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SEISMICITY OF THE SOUTHERN NEVADA REGION

DECEMBER 22, 1971 to JULY 01, 1972

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
EARTH SCIENCES LABORATORIES

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JULY 1972

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SEISMICITY OF THE SOUTHERN NEVADA REGION

DECEMBER 22, 1971 TO JULY 01, 1972

KENNETH C. BAYER

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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RC-184

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SEISMICITY OF THE SOUTHERN NEVADA REGION
DECEMBER 22, 1971 to JULY 01, 1972

Kenneth C. Bayer

ABSTRACT

A cooperative network of twenty-three seismic velocity stations is operated in the southern Nevada area; the stations are monitored by the NOAA/ESL Nevada Special Projects Party located in Las Vegas, Nevada. Data from the stations are analyzed and programmed through the Computer Sciences Corporation CDC 6400 Computer, also located in Las Vegas.

The most significant and active seismic activity was the Silent Canyon Sequence (areas 19 and 20) on the Nevada Test Site. A map showing the principal earthquake and aftershocks is given and discussed in this report.

This is the initial seismic bulletin in which the entire data analysis (including the computer programming) has been accomplished in Las Vegas by the Nevada Special Projects Party. The output is listed in the Hypocenter Summary. The listing is the result of data scaled only from the local network and solutions determined by a local epicenter program. A total of 296 epicenters is listed.

1. INTRODUCTION

This report is a summary of earthquakes recorded by a network of twenty-three seismograph stations in the southern Nevada region for the period of December 22, 1971 to July 01, 1972. This is the third in a continuing series of seismicity reports (CGS-746-12 and NVO-746-TM-3) embracing southern Nevada and the border zones of Arizona, California, and Utah.

The southern Nevada seismic network stations are shown in Figure 1. All stations are located in Nevada with the exception of Leeds in Utah, and Darwin in California. This net is operated by three cooperating agencies listed in Appendix A. The data from all of the stations are recorded by the Nevada Special Projects Party (NSPP) of the NOAA/ESL, Las Vegas, Nevada.

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STATION LOCATION MAP

FIGURE 1

The Hypocenter Summary (Appendix B) was compiled from a local earthquake program which utilized only data from the Nevada network to compute earthquake locations.

2. DISCUSSION

The principal objective of this report is to collect and distribute preliminary seismic data acquired from the Southern Nevada Network of Seismograph Stations. Recorded arrival times and amplitudes are scaled in Las Vegas. The final reduction and collation of data to event hypocenters and derivation of related parameters is accomplished by the Computer Sciences Corporation CDC 6400 Computer located in Las Vegas, Nevada. This compilation is preliminary and may be subject to later revision on the basis of current research. It is anticipated that seismicity of the southern Nevada region, in the future, will be published quarterly.

Periodically, the properly formatted data are key-punched at the Las Vegas office and run through a local earthquake program described by Bolt and Turcotte (1964) using a three-layer model shown in Figure 2. In order to obtain a hypocenter solution with the local station program, P-phase arrival times from at least three stations and one S-phase arrival time for a given earthquake must be present. Although P_g amplitudes are scaled (for future local magnitude determinations) the presently quoted magnitudes, as determined by the Special Projects Party, are from the Wood-Anderson instrument at Mercury, Nevada.

Only data scaled by the Nevada Special Projects Party and computer processed in Las Vegas were used to compile the hypocenter summary listed in Appendix B. The individual station readings, from which the hypocenter summary has been derived, are available upon request from the ESL Nevada Special Projects Party,

FIGURE 2

**NEVADA CRUSTAL MODEL
USED FOR
EARTHQUAKE LOCATIONS**

3060 South Highland Drive, Las Vegas, Nevada 89109. These data are additionally sent to the National Earthquake Information Center (NEIC) Boulder, Colorado, on key-punched cards in the NEIC format. The area monitored by the NSPP (for hypocenter locations), is from 35 to 39 degrees north and 113 to 119 degrees west. A significant amount of data, outside of this area, in the regional and teleseismic range are scaled and also mailed to the NEIC.

In the Hypocenter Summary, if the depth is followed by a D, it is a fixed depth solution obtained by choosing the five kilometer interval that optimized the travel time residuals and standard error. An F following the depth indicates that a convergent solution was found in seven or less iterations by permitting the depth to move freely. The source of the quoted magnitudes is foot-noted at the end of Appendix B. When computer processing of Nevada data was initiated in Las Vegas, the area was subdivided into one-half degree geographic units (total of 96) and each assigned a name and number. Thus the geographic name for each earthquake is listed in the Hypocenter Summary. The geographic name and number guide is shown as Figure 3.

A list of the Atomic Energy Commission's (AEC) announced NTS events is listed as Appendix C.

