

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 July 1, 1941, to September 30, 1941

BY
CARL F. ROMNEY

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
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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.

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	July 1	08-14	Small	36° 51'	121° 31'	a
IV at Hollister.						
2	5	19-51	Small	37° 07'	121° 26'	b
3	13	15-51	Small	37° 13'	122° 15'	b
4	15	12-38	Small	37° 13'	122° 15'	b
5	19	10-28	Tiny	37° 11'	122° 18'	c
6	23	13-12	Moderate	38° 08'	122° 33'	b

V at Ignacio and Novato, IV at Kentfield, Olema, Ross, San Rafael and Sausalito, III at Petaluma.

7	26	08-51	Tiny	37° 58'	121° 47'	b
8	28	09-22	Small	36° 46'	121° 35'	b
9	30	13-35	Small	37° 59'	121° 58'	b
10	Aug. 2	05-21	Small	36° 51'	121° 31'	c
11	2	09-35	Moderate	37° 01'	121° 33'	a
12	8	15-43	Small	37:2	122:2	d
13	19	13-10	Moderate	40° 10'	124° 14'	c
14	22	21-30	Small	37° 01'	121° 39'	b
15	25	11-40	Small	36° 49'	121° 36'	b
16	25	20-31	Small	36° 49'	121° 36'	b

III at Hollister.

17	Sept. 1	21-48	Moderate	38° 34'	122° 27'	c
----	---------	-------	----------	---------	----------	---

IV at St. Helena.

18	2	17-37	Tiny	36:9	121:5	d
19	12	11-56	Tiny	36° 46'	121° 27'	c
20	14	20-43	Small	36° 59'	121° 29'	c

III at Hollister.

21	17	06-24	Moderate	37° 23'	121° 41'	b
----	----	-------	----------	---------	----------	---

One of larger foreshocks of next.

22	17	23-33	Large	37° 23'	121° 41'	a
----	----	-------	-------	---------	----------	---

Felt over about 4,500 square miles in the San Francisco and Monterey Bay regions. Felt as far north as Bolinas, as far east as Vernalis, and as far south as Aptos. Maximum intensity of V reported at Alvarado, Alviso, Berkeley, Boulder Creek, Burlingame, Colma, El Granada, Felton, Half Moon Bay, Hayward, Mill Valley, Milpitas, Mount Hamilton, Newark, Olympia, Redwood City, San Francisco, Santa Cruz, Saratoga, Soquel, and Sunnydale.

23	Sept. 24	05-50	Tiny	37°7	121°8	
24	25	17-55	Small	36° 48'	121° 27'	



IV at Hollister, felt at Salinas.

25	25	23-07	Small	36° 49'	121° 36'	b
26	26	12-25	Small	36°7	121°4	d



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.
- FR_n Waves n times reflected at the earth's surface.
- S (undae secundae) Second phase, or second preliminary tremors (transverse).
- SR_n 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 _c 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_n 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:

$$\begin{aligned}\phi &= 37^{\circ} 52' 13'' \text{ N.} \\ \lambda &= 122^{\circ} 15' 16'' \text{ W.}\end{aligned}$$

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 ₀	ε	$\frac{r}{T_0^2}$	
		K	T			T ₁	μ ²
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

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks	
				h.	m.	s.		
	1941							
1	July 1	III _v	iPz	G	07	51	57.0	Pasadena; Epicenter in Ventura County.
			eEZ	AH	07	51	58.5	
			iNE	AG	07	51	59.0	
			eE	A	07	52	16	
			eZ	H	07	52	17.5	
			iSN	A	07	52	48.0	
			iE	A	07	53	01.0	
			iN	G	07	53	16.5	
			iE	G	07	53	18.0	
			iNZ	AH	07	53	20	
			iz	G	07	53	43.5	
			F		10	25		
2	July 1	Iv	eZ?	H	08	20	06.0	Aftershock of previous
			ePN	A	08	20	09.0	
			eE	A	08	20	11	
			eSN	A	08	21	15.0	
			F		08	26		
3	July 1	Iv	ePz	H	16	14	50.0	See list, page 112
			iNZ	AH	16	14	51.5	
			iz	H	16	14	53.5	
			iSN	A	16	15	06.5	
			iSz	H	16	15	07.3	
			eSE	A	16	15	08	
			F		18	17		
4	July 1	Ir	eSNE	G	20	29	46.0	
			eLN	G	20	31.5		
			eLE	G	20	32.1		
			eLZ	G	20	32.9		
			F		20	41		
5	July 1	I	iz	H	21	05	39.4	
			iz	H	21	05	51.7	
			F		21	06.5		
6	July 1	I	iE	G	22	31	54.0	(S?)
			iN	G	22	32	00.5	
			iNE	G	22	42	51.5	
			eZ	G	22	42	55.5	
			eLN	G	22	44.1		
			eLE	G	22	44.5		
			eLZ	G	22	45.9		
			F		23	02		
7	July 1	Iv	iPz	H	23	54	44.6	Aftershock of 07h 52m Santa Barbara quake
			iz	H	23	54	48.1	
			eSE	A	23	54	59.0	
			eSN	A	23	55	05.0	
			eE	G	23	56	03.0	
			eZ	G	23	56	10.5	
			iSNZ	G	23	56	32.5	
			F		00	04		



