1 of 2

PROCESSED SEISMIC MOTION RECORDS FROM
ST. GEORGE, UTAH
EARTHQUAKE OF SEPTEMBER 2, 1992

RECORDED AT SEISMIC STATIONS
IN SOUTHERN NEVADA

April 1993

Peter K. Lum

Kenneth K. Honda

Prepared for
The U.S. Department of Energy
Nevada Operations Office
Under Contract DE-AC08-89NV10733

Prepared by
URS/John A. Blume & Associates, Engineers
100 California Street, San Francisco, CA 94111

MASTER

CP

ST. GEORGE, UTAH EARTHQUAKE OF SEPTEMBER 2, 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 subject earthquake of September 2, 1992, a total of 16 of these systems 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:	37.047°N, 113.461°W
Magnitude:	5.9 M_L
Origin Date:	02 September 1992
Origin time:	Day 246 Hr 10 Min 26 Sec 20 (GMT)
Local Utah time:	4:26 a.m. (PDT)

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 Kinometrics; and PDAS-100 by Teledyne Geotech. The FBA-11 accelerometers manufactured by Kinometrics were used 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 signals from the sensors are 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 signals from the sensors are 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 16 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 secondary system(s). When both systems recorded the motion, the systems are designated A, B, and/or C 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/sec² 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 33Hz. 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. On the Channel 3 record of Station 9 there was a extraneous pulse at approximately every 2.6 seconds which could not be removed completely by the standard processing. On the Channel 1 record of Station 14 there appear to be an extraneous long period wave of over 15 seconds. The wave was not removed during the procesing and it is quite evident in the velocity and displacement records. Additional processing, possibly removing the this long period wave, should be performed to determine more accurate motion.

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 summaries 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.

0 Kilometers 10

○ See Table #1 for station information

URS/BLUME
3060 S. HIGHLAND DRIVE
LAS VEGAS, NEVADA 89109

FIGURE 2: STATIONS RECORDING THE ST. GEORGE,
UTAH EARTHQUAKE OF
9/2/92 IN LAS VEGAS VALLEY

TABLE 1: LOCATIONS OF THE RECORDING STATIONS
(St. George, Utah Earthquake of September 2, 1992)

<u>Station No.</u>	<u>Recording System(s)</u>	<u>Location</u>	<u>Coordinates</u>	<u>Distance from Epicenter (Km)</u>
1A 1B	PDR-1 PDAS-100	Alamo	115.12W 37.27N	149
2	PDAS-100	Las Vegas	115.02W 36.24N	165
3	PDR-1	Las Vegas	115.05W 36.11N	176
4	PDR-1	Las Vegas	115.14W 36.17N	179
5	PDR-1	Las Vegas	115.22W 36.22N	181
6A 6B 6C	PDR-1 PDAS-100 L-7	Las Vegas	115.19W 36.17N	182
7	L-7	Las Vegas	115.14W 36.11N	183
8	PDR-1	Las Vegas	115.17W 36.10N	186
9	PDR-1	Las Vegas	115.20W 36.12N	186
10	PDR-1	Las Vegas	115.31W 36.26N	186
11	PDR-1	Las Vegas	115.41W 36.15N	201
12	PDAS-100	Emerson	115.63W 37.65N	203
13	PDAS-100	Nevada Test Site	116.06W 36.93N	231
14	PDAS-100	Lathrop Wells	116.40W 36.64N	265
15	PDAS-100	Goldfield	117.23W 37.71N	341
16	PDAS-100	Tonopah	117.23W 38.07N	351

TABLE 2: PEAK AMPLITUDES
(ST. George, Utah Earthquake of September 2, 1992)