3. SILENT CANYON EARTHQUAKE SEQUENCE

Twenty-two earthquakes were recorded by the southern Nevada seismic net in the Silent Canyon area of Nevada, over a six-day period (March 25-31, 1972). A twenty-third earthquake (postulated as a foreshock) was recorded two weeks earlier (March 11) in the immediate area. Only the main earthquake was above the micro-

GEOGRAPHIC REGIONS OF THE SOUTHERN NEVADA SEISMIC NET

FIGURE 3

N303/ERL/ESL
SPECIAL PROJECTS PARTY
LVN

earthquake range. Its magnitude was computed in the 3.0 to 3.5 category. The foreshock and twenty-one aftershocks are classified as micro-earthquakes ($1.0 \leq M \leq 3.0$).

Ground motion displacement in Las Vegas from the main shock (March 25, 13:41:37.55 GMT) was 2.1×10^{-5} cm, which was not sufficient to start the Las Vegas highrise strong-motion seismic network. The ground motion recorded at Control Point One (CP-1) was 1.0×10^{-5} cm, and at the Little Skull Mountain (LSM) station the motion was 1.45×10^{-5} cm. The amplitude calibrated seismic alarm was triggered by the monitor station LSM; one of the twenty continuously recording telemetered stations into the Las Vegas NSPP office. As a result, three temporary stations were fielded to supplement the existing network in case of increased activity.

A review of the spatial and temporal characteristics of the Silent Canyon Sequence suggests intermittent strain release along a strike-slip fault. This postulation is similar to conditions observed along the San Andreas fault and is unlike earthquake activity of the "shot-gun pattern" observed in the Owens Valley of California and earthquakes of August 1971, east of Hiko Junction, Nevada. Additional support is given to this theory by the narrow (~ 4.5 km) zone in an east/west direction and elongation (~ 20 km) in the north/south direction, as indicated in Figure 4. In general, the earthquakes parallel the north/south trending faults. The foreshock may have signified the initial release of strain in the area. The principal event occurred 7 km north and 2 km west of the foreshock. The aftershock activity progressed essentially north for approximately 8 km before appearing 2 km south of the foreshock. The activity reverted to a northerly direction again and moved

back and forth in the upper half of the zone. Finally, the activity reversed to the far south end, changed direction once more and progressed to the far north end (~20 km) terminating near the north end of the narrow band of earthquake activity. Most of the events occurred in the 0 to 5 km depth interval.

4. GENERAL SEISMICITY (December 22, 1971 to July 01, 1972)

The most significant seismicity pattern that developed was the Silent Canyon Earthquake Sequence, previously described in Section 3. Although small in magnitude and in an isolated area, the recorded pattern of events is of scientific interest and merits further investigation.

The Nevada regions - Hiko Junction and Massachusetts Mountain (Nevada Test Site, NTS), and the Owens Valley, California regions near Bishop and southwest of Darwin, continued to be the more active regions monitored by the local network, as illustrated on the seismicity map for this period (Figure 5).

A total of 296 earthquakes are listed in the Hypocenter Summary. There were 63 micro-earthquakes recorded on the Nevada Test Site. Only one (Silent Canyon) was greater than magnitude 3. The Silent Canyon (areas 19 and 20) and Massachusetts Mountain areas (east and south of CP-1) were the most active during this period. The two largest recorded earthquakes ($M=4.2$) occurred in the Tule Desert region midway between Alamo and the Utah border, and in the Sierra Nevada range approximately 45 km northwest of Bishop, California.

Seismic activity recorded during this report generally follows the seismic pattern established during 1971. However, in 1971 the areas of above normal activity were the Massachusetts Mountain earthquake series on the Nevada Test Site (east and south of CP-1) and the Hiko earthquakes north and east of Hiko Junction. The Silent Canyon

Earthquake Sequence of March 1972, in areas 19 and 20, also on the Nevada Test Site, provided above normal activity for this recorded period.

There were no large ($m_b \geq 6.0$) earthquakes in the southern Nevada region during the report period. One seismic event was reported felt in the Groom Lake geographic area; however, this was not substantiated.

A preliminary evaluation of the seismic data with NTS activity (Appendix C) did not show any correlation between earthquakes and man-made events.

5. ACKNOWLEDGMENTS

The entire staff of the Special Projects Party participated in the operation and coordination of the NOAA/ESL seismograph network. Without the cooperation of the Sandia Laboratories and the U. S. Geological Survey a large portion of the data that went into this report would not have been possible. The author gratefully acknowledges the administrative supervision provided by Kenneth W. King, Chief of the Nevada Special Projects Party, Stanley R. Brockman for the computer processing, and Bruce R. Bradley for data plotting and map compilations.

The operation of all the seismograph stations and the interpretation of the data from these stations are made possible through the financial support of the Nevada Operations Office of the United States Atomic Energy Commission (NVO/AEC).