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
8	1941 July 1	I	e ^{NE} e ^Z F	G 04	16.7		Surface Waves
				G 04	19.3		
				04	59		
9	July 2	Id	i ^{Pz} i ^{Sz} F	H 21	36 16.5		
				H 21	36 21.1		
				21	37		
10	July 3	Ir	i ^{SE} i ^{SN} i ^{Sz} e ^{LE} e ^{LN} e ^{Lz} F	G 01	30 58.5		
				G 01	31 07.0		
				G 01	31 10.0		
				G 01	32.0		
				G 01	32.5		
				G 01	33.8		
				01	54		
11	July 3	Iu	i ^{Pz} i ^{PEZ} i ^N e ^N i ^Z e ^N i ^{SN} e ^Z e ^{LNE} e ^{Lz} F	H 07	24 26.2		J.S.A. 31.0°S 68.7°W
				G 07	24 29.0		0 = 07:11:51
				AG 07	24 31.0		U.S.C. & G.S. 33°S 68°W
				A 07	24 37.7		Destructive in Argentina
				H 07	24 38.8		
				G 07	34 57.0		
				G 07	35 05.5		
				G 07	35 06.5		
				G 07	52.0		
				G 07	53.0		
				09	49		
12	July 5	I	e ^{LNE} e ^{Lz} F	G 03	07.6		
				G 03	10.4		
				03	44		
13	July 6	Iu	i ^{Pz} i ^{SN} i ^{SE} e ^{LN} F	G 00	46 15.0		URSS: 33°N 142°E
				G 00	55 54.0		
				G 00	55 56.5		
				G 01	07.4		
				01	29		
14	July 6	Iv	i ^{PNZ} e ^{SNZ} i ^{SN} i ^{SEZ} F	AH 03	51 03.0		See list, page 112
				AH 03	51 15.1		
				A 03	51 16.3		
				AH 03	51 17.4		
				03	51.7		
15	July 6	I	e ^N e ^E F	G 21	45.1		Surface Waves
				G 21	45.8		
				22	34		
16	July 8	Id	e ^{Pz} i ^{Pz} e ^N i ^{NE} F	H 02	30 23.7		S?
				H 02	30 24.2		S?
				A 02	30 31.5		
				H 02	30 32.1		
				02	32		

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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
17	July 8	Id	iPz eSN iSz F	H 14	09	06.4 10.7 13.8 10	
18	July 9	I	eE eN F	G 01	02.2	F 01 03.7 01 14	
19	July 10	Iu	iPz ePN iPz iz iSN eE eN eLE F	H 03	34	25.3 26.0 28.0 32.3 43.0 49.5 56.6 02.7 54	
20	July 10	Iu	iPNZ ipPz eN eE F	AH 09	41	12.5 43.0 51.3 56.7 34	Pasadena: Deep, Roughly 18°S 70°W; 0=09:28.5
21	July 10	I	iPNZ iNZ F	AH 10	29	02.3 33.4 32	
22	July 11	Iu	iPz ePN iN iE iSSE eLN eLE eLz F	H 01	25	19.4 20.9 28.0 41.0 10.0 38.7 40.7 41.2 34	U.S.C. & G.S. 5.5°N 83°W J.S.A. 5.6N 83.1 W S?) 0 = 01:16:35
23	July 11	Id	iPz iSNZ F	H 01	42	57.4 59.0 43	
24	July 11	I	eN eLNE eLz F	G 16	09	50.0 15.6 16.1 34	

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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
25	July 12	I	eLNE F	G 14	15.6		
				14	29		
26	July 13	Iv	iPz ePN iSNZ F	H 23 51	24.1		See list, page 112
				A 23 51	25.1		
				AH 23 51	34.2		
				23 52			
27	July 14	I	eN eE F	G 09	43.2		Surface Waves
				G 09	45.0		
				09	54		
28	July 14	I	ePz eLN eLE F	H 13 00	27.6		
				G 13 09	5		
				G 13 13	0		
				13 34			
29	July 14	Id	iPz iSz F	H 23 38	41.7		
				H 23 38	49.4		
				23 40			
30	July 15	Iv	iPz iSz F	H 20 38	02.3		See list, page 112
				H 20 38	41.5		
				20 39			
31	July 16	Ir	ePEZ ePNE ePN ePz ePE ePN eN eN eE eSN eLNE eE eMN eE F	AG 03 17	32.0		J.S.A. 24.9°N 109.0°W O = 03:13:30
				G 03 17	33.0		
				A 03 17	34.2		
				H 03 17	34.8		
				G 03 17	45.0		
				G 03 17	53.0		
				A 03 18	20.5		
				G 03 20	52.0		
				G 03 20	53.0		
				A 03 21	34.0		
				G 03 22	2		
				A 03 23	6		L?
				A 03 25	9		
				A 03 26	0		
				04 49			
32	July 16	Iu	eNE eLN eLE eLz F	G 08 41	03.5		(S?)
				G 08 52	2		
				G 08 52	7		
				G 08 52	9		
				09 19			
33	July 17	I	eN eE eLEZ eLN F	G 08 03	03.0		
				G 08 03	07.0		
				G 08 03	07.5		
				G 08 03	08.4		
				08 34			



