

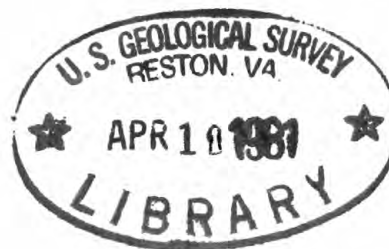
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CATALOG OF EARTHQUAKES ALONG THE SAN ANDREAS FAULT
SYSTEM IN CENTRAL CALIFORNIA, JULY - SEPTEMBER 1977

By S. M. Marks and L. Fluty
Open-File Report 81-462



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INTRODUCTION

Numerous small earthquakes occur each day in the Coast Ranges of central California. The detailed study of these earthquakes provides a tool for gaining insight into the tectonic and physical processes responsible for the generation of damaging earthquakes. This catalog contains the fundamental parameters for earthquakes located within and adjacent to the seismograph network operated by the U.S. Geological Survey(USGS), during the third quarter of 1977.

The motivation for these detailed studies has been described by Pakiser and others (1969) and by Eaton and others (1970). Similar catalogs of earthquakes for the years 1969, 1970, and 1971 have been prepared by Lee and others (1972b, c and d). Catalogs for the first, second, third, and fourth quarters of 1972 and the first, second, third and fourth quarters of 1973 have been prepared by Wesson and others (1972a, b, 1973b, and 1974a and b), by Bufe and others (1975), and by Lester and others (1976a and b). Catalogs for the years 1974, 1975 and 1976 and the first quarter of 1977 have been prepared by Lester and Meagher (1978), by McHugh and Lester (1978 and 1979) and by Marks and Lester (1980a and 1980b). The basic data contained in these catalogs provide a foundation for further studies.

This catalog contains data on 855 earthquakes in central California. Arrival times at 205 seismograph stations were used to locate the earthquakes listed in this catalog. Of these 193 were telemetered stations operated by USGS. Readings from the remaining 12 stations were obtained through the courtesy of the Seismographic Stations, California Institute of Technology, Pasadena, University of California, Berkeley (UCB), and the California Department of Water Resources, Sacramento.

The Seismographic Station of the University of California, Berkeley, has for many years published a bulletin describing earthquakes in northern California and the surrounding area and listing readings at UCB stations from more distant events. The purpose of the present catalog is not to replace the UCB Bulletin, but rather to supplement it, by describing the seismicity of a portion of central California in much greater detail.

INSTRUMENTATION

The telemetered seismograph system used may be illustrated by block diagram (Figure 1). The equipment at each station includes a vertical component, 1 Hz seismometer (usually Mark Products, Model L-4C), a package containing a preamplifier and voltage-controlled oscillator (U.S.G.S., Model J302), and batteries. The frequency-modulated tone produced at each station is carried by wire (occasionally by radio) to a terminal where it is combined with the tones of up to 7 other stations.

demodulated by discriminators and recorded on 16 mm film using a Develocorder (Teledyne, Geotech, Model FR-400). Each Develocorder records seismic signals of up to 17 stations. In addition, 3 timing signals (WWVB on one trace, and a chronometer on the other two) are recorded simultaneously with the seismic signals.

Figure 2 illustrates the overall response of the seismic systems for typical stations. Magnification for individual stations is adjusted according to the background noise level in steps of 6 decibels. As a result, the response for an individual station may differ from that of the typical station by a factor of 2, 4, 8, or 16. Precise calibrations indicate that most stations are operated at magnifications of 25,000 to 100,000 at 1 Hz.

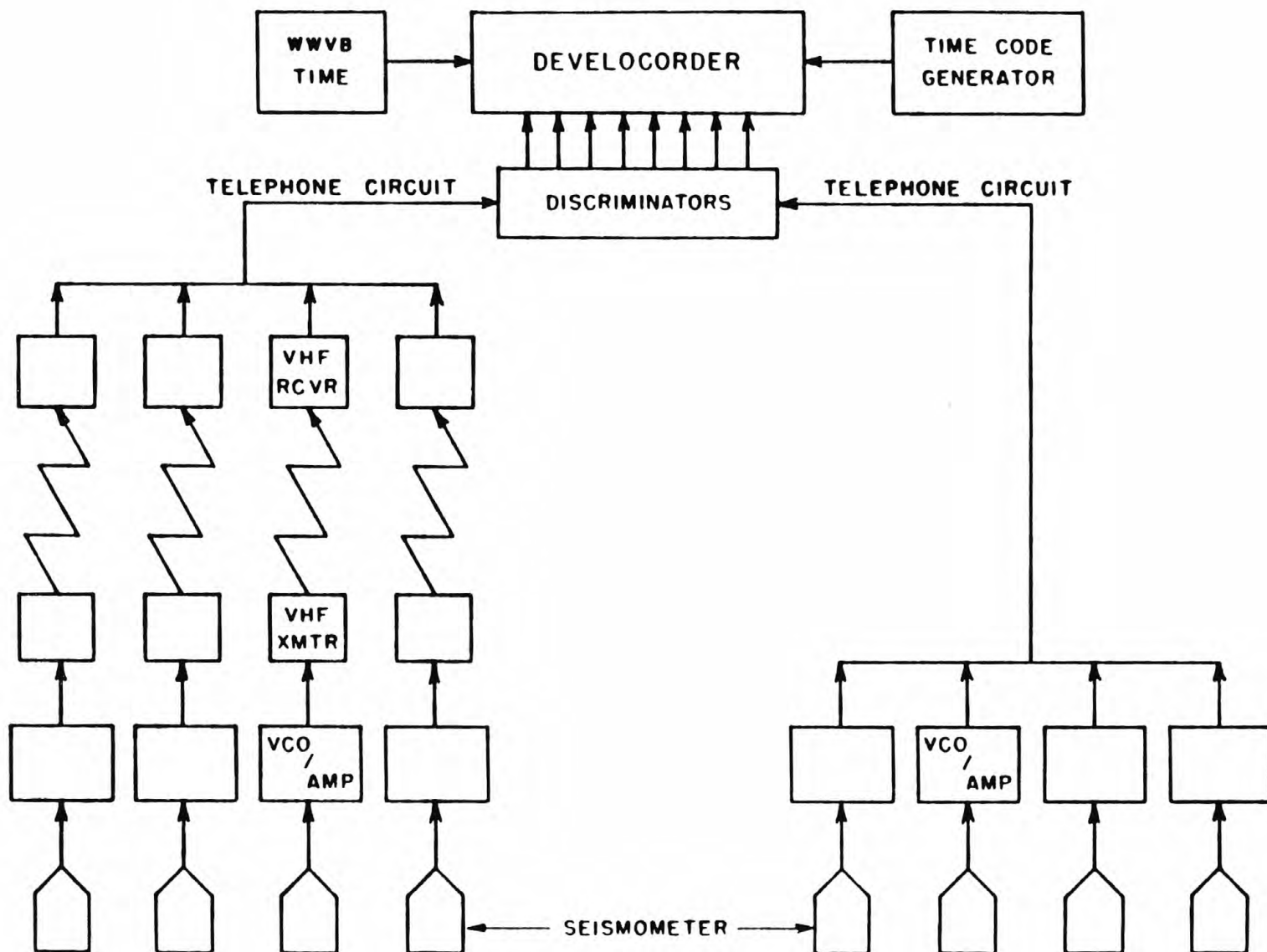
All stations used in the present study are listed in Table 1. Station locations are plotted on Figure 3, except for 4 stations which are located outside the map boundaries.

DATA PROCESSING AND ANALYSIS

The telemetered seismic data recorded on 16 mm film are processed manually to yield information on first P-arrivals, directions of first motions, maximum amplitudes, and signal durations. These data are then processed by computer to give origin time, hypocenter location, magnitude, and pattern of first motions of the earthquakes using the HYP071 computer program (Lee and Lahr, 1972). Each roll of film contains about 24 hours recording time and is processed in the following steps: (1) scanning, (2) timing using a digitizer which prepares punched cards, (3) batch processing by computer program HYP071, (4) correcting errors, (5) adding data from other sources, (6) rerunning HYP071, (7) analyzing poor solutions, and (8) eliminating explosions.

In the routine data processing, local events with signal duration or coda of 10 seconds or more are always timed. This corresponds to a cutoff at about magnitude 1 for events within the USGS network. Some smaller events for which 6 clear first arrivals can be obtained are also timed. The magnitude cutoff for events outside, but near the USGS network, is somewhat larger than 1. The catalog of earthquakes reported here contains all hypocenter solutions obtained. Because the station coverage is not uniform and because some events outside the network are reported, the cutoff for small magnitudes is not uniform over the entire area reported.

Figure 1. Block diagram of the USGS telemetered seismograph system.



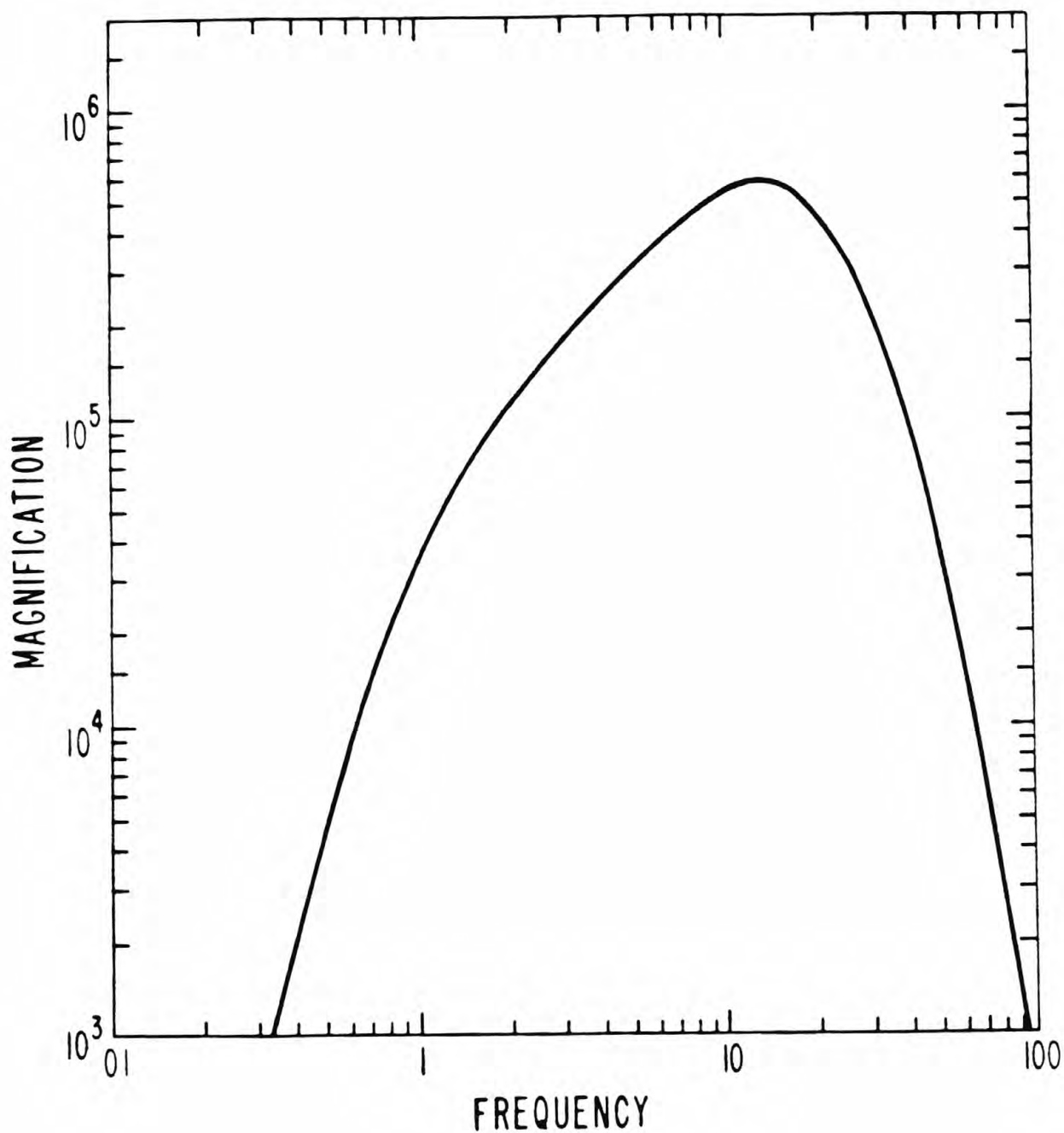


Figure 2. System response of an USGS telemetered seismograph station. This magnification curve is obtained for a system (L-4C seismometer, U.S.G.S. J302M, VCO/Amplifier with attenuation set at 12 db, Develco Discriminator, and Geotech Develocorder).

TABLE 1. STATION DATA *

USGS TELEMETERED STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)	NOTE **
ABR	39-03.11	121-29.21	24	1	(3.5)	(3.5)	
ADW	38 26.35	120 50.89	251	1	(3.5)	(3.5)	
AFR	38 47.54	121 20.91	31	1	(3.5)	(3.5)	
AHR	38 51.26	121 04.23	354	1	(3.5)	(3.5)	
ALA	38 52.62	120 57.37	293	1	(3.5)	(3.5)	
APR	38 52.62	121 13.03	133	1	(3.5)	(3.5)	
ARJ	38 41.19	120 57.38	460	1	(3.5)	(3.5)	
ARR	38 45.92	121 10.31	127	1	(3.5)	(3.5)	
ASR	38 29.86	121 12.29	52	1	(3.5)	(3.5)	07/01 TO 07/21
AVR	39-01.49	121-16.08	91	1	(3.5)	(3.5)	
BAV	37-38.75	121-01.79	604	1	2.0	2.4	
BBG	36-35.48	121- 1.52	1216	1	3.0	(3.5)	
BBN	36-30.60	121- 4.53	448	2	3.4	3.0	
BCG	36-42.55	121-20.60	305	2	4.8	0.7	
BOH	35-11.10	120-05.05	1140	2	(3.5)	(3.5)	
BEH	36-39.88	121-10.45	342	1	1.6	4.0	
BEM	36-39.68	121- 5.76	488	1	0.8	2.2	
BHS	36-21.35	121-32.41	646	2	1.8	2.2	
BJC	36-32.82	121-23.53	207	2	0.9	0.9	
BJO	36-36.65	121-18.81	1052	2	1.5	0.7	
BLR	36-39.96	121-16.36	232	2	5.1	2.4	
BMC	36-39.40	121-21.91	1022	2	(3.5)	(3.5)	
BMH	36-41.18	121-24.80	811	2	(3.5)	(3.5)	
BMS	36-39.48	120-47.62	769	1	3.9	3.8	
BPC	36-33.90	121-38.15	268	2	1.8	1.6	
BPF	36-13.82	121-46.32	349	1	2.2	2.4	
BPI	36-29.40	121-10.11	329	2	1.2	0.3	
BPP	36-10.12	121-22.68	1591	2	2.1	1.3	
BRM	36-50.70	120-49.40	372	1	5.7	5.4	
BRV	36-25.46	121- 1.08	555	2	5.5	2.1	
BSB	36-44.27	121-17.21	398	1	3.8	4.9	
BSC	36-37.98	121-14.05	357	1	5.5	1.9	
BSG	36-24.83	121-15.22	192	2	0.4	0.1	
BSL	36-46.53	121-20.96	155	1	(3.5)	(3.5)	
BSR	36-39.99	121-31.12	395	2	1.4	0.5	
BVL	36-34.51	121-11.34	510	2	3.1	0.6	
BVY	36-44.96	121-24.80	585	2	4.4	(3.5)	
CAC	37-58.57	121-45.62	74	1	7.0	6.2	
CAD	37- 9.77	121-37.45	244	1	3.0	3.2	
CAI	37-51.68	122-25.77	223	1	2.2	2.2	
CAL	37-27.07	121-47.95	265	1	4.4	4.3	
CAO	37-20.96	121-31.96	628	1	3.9	4.2	

TABLE 1. STATION DATA (CONTINUED)

USGS TELEMETERED STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
CBR	37-48.97	122- 3.72	610	1	4.6	5.0
CBW	37-55.45	122- 6.40	221	1	5.1	5.1
CCN	37-47.49	121-56.89	219	1	7.4	(3.5)
CCO	37-15.46	121-40.35	366	1	5.9	6.8
CCY	37-33.70	122-05.45	67	1	2.5	3.2
CDO	37-43.80	121-50.12	198	1	6.8	6.8
CDS	37-57.98	122-15.17	109	1	(3.5)	(3.5)
CDU	38- 1.78	122- 0.05	168	1	8.0	5.4
CLC	37-44.28	122- 3.83	312	1	4.3	4.6
CMC	37-46.88	122-10.55	90	1	3.1	(3.5)
CMH	37-21.57	121-45.38	518	1	5.3	6.2
CMJ	37-31.25	121-52.23	498	1	4.3	4.3
CMO	37-48.68	121-48.15	792	1	6.6	6.6
CMR	37-35.68	121-38.22	500	1	4.6	4.6
CPL	37-37.88	121-57.37	463	1	4.3	4.1
CRA	37 46.03	121 56.25	171	1	(3.5)	(3.5)
CRP	37-54.75	121-54.33	331	1	4.8	4.8
CSC	37-17.11	121-46.35	128	1	5.4	4.8
CSH	37-38.88	122-02.57	170	1	(3.5)	4.0
CTL	37 39.44	121 38.63	458	1	(3.5)	(3.5)
GAF	38-53.59	123-32.28	710	1	5.1	(3.5)
GAX	38-42.65	122-45.30	379	1	0.8	0.8
GBG	38-43.84	122-40.76	1125	1	3.0	(3.5)
GBO	38-49.46	122-50.57	879	1	3.1	(3.5)
GCM	38-48.35	122-45.31	1286	1	3.8	(3.5)
GCV	38-46.14	123-00.89	150	1	3.7	(3.5)
GDC	38-46.03	123-14.31	772	1	4.3	(3.5)
GGL	38-53.80	122-46.58	893	1	2.8	(3.5)
GGP	38-45.88	122-50.65	1054	1	3.4	(3.5)
GHC	38-36.36	123-11.81	518	1	3.6	(3.5)
GHG	39-07.70	122-49.47	903	1	2.8	(3.5)
GHL	39-02.43	123-01.12	956	1	2.8	(3.5)
GMC	38-47.56	123-07.80	426	1	3.7	(3.5)
GMK	38-58.17	122-47.22	906	1	3.9	(3.5)
GMO	38-42.61	123-08.59	802	1	3.0	(3.5)
GPM	38-50.85	122-56.78	783	1	1.7	1.6
GRM	39-01.23	122-35.06	469	1	3.2	(3.5)
GRT	38-56.32	122-40.18	619	1	1.9	(3.5)
GSG	38-52.03	122-42.58	1080	1	4.1	4.0
GSM	38-46.15	122-46.87	1017	1	3.0	(3.5)
GSN	38-56.43	123-11.50	870	1	4.0	(3.5)
GSS	38-42.12	123-00.81	282	1	3.0	(3.5)

TABLE 1. STATION DATA (CONTINUED)

USGS TELEMETERED STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
HAZ	36-53.08	121-35.45	122	2	4.4	1.4
HBT	36-51.01	121-33.04	98	2	4.5	2.3
HCA	37- 1.52	121-29.02	332	1	3.6	5.0
HCR	36-55.88	121-39.63	219	2	4.4	3.2
HCO	36-53.31	121-42.34	129	2	4.0	3.7
HCR	36-57.46	121-35.01	241	1	2.1	3.6
H CZ	36-54.54	121-43.02	30	2	4.0	3.6
HDL	36-57.12	121-39.64	204	2	3.2	2.2
HFE	36-59.00	121-24.09	323	1	3.2	4.3
HFH	36-53.29	121-28.13	101	1	(3.5)	(3.5)
HFP	36-45.22	121-29.43	705	2	2.2	3.8
HGS	37- 5.75	121-26.83	778	1	2.3	4.4
HGW	37-01.02	121-39.20	133	1	2.1	2.5
HJG	36-47.88	121-34.43	171	2	3.0	1.5
HJS	36-48.99	121-17.92	215	1	2.6	3.9
HKR	36-54.10	121-25.56	66	1	4.0	5.6
HLT	36-53.07	121-18.49	183	1	3.0	4.5
HMO	36-36.03	121-55.06	192	2	1.1	1.1
HOR	36-55.03	121-30.46	93	1	3.0	4.4
HPH	36-51.38	121-24.37	122	1	4.6	6.6
HPL	37- 3.13	121-17.40	152	1	2.2	3.6
HPR	36-57.19	121-41.70	94	2	3.7	(3.5)
HQR	36-50.02	121-12.76	536	1	3.1	4.0
H SF	36-43.72	121-29.97	340	2	4.5	3.4
HSL	37-04.81	121-05.65	122	1	(3.5)	(3.5)
JAL	37- 9.50	121-50.82	244	1	1.6	1.8
JBC	37- 9.62	122- 1.57	660	2	3.7	4.7
JBG	37-20.52	122-20.34	158	2	3.8	3.8
JBL	37-07.69	122-10.08	792	2	1.7	1.7
JBM	37-19.09	122-09.16	820	1	3.6	3.3
JBZ	37-01.07	121-49.15	213	2	4.9	5.2
JCR	37- 6.71	121-41.33	192	1	2.2	2.7
JEC	37- 3.04	121-48.56	438	2	3.0	3.8
JEG	37-30.84	120-27.74	202	2	2.5	2.7
JHL	37-06.56	121-49.95	908	2	2.8	3.1
JLT	37-21.22	122-12.25	270	2	3.8	3.4
JLX	37-12.11	121-59.17	244	1	2.9	(3.5)
JMG	37-33.22	122-28.43	201	2	2.4	2.4
JPL	36-58.62	121-49.93	158	2	4.9	4.0
JPP	37-15.87	122-12.78	186	2	4.0	3.7
JPR	37-47.70	122-28.43	107	1	3.0	3.4
JPS	37-11.94	122-20.90	84	2	3.2	2.5

