASS FILTERED BETWEEN .200 - .500 AND 23.00 - 25.00 CYC/SEC
  * PEAK VALUES ACCEL=536.6 CM/SEC/SEC, VELOCITY=-46.97 CM/SEC, DISPL=6.000 CM
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 1
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200 - .500 TO 23.00 - 25.00 Hz
CONVOLUTION THEOREM PROCEDURE
ABSOLUTE ACCELERATION RESPONSE SPECTRUM

13 AUG 1978 2254 GMT UCSB N HALL TR 2
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200 - 0.500 TO 23.00 - 25.00 HZ
CONVOLUTION THEOREM PROCEDURE
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 3
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

ACCELERATION RESPONSE CM/SEC/SEC

UNDAMPED NATURAL PERIOD-SECONDS
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 4
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 5
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

ACCELERATION RESPONSE - CM/SEC/SEC

UNDAMPED NATURAL PERIOD-SECONDS
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 6
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 8
0, 2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE
ABSOLUTE ACCELERATION RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 9
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 1
0, 2.5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASED FROM 0.200 - 0.500 TO 23.00 - 25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE - CM/SEC

UNDAMPED NATURAL PERIOD - SECONDS

RV
FAS

STRONG-MOTION RECORDS SANTA BARBARA 060179
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 3
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 5
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE - CM/SEC

UNDAMPED NATURAL PERIOD - SECONDS

RV
FAS
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UESB N HALL TR 7
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEEDURE

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RV
FAS
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 8
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200 - .500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VEL OCITY RESPONSE-CM/SEC

RV

----- FAS

UNDAMPED NATURAL PERIOD-SECONDS
RELATIVE VELOCITY RESPONSE SPECTRUM
13 AUG 1978 2254 GMT UCSB N HALL TR 9
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 200-500 TO 23.00-25.00 Hz
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS

RV

FAS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 2
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING:
BAND PASSED FROM .200-.500 TO 23.00-25.00 Hz
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 4
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCIY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 5
0.2,5,10,20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE - CM/SEC

10000.00
4000.00
2000.00
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.50

UNDAMPED NATURAL PERIOD-SECONDS

.04 .1 .2 .4 1 2 4 10 20
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 6
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 7
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASS FROM 0.20-0.50 TO 23.00-25.00 HZ

CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

10000.00
4000.00
2000.00
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.50

.04 .1 .2 .4 1 2 4 10 20
UNDAMPED NATURAL PERIOD-SECONDS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 8
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ

CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS
RESPONSE SPECTRA
13 AUG 1978 2254 GMT UCSB N HALL TR 9
0.2, 5, 10, 20 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 Hz
CONVOLUTION THEOREM PROCEDURE

VELOCITY RESPONSE-CM/SEC

UNDAMPED NATURAL PERIOD-SECONDS

0.4 0.8 1.2 1.6 2.0 2.4 2.8 3.2 3.6 4.0

10000.00
4000.00
2000.00
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.50
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 1
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 2
BAND PASSED FROM .200-.500 TO 23.00-25.00 Hz
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 3
BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ

![Graph showing the Fourier amplitude spectrum of an earthquake's acceleration. The x-axis represents the log of frequency in CPS, ranging from -2.0 to 1.5. The y-axis represents the log of the Fourier amplitude spectrum in cm/sec, ranging from -2.0 to 2.5. There are markers at different frequencies indicating significant points in the spectrum.](image-url)
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978  2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115  TR. 4
BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978  2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 4
BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978  2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 5
BAND PASSED FROM  .200- .500 TO  23.00-25.00 HZ
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 5
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
Fourier Amplitude Spectrum of Acceleration
Santa Barbara Earthquake of 13 August 1978
DMG 213 Santa Barbara, UCSB North Hall S/N 115 TR 6
Band passed from 0.2 to 0.5 Hz to 23.00-25.00 Hz

Fourier Amplitude Spectrum- cm/sec
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 CMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 6
BAND PASSED FROM .200-.500 TO 23.00-25.00 Hz

![Graph showing Fourier amplitude spectrum with labeled frequencies: F_r, F_c, and F_c']
Fourier Amplitude Spectrum of Acceleration
Santa Barbara Earthquake of 13 August 1978 2254 GMT
DMG 213 Santa Barbara UCSB North Hall S/N 115 TR. 7
Band passed from 0.200-0.500 to 23.00-25.00 Hz
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 7
BAND PASS FROM 0.200 - 0.500 TO 23.00 - 25.00 Hz
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMC 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 8
BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ
FOURIER AMPLITUDE SPECTRUM OF ACCELERATION
SANTA BARBARA EARTHQUAKE OF 13 AUGUST 1978 2254 GMT
DMG 213 SANTA BARBARA UCSB NORTH HALL S/N 115 TR. 9
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
VELOCITY RESPONSE ENVELOPE SPECTRUM. 5 PERCENT CRITICAL DAMPING
BAND PASSED FROM 0.200 - 500 TO 23.00 - 25.00 Hz

