

# Bulletin of the Seismographic Stations

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EARTHQUAKES IN NORTHERN CALIFORNIA  
AND  
THE REGISTRATION OF EARTHQUAKES  
AT  
BERKELEY—MOUNT HAMILTON—PALO ALTO  
SAN FRANCISCO—FERNDAL—FRESNO

From October 1, 1941, to December 31, 1941

BY  
CARL F. ROMNEY

UNIVERSITY OF CALIFORNIA PRESS  
BERKELEY AND LOS ANGELES  
1948

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## EARTHQUAKE INTENSITY SCALE



Criteria of the Modified Mercalli Scale which were used to rate the intensities of the earthquakes registered were:

### Intensity

- |     |   |
|-----|---|
| II  | Felt by a few people only. Duration or direction not appreciable.       |
| III | Duration or direction appreciable.                                      |
| IV  | Rattling of doors and windows; swinging of suspended objects.           |
| V   | Disturbance of movable objects; plaster cracked.                        |
| VI  | Overthrow of movable objects; cracking of chimneys and other brickwork. |
| VII | Fall of some chimneys; some damage to buildings.                        |

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Latitude and longitude are given for each epicenter in the following list. Only those earthquakes are given for which epicenters were located. The letter represents the excellence with which the epicenter has been located, a indicating excellent, b good, c fair, d poor.

## EARTHQUAKES IN NORTHERN CALIFORNIA

1941 -- Pacific Standard Time



No.	Date	Time	Size	Location		Weight
				Lat. N	Long. W	
1	Oct. 3	08-13	Large	40°4	124°8	c
Felt over approximately 12,000 square miles in northwestern California and southwestern Oregon. Maximum intensity of VII was reached at Eureka, and the quake was felt as far north as Port Orford, as far east as Mt. Shasta, and as far south as San Francisco.						
2	Oct. 3	17-24	Tiny	37° 42'	121° 43'	b
3	5	23-59	Moderate	40°4	125°0	b
4	11	15-21	Tiny	37° 11'	122° 16'	c
5	14	8-32	Moderate	39°4	119°6	c
Felt at Reno Nevada, Loyalton, Norden, Truckee. Foreshock at 0811.						
6	Oct. 26	01-46	Tiny	37°8	122°2	d
7	26	06-20	Tiny	37° 03'	121° 41'	c
8	26	22-59	Tiny	37° 35'	121° 47'	c
9	Nov. 4	15-13	Tiny	37°2	122°3	d
10	6	03-59	Small	36°6	121°2	d
11	12	04-34	Tiny	36° 35'	121° 19'	c
12	17	03-14	Tiny	36° 46'	121° 24'	c
Felt in Tres Pinos.						
13	Nov. 18	19-38	Small	40°2	124°3	c
Felt at Cape Mendocino and Petrolia. Foreshocks at 1818, 1828, and 1912. Aftershock at 2019.						
14	Nov. 18	21-57	Small	37° 03'	121° 33'	c
15	19	19-20	Small	36° 52'	121° 14'	c
16	20	03-42	Small	36° 43'	121° 30'	c
17	21	05-08	Small	37°2	122°3	d
18	24	02-51	Moderate	40°2	124°2	d
Felt at Cape Mendocino Light Station.						
19	Nov. 25	18-59	Small	36° 35'	121° 16'	c
20	Dec. 16	11-48	Tiny	36°8	121°4	d
Felt at Gilroy						
21	Dec. 17	23-25	Small	37° 32'	121° 29'	a
22	24	19-24	Small	36° 55'	122° 17'	b

THE REGISTRATION OF EARTHQUAKES

1. Character of the Earthquake--

I. Perceptible. II. Moderately Strong. III. Strong

d (terrae motus domesticus)	Local shock (origin less than 100 kilometers distant),
v (terrae motus vicinus)	Near shock (origin from 100 to 1,000 kilometers distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 kilometers distant).
u (terrae motus ultimus)	Very distant shock or teleseism (origin more than 5,000 kilometers distant).

2. Phases of the Seismogram--

P (undae primae)	Normal first phase, or first preliminary tremors (longitudinal).
P'	First preliminary tremors which have penetrated the core of the earth.
PR <sub>n</sub>	Waves n times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors (transverse).
SR <sub>n</sub>	Waves n times reflected at the earth's surface.
PS	Waves changed from longitudinal to transverse oscillation or vice versa through reflection at the earth's surface.
PPS	Waves twice reflected at the earth's surface, having been longitudinal on two branches of the path and transverse on one branch.

In general a bar over two letters denoting types of waves indicates refraction. The subscript <sub>c</sub> denotes the boundary at about 2900 km. depth between the core and the middle shell which surrounds it. Thus:

$\overline{S_c P_c S}$	Waves which have penetrated the core, having been transverse before entering and after leaving the core, and longitudinal within the core.
$\overline{P_c P_c} \overline{P_c P}$	Waves refracted at the core boundary into the core, reflected once at this boundary while within the core and again refracted out of the core, having remained longitudinal on all branches of the path.
L (undae longae)	Long waves of surface phase preceding M.
M (undae maximae)	Shorter and more regular waves of large amplitude in the surface phase.
M <sub>n</sub>	Greatest motion in the surface phase.
C (coda)	Tail or end portion.
F (finis)	End of discernible movement.

For local earthquakes a special notation is used:

$\overline{P}$	The longitudinal wave which has traveled its whole path in the surface layer or crust of the earth.
$\overline{S}$	The transverse wave which has traveled its whole path in the surface layer of the earth.
P*	The longitudinal wave which has traveled the horizontal portion of its path in the intermediate layer.
S*	The corresponding transverse wave.





### 3. Nature of the Motion--

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.
T (period)	Time of one complete oscillation.
A	Trace amplitude measured from the media line, + earth motion toward east, north, or zenith, - toward west, south or nadir.
AE	E-W component of A.
AN	N-S component of A.
AZ	Vertical component of A.

### 4. Time--

O (origin)	Time of shock at point of origin.
------------	-----------------------------------

THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA  
BERKELEY, CALIFORNIA



## CONSTANTS

## CONSTANTS OF THE STATION

Latitude and Longitude:

$$\begin{aligned}\phi &= 37^{\circ} 52' 3'' \text{ N.} \\ \lambda &= 122^{\circ} 15' 6'' \text{ W.}\end{aligned}$$

Time -- All determinations are reduced to Universal Time.

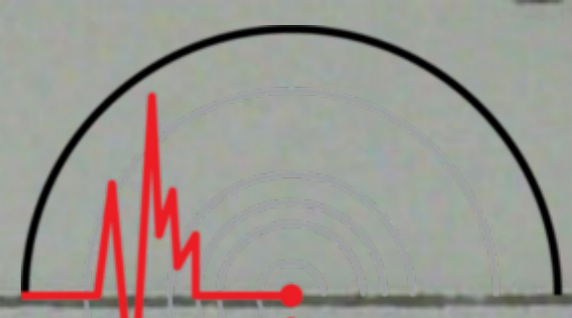
Altitude -- 81 meters (266 feet) above mean sea level.

## CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V		T <sub>0</sub>	ε	$\frac{r}{T_0^2}$	
		K	T			T <sub>1</sub>	μ <sup>2</sup>
Bosch-Omori 100 kg. ..	E	45		12	10		0.001
	N	45		12	10		0.001
Wiechert 80 kg. ....	Z	44		4	5		0.005
Wood-Anderson .....	E	3000		0.9	15		
	N	3000		0.9	15		
Galitzin .....	E	112	12	11.8	0.00	115	11.3
	N	122	12	12.4	0.03	119	11.2
	Z	109	12	11.9	0.01	131	14.9
Benioff .....	Z	V		Coupled Period		ε	
				0.7	5		

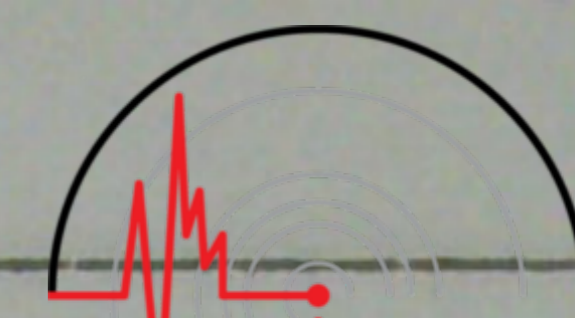
The letter G before a reading designates that the seismogram was from the Galitzin instrument; W, Wiechert, B, Bosch-Omori; A, Wood-Anderson; H, Benioff.

## BERKELEY

International  
Seismological  
Centre

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	Oct. 1	I	eNE F	G 19	24.5		Surface waves
2	Oct. 3	IIIv	iPEN iN iPZ iSNZ eZ iE F	AG 16 G 16 H 16 AH 16 G 16 A 16 19	14 01.0 14 02. 14 02.2 14 37.6 14 40.5 14 42.0 27		USCGS: 40.5°N - 124.6°W See list, page 188
3	Oct. 4	Id	iPZ iN iZ iE F	H 01 A 01 H 01 A 01 01	24 20.0 24 22.4 24 22.7 24 23.1 25		See list, page 188
4	Oct. 5	Iu	ePE iSE iSN eLN eLN F	G 10 G 10 G 10 G 10 G 10 12	22 58.0 31 59.0 32 02.0 42.5 43.2 07		USCGS: 15°S - 173°W Wellington 17°S - 173°W Felt at Apia
5	Oct. 6	IIv	iPNEZ iN iE iN iE iSN iSZ eN iN eE iE F	AH 06 G 06 G 06 G 07 G 07 A 07 H 07 A 07 G 07 A 07 G 07 07	59 49.9 59 58.0 59 59.0 00 07.0 00 13.0 00 30.2 00 32.9 00 58.7 00 59.5 01 04.7 01 08.0 42		See list, page 188
6	Oct. 6	Id	iPZ iN iSZ iSZ F	H 22 A 22 H 22 H 22 22	40 52.7 40 53.1 40 53.7 40 54.7 41		
7	Oct. 8	Iv	eSN eSE eLE iLN F	G 04 G 04 G 04 G 04 05	36 37.0 36 40.0 46 29.5 48 01.5 32		Roughly 8°N - 83°W - Pas.