TABLE 1. STATION DATA (CONTINUED)

USGS TELEMETERED STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
JRG	37-02.22	121-57.87	213	2	(3.5)	(3.5)
JRR	37-03.27	121-43.61	408	1	(3.5)	(3.5)
JSA	37-34.95	122-25.03	207	2	2.2	2.2
JSC	37-17.07	122- 7.42	357	2	3.0	3.0
JSF	37-24.31	122-10.55	143	1	4.0	4.0
JSG	37-16.96	122-03.00	198	1	5.5	4.0
JSJ	37-20.03	122- 5.48	122	1	5.7	4.1
JSM	37-12.74	122-10.06	262	2	4.6	4.0
JSS	37-10.17	121-55.84	946	1	2.8	3.4
JST	37-12.41	121-47.84	149	1	3.2	3.8
JTG	37-01.71	121-52.58	253	2	4.7	4.1
JUC	37-00.07	122-02.90	177	2	(3.5)	(3.5)
JWS	37-25.08	122-16.33	280	2	3.3	2.5
M3F	37-40.71	120-20.80	309	1	(3.5)	(3.5)
MCH	38- 1.12	120-30.57	475	1	(3.5)	(3.5)
MCS	37-56.33	120-31.76	373	1	(3.5)	(3.5)
MCU	37-58.36	120-37.02	336	1	(3.5)	(3.5)
MMW	38-03.83	121-10.89	1411	1	(3.5)	(3.5)
MNH	38-08.75	120-48.82	219	1	(3.5)	(3.5)
MOY	37-54.00	120-34.04	176	1	(3.5)	(3.5)
MST	37-54.27	120-24.29	366	1	(3.5)	(3.5)
NBP	38-40.07	122-11.60	867	1	3.9	(3.5)
NBR	38-15.65	122-32.99	137	1	2.8	2.2
NCD	38-22.19	122-27.70	620	1	2.2	2.2
NCF	38-19.28	122-47.73	98	1	2.2	2.2
NFI	37-41.90	123- 0.00	107	2	1.3	1.3
NFR	38-31.36	123-09.66	528	1	3.9	(3.5)
NGV	38-16.84	122-12.89	257	1	4.4	5.2
NHB	38-35.36	122-54.54	165	1	3.8	(3.5)
NHM	38- 7.28	121-48.02	65	1	6.3	6.3
NLN	38- 9.15	122-42.75	120	1	1.9	1.9
NMH	38-40.17	122-37.93	1311	1	1.3	1.6
NMT	38-48.34	122-26.76	422	1	3.4	(3.5)
NMW	38-33.03	122-43.37	134	1	3.3	3.3
NMX	38-24.68	122- 3.44	177	1	5.7	5.7
NOL	38-02.50	122-47.64	37	2	2.6	2.6
NSH	38-31.20	122-36.43	328	1	2.0	2.0
NSP	38-10.96	122-27.20	88	1	3.2	2.2
NTM	38-23.15	122-40.83	105	1	2.7	2.7
NWR	38-27.42	122-53.26	50	1	1.6	1.6
OBH	39-39.10	121-27.70	916	1	(3.5)	(3.5)
OCH	39-52.55	121-45.93	530	1	(3.5)	(3.5)

TABLE 1. STATION DATA (CONTINUED)

USGS TELEMETERED STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)	
OGO	39-39.22	121-36.72	158	1	(3.5)	(3.5)	
OHC	39-20.18	121-29.05	76	1	(3.5)	(3.5)	
ORA	39-28.13	121-24.80	585	1	(3.5)	(3.5)	
OST	39-22.12	121-35.80	29	1	(3.5)	(3.5)	
OSU	39-16.23	121-51.10	67	1	(3.5)	(3.5)	
OTB	39-32.75	121-33.65	223	1	(3.5)	(3.5)	
OWY	39-27.19	121-29.20	177	1	(3.5)	(3.5)	
PAR	36-14.95	120-20.52	485	1	6.7	5.2	
PBW	36-18.90	120-55.75	381	2	2.1	2.1	
PCA	35-55.90	120-20.22	1189	1	5.2	5.2	
PCR	36-05.65	120-26.08	296	1	(3.5)	(3.5)	
PCY	36-05.45	121-09.37	344	2	(3.5)	(3.5)	08/29 TO 09/23
PCZ	36-05.45	121-09.43	277	2	(3.5)	(3.5)	09/23 TO 09/30
PGH	35-49.86	120-21.17	433	1	3.3	3.4	
PHC	35-40.93	121-09.15	514	2	4.3	4.3	
PHR	36-22.38	120-49.13	750	1	4.0	1.0	
PIV	35-54.39	120-40.94	497	2	4.2	3.4	
PJR	36-05.02	121-10.15	336	2	1.7	2.2	07/01 TO 08/29
PLO	36-14.79	121-02.55	308	2	0.1	0.1	
PMP	36-12.91	120-47.69	784	2	1.8	1.9	
PPF	35-52.91	120-24.31	469	1	4.3	5.3	
PPT	36-06.50	120-43.27	506	2	1.7	1.9	
PSM	36-04.18	120-35.68	988	1	(3.5)	(3.5)	
PTY	35-56.73	120-28.45	552	1	4.3	5.6	
PWK	35-48.87	120-30.67	503	2	4.2	4.4	

** THIS COLUMN INDICATES THE OPERATION PERIOD. IF IT IS BLANK
 THEN THIS STATION HAS BEEN OPERATED CONTINUOUSLY DURING
 THE **THIRD** QUARTER OF 1977.

TABLE 1. STATION DATA (CONTINUED)

CAL TECH STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
YES	35-26.18	119-57.56	939	2	(3.5)	(3.5)

UNIVERSITY OF CALIFORNIA STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
BKS	37-52.60	122-14.10	276	1	2.4	2.4
FHC	40-48.10	123-59.10	610	1	(3.5)	(3.5)
FRI	36-59.50	119-42.50	119	1	(3.5)	(3.5)
JAS	37-56.80	120-26.30	457	1	(3.5)	(3.5)
MHC	37-20.50	121-38.50	1282	1	4.5	5.0
PRI	36- 3.50	120-39.90	1187	1	4.0	4.0
PRS	36-19.90	121-22.20	363	2	1.1	1.1
SAO	36-45.90	121-26.70	350	2	2.7	1.0

CALIFORNIA DEPARTMENT OF WATER RESOURCES STATIONS

CODE	LAT N	LONG W	ELV	K	D(E)	D(W)
KPK	39-35.01	121-18.32	897	1	(3.5)	(3.5)
ORV	39-33.33	121-30.00	362	1	(3.5)	(3.5)
PAM	39-26.94	121-31.19	131	1	(3.5)	(3.5)

* LAT AND LONG ARE LATITUDE AND LONGITUDE IN DEGREES AND MINUTES. ELV IS ELEVATION IN METERS. D(E) AND D(W) ARE GIVEN IN KILOMETERS. SEE TEXT (P. 14) FOR EXPLANATION OF K, D(E), AND D(W).

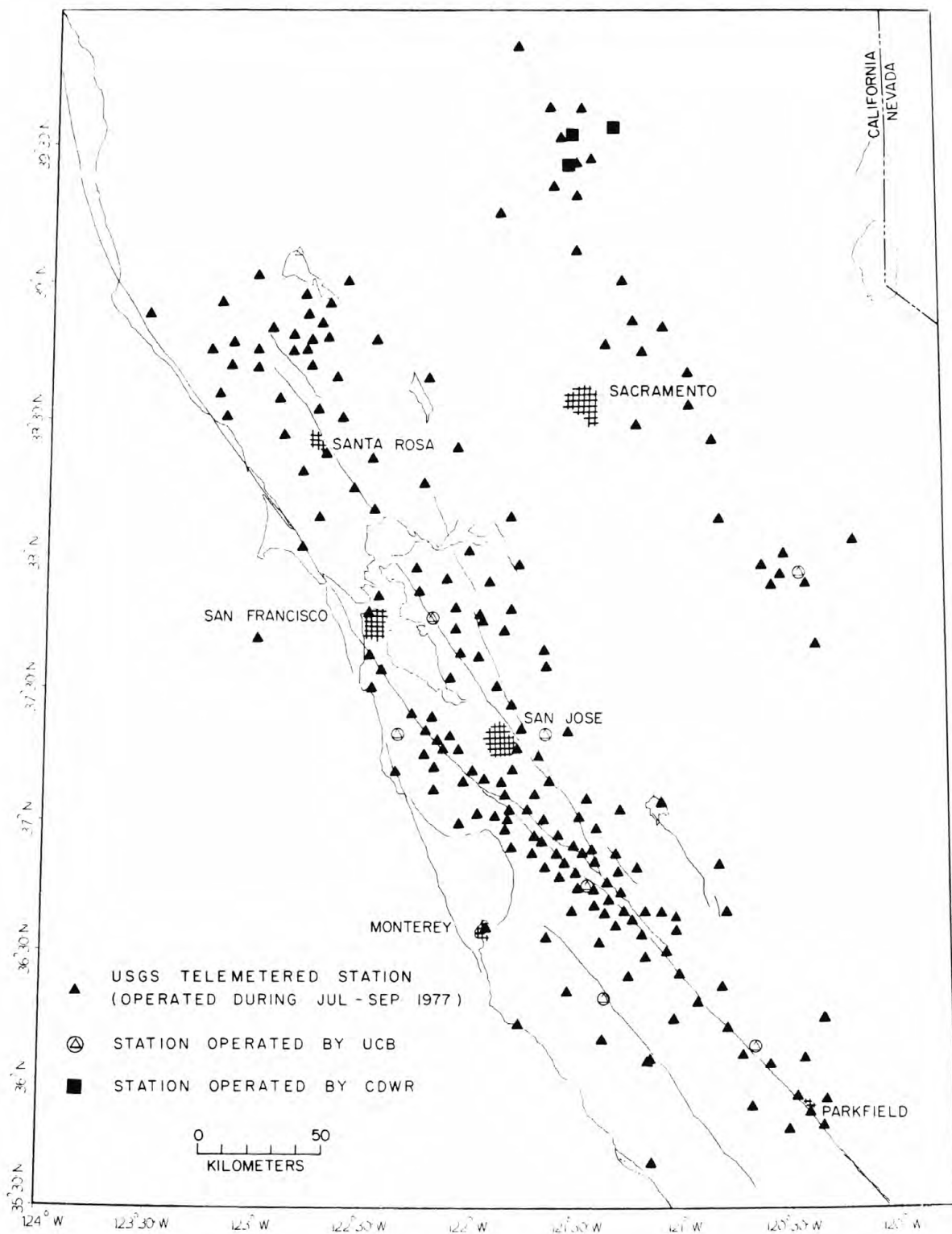


Figure 3. Map showing principal seismograph stations used in locating earthquakes for the third quarter of 1977.

Location of earthquakes was based mainly on first P-arrivals. When an adequate location could not be obtained using P-arrivals alone, S-arrivals were used to supplement the P-arrivals whenever possible. The HYPO71 computer program uses Geiger's method (Geiger, 1912) to determine hypocenters by minimizing the residuals between observed and calculated arrivals in a least-squares sense. Traveltimes from a trial hypocenter to the stations and their partial derivatives are computed on the assumptions of a horizontal multilayer velocity model by a technique introduced by Eaton (1969).

The crustal velocity model used was derived mostly from analysis of explosion data by Wesson and others (1973a). It is specified by:

<u>Layer</u>	<u>Depth (km)</u>	<u>P-velocity (km/sec)</u>	<u>S-velocity (km/sec)</u>
1	0 to D	4.0	2.2
2	D to 15	5.9	3.3
3	15 to 25	6.8	3.8
4	below 25	8.05	4.5

The variable boundary between the first and second layer (depth D) is determined for each station from time-term analysis of explosion data whenever they are available. The variable first layer in the crustal model is an approximation of the sedimentary layer above the Pg refractor. To allow for sharp changes in sediment thickness across the San Andreas fault, two D values for each station were determined: one for sources east of the fault, and the other for sources west of the fault. The set of D values to be used in the program is determined by the location relative to the fault of the station with the earliest P-arrival time. For example, if the earliest P-arrival occurs at a station west of the fault, then the set of D values appropriate to the sources on the west side, D(W), of the fault is selected. Table 1 shows values of D in kilometers at each station for sources east (D(E)) and west (D(W)) of the San Andreas fault as well as the location of the stations relative to the fault (K = 1 for east, and K = 2 for west). An assumed value for D of 3.5 km (about the median of the calculated values) is given in parentheses if a value could not be determined from explosion data.

The method used for estimating the Richter magnitude of the earthquakes has been described by Lee and others (1972a). In brief, the magnitude of an earthquake is based on the average of magnitudes estimated at various stations. Station magnitude (M) is derived from its recorded signal duration (τ) according to:

$$M = -0.87 + 2.00 \log (\tau) + 0.0035\Delta$$

where Δ is the epicentral distance in kilometers. The signal duration or coda is defined as the duration time in seconds from the onset of the first P-arrival to the point where the trace amplitude (peak-to-peak) falls below 1 cm as it appears on the Geotech film viewer.

For earthquakes with Richter magnitudes of 3.5 and below, equation (1) gives a good estimate of the magnitude. Richter magnitudes have been calculated (Richter, 1942) for earthquakes with coda magnitudes of 3.5 or greater using records obtained from the UCB Wood-Anderson seismographs at Berkeley and Mount Hamilton, and the Stanford-USGS Wood-Anderson at Palo Alto. The earthquakes for which the Richter magnitude has been determined from Wood-Anderson records are indicated in the catalog by an R next to the magnitude.

Beginning March 25 through April 26, 1977 all Develocorders were calibrated so that output levels would be standardized for all stations recorded on film. Prior to March 25 the introduction of a 5 Hz, 1 volt (peak to peak) signal into each Develocorder produced random output levels for each station and these are listed in Table 2. Since completion of calibrations, on April 26, the same input signal generates a standard 20 mm (peak to peak) output level for each station. Comparing this value with those listed in Table 2 it is apparent that this standardization process has resulted in a decrease in gain for most stations recorded on film. Consequently this has probably resulted in a decrease in coda magnitude for most of the earthquakes reported, since the method for measuring codas was not changed. At present no adequate investigation has been made to accurately determine the actual amount of magnitude bias introduced by these gain changes. However, Bakun (personal communication) has estimated from a small sample study that magnitudes may be bias downward by as much as one-quarter of a magnitude unit.

A substantial effort has been made to identify explosions so as to eliminate them from the catalog. Explosions can be identified on the basis of several criteria: location of a known quarry or blasting site, shallow focal depth, time of day, focal mechanism, and/or through correspondence with quarry operators. During the third quarter of 1977, 44 blasts were identified and eliminated from the catalog.

DISCUSSION OF CATALOG

The parameters for the earthquakes listed in the Appendix include the origin time, location of hypocenter (epicenter and focal depth), and magnitude. In addition, six other parameters are listed so that an evaluation of the quality of the hypocenter solution may be made. These parameters are (1) the largest azimuthal separation between stations (GAP), (2) the epicentral distance to the nearest station (DMIN), (3) the root-mean-square error of the time residuals (RMS), (4) the standard error of the epicenter (ERH), (5) the standard error of the focal depth (ERZ) and (6) the number of P- and S-arrivals used in the location (NO). Based on these parameters, the general reliability of each earthquake solution is graded as either excellent (A), good (B), fair (C), or poor (D). Exact rules of quality classification are given in the Appendix.

A brief discussion on the accuracy of hypocenter determinations has been given by Lee and others (1971). To obtain a reliable epicenter, GAP should be less than 180 ; to obtain a reliable focal depth, DMIN should be less than the focal depth. In addition, systematic errors arise from uncertainties in the crustal velocity model. These errors cannot be determined except through controlled experiments, e.g., known explosions in the focal region. Because we present all hypocenter solutions of earthquakes in the region we studied, their quality varies. Although standard errors of epicenter and focal depth (ERH and ERZ) are given, they must be interpreted with caution, especially for quality C and D solutions. Hypocenter solutions for known blasts distributed throughout the San Francisco Bay region indicate that the true positions are often within the standard error limits of the solutions, provided that the conditions GAP 180 and DMIN is within a few kilometers are met. For example, comparison of locations determined for well-recorded quarry blasts (solution quality A) with the known coordinates indicate a typical error of about 1 km. As suggested by known blasts, a general statement on the accuracy of our hypocenter solutions is as follows:

Solution Quality	Approximate accuracy in	
	Epicenter	Focal Depth
A (excellent)	1 km	2 km
B (good)	2.5 km	5 km
C (fair)	5 km	>5 km
D (poor)	>5 km	>5 km

Epicenters listed in the Appendix are plotted according to magnitude in Figure 4.

The dashed lines in Figure 4 indicate the boundaries of the USGS seismograph network as it existed during the third quarter of 1977. We feel that the hypocenters listed in the the Appendix represent a nearly complete set of earthquakes above magnitude 1 within these boundaries and that these earthquakes are generally well located. Earthquakes outside the dashed boundaries in Figure 4 tend to be less well located, depending on their distance from the network and their relationship to its geometry. Further, the minimum magnitude event that we can detect and locate increases with increasing distance from the network. For earthquakes outside the network, which yielded unsatisfactory locations on the basis of first P-arrivals alone, S-arrivals were included whenever possible.

We believe that the precision of the earthquake locations (or the relative locations) is better than the absolute accuracy of the earthquake locations. Despite our attempts to model the laterally inhomogeneous nature of the velocity structure within the earth's crust using a variable-thickness surface layer, we suspect that the locations within certain parts of the area included in the boundaries of the network may be systematically biased by as much as 2-3 km (Mayer-Rosa, 1973).

Some of the earthquakes listed in this catalog are multiple events, that is, earthquakes from a given source region which occur in such rapid succession that the seismographs are still recording arrivals from one earthquake when the first arrivals from a following earthquake begin to appear. Depending on the size of the individual events and their separation in time, it may be possible to accurately time and locate the later event(s). Sometimes, however, this is not possible.

The contents of the Appendix, along with similar location information for central California earthquakes since 1969, may be obtained in forms amenable to computer input (magnetic tape) by contacting:

National Oceanic and Atmospheric Administration
Environmental Data and Information Service
NGSDC, Mail Code D62
325 Broadway
Boulder, CO 80303

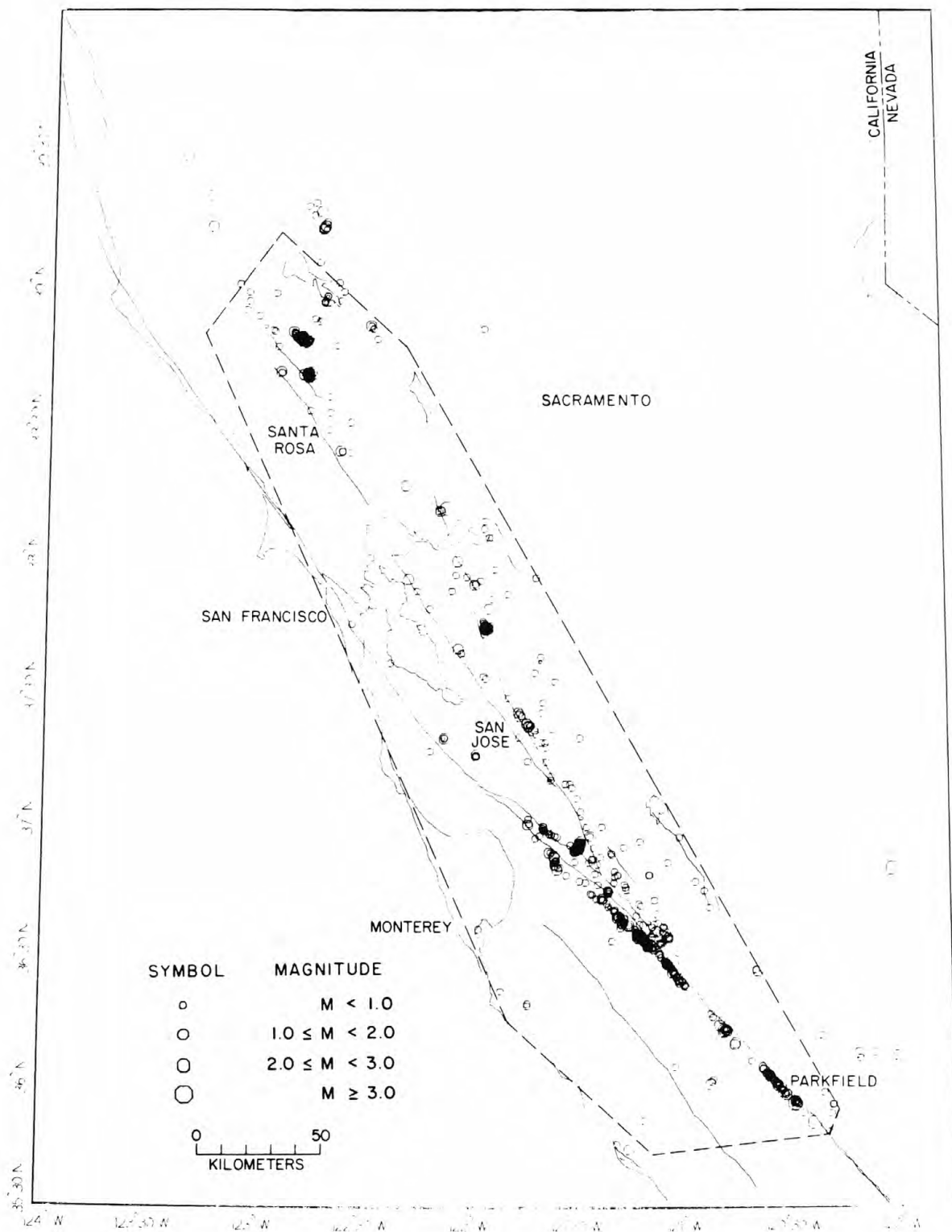


Figure 4. Map showing earthquake epicenters for July - Sept. 1977 reported in the Appendix. Earthquakes in the region enclosed by the dashed line are generally well recorded and located.