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APPENDIX A
SEISMIC STATION CONSTANTS

APPENDIX A

SEISMIC STATION CONSTANTS

Code	Station Name	Latitude (North)	Longitude (West)	Elev. (Meters)	Inst. Comp.	Approx. Magnification @ 1 Hz
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NOAA/ESL NEVADA SEISMOGRAPH STATIONS

ALA	Alamo	37° 16. 15'	115° 08. 10'	1067	SPZ	100K
BTY	Beatty	36° 53. 63'	116° 45. 88'	1008	SPZ	100K
CPX	CP-1 (Control Point #1)	36° 55. 92'	116° 03. 33'	1285	SPZ	110K
ETS	Engine Test Stand	36° 49. 95'	116° 18. 50'	1158	SPZ	0. 1K
LSM	Little Skull Mountain	36° 44. 32'	116° 16. 68'	1146	SPZ	220K
LVN	Las Vegas, Nevada	36° 06. 55'	115° 08. 40'	670	SPZ	8K
LVW	Las Vegas (West)	36° 10. 20'	115° 11. 25'	654	SPZ	3. 3K
MCV	Mercury	36° 38. 01'	115° 59. 99'	1158	SPZ	100K
PRN	Pahroc Range, Nevada	37° 26. 50'	115° 04. 00'	1524	SPZ	105K
SMN	Sleeping Mountain, Nevada	37° 08. 60'	116° 46. 00'	1246	SPZ	100K
TSV	Twin Springs	38° 12. 10'	116° 10. 50'	1585	SPZ	105K

SANDIA LABORATORIES STATIONS

BMN	Battle Mountain, Nevada	40° 25. 90'	117° 13. 30'	1524	SPZ	} Variable
DAC	Darwin, California	36° 16. 62'	117° 35. 62'	1432	SPZ	
ELY	Ely, Nevada	39° 07. 88'	114° 53. 52'	2012	SPZ	
LEE	Leeds, Utah	37° 14. 58'	113° 22. 60'	1067	SPZ	
NEL	Nelson, Nevada	35° 42. 74'	114° 50. 61'	1052	SPZ	
TPH	Tonopah, Nevada	38° 04. 29'	117° 13. 21'	1890	SPZ	

U. S. GEOLOGICAL SURVEY, YUCCA FLATS, NEVADA STATIONS

NYC	Charley	(NTS)	37° 09. 30'	116° 09. 32'	1574	SPZ	} 1000K (20X Viewer)
NYJ	Joshua Tree	(NTS)	37° 00. 48'	115° 58. 48'	1195	SPZ	
NYM	Climax Mine	(NTS)	37° 13. 88'	116° 03. 14'	1489	SPZ	
NYR	Receiver Site	(NTS)	37° 03. 32'	116° 05. 50'	1188	SPZ	
NYS	Syncline Ridge	(NTS)	37° 01. 95'	116° 10. 13'	1402	SPZ	
NYV	Vern	(NTS)	37° 06. 77'	115° 59. 40'	1340	SPZ	

APPENDIX B

HYPOCENTER SUMMARY

Hypocenter Summary

Dec 1971	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic*** Region
22	17 54 47.00	37.44°	118.48°	5.0 D		Blanco Mtn.
24	09 12 31.73	36.05	114.70	5.0 D		Hoover Dam
24	13 19 12.94	37.65	115.05	5.0 D		Hiko
25	04 54 28.82	38.59	116.22	5.0 D		Morey Peak
26	00 12 12.83	37.74	115.06	5.0 D		Hiko
26	06 03 56.44	37.40	114.47	21.5 F	4.2 (ERL)	Tule Desert
26	17 32 04.69	36.28	118.35	0.0 D	3.1 (PAS)	Kern Peak
28	00 43 49.47	38.42	117.97	0.0 D		Pilot Peak
29	08 05 06.63	36.39	117.85	0.0 D		Darwin
30	08 44 19.08	36.94	115.97	20.0 D		Mercury
Jan 1972						
01	08 14 50.07	37.39	118.44	0.0 D		Blanco Mtn.
02	08 42 29.08	37.69	114.98	13.6 F		Highland Peak
02	16 35 14.37	36.27	117.33	25.2 F		Panamint Butte
03	00 16 26.31	38.31	118.78	5.0 D		Powell Mtn.
05	20 10 27.27	38.78	118.21	20.0 D		Gabbs Valley
06	10 10 40.31	35.74	117.71	5.0 D	4.0 (BRK)	Little Lake
06	23 59 05.86	37.40	116.08	13.9 F		Silent Canyon
08	07 00 42.72	37.52	118.03	10.0 D		Davis Mtn.
08	08 15 19.85	36.60	115.78	0.0 D		Mercury
08	12 22 00.02	36.86	117.56	5.0 D		Dry Mtn.
08	14 07 08.08	37.03	116.07	8.3 F		Silent Canyon
10	14 18 54.22	37.74	115.09	13.0 F		Hiko
10	14 48 30.40	37.75	115.10	14.9 F		Hiko
11	04 24 02.85	35.30	116.52	10.0 D		Goldstone Lake
11	07 38 32.87	37.33	118.43	5.0 D		Blanco Mtn.
12	07 32 08.62	37.72	115.12	16.4 F		Hiko
13	16 22 34.71	37.33	117.45	20.0 D		Mt. Jackson
14	10 06 09.75	37.77	115.11	0.0 D		Hiko
15	20 51 57.80	36.99	115.98	15.0 D		Mercury
16	11 58 53.27	37.73	118.98	15.0 D		Glass Mtn.
19	02 00 33.30	35.94	115.21	15.0 D		Goodsprings
19	15 43 58.50	36.96	115.88	10.0 D		Mercury
21	22 36 37.18	36.71	115.32	10.0 D		Hayford Peak