## BERKELEY

International  
Seismological  
Centre

No.	Date	Char- acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
8	Oct. 8	Iu	iPN iSNE eLN eLE F	05	38	51.0 55.5 58.4 59.4 32	
9	Oct. 9	Id	iPNEZ iSEZ F	AH 00	12	11.1 12.4 13	
10	Oct. 10	Id	iPN iSE iSN F	A 23	56	44.7 47.8 48.2 57	
11	Oct. 11	I	iE eN eE F	A 22	55	49.4 51.7 52.0 56	
12	Oct. 12	I	eE eNE F	A 03	56	43.0 44.9 57	
13	Oct. 13	Iv	eN iNE F	A 16	11	29.0 31.0 12	Foreshock
14	Oct. 14	Iv	ePN eE iSE iSN F	A 16	32	48.8 49.3 16.8 17.3 36	See list, page 188
15	Oct. 15	Id	iPZ iSN iSEZ F	H 23	10	20.4 20.8 21.0 11	Sharp
16	Oct. 15	I	iE iSE iSN F	A 23	13	49.0 51.3 51.5 14	
17	Oct. 16	I	ePZ eLNE eLZ F	G 04	53	02.5 13.9 14.3 37	



No.	Date	Char-acter	Phase	BERKELEY			Remarks
				Time (U.T.)			
				h.	m.	s.	
18	1941 Oct. 16	Iu	iS <sub>N</sub> ?	G 15	34	45.0	Pas. - Roughly 18°S 168°E
			i <sub>E</sub>	G 15	34	53.5	
			eL <sub>E</sub>	G 15	49.7		
			eL <sub>NZ</sub>	G 15	50.4		
			F	16	37		
19	Oct. 18	I	i <sub>N</sub>	A 00	09	35.2	
			F	00	10		
20	Oct. 18	Iv	eZ	H 10	38	48.7	Felt in Owens Valley
			e <sub>N</sub>	A 10	38	04.5	
			e <sub>N</sub>	A 10	39	35.8	
			F	10	40		
21	Oct. 19	Id	iP <sub>Z</sub>	H 00	04	07.1	
			i <sub>Z</sub>	H 00	04	08.1	
			F	00	08		
22	Oct. 19	Iv	iP <sub>Z</sub>	H 19	12	30.8	
			i <sub>N</sub>	A 19	12	49.8	
			iS <sub>Z</sub>	H 19	12	50.2	
			i <sub>E</sub>	A 19	12	50.8	
			F	19	14		
23	Oct. 21	Iv	i <sub>Z</sub>	H 22	39	03.7	Felt at Big Bend
			i <sub>N</sub>	A 22	39	05.0	
			F	22	41		
24	Oct. 21	Id	iP <sub>Z</sub>	H 22	48	42.2	
			i <sub>N</sub>	A 22	48	42.8	
			iS <sub>NEZ</sub> ?	AH 22	48	43.6	
			F	22	49		
25	Oct. 22	Iv	eP <sub>Z</sub>	H 06	58	36.5	Pas. - 33°49'N 118°17'W Felt throughout L.A. region
			e <sub>N</sub>	A 06	58	39.5	
			i <sub>Z</sub>	H 06	59	10.7	
			eZ	G 06	59	27.0	
			e <sub>E</sub>	G 06	59	28.0	
			i <sub>N</sub>	A 06	59	37.8	
			i <sub>N</sub>	G 07	00	14.0	
			i <sub>E</sub>	G 07	00	23.5	
			F	07	12		
26	Oct. 22	Iv	iP <sub>Z</sub>	H 10	33	53.3	
			iS <sub>Z</sub>	H 10	34	30.0	
			F	10	35		
27	Oct. 22	I(d)	iP <sub>Z</sub>	H 23	11	08.3	
			e <sub>N</sub>	A 23	11	08.7	
			F	23	12		



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
28	Oct. 23	I(d)	iP <sub>Z</sub> i <sub>N</sub> i <sub>Z</sub> F	H 01 42 37.4 A 01 42 40.1 H 01 42 42.2 01 43	(S)
29	Oct. 23	Iv	iP <sub>Z</sub> e <sub>N</sub> i <sub>NZ</sub> i <sub>N</sub> F	H 20 45 19.7 A 20 45 22.6 AH 20 45 55.4 A 20 46 02.4 22 47	Felt in Owens Valley (S)
30	Oct. 23	Id	iP <sub>Z</sub> e <sub>N</sub> i <sub>SZ</sub> i <sub>N</sub> F	H 22 56 49.9 A 22 56 50.7 H 22 56 51.5 A 22 56 51.9 22 57	
31	Oct. 23	I	e <sub>E</sub> e <sub>N</sub> e <sub>Z</sub> F	G 23 26.2 G 23 27.2 C 23 28.2 23 54	Surface waves
32	Oct. 24	Iv	i <sub>NZ</sub> e <sub>N</sub> F	AH 17 49 48.2 A 17 50 28.9 17 52	Pasadena Epicenter in Owens Valley
33	Oct. 24	Iv	i <sub>Z</sub> e <sub>N</sub> F	H 19 23 31.2 A 19 23 41.5 19 24	
34	Oct. 25	Iv	iP <sub>Z</sub> i <sub>SZ</sub> i <sub>SNE</sub> F	H 07 08 08.1 H 07 08 25.1 A 07 08 27.3 07 11	
35	Oct. 25	Id	iP <sub>Z</sub> i <sub>SNEZ</sub> F	A 23 28 10.4 AH 23 28 11.6 23 29	
36	Oct. 26	Id	iP <sub>Z</sub> i <sub>SNEZ</sub> F	H 01 52 15.4 AH 01 52 17.4 01 53	
37	Oct. 26	Id	iP̄ <sub>Z</sub> i <sub>E</sub> i <sub>SNEZ</sub> i <sub>SE</sub> F	H 09 45 55.3 A 09 45 55.5 AH 09 45 57.3 A 09 45 57.5 09 47	See list, page 188



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
38	Oct. 26	Id	iPz iz eN	H 14 19 51.9 H 14 20 00.7 A 14 20 05.7	See list, page 188
39	Oct. 27	Id	iPN iPEZ iSE iSN F	A 05 18 29.5 AH 05 18 29.7 A 05 18 34.2 A 05 18 34.5 05 19	
40	Oct. 27	Id	iP <sup>-</sup> NEZ iS <sup>-</sup> NE F	AH 05 58 49.5 A 05 58 56.1 06 00	
41	Oct. 27	Iv	ePz eN eE eN F	H 12 14 04.6 A 12 14 06.5 A 12 14 07.5 A 12 16 34 12 25	(L)
42	Oct. 27	Iv	eN iE iN F	G 12 14 52.5 G 12 15 59.0 G 12 16 06.0 12 27	
43	Oct. 28	IIv	iPz eN eE iNE iz eN eZ eE F	H 10 34 43.8 A 10 34 45.9 A 10 34 48.7 G 10 35 59.0 G 10 36 33.5 A 10 37 36.2 H 10 37 38.7 A 10 37 40.2 10 52	
44	Oct. 30	Id	iPz F	07 21 27.2 07 22	
45	Oct. 30	Id	iPz iSz F	20 00 17.4 20 00 19.0 20 01	
46	Oct. 30	IIId	iz iz iz F	22 26 25.9 22 26 26.0 22 26 28.9 22 27	
47	Oct. 31	IIId	iPz iz F	H 00 09 25.6 H 00 09 26.0 00 10	



BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
48	Oct. 31	IIv	iPz	G 12 42 48.0	
			iPN	G 12 42 48.5	
			iPNZ	AH 12 42 48.8	
			iPE	G 12 42 53.0	
			iSE	G 12 44 17.5	
			iSZ	G 12 44 18.5	
			iN	G 12 44 21.0	
			eN F	A 12 45 38.3 13 07	
49	Oct. 31	Id	iPz	H 18 20 53.0	
			iSNZ	AH 18 20 54.5	
			F	18 21	
50	Oct. 31	Iu	ePN	G 17 03 23.0	
			ez	G 17 03 37.0	
			iSN	G 17 13 21.0	
			eLE	G 17 29.7	
			eLNZ	G 17 30.2	
			F	18 07	
51	Oct. 31	Id	iPz	H 21 37 13.8	
			iN	A 21 37 14.1	
			iZ	H 21 37 15.9	
			F	21 38	
52	Oct. 31	Id	iPz	H 23 24 13.5	
			iSZ	H 23 25 14.4	
			F	23 25	
53	Nov. 4	Iv	iPNZ	AH 02 10 16.0	Pasadena Epicenter 37°34'N 118°44'W
			iz	H 02 10 55.6	
			iS?N	A 02 10 56.3	
			F	02 13	
54	Nov. 4	Iv	iPz	H 02 37 42.6	Wellington: -18½° S - 177½°W h = 550-600 km
			iN	A 02 37 43.5	
			ipPNEZ	AH 02 39 43.5	
			ipPEZ	G 02 39 44.5	
			F	02 44	
55	Nov. 4	Iv	ePz	H 23 12 51	See list, page 188
			F	23 13	
56	Nov. 5	Iv	ePz	G 13 18 01.0	
			iGNE	G 13 41.5	
			eLN	G 13 45.2	
			eLE	G 13 46.2	
			eLZ	G 13 48.7	
			F	12 27	



## BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
57	Nov. 5	Iu	ePPS <sub>Z</sub> e <sub>N</sub> iSS <sub>N</sub> iSS <sub>Z</sub> eL <sub>Z</sub> eL <sub>N</sub> F	G 18 06 18.0 G 18 06 29.0 G 18 11 24.0 G 18 11 30.0 G 18 24.6 G 18 26.1 19 17			
58	Nov. 5	I	iNE iN F	AH 20 24 25.3 A 20 24 35.9 20 25			
59	Nov. 6	I	e <sub>N</sub> eEZ F	G 07 45.2 G 07 49.3 08 17			
60	Nov. 6	Iv	iNZ iN F	AH 10 33 06.1 A 10 33 38.9 10 35	Felt in Ferndale		
61	Nov. 6	I	e <sub>N</sub> iN F	A 11 59 46.6 A 12 00 12.9 12 01			
62	Nov. 6	IIr	iPNZ iSE iSN iSZ F	AG 12 36 13.0 G 12 41 20.0 G 12 41 20.0 G 12 41 22.0 14 03	USCGS: - 54°N 163°W JSA: - 54.5°N 157.8°W		
63	Nov. 6	I	eZ iE iZ iN F	G 17 34 51.8 G 17 37 29.5 G 17 37 38.0 G 17 37 48.5 17 52			
64	Nov. 6	Id	iZ eN	H 23 33 57.5 A 23 33 58.2			
65	Nov. 8	I	iZ iZ F	H 17 56 26.3 H 17 56 29.3 17 57			
66	Nov. 8-9	IIu	ePZ eN eE eE eN iPS <sub>Z</sub> eL <sub>Z</sub> F	G 23 51 54.5 A 23 56 16.3 A 26 56 21.8 A 00 02 25.8 A 00 02 27.3 G 00 05 40.5 G 00 27.2 02 27	JSA: 0.7°N - 125.0°E		



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
67	Nov. 9	Id	iz iz F	H 12 57 H 12 57 12 58	40.1 43.7		
68	Nov. 9	I	iz F	H 16 24 16 25	54.3		
69	Nov. 10	Iu	ePz eNE F	H 09 56 A 09 56 10 01 ca	40.0 40.7		Pas.- 23°S 67°W h = 200 km.
70	Nov. 10	I	ePz iN iE iz F	H 19 57 A 19 57 A 19 57 H 19 57 19 58.5	58.0 58.2 58.8 59.8		
71	Nov. 11	Id	iPz iN iE iz iN F	H 23 12 A 23 12 A 23 12 H 23 12 A 23 12 23 13	10.5 12.3 17.4 17.7 18.4		
72	Nov. 12	I	eE eN F	G 10 53.2 G 10 54.2 11 27			Surface waves
73	Nov. 13	Id	iPz iz iN iE F	H 23 22 H 23 22 A 23 22 A 23 22 23 22.5	03.5 05.2 05.5 05.7		
74	Nov. 14	IIv	ePN iz iN iE iz iN ePN eE iSE iSN iLE iLN F	G 08 43 G 08 43 G 08 43 G 08 43 G 08 43 G 08 44 A 08 44 A 08 44 A 08 44 A 08 44 A 08 45 A 08 45 09 07	06.5 27.5 28.5 39.5 56.0 00.0 00.4 06.9 56.9 58.3 58.0 58.8		



BERKELEY

No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
75	Nov. 14	Id	eE	A 22 33 37.0	
			iN	A 22 33 38.6	
			iEZ	AH 22 33 39.4	
			F	22 34	
76	Nov. 15	Iv	ePN	A 16 44 03.0	Owens Valley
			iN	A 16 44 32.3	
			F	16 46	
77	Nov. 16	Iu	eNE	G 09 57.7	Surface waves USCGS: 13½°N 88°W
			F	10 07	
78	Nov. 18	Iv	iN	G 10 43 28.0	
			eE	G 10 43 42	
			eE	G 10 50 15.0	
			iN	G 10 50 17.5	
			iZ	G 10 50 49.5	
			iE	G 11 03 41.5	
			eLE	11 09.2	
			eLN	11 09.8	
			F	13 22	
			79	Nov. 18	
iPE	G 16 58 47.5				
iPz	G 16 58 49.5				
eN	A 16 58 51.0				
iPN	G 16 58 53.5				
iSZ	G 17 07 58.0				
iSKSE	G 17 08 54.5				
ISKSZ	G 17 08 58.0				
eSN	A 17 09 01.7				
ISKSN	G 17 09 03.0				
eLN	A 17 20.8				
eLz	G 17 22.7				
F	20 37				
80	Nov. 19	I			iZ
			F	02 22	
81	Nov. 19	Iv	iPz	H 03 38 58.5	See list, page 188
			iZ	H 03 39 24.8	
			F	03 42	
82	Nov. 19	Id	iPz	A 05 57 47.1	Lost in next shock
			F		
83	Nov. 19	Id	iS <sub>Z</sub>	H 05 58 01.8	See list, page 188
			F	05 59	



## BERKELEY

No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
84	Nov. 19	Iv	iZ	H 09 44 21.6	
			iZ	H 09 44 37.8	
			F	09 45	
85	Nov. 19	Id	iPZ	H 17 24 41.5	
			eN	A 17 24 49.6	
			iZ	H 17 24 50.3	
			F	17 25	
86	Nov. 20	Iv	iPZ	H 03 20 58.1	See list, page 188
			eN	A 03 20 59.5	
			iSNZ	AH 03 21 19.1	
			F	03 23	
87	Nov. 20	I	iN	A 11 42 24.5	See list, page 188
			F	11 28	
88	Nov. 20	I	eNE	G 16 45.1	Surface waves
			F	17 12	
89	Nov. 20	Iv	eN	G 21 58.6	Surface waves
			eE	G 21 59.1	
			F	22 22	
90	Nov. 21	Iv	iPNEZ	AH 13 07 51.8	See list, page 188
			iSNEZ	AH 13 08 01.6	
			F	13 09	
91	Nov. 22	Iu	eNE	G 08 07.1	
			eLE	G 08 10.1	
			eIZ	G 08 11.1	
			F	08 42	
92	Nov. 22	I	iPZ	H 23 53 38.7	
			F	23 54	
93	Nov. 23	I	iZ	H 01 52 59.7	
			F	01 55	
94	Nov. 23	Iv	eLE	G 16 39.6	
			eLN	G 16 39.8	
			eLZ	G 16 40.9	
			F	16 52	
95	Nov. 24	I	ePN	A 10 51 46.8	See list, page 188
			iPZ	H 10 51 47.1	
			F	10 56	
96	Nov. 24	Iu	eE	G 18 00.9	Surface waves Pas.: 44°S 34°E
			eNZ	G 18 06.1	
			F	18 47	

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
97	Nov. 24-25	IIu	iPNZ iPE ePZ iN iSKSN iSKSE iSKSZ eSN iSE iSZ eLZ eLNE F	G 21 58 49.0 G 21 58 49.5 H 21 58 50.3 A 21 58 50.8 G 22 09 07.0 G 22 09 09.0 G 22 09 11.5 A 22 09 17.3 G 22 10 09.0 G 22 10 09.5 G 22 24.3 G 22 24.4 00 47			
98	Nov. 25	Iu	iE iN eLN eLE F	G 15 40 54.0 G 15 40 56.5 G 15 50.1 G 15 50.3 16 22			
99	Nov. 25	IIIu	iPE ePNZ iPNZ eN eE eN eE ePR1E ePR2E eSE eSN eLN eLZ eLE eMN eMZ eME F	G 18 15 45.5 AH 18 15 50.5 G 18 15 51.5 A 18 16 36.0 A 18 16 53.0 A 18 18 27.5 A 18 18 29.0 A 18 19 00.5 A 18 20 29.5 A 18 26 00.5 A 18 26 17.5 A 18 40 18.5 H 18 40 48.5 A 18 41 00.5 A 18 47 03.5 H 18 47 08.5 A 18 47 33.5 23 22	USCGS: - 36.5°N 19.5°W		
100	Nov. 26	I	eLZ F	G 08 38.4 09 02			
101	Nov. 27	Iu	eZ eN iZ iN iE eE iPSZ iE eNZ F	H 08 55 25.4 A 08 55 28.5 G 08 56 30.0 G 09 02 45.0 G 09 02 45.5 G 09 05 25.0 G 09 05 30.5 G 09 10.0 G 09 11.5 10 12	Wellington roughly 8°S 123°E		

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
102	Nov. 27	I	iz eN iz F	H 13 55 56.5 A 13 56 09.6 H 13 56 10.1 13 57			
103	Dec. 1	Iu	eN ez eE F	G 20 48.3 G 20 49.0 G 20 50.5 21 47	Surface waves Pas.: 54°S 56°W		
104	Dec. 2	I	eN ez eE F	G 13 51.5 G 13 58.4 G 13 58.7 14 12	Surface waves		
105	Dec. 3	I	eNZ eE F	G 09 42.0 G 09 42.8 09 47	Surface waves		
106	Dec. 5	I	ez eN F	H 17 27 19.6 A 17 27 20.3 17 29			
107	Dec. 6	IIIu	iPz iPNEZ iN eSN eE eLN eLE eLz F	H 20 55 22.2 AHG 20 55 30.1 G 20 55 23.5 A 21 02 17.7 A 21 02 43.2 A 21 07.8 A 21 08.2 H 21 10.2 01 07	Damage in Costa Rica and Panama USCGS: -8°N 83°W		
108	Dec. 5	Iu	eN ez F	A 21 42 32.7 H 21 42 33.9 21 45 ca	Aftershock of Costa Rica quake		
109	Dec. 6	Iu	iPz eN iE eLE eLN eLz F	HG 01 33 03.5 A 01 33 10.3 G 01 39 50.0 G 01 45.0 G 01 45.5 G 01 49.4 02 42	Aftershock of Costa Rica quake		
110	Dec. 6	Iu	iPz eN F	H 03 04 09.7 A 03 04 14.8 03 06	Aftershock of Costa Rica quake		



BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
111	Dec. 6-7	IIu	iP <sub>NZ</sub>	HG 21 33 00.1	Aftershock of Costa Rica quake USCGS: - 8°N 83°W
			iP <sub>Z</sub>	G 21 33 02.5	
			iz	H 21 33 03.4	
			iP <sub>E</sub>	G 22 33 04.0	
			eE	A 21 33 04.7	
			eN	A 21 33 11.7	
			iS <sub>Z</sub>	G 21 39 46.0	
			iS <sub>N</sub>	G 21 39 47.0	
			iS <sub>E</sub>	G 21 39 49.0	
			eN	A 21 39 51.4	
			eE	A 21 39 54.2	
			eL <sub>NE</sub>	G 21 46.0	
			eL <sub>Z</sub>	G 21 48.7	
			eL <sub>NE</sub>	G 21 49.0	
			F	01 02	
112	Dec. 7	Iu	iP <sub>Z</sub>	H 00 03 01.6	Aftershock of Preceding
			eE	A 00 03 01.9	
			eN	A 00 03 02.8	
			F	00 04	
113	Dec. 7	Iv	iz	H 00 33 38.8	
			F	00 35	
114	Dec. 7	I	iz	H 04 31 28.2	
			F	04 33	
115	Dec. 7	Iv	iz	H 07 36 37.1	Felt in Hoopa
			iz	H 07 37 11.1	
			F	07 39	
116	Dec. 7	I	iz	H 11 50 21.5	
			eN	A 11 50 22.0	
			F	11 52	
117	Dec. 8	Iv	iz	H 00 30 15.7	Monterey County
			iz	H 00 30 21.3	
			eN	A 00 30 26.5	
			eE	A 00 30 28.0	
			iz	H 00 30 41.8	
			F	00 32	
118	Dec. 8	Iu	iz	H 07 49 38.2	Aftershock of Costa Rica quake
			eN	A 07 49 38.8	
			iP <sub>Z</sub>	G 07 49 39.5	
			eL <sub>N</sub>	G 08 02.0	
			eL <sub>E</sub>	G 08 05.5	
			eL <sub>Z</sub>	G 08 05.0	
			F	08 42	

## BERKELEY

No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
119	Dec. 8	I	iz	H 11 44 30.6	
			iz	H 11 44 41.1	
			F	11 46	
120	Dec. 9	Iu	eLE	G 19 46.5	
			eLN	G 19 47.0	
			eLZ	G 19 47.3	
			F	20 07	
121	Dec. 12	I	iz	H 01 15 05.0	
			eN	A 01 15 05.5	
			F	01 16	
122	Dec. 14	I	iz	H 21 03 21.1	
			eN	A 21 03 33.2	
			F	21 04	
123	Dec. 14	I	iz	H 21 21 38.2	
			F	21 22	
124	Dec. 16	Id	iPZ	H 19 48 50.0	See list, page 188
			F	19 50	
125	Dec. 16	Iu	iz	G 19 43 38.5	Damage in Southern Formosa JSA: 22.5°N 121°E
			eLZ	G 20 04.7	
			F	21 12	
126	Dec. 18	Iv	e $\bar{P}$ NZ	AH 07 35 12.5	See list, page 188
			iz	H 07 35 15.5	
			iNZ	AH 07 35 24.7	
			F	07 37	
127	Dec. 19	Id	iz	H 00 23 40.4	
			eNE	A 00 23 40.5	
			iNE	A 00 23 41.9	
			iz	H 00 23 42.4	
			F	00 24	
128	Dec. 20	Id	iNEZ	AH 00 10 23.5	
			iN	A 00 10 24.8	
			iE	A 00 10 25.1	
			F	00 11	
129	Dec. 21	Id	iNEZ	AH 23 40 18.0	
			iE	A 23 40 18.4	
			iz	H 23 40 19.6	
			F	23 41	
130	Dec. 22	I	ez	H 00 54 45.0	
			eN	A 00 54 55	
			F	00 57	



BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
131	Dec. 22	Id	iEZ eN iEZ F	AH 23 53 01.1 A 23 53 01.5 AH 23 53 03.1 23 54	
132	Dec. 23	Id	iZ iN iZ F	H 23 19 10.2 A 23 19 10.9 H 23 19 12.1 23 20	Blast?
133	Dec. 24	I	ePZ F	H 03 38 12.8 03 40	
134	Dec. 24	I	eNE ez F	G 03 42.4 G 03 45.1 03 54	Surface waves?
135	Dec. 24	I	iPZ ePE iNZ eLNE eLZ F	G 12 06 05.0 A 12 06 11.0 AH 12 06 12.0 G 12 09.3 G 12 11.6 12 22	
136	Dec. 24	Id	iPZ eN iSNEZ F	H 22 00 52.6 A 22 00 52.8 AH 22 00 54.3 22 02	
137	Dec. 25	Iv	ePZ iZ iSZ eSNE F	H 03 24 41.4 H 03 24 42.1 H 03 24 54.9 A 03 24 55.2 03 26	
138	Dec. 25	Id	iPZ iSZ F	H 22 01 09.2 H 22 01 10.2 22 02	
139	Dec. 26	Iu	iN iZ iE iE iN eN eE F	G 15 16 22.0 G 15 16 24.0 G 15 16 28.5 G 15 22 26.5 G 15 22 41.0 G 15 35.2 G 15 26.2 17 12	
140	Dec. 27	Iu	iPZ F	H 18 29 51.0 18 31	Felt at Lisbon Pas.: 36°N 10 1/2°W



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
141	Dec. 27	Id	iZ iN iE iZ F	H 22 03 12.3 A 22 03 13.0 A 22 03 13.7 H 22 03 14.2 22 04	
142	Dec. 27	Id	iZ F	H 22 39 55.0	Lost in next shock
143	Dec. 27	Id	iZ F	H 22 40 30.0 22 41	
144	Dec. 29	I	ez F	G 06 01.7 06 12	Surface waves
145	Dec. 29	Id	iPZ iSZ F	H 19 14 20.6 H 19 14 22.1 19 15	
146	Dec. 29	Id	iPZ iSZ F	H 22 07 30.7 H 22 07 32.3 22 08	
147	Dec. 29	Id	iPZ iSZ F	H 23 38 21.8 H 23 38 24.3 23 39	
148	Dec. 30	Id	iPZ iSZ F	H 00 36 41.3 H 00 36 42.6 00 37	
149	Dec. 30	Id	iPZ iSZ F	H 18 47 25.3 H 18 47 26.8 18 48	
150	Dec. 31	IIv	iPZ iPEZ iE iN iZ iN iNE iSE iSN iSZ iN iE iE F	H 06 49 32.2 HG 06 49 33.4 A 06 49 33.8 A 06 49 34.2 G 06 49 35.0 G 06 49 36.5 A 06 49 40.1 G 06 49 56.0 G 06 49 57.0 G 06 49 57.5 A 06 50 09.0 A 06 50 09.3 A 06 50 11.7 07 00	Owens Valley, Felt in Sierra Nevada and San Joaquin Valley 37°34'N 118°44'W



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
151	Dec. 31	Iv	iz eN iz F	H 08 09 02.8 A 08 09 38.5 A 08 09 41.0 08 11	Owens Valley aftershock
152	Dec. 31	Iv	iz eN iz F	H 11 03 20.2 A 11 03 49.0 H 11 03 49.8 11 05	Owens Valley aftershock
153	Dec. 31	Iv	iz eN F	H 11 15 44.9 A 11 16 21.9 11 17	Owens Valley aftershock
154	Dec. 31	Iv	iz eN iz F	H 12 21 03.4 A 12 21 38.5 H 12 21 40.4 12 23	Owens Valley aftershock
155	Dec. 31	Iu	iPz iNZ F	G 17 34 23.0 AH 17 34 26.6 17 36	Wellington 21°S 178°W
156	Dec. 31	Iu	iPz iPz eN iN eE iSE iSNZ F	G 17 45 21.5 H 17 45 42.6 A 17 45 43.1 G 17 45 50.0 A 17 45 57.6 G 17 53 24 G 17 53 32 18 32	Pas. Roughly 3°S 80°W
157	Dec. 31	Iv	iPz eE iN iN iSE iSZ iN F	H 18 06 31.4 A 18 06 32.2 A 18 06 41.7 A 18 06 53.3 A 18 07 09.0 H 18 07 09.7 A 18 07 19.2 18 04	Owens Valley aftershock
158	Dec. 31	I	eE eN ez F	G 19 38.5 G 19 40.3 G 19 40.5 20 02	Surface waves
159	Dec. 31	Id	eNZ eE iN iE iz F	AH 23 31 32.1 A 23 31 32.5 A 23 31 33.1 A 23 31 33.6 H 23 31 33.8 23 32	



CONSTANTS

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Latitude and longitude:

$$\begin{aligned} \phi &= 37^{\circ} 20' 4'' \text{ N.} \\ \lambda &= 121^{\circ} 38' 6'' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 1281.7 meters (4205 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	$T_0$	$\epsilon$
Wood-Anderson .....	E	3000	1	15
	N	3000	1	15