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APPENDIX: CATALOG OF EARTHQUAKES July - September (1977)

Earthquakes along the San Andreas fault system in central California for July-September 1977 are listed chronologically in this APPENDIX.

The following data are given for each event:

1. Origin time in Coordinated Universal Time (UTC): date, hour (HR), minute (MN), and second (SEC). To convert to Pacific Standard Time (PST), subtract eight hours, to Pacific Daylight Time (PDT), subtract seven hours.

2. Epicenter in degrees and minutes of north latitude (LAT N) and west longitude (LONG W).

3. DEPTH, depth of focus in kilometers. If "*" follows the DEPTH, it means that the focal depth is constrained by the location program.

4. MAG, local magnitude of the earthquake. If "R" follows the magnitude, it indicates the Richter magnitude calculated from Wood-Anderson seismograph records.

5. NO, number of P- and S-arrivals used in locating earthquake.

6. GAP, largest azimuthal separation in degrees between stations.

7. DMIN, epicentral distance in kilometers to the nearest station.

8. RMS, root-mean-square error of the time residuals:

$$RMS = \sqrt{\sum_i R_i^2 / NO}$$

where R_i is the observed seismic-wave arrival time minus the computed time at the i th station.

9. ERH, standard error of the epicenter in kilometers:

$$ERH = \sqrt{SDX^2 + SDY^2}$$

where SDX and SDY are the standard errors in latitude and longitude, respectively, of the epicenter.

10. ERZ, standard error of the depth in kilometers.

11. Q, solution quality of the hypocenter. This measure is intended to indicate the general reliability of each solution.

<u>Q</u>	<u>Epicenter</u>	<u>Focal Depth</u>
A	excellent	good
B	good	fair
C	fair	poor
D	poor	poor

Q is based on both the nature of the station distribution with respect to the earthquake and the statistical measure of the solution. These two factors are each rated independently according to the following schemes.

Station Distribution

	<u>NO</u>	<u>GAP</u>	<u>DMIN</u>
A	> 6	< 90	< DEPTH or 5 km
B	> 6	< 135	< 2 x DEPTH or 10 km
C	> 6	< 180	< 50 km
D	Others		

Statistical Measures

	<u>RMS (sec)</u>	<u>ERH (km)</u>	<u>ERZ (km)</u>
A	< 0.15	< 1.0	< 2.0
B	< 0.30	< 2.5	< 5.0
C	< 0.50	< 5.0	
D	Others		

Q is taken as the average of the ratings from the two schemes, i.e., an A and a C yield a B, and two B's yield a B. When the two ratings are only one level apart the lower one is used, i.e., an A and a B yield a B.

12. QUADRANGLE, for earthquakes between 35° 00.0' and 40° 00.0' N latitude and 119° 45.0' and 123° 45.0' W longitude, QUADRANGLE indicates the name of the U.S. Geological Survey 7.5' quadrangle (or quadrant of 15' quadrangle), in which the epicenter is located. For earthquakes offshore or outside the designated area, the entry is starred and indicates the general geographic area in which the epicenter is located, for example, "****MONTEREY BAY****".

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977

	1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE
JUL	1	0	26	58.3	37- 8.0	121-31.0	3.5	1.3	32	102	7.5	0.12	.4	.9	B	MT SIZER
	1	5	32	50.2	35-57.3	120-32.5	3.3	2.7	16	113	6.2	0.14	.6	.4	B	STOCKDALE MTN
	1	5	34	17.2	35-57.8	120-32.5	2.5	1.2	6	116	6.4	0.02	.2	.1	B	STOCKDALE MTN
	1	6	4	45.8	38-48.5	122-47.9	1.0	1.6	20	42	3.3	0.11	.3	.3	A	THE GEYSERS
	1	6	50	7.8	36-34.3	121-12.0	5.6	1.5	19	66	1.1	0.13	.7	1.3	B	BICKMORE CANYON
	1	7	56	41.2	39-28.2	123-22.2	6.9	2.2	14	293	56.4	0.23	7.6	2.2	D	NE 1/4 WILLITS
	1	9	57	47.8	36-52.7	121-19.9	4.1	1.9	32	62	2.1	0.12	.3	.3	A	THREE SISTERS
	1	9	59	49.9	38-48.0	122-48.1	3.0	1.1	9	71	3.9	0.19	1.1	.9	B	THE GEYSERS
	1	13	9	20.7	38-48.5	122-49.5	1.0	1.9	22	46	2.4	0.08	.2	.2	A	THE GEYSERS
	1	19	51	27.2	37-39.5	122- 3.3	4.3	2.1	38	33	1.6	0.13	.3	.3	A	HAYWARD
	1	23	11	47.9	38-35.7	122-39.9	8.1	1.4	15	109	8.2	0.17	1.0	2.1	B	MARK WEST SPRINGS
	2	1	49	46.2	38-41.2	122-45.8	3.8	1.3	15	86	2.7	0.15	.7	.5	A	JIMTOWN
	2	5	31	37.0	38-48.1	122-48.5	2.6	1.3	12	66	3.9	0.04	.2	.1	A	THE GEYSERS
	2	5	54	47.1	38-48.4	122-47.7	3.7	1.5	14	60	3.4	0.11	.4	.4	A	THE GEYSERS
	2	13	15	57.3	36-55.1	121-28.5	5.1	1.5	27	58	2.2	0.07	.2	.4	A	SAN FELIPE
	2	17	45	40.7	36-48.8	121-19.1	5.2	1.0	14	71	1.3	0.11	.5	.9	A	TRES PINOS
	2	19	19	54.1	38- 8.1	121-55.6	19.7	1.5	16	101	11.2	0.22	1.4	2.0	B	DENVERTON
	2	21	54	17.7	36- 1.6	120-36.2	2.9	1.8	12	69	4.7	0.10	.8	.9	A	SMITH MTN
	3	1	13	25.9	36-31.2	121- 8.4	4.8	1.8	22	54	4.4	0.22	.7	1.9	B	BICKMORE CANYON
	3	1	44	53.8	37-38.5	122- 2.3	2.1	1.2	12	73	0.8	0.14	.6	.4	A	HAYWARD
	3	4	54	2.0	36-58.4	121-38.4	6.4	0.9	15	62	4.2	0.08	.3	.5	A	WATSONVILLE EAST
	3	6	36	46.9	36-36.0	121- 8.6	10.5	1.9	29	53	4.2	0.18	.5	1.0	B	BICKMORE CANYON
	3	9	34	36.0	38-48.4	122-49.1	1.1	1.2	12	67	2.2	0.08	.3	.2	A	THE GEYSERS
	3	9	47	6.1	38-47.8	122-48.5	3.1	0.9	9	74	3.9	0.13	.8	.7	A	THE GEYSERS
	3	9	48	22.5	37-32.8	121-55.5	4.7	1.1	15	100	5.6	0.11	.5	.4	B	NILES
	3	10	16	56.3	37-36.7	121-40.0	8.4	0.9	10	154	3.2	0.09	.8	1.0	B	MENDENHALL SPRINGS
	3	16	32	23.8	38-48.5	122-49.3	1.0	1.4	13	54	2.5	0.08	.3	.2	A	THE GEYSERS
	3	19	46	52.6	37-22.6	121-43.8	3.9	2.9	55	114	3.0	0.16	.4	.3	B	MT DAY
	3	20	19	38.0	37-21.1	121-41.6	7.5	1.5	30	80	5.6	0.11	.3	1.0	A	LICK OBSERVATORY
	3	20	21	24.1	37-21.1	121-41.9	4.9	2.5	50	80	5.2	0.15	.3	.4	B	LICK OBSERVATORY
	3	20	21	26.4	35-58.2	120-33.1	2.2	1.4	9	82	7.5	0.14	.7	.6	B	STOCKDALE MTN
	3	20	46	30.2	36-23.7	121- 0.6	7.4	0.9	12	65	3.4	0.13	.6	1.3	A	TOPO VALLEY
	4	0	27	53.5	35-45.2	121-18.9	6.6	1.6	14	204	16.6	0.15	1.1	2.1	C	BURRO MTN
	4	2	25	58.5	38-49.6	122-50.3	1.8	1.1	13	49	0.5	0.11	.4	.3	A	THE GEYSERS
	4	2	26	8.1	38-49.9	122-50.8	1.0	2.1	22	43	0.2	0.09	.3	.2	A	THE GEYSERS
	4	4	9	30.4	38-50.7	121-56.0	10.1	2.0	17	125	29.2	0.26	1.2	1.3	C	ZAMORA
	4	7	50	36.4	38-32.5	122-45.7	3.7	1.7	27	42	3.6	0.17	.5	.5	B	HEALDSBURG
	4	9	52	7.9	38-49.7	122-50.6	1.7	1.3	13	65	0.5	0.09	.4	.3	A	THE GEYSERS
	4	12	24	39.0	38-49.6	122-50.4	1.6	1.5	15	49	0.4	0.11	.4	.5	A	THE GEYSERS
	4	15	9	10.5	36-27.8	121- 5.0	5.8	1.5	30	63	5.2	0.20	.6	1.4	B	TOPO VALLEY
	4	17	13	48.6	36- 5.6	120- 0.4	4.7	2.1	9	294	34.7	0.09	6.0	.5	D	LA CIMA
	4	19	54	47.3	36-33.0	121-10.3	3.5	2.4	41	49	2.9	0.21	.5	.4	B	BICKMORE CANYON
	5	2	53	6.4	35-55.1	120-29.1	4.4	2.1	11	74	3.2	0.14	.7	.8	A	PARKFIELD
	5	8	28	0.9	35-54.3	120-18.8	5.2	1.7	2	231	3.2	0.04	.6	.8	C	THE DARK HOLE
	5	3	38	32.9	35-54.3	120-13.6	5.8	1.9	7	233	3.3	0.05	.7	.9	C	THE DARK HOLE

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
JUL	5	18	44	27.9	38-47.7	122-48.6	3.2	0.8	9	74	3.3	0.10	.6	.6	A	THE GEYSERS
	5	19	36	12.5	36-36.0	121- 5.5	12.9	1.0	27	51	6.1	0.11	.4	.5	A	SAN BENITO
	6	9	41	57.2	35-59.3	120-52.7	11.1	2.2	34	96	19.3	0.18	.5	.7	B	HAMES VALLEY
	6	10	31	11.5	36-47.9	121-32.7	4.3	1.5	39	39	2.5	0.28	.6	.5	B	SAN JUAN BAUTISTA
	6	12	29	26.1	38-48.7	122-48.4	3.6	1.5	18	73	3.5	0.14	.5	.4	A	THE GEYSERS
	6	14	5	17.3	36-51.1	121-30.3	7.5	1.7	38	41	4.1	0.20	.5	1.0	B	SAN JUAN BAUTISTA
	6	19	54	59.1	38-41.1	122-45.5	4.3	2.0	27	45	2.7	0.18	.5	.7	B	JIMTOWN
	6	20	58	47.5	36-46.6	121-29.0	3.7	1.1	18	76	2.5	0.21	.9	.9	B	HOLLISTER
	7	3	0	44.8	36-36.9	121-16.8	10.0	2.1	33	44	3.1	0.14	.4	.7	A	MT JOHNSON
	7	3	7	30.6	36-36.9	121-16.7	9.7	1.8	30	44	3.2	0.14	.4	.7	A	MT JOHNSON
	7	12	38	56.2	37-15.5	121-58.1	5.9	1.9	31	35	6.4	0.09	.2	.9	B	SAN JOSE WEST
	7	13	40	21.8	38-48.4	122-48.2	1.6	0.9	9	73	4.7	0.10	.4	.4	A	THE GEYSERS
	7	14	12	38.3	36- 8.9	120-45.7	11.0	2.8	31	76	8.0	0.19	.6	.6	B	MONARCH PEAK
	7	14	20	54.0	36- 8.5	120-45.8	9.2	2.9	43	75	8.5	0.19	.5	.6	B	MONARCH PEAK
	7	17	55	14.6	38-51.2	122-28.5	3.8	1.7	15	157	5.3	0.16	.8	.6	C	JERICO VALLEY
	7	18	20	47.4	38-49.2	122-48.2	3.6	1.4	13	68	3.5	0.13	.6	.6	A	THE GEYSERS
	7	19	0	34.2	36-17.9	121-43.7	8.4	1.6	23	126	8.4	0.17	1.0	2.0	B	VENTANA CONES
	7	20	16	59.9	36-58.4	121-39.1	4.5	1.7	31	52	4.5	0.14	.3	.6	A	WATSONVILLE EAST
	7	20	19	50.5	38-51.3	122-28.6	2.4	2.1	14	81	6.1	0.14	.7	.6	B	JERICO VALLEY
	7	22	7	35.4	36-44.6	121-15.3	4.8	1.5	16	98	3.0	0.15	.6	.7	B	PAICINES
	8	5	18	14.2	36-53.8	121-29.8	11.2	1.3	28	73	2.5	0.13	.4	.8	A	SAN FELIPE
	8	8	25	37.3	36-53.6	121-30.2	11.8	2.5	69	35	2.7	0.14	.3	.3	A	CHITTENDEN
	8	8	26	59.8	36-53.8	121-30.0	11.1	1.7	41	73	2.4	0.12	.3	.5	A	CHITTENDEN
	8	8	28	2.5	36-53.7	121-29.9	11.1	1.2	42	72	2.5	0.11	.3	.5	A	SAN FELIPE
	8	8	30	50.9	36-54.0	121-29.6	10.5	1.3	21	96	2.3	0.10	.4	.8	B	SAN FELIPE
	8	8	31	39.9	36-53.8	121-30.0	11.0	2.7	53	48	2.4	0.12	.3	.3	A	CHITTENDEN
	8	8	36	13.8	36-53.7	121-30.1	11.0	2.1	58	35	2.5	0.12	.3	.4	A	CHITTENDEN
	8	8	36	46.9	36-53.9	121-30.1	9.4	1.8	25	74	3.2	0.13	.4	.7	A	CHITTENDEN
	8	8	37	43.5	36-53.8	121-29.9	9.1	1.3	25	74	2.4	0.10	.3	.6	A	SAN FELIPE
	8	8	44	26.3	36-53.7	121-30.0	10.4	1.3	26	72	2.5	0.13	.4	.7	A	CHITTENDEN
	8	9	8	30.2	36-53.9	121-30.0	11.5	1.4	29	75	2.2	0.13	.4	.8	A	SAN FELIPE
	8	9	49	47.1	35-54.1	120-28.9	11.9	2.7	24	71	4.8	0.16	.7	.6	B	PARKFIELD
	8	9	55	45.3	36-54.0	121-29.9	11.0	1.3	28	77	2.0	0.11	.4	.7	A	SAN FELIPE
	8	9	59	15.2	36-54.0	121-30.4	8.8	1.4	25	75	1.9	0.13	.4	.7	A	CHITTENDEN
	8	10	10	50.0	36-53.9	121-29.9	10.7	1.7	26	75	2.3	0.12	.4	.7	A	SAN FELIPE
	8	12	43	19.1	36-53.7	121-29.9	10.9	1.5	32	73	2.5	0.12	.4	.6	A	SAN FELIPE
	8	19	13	31.7	36-22.2	120-59.3	6.4	1.7	24	61	6.7	0.17	.5	1.5	B	LONOAK
	9	1	32	29.0	35-56.7	120-31.8	8.4	1.9	14	114	5.0	0.15	.8	1.6	B	STOCKDALE MTN
	9	2	49	57.4	35-57.1	120-31.4	6.7	1.3	9	75	4.4	0.10	.6	1.5	A	STOCKDALE MTN
	9	3	20	59.6	37-52.5	122- 5.0	13.5	1.3	17	127	5.3	0.06	.3	.3	B	WALNUT CREEK
	9	5	36	7.8	37-27.3	121-39.1	5.2	1.5	13	133	13.0	0.11	.5	.5	B	MT DAY
	9	6	0	13.6	38-48.2	122-47.7	3.8	1.3	14	70	3.4	0.10	.4	.4	A	THE GEYSERS
	9	7	3	7.7	38-48.4	122-47.7	2.1	1.5	14	58	3.5	0.08	.3	.2	A	THE GEYSERS
	9	7	56	12.4	35-56.7	120-31.7	10.8	2.5	17	114	4.8	0.15	.7	.9	B	STOCKDALE MTN
	9	14	1	0.7	36-49.0	120- 1.0	6.2	3.3	9	150	33.6	0.06	1.0	1.2	B	BIOLA

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
JUL	9	18	7	36.3	38-48.9	122-47.8	4.1	0.9	9	85	3.3	0.13	.8	.9	A	THE GEYSERS
	10	0	12	36.6	36-33.0	121-10.7	4.4	0.3	12	65	3.0	0.11	.5	1.0	A	BICKMORE CANYON
	10	7	13	27.5	38-48.4	122-47.8	2.9	1.0	9	75	3.6	0.07	.3	.3	A	THE GEYSERS
	10	7	15	15.8	38-48.5	122-47.7	2.8	2.4	24	43	3.5	0.10	.3	.2	A	THE GEYSERS
	10	8	41	5.7	37-16.3	122-11.1	1.9	1.6	17	138	2.6	0.11	.4	.3	B	MINDEGO HILL
	10	13	20	1.0	38-48.3	122-48.3	1.6	0.9	9	74	3.9	0.12	.5	.5	A	THE GEYSERS
	11	0	56	50.1	38-49.3	122-48.0	1.3	1.0	9	82	3.7	0.08	.3	.4	A	THE GEYSERS
	11	11	30	15.7	36-38.4	121-17.4	3.5	1.8	27	65	3.2	0.22	.6	.4	B	PAICINES
	11	18	18	2.0	36-53.7	121-29.8	11.8	1.8	35	62	2.6	0.09	.3	.4	A	SAN FELIPE
	12	8	5	38.5	36-32.1	121- 6.1	9.4	1.8	28	78	3.6	0.15	.5	.8	A	SAN BENITO
	12	11	8	10.7	38-48.0	122-48.5	1.1	1.7	17	52	4.1	0.09	.2	.2	A	THE GEYSERS
	12	13	30	57.8	36-24.5	121- 1.8	7.2	1.5	22	64	2.2	0.14	.5	1.0	A	TOPO VALLEY
	12	15	41	30.5	35-55.1	120-28.9	4.3	1.4	9	73	3.0	0.15	.8	1.0	A	PARKFIELD
	12	22	21	19.6	38-47.2	122-46.9	0.0	1.0	6	129	2.0	0.01	.1	.1	B	THE GEYSERS
	13	6	28	30.2	38-49.1	122-48.3	2.1	1.9	18	91	3.4	0.11	.4	.3	B	THE GEYSERS
	13	6	29	56.6	38-48.7	122-48.2	2.3	1.0	8	85	3.7	0.06	.3	.3	A	THE GEYSERS
	13	6	30	37.3	38-48.7	122-48.3	2.5	1.1	8	84	3.5	0.06	.3	.3	A	THE GEYSERS
	13	7	32	19.4	38-48.7	122-48.2	0.9	1.1	7	85	3.7	0.06	.3	.5	A	THE GEYSERS
	13	22	3	36.0	38-47.2	122-47.1	1.3	1.1	8	91	1.9	0.04	.2	.2	B	THE GEYSERS
	14	1	42	4.9	38-48.7	122-50.1	1.7	1.4	17	43	1.6	0.09	.3	.2	A	THE GEYSERS
	14	4	18	14.0	38-48.4	122-48.5	3.9	0.8	10	77	3.6	0.11	.6	.8	A	THE GEYSERS
	14	5	37	8.8	38-48.7	122-50.1	1.9	0.8	11	64	1.6	0.06	.3	.2	A	THE GEYSERS
	14	8	9	50.6	36-56.4	121-41.4	10.5	1.5	44	42	1.5	0.17	.4	.6	B	WATSONVILLE EAST
	14	11	38	5.6	36-33.9	121-12.3	8.4	3.4	74	38	1.9	0.19	.3	.5	B	BICKMORE CANYON
	14	11	40	44.7	36-34.0	121-11.9	6.2	0.9	17	40	1.3	0.05	.2	.4	A	BICKMORE CANYON
	14	11	45	14.3	36-34.1	121-12.4	5.4	2.9	48	38	1.7	0.20	.4	.6	B	BICKMORE CANYON
	14	11	53	2.0	36-34.1	121-12.2	6.7	1.4	29	39	1.5	0.17	.5	1.0	B	BICKMORE CANYON
	14	12	16	43.9	36-34.0	121-12.0	6.5	1.6	31	40	1.4	0.14	.3	.7	A	BICKMORE CANYON
	14	12	41	58.5	36-33.7	121-11.9	6.9	2.3	47	39	1.8	0.17	.4	.8	B	BICKMORE CANYON
	14	13	11	49.6	36-34.1	121-12.1	4.7	2.3	49	34	1.4	0.18	.4	.4	B	BICKMORE CANYON
	14	13	13	31.5	36-34.1	121-12.1	6.6	1.2	27	39	1.5	0.18	.5	1.1	B	BICKMORE CANYON
	14	14	8	35.7	36-36.6	121-12.1	6.6	1.5	11	147	3.8	0.19	1.4	1.8	C	BICKMORE CANYON
	14	15	36	6.2	36-33.7	121-11.7	6.4	2.0	27	40	1.6	0.14	.4	.9	A	BICKMORE CANYON
	14	18	34	56.8	36-33.7	121-11.7	6.1	2.4	30	40	1.6	0.14	.4	.8	A	BICKMORE CANYON
	14	20	12	10.8	36-34.1	121-12.0	6.7	1.6	20	67	1.3	0.15	.5	1.1	A	BICKMORE CANYON
	14	21	12	20.6	38-48.1	122-46.6	2.1	1.2	11	74	2.0	0.11	.4	.3	A	THE GEYSERS
	14	23	56	41.0	38-48.1	122-48.5	1.3	1.5	16	63	3.9	0.07	.2	.2	A	THE GEYSERS
	15	3	11	14.9	36-36.6	121- 8.1	15.9	1.4	20	52	6.2	0.14	.6	.8	A	BICKMORE CANYON
	15	3	47	28.9	36-34.1	121-12.0	6.3	1.8	27	39	1.3	0.15	.4	.9	A	BICKMORE CANYON
	15	5	37	48.3	36-33.7	121-12.1	5.2	2.5	32	39	1.3	0.16	.4	.6	B	BICKMORE CANYON
	15	5	40	57.8	36-33.8	121-12.2	5.4	2.2	32	38	1.3	0.17	.4	1.0	B	BICKMORE CANYON
	15	11	26	40.4	36-34.2	121-12.3	6.8	1.9	28	38	1.5	0.12	.3	.7	A	BICKMORE CANYON
	15	11	31	59.2	36-34.1	121-12.5	6.2	3.0	38	38	1.3	0.18	.4	.7	B	BICKMORE CANYON
	15	14	36	36.1	36-33.6	121-11.6	7.3	1.7	25	41	1.7	0.14	.4	.9	A	BICKMORE CANYON
	15	17	26	31.5	38-47.1	122-47.0	0.8	0.6	3	92	1.8	0.09	.4	.4	B	THE GEYSERS