Hypocenter Summary

Jan 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic *** Region
21	23 15 22.55	36.62°	113.90°	25.0 D		Cane Springs
22	00 40 29.57	36.78	115.40	1.0 F		Hayford Peak
22	02 57 14.72	37.54	118.87	10.0 D	4.2 (BRK)	Glass Mtn.
22	23 11 51.60	36.75	115.40	0.0 D		Hayford Peak
23	11 29 19.43	37.81	113.00	25.0 D		Cedar City
24	10 59 07.15	37.25	115.90	1.0 F		Groom Lake
24	13 30 54.41	36.75	115.46	14.8 F	3.4 (ERL)	Hayford Peak
26	14 56 22.76	36.11	117.94	0.0 D		Darwin
27	08 45 12.67	36.04	117.96	10.0 D		Darwin
28	15 26 51.23	37.23	117.33	15.0 F		Mt. Jackson
29	08 20 00.86	36.18	118.42	0.0 D		Kern Peak
30	18 17 57.75	37.21	116.60	0.0 F		Thirsty Canyon
Feb 1972						
01	13 49 05.93	36.92	115.97	3.4 F		Mercury
06	06 35 40.84	36.93	115.98	5.7 F		Mercury
08	07 51 41.71	36.69	116.34	6.8 F		Lathrop Wells
08	11 17 42.53	36.59	116.60	7.3 F		Chloride Cliff
10	23 47 12.06	35.94	115.51	5.0 D		Clark Mtn.
14	02 10 17.03	37.24	116.52	5.5 F		Thirsty Canyon
14	12 05 52.06	36.86	116.27	7.6 F		Lathrop Wells
17	00 35 24.56	37.17	117.57	5.0 D		Magruder Mtn.
17	07 55 32.66	37.17	117.56	15.0 F		Magruder Mtn.
17	11 57 46.69	37.18	117.54	5.0 D		Magruder Mtn.
17	14 49 30.06	37.13	117.59	10.0 D		Magruder Mtn.
18	07 13 24.32	36.14	117.71	15.0 D		Darwin
18	13 03 35.67	37.15	116.28	0.0 F		Silent Canyon
19	10 59 01.16	36.91	115.97	5.9 F		Mercury
21	13 40 20.64	38.58	115.74	0.0 D		Portugese Mtn.
22	02 33 56.89	36.49	115.62	5.0 D		Charleston Peak
22	05 05 04.44	36.95	115.92	12.8 F		Mercury
22	08 43 10.27	37.38	114.22	15.0 D		Tule Desert
24	15 57 24.82	37.01	117.91	0.0 D		Magruder Mtn.
25	13 52 31.33	37.30	115.97	16.6 F		Groom Lake

Hypocenter Summary

Feb 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic*** Region
25	22 02 37.05	37.28 °	115.86 °	10.0 D		Groom Lake
26	00 06 43.64	37.26	117.57	15.0 D		Magruder Mtn.
26	04 19 14.13	38.30	117.18	15.0 D		Tonopah
26	05 45 49.24	36.34	116.49	25.0 D		Ash Meadows
26	23 27 09.17	36.84	115.83	25.0 D		Mercury
27	14 03 05.36	36.74	115.99	14.3 F		Mercury
27	22 13 42.53	36.63	118.18	20.6 F		Mt. Whitney
28	23 17 42.26	36.41	114.73	12.0 F		Hoover Dam
Mar 1972						
02	07 16 59.80	37.85	115.69	0.0 F		Worthington Peak
02	10 18 26.62	36.74	116.02	5.0 D		Lathrop Wells
02	10 47 49.71	36.74	115.98	12.1 F		Mercury
02	10 53 38.50	36.04	117.43	8.7 F		Panamint Butte
03	13 57 51.23	36.83	116.24	5.0 D		Lathrop Wells
04	01 55 23.77	35.83	117.80	15.5 F		Little Lake
04	05 58 01.53	36.73	118.12	16.9 F		Mt. Whitney
04	13 56 52.13	36.87	116.26	08.2 F		Lathrop Wells
04	18 17 38.93	36.00	115.47	0.0 F		Goodsprings
07	03 09 57.38	36.51	117.00	17.9 F		Tin Mtn.
09	17 28 45.17	37.38	118.56	5.0 D		Blackcap Mtn.
10	03 43 13.41	37.19	116.31	0.0 F		Silent Canyon
10	10 01 22.60	37.46	115.54	10.0 D		Groom Lake
10	11 32 36.51	37.05	116.70	0.0 F		Thirsty Canyon
11	15 02 52.53	37.46	114.62	0.0 D		Delamar Mts.
11	16 21 28.64	37.24	116.39	0.0 F		Silent Canyon
12	09 34 46.83	37.01	117.66	5.0 D		Magruder Mtn.
12	12 18 42.59	37.01	117.64	5.0 D		Magruder Mtn.
13	00 38 26.42	38.55	117.48	25.0 D		Toiyabe Dome
13	13 35 13.84	35.98	118.00	10.0 D		Lamont Peak
15	04 29 39.57	36.49	117.06	15.7 F		Panamint Butte
15	13 36 51.08	37.54	114.24	6.8 F		Ely Range
15	23 19 42.39	35.81	115.31	0.0 F		Goodsprings
16	03 09 00.65	35.64	117.76	10.0 D		Little Lake
17	05 49 58.44	37.35	116.55	5.0 D		Thirsty Canyon
17	08 35 45.91	37.11	116.99	12.2 F		Thirsty Canyon