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
34	July 17	Iu	eNE F	G 22	38.4		Surface Waves URSS: 80°N 15°E
35	July 18	Iv	ePz* iPNZ* ez eN iS _Z * eS _N * eSE iN iE iZ iN F	H 03 AH 03 G 03 G 03 H 03 A 03 A 03 G 03 G 03 G 03 G 03 04	54 54 55 55 54 55 55 55 55 55 55 02	45.0 46.7 02.5 09.0 24.8 25.4 26.8 29.0 30.0 34.0 35.0	Near Fallon, Nev.
36	July 18	Id	iPz iS _{NZ} F	H 15 AH 15 15	54 54 55	23.1 25.6	
37	July 18	Iv	ePN iPz ePN iS _Z F	A 18 H 18 A 18 H 18 18	48 48 49 49 36	58.4 58.7 16.5 17.2	San Benito County?
38	July 19	Iu	iPNZ eS _Z ez eNZ F	AH 09 H 09 H 09 AH 09 10	35 43 48 52 00	23.5 57.5	URSS 39°N 37.5°W (G?)
39	July 19	I	ePz iN F	H 11 A 11 11	38 38 41	20.0 22.4	
40	July 19	Iu	iPz ePN eS _Z ez ez ez F	H 15 A 15 H 15 H 15 H 15 H 15 16	25 25 35 40.0 44.3 46.9 00 ca	35.4 35.9 17.4	URSS. 33°N 135°E
41	July 19	Iv	iPz F	H 18 18	28 29	39.3	See list, page 112
42	July 20	Iu	eL _E e _E F	G 06 G 06 07	42.8 45.8 19		Wellington: 22 1/2° S 170°E



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No.	Date	Char-acter	Phase	Time (U.T.)			Remarks	
				h.	m.	s.		
43	1941 July 20	Id	iPz	H	20	54	16.6	
			iSz	H	20	54	17.5	
			iN	A	20	54	17.8	
			F		20	55		
44	July 21	Id	iPz	H	01	08	28.6	
			eSN	A	01	08	30.4	
			iSz	H	01	08	30.7	
			F		01	09		
45	July 23	Iu	eNEZ F	G 01	01	29 + ca 44 ca	J.S.A. 18.8 N 106.7° W	
46	July 23	IIId	iPNZ	AH	21	12	26.0	See list, page 112
			iPE	A	21	12	26.3	
			iSN	A	21	12	30.7	
			F		21	15		
47	July 23	IIr	ePz	G	21	12	25.0	J.S.A.: 14.3°N 93.2°W
			ePE	G	21	12	26.0	
			iPNZ	G	21	12	29.5	
			iFE	G	21	12	31.0	
			iSN	G	21	17	06.0	
			eE	G	21	17	08.0	
			eLE	G	21	20.7		
			eLN	G	21	21.7		
			eLZ	G	21	22.7		
			F		21	54		
48	July 24	I	eNE F	G 11	10 11	49.2 04	Surface Waves	
49	July 24	Iu	iPNZ	AH	14	05	23.1	URSS 16°N 127°E
			ipPz	H	14	05	38.4	
			eZ	H	14	16	03.4	
			F			?		
50	July 24	Id	iPz	H	23	31	23.1	
			iSNZ	AH	23	31	24.3	
			F		23	32		
51	July 25	Iu	iPz	G	10	01	17.0	Wellington: 22°S 170°E
			eSSNE	G	10	13	13.5	
			eLNE	G	10	29.1		
			eLZ	G	10	29.6		
			F		11	02		
52	July 26	Id	iPz	H	08	59	27.8	
			iSNZ	AH	08	59	29.0	
			F		09	00		



BERKELEY

No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
	1941			h. m. s.	
53	July 26	Id	iPz iSNZ F	H 16 51 00.9 AH 16 51 05.7 16 52	See list, page 112
54	July 26	Iu	iPz iPz ePN iE eN iPPz i N ePPz eSN iSN iSE eLNE F	H 20 23 43.9 G 20 23 44.5 A 20 23 46.0 G 20 23 46.5 G 20 23 51.5 G 20 25 26.5 A 20 26 56.2 H 20 26 56.6 A 20 33 58.3 G 20 33 59.5 G 20 34 02.0 G 20 44.7 21 59	URSS. 15°N 147°5E
55	July 27	Id	iPz iSz F	H 09 33 16.7 H 09 33 18.9 09 34	
56	July 28	Iu(?)	iPz ez eLNE F	H 16 04 47.5 H 16 09 23.5 G 16 33.7 17 09	
57	July 28	Iv	iPz ePN eSN iSN F	H 17 22 08.3 A 17 22 09.0 A 17 22 23.2 H 17 22 23.8 17 24	See list, page 112
58	July 29	Id	iPz iSN iSz F	H 07 10 51.7 A 07 10 55.1 H 07 10 55.2 07 12	
59	July 30	Ir	ePN iPEZ iPNZ ePE iPPz eSN eSN eSE iE eLz	A 01 57 27.4 GH 01 57 28.0 G 01 57 29.0 A 01 57 30.2 H 01 58 17.4 A 02 02 23.5 G 02 02 25 G 02 02 26 A 02 02 46.4 G 02 05.7	U.S.C. & G.S.: 60.9N 149.2°W O = 01:51.5



