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PROCESSED SEISMIC MOTION RECORDS FROM
BIG BEAR, CALIFORNIA
EARTHQUAKE OF JUNE 28, 1992

RECORDED AT SEISMOGRAPH STATIONS
IN SOUTHERN NEVADA

April 1993

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Nevada Operations Office
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MASTER

BIG BEAR, CALIFORNIA EARTHQUAKE OF 28 JUNE 1992

Background

As part of the contract with the U.S. Department of Energy, Nevada Operations Office (DOE/NV), URS/John A. Blume & Associates, Engineers (URS/Blume) maintained a network of seismographs in southern Nevada to monitor the ground motion generated by the underground nuclear explosions (UNEs) at the Nevada Test Site (NTS). The seismographs were located in the communities surrounding the NTS and the Las Vegas valley. When these seismographs were not used for monitoring the UNE generated motions, a limited number of them were maintained for monitoring motion generated by other than UNEs (e.g., motion generated by earthquakes, wind, blast). During the Big Bear earthquake of June 28, 1992, the systems located at 15 of the ground locations recorded the earthquake motions. Due to the potential benefit of these data for the scientific community, DOE/NV authorized the release of these records.

Earthquake Parameters

The earthquake parameters obtained from various sources were:

Epicenter:	34.201°N, 116.826°W
Depth:	7 Km (Caltech/USGS)
Magnitude:	6.6 M_s (NEIC)
Date:	28 June 1992
Origin time:	Day 180 Hr 15 Min 05 Sec 31 (GMT)
Local time:	8:05 AM (PDT)

The earthquake was widely felt throughout southern Nevada. The motion was most perceptible by the occupants of high-rise buildings in Las Vegas; located approximately 250 km from the epicenter. Minor damage was reported at widely dispersed areas, including shifting of mobile home supports.

Description of Equipment

Three types of seismographs were used in the monitoring program. They were L-7 velocity meter manufactured by the Precision Instrument Company (L-7B system) and by Develco, Inc. (L-7D system); PDR-1 by Kinematics; and PDAS-100 by Teledyne Geotech. The FBA-11 accelerometers manufactured by Kinematics were utilized as the sensors for both PDR-1 and PDAS-100 systems. The FBA-11 has a flat response from DC to 50 Hz.

L-7 Velocity Meter: It is a continuously recording velocity seismograph which records the motion on an analog magnetic tape. The system has a flat velocity response over a frequency spectrum from 0.1 Hz to 34 Hz (Reference 1). It has a recording capability of 5 continuous days.

PDR-1: The acceleration signal from the sensors is converted to a digital form and recorded on a digital cassette tape. The selectable sampling rate was set at 200 samples per second per channel.

The system was set to trigger on a short-term average (STA) and long-term average (LTA) threshold. It has a pre-event memory of about 5 seconds and has a recording capability of approximately 20 minutes.

PDAS-100: The acceleration signal from the sensors is converted to a digital form and recorded on a random access memory (RAM) within the system. The selectable sampling rate was set at 200 samples per second per channel. The system was set to trigger on a short-term average (STA) and long-term average (LTA) threshold. It has a selectable pre-event memory of up to 20 seconds and has a recording capability of approximately 20 minutes.

Seismic Recordings

The subject earthquake was recorded at 15 ground station sites in southern Nevada as shown on Figure 1. Those in the Las Vegas valley are detailed in Figure 2. Table 1 tabulates the system type, location, geodetic coordinates and distance from epicenter for each station. At several selected sites, the station was monitored by a secondary system. When both systems recorded the motion, the systems are designated A and B on the tables.

Conversion and Processing

The records obtained from the earthquake were retrieved and converted from field data to a computer compatible format for processing. The processing was performed using URS/Blume's standard signal processing as described in Reference 2.

Briefly, the processing was performed in three phases:

- In Phase 1 processing, the seismic signal was converted from field data to a computer compatible format using a special interface equipment. The data were scaled to an engineering unit (cm/sec^2 or cm/sec). The resulting plots were checked for any error and reviewed for additional processing requirements.
- In Phase 2 processing, the records were processed using the noise reduction techniques. The techniques include baseline correction, cosine tapering and application of low-pass and high-pass filtering using the Butterworth filter, Order 4.

For the UNE generated ground motion records, they are generally band-pass filtered from 0.1 to 33 Hz. Fourier amplitude spectra are generated before and after the Phase 2 processes. The corrected acceleration, velocity and displacement time histories were generated using numerical differentiation and integration. The pseudo relative velocity spectrum (PSRV) of 49 periods and 5 percent of critical damping was computed. The 49 periods are equally spaced on a logarithmic scale from 0.05 to 6.072 seconds.