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
JUL	15	19	35	55.2	36-27.8	121- 2.3	0.8	1.3	15	73	4.6	0.08	.3	.3	A	TOPO VALLEY
	16	11	40	45.4	38-49.1	122-48.7	0.3	0.6	9	94	2.3	0.05	.2	.3	B	THE GEYSERS
	16	12	35	2.8	38-30.0	122-34.1	5.7	1.4	17	144	4.1	0.15	.9	1.3	C	CALISTOGA
	16	21	10	25.4	36-38.3	121-13.5	7.6	2.4	68	32	3.0	0.16	.3	.5	B	PAICINES
	16	21	17	58.4	36-38.3	121-18.3	6.4	1.8	44	37	3.2	0.17	.4	.8	B	PAICINES
	16	23	41	37.0	36-54.0	121-29.3	8.8	2.1	63	30	2.2	0.14	.3	.4	A	SAN FELIPE
	17	2	22	23.7	36-55.2	121-28.4	5.0	1.4	38	43	3.1	0.12	.3	.5	A	SAN FELIPE
	17	4	21	39.3	38-48.6	122-48.3	3.7	1.2	16	55	3.6	0.14	.5	.5	A	THE GEYSERS
	17	5	59	5.6	36-34.1	121-12.0	7.1	1.9	30	39	1.3	0.14	.4	.8	A	BICKMORE CANYON
	17	11	50	34.6	36-38.3	121-18.3	5.8	0.9	20	37	3.2	0.17	.6	1.2	B	PAICINES
	17	20	5	33.2	36-32.7	121-10.7	7.8	1.7	30	44	3.5	0.11	.3	.6	A	BICKMORE CANYON
	17	20	47	30.0	36-32.8	121-10.9	8.4	1.7	31	43	3.2	0.13	.3	.7	A	BICKMORE CANYON
	18	4	59	19.8	38-48.8	122-48.9	1.3	0.9	9	84	2.3	0.08	.3	.4	A	THE GEYSERS
	18	8	12	42.5	37-10.7	121-37.0	4.3	1.6	54	94	1.9	0.11	.2	.2	B	MT SIZER
	18	9	10	56.7	36-34.3	121-12.4	5.7	1.3	25	40	1.5	0.15	.5	.9	B	BICKMORE CANYON
	18	9	18	2.0	36-40.9	121-11.7	11.3	1.3	23	67	2.7	0.11	.4	.8	A	CHERRY PEAK
	18	11	18	19.2	38-48.4	122-47.0	3.8	0.8	9	73	2.4	0.06	.4	.3	A	THE GEYSERS
	18	19	19	49.8	38-49.2	122-48.5	1.0	1.5	11	89	3.0	0.06	.3	.2	A	THE GEYSERS
	19	9	48	53.1	37-57.4	121-52.8	10.3	1.7	22	74	5.3	0.18	.6	1.0	B	CLAYTON
	19	10	5	28.4	36-32.3	121-10.2	7.6	1.7	28	43	4.4	0.15	.4	.9	A	BICKMORE CANYON
	19	16	16	43.8	36-56.7	121-35.3	3.6	1.5	22	35	1.4	0.08	.2	.2	A	CHITTENDEN
	19	17	4	59.4	38-48.3	122-47.9	1.3	1.0	6	79	3.7	0.05	.3	.5	A	THE GEYSERS
	19	23	50	31.6	37-59.2	122- 3.6	13.4	2.8	36	59	8.1	0.13	.4	.3	A	WALNUT CREEK
	20	11	30	22.5	36-31.8	121- 6.2	11.4	2.3	20	62	3.3	0.09	.3	.5	A	SAN BENITO
	20	11	35	46.3	36-31.8	121- 6.3	10.9	1.7	23	65	3.4	0.09	.3	.6	A	SAN BENITO
	20	11	38	7.2	36-31.7	121- 6.3	12.4	0.7	15	82	3.3	0.13	.7	1.4	A	SAN BENITO
	21	1	3	39.8	35-58.8	120-33.7	3.2	1.5	11	67	8.8	0.09	.5	.3	B	STOCKDALE MTN
	21	1	27	4.2	36-25.5	121- 2.5	3.4	1.3	21	86	2.0	0.10	.4	.3	A	TOPO VALLEY
	21	5	27	9.3	36-39.0	121- 7.3	15.2	1.6	35	73	2.5	0.15	.5	.6	A	PANOCH PASS
	21	8	35	54.4	38-48.7	122-48.2	2.8	0.9	9	82	3.7	0.05	.3	.2	A	THE GEYSERS
	21	19	31	9.2	36-40.7	121-20.9	4.9	1.4	22	55	2.3	0.15	.5	.6	A	PAICINES
	21	19	52	27.7	38-48.8	122-48.2	3.9	0.8	9	85	3.7	0.11	.7	.8	A	THE GEYSERS
	21	20	5	9.6	36-34.4	121-12.9	8.7	1.2	19	68	2.3	0.17	.7	1.5	B	BICKMORE CANYON
	21	21	44	5.2	38-47.6	122-48.1	2.1	1.7	18	73	3.2	0.11	.3	.2	A	THE GEYSERS
	21	21	45	1.2	38-47.8	122-48.6	3.3	1.5	17	52	3.9	0.15	.5	.4	B	THE GEYSERS
	22	11	34	36.6	36-33.4	121-11.3	5.3	1.2	17	66	2.1	0.17	.7	1.3	B	BICKMORE CANYON
	22	17	56	7.0	39- 5.1	122-43.3	2.8	1.3	10	183	10.1	0.09	.7	.7	C	CLEARLAKE OAKS
	22	19	56	51.3	36- 2.0	120-37.0	0.1	1.1	7	109	4.6	0.10	.6	.7	B	SMITH MTN
	22	22	36	28.0	36-32.5	121- 9.7	6.9	1.3	13	61	4.4	0.14	.7	1.5	A	BICKMORE CANYON
	23	4	41	42.8	38-48.4	122-48.5	0.9	1.9	18	44	3.5	0.10	.3	.2	A	THE GEYSERS
	23	4	42	37.3	38-48.6	122-48.6	1.2	2.2	16	66	3.2	0.09	.3	.2	A	THE GEYSERS
	23	6	36	21.3	36-32.7	121-10.5	7.9	1.2	14	65	3.5	0.06	.3	.6	A	BICKMORE CANYON
	23	6	37	0.8	36-58.1	121-38.7	4.3	0.8	15	56	4.4	0.06	.2	.2	A	WATSONVILLE EAST
	23	6	38	34.3	36-58.2	121-38.8	4.4	1.1	17	57	4.4	0.07	.3	.3	A	WATSONVILLE EAST
	23	10	30	8.3	37-14.1	121-43.6	6.0	1.1	16	64	5.4	0.04	.2	.6	A	MORGAN HILL

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
JUL	23	10	58	49.6	36-53.8	121-28.9	7.8	2.0	36	35	3.3	0.10	.2	.6	A	SAN FELIPE
	23	12	41	27.9	38-48.5	122-47.9	1.8	0.7	9	77	3.7	0.09	.4	.3	A	THE GEYSERS
	23	17	53	56.6	38-23.2	122-34.1	9.4	1.1	16	112	9.5	0.19	.8	2.1	B	KENWOOD
	24	2	23	29.2	37-45.0	122-33.5	11.9	1.6	36	99	8.9	0.19	.6	.5	B	***GULF OF THE FARALLONES***
	24	3	18	53.4	36-25.8	120-39.2	10.5	2.9	50	144	16.1	0.13	.5	.5	C	IDRIA
	24	14	15	38.6	38-47.5	122-48.4	3.6	1.0	17	61	3.3	0.15	.5	.4	A	THE GEYSERS
	24	14	47	22.2	37- 1.1	121-28.4	3.4	1.0	31	62	1.2	0.16	.4	.3	B	GILROY HOT SPRINGS
	24	21	36	52.8	38-48.3	122-48.1	1.0	1.4	18	47	4.0	0.11	.3	.3	A	THE GEYSERS
	24	21	38	29.6	38-48.4	122-48.1	0.9	2.6	28	36	4.0	0.09	.2	.2	A	THE GEYSERS
	25	0	38	57.6	37-18.3	121-38.7	5.0	1.1	25	68	5.8	0.10	.3	.3	B	LICK OBSERVATORY
	25	7	57	21.3	38-47.9	122-48.5	3.2	1.1	15	66	4.0	0.14	.5	.6	A	THE GEYSERS
	25	8	36	28.1	38-48.7	122-48.3	3.5	1.2	13	71	3.7	0.15	.6	.6	B	THE GEYSERS
	25	15	47	36.4	38-48.3	122-46.7	4.2	0.9	9	79	2.0	0.10	.6	1.2	A	THE GEYSERS
	25	18	56	11.0	36-43.8	121-20.9	9.7	1.7	22	68	2.4	0.15	.6	1.0	A	PAICINES
	25	21	16	59.6	36-37.9	121-16.5	7.1	1.7	28	46	3.5	0.14	.4	.7	A	PAICINES
	26	4	18	27.7	36-44.3	121-20.9	11.3	1.0	14	76	3.2	0.14	.9	1.7	A	PAICINES
	26	4	36	58.3	36-25.4	121- 2.5	6.8	1.3	16	87	2.0	0.16	.7	1.2	B	TOPO VALLEY
	26	5	58	48.7	38-48.6	122-50.1	1.7	0.8	9	103	1.8	0.05	.2	.1	B	THE GEYSERS
	26	6	27	54.2	36-42.6	121-24.3	4.8	1.5	32	58	2.7	0.16	.4	.5	B	MT HARLAN
	26	9	38	59.1	38-49.2	122-48.2	2.1	0.7	9	92	3.5	0.07	.3	.3	B	THE GEYSERS
	26	9	39	25.1	38-49.3	122-48.1	2.1	0.9	9	92	3.6	0.09	.4	.4	B	THE GEYSERS
	26	11	44	32.9	36-53.2	121-37.2	4.8	1.9	31	69	2.5	0.21	.6	.5	B	CHITTENDEN
	26	12	14	32.1	36-48.0	121-18.3	5.3	1.1	25	59	2.0	0.13	.4	.6	A	TRES PINOS
	26	19	59	39.6	36-10.5	120-21.6	15.5	2.0	12	165	8.4	0.10	.9	1.1	B	COALINGA
	26	20	9	57.5	38-49.5	122-50.4	1.9	1.0	10	90	0.3	0.09	.5	.3	B	THE GEYSERS
	26	20	15	36.1	38-49.6	122-50.6	1.8	0.8	10	105	0.2	0.12	.7	.4	B	THE GEYSERS
	26	21	42	16.0	35-54.7	120-29.4	5.2	3.5R	21	64	4.0	0.16	.5	.5	B	PARKFIELD
	27	2	2	46.0	35-55.3	120-29.2	4.5	1.4	9	74	2.9	0.11	.7	.6	A	PARKFIELD
	27	4	46	47.7	38-58.6	123- 3.6	4.2	1.5	16	129	7.9	0.13	.6	.7	B	HOPLAND
	27	7	31	39.5	36- 1.7	120-36.4	2.2	1.3	9	104	4.7	0.08	.5	.5	B	SMITH MTN
	27	10	12	30.7	36- 1.5	120-35.8	3.5	2.0	16	67	4.9	0.14	.7	.8	A	SMITH MTN
	27	10	56	6.5	37-37.7	121-39.8	11.1	1.4	12	178	4.4	0.10	1.0	1.3	B	ALTAMONT
	27	11	10	46.6	36-54.2	121-29.6	6.2	2.9	80	32	2.0	0.12	.2	.5	A	SAN FELIPE
	27	14	43	41.8	36-28.1	121- 5.0	8.5	1.3	14	93	4.7	0.08	.4	.7	B	TOPO VALLEY
	27	16	16	11.6	38-48.8	122-49.6	1.4	1.0	9	94	1.8	0.05	.2	.2	B	THE GEYSERS
	27	16	43	23.3	37-17.2	121-38.3	6.8	1.2	14	91	4.4	0.10	.5	1.3	B	LICK OBSERVATORY
	27	21	51	17.6	37-19.2	122- 7.1	5.0	3.6R	49	33	2.8	0.11	.2	.2	A	CUPERTINO
	27	21	54	31.6	37-19.4	122- 7.2	4.2	1.2	18	43	2.8	0.10	.3	.2	A	CUPERTINO
	27	21	56	2.6	36-52.2	121-23.2	4.6	1.5	25	83	2.3	0.10	.3	.4	A	HOLLISTER
	27	21	58	12.1	36-25.2	121- 2.4	6.7	1.2	14	87	2.0	0.08	.4	.7	A	TOPO VALLEY
	27	22	55	39.1	37-19.2	122- 7.4	4.3	1.0	13	53	2.7	0.08	.4	.3	A	CUPERTINO
	28	3	11	46.8	38-49.7	122-47.8	2.6	0.9	8	109	4.0	0.06	.3	.2	B	THE GEYSERS
	28	4	5	37.0	38-48.7	122-47.7	1.7	1.3	10	80	3.3	0.10	.4	.3	A	THE GEYSERS
	28	5	34	15.5	36-53.7	121-28.7	7.6	1.4	22	81	1.1	0.10	.4	.7	A	SAN FELIPE
	28	7	10	18.5	37-19.3	122- 7.1	4.3	1.3	20	43	2.3	0.10	.3	.2	A	CUPERTINO

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ER4	ERZ	Q	QUADRANGLE	
JUL	28	10	45	3.3	38-48.6	122-47.7	1.9	2.0	17	55	3.5	0.09	.2	.2	A	THE GEYSERS
	28	10	45	54.1	38-48.6	122-47.6	1.9	1.9	17	55	3.3	0.09	.2	.2	A	THE GEYSERS
	28	11	18	36.3	35-47.9	120-19.9	3.6	1.2	7	278	4.1	0.12	4.3	.8	D	CHOLAME VALLEY
	29	4	13	54.4	36-42.5	121-22.5	2.8	2.3	46	40	2.2	0.18	.3	.3	B	MT HARLAN
	29	10	20	45.2	36-54.3	121-28.5	9.3	1.8	39	54	8.2	0.14	.3	.7	A	SAN FELIPE
	29	16	18	29.0	35-58.2	120-33.2	2.3	1.4	9	77	7.7	0.13	.8	.6	B	STOCKDALE MTN
	29	21	26	2.4	38-48.1	122-48.0	1.9	0.8	10	73	3.2	0.06	.3	.2	A	THE GEYSERS
	30	1	31	26.1	37-56.1	122- 4.0	6.7	1.7	26	47	3.3	0.20	.6	.6	B	WALNUT CREEK
	30	1	59	35.5	38-16.1	122-18.3	5.2	2.1	15	112	8.0	0.13	.6	.2	B	NAPA
	30	5	47	52.5	36-34.1	121-12.5	7.8	1.4	29	38	1.3	0.17	.5	.9	B	BICKMORE CANYON
	30	9	57	30.8	37-44.2	121-54.8	6.8	1.4	12	75	6.8	0.09	.4	.7	B	DUBLIN
	30	9	59	2.9	37-44.0	121-55.2	7.4	1.0	12	48	6.2	0.09	.4	.7	A	DUBLIN
	30	15	9	49.3	36-55.0	121-28.7	3.8	1.8	53	41	2.6	0.18	.3	.3	B	SAN FELIPE
	30	16	35	37.9	36-55.4	121-28.4	7.4	3.7R	82	37	3.1	0.14	.2	.4	A	SAN FELIPE
	30	17	43	32.8	37-44.1	121-54.8	6.8	1.4	10	76	6.2	0.07	.3	.7	B	DUBLIN
	30	21	10	22.7	37-20.3	121-41.1	8.4	1.8	37	76	6.8	0.10	.3	.8	A	LICK OBSERVATORY
	31	1	37	38.4	38-48.7	122-48.5	3.4	1.0	10	80	3.4	0.14	.7	.5	A	THE GEYSERS
	31	2	7	13.2	36-42.5	121-22.9	2.8	1.4	16	54	3.4	0.19	.6	.6	B	MT HARLAN
	31	7	30	41.1	36-38.7	121-13.0	9.4	1.6	23	57	2.0	0.13	.4	.8	A	CHERRY PEAK
	31	12	14	54.3	36-25.7	121- 3.0	6.2	1.6	21	55	2.3	0.18	.6	1.3	B	TOPO VALLEY
AUG	31	22	1	34.9	36-56.6	121- 0.9	4.7	1.7	17	148	16.7	0.17	1.2	1.6	C	LOS BANOS VALLEY
	1	2	56	49.7	36-25.7	121- 2.9	4.1	1.0	14	82	2.7	0.09	.5	1.0	A	TOPO VALLEY
	1	6	4	19.2	38-56.3	122-40.3	4.7	1.1	9	124	0.2	0.18	1.4	1.7	B	CLEARLAKE HIGHLANDS
	1	8	32	7.4	35-59.9	120-35.1	1.5	1.7	10	59	8.0	0.10	.4	.4	B	STOCKDALE MTN
	1	16	8	52.3	36-33.1	121-11.0	4.7	2.4	32	43	2.7	0.15	.4	.8	B	BICKMORE CANYON
	1	20	21	19.9	36-12.0	120-48.7	7.6	2.0	34	106	2.3	0.24	.8	1.0	B	MONARCH PEAK
	2	2	31	43.5	37-55.2	122-17.4	5.5	2.2	52	38	6.1	0.15	.3	.3	B	RICHMOND
	2	6	39	53.7	38-48.7	122-48.5	1.5	2.0	27	38	3.3	0.10	.2	.2	A	THE GEYSERS
	3	4	54	0.8	36-32.3	121- 8.8	7.1	1.5	19	62	5.6	0.18	.7	1.5	B	BICKMORE CANYON
	3	5	58	14.7	36-25.2	121- 2.7	7.6	1.8	31	41	2.4	0.17	.5	1.0	B	TOPO VALLEY
	3	8	7	44.2	38-48.3	122-46.3	2.3	1.5	17	67	1.5	0.11	.3	.2	A	THE GEYSERS
	3	9	32	40.8	38-48.1	122-48.9	1.2	1.5	17	56	3.5	0.08	.2	.2	A	THE GEYSERS
	3	9	48	5.3	38-48.0	122-48.6	1.2	1.5	17	61	3.9	0.09	.2	.2	A	THE GEYSERS
	3	11	12	36.8	35-54.6	120-28.3	4.6	1.8	9	70	4.0	0.16	.9	1.2	B	PARKFIELD
	3	14	23	33.1	36-51.7	121-25.5	3.8	1.4	29	67	1.7	0.15	.4	.3	B	HOLLISTER
	3	15	19	8.7	35-54.6	120-28.3	4.3	1.7	8	70	4.0	0.16	1.0	1.3	B	PARKFIELD
	3	16	24	7.3	36-45.8	121-16.3	4.9	1.5	15	57	3.2	0.12	.5	.5	A	TRES PINOS
	3	20	33	6.9	36-53.0	121-20.1	4.1	1.6	21	74	2.3	0.12	.4	.3	A	THREE SISTERS
	4	2	49	2.5	36-31.1	121- 8.8	5.6	1.6	24	57	3.2	0.34	1.0	1.6	B	BICKMORE CANYON
	4	4	20	2.1	36-33.7	121- 8.6	2.6	1.5	24	61	4.4	0.16	.5	1.0	B	BICKMORE CANYON
	4	4	20	16.7	36-33.8	121- 8.5	9.7	2.2	27	53	4.4	0.16	.5	.7	B	BICKMORE CANYON
	4	4	21	24.5	36-33.8	121- 8.6	10.3	1.2	18	61	4.4	0.18	.7	1.6	B	BICKMORE CANYON
	4	7	12	55.3	36-22.3	120-59.7	9.2	1.7	12	63	6.2	0.14	.7	1.6	A	LONOAK
	4	14	12	7.4	36-26.1	120-39.7	12.6	1.8	37	169	15.6	0.24	1.1	.7	C	IDRIA
	5	0	52	6.9	35-59.6	120-34.0	3.0	1.1	9	85	8.2	0.12	.8	.9	B	STOCKDALE MTN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
AUG	5	11	19	8.2	36-44.6	121-21.0	9.8	1.1	14	83	3.6	0.19	1.0	1.9	B	PAICINES
	5	21	20	24.7	38-48.7	122-49.6	0.1	1.8	18	57	2.0	0.15	.4	.4	A	THE GEYSERS
	5	21	22	24.8	38-48.7	122-49.4	1.0	1.3	9	75	2.1	0.03	.1	.1	A	THE GEYSERS
	5	21	22	50.9	38-48.7	122-49.7	1.5	1.2	10	68	1.3	0.15	.6	.5	A	THE GEYSERS
	6	1	17	9.5	36-56.9	121-26.0	4.9	2.3	54	54	4.3	0.12	.2	.3	A	SAN FELIPE
	6	9	36	58.8	38-48.5	122-49.4	1.6	0.9	8	92	2.4	0.03	.1	.1	B	THE GEYSERS
	6	13	16	33.3	36- 1.4	120-36.3	0.7	1.8	9	69	5.2	0.08	.3	.4	B	SMITH MTN
	6	15	16	41.2	36-14.3	120-49.4	5.7	1.4	8	135	3.6	0.12	1.3	2.1	B	MONARCH PEAK
	6	18	10	54.4	36-36.8	121-16.5	8.0	1.6	23	45	3.5	0.16	.5	1.1	B	MT JOHNSON
	6	23	6	35.7	38-49.1	122-48.0	3.5	1.6	16	79	3.3	0.14	.5	.6	A	THE GEYSERS
	7	0	28	15.2	39-18.2	122-44.6	2.8	1.8	13	292	20.6	0.15	2.3	.9	C	FOUTS SPRINGS
	7	2	26	16.5	36-50.8	121-26.4	5.1	1.5	20	59	3.1	0.07	.2	.8	A	HOLLISTER
	7	4	50	23.2	36-37.1	121- 9.6	11.2	0.7	13	61	5.4	0.17	.9	1.8	B	BICKMORE CANYON
	7	9	41	15.5	38-48.2	122-46.5	3.2	0.6	7	107	1.7	0.04	.3	.2	B	THE GEYSERS
	7	9	41	39.1	38-48.2	122-46.5	2.4	1.1	10	68	1.3	0.10	.4	.4	A	THE GEYSERS
	7	11	4	2.3	38-48.7	122-48.4	4.0	0.8	9	81	3.4	0.13	.8	.9	A	THE GEYSERS
	7	11	7	21.4	38-48.4	122-47.5	2.9	0.8	8	73	3.2	0.17	.3	.2	B	THE GEYSERS
	7	12	36	44.1	36-36.1	121- 5.3	15.7	1.0	12	72	5.8	0.10	.9	1.2	A	SAN BENITO
	7	13	9	3.5	38-48.8	122-48.7	3.2	1.0	8	87	3.0	0.08	.6	.5	A	THE GEYSERS
	7	14	36	23.1	37-43.6	121-55.5	5.7	1.4	12	102	7.6	0.08	.4	.3	B	DUBLIN
	7	20	36	22.8	36-35.5	121-57.4	14.0	1.6	19	185	3.7	0.09	.6	.3	C	MONTEREY
	7	21	31	8.8	38-48.2	122-48.4	1.3	1.1	15	60	3.8	0.11	.3	.3	A	THE GEYSERS
	8	2	56	50.0	36-54.1	121-29.1	8.2	1.6	34	51	2.1	0.11	.3	.5	A	SAN FELIPE
	8	14	6	11.1	38-48.8	122-48.2	3.7	1.4	19	53	3.6	0.14	.5	.4	A	THE GEYSERS
	8	18	43	12.6	36-51.6	121-25.2	4.2	1.4	22	47	1.3	0.12	.4	.3	A	HOLLISTER
	8	18	54	0.5	38-58.8	122-36.4	1.5	1.4	15	121	4.8	0.15	.7	.5	B	LOWER LAKE
	8	20	44	28.0	38-48.7	122-48.4	3.4	1.4	16	55	3.5	0.12	.4	.4	A	THE GEYSERS
	9	5	19	20.5	37-22.2	121-43.1	4.3	2.4	74	82	7.5	0.16	.3	.2	B	LICK OBSERVATORY
	9	5	24	30.3	37-22.4	121-43.1	9.1	1.9	55	83	3.7	0.11	.3	.6	A	LICK OBSERVATORY
	9	5	31	14.7	37-22.1	121-42.8	8.9	1.7	53	83	4.0	0.11	.2	.6	A	LICK OBSERVATORY
	9	5	31	40.6	36-58.1	121-37.8	7.6	1.3	20	48	4.3	0.09	.3	.6	A	WATSONVILLE EAST
	9	8	4	21.7	36-44.3	121-20.9	8.9	2.3	51	27	3.2	0.16	.3	.6	B	PAICINES
	9	8	5	2.7	36-44.7	121-21.0	8.4	1.7	27	39	3.5	0.24	.7	1.3	B	PAICINES
	9	8	6	30.9	36-44.4	121-20.7	8.9	1.5	26	43	3.4	0.18	.6	1.1	B	PAICINES
	9	8	34	25.0	36-11.7	120-48.6	8.3	3.2	30	76	2.5	0.23	.7	1.3	B	MONARCH PEAK
	9	8	40	7.8	37- 2.6	121-28.6	5.4	1.5	28	62	2.0	0.13	.4	.8	A	GILROY HOT SPRINGS
	9	8	44	31.5	36-12.2	120-48.3	6.8	1.5	10	112	1.6	0.09	.7	1.0	B	MONARCH PEAK
	9	8	54	21.4	36-12.4	120-48.2	7.2	1.5	11	91	1.3	0.11	.9	1.2	B	MONARCH PEAK
	9	8	59	48.1	36-12.2	120-43.2	7.5	1.7	13	86	1.5	0.10	.6	.8	A	MONARCH PEAK
	9	9	12	59.5	36-23.6	121- 1.0	6.4	1.3	22	78	3.5	0.23	.8	1.7	B	TOPO VALLEY
	9	12	1	17.3	36-57.1	121-40.2	11.5	1.7	35	41	2.3	0.12	.3	.4	A	WATSONVILLE EAST
	9	14	55	6.5	36-50.7	121- 4.1	4.8	1.8	25	96	12.9	0.14	.5	.7	B	RUBY CANYON
10	1	52	17.8	38-50.3	122-56.6	6.2	1.2	17	59	1.1	0.14	.6	1.0	A	ASTI	
10	8	25	48.5	36-46.3	121-27.3	10.1	1.6	18	49	3.7	0.16	.7	1.4	B	HOLLISTER	
10	9	34	50.1	36-53.9	121-28.7	8.6	1.7	33	40	1.4	0.10	.3	.5	A	SAN FELIPE	