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)		Remarks
				h.	m. s.	
	1941					
59	July 30 (cont)	Ir	eLE eLN eLE eLZ eME F	G 02 05.8 A 02 06.0 A 02 06.1 H 02 06.2 A 02 09.9 4 30 ca		
60	July 30	Id	iPZ eSN iSZ F	H 21 35 00.1 A 21 35 02.9 H 21 35 03.2 21 36	See list, page 112	
61	July 31	Id	iPZ iSZ eSN F	H 01 51 52.2 H 01 51 53.7 A 01 51 54.4 01 53		
62	August 1	Id	iPZ iSZ F	H 22 53 21.8 H 22 53 23.1 22-54	Very small-blast?	
63	August 2	IIIu	ePE iPEZ iPN ipPE eE iSE iSN eLZ eE eE F	A 11 54 00.3 G 11 54 01.5 G 11 54 02.0 A 11 54 22.4 A 12 04 36.0 G 12 04 41.0 G 12 05 23.0 G 12 19.7 A 12 20.1 A 12 25.0 16 04	U.S.C. & G.S.: 30°S 178°5 W h = 100 km	
64	August 2	Iv	iPZ ePE i N iZ eSE iSNZ F	H 17 35 57.2 A 17 35 57.3 A 17 35 57.6 H 17 36 08.8 A 17 36 11.5 AH 17 36 11.7 17 38	See list, page 112	
65	August 3	Id	ePNE iPZ iSNEZ F	A 01 40 22.3 H 01 40 22.5 AH 01 40 24.5 01 41		
66	August 3	I	eN eE F	G 11 25.2 G 11 26.7 11 49	Surface waves	

BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
67	August 3	I	eN eE F	G 13	18.7 23.7 14 04		Surface waves
68	August 4	Ir	ePz eSN iSE eZ eLNE eLZ F	G 00	28 58.5 33 52.0 33 58.0 33 59.0 35.7 38.2 00 49		
69	August 4	Iu	iPz ePN iP ^{NE} ipPz eSN iSNE iSZ eN iSSE eLEZ eLN F	H 11 A 11 G 11 H 11 A 11 G 11 G 11 A 11 G 11 G 11 G 11 12 29	01 05.2 01 05.6 01 06.0 01 17.1 07 29.5 07 31.5 07 32.5 10 00.1 11 01.5 13.4 13.9		U.S.C. & G.S.: 52° N 176.5°W (h = 100 km) J.S.A.: 54.3° N 179.2°W (h = 75 km)
70	August 6	IIr	iPz iPz iN i N eFE iE ipPEZ iE iz iz eSNE iScPz iSSN iSSZ e N e E F	G 06 H 06 G 06 A 06 A 06 G 06 AH 06 A 06 H 06 H 06 G 06 H 06 G 06 G 06 A 06 A 06 07 59	21 21.5 21 24.4 21 25.0 21 25.4 21 25.7 21 29.0 21 55.2 22 25.5 23 20.4 24 09.1 26 30.0 27 37.5 28 53.0 29 06.5 31 37.5 31 39.0		U.S.C.&G.S.: 55.5°N 160°W h = 200 km Deep
71	August 8	I	eE eN F	G 19 G 19 20 09	42.3 42.9		Surface waves
72	August 9	Id	iPNZ iSNZ F	AH 08 AH 08 08 50	49 25.3 49 25.8		Blast ?



BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
73	August 9	I	eE eNZ F	G 16 00.9 G 16 02.7 16 24	Surface waves
74	August 10	Id	iPz eSz iSz F	H 00 49 23.2 H 00 49 24.9 H 00 49 25.6 00 50	
75	August 10	Ir	iPz eNE eSE eSN F	G 05 10 26.5 G 05 10 27.0 G 05 14 54.0 G 05 14 58.0 06 19	
76	August 10	I	eN F	G 14 54.2 15 09	
77	August 12	I	eNE eZ F	G 13 05.2 G 13 06.7 13 34	
78	August 14	I	eE eN F	G 10 32.0 G 10 33.8 11 04	Surface waves
79	August 15	IIu	iPz iE ePz eN ePN iSE eN eZ eLE eLN iP'P'z eLN iMN F	G 06 21 51.5 G 06 21 52.0 H 06 21 52.7 G 06 21 55.0 A 06 22 01.8 G 06 32 12.0 G 06 32 16.0 G 06 32 22.0 G 06 43.0 G 06 43.3 G 06 44 10.5 A 06 48.3 G 06 48.9 07 09	U.S.C.&G.S.: 19° N 27° W J.S.A.: 20.1° N 27.8° W
80	August 16	Iu	eN eE eLNE eLz F	G 04 01 56.5 G 04 02 00.5 G 04 14.7 G 04 19.7 05 04	
81	August 19	I	eNEZ F	G 10 29 ca 11 04 ca	Surface waves