During the preliminary processing of records from distant earthquakes, it was observed that these records appeared to contain motion of long period than those observed from the UNE generated ground motion. Thus the processing procedure using the standard filter cut-offs would partially filter-out this long period motion. In order to examine the characteristics of

the long-period motion, the lower cut-off frequency was extended to 0.05 Hz and the PSRV was extended to a period of 30.11 seconds. Of course, the PSRV values for periods greater than 20 seconds are not the optimum values since they are a result of response to ground motion which had been filtered with high-pass filter of 0.05 Hz.

- In the final phase, the records were arranged for the long-term preservation and for report preparation. The final product contains data plots in chronological order of data processing; original recording, uncorrected and corrected Fourier amplitude spectra, corrected acceleration, velocity, displacement and PSRV.

Results

Table 2 tabulates the uncorrected peak acceleration or velocity, corrected peak acceleration, velocity and displacement values and any data processing comments. At several locations the systems were not triggered by the arrival of initial wave, but rather by the larger amplitude motion which arrived later. The data are written in a format which is compatible with the standard format for the California Strong-Motion Instrumentation Program (CSMIP) tapes [Reference 3]. Table 3 summarizes the standard data format.

The data were written on a 8MM tape using ASCII format (record length=80, blocksize=2000). Table 4 gives examples of VAX/VMS commands used to create the data tape and an instruction for retrieval of the data files.

Acknowledgment

The network of seismographs in southern Nevada to monitor the seismic motion generated by the UNEs at the NTS was maintained by the staff of electronic technicians consisting of Ray Bradley, Don Morgan, Robert Stewart, Lori Forrester and Jim Graham. The seismic records conversion and processing staff included Vickie Ross, Stephanie Miller, Rosemarie Musso, Ben Gacula and Cory Lieber.

References

1. Navarro, R., and G.M. Wuollet, "The L-7 Velocity Seismograph Shaking-Table Results", NOAA Technical Report ERL 254-ESL 26, Boulder, Colorado, July 1972.
2. Lum, P. K., "Overview of Seismic Signal Conversion and Processing Operations", URS/John A. Blume & Associates, Engineers, San Francisco, JAB-10733-TM3, March 1991.
3. Shakal, A. F. and Huang, M. J., "Standard Tape Format for CSMIP Strong-Motion Data Tapes", California Department of Conservation, Division of Mines and Geology, Office of Strong Motion Studies, Report OSMS 85-03, December 1985.

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 3060 S. HIGHLAND DRIVE
 LAS VEGAS, NEVADA 89109

FIGURE 2: STATIONS RECORDING THE BIG BEAR,
 CALIFORNIA EARTHQUAKE OF
 6/28/92 IN LAS VEGAS VALLEY

TABLE 1: LOCATIONS OF THE RECORDING STATIONS
(Big Bear, California Earthquake of June 28, 1992)

<u>Station No.</u>	<u>Recording System(s)</u>	<u>Location</u>	<u>Coordinates</u>	<u>Distance from Epicenter (Km)</u>
1	PDAS-100	Laughlin	114.58W 35.15N	231
2	PDR-1	Pahrump Site 1	115.98W 36.21N	236
3	PDR-1	Las Vegas	115.14W 36.11N	261
4	L-7	Las Vegas	115.19W 36.17N	265
5	PDR-1	Las Vegas	115.31W 36.26N	267
6	PDR-1	Las Vegas	115.14W 36.17N	267
7	PDR-1	Las Vegas	115.22W 36.22N	268
8	PDR-1	Las Vegas	115.16W 36.21N	270
9A 9B	PDR-1 PDAS-100	Lathrop Wells	116.40W 36.64N	274
10	PDR-1	Las Vegas	115.02W 36.18N	275
11	PDR-1	Beatty	116.76W 36.91N	301
12	PDAS-100	Nevada Test Site	116.06W 36.93N	311
13	PDR-1	Death Valley	117.34W 37.03N	318
14	PDR-1	Alamo	115.12W 37.27N	374
15	PDR-1	Goldfield	117.23W 37.71N	391

TABLE 2: PEAK AMPLITUDES
(Big Bear, California Earthquake of June 28, 1992)