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
AUG	10	10	21	16.1	36-22.7	120-59.6	9.3	1.7	15	62	5.6	0.12	.5	.9	A	ROCK SPRING PEAK
	10	20	19	23.1	37-22.7	121-43.8	4.1	2.6	74	82	3.2	0.18	.3	.2	B	MT DAY
	10	23	49	4.8	36-30.1	121- 1.4	7.8	1.1	17	79	4.3	0.19	.8	1.7	B	SAN BENITO
	10	23	53	44.7	38-57.8	122-41.1	3.8	1.1	9	164	3.0	0.10	.8	.4	B	CLEARLAKE HIGHLANDS
	11	0	10	39.0	38-57.8	122-41.2	3.8	1.4	14	164	3.1	0.17	.9	.6	C	CLEARLAKE HIGHLANDS
	11	0	18	54.4	38-57.7	122-41.2	3.7	1.0	12	163	3.0	0.14	.9	.5	B	CLEARLAKE HIGHLANDS
	11	6	59	13.5	36- 1.0	120-36.1	5.9	2.8	22	54	5.7	0.23	.8	2.1	B	SMITH MTN
	11	7	8	22.0	35-59.6	120-34.0	4.9	1.2	9	85	8.7	0.12	.8	1.0	B	STOCKDALE MTN
	11	16	34	58.8	38-48.5	122-48.3	1.5	1.0	9	75	3.3	0.08	.3	.3	A	THE GEYSERS
	11	17	3	14.8	36-32.0	121-10.0	8.8	2.2	33	41	4.8	0.27	.7	1.5	B	BICKMORE CANYON
	11	22	10	26.0	37- 8.9	121-33.0	4.4	1.3	17	111	6.8	0.12	.5	.4	B	MT SIZER
	12	2	25	16.8	36-32.4	121-10.7	7.9	1.4	26	41	4.0	0.19	.6	1.3	B	BICKMORE CANYON
	12	4	59	30.1	36-29.0	121- 6.2	5.3	1.2	18	91	3.7	0.13	.5	1.3	B	TOPO VALLEY
	12	5	59	0.4	39-17.5	122-46.6	4.5	1.8	19	268	34.7	0.14	4.2	2.1	D	POTATO HILL
	12	15	36	6.4	36-59.3	121-39.3	7.3	1.1	21	49	3.3	0.09	.3	.7	A	WATSONVILLE EAST
	12	21	59	7.4	36-31.2	121-10.2	7.5	1.4	20	58	3.4	0.26	1.0	2.0	B	BICKMORE CANYON
	13	1	59	16.2	36-57.1	121-35.9	4.3	1.9	48	46	1.5	0.11	.2	.2	A	CHITTENDEN
	13	17	38	31.4	36-34.2	121-12.2	3.7	1.0	18	67	1.4	0.19	.7	.6	B	BICKMORE CANYON
	13	18	47	45.5	38-48.3	122-48.3	1.4	0.9	14	61	4.0	0.09	.3	.2	A	THE GEYSERS
	13	19	13	32.4	37-44.4	121-54.8	6.5	1.3	20	48	3.7	0.11	.4	.3	A	DUBLIN
	13	19	13	35.4	37-43.8	121-54.3	3.8	1.5	23	50	5.1	0.19	.5	.4	B	DUBLIN
	13	19	19	43.8	37-44.1	121-55.3	4.5	1.1	27	43	3.8	0.16	.4	.3	B	DUBLIN
	13	19	48	33.6	37-44.7	121-54.2	4.8	1.6	29	69	3.7	0.19	.5	.4	B	DUBLIN
	13	23	57	24.7	36-55.0	121-31.6	3.8	1.2	33	51	1.7	0.14	.3	.3	A	CHITTENDEN
	14	4	6	36.5	37-44.2	121-55.1	5.0	1.2	31	45	3.7	0.16	.4	.4	B	DUBLIN
	14	11	53	1.8	38-48.4	122-26.6	2.1	1.3	11	179	0.3	0.10	.9	.3	B	JERICO VALLEY
	14	11	55	29.9	37-44.7	121-55.0	8.1	1.2	19	50	3.1	0.10	.4	.8	A	DUBLIN
	14	13	38	52.0	37-44.1	121-55.2	4.8	2.2	64	43	3.9	0.18	.3	.3	B	DUBLIN
	14	14	17	48.9	37-44.5	121-55.3	6.3	0.9	21	46	3.1	0.15	.5	.4	B	DUBLIN
	14	14	25	34.5	37-44.3	121-55.1	5.7	3.2	69	46	3.6	0.18	.3	.3	B	DUBLIN
	14	14	30	13.3	37-44.1	121-54.9	4.4	1.6	41	45	4.0	0.18	.4	.3	B	DUBLIN
	14	14	40	25.8	37-44.3	121-54.9	5.0	2.1	32	47	3.9	0.14	.3	.3	A	DUBLIN
	14	14	41	51.0	37-42.8	121-55.9	6.6	1.1	13	51	5.7	0.19	.8	.7	B	DUBLIN
	14	14	49	52.4	37-44.1	121-55.0	4.4	1.2	30	45	3.7	0.18	.4	.3	B	DUBLIN
	14	14	53	17.9	37-44.3	121-54.8	4.4	1.4	35	47	3.7	0.18	.4	.3	B	DUBLIN
	14	15	0	19.6	37-44.2	121-55.2	4.8	2.0	44	45	3.7	0.16	.3	.3	B	DUBLIN
	14	15	1	12.9	37-43.8	121-55.5	4.4	1.2	18	44	4.2	0.21	.6	.5	B	DUBLIN
	14	15	2	48.2	37-44.4	121-54.8	5.6	1.1	19	49	3.6	0.13	.5	.8	A	DUBLIN
	14	15	2	57.1	37-44.0	121-55.3	4.7	2.8	26	42	4.0	0.17	.4	.4	B	DUBLIN
	14	15	3	25.3	37-44.3	121-55.1	6.0	2.4	17	46	3.6	0.17	.6	.5	B	DUBLIN
	14	15	20	54.9	36-32.6	121- 5.6	16.5	1.3	17	105	4.0	0.11	.9	1.4	B	SAN BENITO
	14	15	22	29.0	37-44.3	121-54.8	4.8	1.8	24	53	3.7	0.14	.4	.3	A	DUBLIN
	14	15	39	34.7	37-44.3	121-55.0	6.6	1.3	14	48	3.7	0.09	.4	.4	A	DUBLIN
	14	16	23	39.4	36-27.4	121- 4.5	3.5	2.2	27	75	5.7	0.12	.4	.7	A	TOPO VALLEY
	14	16	42	19.1	37-44.2	121-55.0	7.3	1.3	12	66	6.7	0.06	.3	.5	A	DUBLIN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
AUG	14	16	47	5.9	37-44.3	121-55.3	8.2	1.4	13	92	3.5	0.08	.4	.9	B	DUBLIN
	14	17	13	41.9	37-44.3	121-54.7	7.7	1.3	11	74	4.0	0.07	.4	1.3	A	DUBLIN
	14	18	6	33.5	36-23.3	121- 0.4	5.7	1.5	14	86	4.2	0.12	.6	1.2	A	TOPO VALLEY
	14	18	13	12.8	37-44.4	121-54.7	6.5	1.6	21	49	3.3	0.11	.4	.4	A	DUBLIN
	14	18	13	42.4	37-44.3	121-54.7	6.5	1.5	21	64	3.2	0.11	.3	.3	A	DUBLIN
	14	20	4	22.9	37-44.0	121-54.9	6.6	1.3	12	77	4.2	0.07	.3	.3	A	DUBLIN
	14	20	5	42.6	37-44.3	121-55.0	6.8	1.6	18	48	3.6	0.10	.4	.6	A	DUBLIN
	14	20	6	43.8	37-44.0	121-54.8	8.1	1.2	11	77	4.3	0.07	.4	1.0	A	DUBLIN
	14	22	44	37.6	37-43.9	121-55.5	7.3	1.2	11	69	7.0	0.05	.2	.4	A	DUBLIN
	15	3	38	19.9	37-44.2	121-55.3	6.3	2.2	33	44	3.7	0.14	.4	.4	A	DUBLIN
	15	4	14	12.5	37-44.3	121-54.8	6.3	1.2	11	74	3.9	0.07	.3	.3	A	DUBLIN
	15	4	49	16.5	35-57.7	120-32.7	3.4	1.9	11	74	6.7	0.16	.8	.6	B	STOCKDALE MTN
	15	5	21	18.8	37-44.4	121-54.8	6.6	1.3	16	49	3.7	0.12	.5	.5	A	DUBLIN
	15	5	21	30.7	37-44.4	121-54.8	6.8	1.4	15	49	3.7	0.10	.4	.7	A	DUBLIN
	15	6	14	12.0	37-44.2	121-55.5	6.9	1.3	13	90	3.7	0.09	.5	.8	A	DUBLIN
	15	6	53	51.9	37-44.1	121-55.6	5.7	2.0	29	42	3.8	0.13	.3	.5	A	DUBLIN
	15	8	23	20.6	36- 1.7	120-36.6	2.1	1.5	9	105	4.7	0.10	.7	.6	B	SMITH MTN
	15	9	17	7.9	37-44.4	121-54.6	6.3	1.5	11	63	3.8	0.08	.3	.3	A	DUBLIN
	15	12	0	50.2	38-49.0	122-48.3	2.5	1.3	11	136	4.4	0.10	.6	.3	B	THE GEYSERS
	15	12	53	10.4	37-44.4	121-54.8	7.7	1.5	11	63	3.7	0.09	.5	1.2	A	DUBLIN
	15	14	46	6.2	36-35.4	121-13.3	3.6	1.0	17	64	3.4	0.18	.7	.8	B	BICKMORE CANYON
	15	14	54	30.3	36-35.0	121- 7.5	8.1	1.2	15	67	5.8	0.13	.6	1.5	A	BICKMORE CANYON
	15	16	35	30.0	37-44.1	121-54.8	6.5	1.2	11	76	4.1	0.12	.6	.5	A	DUBLIN
	15	16	36	31.3	37-44.3	121-55.0	6.2	1.6	20	46	3.8	0.14	.4	.4	A	DUBLIN
	15	17	34	46.6	37-38.6	122- 1.8	2.9	1.1	8	77	1.2	0.06	.4	.2	A	HAYWARD
	15	18	3	1.7	38-40.4	122-46.3	4.6	1.8	20	59	4.3	0.18	.6	1.7	B	JIMTOWN
	15	18	45	55.3	36-27.7	121- 4.6	7.5	1.2	18	110	5.3	0.15	.6	1.2	B	TOPO VALLEY
	16	4	4	17.2	36-54.4	121-16.5	3.5	1.2	16	103	3.9	0.09	.4	.3	B	THREE SISTERS
	16	6	14	50.7	36-50.1	121-35.9	6.4	1.8	44	42	4.1	0.28	.6	1.4	B	SAN JUAN BAUTISTA
	16	7	28	19.3	36-28.1	121- 5.3	5.9	1.6	18	77	4.7	0.09	.3	.9	A	TOPO VALLEY
	16	8	0	21.9	36-45.2	121-15.9	4.8	1.1	19	51	2.6	0.21	.7	.7	B	TRES PINOS
	16	11	23	9.3	38-48.1	122-47.4	1.9	1.4	11	136	3.0	0.09	.5	.3	B	THE GEYSERS
	16	14	18	47.1	37-24.4	121-45.1	4.6	1.3	35	82	5.3	0.11	.3	.2	B	CALAVERAS RESERVOIR
	16	14	24	10.9	37-21.8	121-36.4	5.0	2.2	69	110	4.0	0.13	.3	.3	B	ISABEL VALLEY
	16	14	56	2.8	37-44.1	121-55.3	7.4	1.3	12	47	6.7	0.08	.3	.6	A	DUBLIN
	16	17	23	20.0	36-27.3	121- 4.6	8.8	1.9	28	76	6.1	0.15	.5	1.0	B	TOPO VALLEY
	16	20	8	3.1	36-36.9	121- 6.9	14.2	1.1	24	55	5.5	0.16	.6	.7	B	SAN BENITO
	17	0	44	34.9	36-35.7	121- 5.1	12.8	1.6	31	48	5.3	0.14	.4	.7	A	SAN BENITO
	17	0	52	46.6	36-32.3	121- 9.8	3.6	2.3	31	45	4.5	0.18	.5	.5	B	BICKMORE CANYON
	17	3	37	52.3	38-48.0	122-48.1	1.7	1.0	7	138	3.2	0.03	.3	.2	B	THE GEYSERS
	17	5	20	31.9	35-50.1	120-24.0	7.0	3.4	37	160	4.2	0.18	.8	.4	C	CHOLAME HILLS
	17	8	5	46.2	36-32.3	121- 9.6	7.7	1.5	25	48	4.9	0.33	1.1	2.3	B	BICKMORE CANYON
	17	8	24	19.4	36-44.2	121-20.7	9.0	1.2	25	37	3.0	0.14	.5	.8	A	PAICINES
	17	15	40	44.6	36-36.6	121-11.1	10.5	1.4	25	42	3.3	0.15	.5	.9	A	BICKMORE CANYON
	17	17	40	2.8	37-44.2	121-55.1	6.6	1.3	13	45	3.8	0.10	.4	.4	A	DUBLIN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