Hypocenter Summary

Mar 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic*** Region
18	00 10 33.32	36.17°	117.54°	25.0 D		Darwin
18	15 56 40.04	35.92	114.97	0.0 D		Boulder City
20	23 05 23.93	37.55	113.52	5.0 D		Mt. Escalante
20	23 18 42.19	36.33	114.93	18.0 F		Hoover Dam
21	01 21 11.78	35.98	117.68	8.4 F		Little Lake
21	01 27 23.37	36.34	117.86	4.5 F		Darwin
21	01 36 01.75	37.03	116.01	0.0 F		Silent Canyon
22	16 04 20.94	37.16	114.05	0.0 D		Tule Desert
23	20 38 11.28	37.25	116.21	13.3 F		Silent Canyon
25	13 31 08.41	37.17	117.41	0.0 F		Mt. Jackson
25	13 41 37.55	37.29	116.41	0.0 D	3.1 (NSPP)	Silent Canyon
25	14 28 35.64	37.33	116.41	0.0 F		Silent Canyon
25	14 30 32.37	37.40	116.48	32.1 F		Silent Canyon
25	14 41 23.14	37.36	116.41	0.0 F		Silent Canyon
25	14 48 13.28	37.36	116.41	0.0 F		Silent Canyon
25	14 57 08.09	36.88	115.96	6.1 F		Mercury
25	15 37 36.40	37.35	116.41	0.0 F		Silent Canyon
25	15 46 13.26	37.32	116.40	11.6 F		Silent Canyon
25	16 16 53.15	37.37	116.41	0.0 F		Silent Canyon
25	16 22 56.62	37.35	116.42	0.0 F		Silent Canyon
25	17 51 27.66	37.22	116.41	17.0 F		Silent Canyon
25	18 14 45.25	37.32	116.40	9.5 F		Silent Canyon
25	18 15 35.87	37.39	116.43	5.0 D		Silent Canyon
25	18 20 24.94	37.36	116.41	0.0 F		Silent Canyon
25	18 30 36.19	37.22	116.41	14.9 F		Silent Canyon
25	20 13 44.52	37.26	116.41	11.0 F		Silent Canyon
25	22 26 10.28	37.18	116.24	10.0 D		Silent Canyon
26	00 00 08.10	37.35	116.41	0.0 F		Silent Canyon
26	02 01 18.87	36.06	114.66	3.5 F		Hoover Dam
26	02 07 42.92	37.31	116.41	13.4 F		Silent Canyon
26	07 22 53.07	37.31	116.58	29.3 F		Thirsty Canyon
26	11 22 06.42	36.05	117.76	20.0 D		Darwin
26	13 02 55.30	36.09	117.72	15.0 D		Darwin
26	23 52 23.02	36.89	115.97	9.4 F		Mercury
27	07 50 22.39	35.19	118.26	5.0 D	3.3 (PAS)	Mojave
28	02 30 43.86	37.36	116.42	8.3 F		Silent Canyon
28	12 06 53.26	37.38	118.33	10.0 D		Blanco Mtn.