Station No.	Comp	<-- Uncorrected -->		<----- Corrected ----->			Comments
		Accel. (cm/sec ²)	Velocity (cm/sec)	Accel. (cm/sec ²)	Velocity (cm/sec)	Disp (cm)	
1	DOWN	-7.342	0.000	6.769	0.590	-0.196	
1	NORTH	18.162	0.000	17.865	-1.408	0.759	
1	WEST	-21.829	0.000	-21.677	-1.634	1.126	
2	DOWN	-3.109	0.000	-3.089	0.371	-0.228	
2	NORTH	-5.548	0.000	-5.542	-0.829	0.482	
2	WEST	-4.371	0.000	-4.365	0.876	-0.536	
3	DOWN	-5.470	0.000	-5.000	0.747	0.336	
3	NORTH	9.146	0.000	8.583	-2.491	1.118	
3	WEST	-11.125	0.000	-10.537	-2.818	1.348	
4	DOWN	0.000	-0.104	1.137	-0.102	0.017	
4	NORTH	0.000	0.292	-2.775	0.292	-0.057	
4	WEST	0.000	-0.205	-2.092	-0.204	-0.060	
5	DOWN	-3.193	0.000	-3.157	0.361	-0.241	
5	NORTH	4.018	0.000	3.982	1.274	0.710	
5	WEST	-4.468	0.000	-4.424	1.293	0.823	
6	DOWN	-4.013	0.000	-4.079	0.865	-0.291	
6	NORTH	-10.211	0.000	-9.984	1.915	-0.793	
6	WEST	11.563	0.000	11.542	-3.186	-2.130	
7	DOWN	-5.422	0.000	-5.162	-0.726	0.264	
7	NORTH	-6.466	0.000	-6.421	1.519	0.779	
7	WEST	-9.447	0.000	-9.471	1.908	1.042	
8	DOWN	4.424	0.000	4.442	-0.763	-0.254	
8	NORTH	11.578	0.000	11.579	-2.534	-1.459	
8	WEST	6.940	0.000	6.856	-1.789	-1.191	
9A	DOWN	1.867	0.000	1.892	0.604	0.310	
9A	NORTH	3.208	0.000	3.207	-0.609	-0.439	
9A	WEST	3.193	0.000	3.181	0.843	0.415	
9B	DOWN	1.903	0.000	1.904	0.588	0.303	
9B	NORTH	3.154	0.000	3.140	0.607	-0.437	
9B	WEST	3.204	0.000	3.181	0.855	0.399	
10	DOWN	1.521	0.000	1.520	-0.242	-0.160	
10	NORTH	2.513	0.000	2.515	-0.569	-0.643	
10	WEST	-3.825	0.000	-3.771	0.542	-0.443	
11	DOWN	-0.925	0.000	-0.888	0.324	-0.308	LATE TRIGGERED
11	NORTH	2.627	0.000	2.646	-0.329	0.250	
11	WEST	2.967	0.000	2.979	-0.281	-0.164	
12	DOWN	-0.710	0.000	-0.681	-0.243	-0.203	
12	NORTH	-1.455	0.000	-1.455	0.396	-0.337	
12	WEST	-1.362	0.000	-1.331	0.274	0.169	

TABLE 2: PEAK AMPLITUDES (CONT'D)

Station No.	Comp	<-- Uncorrected -->		<----- Corrected ----->			Comments
		Accel. (cm/sec ²)	Velocity (cm/sec)	Accel. (cm/sec ²)	Velocity (cm/sec)	Disp (cm)	
13	DOWN	-0.902	0.000	-0.804	0.243	0.182	
13	NORTH	1.415	0.000	1.412	0.226	-0.181	
13	WEST	-1.603	0.000	-1.602	0.286	0.280	
14	DOWN	1.395	0.000	1.429	0.363	0.232	LATE TRIGGERED
14	NORTH	-1.843	0.000	-1.798	0.606	-0.374	
14	WEST	-3.149	0.000	-2.877	-0.864	0.569	
15	DOWN	0.485	0.000	0.473	0.149	0.155	LATE TRIGGERED
15	NORTH	1.135	0.000	1.117	-0.241	0.186	SHORT RECORDS
15	WEST	-0.942	0.000	-0.930	-0.193	-0.150	

TABLE 3: DATA FORMAT

Each station contains 3 data channels and contains the following 4 files:

		Units
Vol 1	Uncorrected acceleration	1000/g
Vol 2	Corrected acceleration	cm*100/sec ²
	Corrected velocity	cm*100/sec
	Corrected displacement	cm*100
Vol 3	Pseudo Response Velocity	cm/sec
Vol 4	Fourier Amplitude Spectra	cm/sec