	1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE
AUG	17	21	47	20.9	36-32.4	121- 6.5	12.5	1.5	29	74	4.4	0.15	.5	.9	A	SAN BENITO
	17	22	27	39.7	37-44.4	121-55.0	5.6	2.4	50	47	3.6	0.15	.3	.4	B	DUBLIN
	17	22	29	36.2	37-44.5	121-54.8	7.6	1.4	16	49	3.6	0.10	.4	.8	A	DUBLIN
	17	22	48	17.2	36-54.4	121-29.5	4.3	1.5	34	47	1.9	0.11	.3	.2	A	SAN FELIPE
	18	0	41	55.9	37-15.5	121-58.1	5.0	2.0	39	30	6.6	0.11	.2	.3	B	SAN JOSE WEST
	18	6	51	40.2	36-35.4	121-13.4	3.2	1.6	29	40	3.5	0.23	.6	.5	B	BICKMORE CANYON
	18	7	35	8.0	38-48.5	122-49.2	1.2	1.5	19	122	5.5	0.11	.4	.3	B	THE GEYSERS
	18	9	13	52.2	36- 6.4	120- 6.5	3.4	1.5	11	306	28.3	0.14	2.2	1.3	C	LA CIMA
	18	11	58	16.6	37-25.1	121-46.1	5.8	2.8	73	79	4.5	0.15	.3	.3	A	CALAVERAS RESERVOIR
	18	12	4	1.5	37-25.2	121-45.7	6.9	1.4	24	81	4.8	0.11	.4	.9	A	CALAVERAS RESERVOIR
	18	23	48	28.7	36-37.8	121-17.0	6.1	1.8	29	44	3.4	0.13	.3	.7	A	PAICINES
	19	4	5	7.9	36-37.6	121-16.8	5.9	1.5	24	45	3.4	0.14	.4	.8	A	PAICINES
	19	8	28	35.9	35-24.3	120-37.9	6.2	2.4	12	235	46.7	0.17	2.4	4.1	C	ATASCADERO
	19	8	40	47.3	38-48.0	122-46.1	3.8	1.5	12	134	1.3	0.08	.5	.3	B	THE GEYSERS
	19	11	13	21.4	36-25.5	121- 3.1	6.4	2.0	21	74	3.0	0.11	.4	.9	A	TOPO VALLEY
	20	2	21	28.7	38-49.4	122-48.7	2.4	1.5	13	141	5.2	0.12	.6	.4	B	THE GEYSERS
	20	2	23	4.3	38-48.9	122-48.3	2.6	1.0	9	147	4.5	0.09	.7	.4	B	THE GEYSERS
	20	17	51	55.1	36-41.5	121-21.4	3.1	1.6	30	39	2.2	0.17	.4	.4	B	PAICINES
	20	20	0	11.1	38-40.7	122-45.8	3.7	1.7	16	69	3.7	0.12	.5	.4	A	JIMTOWN
	20	22	26	44.6	38-50.7	122-27.8	6.0	1.4	8	230	4.6	0.12	1.7	1.7	C	JERICO VALLEY
	21	2	46	1.0	36-59.1	121-39.0	7.4	1.2	22	49	3.5	0.08	.3	.5	A	WATSONVILLE EAST
	21	4	57	11.6	36- 1.4	120-36.0	1.9	1.6	8	111	5.1	0.06	.4	.4	B	SMITH MTN
	21	13	50	54.6	36-31.6	121- 9.8	7.6	2.2	34	38	4.2	0.32	.8	1.7	B	BICKMORE CANYON
	21	18	28	31.2	38-48.7	122-48.4	2.2	1.2	6	158	4.5	0.06	.7	.4	B	THE GEYSERS
	21	18	34	50.3	38-48.7	122-48.4	2.1	1.2	8	151	4.5	0.07	.5	.3	B	THE GEYSERS
	21	23	47	46.7	35-59.4	120-34.0	3.6	1.2	8	85	9.2	0.06	1.2	1.5	B	STOCKDALE MTN
	22	2	46	1.0	36-59.1	121-39.0	7.4	1.2	22	49	3.5	0.08	.3	.5	A	WATSONVILLE EAST
	22	3	44	38.6	38-48.6	122-49.1	3.8	2.4	24	122	5.5	0.18	.6	.6	B	THE GEYSERS
	22	4	6	5.4	37-15.3	121-58.1	7.0	1.6	31	33	6.1	0.11	.3	1.0	A	SAN JOSE WEST
	22	4	57	11.6	36- 1.4	120-36.0	1.9	1.6	8	111	5.1	0.06	.4	.4	B	SMITH MTN
	22	8	25	24.7	36-24.4	121- 1.1	1.6	1.1	9	100	2.0	0.07	.4	.3	B	TOPO VALLEY
	22	17	4	21.8	36- 4.6	120-41.1	2.8	1.7	8	149	22.6	0.09	.8	.8	B	SLACK CANYON
	22	17	42	2.5	38-48.1	122-47.9	1.5	1.6	17	128	3.8	0.12	.4	.3	B	THE GEYSERS
	22	17	43	24.5	38-48.3	122-47.8	2.0	1.9	17	129	3.5	0.10	.4	.3	B	THE GEYSERS
	22	17	43	59.7	38-48.3	122-47.9	1.0	1.8	14	133	3.7	0.12	.5	.5	B	THE GEYSERS
	22	17	44	41.0	38-48.0	122-47.7	1.4	1.3	11	136	3.5	0.08	.4	.4	B	THE GEYSERS
	22	17	44	51.0	38-48.1	122-48.1	1.1	1.7	16	129	4.1	0.12	.5	.5	B	THE GEYSERS
	22	17	45	35.2	38-47.5	122-46.4	2.0	1.4	5	198	2.2	0.01	.2	.1	C	THE GEYSERS
	22	19	20	35.7	38-48.4	122-48.5	1.5	1.0	10	162	4.7	0.09	.5	.4	B	THE GEYSERS
	23	2	28	20.8	38-48.6	122-47.9	1.5	1.3	11	141	3.3	0.11	.6	.5	B	THE GEYSERS
	23	6	26	13.4	38-49.4	122-47.8	3.8	1.4	18	137	4.1	0.15	.6	.5	B	THE GEYSERS
	23	23	48	40.4	36-48.3	121-24.7	4.6	1.5	23	42	5.7	0.16	.5	.9	B	HOLLISTER
	24	7	7	9.9	35-54.5	120-28.5	3.8	1.7	8	77	4.1	0.07	.4	.2	A	PARKFIELD
	24	12	7	38.6	35-54.7	120-28.6	3.8	1.2	7	97	3.4	0.06	.5	.3	B	PARKFIELD
	24	19	34	18.4	35-23.4	121- 1.2	6.9	1.9	16	78	3.7	0.14	.7	1.4	A	TOPO VALLEY

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
AUG	24	20	18	49.3	36-32.8	121-19.9	2.7	1.7	23	67	5.4	0.16	.5	1.2	B	MT JOHNSON
	24	21	52	58.9	37-15.1	121-58.3	8.1	1.1	18	107	5.6	0.09	.4	.9	B	SAN JOSE WEST
	24	22	59	5.5	38-48.4	122-49.2	1.2	1.5	12	67	2.3	0.07	.2	.2	A	THE GEYSERS
	24	22	59	35.9	38-48.4	122-49.2	1.2	1.7	16	55	2.7	0.09	.3	.2	A	THE GEYSERS
	25	1	53	55.4	37-50.3	121-53.6	1.5	1.3	12	76	7.5	0.15	.5	.5	B	DIA3LO
	25	3	33	24.9	38-48.6	122-49.0	1.6	1.0	9	73	2.3	0.05	.2	.2	A	THE GEYSERS
	25	3	35	28.1	38-48.6	122-49.1	1.6	1.1	9	87	2.6	0.06	.2	.2	A	THE GEYSERS
	25	7	0	35.1	38-48.3	122-48.7	1.3	1.1	10	68	3.5	0.08	.3	.3	A	THE GEYSERS
	25	7	3	29.5	38-48.3	122-48.7	1.3	1.1	9	79	3.5	0.08	.3	.3	A	THE GEYSERS
	25	9	38	22.6	36-33.5	121-11.8	6.8	2.8	32	40	2.0	0.17	.4	1.0	B	BICKMORE CANYON
	25	11	17	13.0	36-33.5	121-11.7	7.5	2.1	27	40	1.9	0.14	.4	.9	A	BICKMORE CANYON
	25	11	35	21.7	36-33.4	121-11.3	6.6	1.3	14	53	2.1	0.04	.2	.3	A	BICKMORE CANYON
	25	14	48	9.8	38-48.5	122-48.1	0.5	1.1	17	58	3.9	0.10	.3	.3	A	THE GEYSERS
	25	16	29	27.3	39-16.3	122-43.1	4.1	2.2	29	211	18.4	0.15	1.0	.5	C	FOUTS SPRINGS
	25	22	29	36.9	36-55.4	121-28.3	7.0	1.5	50	37	3.3	0.12	.2	.5	A	SAN FELIPE
	26	0	29	37.8	36- 1.0	120-36.3	1.5	1.0	10	105	5.9	0.08	.5	.5	B	SMITH MTN
	26	2	0	2.2	36- 1.8	120-37.3	11.7	1.3	10	120	16.3	0.06	.4	1.8	B	SMITH MTN
	26	14	43	31.4	36-36.5	121-15.2	4.7	2.1	39	42	3.2	0.20	.5	.5	B	MT JOHNSON
	26	20	57	17.5	36-18.3	121-43.7	6.0	1.6	42	127	9.2	0.17	.6	1.0	B	VENTANA CONES
	27	3	54	14.0	36-42.2	121- 7.9	6.5	1.6	29	56	5.7	0.13	.4	.9	A	CHERRY PEAK
	27	4	4	53.8	36-42.2	121- 8.0	8.2	1.9	46	56	5.7	0.11	.3	.5	A	CHERRY PEAK
	27	4	44	5.0	36-33.9	121- 8.9	13.5	1.3	16	120	3.8	0.15	1.1	1.9	B	BICKMORE CANYON
	27	6	30	36.6	37- 8.9	121-31.7	3.8	1.1	32	102	9.2	0.12	.4	.3	B	MT SIZER
	27	9	22	41.7	38-56.6	123- 3.5	3.8	1.1	17	110	11.3	0.15	.6	.5	B	HOPLAND
	27	12	41	52.6	36-33.2	121-12.1	3.3	1.7	30	38	2.5	0.21	.6	.4	B	BICKMORE CANYON
	27	13	11	1.3	37- 0.9	121-43.4	13.3	1.1	33	54	6.5	0.16	.5	.7	B	MT MADONNA
	27	21	43	47.0	37-53.9	121-58.5	12.7	2.3	33	46	6.3	0.12	.3	.3	A	CLAYTON
	27	23	19	38.0	38-47.9	122-48.7	3.5	1.4	15	59	4.0	0.14	.5	.5	A	THE GEYSERS
	27	23	20	59.2	38-48.0	122-48.7	3.2	0.9	9	79	3.8	0.12	.7	.7	A	THE GEYSERS
	27	23	28	13.3	36-34.3	121- 4.9	10.1	1.7	20	64	5.5	0.12	.5	.8	A	SAN BENITO
	28	1	56	30.5	36-40.7	121-20.6	3.9	0.9	12	59	3.1	0.17	.7	.8	B	PAICINES
	28	1	57	16.3	38-47.4	122-48.3	2.2	1.2	10	76	3.1	0.07	.3	.2	A	THE GEYSERS
	28	9	1	55.0	38-48.3	122-48.6	3.4	1.0	9	79	3.5	0.14	.8	.6	A	THE GEYSERS
	28	11	47	38.7	36-54.2	121-29.0	9.1	2.4	43	40	2.1	0.12	.3	.5	A	SAN FELIPE
	28	12	26	29.0	36-46.3	121-19.3	3.5	1.2	13	80	2.5	0.12	.5	.6	A	TRES PINOS
	28	16	13	5.6	36-26.7	121- 3.4	9.1	1.3	23	81	4.1	0.18	.7	1.3	B	TOPO VALLEY
	29	7	50	54.4	36-58.8	121-39.3	7.6	1.2	18	49	4.2	0.09	.3	.7	A	WATSONVILLE EAST
	29	10	31	24.7	37-51.9	121-49.1	13.3	1.4	19	130	6.1	0.17	.9	.7	B	TASSAJARA
	29	12	33	10.4	39-19.6	123-14.7	6.8	2.3	34	229	37.3	0.18	2.0	1.1	C	REDWOOD VALLEY
	29	12	38	43.7	36-29.7	121- 6.4	2.0	1.1	19	75	3.3	0.20	.7	.5	B	TOPO VALLEY
	29	13	41	51.3	37-54.1	121-58.4	6.6	1.4	24	45	6.1	0.16	.4	.5	B	CLAYTON
	29	21	10	55.6	36-38.5	121-18.0	4.8	2.6	31	31	3.6	0.15	.4	.5	A	PAICINES
	29	21	42	1.7	36-52.1	121-35.9	3.4	2.0	23	55	2.0	0.21	.5	.4	B	SAN JUAN BAUTISTA
	29	22	52	21.3	36-52.3	121-36.0	3.6	2.6	32	56	1.8	0.22	.5	.4	B	SAN JUAN BAUTISTA
	30	3	53	20.0	36-52.4	121-36.1	3.9	2.7	28	58	1.5	0.17	.5	.4	B	SAN JUAN BAUTISTA

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE		
AUG	30	5	5	26.0	36-23.4	121- 0.9	8.2	2.1	22	63	3.7	0.13	.4	1.0	A	TOPO VALLEY	
	30	5	44	18.4	38-48.4	122-48.4	1.8	0.9	8	87	3.7	0.07	.3	.3	A	THE GEYSERS	
	30	8	24	7.6	38-56.8	122-37.1	4.1	1.4	10	116	4.5	0.14	1.0	1.9	B	LOWER LAKE	
	30	19	36	25.5	36-34.6	121- 8.4	12.0	1.2	14	64	4.4	0.12	.3	1.6	A	BICKMORE CANYON	
	30	19	37	51.8	38-48.9	122-49.3	1.2	1.4	14	71	2.1	0.07	.2	.2	A	THE GEYSERS	
	30	20	33	43.0	35-43.9	121-15.5	10.5	2.1	14	238	39.7	0.09	1.4	.6	C	PIEDRAS BLANCAS	
	30	21	58	17.0	38- 4.5	121-53.6	20.1	1.5	10	94	10.7	0.21	1.9	2.3	B	HONKER BAY	
	30	22	28	60.0	38-49.0	122-48.2	3.7	1.1	11	90	3.5	0.15	.7	.7	B	THE GEYSERS	
	30	23	9	26.5	36-38.0	121-16.8	4.1	2.1	27	45	3.7	0.16	.4	.5	B	PAICINES	
	31	2	13	17.8	38-41.1	122-54.2	1.7	2.0	25	49	9.7	0.13	.3	.4	B	GEYSERVILLE	
	31	2	40	51.7	38-40.9	122-54.1	6.3	1.2	17	63	10.0	0.14	.6	2.1	B	GEYSERVILLE	
	31	3	49	11.6	39-15.5	122-45.1	4.0	1.6	10	288	30.2	0.16	2.7	1.7	D	POTATO HILL	
	31	5	15	22.5	36-47.9	121-18.2	7.7	1.4	21	54	2.0	0.11	.4	.7	A	TRES PINOS	
	31	6	32	44.0	36-38.5	121-18.0	4.6	2.5	30	31	3.6	0.14	.3	.4	A	PAICINES	
	31	9	24	37.7	36-33.6	121-11.3	3.3	2.1	32	42	1.6	0.18	.5	.4	B	BICKMORE CANYON	
	31	9	27	4.6	36-38.5	121-18.0	5.6	2.6	36	31	3.6	0.16	.4	.6	B	PAICINES	
	31	12	56	53.8	37-52.5	122-15.0	10.7	1.8	30	53	10.1	0.12	.3	.6	A	RICHMOND	
	31	15	3	45.3	35-55.0	120-29.3	3.5	1.2	8	76	3.5	0.08	.5	.3	A	PARKFIELD	
	31	18	56	55.7	36-24.3	121- 2.0	7.5	1.9	28	80	2.5	0.11	.4	.8	A	TOPO VALLEY	
	31	22	13	41.1	37-44.8	121-55.9	6.0	1.6	29	50	5.2	0.17	.4	.4	B	DUBLIN	
	SEP	31	23	16	26.6	37-54.8	121-56.9	0.1	1.2	15	87	3.8	0.20	.7	.7	B	CLAYTON
		31	23	39	7.6	38-23.7	122-37.0	9.5	2.5	48	83	5.7	0.19	.4	.6	B	KENWOOD
1		2	18	9.2	36-42.6	121-22.9	0.1	1.1	15	55	3.4	0.11	.3	.4	A	MT HARLAN	
1		3	59	53.2	38-52.8	122-44.6	4.4	1.2	12	66	3.3	0.12	.6	1.3	A	CLEARLAKE HIGHLANDS	
1		6	8	2.3	38-23.6	122-36.4	9.6	1.6	21	84	6.4	0.11	.4	.6	A	KENWOOD	
1		9	25	53.3	36-32.4	121- 5.6	9.5	1.0	20	105	3.7	0.15	.6	1.2	B	SAN BENITO	
1		16	46	57.2	36-27.6	121- 5.0	8.8	1.6	18	80	5.6	0.20	.8	1.6	B	TOPO VALLEY	
1		17	37	43.1	38-49.0	122-48.5	0.8	1.7	18	49	3.1	0.08	.2	.2	A	THE GEYSERS	
1		17	58	21.9	36-37.0	121-17.0	10.4	2.4	31	45	2.8	0.16	.4	.8	B	MT JOHNSON	
1		20	7	51.9	36- 2.8	120-38.1	2.2	1.5	10	115	4.4	0.12	.8	.8	B	SLACK CANYON	
2		5	19	39.6	38-48.6	122-49.3	1.2	1.5	14	71	2.4	0.06	.2	.2	A	THE GEYSERS	
2		7	50	5.5	38-48.7	122-48.3	3.5	1.8	19	47	3.6	0.13	.4	.4	A	THE GEYSERS	
2		7	50	31.1	38-48.6	122-48.6	2.5	1.2	9	78	3.3	0.05	.3	.2	A	THE GEYSERS	
2		7	54	16.3	36-55.7	121-28.2	5.2	1.4	27	64	3.6	0.11	.3	.7	A	SAN FELIPE	
2		11	45	56.6	38-48.8	122-47.7	2.8	1.3	11	67	3.5	0.07	.3	.2	A	THE GEYSERS	
2		13	7	31.1	36-54.7	121-28.9	3.6	1.0	12	60	2.4	0.05	.3	.2	A	SAN FELIPE	
2		14	4	13.6	38- 6.5	121-55.8	20.2	1.6	17	118	10.6	0.16	.9	1.2	B	HONKER BAY	
2		16	24	34.7	36-55.0	121-28.8	4.6	2.8	48	39	2.5	0.14	.3	.3	A	SAN FELIPE	
2		19	10	36.5	36-57.3	121-36.8	4.5	1.3	13	87	2.7	0.05	.2	.4	A	CHITTENDEN	
3		0	31	18.9	36-27.4	121- 4.5	5.6	2.0	19	64	5.7	0.10	.4	1.0	B	TOPO VALLEY	
3		0	47	46.4	36-27.3	121- 4.2	5.4	1.3	13	113	5.7	0.07	.4	1.0	B	TOPO VALLEY	
3		1	58	53.1	38-32.2	122-40.0	5.1	1.6	15	76	5.2	0.16	.7	1.6	B	MARK WEST SPRINGS	
3	2	16	27.0	36- 2.9	120-38.0	3.2	1.1	10	95	4.2	0.09	.7	.6	B	SLACK CANYON		
3	10	18	58.0	39-14.1	122-41.4	1.9	1.4	9	286	16.5	0.05	1.7	64.0	D	NW 1/4 CLEARLAKE OAKS		
3	11	45	24.7	39-12.5	122-42.4	3.9	2.3	15	269	13.5	0.15	2.7	.6	D	NW 1/4 CLEARLAKE OAKS		

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
SEP	3	11	53	23.2	39-13.2	122-41.9	5.1	2.3	23	202	15.7	0.14	1.9	1.2	C	NW 1/4 CLEARLAKE OAKS
	3	11	54	31.5	39-12.8	122-42.2	4.0	2.3	20	201	14.1	0.16	2.2	.6	C	NW 1/4 CLEARLAKE OAKS
	3	12	13	24.2	39-13.1	122-41.9	6.6	2.2	22	202	14.8	0.15	1.7	2.9	C	NW 1/4 CLEARLAKE OAKS
	3	12	21	22.5	39-12.3	122-41.6	3.6	1.4	8	278	14.2	0.07	1.7	.4	C	NW 1/4 CLEARLAKE OAKS
	3	17	25	59.8	38-23.6	122-36.6	3.2	1.0	15	84	6.2	0.10	.5	1.0	A	KENWOOD
	3	18	22	44.7	36-55.7	121-12.0	2.9	1.7	44	76	10.5	0.14	.3	.3	B	MARIPOSA PEAK
	3	18	49	28.8	36-30.7	121- 8.4	5.4	1.5	20	45	3.9	0.20	.7	.7	B	BICKMORE CANYON
	3	21	9	40.0	36-37.8	121-17.2	4.6	1.9	32	44	3.3	0.12	.3	.4	A	PAICINES
	4	6	47	33.6	36-33.3	121-10.8	3.8	0.9	16	65	2.5	0.13	.5	.5	A	BICKMORE CANYON
	4	9	40	10.2	36-54.6	121-28.8	3.2	0.9	15	101	2.5	0.09	.4	.3	B	SAN FELIPE
	4	12	33	46.3	36-33.9	121- 4.6	11.2	2.7	53	51	5.3	0.17	.4	.4	B	SAN BENITO
	4	12	35	26.7	36-33.5	121- 4.1	11.3	1.5	29	68	5.3	0.14	.4	.8	A	SAN BENITO
	4	17	40	40.7	37-45.4	121-55.9	9.6	1.6	32	55	1.2	0.17	.5	.7	B	DIABLO
	5	1	15	24.8	37-45.8	121-56.2	11.6	1.3	19	56	0.5	0.17	.7	1.1	B	DIABLO
	5	1	18	10.9	38-49.2	122-49.6	1.4	0.9	13	83	1.5	0.07	.2	.2	A	THE GEYSERS
	5	13	2	31.3	35-59.2	120-33.5	3.2	1.3	11	64	8.8	0.06	.3	.2	B	STOCKDALE MTN
	5	13	26	50.1	35-59.3	120-33.6	4.3	3.1	21	64	9.0	0.13	.5	.5	B	STOCKDALE MTN
	5	13	30	41.5	35-59.2	120-34.2	1.5	1.7	12	76	9.5	0.11	.4	.4	B	STOCKDALE MTN
	5	13	32	3.5	35-59.1	120-34.3	1.7	1.4	10	65	9.6	0.11	.6	.6	B	STOCKDALE MTN
	5	15	30	20.5	35-59.4	120-34.3	0.9	1.4	7	120	9.1	0.10	.5	.6	B	STOCKDALE MTN
	5	16	21	23.7	35-59.3	120-34.3	1.5	1.5	8	87	9.2	0.08	.4	.4	B	STOCKDALE MTN
	5	16	31	1.2	35-59.2	120-34.2	1.4	1.8	10	120	9.4	0.10	.4	.4	B	STOCKDALE MTN
	5	16	56	27.5	36-34.1	121-12.7	8.0	2.0	24	39	2.2	0.12	.3	.7	A	BICKMORE CANYON
	5	17	45	27.9	38-11.0	122- 6.5	5.4	3.5R	72	42	14.3	0.16	.4	.4	C	FAIRFIELD SOUTH
	5	22	57	42.1	38-48.5	122-49.4	1.5	0.7	9	92	2.5	0.04	.2	.1	B	THE GEYSERS
	6	9	38	12.9	37-48.6	121-54.5	4.4	2.3	28	49	5.5	0.14	.4	.4	B	DIABLO
	6	9	55	46.1	37-24.4	121-45.8	3.8	2.1	30	79	5.2	0.12	.4	.3	B	CALAVERAS RESERVOIR
	6	12	30	36.4	37-32.2	121-35.8	8.1	1.3	9	182	7.4	0.05	.4	.9	C	CEDAR MTN
	6	17	6	26.7	35-52.5	120-26.9	8.4	1.5	10	101	3.2	0.08	.5	1.1	B	CHOLAME HILLS
	6	18	57	8.1	38-48.8	122-47.5	2.0	1.3	18	76	3.3	0.09	.3	.2	A	THE GEYSERS
	6	19	51	21.1	35-52.3	120-19.3	4.9	1.4	6	225	5.4	0.04	2.9	2.7	D	CHOLAME VALLEY
	6	20	33	40.9	37-28.4	121-48.9	6.6	1.6	20	85	2.3	0.10	.4	.7	A	CALAVERAS RESERVOIR
	7	5	10	7.4	36-26.5	121- 3.4	3.4	2.0	32	65	4.0	0.22	.6	.5	B	TOPO VALLEY
	7	8	56	44.9	38-10.6	122- 8.1	4.5	1.9	22	100	13.5	0.21	.8	.7	C	CORDELIA
	7	18	36	15.0	38-48.6	122-48.3	1.8	1.1	9	79	3.7	0.07	.3	.2	A	THE GEYSERS
	7	23	21	41.2	36-49.8	121-34.4	4.4	1.5	20	50	3.1	0.20	.7	.5	B	SAN JUAN BAUTISTA
	7	23	54	57.7	36-50.4	121-35.8	3.9	2.5	48	41	4.2	0.27	.5	.4	B	SAN JUAN BAUTISTA
	8	0	4	52.8	36-31.2	121- 9.4	3.7	1.8	25	60	3.5	0.25	.8	1.5	B	BICKMORE CANYON
	8	0	8	9.8	36-31.5	121- 9.5	3.0	1.5	12	90	4.2	0.15	.8	1.4	B	BICKMORE CANYON
	8	0	12	57.0	36-34.6	121-12.5	3.4	1.6	24	66	1.7	0.18	.6	.4	B	BICKMORE CANYON
	8	0	28	20.8	38-40.0	122-46.1	5.5	3.8R	31	49	5.0	0.16	.4	1.4	B	JIMTOWN
	8	0	52	24.0	38-40.2	122-46.3	4.7	1.5	23	49	4.8	0.18	.5	1.1	B	JIMTOWN
	8	1	48	42.8	38-40.2	122-46.3	5.8	1.3	14	71	4.7	0.13	.6	1.2	A	JIMTOWN
	8	2	27	56.5	36-55.0	121-28.7	2.8	1.6	29	61	2.6	0.13	.3	.2	A	SAN FELIPE
	8	3	54	48.1	38-39.9	122-46.2	5.7	1.2	14	73	5.3	0.10	.5	.9	A	JIMTOWN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