No.	Date	Char-acter	Phase	BERKELEY			Remarks
				Time (U.T.)			
				h.	m.	s.	
82	1941 August 19	IIu	iz	G 18	04	04.0	Wellington: 14°S 166°E
			eN	G 18	04	20.5	
			eE	G 18	04	30.0	
			eN	G 18	14.5		
			eLE	G 18	18.5		
			eLZ	G 18	20.2		
			eLN	G 18	20.7		
			F		19 24		
83	August 19	Iv	ez	H 21	10	23.7	See list, page 112
			iz	H 21	10	30.8	
			eN	A 21	11	03.5	
			F		21 14		
84	August 20	Iu	iPz	G 08	32	33.0	
			eSN	G 08	42	03.5	
			iSE	G 08	42	13.0	
			eLE	G 08	58.2		
			eLNZ	G 08	58.7		
			F		10 01		
85	August 21	I	eE	G 00	06.8	Pasadena: Roughly 30°N 114°W	
			eNZ	G 00	07.3		
			F		00 19		
86	August 22	Id	iPz	H 17	17	37.1	Blast?
			iSz	H 17	17	38.7	
			F		17 18		
87	August 22	Iu	eLNEZ	G 19	36	ca	
			F		20 10	ca	
88	August 23	Id	iPz	H 05	29	57.2	See list, page 112
			iSz	H 05	30	10.3	
			F		05 31		
89	August 23	I	eNE	G 13	43.1		
			F		13 59		
90	August 24	Id	iPz	H 00	00	31.6	
			iSz	H 00	00	32.7	
			F		00 01		
91	August 24	IIId	iPz	H 02	52	46.6	
			eSE	A 02	52	49.1	
			iSNZ	AH 02	52	49.8	
			iE	A 02	52	50.2	
			F		02 54.7		

BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
92	August 25	Id	iPz iz iz F	H 19 40 44.3 H 19 40 47.2 H 19 41 01.5 19 42	See list, page 112
93	August 26	Iv	iPz iSz F	H 04 31 54.3 H 04 32 11.2 04 33	See list, page 112
94	August 27	Ir	eS _{NE} eL _E eL _N eL _Z F	G 18 42 55.0 G 18 46.1 G 18 46.6 G 18 49.1 19 19	J.S.A.: 14.8°N 98.1°W
95	August 28	Id	iPz iS _N iS _{EZ} F	H 01 27 11.7 A 01 27 13.8 AH 01 27 14.4 01 28	
96	August 28	Ir	eP _N iPz iP _E eS _N iS _E eL _{NZ} F	G 03 53 53.5 G 03 53 54.0 G 03 53 55.0 G 03 58 01.5 G 03 58 04.5 G 04 01.1 04 29	J.S.A.: 19.6°N 109.1°W
97	August 28	Ir	iPz i _E iS _E iS _N eL _N eL _Z F	G 06 50 05.5 G 06 50 08.5 G 06 54 15.0 G 06 54 16.5 G 06 56.4 G 06 57.4 07 24	J.S.A.: 19.6°N 109.1°W
98	August 28	Iu	eN iPz eS _N eS _E eL _E eL _Z F	G 20 38 50.0 G 20 38 52.0 G 20 48 29.5 G 20 48 32.0 G 21 00.1 G 21 01.6 22 24	Wellington 19.5°S 176°W
99	August 29	Iu	eS _N iS _E eL _{NE} F	G 02 57 59.5 G 02 58 01.0 G 03 12.6 03 32	

No.	Date	Char-acter	Phase	BERKELEY			Remarks
				Time (U.T.)			
				h.	m.	s.	
100	1941 August 29	Iv	ePz	H 13	11	08.9	J.S.A.: 43.0°N 123.8°W Normal F runs into aftershock at 05-18. P & S not readable
			eP _N	A 13	11	11.0	
			iz	H 13	11	30.0	
			iS _E	A 13	12	08.7	
			i N	A 13	12	11.2	
			F			?	
101	August 30	Iu	iPz	G 09	48	34.0	URSS: 19.5°N 149.5°E J.S.A.: 27.0°N 146.2° E Pasadena: 19°N 147° E
			iE	G 09	48	34.5	
			eN	G 09	48	52.5	
			iE	G 09	58	28.5	
			iZ	G 09	58	30.5	
			iN	G 09	58	31.5	
			eL _E	G 10	12.1		
			eL _Z	G 10	15.2		
			F	12	13		
			102	August 30	Iu	iPz	
iE	G 13	19				01.5	
eN	G 13	19				06.0	
iS _N	G 13	29				02.5	
iS _E	G 13	29				16.0	
eL _E	G 13	42.2					
eL _Z	G 13	42.7					
F	16	28					
103	August 30	Iv	eP _N	A 13	30	06.0	
			eS _N	A 13	30	52.2	
			i E	A 13	31	03.6	
			F	13	34.5		
104	August 30	Id	iPz	H 23	08	57.8	
			iS _Z	H 23	08	59.0	
			F	23	09.5		
105	August 31	Id	iPz	H 00	01	04.3	
			iS _Z	H 00	01	06.1	
			F	00	02		
106	August 31	Iu	iPz	G 04	25	18.5	Tonga region according to Pasadena
			eS _E	G 04	35	12.0	
			eS _N	G 04	35	12.5	
			F	05	53		
107	Sept. 1	Iu	iPz	G 06	26	32.5	
			iE	G 06	26	38.5	
			eS _E	G 06	36	04.5	
			eN _E	G 06	48.6		
			eL _{N_E}	G 06	52.8		
			eZ	G 06	53.5		
			F	07	33		