Hypocenter Summary

Mar 1972	Origin Time (GMT)	Latitude North	Longitude West	Depth* (km)	Magnitude **	Geographic*** Region
28	12 37 26.29	37.41°	116.42°	0.0 F		Silent Canyon
28	16 05 41.30	37.48	118.35	5.0 D		Blanco Mtn.
28	23 40 59.41	37.21	116.31	0.0 F		Silent Canyon
29	02 31 28.15	36.42	115.40	5.0 D		Las Vegas
29	05 16 39.15	37.32	116.48	24.7 F		Silent Canyon
29	13 12 02.01	36.28	115.44	15.0 D		Las Vegas
30	08 21 15.11	36.39	115.41	10.0 D		Las Vegas
30	14 07 26.44	37.30	114.80	9.4 F		Delamar Mts.
30	22 14 45.30	36.95	116.06	8.1 F		Lathrop Wells
30	23 25 57.81	37.32	116.40	15.5 F		Silent Canyon
31	09 48 47.03	37.38	116.41	0.0 F		Silent Canyon
31	11 01 09.13	37.36	116.40	0.0 D		Silent Canyon
31	13 17 53.72	37.40	116.41	0.0 F		Silent Canyon
Apr 1972						
01	00 17 24.20	38.84	118.27	10.0 D		Gabbs Valley
01	19 34 11.57	36.44	115.39	15.0 D		Las Vegas
02	06 44 55.42	35.46	117.51	15.0 D		Boron
03	08 38 40.82	37.14	114.49	17.6 F		Tule Desert
04	02 04 04.55	37.15	114.48	10.0 D		Tule Desert
04	05 52 57.56	36.06	118.16	5.0 D		Kern Peak
04	06 04 16.54	36.09	118.17	5.0 D		Kern Peak
06	08 16 40.87	37.52	117.43	14.7 F		Goldfield
07	06 02 44.86	37.07	116.15	7.9 F		Silent Canyon
07	22 21 29.15	36.48	114.69	1.5 F		Hoover Dam
09	06 41 00.64	36.87	116.29	4.6 F		Lathrop Wells
09	09 50 22.53	37.01	116.13	5.0 D		Silent Canyon
09	10 00 53.43	37.01	116.13	5.0 D		Silent Canyon
09	15 37 47.42	37.60	117.46	5.0 D		Goldfield
14	23 33 48.75	35.73	116.04	5.0 D		Shoshone
15	23 38 01.31	37.90	117.40	15.0 D		Goldfield
15	23 39 33.43	37.90	117.42	10.0 D		Goldfield
16	12 04 25.28	36.99	116.16	5.0 D		Lathrop Wells
16	14 37 08.28	36.99	116.16	5.0 D		Lathrop Wells
17	14 39 11.92	36.98	116.14	5.0 D		Lathrop Wells
19	00 38 28.19	37.34	117.79	5.0 D		Magruder Mt.
19	08 50 29.45	37.73	115.10	25.5 F		Hiko

Hypocenter Summary

Apr 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic *** Region
19	13 07 01.56	36.72°	115.82°	5.0 D		Mercury
19	21 06 45.08	36.02	114.76	0.0 D		Hoover Dam
19	23 08 39.04	35.74	115.37	0.0 F		Goodsprings
20	11 02 07.25	35.98	114.87	3.8 F		Boulder City
21	13 43 37.30	36.07	117.55	25.0 D		Darwin
21	20 58 39.16	37.53	115.32	25.0 D		Hiko
21	22 08 36.43	36.34	114.88	10.6 D		Hoover Dam
21	22 48 38.89	37.80	115.21	0.0 D		Hiko
21	22 56 38.13	36.35	116.75	20.0 D		Furnace Creek
22	04 56 05.93	37.74	115.97	5.0 D		Worthington Peak
22	04 57 54.41	37.78	115.98	5.0 D		Worthington Peak
22	06 00 43.28	37.74	116.06	5.0 D		Quartzite Mt.
22	06 14 03.57	37.81	116.06	0.0 D		Quartzite Mt.
22	15 41 31.09	36.90	115.96	4.0 F		Mercury
23	04 43 17.70	36.14	117.74	8.0 F		Darwin
24	02 12 31.72	37.71	115.04	20.0 F		Hiko
25	09 59 09.73	37.22	116.51	0.0 F		Thirsty Canyon
26	02 12 26.79	37.09	115.83	0.0 D		Groom Lake
26	08 09 40.98	37.19	116.80	6.8 F		Thirsty Canyon
26	10 07 52.08	36.74	115.44	0.0 F		Hayford Peak
26	14 00 56.15	36.76	115.95	0.0 F		Mercury
26	20 16 29.03	36.40	114.41	22.3 F		Virgin Basin
27	14 21 14.36	37.31	117.59	0.0 F		Magruder Mt.
27	14 44 39.14	37.29	117.58	10.0 D		Magruder Mt.
27	14 51 25.41	37.40	117.76	0.0 D		Magruder Mt.
28	00 07 25.42	37.24	116.52	12.0 F		Thirsty Canyon
28	00 36 14.74	38.20	118.66	10.0 D		Powell Mt.
29	19 02 32.46	37.64	117.35	10.0 D		Goldfield
30	00 03 15.10	37.31	114.81	5.0 D		Delamar Mt.
30	02 46 19.71	37.52	118.55	5.0 D		Glass Mt.