	1977	HR	MIN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE
SEP	8	4	23	5.1	38-40.3	122-46.2	4.9	2.0	30	49	4.6	0.19	.5	1.1	B	JIMTOWN
	8	6	21	34.5	38-40.2	122-46.1	5.3	1.6	23	50	4.7	0.16	.5	1.4	B	JIMTOWN
	8	8	53	52.8	37-33.4	121-56.1	4.3	1.4	16	64	6.9	0.13	.5	.5	B	NILES
	8	10	2	14.0	38-48.5	122-48.0	2.2	1.0	7	77	3.9	0.05	.3	.3	A	THE GEYSERS
	8	10	47	14.7	38-40.2	122-46.2	5.0	1.9	26	49	4.8	0.18	.5	1.5	B	JIMTOWN
	8	11	19	54.9	36-54.2	121-29.3	5.8	1.5	33	52	2.3	0.10	.2	.5	A	SAN FELIPE
	8	11	46	52.4	38-48.8	122-48.3	2.3	1.2	9	85	3.5	0.05	.2	.2	A	THE GEYSERS
	8	13	37	8.7	38-40.1	122-46.1	5.6	1.6	22	50	4.8	0.16	.5	1.4	B	JIMTOWN
	8	14	15	53.7	36-55.0	121-28.8	3.2	1.5	29	41	2.4	0.14	.4	.3	A	SAN FELIPE
	8	18	25	3.2	38-48.0	122-48.3	0.5	2.2	17	68	3.9	0.13	.4	.5	A	THE GEYSERS
	8	18	29	0.9	38-48.0	122-48.3	0.8	1.2	11	67	4.1	0.06	.2	.2	A	THE GEYSERS
	8	18	37	38.6	38-48.1	122-48.3	1.3	1.0	10	73	4.1	0.07	.3	.3	A	THE GEYSERS
	8	20	37	33.4	36-55.2	121-29.0	3.9	1.6	21	77	2.1	0.12	.4	.4	A	SAN FELIPE
	8	22	49	38.8	36-32.0	121- 9.9	8.3	1.1	13	64	4.9	0.18	.9	2.1	B	BICKMORE CANYON
	9	6	10	37.9	36-55.4	121-28.6	4.3	2.4	41	49	2.8	0.14	.3	.3	A	SAN FELIPE
	9	6	42	59.9	38-47.7	122-48.3	2.0	0.9	8	77	3.5	0.10	.8	.6	A	THE GEYSERS
	9	8	28	46.6	36-33.6	121-11.5	6.6	1.2	8	71	1.7	0.02	.2	.3	A	BICKMORE CANYON
	9	10	52	39.2	38-40.3	122-46.1	5.0	1.5	17	49	4.5	0.16	.7	1.7	B	JIMTOWN
	9	11	13	44.3	36-54.4	121-28.7	4.0	0.7	16	58	2.3	0.09	.4	.2	A	SAN FELIPE
	9	11	18	39.0	36-55.2	121-28.7	3.7	2.7	43	36	2.7	0.17	.4	.3	B	SAN FELIPE
	9	13	31	24.0	36-55.1	121-28.7	3.7	2.1	37	50	2.7	0.13	.3	.2	A	SAN FELIPE
	9	13	54	53.2	36-54.1	121-28.5	4.0	1.0	12	63	1.5	0.08	.4	.3	A	SAN FELIPE
	9	17	30	1.9	37-55.7	122- 0.9	5.7	1.8	27	40	8.1	0.24	.7	.7	B	WALNUT CREEK
	9	18	42	18.7	37-55.6	121-41.1	6.1	1.5	13	190	8.6	0.18	1.3	.5	C	BRENTWOOD
	9	19	32	54.4	37-44.9	121-55.4	8.6	1.0	15	52	2.4	0.10	.4	.8	A	DUBLIN
	9	20	35	15.9	36-55.3	121-28.7	4.3	1.8	43	56	2.7	0.14	.3	.3	A	SAN FELIPE
	9	21	38	59.9	38-46.6	122-55.1	4.6	1.2	20	47	6.5	0.16	.5	1.5	B	ASTI
	9	23	53	31.9	38-40.3	122-45.9	5.7	2.4	36	50	4.5	0.16	.4	1.1	B	JIMTOWN
	10	0	36	43.6	36-21.2	121-51.2	8.0	1.6	22	196	15.6	0.20	1.2	1.4	C	BIG SUR
	10	6	5	55.3	38-47.9	122-48.1	1.8	1.4	19	46	3.7	0.07	.2	.1	A	THE GEYSERS
	10	7	38	4.0	36-13.1	120-50.1	8.0	2.8	35	85	3.7	0.28	.8	1.3	B	MONARCH PEAK
	10	8	52	10.5	38-48.7	122-48.0	2.2	1.4	21	49	3.9	0.08	.2	.1	A	THE GEYSERS
	10	9	11	40.4	36-55.0	121-28.7	2.8	1.2	23	60	2.6	0.09	.2	.1	A	SAN FELIPE
	10	12	12	39.8	36-54.8	121-28.7	3.6	1.2	28	55	2.6	0.11	.3	.2	A	SAN FELIPE
	10	14	40	21.1	36-55.2	121-28.6	2.2	1.0	17	68	2.7	0.10	.3	.2	A	SAN FELIPE
	10	16	0	6.8	36- 0.3	120-35.2	2.0	1.8	11	61	7.3	0.06	.4	.3	B	SMITH MTN
	10	17	18	43.3	36-55.3	121-28.7	3.6	1.1	32	56	2.7	0.15	.3	.3	A	SAN FELIPE
	10	17	25	18.0	36- 3.1	120-37.8	5.3	2.2	19	78	3.8	0.16	.6	.7	B	SLACK CANYON
	10	19	37	45.7	35-59.2	120-33.8	2.9	1.5	14	65	9.2	0.11	.5	.3	B	STOCKDALE MTN
	10	21	19	22.4	35-59.0	120-33.9	3.0	1.9	11	66	9.2	0.09	.5	.5	B	STOCKDALE MTN
	11	1	4	44.8	36-55.6	121-28.5	4.1	1.1	26	58	3.1	0.15	.4	.4	B	SAN FELIPE
	11	1	45	45.1	36- 5.1	120-10.9	3.3	1.8	12	272	22.0	0.22	6.8	1.3	D	AVENAL
	11	3	39	4.0	38-40.5	122-46.2	5.1	1.7	29	48	4.1	0.17	.5	1.4	B	JIMTOWN
	11	5	18	45.8	38-40.5	122-47.7	4.4	3.4	31	44	5.3	0.24	.6	2.6	B	JIMTOWN
	11	5	21	45.9	38-40.6	122-46.4	3.8	1.7	30	47	4.1	0.18	.4	.4	B	JIMTOWN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
SEP	11	5	27	11.1	38-40.5	122-46.2	5.5	1.0	20	68	4.2	0.14	.5	1.2	A	JIMTOWN
	11	5	30	30.0	38-40.1	122-45.9	5.5	1.7	29	51	4.3	0.15	.4	1.2	A	JIMTOWN
	11	5	58	55.7	38-40.4	122-46.5	3.8	2.1	31	48	4.5	0.17	.4	.4	B	JIMTOWN
	11	6	14	3.6	36-54.8	121-28.7	3.7	1.1	24	54	2.6	0.11	.3	.3	A	SAN FELIPE
	11	7	10	52.9	36-55.4	121-28.7	3.6	1.6	42	56	2.7	0.15	.3	.3	B	SAN FELIPE
	11	7	19	7.7	36-59.8	121-43.2	9.2	1.7	60	43	5.4	0.18	.3	.7	B	WATSONVILLE EAST
	11	7	30	16.2	36-59.7	121-43.5	11.6	2.5	66	43	5.3	0.22	.4	.5	B	WATSONVILLE EAST
	11	7	39	6.4	38-40.5	122-46.4	5.0	2.0	32	47	4.2	0.18	.4	1.1	B	JIMTOWN
	11	8	10	19.7	38-40.2	122-45.9	5.7	1.0	20	51	4.6	0.16	.6	1.3	B	JIMTOWN
	11	9	12	35.3	36-31.5	121- 7.9	6.6	1.3	24	57	5.2	0.25	.9	1.9	B	BICKMORE CANYON
	11	11	10	20.2	36-54.9	121-28.8	3.7	1.4	38	55	2.5	0.12	.3	.2	A	SAN FELIPE
	11	11	26	27.4	36-54.8	121-28.8	3.8	1.3	38	44	2.6	0.12	.3	.2	A	SAN FELIPE
	11	12	7	42.5	36-54.9	121-28.7	2.8	1.5	39	55	2.5	0.14	.3	.2	A	SAN FELIPE
	11	12	30	52.1	38-40.3	122-46.4	3.7	1.6	28	49	4.6	0.17	.4	.4	B	JIMTOWN
	11	12	33	7.1	38-40.2	122-46.2	4.3	1.7	28	49	4.6	0.17	.4	1.5	B	JIMTOWN
	11	15	36	30.3	36-57.6	121-37.5	3.6	1.8	30	36	3.7	0.12	.3	.2	A	WATSONVILLE EAST
	11	17	1	24.9	36-54.3	121-29.2	3.9	1.1	15	53	2.3	0.10	.4	.3	A	SAN FELIPE
	11	19	53	35.0	36-47.6	121-19.1	6.2	1.2	12	86	3.1	0.14	.8	1.4	A	TRES PINOS
	11	21	3	34.9	38-10.5	122- 8.4	4.4	2.7	16	50	13.5	0.27	1.1	1.0	C	CORDELIA
	11	23	46	12.2	38-40.2	122-46.0	5.1	3.7R	35	50	4.6	0.16	.4	1.4	B	JIMTOWN
	12	0	9	13.5	38-40.3	122-46.0	5.4	1.2	14	65	4.5	0.15	.7	1.6	A	JIMTOWN
	12	1	17	16.4	38-10.4	122- 8.7	0.1	1.9	12	121	13.4	0.19	1.1	1.0	C	CORDELIA
	12	1	21	15.6	38-40.4	122-46.3	5.1	1.2	13	70	4.5	0.15	.7	1.7	A	JIMTOWN
	12	1	52	16.7	38-40.2	122-46.4	3.8	1.6	15	62	4.9	0.20	.8	.7	B	JIMTOWN
	12	7	7	9.3	36-54.7	121-28.9	2.6	1.0	16	59	2.4	0.07	.2	.1	A	SAN FELIPE
	12	9	16	48.5	36-11.7	120-48.6	4.7	2.4	17	89	2.7	0.21	.9	.9	B	MONARCH PEAK
	12	11	46	22.7	38-28.4	122-40.2	8.5	1.3	15	76	7.5	0.11	.4	1.0	A	SANTA ROSA
	12	12	3	58.2	38-40.4	122-46.2	5.4	1.6	18	76	4.4	0.14	.6	1.3	A	JIMTOWN
	12	13	18	7.3	36-12.0	120-48.0	7.4	1.6	8	92	1.7	0.08	.7	1.0	B	MONARCH PEAK
	12	16	27	1.7	37-19.5	121-45.9	5.7	1.6	37	62	3.9	0.12	.3	.4	A	SAN JOSE EAST
	12	20	7	31.0	36-54.9	121-29.0	3.9	1.2	25	59	2.2	0.12	.4	.3	A	SAN FELIPE
	12	20	18	20.7	38-53.3	123- 0.7	5.8	1.7	25	68	7.3	0.13	.4	1.6	B	HOPLAND
	13	1	48	14.2	36-34.5	121-12.4	3.6	2.9	30	40	1.6	0.19	.5	.5	B	BICKMORE CANYON
	13	6	18	53.8	38-40.5	122-46.3	4.5	1.9	32	48	4.1	0.18	.4	1.1	B	JIMTOWN
	13	6	19	18.1	38-40.4	122-46.5	4.7	1.8	18	204	11.3	0.19	1.3	2.9	C	JIMTOWN
	13	7	25	41.8	37- 9.8	121-37.3	4.2	1.0	26	95	8.3	0.15	.5	.4	B	MT SIZER
	13	11	26	28.5	38-40.4	122-46.1	3.7	1.4	22	49	4.4	0.18	.6	.5	B	JIMTOWN
	13	15	15	10.9	38-40.7	122-46.1	6.1	0.9	16	67	3.7	0.14	.6	1.2	A	JIMTOWN
	13	15	31	43.2	38-48.1	122-46.1	3.8	1.6	17	52	1.3	0.08	.3	.2	A	THE GEYSERS
	13	16	48	57.2	38-52.4	122-43.3	4.1	0.8	11	76	1.2	0.10	.5	.5	A	WHISPERING PINES
	13	17	50	4.7	37- 9.8	121-37.1	4.4	1.3	20	96	3.5	0.11	.4	.3	B	MT SIZER
	13	20	49	10.7	36-51.4	121-35.6	4.5	1.5	35	47	3.1	0.25	.6	.6	B	SAN JUAN BAUTISTA
	13	21	18	13.4	38-40.4	122-46.1	4.4	2.1	37	40	4.2	0.20	.4	1.1	B	JIMTOWN
	13	21	18	48.3	38-40.3	122-46.7	4.1	1.3	15	71	4.7	0.23	1.1	2.6	B	JIMTOWN
	13	23	6	43.2	38-40.7	122-46.6	3.8	1.5	25	55	4.1	0.18	.5	.4	B	JIMTOWN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

	1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE
SEP	14	5	30	56.3	38-47.4	122-48.3	3.5	1.0	15	65	3.1	0.10	.4	.4	A	THE GEYSERS
	14	6	15	27.2	36-55.2	121-28.8	3.7	1.5	32	55	2.5	0.16	.4	.3	B	SAN FELIPE
	14	11	46	34.8	36-54.8	121-28.8	3.8	1.3	34	60	2.5	0.12	.3	.2	A	SAN FELIPE
	15	0	30	27.2	36-55.7	121-28.1	4.4	2.0	34	52	3.7	0.12	.3	.3	A	SAN FELIPE
	15	9	17	42.7	36-59.0	121-27.0	3.2	1.7	18	61	4.3	0.17	.7	.6	B	SAN FELIPE
	15	9	33	26.2	36-36.3	121-15.0	4.6	2.2	29	30	3.4	0.14	.3	.4	A	MT JOHNSON
	15	14	0	19.3	38-52.3	122-43.2	4.3	1.2	11	77	0.7	0.09	.5	.8	A	WHISPERING PINES
	15	15	26	50.4	38-40.6	122-46.3	5.8	0.9	12	68	4.7	0.12	.8	1.2	A	JIMTOWN
	15	15	27	8.4	36-54.9	121-28.7	3.7	1.4	17	61	2.6	0.10	.4	.3	A	SAN FELIPE
	15	20	4	34.5	38-48.7	122-49.3	1.4	1.1	10	90	2.4	0.05	.2	.2	A	THE GEYSERS
	15	20	5	23.9	38-48.7	122-49.3	1.0	1.9	22	43	2.4	0.08	.2	.2	A	THE GEYSERS
	15	22	10	51.3	38-49.2	122-48.3	2.1	1.9	23	42	3.4	0.09	.2	.2	A	THE GEYSERS
	15	22	13	14.0	38-49.0	122-48.2	3.9	1.8	19	42	3.5	0.13	.4	.6	A	THE GEYSERS
	15	22	56	44.7	38-48.6	122-48.4	2.5	1.0	8	84	3.5	0.06	.4	.3	A	THE GEYSERS
	16	0	0	14.1	38-48.8	122-48.6	3.1	1.1	8	84	3.2	0.06	.4	.2	A	THE GEYSERS
	16	0	4	41.5	38-48.0	122-48.3	2.1	1.1	6	152	4.0	0.01	.1	.1	B	THE GEYSERS
	16	4	41	38.1	37- 5.7	121-29.7	8.5	1.5	29	94	4.3	0.10	.3	.7	B	GILROY HOT SPRINGS
	16	4	50	6.9	38-40.2	122-46.0	6.4	1.5	15	51	4.6	0.15	.6	1.5	A	JIMTOWN
	16	5	54	36.2	38-40.3	122-44.5	5.4	1.3	15	54	4.4	0.17	.8	1.7	B	MOUNT ST HELENA
	16	6	13	22.4	36-54.0	121-29.3	5.2	1.1	25	48	2.2	0.08	.2	.5	A	SAN FELIPE
	16	7	53	50.8	38-40.1	122-46.4	6.3	1.0	13	62	5.1	0.10	.5	1.0	A	JIMTOWN
	16	8	51	3.7	38-40.6	122-46.5	5.0	1.6	16	62	4.2	0.17	.7	1.7	B	JIMTOWN
	16	10	0	15.4	36-33.3	121-10.9	4.4	1.3	15	65	2.4	0.09	.3	.7	A	BICKMORE CANYON
	16	10	0	44.5	38-40.1	122-46.6	5.3	1.0	12	72	5.1	0.11	.7	1.3	A	JIMTOWN
	16	10	14	26.6	36-51.2	121-35.9	2.8	1.4	16	66	4.3	0.20	.7	.5	B	SAN JUAN BAUTISTA
	16	10	53	16.5	38-39.9	122-46.3	5.5	1.3	15	51	5.2	0.16	.7	1.7	B	JIMTOWN
	16	12	22	53.8	36-53.9	121-28.9	8.2	2.0	35	42	1.7	0.12	.3	.6	A	SAN FELIPE
	16	15	6	12.1	38-40.9	122-46.1	5.2	1.0	15	69	3.4	0.13	.6	1.1	A	JIMTOWN
	16	15	18	35.7	38-40.7	122-46.7	4.7	1.2	14	68	4.1	0.11	.5	1.1	A	JIMTOWN
	16	15	24	28.6	38-40.6	122-46.7	5.1	1.9	19	68	4.2	0.17	.6	1.6	B	JIMTOWN
	16	17	12	7.1	36-53.7	121-28.7	7.2	1.4	28	47	1.2	0.11	.3	.6	A	SAN FELIPE
	16	19	34	42.9	38-48.3	122-48.0	2.0	0.8	7	79	3.9	0.02	.1	.2	A	THE GEYSERS
	16	19	35	57.3	38-48.3	122-48.0	2.5	1.3	8	79	3.9	0.05	.3	.2	A	THE GEYSERS
	16	22	4	4.0	37-48.5	122-11.4	1.8	1.2	17	47	11.4	0.11	.4	.5	B	OAKLAND EAST
	16	22	36	22.7	38-40.6	122-46.7	4.8	1.3	13	69	4.3	0.14	.8	1.6	A	JIMTOWN
	17	1	47	49.4	36-55.4	121-28.3	3.9	1.6	24	63	3.2	0.11	.4	.3	A	SAN FELIPE
	17	2	28	11.8	38-40.8	122-46.3	5.0	1.0	9	135	3.7	0.13	1.1	1.5	C	JIMTOWN
	17	5	32	57.4	38-48.4	122-48.3	1.7	1.0	8	84	3.9	0.08	.4	.4	A	THE GEYSERS
	17	6	31	44.4	38-47.4	122-48.5	3.2	0.8	8	95	3.4	0.09	.6	.5	B	THE GEYSERS
	17	9	22	58.4	38-40.4	122-46.7	4.2	0.9	10	100	4.6	0.08	.6	.9	B	JIMTOWN
	17	10	35	10.1	36- 6.4	120-11.2	5.3	2.2	11	247	21.1	0.12	3.6	2.2	D	AVENAL
	17	10	36	49.7	35-57.2	120-21.2	4.2	1.5	8	148	2.9	0.17	1.8	.9	C	THE DARK HOLE
	17	15	4	13.4	38-48.0	122-48.4	1.9	1.1	9	75	4.0	0.04	.2	.1	A	THE GEYSERS
	17	15	26	24.2	36-54.7	121-28.5	3.9	1.5	23	62	2.8	0.10	.3	.3	A	SAN FELIPE
	17	17	11	24.3	38-40.9	122-46.5	3.8	2.1	26	47	3.7	0.18	.5	.4	B	JIMTOWN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