BERKELEY					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
108	Sept. 2	Id	eE iF _{NZ} eE iSE iSN iE F	G 05 48 05.0 AH 05 48 07.8 A 05 48 08.4 AG 05 48 17.2 A 05 48 17.4 G 05 48 26.0 05 51.0	See list, page 112
109	Sept. 2	I	eNE F	G 10 35.6 11 08	Surface waves
110	Sept. 3	I	eL _{NE} eL _Z F	G 04 40.4 G 04 41.8 04 53	J.S.A.: 14.8°N 93.8°W
111	Sept. 4	Iu	iP _Z iE i Z eN eP _N e E iz iPP _Z eSE iSE iSN i N eLE _Z eLN eLE F	G 10 34 31.0 G 10 34 31.5 H 10 34 34.9 G 10 34 38.5 A 10 34 42.9 A 10 34 53.3 H 10 34 56.3 H 10 35 28.7 A 10 44 51.1 G 10 45 17.5 G 10 45 19.5 A 10 45 42.9 G 11 01.4 A 11 01.7 A 11 01.8 13 48	Wellington: 6° S 151.5°E Felt at Rabaul
112	Sept. 5	Iu	eS _{NE} eLN eL _E eL _Z F	G 23 37.6 G 23 43.4 G 23 44.4 G 23 45.0 00 13	J.S.A.: 54.0°N 172.5°E
113	Sept. 6	Id	i N eP _E iSE i N iP _Z iS _Z F	A 21 04 27.8 A 21 04 28.0 A 21 04 29.2 A 21 04 29.4 H 21 04 29.6 H 21 04 30.2 21 05	
114	Sept. 7	Iu	eL _{NEZ} F	G 01 28.3 01 38	BCIS: 21.5° N 2.5°W
115	Sept. 8	Iv	eP _N (?) eS _N F	A 03 13 50.4 A 03 14 03.5 03 18	Pasadena: Aftershock of July 1, 07h, felt at Santa Barbara (34°20'N 119°35'W)

BERKELEY					Remarks
No.	Date	Char-acter	Phase	Time (U.T.)	
					h. m. s.
116	1941 Sept. 8	Id	eP _{NE}	A 20 04 27.6	
			iS _{NE}	A 20 04 30.0	
			F	20 06	
117	Sept. 9	IIu	iP _Z	G 07 32 34.0	U.S.C.&G.S.: 7°S 153°E J.S.A.: 5°S 155.6°E
			iP _E	G 07 32 35.0	
			i _E	A 07 32 36.7	
			eP _N	A 07 32 37.2	
			e(S?) _N	A 07 42 53.7	
			iSKS _E	G 07 43 07.5	
			iSKS _{NZ}	G 07 43 18.5	
			iG _N	G 07 56.4	
			eL _E	G 07 59.8	
			eL _Z	G 08 00.7	
			F	10 13	
118	Sept. 9	Id	eP _E	A 20 00 22.6	
			eS _N	A 20 00 23.2	
			eS _E	A 20 00 23.8	
			F	20 01	
119	Sept. 10	Id	eP _{NE}	A 22 04 16.0	
			iS _{NE}	A 22 04 17.1	
			F	22 04.5	
120	Sept. 10	Iu	e _N	G 22 34.2	Turkey, according to Pasadena
			eL _E	G 22 43.2	
			eL _N	G 22 45.2	
			F	23 23	
121	Sept. 11	Id	iP _Z	H 01 02 16.1	
			iS _{EZ}	4H 01 02 17.9	
			F	01 02.6	
122	Sept. 12	IIu	iSKS _E	G 07 26 37.0	U.S.C.&G.S.: 2°N 130°E J.S.A.: 14°N 128°E Pasadena: 0.5°S 132°E
			i _E	G 07 29 05.5	
			iFS _N	G 07 29 15.5	
			iSSE	G 07 35 01.5	
			iSSN	G 07 35 05.5	
			i(G?) _N	G 07 44 32.5	
			eL _E	G 07 49.6	
			eL _N	G 07 52.9	
			F	09 48	
123	Sept. 12	Iv	eP _Z	H 19 56 33.5	See list, page 112
			F	19 57	



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
124	Sept. 12	Id	iP _Z NEZ iS _E i Z i N F	H 23 42 03.0 AH 23 42 03.5 A 23 42 04.4 H 23 42 04.6 A 23 42 04.8 23 42.4			
125	Sept. 13	IIIr	i N iP _{NZ} iP _E eP _Z iE iN eS _N eL _Z eL _N i E i Z F	A 18 20 01.0 GH 18 20 01.5 G 18 20 02.0 G 18 20 03.0 A 18 20 14.7 A 18 20 26.8 A 18 24 28.1 G 18 27.1 A 18 27.9 A 18 28.2 H 18 29.2 21 08	U.S.C.&G.S.: 18.7°N 106.9°W Pasadena: Deep		
126	Sept. 14	I	eE iN eN eN eL _N F	G 04 33 18.0 G 04 33 51.0 G 04 36 31.0 G 04 43 22.0 G 04 51.0 06 08	Pasadena: East Indies		
127	Sept. 14	Iu	iN iE iN eE F	G 14 00 26.5 G 14 00 29.5 G 14 19 57.0 G 14 20 00.0 14 43	Pasadena: East Indies		
128	Sept 14	IIv	iP _N iP _{NEZ} iP _N iN iS _{NE} F	G 16 44 19.0 AH 16 44 19.7 A 16 44 28.4 G 16 44 44.0 A 16 44 56.9 17 13	Owens Valley Pasadena: 37°34' N 118° 44' W Foreshock of 18h 39m		
129	Sept. 14	IIv	eP _{NZ} eP _E iS _E iS _N F	AH 16 55 47.0 A 16 55 47.5 A 16 56 26.5 A 16 56 26.7 17 00	Foreshock of 18h 39m (?)		
130	Sept. 14	IIv	iP _{NE} iP _Z iZ iN iS _{NE} F	G 18 22 06.0 H 18 22 06.3 G 18 22 07.0 G 18 22 39.0 A 18 22 41.5 18 33 ca	Foreshock of 18h 39m Owens Valley		