May
1972

01	12 45 41.05	36.87	115.99	3.5 F		Mercury
01	13 51 44.81	37.02	116.08	0.0 F		Silent Canyon
02	14 54 04.96	37.89	115.03	16.8 F		Hiko
02	19 55 08.40	37.27	116.41	11.1 F		Silent Canyon
04	14 22 46.36	37.04	115.83	31.0 F		Groom Lake
04	21 27 40.31	36.81	117.66	15.0 D		Dry Mt.
06	06 50 40.89	36.53	117.84	5.0 D		Dry Mt
06	15 52 48.92	37.18	116.30	5.0 D		Silent Canyon

Hypocenter Summary

May 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic*** Region
07	11 43 51.76	37.28°	114.78°	17.1 F		Delamar Mt.
07	13 30 13.87	37.40	117.12	10.0 D		Mt. Jackson
08	14 56 56.12	37.21	116.03	34.5 D		Silent Canyon
08	20 21 14.88	36.16	118.10	0.0 D		Kern Peak
08	22 41 07.98	35.69	116.06	5.0 D		Shoshone
09	03 36 25.70	36.76	115.96	0.0 F		Mercury
10	03 24 58.83	37.27	115.22	0.0 F		Alamo
12	18 50 42.15	36.87	115.96	5.4 F		Mercury
13	01 49 58.00	37.16	116.29	0.0 F		Silent Canyon
13	02 54 12.10	37.36	118.52	10.0 D		Blackcap Mt.
13	20 46 41.54	38.01	116.19	0.0 F		Warm Springs
15	01 59 16.67	37.18	116.74	0.0 F		Thirsty Canyon
15	05 09 39.25	37.23	116.97	0.0 F		Thirsty Canyon
15	08 55 23.49	37.17	117.27	0.0 F		Mt. Jackson
16	01 16 58.13	36.34	116.73	0.0 D		Furnace Creek
16	05 46 30.63	37.13	116.41	0.0 D		Silent Canyon
16	15 31 30.15	36.74	116.26	10.0 D		Lathrop Wells
16	15 36 37.33	36.76	116.26	15.0 D		Lathrop Wells
16	16 14 08.06	36.72	116.29	10.0 D		Lathrop Wells
18	12 00 40.01	37.13	116.10	19.0 F		Silent Canyon
20	23 44 06.97	35.71	115.99	0.0 F		Clark Mt.
21	12 26 38.24	37.02	117.40	5.0 D		Magruder Mt.
21	12 30 54.60	37.38	117.17	0.0 F		Mt. Jackson
21	22 24 56.11	37.01	115.63	0.0 D		Groom Lake
22	08 57 10.08	37.35	117.26	0.0 F		Mt. Jackson
22	12 48 00.60	36.40	114.97	0.0 F		Hoover Dam
22	16 03 40.44	37.17	116.19	27.0 F		Silent Canyon
22	23 53 58.09	36.37	116.77	5.0 D		Furnace Creek
23	06 47 59.60	36.82	117.24	0.0 F		Tin Mtn.
23	12 57 11.67	36.74	116.00	10.9 F		Lathrop Wells/Mercury
23	15 28 06.78	37.78	118.02	0.0 D		Davis Mt.
23	22 45 35.86	37.60	117.54	10.0 D		Silver Peak
24	01 31 10.47	37.38	118.77	5.0 D		Blackcap Mt.
24	15 37 27.41	37.38	117.14	5.0 D		Mt. Jackson
24	16 59 48.18	37.20	116.85	0.0 D		Thirsty Canyon
25	04 34 59.66	37.39	117.12	0.0 F		Mt. Jackson

Hypocenter Summary

May 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic *** Region
25	04 40 45.47	37.37°	117.10°	20.0 D		Mt. Jackson
25	04 42 36.05	37.29	116.77	0.0 D		Thirsty Canyon
25	04 45 00.11	37.38	117.13	0.0 F		Mt. Jackson
25	05 26 25.65	37.38	117.07	5.0 D		Mt. Jackson
25	07 03 31.33	37.36	117.02	5.0 D		Mt. Jackson
25	08 37 07.35	38.27	117.07	25.0 D		Tonopah
25	08 59 28.25	37.02	116.16	5.0 D		Silent Canyon
26	16 47 12.19	37.11	115.79	20.0 D		Groom Lake
26	18 43 01.71	36.35	114.87	14.5 F		Hoover Dam
30	09 01 34.04	36.72	115.76	7.5 F		Mercury
Jun 1972						
02	08 39 32.18	36.31	117.91	13.2 F		Darwin
02	11 46 22.87	38.50	117.64	5.0 D		Paradise Peak
05	08 47 49.90	35.76	116.24	10.0 D		Shoshone
05	11 03 46.20	36.89	117.52	11.5 F		Dry Mtn.
06	00 00 56.76	37.18	117.76	10.0 D		Magruder Mtn.
06	00 54 07.85	37.23	117.84	0.0 F		Magruder Mtn.
06	01 01 38.20	37.23	117.83	5.0 D		Magruder Mtn.
06	01 10 55.67	37.23	117.87	10.0 D		Magruder Mtn.
07	22 57 32.90	35.74	115.99	15.0 D		Clark Mtn.
09	08 14 52.17	37.30	118.37	10.0 D		Blanco Mtn.
09	18 37 38.43	36.88	114.57	24.3 F		Moapa
10	11 25 55.78	37.60	118.69	0.0 D		Glass Mtn.
10	15 25 10.59	36.91	116.78	10.0 D		Chloride Cliff
11	02 56 54.05	37.48	114.13	10.0 D		Tule Desert
12	04 47 49.50	37.17	116.78	0.0 F		Thirsty Canyon
12	06 11 47.80	36.75	115.38	0.0 D		Hayford Peak
13	06 59 55.15	36.73	115.40	10.0 D		Hayford Peak
13	08 47 01.96	35.55	117.46	15.0 D		Searles Lake
16	12 43 58.08	38.53	116.24	5.0 D		Morey Peak
16	13 03 07.20	37.29	116.56	5.0 D		Thirsty Canyon
17	22 31 46.35	37.22	117.38	15.0 D		Mt. Jackson
18	02 47 51.75	37.53	118.76	0.0 D		Glass Mtn.
18	02 49 01.09	37.60	118.79	0.0 D		Glass Mtn.
18	02 51 22.47	37.64	118.78	5.0 D		Glass Mtn.
18	03 12 04.83	37.54	118.76	0.0 D		Glass Mtn.
18	03 17 46.92	37.55	118.76	0.0 D		Glass Mtn.