	1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE
SEP	18	0	9	46.5	38-48.4	122-48.2	1.6	1.1	8	82	4.3	0.08	.4	.3	A	THE GEYSERS
	18	0	44	14.6	38-39.3	122-46.3	5.3	1.0	13	74	5.4	0.10	.5	1.2	B	JIMTOWN
	18	2	42	31.6	39-40.0	122-46.4	5.2	1.2	13	73	5.2	0.07	.4	.8	A	JIMTOWN
	18	7	40	34.7	36-29.7	121- 6.8	5.9	1.5	17	68	3.8	0.11	.4	.9	A	TOPO VALLEY
	18	9	4	39.0	38-48.2	122-48.5	1.5	1.0	9	77	3.3	0.07	.3	.3	A	THE GEYSERS
	18	9	35	52.9	36-50.4	121-24.0	11.8	1.2	14	75	1.2	0.08	.5	1.3	A	HOLLISTER
	18	9	51	4.6	38-48.5	122-48.4	3.5	1.3	12	76	3.5	0.13	.6	.5	A	THE GEYSERS
	18	11	50	29.4	38-40.9	122-46.4	5.1	1.8	21	47	3.5	0.16	.5	1.4	B	JIMTOWN
	18	12	2	52.3	38-41.0	122-46.4	5.1	1.5	13	67	3.5	0.17	.9	1.6	B	JIMTOWN
	18	12	19	26.9	38-40.6	122-47.3	4.2	1.1	13	70	4.9	0.13	.7	1.6	A	JIMTOWN
	18	13	19	3.6	36-30.3	121- 7.6	6.4	1.0	14	49	4.4	0.11	.5	.9	A	BICKMORE CANYON
	18	14	28	47.4	38-41.0	122-46.5	5.1	1.8	19	50	3.4	0.18	.6	1.6	B	JIMTOWN
	18	18	32	46.9	37-34.1	121-41.6	6.3	1.8	28	90	5.7	0.16	.5	.5	B	MENDENHALL SPRINGS
	18	19	46	53.7	36-15.9	120-52.4	4.5	2.0	22	105	7.5	0.17	.6	.9	B	HEPSEDAM PEAK
	18	22	4	4.6	38-40.9	122-46.2	4.7	0.3	15	68	3.4	0.13	.6	1.1	A	JIMTOWN
	18	22	56	32.5	38-49.1	122-47.7	3.4	1.3	16	48	3.8	0.17	.6	.6	B	THE GEYSERS
	19	15	31	39.4	38-48.8	122-48.0	1.8	1.7	16	76	3.9	0.11	.3	.2	A	THE GEYSERS
	19	17	47	20.7	38-40.7	122-46.5	4.7	1.2	13	67	4.0	0.14	.7	1.5	A	JIMTOWN
	19	23	49	1.6	36-55.4	121-28.5	3.7	1.7	27	64	3.0	0.12	.3	.3	A	SAN FELIPE
	20	0	35	5.9	39-12.9	123-14.5	5.7	2.2	18	249	27.2	0.08	.9	2.7	C	UKIAH
	20	1	10	6.7	38-46.9	122-38.0	7.1	1.5	16	71	5.4	0.17	.7	1.8	B	WHISPERING PINES
	20	1	52	50.6	38-40.5	122-46.0	3.5	0.9	11	68	4.0	0.09	.6	.4	A	JIMTOWN
	20	13	20	48.6	36-12.0	120-48.2	12.3	2.3	21	87	12.6	0.15	.6	.7	B	MONARCH PEAK
	20	14	18	6.1	36-55.1	121-28.5	4.2	1.5	26	73	2.9	0.11	.3	.3	A	SAN FELIPE
	20	17	19	48.1	38-48.4	122-48.6	1.7	0.9	8	91	3.4	0.09	.4	.4	B	THE GEYSERS
	20	18	29	33.0	36-55.0	121-28.3	2.7	1.4	21	57	3.2	0.12	.3	.2	A	SAN FELIPE
	20	22	35	44.8	36-55.7	121-28.2	4.2	1.2	26	59	3.5	0.12	.3	.3	A	SAN FELIPE
	20	23	17	12.3	36-49.3	121-35.3	5.8	2.5	51	93	2.2	0.26	.5	1.4	B	SAN JUAN BAUTISTA
	21	1	54	40.4	38-48.6	122-49.0	4.1	2.2	11	122	11.3	0.09	.9	1.5	B	THE GEYSERS
	21	2	27	20.1	36-23.5	121- 0.3	5.7	1.3	15	64	4.0	0.13	.6	1.3	A	TOPO VALLEY
	21	4	17	22.5	36-11.9	120-46.7	6.4	0.8	7	163	2.3	0.07	1.0	1.0	C	MONARCH PEAK
	21	9	28	59.2	36-36.6	121-15.2	5.6	1.6	21	42	3.1	0.16	.5	1.0	B	MT JOHNSON
	21	13	12	42.9	38-39.8	122-46.3	4.7	1.3	7	138	5.5	0.07	.6	1.3	B	JIMTOWN
	21	13	36	24.0	35-59.9	120-52.4	14.8	1.5	13	168	18.3	0.09	.6	.4	B	WUNPOST
	21	13	58	55.8	38-48.3	122-48.3	4.1	1.6	9	234	10.2	0.08	1.1	2.4	C	THE GEYSERS
	21	14	0	7.9	38-54.7	123- 4.3	0.4	1.2	4	316	31.7	0.19	.0	.0	C	HOPLAND
	21	14	23	53.6	36-57.5	121-37.4	4.0	1.3	18	65	3.6	0.11	.4	.3	A	CHITTENDEN
	21	14	48	32.3	36-55.0	121-28.9	2.6	1.5	24	45	2.3	0.08	.2	.1	A	SAN FELIPE
	21	14	49	45.3	36-54.8	121-29.1	2.7	2.5	42	53	2.1	0.12	.2	.2	A	SAN FELIPE
	21	15	15	57.5	38-48.0	122-49.0	3.9	1.5	8	201	11.2	0.07	.9	.5	C	THE GEYSERS
	21	15	47	11.2	39- 0.8	122-37.8	4.9	1.4	4	235	4.1	0.02	.0	.0	C	CLEARLAKE OAKS
	21	16	25	51.8	38-48.1	122-48.6	4.0	1.1	4	256	11.1	0.01	.0	.0	C	THE GEYSERS
	21	17	6	58.3	39-48.3	122-46.3	3.3	1.2	7	235	8.5	0.04	1.1	.6	C	THE GEYSERS
	21	19	53	31.2	36-45.3	121-23.2	10.6	1.3	20	55	2.1	0.17	.3	1.2	B	HOLLISTER
	22	2	17	17.8	36-40.1	121-19.0	4.6	1.0	14	73	3.2	0.15	.6	1.3	B	PAICINES

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
SEP	22	2	45	12.3	36-39.7	121-19.1	3.8	1.9	24	39	4.1	0.17	.5	.5	B	PAICINES
	22	2	46	32.5	38-40.7	122-46.4	4.8	2.3	20	85	3.9	0.20	.7	1.3	B	JIMTOWN
	22	3	0	17.5	38-40.3	122-45.9	3.8	0.9	6	141	3.6	0.03	.5	.2	B	JIMTOWN
	22	10	1	49.7	37-19.4	121-28.9	8.0	1.8	24	149	5.3	0.12	.5	1.0	B	MT STAKES
	22	11	1	38.4	36-33.9	121-12.1	5.9	2.6	31	39	1.7	0.17	.4	1.0	B	BICKMORE CANYON
	22	12	39	46.5	36- 3.3	121- 2.5	12.1	1.8	8	169	11.9	0.05	.5	.5	B	ESPINOSA CANYON
	22	15	53	16.2	36-15.1	120-51.8	3.1	1.5	13	106	7.4	0.18	.9	.8	B	HEPSEDAM PEAK
	22	20	16	28.0	38-48.4	122-45.8	1.9	1.7	15	161	7.3	0.14	.8	.5	B	THE GEYSERS
	22	20	21	34.7	38-48.3	122-46.1	1.4	1.5	13	183	7.8	0.12	.8	.6	C	THE GEYSERS
	22	20	44	45.6	38-48.2	122-46.3	2.0	1.1	13	65	1.5	0.10	.3	.2	A	THE GEYSERS
	22	20	48	42.9	38-48.5	122-46.0	2.0	3.5R	37	35	1.1	0.17	.3	.3	B	THE GEYSERS
	22	22	25	5.4	36-57.0	121-26.0	5.5	1.3	27	74	4.7	0.15	.4	1.2	B	SAN FELIPE
	22	23	55	11.3	36-54.8	121-28.9	2.2	0.9	19	60	2.4	0.11	.3	.2	A	SAN FELIPE
	23	3	13	22.9	38-40.0	122-45.7	6.0	0.8	14	71	5.0	0.13	.6	1.3	A	JIMTOWN
	23	6	53	13.6	38-48.1	122-46.3	2.2	2.1	31	51	1.6	0.11	.2	.2	A	THE GEYSERS
	23	8	23	42.8	38-40.5	122-46.5	5.0	1.5	27	49	4.4	0.18	.5	1.0	B	JIMTOWN
	23	8	59	42.2	36-31.3	121- 9.9	8.0	1.4	25	35	3.6	0.20	.6	1.2	B	BICKMORE CANYON
	23	10	31	23.1	36-11.9	120-47.8	5.9	2.3	26	104	1.8	0.22	.7	1.0	B	MONARCH PEAK
	23	12	35	48.0	38-40.3	122-46.5	6.3	0.7	14	71	4.7	0.10	.5	1.0	A	JIMTOWN
	23	14	0	57.0	38-39.8	122-46.2	5.9	1.2	15	74	5.4	0.12	.5	1.3	A	JIMTOWN
	23	14	5	17.5	38-40.0	122-46.3	5.9	1.1	14	51	5.2	0.10	.5	1.0	A	JIMTOWN
	23	15	42	5.4	36-11.8	120-48.1	6.7	1.4	11	112	2.2	0.10	.7	1.0	B	MONARCH PEAK
	23	20	20	12.9	38-40.1	122-46.3	3.9	1.8	27	49	5.0	0.18	.5	.6	B	JIMTOWN
	23	21	19	38.5	38-48.0	122-48.7	1.4	1.0	9	79	3.8	0.07	.3	.3	A	THE GEYSERS
	23	22	45	54.5	36- 0.4	120-51.9	15.1	1.7	13	168	17.2	0.09	.6	1.4	B	PANCHO RICO VALLEY
	23	22	53	55.1	36-54.3	121-29.3	3.9	1.4	28	52	2.2	0.10	.2	.2	A	SAN FELIPE
	24	0	51	18.0	36-35.8	121-17.5	6.8	1.2	15	72	2.5	0.13	.6	1.1	A	MT JOHNSON
	24	3	7	45.1	38-48.5	122-48.4	1.7	1.2	9	77	3.5	0.06	.3	.2	A	THE GEYSERS
	24	4	54	47.5	38-51.0	122-58.7	3.1	0.9	12	83	2.3	0.11	.5	.4	A	ASTI
	24	6	40	43.6	36-43.8	121-25.9	4.6	1.8	23	67	2.7	0.19	.6	.7	B	MT HARLAN
	24	10	26	22.8	38-58.4	122-55.8	7.7	1.5	17	74	10.7	0.16	.7	2.6	B	HIGHLAND SPRINGS
	24	10	57	24.8	36-35.0	121- 7.6	10.0	2.3	31	46	5.7	0.15	.4	.7	B	BICKMORE CANYON
	24	11	40	2.1	38-48.1	122-46.6	4.1	1.1	9	88	1.9	0.08	.5	.5	A	THE GEYSERS
	24	11	54	9.2	35-59.4	120-34.2	1.9	1.6	10	63	9.1	0.11	.6	.5	B	STOCKDALE MTN
	24	13	43	12.2	36-51.4	121-35.4	2.1	2.0	26	44	3.2	0.21	.5	.4	B	SAN JUAN BAUTISTA
	24	14	27	55.6	36-54.4	121-29.4	4.3	1.5	27	53	2.0	0.09	.3	.2	A	SAN FELIPE
	24	14	46	47.7	36-44.7	121-15.9	9.5	1.5	15	49	2.0	0.16	.8	1.5	B	PAICINES
	24	14	52	8.4	36-25.6	121- 2.1	0.0	2.1	20	57	1.5	0.13	.4	.6	A	TOPO VALLEY
	24	19	49	29.7	36-54.3	121-29.5	3.5	1.1	17	79	1.9	0.10	.3	.3	A	SAN FELIPE
	25	1	34	50.3	36-34.4	121-12.8	5.4	2.7	33	34	2.1	0.18	.4	1.0	B	BICKMORE CANYON
	25	1	40	55.1	36-34.3	121-12.6	5.2	2.6	33	37	2.0	0.18	.4	.7	B	BICKMORE CANYON
	25	2	45	51.6	37-36.3	122-22.4	13.2	1.1	14	65	4.6	0.07	.4	.4	A	SAN MATEO
	25	5	16	58.1	36-43.6	121-25.5	3.5	1.4	11	84	2.7	0.14	.9	.6	A	MT HARLAN
	25	5	56	0.8	36-44.4	120-53.9	1.0	1.9	21	102	12.9	0.14	.7	1.2	B	CERRO COLORADO
	25	9	26	44.3	36-53.3	121-37.5	5.5	2.3	32	49	3.0	0.17	.5	.5	B	CHITTENDEN

CENTRAL CALIFORNIA EARTHQUAKES--THIRD QUARTER 1977 (CONTINUED)

1977	HR	MN	SEC	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	Q	QUADRANGLE	
SEP	25	9	33	41.6	36-48.0	121- 9.2	2.7	1.5	17	71	6.4	0.12	.5	.3	B	QUIEN SAGE VALLEY
	25	9	33	58.0	36-48.0	121- 9.5	5.6	1.2	15	70	6.2	0.11	.5	.7	B	QUIEN SAGE VALLEY
	25	10	14	59.9	37-14.0	121-38.3	7.8	1.3	15	96	4.1	0.11	.5	1.2	B	MORGAN HILL
	25	17	28	6.3	37-22.0	121-43.2	4.5	2.5	45	80	3.3	0.15	.4	.3	B	LICK OBSERVATORY
	25	18	6	44.0	36-40.5	120-52.4	2.9	1.2	12	87	7.5	0.08	.5	.5	B	MERCY HOT SPRINGS
	26	3	23	44.5	38-47.8	122-48.7	3.4	1.3	9	77	4.0	0.16	.9	.7	B	THE GEYSERS
	26	3	29	25.0	37-22.3	121-42.5	7.0	1.3	15	84	4.4	0.13	.6	1.5	A	LICK OBSERVATORY
	26	8	1	39.4	36-34.6	121- 5.0	10.6	2.2	38	60	5.4	0.14	.3	.5	A	SAN BENITO
	26	11	57	10.6	36-39.8	121-19.3	3.7	1.6	25	50	4.0	0.16	.4	.4	B	PAICINES
	26	14	39	50.5	36-26.9	121- 3.9	6.9	1.6	13	98	4.9	0.09	.4	1.0	B	TOPO VALLEY
	26	22	31	59.8	38-50.0	122-56.2	5.5	1.2	14	98	1.3	0.11	.5	.9	B	ASTI
	27	6	55	12.8	37-18.4	121-39.8	4.1	1.3	17	73	5.5	0.13	.5	.3	B	LICK OBSERVATORY
	27	12	35	4.8	38-40.4	122-46.3	3.9	1.7	23	49	4.3	0.18	.5	.7	B	JIMTOWN
	27	12	39	38.3	36-41.4	121-12.3	11.3	1.3	17	111	4.0	0.10	.5	.9	B	CHERRY PEAK
	27	16	2	31.6	36- 0.8	120-35.9	2.1	1.7	12	66	6.3	0.13	.7	.6	B	SMITH MTN
	27	20	25	57.0	36-46.5	120-56.4	3.7	1.4	13	128	13.0	0.14	.7	.7	B	ORTIGALITA PEAK
	28	1	13	12.8	38-48.2	122-48.4	1.8	1.1	9	75	3.9	0.04	.2	.2	A	THE GEYSERS
	28	2	0	46.9	38-40.5	122-46.4	5.7	1.4	15	69	4.3	0.14	.6	1.4	A	JIMTOWN
	28	5	41	21.7	36-54.8	121-28.9	4.0	1.0	15	61	2.4	0.11	.5	.3	A	SAN FELIPE
	28	7	45	25.2	36-54.9	121-28.8	3.8	1.0	17	60	2.5	0.10	.4	.3	A	SAN FELIPE
	28	8	44	3.8	38- 4.6	121-54.4	19.5	1.6	21	97	9.7	0.19	1.1	1.6	B	HONKER BAY
	28	17	28	0.5	38-56.5	122-42.0	0.4	1.1	9	77	2.6	0.10	.5	.5	A	CLEARLAKE HIGHLANDS
	28	18	47	3.8	36-42.4	121-22.4	2.6	1.3	15	53	2.7	0.20	.7	.8	B	PAICINES
	28	20	54	48.1	36-54.2	121-25.0	4.6	1.4	26	68	0.9	0.08	.2	.4	A	SAN FELIPE
	29	1	57	21.9	35-50.8	121-11.2	10.1	2.0	16	216	26.3	0.15	2.0	.9	C	BURVETT PEAK
	29	4	18	50.9	36-49.8	121-34.9	4.2	2.0	29	47	3.6	0.28	.7	.5	B	SAN JUAN BAUTISTA
	29	6	6	19.1	38-48.7	122-47.8	2.3	1.3	11	81	3.6	0.07	.3	.2	A	THE GEYSERS
	29	7	50	7.1	36-54.5	121-29.1	4.3	1.8	32	56	2.3	0.08	.2	.2	A	SAN FELIPE
	29	7	58	23.0	36-54.5	121-29.0	4.5	1.6	30	37	2.4	0.10	.3	.3	A	SAN FELIPE
	29	13	10	22.0	36-59.1	121-22.7	4.8	1.6	23	73	2.1	0.15	.5	1.2	A	SAN FELIPE
	29	16	12	46.1	39- 0.4	123- 6.4	1.0	1.3	11	169	8.5	0.13	1.0	.7	C	PURDYS GARDENS
	29	16	17	33.0	38-48.5	122-49.7	1.4	0.8	8	98	2.2	0.17	.8	.7	B	THE GEYSERS
	29	17	19	38.5	38-40.2	122-46.6	5.4	1.0	12	72	4.9	0.12	.7	1.3	A	JIMTOWN
	29	17	54	25.2	36-33.7	121- 3.8	12.1	1.5	16	69	4.7	0.11	.6	1.1	A	SAN BENITO
	29	18	12	57.5	36-33.6	121- 4.2	10.9	2.4	26	53	5.3	0.13	.4	.6	A	SAN BENITO
	29	18	36	53.4	36-33.6	121- 3.8	11.8	2.2	20	68	4.9	0.11	.5	.8	A	SAN BENITO
	29	22	17	16.6	37-25.2	121-39.4	4.1	1.8	20	120	11.1	0.13	.5	.4	B	MT DAY
	29	23	29	9.8	38-56.7	122-41.8	0.5	1.0	8	134	2.5	0.04	.2	.2	B	CLEARLAKE HIGHLANDS
	29	23	35	45.4	38-56.4	122-41.8	0.8	1.2	8	122	2.4	0.04	.2	.2	B	CLEARLAKE HIGHLANDS
	29	23	36	5.8	38-56.5	122-41.9	0.8	1.1	10	76	2.5	0.16	.7	.6	B	CLEARLAKE HIGHLANDS
	30	1	24	43.5	38-48.6	122-48.6	3.5	1.2	9	79	3.3	0.10	.6	.5	A	THE GEYSERS
	30	2	33	28.6	38-56.3	122-41.3	3.9	1.5	13	74	1.7	0.16	.9	.7	B	CLEARLAKE HIGHLANDS
	30	17	55	37.6	36-33.7	121- 4.2	10.0	2.3	31	52	5.2	0.15	.4	.7	A	SAN BENITO
	30	18	20	25.0	36-33.7	121- 3.8	11.5	1.3	16	68	4.7	0.11	.6	1.0	A	SAN BENITO
	30	19	35	30.7	36-33.3	121- 3.6	10.9	1.2	16	70	5.1	0.08	.5	.8	A	SAN BENITO

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