BERKELEY					Remarks
No.	Date	Char-acter	Phase	Time (U.T.)	
				h. m. s.	
131	1941 Sept. 14	IIIv	iPz	G 18 39 59.0	Pasadena: Epicenter in Owens Valley 39°34'N 118°44'W Strong in Sierra Nevada; felt widely in San Joaquin Valley 0 = 18:39:12
			iP _{NEZ}	AGH 18 39 59.4	
			iN	A 18 40 24.3	
			iN	G 18 40 33.0	
			iNE	A 18 40 34.7	
			iE	A 18 40 35.3	
			iN	A 18 40 39.7	
			F	19 43	
132	Sept. 14	I	eZ	H 18 55 12.5	(Faint)
			eN	A 18 55 26.0	
			iN	A 18 55 58.0	
			F	18 57	
133	Sept. 14	I	eP _{NEZ}	AH 21 15 50.0	Aftershock of 18h 39m (?)
			iz	H 21 16 21.1	
			iN	A 21 16 30.6	
			iE	A 21 16 33.1	
			iN	A 21 16 40.3	
			F	21 19	
134	Sept. 15	I	eN	G 01 38 23.5	
			eE	G 01 38 27.0	
			eN	G 01 39 08.0	
			iN	G 01 39 58.0	
			F	01 46	
135	Sept. 15	Iu	eNE	G 07 16.3	Pasadena: Near Apia
			F	07 23	
136	Sept. 15	Id	iPz	H 20 11 36.7	
			eSN	A 20 11 38.5	
			iSz	H 20 11 39.4	
			i N	A 20 11 40.1	
			i E	A 20 11 41.3	
			F	20 12	
137	Sept. 16	IIu	ePNE	G 21 51 38.5	Normal U.S.C.&G.S.: 28.5° S 178°W
			iP _{NEZ}	AGH 21 51 39.4	
			eSN	A 22 02 03.0	
			iSE	G 22 02 04.0	
			i E	A 22 02 04.5	
			iN	G 22 02 06.0	
			eGN	A 22 13.9	
			eL _{NEZ}	AG 22 17.3	
			eME	A 22 22.3	
			eMN	A 22 22.8	
			F	01 48	

No.	Date	Char-acter	Phase	BERKELEY			Remarks	
				Time (U.T.)				
				h.	m.	s.		
138	1941 Sept. 17	Iu	eP ^u _E	G	07	06	03.0	Pasadena: Roughly 0°, 122°E
			iSKS _E	G	07	12	23.5	
			eSKS _N	G	07	12	26.5	
			iPS _N	G	07	14	06.0	
			iSS _E	G	07	21	53.0	
			iSS _N	G	07	21	56.0	
			iSSS _N	G	07	25	59.0	
			iSSSE	G	07	26	01.0	
			eLE	G	07	32.0		
			F		09	13		
139	Sept. 17	Iv	iPz	H	14	23	50.4	See list, page 112
			i _N	A	14	23	50.8	
			e _E	A	14	23	51.0	
			eS _N	A	14	23	59.7	
			iSEZ	AH	14	24	00.5	
			i _N	A	14	24	01.1	
			F		14	22.4		
140	Sept. 17	Id	ePz	H	16	55	25.5	Blast?
			iSz	H	16	55	27.2	
			F					
141	Sept. 18	Iu	i _N	G	02	32	26.0	
			i _E	G	02	32	44.5	
			e _N	G	02	47	52.5	
			eL _E	G	02	54.9		
			eL _N	G	02	56.1		
			F		03	38		
142	Sept. 18	I	e _N	G	06	01.9	Surface waves	
			e _E	G	06	05.4		
			F		06	18		
143	Sept. 18	Id	iPz	H	07	29	02.2	
			iSEZ	AH	07	29	12.0	
			iS _N	A	07	29	12.7	
			iS _E	A	07	29	13.4	
			F		07	30		
144	Sept. 18	IIId	iP _N	G	07	33	38.5	See list, page 112
			i _Z	G	07	33	39.0	
			iP _{NEZ}	AGH	07	33	39.5	
			iS _{NE}	G	07	33	52.0	
			i _Z	G	07	33	52.5	
			F		07	41		
145	Sept. 18	Iu	iP _{NEZ}	G	13	25	14.0	U.S.C.&G.S.: 13°S 73°W h = 100 km (Peru)
			iP _{NEZ}	AH	13	25	14.5	
			ipPz	H	13	25	38.1	