MOUNT HAMILTON

No.	Date	Character	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
1	Oct. 2	IIId	eP <sup>NE</sup> iS <sup>N</sup> iS <sup>E</sup> F	07 15 40.6 07 15 44.4 07 15 44.9 07 17	
2	Oct. 2	Id	eP <sup>NE</sup> iS <sup>NE</sup> F	11 39 09.6 11 39 13.1 11 40	
3	Oct. 3	Id	e <sup>N</sup> iS <sup>E</sup> iS <sup>N</sup> F	06 42 30.2 06 42 31.7 06 42 32.1 06 43	
4	Oct. 3	IIv	eP <sup>N</sup> eP <sup>E</sup> iS <sup>E</sup> iS <sup>N</sup> iL <sup>N</sup> iL <sup>E</sup> F	16 14 11.1 16 14 11.6 16 15 02.1 16 15 02.6 16 15 49 16 16 01 16 40	See list, page 188
5	Oct. 4	Id	iP <sup>NE</sup> iS <sup>NE</sup> i <sup>N</sup> F	01 24 18.1 01 24 24.0 01 24 27 01 26	See list, page 188
6	Oct. 4	Id	eP <sup>NE</sup> iS <sup>NE</sup> F	06 26 03.2 06 26 05 06 27	
7	Oct. 4	Id	eP <sup>NE</sup> iS <sup>NE</sup> F	06 32 42 06 32 50.5 06 34	
8	Oct. 5	Id	eP <sup>NE</sup> iS <sup>NE</sup> F	07 44 49 07 44 51.4 07 46	
9	Oct. 5	IIId	iP <sup>NE</sup> iS <sup>NE</sup> F	10 11 45.0 10 11 46.6 10 13	
10	Oct. 6	I	eP <sup>NE</sup> e <sup>N</sup> e <sup>E</sup> e F	07 00 01 07 01 15.7 07 00 52.7 07 01 47.3 07 20	See list, page 188 Pasadena aftershock of Oct. 3, 16 hr.
11	Oct. 6	Id	eP <sup>NE</sup> iS <sup>NE</sup> F	11 33 17.9 11 33 19.3 11 34	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
12	Oct. 6	Id	ePN ePE iSN F	12	01	38.5 39.6 43.5 03	
13	Oct. 6	Id	ePNE iSNE F	12	33	15.1 17.2 34	
14	Oct. 6	Id	ePN ePE iSNE F	12	51	26.1 22.7 30.2 52	
15	Oct. 7	I	eN eN F	20	17	09 33 19	
16	Oct. 8	Id	ePN iSNE F	04	20	59.2 02.2 22	
17	Oct. 9	Id	iPNE iSNE iN F	09	03	33.0 35.1 36.6 05	
18	Oct. 9	Id	iPNE eSNE F	14	21	57.3 02.5 23	
19	Oct. 9	I	iN iE F	20	34	46.4 47.1 36	
20	Oct. 10	Id	ePN iSN F	19	06	54.0 56 08	
21	Oct. 10	I	iPNE iSN F	11	26	21.7 23.7 28	
22	Oct. 10	Iv	iPNE iSN iSE F	17	24	45.9 55.1 53.7 26	Near Hollister
23	Oct. 11	Id	iPNE iSNE F	22	22	36.3 38.4 24	



## MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
24	Oct. 11	Id	e $\bar{P}$ <sub>N</sub> iS <sub>NE</sub> F	23	21	12.9 19.3 22	
25	Oct. 13	Iv	eP <sub>N</sub> iS <sub>NE</sub> F	03	51	56.8 04.5 53	
26	Oct. 13	Id	eP <sub>N</sub> iS <sub>NE</sub> F	07	26	03.0 04.5 27	
27	Oct. 13	Id	eP <sub>N</sub> iS <sub>NE</sub> F	19	38	54.6 59.5 40	
28	Oct. 13	Id	eP <sub>N</sub> iS <sub>NE</sub> F	21	41	52.7 55.6 43	
29	Oct. 14	Id	eP <sub>NE</sub> iS <sub>NE</sub> F	09	59	07 11.6 00	
30	Oct. 14	Id	iP <sub>NE</sub> iS <sub>NE</sub> F	15	02	54.2 55.6 04	
31	Oct. 14	Id	eP <sub>NE</sub> eS <sub>NE</sub> F	15	14	48.8 50.5 16	
32	Oct. 14	Iv	eP <sub>N</sub> eF <sub>E</sub> eNE F	16	11	07.5 14.5 35 13	Foreshock
33	Oct. 14	Id	eP <sub>NE</sub> iN iS <sub>NE</sub> F	16	32	49.5 52.3 19.4 36	See list, page 188
34	Oct. 15	I	eP <sub>E</sub> eP <sub>N</sub> F	01	36	50.6 53.6 39	
35	Oct. 15	I	eF <sub>E</sub> eP <sub>N</sub> F	04	50	50 50.6 52	

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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
36	Oct. 18	Iv	eP <sub>NE</sub> i <sub>NE</sub> F	10	38	43.5 12.2 41.	Felt in Owens Valley
37	Oct. 18	I	eP <sub>NE</sub> F	13	00	23.5 02	
38	Oct. 19	Id	iP <sub>N</sub> iS <sub>NE</sub> F	06	26	51.3 55.0 28	
39	Oct. 19	Iv	eP <sub>N</sub> eS <sub>N</sub> iS <sub>E</sub> F	19	12	38.5 06.3 06.4 15	
40	Oct. 21	I	eP <sub>NE</sub> F	22	39	19.5 41	Felt at Big Bend
41	Oct. 22	Iv	iP <sub>NE</sub> iS <sub>NE</sub> i <sub>N</sub> F	06	58	29.5 55.5 85 07 07	
42	Oct. 22	Id	iP <sub>NE</sub> iS <sub>NE</sub> F	23	36	07.2 10.5 37	
43	Oct. 23	Iv	iP <sub>E</sub> iP <sub>N</sub> F	20	45	13.1 14.0 43	Felt in Owens Valley
44	Oct. 24	Iv	eP <sub>NE</sub> i <sub>E</sub> F	17	49	41.5 13.8 51	Pasadena epicenter in Owens Valley
45	Oct. 25	I	eP <sub>N</sub> eP <sub>E</sub> i <sub>N</sub> F	07	08	17.3 21.3 44.1 01	Felt in Willows
46	Oct. 25	Id	iP <sub>NE</sub> iS <sub>NE</sub> F	09	56	14.0 16.4 57	
47	Oct. 26	Id	iP <sub>NE</sub> iS <sub>NE</sub> F	14	19	38.8 42.8 21	See list, page 188



MT. HAMILTON



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
48	Oct. 27	I	ePN iN iN F	00	43	05.9 34.0 32.9	
49	Oct. 27	Id	ePN iSE iSN F	05	58	46.7 50.7 51.2	
50	Oct. 27	Id	ePN iSN F	05	18	34.8 42.8	
51	Oct. 27	Iv	iPNE eLE eLN F	12	14	17.8 16.5 17.0	
52	Oct. 28	Iv	ePNE eLNE F	10	34	54.5 38.0	
53	Oct. 28	Id	iPNE iNE F	19	52	09.3 10.4	
54	Oct. 31	Ir	iPNE eLNE	12	42	59.8 46.0	USCGS: 43.9°N 128.1°W
55	Oct. 31	Id	ePN eSNE F	11	20	47.5 50.3	
56	Oct. 31	Id	iPE iPN iSNE F	11	38	10.8 11.3 14.8	
57	Nov. 3	I	ePN ePE F	01	39	26.5 27	
58	Nov. 4	Iv	iPN eN F	02	10	10.5 32.5	Pasadena Epicenter 37°34'N 118°44'W
59	Nov. 4	Id	ePN eSN F	04	44	05.9 07.4	



## MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
60	Nov. 4	Iu	ePN F	02	37	45 41	Pas. Wellington 18 1/2°S, 177 1/2°W
61	Nov. 4	I	ePN iPN F	23	12	48 53.1 14	See list, page 188
62	Nov. 4	I	ePN iPN F	23	12	48 53.1 14	See list, page 188
63	Nov. 5	I	iPN iSN F	11	25	54.1 55.5 27	
64	Nov. 6	Iv	iPN iSN F	11	59	32.4 44.7 03	See list, page 188
65	Nov. 10	I	iPN F	00	56	38.8 00	Fas. Roughly 23°S 67°W
66	Nov. 12	Iv	iPN iSN F	12	34	30.1 41.6 36	See list, page 188
67	Nov. 13	I	ePN F	04	54	34.5 57	
68	Nov. 14	IIv	ePN F	08	42	47.0 00	Considerable damage near L.A. Pas. 33°47'N 118°15W
69	Nov. 15	Iv	iPN F	04	38	51.3 40	USCGS: -59 1/2°S 27 1/2°W
70	Nov. 15	Iv	ePN iSN F	16	43	47.6 16.4 47	Owens Valley
71	Nov. 16	Iv	ePN iSN F	04	44	38.1 07.1 47	
72	Nov. 17	Id	ePN iSN F	11	14	09 17.5 15	See list, page 188
73	Nov. 18	IIId	iPN iSN F	05	57	34.3 38 00	See list, page 188

## MT. HAMILTON

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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
74	Nov. 18	Iv	ePN eSN eLN F	16 58 54.7 17 09 13.7 17 21.0 17 45		32°N 132°E	
75	Nov. 19	I	eN F	03 39 17.7 03 43			
76	Nov. 19	Id	ePN eSN F	09 44 11 09 44 15 09 45			
77	Nov. 20	Id	iPN iSN F	03 20 45.4 03 20 56.9 03 23		See list, page 188	
78	Nov. 20	Id	iPN iSN F	11 41 55 11 42 04 11 44		See list, page 188	
79	Nov. 21	I	ePN iSN F	13 07 48 13 07 55.0 13 10		See list, page 188	
80	Nov. 26	Iv	ePE iSE F	02 42 41.0 02 42 52.2 02 44			
81	Nov. 26	Iv	iPE iSE F	02 58 57.6 02 59 09.1 03 01		See list, page 188	
82	Nov. 27	Id	ePE iSE F	15 20 14.2 15 20 21.7 15 22			
83	Dec. 5	Id	ePN iSNE F	00 41 25.7 00 41 27.7 00 43			
84	Dec. 5	Ir	iPNE eSNE eLNE F	20 55 17.6 21 02 6.7 21 08.0 22 40		USCGS 8°N 83°W JSA 9°N 83.2°W	
85	Dec. 6	Ir	ePE ePN eSE eSN eN eE F	21 32 57.9 21 33 00.1 21 39 38.9 21 40 11.9 21 48 21 51 22 10		Aftershock of preceding	