Station No.	Comp	<-- Uncorrected -->		<----- Corrected ----->			Comments
		Accel. (cm/sec ²)	Velocity (cm/sec)	Accel. (cm/sec ²)	Velocity (cm/sec)	Disp (cm)	
1A	DOWN	-2.352	0.000	-2.354	-0.138	0.052	
1A	NORTH	4.442	0.000	4.442	-0.383	-0.055	
1A	WEST	5.634	0.000	5.619	0.524	-0.082	
1B	DOWN	-2.357	0.000	-2.355	0.137	0.055	
1B	NORTH	4.314	0.000	4.305	-0.354	0.060	
1B	WEST	5.510	0.000	5.505	0.523	-0.086	
2	DOWN	-2.864	0.000	-2.829	-0.242	-0.041	
2	NORTH	4.075	0.000	4.085	-0.287	-0.063	
2	WEST	4.579	0.000	4.580	0.314	0.060	
3	DOWN	-2.431	0.000	-2.427	0.215	-0.051	LATE TRIGGERED SHORT RECORD
3	NORTH	-4.847	0.000	-4.844	-0.226	-0.041	
3	WEST	-4.033	0.000	-4.028	0.301	-0.056	
4	DOWN	1.343	0.000	1.293	0.142	-0.033	LATE TRIGGERED
4	NORTH	2.522	0.000	2.515	-0.202	-0.047	
4	WEST	-2.406	0.000	-2.399	0.290	0.079	
5	DOWN	1.694	0.000	1.690	0.121	0.036	
5	NORTH	4.064	0.000	4.059	0.272	-0.040	
5	WEST	-4.564	0.000	-4.566	0.452	-0.056	
6A	DOWN	-1.099	0.000	-1.068	0.101	0.056	LATE TRIGGERED
6A	NORTH	2.505	0.000	-2.693	-0.247	-0.059	
6A	WEST	2.696	0.000	2.677	-0.204	0.061	
6B	DOWN	-1.067	0.000	-1.065	0.097	0.028	
6B	NORTH	-2.715	0.000	-2.708	-0.242	-0.059	
6B	WEST	2.709	0.000	2.704	-0.206	0.063	
6C	DOWN	0.000	0.096	-1.474	0.094	-0.033	NOISY RECORDS
6C	NORTH	0.000	0.295	3.539	0.295	-0.062	
6C	WEST	0.000	0.271	-3.081	0.264	-0.054	
7	DOWN	0.000	-0.098	0.977	-0.098	0.022	NOISY RECORDS
7	NORTH	0.000	-0.144	1.657	-0.145	0.036	
7	WEST	0.000	-0.125	-2.008	-0.125	-0.034	
8	DOWN	0.862	0.000	0.856	0.090	-0.026	
8	NORTH	-2.207	0.000	-2.203	-0.159	0.037	
8	WEST	-2.327	0.000	-2.316	-0.164	-0.046	
9	DOWN	1.126	0.000	1.129	0.115	0.023	
9	NORTH	1.873	0.000	1.846	0.181	-0.039	
9	WEST	-1.676	0.000	-1.687	-0.176	-0.070	SPIKES IN RECORD
10	DOWN	1.070	0.000	1.065	-0.069	-0.024	LATE TRIGGERED
10	NORTH	1.488	0.000	1.489	-0.089	0.021	
10	WEST	2.126	0.000	2.104	0.142	-0.029	

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)	
11	DOWN	-1.502	0.000	-1.491	0.065	0.018	LATE TRIGGERED
11	NORTH	2.068	0.000	2.066	0.108	0.019	
11	WEST	-1.657	0.000	-1.660	0.090	-0.029	
12	DOWN	0.684	0.000	0.684	-0.077	-0.028	
12	NORTH	0.761	0.000	0.759	0.037	-0.016	
12	WEST	-0.874	0.000	-0.881	0.056	0.028	
13	DOWN	0.403	0.000	0.400	-0.048	0.023	NOISY RECORDS
13	NORTH	-0.681	0.000	-0.678	0.064	0.016	
13	WEST	0.408	0.000	-0.393	0.041	0.037	
14	DOWN	0.530	0.000	0.499	--	--	EXTRANEIOUS WAVE
14	NORTH	-1.196	0.000	-1.190	-0.128	0.026	
14	WEST	1.090	0.000	1.091	-0.103	0.021	
15	DOWN	0.303	0.000	0.248	0.029	-0.017	NOISY RECORDS
15	NORTH	0.170	0.000	0.161	0.020	0.010	
15	WEST	0.339	0.000	0.267	-0.027	0.011	
16	DOWN	0.047	0.000	0.044	-0.008	-0.003	LATE TRIGGERED
16	NORTH	-0.060	0.000	-0.061	-0.009	-0.006	
16	WEST	-0.050	0.000	-0.050	-0.008	-0.006	

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 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
	66-72	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 SYSTEM A

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

SYSTEM A

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM A

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FOURIER AMPLITUDE (CM/SEC)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM A
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 1 SYSTEM A CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM A CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM A CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM A DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 1 SYSTEM B

URS/Blume

1074 5-SEP-1992 23:12

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM B
UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

1030 5-SEP-1992 23:12

STATION B. AMP:1

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM B
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 1 SYSTEM B
 CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM B CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM 6 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

1074 7-APR-1993 17:25

STATION B.CH3:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM B CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 1 SYSTEM B 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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 2

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 2
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 2
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FOURIER AMPLITUDE (CM/SEC)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 2 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

AMPLITUDE

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 2 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 2 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 2 DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 3

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 3

UNCORRECTED ACCELERATION TIME HISTORIES

ACCELERATION (CM/SEC**2)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 3

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FOURIER AMPLITUDE (CM/SEC)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 3

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

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 3 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 3 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 3 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 3
DAMPING: 5% OF CRITICAL

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 4

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 4

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 4
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

1030 8-APR-1993 06:31

STATN4.FM3:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 4
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

1118 8-APR-1993 06:37

STATION CH1.2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 4 CH 1 DOWN

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

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 4 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

1118 8-APR-1993 08:38

STATN4.CH5,2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 4 CH 3 WEST

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

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

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
DAMPING: 5% OF CRITICAL
STATION NO. 4

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 5

URS/Blume

710 5-SEP-1992 18:04

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 5

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

518 5-SEP-1992 18:05

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 5

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 5

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

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 5 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 5 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

710 8-APR-1993 10:25

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 5 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
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 SYSTEM A