UNITS = CM/SEC
13 AUG 1978 2254 GMT UCSB HALL TR 4

0-20, 20-40, 40-60, 60+

UNDAMPED NATURAL PERIOD-SECONDS

ACCEL-G/10

TIME - SECONDS

VELOCITY CM/SEC

CALIFORNIA DIVISION OF MINES AND GEOLOGY
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE, 5 PERCENT DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 Hz
13 AUG 1978 2254 GMT UCSB N HALL TR 1

UNITs=CM/SEC

[Graph showing velocity response spectrum with duration on the x-axis and undamped natural period on the y-axis, with shaded regions indicating different velocity ranges (20-40, 40-60, 60+).]
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE 5 PERCENT DAMPING
BAND PASSED FROM 0.05-0.50 TO 23.00-25.00 HZ
13 AUG 1978 2254 GMT UCSB N HALL TR 2

UNITS = CM/SEC

- 5-10.
- 10-15.
- 20-25.
- 25+

RESPONSE DURATION-SEC

UNDAMPED NATURAL PERIOD-SECONDS
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE .5 PERCENT DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ
13 AUG 1978 2254 GMT UCSB N HALL TR 3

UNITS = CM/SEC

- 20-40,
- 40+

UNDAMPED NATURAL PERIOD-SECONDS

RESPONSE DURATION-SEC
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE. 5 PERCENT DAMPING BAND PASSED FROM .200-.500 TO 23.00-25.00 HZ 13 AUG 1978 2254 GMT UCSB N HALL TR 4

UNITS=CM/SEC

[Graph showing response duration spectrum with units and damping bands]
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE .5 PERCENT DAMPING BAND PASSED FROM .200- .500 TO 23.00-25.00 HZ
13 AUG 1978 2254 GMT UCSB N HALL TR 5

UNITS=CM/SEC

4 - 40-80.
3 - 80-120.
2 - 120+
1 -
0 -

UNDAMPED NATURAL PERIOD-SECONDS

RESPONSE DURATION-SEC
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE. 5 PERCENT DAMPING BAND PASSED FROM 0.200-0.500 TO 23.00-25.00 HZ
13 AUG 1978 2254 GMT UCSB N HALL TR 7

UNITs=CM/SEC

- 40-80.
- 80-120.
- 120-160.
- 160-200.
- 200+

UNDAMPED NATURAL PERIOD-SECONDS

RESPONSE DURATION-SEC
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE. 5 PERCENT DAMPING
BAND PASSED FROM .200-.500 TO 23.00-25.00 Hz
13 AUG 1978 2254 GMT UCSB N HALL TR 8

UNITS=CM/SEC

40-80
80-120
120+

RESPONSE DURATION-SEC

UNDAMPED NATURAL PERIOD-SECONDS
DURATION SPECTRUM OF THE VELOCITY RESPONSE ENVELOPE .5 PERCENT DAMPING BAND PASSED FROM .200 - .500 TD 23.00-25.00 Hz
13 AUG 1978 2254 GMT UCSB N HALL TR 9

UNITS=CM/SEC

40 - 80.  80 - 120.  120+

RESPONSE DURATION-SEC

UNDAMPED NATURAL PERIOD-SECONDS

4

3

2

1

0

0  2  4  6
REFERENCES CITED


APPENDIX A

REFERENCE DOCUMENTS ON THE DATA PROCESSING SYSTEM OF THE CALIFORNIA STRONG MOTION INSTRUMENTATION PROGRAM (listed in the order of data flow)


APPENDIX B

TEST RESULTS FOR THE DATA PROCESSING SYSTEM OF THE CALIFORNIA STRONG MOTION INSTRUMENTATION PROGRAM

1. Porter, L.D., Memorandum for the Record: Processing of Strong-Motion Data from the Santa Barbara Earthquake of 13 August 1978, Consistency and Reproducibility of the FM-TOWILL Line-Following Digitizer - Processed Data and Test Results for a Doubly-Digitized Trace (UCSB North Hall Trace 8), CDMS Memorandum OSMS-DPTR-79-1.2, 30 March 1979.


5. Porter, L.D., Memorandum for the Record: Processing of Strong-Motion Data from the Santa Barbara Earthquake of 13 August 1978, Test Results for a Hanning Filter Cutoff of 75 Micrometers in the BUTTER Program, Test Data Set Freitas Building Traces 1, 2, 3, CDMS Memorandum OSMS-DPTR-79-5.1, 30 March 1979.