No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
86	Dec. 8	Iv	iP <sub>N</sub> iP <sub>E</sub> iS <sub>NE</sub> F	00	30	08.1 08.6 24.1	Monterey County
87	Dec. 10	Iv	eP <sub>N</sub> iS <sub>NE</sub> F	11	32	28.5 44	
88	Dec. 16	IIId	iP <sub>NE</sub> iS <sub>NE</sub> F	19	48	38.1 44.3	See list, page 188
89	Dec. 18	IIId	iP <sub>NE</sub> iS <sub>NE</sub> F	07	35	03.9 07.0	See list, page 188
90	Dec. 22	I	eP <sub>N</sub> eP <sub>E</sub> F	00	54	39.4 41.6	
91	Dec. 25	Ir	iP <sub>NE</sub> iS <sub>NE</sub> F	03	24	37.2 46.9	See list, page 188
92	Dec. 30	Id	eP <sub>NE</sub> iS <sub>N</sub> iS <sub>E</sub> F	15	20	20.7 21.7 22.5	
93	Dec. 31	IIIv	iP <sub>E</sub> iP <sub>N</sub> F	06	49	26.5 26.5	Pas. 37°34'N 118°44'W
94	Dec. 31	Iv	eP <sub>N</sub> iE iS <sub>N</sub> eE F	08	08	57.8 58.3 28.5 28.8	Aftershock of preceding
95	Dec. 31	Iv	eP <sub>N</sub> eE iS <sub>N</sub> iE F	11	03	06.0 07.5 35.5 36	Aftershock
96	Dec. 31	Iv	iP <sub>NE</sub> eE iS <sub>N</sub> F	11	15	34.5 08.1 08.7	Aftershock
				11	18		

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No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
97	Dec. 31	Iv	iP <sub>N</sub>	12 20 56.5	Aftershock
			iS <sub>N</sub>	12 21 26.5	
			eE	12 21 27	
			F	12 23	
98	Dec. 31	I	i <sub>N</sub>	17 34 27.2	Wellington 21°S 178°W
			i <sub>E</sub>	17 34 26.7	
			F	17 36	
99	Dec. 31	IIv	i <sub>E</sub>	18 06 25.4	Aftershock of 06 <sup>h</sup> 49 <sup>m</sup>
			iP <sub>N</sub>	18 06 25.8	
			i <sub>E</sub>	18 06 54.8	
			iS <sub>N</sub>	18 06 55.3	
			F	18 11	
100	Dec. 31	Iv	eP <sub>N</sub>	20 31 51.3	Aftershock of 06 <sup>h</sup> 49 <sup>m</sup>
			eS <sub>N</sub>	20 32 09.3	
			eE	20 32 09.8	
			F	20 33	

PALO ALTO

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PALO ALTO, CALIFORNIA



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Latitude and longitude:

$\phi = 37^{\circ} 25.1 \text{ N.}$   
 $\lambda = 122^{\circ} 10.8 \text{ W.}$

Time -- All determinations are reduced to Universal Time.

Altitude -- 83 meters (272 feet) above mean sea level.

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Apparatus	Component	V	T <sub>0</sub>	$\epsilon$
Wood-Anderson .....	E	3000	1	15
	N	3000	1	15

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	Oct. 3	IIv	iP <sub>E</sub> iP <sub>N</sub> eS <sub>E</sub>	16	14	07.5 08.6 48.5	See list, page 188
2	Oct. 4	I	iP̄ <sub>E</sub> iP <sub>N</sub> F	01	24	19.8 20.9 25.4	See list, page 188
3	Oct. 6	Id	eP <sub>E</sub> eS <sub>E</sub> eS <sub>N</sub> F	00	05	23 26.5 .4 06	
4	Oct. 6	IIv	iP <sub>NE</sub> iS <sub>N</sub> iS <sub>E</sub> F	06	59	56.2 40.6 42.1 12	Aftershock of Oct. 3, 16 <sup>h</sup> See list, page 188
5	Oct. 10	I	eP <sub>NE</sub> eS <sub>NE</sub> F	16	44	42.9 43.9 45.3	Blast?
6	Oct. 10	Id	eP <sub>E</sub> eS <sub>N</sub> eS <sub>E</sub> F	17	24	51.2 59.3 00.4 26	Near Hollister
7	Oct. 11	IIId	iP̄ <sub>NE</sub> iS <sub>NE</sub> F	23	21	07.3 10.8 22	
8	Oct. 14	Iv	eP <sub>E</sub> eP <sub>N</sub> iS <sub>N</sub> iS <sub>E</sub> F	16	32	52.4 53 25.3 25.6 36	See list, page 188
9	Oct. 19	I	eP <sub>E</sub> eP <sub>N</sub> eS <sub>NE</sub> F	19	12	40 41 03 14	
10	Oct. 22	Iv	eP <sub>N</sub> eP <sub>E</sub> eS <sub>E</sub> iS <sub>N</sub> F	06	58	29.4 31.9 28.0 30.9 06	Pasadena: Normal Felt throughout L.A. area. Minor damage near the epicenter 33°49'N 118°13'W

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No.	Date	Char-acter	Phase	Time (U.F.)			Remarks
				h.	m.	s.	
	1941						
11	Oct. 23	Id	eP <sub>NE</sub> iS <sub>E</sub> eS <sub>N</sub> F	18	40	38.9 40.1 40.6 41	
12	Oct. 24	Iv	eP <sub>N</sub> eP <sub>E</sub> eS <sub>E</sub> eS <sub>N</sub> F	17	49	46 47.6 15.6 16.2 52	Pasadena epicenter in Owens Valley
13	Oct. 24	I	eP <sub>E</sub> eS <sub>E</sub> F	23	42	50.8 13.3 44	
14	Oct. 25	Iv	eP <sub>E</sub> iP <sub>E</sub> eS <sub>E</sub> F	07	08	06.0 09.0 39.7 11	Felt in Willows
15	Oct. 25	I	e <sub>E</sub> e <sub>N</sub> F	20	12	17.5 18.0 13	
16	Oct. 25	IIId	eP <sub>NE</sub> eS <sub>NE</sub> F	21	07	59.0 00.2 09	
17	Oct. 26	Id	eP <sub>E</sub> F	14	19	46 21	See list, page 188
18	Oct. 27	Id	eP <sub>NE</sub> eS <sub>NE</sub> F	05	58	46.7 51.6 00	See list, page 188
19	Oct. 29	I	eP <sub>NE</sub> eS <sub>NE</sub> F	00	17	01.6 03.7 18	
20	Oct. 30	Id	eP <sub>NE</sub> eS <sub>NE</sub> F	00	11	15.7 18.9 12.1	
21	Oct. 31	I	iP <sub>E</sub> eP <sub>N</sub> eL <sub>NE</sub> F	12	42	53.9 56.5 45.3 57	Pas: Felt at Portland, Oregon USCGS:- 43.9°N 128.1°W
22	Nov. 3	Iv	eP <sub>NE</sub> eS <sub>E</sub> eS <sub>N</sub> F	20	25	40 03.4 06.4 28	



No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
23	Nov. 4	Iv	iP <sub>N</sub> iP <sub>E</sub> iS <sub>NE</sub> F	02	10	15.8 16.3 49.4 13	
24	Nov. 4	Iu	iP <sub>E</sub> iP <sub>N</sub> iPP <sub>N</sub> iPP <sub>E</sub> eS <sub>E</sub> eS <sub>N</sub> F	02	37	43.0 44.0 43.6 44.0 16.5 44.4 20	Pas:- Deep - 550-600 km Wellington: 18.5°S 177.5°W
25	Nov. 4	IIId	iP <sub>N</sub> iP <sub>E</sub> eS <sub>N</sub> iS <sub>E</sub> F	23	12	41.7 42.2 44.8 45.4 14	See list, page 188
26	Nov. 6	Iv	eP <sub>NE</sub> iS <sub>NE</sub> F	00	20	27.2 30.4 21.2	
27	Nov. 6	Iv	eP <sub>E</sub> eP <sub>N</sub> eS <sub>NE</sub> F	10	33	11.4 12.9 57.6 31	Felt in Ferndale
28	Nov. 6	Iv	iP <sub>NE</sub> iS <sub>N</sub> iS <sub>E</sub> F	11	59	37.4 53.8 54.8 01.2	See list, page 188
29	Nov. 6	Ir	iP <sub>E</sub> eP <sub>N</sub> iS <sub>E</sub> e <sub>N</sub> iL <sub>E</sub> eL <sub>N</sub> F	12	36	15.2 16 41 26.0 41 33 44.7 45.4 49	USCGS: 54°N 163°W
30	Nov. 8	Iu	ePP <sub>NE</sub> eS <sub>E</sub> iPS <sub>E</sub> eL <sub>E</sub> F	23	56	14.8 24 02 33.0 24 05 41.5 24 27.9 24 44	JSA: 7°N 125°E
31	Nov. 10	Iu	iP <sub>E</sub> eP <sub>N</sub> F	09	56	39.8 41.1 59.2	Pas: 23°S 67°W

No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
32	Nov. 11	I	eE	23 45 27.6	
			eE	23 45 30.8	
			F	23 46.2	
33	Nov. 12	Iv	ePN	12 34 35.0	See list, page 188
			iPE	12 34 35.0	
			eSE	12 34 49.6	
			eSN	12 34 51.2	
			F	12 36	
34	Nov. 14	IIv	ePN	08 42 50.9	Pas: 33°47'N 118°15'W Much damage near the epicenter
			ePE	08 42 51.5	
			iN	08 43 04.8	
			iN	08 43 15.9	
			iE	08 43 30.8	
			iN	08 43 41.8	
			iSN	08 44 25.3	
			iSE	08 44 26.8	
			F	08 59	
35	Nov. 15	Iv	eP <sup>NE</sup>	16 43 54.0	Owens Valley
			eSE	16 42 26.5	
			iSN	16 44 27.4	
			F	16 46.3	
36	Nov. 17	Iv	ePE	11 14 14.6	See list, page 188
			ePN	11 14 15.1	
			eS <sup>NE</sup>	11 14 29.6	
			F	11 15.3	
37	Nov. 18	Iu	ePE	16 58 54.8	Pasadena Normal: Destructive in Japan. Approx. 32°N 132°E
			ePN	16 58 56.0	
			eSE	17 09 01.3	
			eSN	17 09 05.3	
			eL <sup>NE</sup>	17 21	
F	18 00				
38	Nov. 19	I	eN	02 20 00.7	
			F	02 22	
39	Nov. 19	Iv	ePE	03 39 04.5	See list, page 188
			ePE	03 39 17	
			eFN	03 39 17.9	
			eE	03 39 47	
			eE	03 40 10.7	
			F	03 42.4	
40	Nov. 19	Id	iPN	05 57 40.5	See list, page 188
			iPE	05 57 41.9	
			iSN	05 57 51.0	
			iSE	05 57 52	
			F	05 59	