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM A
UNCORRECTED ACCELERATION TIME HISTORIES

STARTING: ACC:1

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM A
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM A
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 6 SYSTEM A CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

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

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM A CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM A DAMPING: 5% OF CRITICAL

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 6 SYSTEM B

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B
UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

1074 8-APR-1993 09:11

STATNGB.CH1:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM B DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 6 SYSTEM C

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C
UNCORRECTED VELOCITY TIME HISTORIES

TIME (SEC)

2050 25-SEP-1992 11:08

STRATNGC.RCC:1

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C
UNCORRECTED ACCELERATION TIME HISTORIES

1030 25-SEP-1992 11:09

STAT6C.AMP:1

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C
CORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER-4, 0.05-33HZ)

TIME (SEC)

2050 8-APR-1993 09:33

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER-4, 0.05-33HZ)

TIME (SEC)

URS/Blume

2050 8-APR-1993 09:34

STRINGS.CH3:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 6 SYSTEM C DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 7

URS/Blume

2050 9-SEP-1992 11:52

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 7

UNCORRECTED VELOCITY TIME HISTORIES

2050 9-SEP-1992 11:54

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 7

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 7

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 7

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

FREQUENCY (HZ)

2050 8-APR-1993 10:45

STATION7.CH1:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 7 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

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

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 7 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 7 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

2050 8-APR-1993 10:47

STATION.CH3:2

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
DAMPING: 5% OF CRITICAL
STATION NO. 7

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 8

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 8

UNCORRECTED ACCELERATION TIME HISTORIES

AIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202

Centimeter

Inches

MANUFACTURED TO AIM STANDARDS
BY APPLIED IMAGE, INC.

2 of 2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 8
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 8

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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 8 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 8 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 8 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

AMPLITUDE

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
DAMPING: 5% OF CRITICAL
STATION NO. 8

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 9

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9

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

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

802 8-APR-1993 08:13

STAT01.CH2:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 9 DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 10

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 10

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 10

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 10

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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 10 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPT/BUTTERWORTH, ORDER=4, 0.05-33HZ

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 10 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 10 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

396 7-APR-1995 17:33

STATN10.CH3:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 11

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 11

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 11

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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 11 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

350 7-APR-1993 17:39

STATION11.CIN:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 11 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 11 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BFF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
DAMPING: 5% OF CRITICAL
STATION NO. 11

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 12

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 12

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 12

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 12

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

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 12 CH 1 DOWN

CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT

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

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 12 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 12 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92 STATION NO. 13

UNCORRECTED ACCELERATION TIME HISTORIES

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 13
UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

516 10-SEP-1991 13:33

STAT13.HMP:1

518 6-APR-1993 07:31

STATION 13 RMS.2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 13

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

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 13 CH 1 DOWN

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

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 13 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERNORTH, ORDER-4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 13 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 13
 DAMPING: 5% OF CRITICAL

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

CH 1 DOWN

CH 2 NORTH

CH 3 WEST

STATION NO. 14

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 14
UNCORRECTED ACCELERATION TIME HISTORIES

1010 5-SEP-1992 14:58

STATN14.ACC#1

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 14

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 14

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

FREQUENCY (HZ)

ST. GEORGE. UTAH EARTHQUAKE 9/2/92
 STATION NO. 14 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF(BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 14 CH 2 NORTH
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

1010 8-APR-1955 06:51

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 14 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
FFT (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
DAMPING: 5% OF CRITICAL
STATION NO. 14

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 15

URS/Blume

970 5-SEP-1992 14:33

STAT15.ACC:1

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 15

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 15

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 15

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

FREQUENCY (HZ)

970 6-APR-1993 08:24

STATN15.CH1:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 15 CH 1 DOWN
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 15 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 15 CH 3 WEST
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 15
 DAMPING: 5% OF CRITICAL

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

STATION NO. 16

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92

STATION NO. 16

UNCORRECTED ACCELERATION TIME HISTORIES

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 16

UNCORRECTED FOURIER AMPLITUDE SPECTRA OF ACCELERATION

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 16

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

FREQUENCY (HZ)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
 STATION NO. 16 CH 1 DOWN
 CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
 BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

45° 8-APR-1993 11:03

STATN16.CH2:2

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 16 CH 2 NORTH
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

URS/Blume

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 16 CH 3 WEST
CORRECTED ACCELERATION, VELOCITY & DISPLACEMENT
BPF (BUTTERWORTH, ORDER=4, 0.05-33HZ)

TIME (SEC)

ST. GEORGE, UTAH EARTHQUAKE 9/2/92
STATION NO. 16
DAMPING: 5% OF CRITICAL

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

CH 3 WEST

CH 2 NORTH

CH 1 DOWN

DISTRIBUTION LIST: JAB-10733-TM11

**U.S. Department of Energy
Nevada Operations Office
P.O. Box 98518
Las Vegas, NV 89193-8518**

**J.E. O'Donnell
Technical Information Resource Center**

**U.S. Department of Energy
Office of Science Education and
Technical Information
P.O. Box 62
Oak Ridge, TN 37831**

(2 Copies)

**DATE
FILMED**

9/20/93

END