A typical station contains the following data:

<u>Vol</u>	<u>Ch.</u>	<u>Line No.</u>	<u>No. of Lines</u>	<u>Format</u>	<u>Description</u>
1	1	1-13	13	a80	Header of alphanumeric data.
		14-20	7	16i5	Header of 100 integer parameters.
		21-27	7	8f10.3	Header of 50 real-value parameters.
		28-..	many	8f10.0	.. points of t(i),a(i) pairs of acc. data.
		...	1	a80	/& --- End of data for Channel 1.
	2	(Repeat header, data and end-of-file mark for Channel 2)			
	3	(Repeat header, data and end-of-file mark for Channel 3)			
2	1	1-25	25	a80	Header of alphanumeric data.
		26-32	7	16i5	Header of 100 integer parameters.
		33-45	13	8f10.3	Header of 100 real-value parameters.
		46	1	a80	Acceleration header information.
		47-..	many	8f10.0	... points of a(i) of dt= .005 second.
		..	1	a80	Velocity header information.
		..	many	8f10.0	... points of v(i) of dt= .005 second.
		..	1	a80	Displacement header information.
		..	many	8f10.0	... points of d(i) of dt= .005 second.
		..	1	a80	/& --- End of data for Channel 1
	2	(Repeat header, data and end-of-file mark for Channel 2)			
	3	(Repeat header, data and end-of-file mark for Channel 3)			
3	1	1-30	30	a80	Header of alphanumeric data.
		31-37	7	16i5	Header of 100 integer parameters.
		38-50	13	8f10.3	Header of 100 real-value parameters.
		51	1	f10.3	Damping values (.05 pct of critical).
		52-64	13	8f10.3	49 periods at which PSRV are computed (65 periods for the subject earthquake data).
		65	1	a80	PSRV header information
		65-72	7	8e10.3	49 points of PSRV or
		66-74	9	8e10.3	65 points of PSRV for the subject earthquake.
		..	1	a80	/& --- End of data for Channel 1
	2	(Repeat header, data and end-of-file mark for Channel 2)			
	3	(Repeat header, data and end-of-file mark for Channel 3)			
4	1	1-30	30	a80	Header of alphanumeric data.
		31-37	7	16i5	Header of 100 integer parameters.
		38-50	13	8f10.3	Header of 100 real-value parameters.
		51	1	a80	Fourier amplitude header information.
		52-..	7	8e10.3	.. points of Fourier amplitude data.
		..	1	a80	/& --- End of data for Channel 1
	2	(Repeat header, data and end-of-file mark for Channel 2)			
	3	(Repeat header, data and end-of-file mark for Channel 3)			

TABLE 4: READ / WRITE DATA ON 8MM ASCII FORMATTED TAPE

WRITE DATA ON ASCII FORMATTED 8MM TAPE

Below is an example to save files on 8MM ASCII formatted tape with record length=80, block size = 2000 using the VAX/VMS operating system utilities TWRITE:

```
$ INIT MUB0: 0705B
$ MOUNT/NOASSIST/FOR/RECORD=80/BLOCK=2000 MUB0:
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN1.V1
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN1.V2
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN1.V3
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN1.V4
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN2.V1
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN2.V2
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN2.V3
$ TWRITE/ASCII/RECORD=80/BLOCK=2000/OUTPUT=MUB0:  STATN2.V4

... etc.. (for all stations, each with v1,v2,v3 and v4 data)

$ EXIT
```

READ/RETRIEVE DATA FROM ASCII FORMATTED 8MM TAPE

Below is an example to read/retrieve files from an 8MM ASCII formatted tape with record length=80, block size = 2000 using the VAX/VMS operating system utilities TREAD:

```
$ MOUNT/NOASSIST/FOR/RECORD=80/BLOCK=2000 MUB0:
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN1.V1
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN1.V2
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN1.V3
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN1.V4
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN2.V1
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN2.V2
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN2.V3
$ TREAD/ASCII/RECORD=80/BLOCK=2000/INPUT=MUB0:  STATN2.V4

... etc.. (for all stations, each with v1,v2,v3 and v4 data)

$ EXIT
```

STATION NO. 1

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 1

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

518 7-APR-1993 08:46

STAT1.AMP;3

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 1

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 1

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

670 7-APR-1993 08:42

STATN1.CH1:4

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 1 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 1 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