PALO ALTO					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
41	Nov. 20	Iv	i $\overline{P}$ <sub>NE</sub> i $\overline{S}$ <sub>E</sub> F	03 20 53.2 03 21 05.7 03 22.1	See list, page 188
42	Nov. 20	Iv	i $\overline{P}$ <sub>E</sub> e $\overline{P}$ <sub>N</sub> i $\overline{S}$ <sub>N</sub> F	11 42 04.2 11 42 05.0 11 42 16.7 11 43	See list, page 188
43	Nov. 20	Id	i $\overline{P}$ <sub>NE</sub> e $\overline{S}$ <sub>N</sub> i $\overline{S}$ <sub>E</sub> F	22 31 20.0 22 31 21.3 22 31 22.7 22 32	
44	Nov. 21	Id	i $\overline{P}$ <sub>E</sub> i $\overline{S}$ <sub>NE</sub> F	13 07 43.6 13 07 49.0 13 09	See list, page 188
45	Nov. 21	Iv	e $\overline{E}$ e $\overline{N}$ e $\overline{E}$ e $\overline{E}$ e $\overline{N}$ e $\overline{E}$ F	16 57 02 16 57 14.6 16 57 15.7 16 57 53.6 16 58 04.6 16 58 07.5 17 00	Felt in Santa Barbara
46	Nov. 21	Id	i $\overline{P}$ <sub>E</sub> i $\overline{N}$ e $\overline{N}$ i $\overline{S}$ <sub>NE</sub> F	23 25 18.8 23 25 21.4 23 25 21.6 23 25 26.4 23 26	
47	Nov. 26	I	e $\overline{E}$ F	18 11 48.9 18 12.5	
48	Nov. 22	I	e $\overline{P}$ <sub>E</sub> F	01 53 05.5 01 54	
49	Nov. 22	I	e $\overline{P}$ <sub>E</sub> F	01 54 00.7 01 55	
50	Nov. 23	IIId	i $\overline{P}$ <sub>NE</sub> i $\overline{S}$ <sub>NE</sub> F	22 32 49.1 22 32 52.5 22 33.6	
51	Nov. 24	Iv	i $\overline{P}$ <sub>E</sub> e $\overline{P}$ <sub>N</sub> i $\overline{E}$ e $\overline{N}$ e $\overline{E}$ e $\overline{N}$ F	10 51 53.1 10 51 54.3 10 52 01.8 10 52 02.8 10 52 41.0 10 52 41.3 10 55	See list, page 188



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
52	Nov. 24	IIId	iP <sub>NE</sub> iS <sub>N</sub> iS <sub>E</sub> F	20	19	40.1 41.5 42.1 20	
53	Nov. 24	Iu	iP <sub>NE</sub> eS <sub>E</sub> eS <sub>N</sub> eL <sub>NE</sub> F	21	58	50.3 09.4 12.0 25.2 47	USCGS: 28.5°S 178°W
54	Nov. 25	IIu	eP <sub>N</sub> eP <sub>E</sub> eS <sub>N</sub> eS <sub>E</sub> eL <sub>E</sub> eL <sub>N</sub> F	18	15	52.8 53.1 47.8 53.0 43.1 44.2 09	
55	Nov. 25	Id	iP <sub>E</sub> iS <sub>N</sub> iS <sub>E</sub> F	19	59	46.4 49.1 49.6 00	
56	Nov. 26	Iv	iP <sub>N</sub> iP <sub>E</sub> iS <sub>E</sub> iS <sub>N</sub> F	02	59	02.6 03.1 17.6 17.8 01	See list, page 188
57	Nov. 26	Iu	e <sub>N</sub> e <sub>E</sub> F	08	39	42.5 51.5 46	
58	Nov. 27	Iu	eP <sub>NE</sub> e <sub>N</sub> eP <sub>PE</sub> eP <sub>FN</sub> F	08	55	25.6 28.5 35.0 40.3 58	
59	Nov. 27	Iv	eP <sub>NE</sub> iS <sub>NE</sub> F	15	20	15.7 30.6 22	
60	Nov. 29	Id	iP <sub>E</sub> eP <sub>N</sub> iS <sub>NE</sub> F	00	24	32.0 32.9 35.6 25	

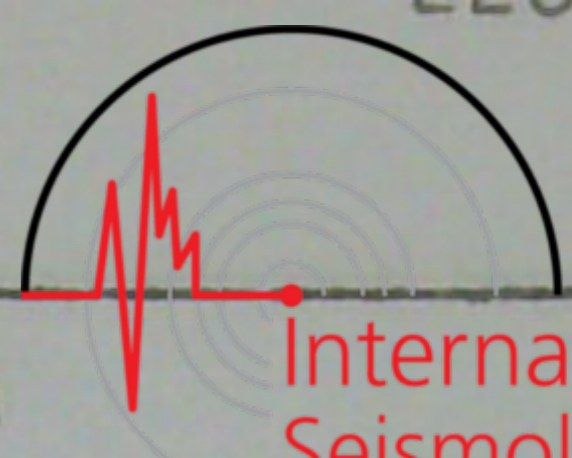
## PALO ALTO



No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
61	Dec. 6	Id	iP <sub>E</sub> iS <sub>N</sub> iS <sub>E</sub> F	20	59	13.6 16.8 17.1 00	
62	Dec. 6	Iu	e <sub>E</sub> e <sub>N</sub> e <sub>E</sub> e <sub>N</sub> eL <sub>N</sub> F	21	32	56.6 03.1 46.6 48.1 50.7 19	Aftershock of Costa Rica quake
63	Dec. 8	Iv	eP <sub>E</sub> e <sub>N</sub> i <sub>E</sub> i <sub>N</sub> i <sub>E</sub> i <sub>N</sub> i <sub>E</sub> F	00	30	10.3 12.3 13.0 19.9 29.0 32.7 33.4 32	Monterey County
64	Dec. 9	Id	iP <sub>E</sub> iS <sub>NE</sub> i <sub>E</sub> F	23	54	21.7 24.7 27.6 55	
65	Dec. 13	Iv	eP <sub>E</sub> iS <sub>E</sub> eS <sub>N</sub> F	07	48	48.4 04.8 06.6 50	
66	Dec. 18	IIv	e <sub>P</sub> <sub>N</sub> e <sub>E</sub> i <sub>P</sub> <sub>N</sub> i <sub>N</sub> iS <sub>E</sub> iS <sub>N</sub> i <sub>E</sub> F	07	35	09.9 10.9 11.2 11.9 18.6 18.8 20.9 37	See list, page 188
67	Dec. 19	Id	eP <sub>NE</sub> iS <sub>NE</sub> F	19	02	00.4 03.4 03	
68	Dec. 22	Iv	eP <sub>E</sub> eP <sub>N</sub> eS <sub>N</sub> iS <sub>E</sub> F	00	54	44.2 45.0 12.8 14.6 57	

## PALO ALTO

No.	Date	Char- acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
69	Dec. 25	Id	iP <sub>E</sub> iS <sub>NE</sub> F	03 24 34.2 03 24 41.6 03 26	See list, page 188
70	Dec. 31	IIv	eP <sub>E</sub> iP <sub>NE</sub> e <sub>NE</sub> e <sub>NE</sub> F	06 49 31.9 06 49 32.8 06 50 04.2 06 54 28.7 06 58	
71	Dec. 31	Iv	iP <sub>N</sub> iP <sub>E</sub> i <sub>E</sub> i <sub>N</sub> iS <sub>E</sub> iS <sub>N</sub> F	18 06 30.9 18 06 31.2 18 06 38.6 18 06 39.3 18 07 06.0 18 07 06.2 18 10	



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 SAN FRANCISCO, CALIFORNIA



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Latitude and longitude:

$$\begin{aligned} \phi &= 37^{\circ} 46!4 \text{ N.} \\ \lambda &= 122^{\circ} 27!2 \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 100 meters (328 feet) above mean sea level.

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Apparatus	Component	V	T <sub>0</sub>	ε
Wood-Anderson .....	E 15° S	1500	1	15
	N	3000	1	15

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	Oct. 2	I	eN F	16	39	54.9 16 41	
2	Oct. 3	IIIv	ePN ePE iE iNE iSE iE iE F	16	14	00.2 00.7 14.2 28.7 34.9 03.7 31.2 35	See list, page 188
3	Oct. 6	Iv	eN ePE eSE eSN F	06	59	49.6 52.1 19.1 22.7 09	Aftershock Oct. 3 See list, page 188
4	Oct. 10	Iv	ePEN iSNE F	17	25	06.2 22.8 27	Near Hollister
5	Oct. 14	Iv	eN eE eE eN F	16	11	26 27 34 35 13	Foreshock
6	Oct. 14	Iv	eN iSE iSN F	16	33	01.6 20.1 19.7 37	See list, page 188
7	Oct. 21	Iv	eN F	22	39	07.7 40	Felt at Big Bend
8	Oct. 21	Iv	eN eE F	06	58	45.5 50.5 04	Felt throughout L.A. Pas: 33°49'N 118°13'W
9	Oct. 26	Id	ePE eSNE F	09	44	58 00.6 46	See list, page 188
10	Nov. 14	Iv	ePE ePN iE eN	08	41	55.0 05.0 00.1 59.0	Pas. 33°47'N 118°15'W



## SAN FRANCISCO

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No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
11	Nov. 20	I	i <sub>N</sub> F	11 42 24.5 11 28	See list, page 188
12	Dec. 5	Iv	e <sub>P</sub> <sub>NE</sub> i <sub>S</sub> <sub>NE</sub> F	20 55 24.0 21 02 27.9 22 00	USCGS: 8°N 93°W O = 20:46.9
13	Dec. 8	I	e <sub>P</sub> <sub>NE</sub> i <sub>NE</sub> F	00 30 32.0 00 30 38.2 00 33	Monterey County
14	Dec. 18	I	e <sub>P</sub> <sub>N</sub> i <sub>NE</sub> F	07 35 13.5 07 35 27.1 7 36	See list, page 188
15	Dec. 31	IIv	e <sub>P</sub> <sub>NE</sub> i <sub>NE</sub> i <sub>S</sub> <sub>NE</sub> F	06 49 36.3 06 49 45.6 06 51 03.3 06 56	37°34'N 118°44'W O = 06:48:44
16	Dec. 31	I	e <sub>P</sub> <sub>N</sub> e <sub>E</sub> F	18 06 35.7 18 06 36.2 18 08	Aftershock

FERNDALE

THE FERNDALE STATION  
 FERNDALE, CALIFORNIA



CONSTANTS

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Latitude and longitude:

$$\begin{aligned} \phi &= 40^{\circ} 34' \text{ N.} \\ \lambda &= 124^{\circ} 16' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 17 meters (55 feet) above mean sea level.