Hypocenter Summary

Jun 1972	Origin Time GMT	Latitude North	Longitude West	Depth* (km)	Magnitude**	Geographic *** Region
18	03 43 13.78	37.54°	118.73°	0.0 D		Glass Mtn.
18	03 50 11.88	37.46	118.52	10.0 D		Blackcap Mtn.
18	10 38 36.42	36.81	117.61	0.0 F		Dry Mtn.
18	14 00 25.47	36.43	118.28	0.0 D		Kern Peak
18	19 23 43.98	37.03	116.48	9.9 F		Silent Canyon
19	10 51 40.40	36.80	117.63	0.0 D		Dry Mtn.
21	04 27 05.06	36.50	117.14	22.6 F		Panamint Butte
22	04 50 47.64	36.44	115.87	15.0 D		Charleston Peak
22	07 31 48.64	38.59	116.07	0.0 D		Morey Peak
24	09 38 16.88	36.01	117.89	5.0 D		Darwin
28	03 51 06.94	37.74	115.25	20.0 D		Hiko
28	16 18 29.63	36.87	115.94	13.6 F		Mercury
29	13 53 10.89	37.25	114.71	5.0 D		Delamar Mts.
30	06 18 12.12	37.25	114.74	15.0 D		Delamar Mts.
30	21 10 03.94	36.33	114.95	5.0 D		Hoover Dam

* D = Fixed Depth Solution
F = Free Depth Solution

** Magnitudes:

BRK = M_L , Local Magnitude, University of California at Berkeley

ERL = m_b , Body Wave Magnitude, Environmental Research Laboratories, Boulder, CO.

NSPP = M_L , Local Magnitude, Nevada Special Projects Party of ERL/ESL, Las Vegas

PAS = M_L , Local Magnitude, California Institute of Technology, Pasadena

*** See Figure 3 for Geographic Region Map

APPENDIX C

ANNOUNCED AEC TESTS
(December 22, 1971 to July 01, 1972)

<u>Event</u>	<u>Date</u> <u>(1972)</u>	<u>Type</u> *	<u>Time</u> <u>(GMT)</u> h m s	<u>Latitude</u> <u>(North)</u>	<u>Longitude</u> <u>(West)</u>	<u>Elev.</u> <u>of shot</u> <u>(meters)</u>	<u>Magnitude</u>
Longchamps	Apr 19	Nuclear	16 32 00.0	37°07'18.98"	116°05'01.82"	976.9	$m_b = 4.60$
Pre-Mine Dust	May 10	H. E.	12 00 00	37°00'37.44"	116°12'06.84"	1335.0	
Zinnia	May 17	Nuclear	14 10 00.16	37°07'14.00"	116°05'16.42"	981.2	$M_L = 4.34$
Monero	May 19	Nuclear	17 00 00.05	37°03'52.93"	116°00'06.29"	736.1	$M_L = 4.49$
Post Mine Throw I							
No. 1	May 22	H. E.	23 28 56	37°07'16"	116°19'51"	1567.0	
No. 2	May 23	H. E.	22 15 38	37°07'16"	116°19'51"	1567.0	
No. 3	May 24	H. E.	21 21 19	37°07'16"	116°19'51"	1567.0	
No. 4	May 25	H. E.	20 30 59	37°07'16"	116°19'51"	1567.0	
No. 5	May 26	H. E.	19 15 42	37°07'16"	116°19'51"	1567.0	

* H. E. = High Explosive (chemical)

m_b = NEIC, Body Wave Magnitude

M_L = NSPP, Wood Anderson, Magnitude

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