670 7-APR-1993 08:42

STATN1.CH3:4

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 1 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 1
 DAMPING: 5% OF CRITICAL

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 2

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 2
UNCORRECTED ACCELERATION TIME HISTORIES

STAT02.FMP.1

S18 16-JUL-1992 22:15
BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 2

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 2

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 2 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 2 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER-4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 2 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 2 DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 3

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 3

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 3

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 3

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERNORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 3 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 3 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 3 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERNORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 3 DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 4

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 4

UNCORRECTED ACCELERATION TIME HISTORIES

1030 8-SEP-1992 16:48

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 4

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

URS/Blume

1030 5-APR-1993 10:57

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 4

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER-4, 0.05-33HZ)

URS/Blume

2054 5-APR-1993 11:08

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 4 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

STATM4.CH1:2

TIME (SEC)

URS/Blume

2054 5-APR-1993 11:09

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 4 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

2054 5-APR-1993 11:09

STATM4.CH3;2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 4 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 4 DAMPING: 5% OF CRITICAL

BPF(BUTTERNORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 5

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 5

UNCORRECTED ACCELERATION TIME HISTORIES

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/52
STATION NO. 5

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 5

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER-4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 5 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

1382 5-APR-1993 09:51

STATNS.CH2:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 5 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERNORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 5 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 5 DAMPING: 5% OF CRITICAL

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 6

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 6

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 15-JUL-1992 00:49

STATNS.AMP;1

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 6

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

URS/Blume

1030 5-APR-1993 13:15

STAT6.FM3,2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 6

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
8PF (BUTTERNORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 6 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

1070 5-APR-1993 13:21

STAT6.CH2:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 6 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 6 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

STATION NO. 7

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 7

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 14-JUL-1992 20:19

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 7

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 7

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 7 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

AMPLITUDE

1574 5-APR-1993 11:27

STAT07.CH2:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 7 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 7 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 7 DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 8

URS/Blume

1306 24-JUL-1992 08:49

STAT08.ACC;1

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 8

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 8

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 8

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FOURIER AMPLITUDE (CM/SEC)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 8 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 8 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 8 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 8 DAMPING: 5% OF CRITICAL

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 9 SYSTEM A

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 9 SYSTEM A

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 16-JUL-1992 21:15

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

STATN9A.RMP;1

FREQUENCY (HZ)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

STAT9A.AM3;2

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM A DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 9 SYSTEM B

1074 21-JUL-1992 18:59

STATNSB.ACC:1

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 9 SYSTEM B

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 21-JUL-1992 19:00

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM B
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

STAT98.AMP;1

FREQUENCY (HZ)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM B
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

1074 5-APR-1993 10:47

STATN9B.CH1:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM B CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 9 SYSTEM B CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM B CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 9 SYSTEM B DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 10

URS/Blume

1270 14-JUL-1992 23:32

STATION NO. 10

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 10

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 14-JUL-1992 23:33

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 10

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

1030 5-APR-1993 13:00

STATNIO.F03:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 10

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

URS/Blume

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2 of 2

1270 5-APR-1993 13:07

STATN10.CH1:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 10 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

1270 5-APR-1993 13:08

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 10 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

1270 5-APR-1993 13:08

STATW10.CH5:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 10 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 10 DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 11

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 11

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

262 16-JUL-1992 19:01

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 11

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 11

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

510 5-APR-1993 10:00

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 11 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 11 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

510 5-APR-1993 10:00

STATN11.CH3:2

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 11 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 11 DAMPING: 5% OF CRITICAL

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 12

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 12

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION-NO. 12

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 12

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 12 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 12 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 12 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 12 DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 13

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 13

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 13

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 13

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 13 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 13 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 13 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
DAMPING: 5% OF CRITICAL
STATION NO. 13

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 14

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 14

UNCORRECTED ACCELERATION TIME HISTORIES

ACCELERATION (CM/SEC**2)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 14

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 14

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 14 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 14 CH 2 NORTH

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 14 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 14
DAMPING: 5% OF CRITICAL

BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 15

URS/Blume

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92 STATION NO. 15

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 15

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 15

CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FOURIER AMPLITUDE (CM/SEC)

FREQUENCY (HZ)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 15 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
 STATION NO. 15 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92

STATION NO. 15 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

BIG BEAR, CALIFORNIA EARTHQUAKE 6/28/92
STATION NO. 15 DAMPING: 5% OF CRITICAL

BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

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