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Apparatus	Component	V	T <sub>0</sub>	ξ
Bosch-Omori 25 kg. ....	E	12	11	5
	N	12	8	6

The station is operated by Mr. Joseph Bognuda, of Ferndale, in cooperation with the University of California.

FERNDALE



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	Oct. 3	IIIId	iP <sub>NE</sub>	16	13	20 ca	See list, page 188
2	Oct. 5	IIId	iP <sub>E</sub> iS <sub>E</sub> F	06	59	10 18 20	See list, page 188 Felt in Ferndale
3	Oct. 6	Id	e <sub>E</sub> iS <sub>E</sub> F	07	06	10 16 08	Aftershock
4	Oct. 6	Id	eP <sub>E</sub> iS <sub>E</sub> F	07	21	31 39 23	Aftershock
5	Oct. 6	Id	eP <sub>E</sub> eS <sub>E</sub> F	07	56	16 24 58	Aftershock
6	Oct. 27	I	e <sub>NE</sub> F	12	14	10 26	
7	Oct. 28	I	eP <sub>N</sub> iP <sub>E</sub> i <sub>N</sub> i <sub>E</sub> i <sub>NE</sub> F	10	34	36 42 12 14 18 50	
8	Oct. 28	I	e <sub>N</sub> e <sub>E</sub> F	11	41	34 02 52	
9	Oct. 31	I	e <sub>E</sub> e <sub>N</sub> i <sub>E</sub> F	12	42	35 39 03 07	
10	Nov. 6	IIId	e <sub>N</sub> e <sub>E</sub> i <sub>N</sub> i <sub>E</sub> F	10	32	28 29 32 33 34	Felt in Ferndale
11	Nov. 8	Iu	e <sub>E</sub> e <sub>N</sub> i <sub>E</sub> i <sub>N</sub> F	23	56	18 38 23 10 40	JSA: 0.7°N 125.0°E

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FERNDALE



No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
12	Nov. 18	Id	e <sub>R</sub> N e <sub>P</sub> E i <sub>N</sub> i <sub>E</sub> i <sub>E</sub> F	23	13	08 10 15 16 26 15	
13	Nov. 18	Iu	e <sub>S</sub> N e <sub>S</sub> E e <sub>N</sub> F	17	08	38 43 28 50	Pas: approx. 32°N 132°E
14	Nov. 18	Id	e <sub>R</sub> N e <sub>P</sub> E i <sub>S</sub> NE F	02	18	49 51 56 21	
15	Nov. 19	Id	e <sub>N</sub> i <sub>N</sub> i <sub>E</sub> F	02	28	12 18 19 29	
16	Nov. 19	Id	e <sub>R</sub> N e <sub>P</sub> E e <sub>S</sub> N e <sub>S</sub> E	03	12	22 23 28 29	
17	Nov. 19	IIId	e <sub>P</sub> E e <sub>R</sub> N e <sub>S</sub> N i <sub>S</sub> N F	03	38	20 21 25 27 41	See list, page 188
18	Nov. 19	Id	e <sub>N</sub> e <sub>S</sub> NE F	04	19	02 07 20	Aftershock
19	Nov. 24	Id	e <sub>P</sub> NE e <sub>S</sub> NE F	10	51	10 15 54	See list, page 188
20	Nov. 24	Iu	e <sub>R</sub> N e <sub>P</sub> E e <sub>S</sub> N e <sub>S</sub> E e <sub>L</sub> N F	21	59	04 14 24 36 24.5 40	USCGS: - 28.5°S 118°W

FERNDALE



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No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
21	Nov. 25	Iu	iPN	18 15 54	USCGS: 36½°N 19½°W
			iPE	18 16 06	
			iSE	18 25 40	
			iSN	18 25 46	
			eLN	18 39.5	
			eLE	18 40.5	
			F	21 45	
22	Dec. 5	IIu	eN	20 55 45	USCGS: 8°N 83°W Damage in Costa Rica and Panama
			eE	20 55 48	
			eN	21 02 55	
			eE	21 02 58	
			eLE	21 08.0	
			eLN	21 08.2	
			F	23 10	
23	Dec. 6	Iu	eN	21 33 50	Aftershock
			eE	21 33 52	
			eE	21 40 26	
			eN	21 40 46	
			eLN	21 49.5	
			eLE	21 52.6	
			F	22 40	
24	Dec. 7	Id	ePN	07 36 05	Felt in Hoopa
			ePE	07 36 06	
			eSE	07 36 15	
			F	07 38	
25	Dec. 31	I	eN	06 51 43	
			eE	06 51 45	
			iN	06 52 04	
			iE	06 52 10	
			F	06 58	

FRESNO

THE FRESNO STATION, FRESNO STATE COLLEGE  
FRESNO, CALIFORNIA



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CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\begin{aligned}\phi &= 36^{\circ} 46!1 \text{ N.} \\ \lambda &= 119^{\circ} 47!8 \text{ W.}\end{aligned}$$

Time -- All determinations are reduced to Universal Time.

Altitude -- 88.4 meters (290 feet) above mean sea level.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T <sub>0</sub>	ε
Wood-Anderson .....	N	3000	0.9	15



FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
1	Oct. 3	IIv	iP <sub>N</sub> iP <sub>N</sub> iS <sub>N</sub> F	16 14 34.1 16 14 36.5 16 17 18.9 16 40	See list, page 188
2	Nov. 4	IIv	iP <sub>N</sub> iS <sub>N</sub> F	02 09 51.6 02 10 06.6 18 14	Pasadena epicenter 37°34' N 118°44'W
3	Nov. 6	Iv	eP <sub>N</sub> iS <sub>N</sub> F	11 59 36.5 11 59 50.7 12 03	See list, page 188
4	Nov. 12	Id	iS <sub>N</sub> F	12 34 53.2 12 35	See list, page 188
5	Nov. 14	IIv	eP <sub>N</sub> iP <sub>N</sub> i <sub>N</sub> iS <sub>N</sub> F	08 42 30.1 08 42 34.2 08 42 40.6 08 43 26.0 ?	33°47'N 118°15'W O = 00:41:36 Sharp
6	Nov. 15	Iv	eP <sub>N</sub> iS <sub>N</sub> F	16 43 29.0 16 43 42.9 16 45	Owens Valley
7	Nov. 18	Iu	eP <sub>N</sub> F	16 59 02.3 17 16	Approx. 32°N 132°E
8	Nov. 18	Iv	eP <sub>N</sub> i <sub>N</sub> F	18 08 43.2 18 09 21.6 18 12	
9	Nov. 21	Iv	eP <sub>N</sub> iS <sub>N</sub> F	16 56 43.1 16 57 05.3 17 01	Felt in Santa Barbara
10	Nov. 24	Iu	iP <sub>N</sub> F	21 58 55.8 22 06	USCGS: 28.5°S 178°W O = 21:46.3
11	Nov. 25	Iu	eP <sub>N</sub> iP <sub>N</sub> iS <sub>N</sub> F	18 15 45.3 18 15 53.2 18 25 51.9 ?	USCGS: 36.5°N 19.5°W
12	Dec. 5	Iu	iP <sub>N</sub> eS <sub>N</sub> F	18 55 05.1 19 01 27.6 19 52	USCGS: 8°N 83°W



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No.	Date	Char-acter	Phase	FRESNO			Remarks
				Time (U.T.)			
	1941			h.	m.	s.	
13	Dec. 6	Iu	e <sub>N</sub> F	21	32	48.5	USCGS: 8°N 83°W O = 21:14.6
14	Dec. 8	IIu	i <sub>P</sub> <sub>N</sub> i <sub>N</sub> i <sub>N</sub> F	00	30	10.3	Monterey County
				00	30	16.3	
				00	30	26.2	
				00	34		
15	Dec. 18	Iv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	20	59	24.0	
				20	59	38.1	
				21	01		
16	Dec. 21	IIv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	00	54	26.0	
				00	54	38.9	
				00	59		
17	Dec. 21	Iv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	07	31	45.6	Approx. 32.6°N 116.1°W O = 07:30.2
				07	32	53.6	
				07	35		
18	Dec. 31	IIIv	i <sub>P</sub> <sub>N</sub> i <sub>N</sub> F	06	49	07.4	Owens Valley
				06	57	26.7	
				07	03		
19	Dec. 31	Iv	i <sub>N</sub> F	07	22	45.3	
				07	23		
20	Dec. 31	Iv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	08	08	38.0	Aftershock
				08	08	52.7	
				08	10		
21	Dec. 31	Iv	i <sub>P</sub> <sub>N</sub> i <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	11	02	47.2	Aftershock
				11	02	51.2	
				11	03	01.8	
				11	05		
22	Dec. 31	Iv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	11	15	19.8	Aftershock
				11	15	33.9	
				11	17		
23	Dec. 31	Iv	i <sub>P</sub> <sub>N</sub> i <sub>S</sub> <sub>N</sub> F	12	20	37.1	Aftershock
				12	20	51.7	
				12	23		