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
145	Sept. 18 (cont.)	Iu	i N i E eSN i E iSN iSE eLE F	A 13 25 38.6 A 13 25 39.1 A 13 34 18.1 A 13 34 18.8 G 13 34 20.5 G 13 34 21.0 G 13 48.1 14 56			
146	Sept. 18	Iu	eNE F	G 18 48.0 19 23		LaPas: Near Apia Surface Waves	
147	Sept. 18	Id	iPZ iSNZ F	H 21 32 12.1 AH 21 32 12.9 21 33.4			
148	Sept. 19	Id	iPZ iSNEZ F	H 01 29 01.5 AH 01 29 03.3 01 29			
149	Sept. 19	Id	iPNZ eSNZ iSE iSZ F	AH 18 04 54.2 AH 18 04 55.3 A 18 04 55.7 H 18 04 56.7 18 05			
150	Sept. 20	Id	iPZ iSNEZ F	H 17 26 12.7 AH 17 26 14.1 17 26		Elast?	
151	Sept. 20	Id	iPZ iZ iS?Z iSNE F	H 19 05 09.5 H 19 05 10.2 H 19 05 17.5 A 19 05 17.9 19 06		Aftershock	
152	Sept. 21	Iv	ePN ePZ ePE ePNE iSN iE iN F	A 19 54 08.0 H 19 54 08.5 A 19 54 09.5 G 19 54 10.0 A 19 54 56.5 G 19 55 07.5 G 19 55 25.0 20 08		Pasadena: Near Gorman	
153	Sept. 22	I	eZ eN eE eN iZ eE F	H 03 56 45.5 A 03 56 58.5 A 03 57 20.5 A 03 57 21.0 H 03 57 21.8 A 03 57 22.1 03 59		Pasadena: Owens Valley	



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
154	1941 Sept. 23	IIId	iPz iS _{NEZ} F	H 23 39 46.2 AH 23 39 47.9 23 40			
155	Sept. 24	IIu	iPz iP _{NE} ep _E ipPNZ iPcPz i N iS _{NE} iSN eL _{NE} eLN eMN F	H 01 10 53.6 AG 01 10 54.2 A 01 11 11.0 AH 01 11 12.1 H 01 11 51.1 A 01 11 54.2 AG 01 18 45.0 G 01 18 47.0 G 01 24.3 A 01 26.9 A 01 30.8 03 28		Pasadena: Deep U.S.C.&G.S.: 52°N 158°E ca J.S.A.: 50° N 158.3° E h = 100 km	
156	Sept. 24	Id	iPz iS* _Z F	H 13 49 40.8 H 13 49 48.2 13 51		See list, page 113	
157	Sept. 24	I	eE eN eL _{NE} F	G 18 47 59.5 G 18 48 03.0 G 19 07.5 11 35			
158	Sept. 24	Id	iPz iS _{NZ} F	H 23 44 28.8 AH 23 44 29.5 23 45			
159	Sept. 25	IIr	iPz iS _{NE} iLN eGN iLE eL _{NE} eNE eNE eN F	H 17 55 28.7 G 18 01 00.5 G 18 02 51.5 A 18 02.9 G 18 03 00.5 A 18 04.2 A 18 06.0 A 18 07.5 A 18 10.0 19 53		Pasadena: Strong on Hawaii U.S.C.&G.S.: 19°N 155°W ca J.S.A.: 20.3°N 155.1°W	
160	Sept. 25	Id	iPz ePN iS _{NEZ} F	H 21 21 15.5 A 21 21 16.0 AH 21 21 16.8 21 22			
161	Sept. 26	Id	iPNZ iZ eE iSN F	AH 01 55 07.0 H 01 55 08.3 A 01 55 09.5 A 01 55 22.8 01 57		See list, page 113	



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
162	Sept. 26	Iv	ePz eSz Fz	H 07 07	41.5		See list, page 113
				H 07 07	57.5		
				07 09			
163	Sept. 26	Id	ePz Fz	H 20 25	16.5		See list, page 113
				20 26			
164	Sept. 26	Id	iPz iS _{NEZ} F	H 23 37	57.8		Blast?
				AH 23 37	58.9		(Runs into next)
165	Sept. 26	Id	iPz iS _N iS _Z F	H 23 38	04.1		Blast?
				A 23 38	04.7		
				H 23 38	05.2		Runs into next
166	Sept. 26	Id	iPz iS _Z F	H 23 38	08.7		Blast?
				H 23 38	09.1		
				23 38			
167	Sept. 27	Id	iPz iS _{NEZ} F	H 00 28	44.6		
				AH 00 28	46.5		
				00 29			
168	Sept. 27	Id	iPz iS _{NEZ} F	H 00 57	38.0		
				AH 00 57	41.5		
				00 58			
169	Sept. 27	Id	iPNZ iS _{NEZ} F	AH 23 11	17.6		Blast?
				AH 23 11	18.5		
				23 12			
170	Sept. 27	Id	iPz iS _Z F	H 23 22	16.2		Blast?
				H 23 22	16.8		
				23 22			
171	Sept. 29	Iu	iS _E iSKS _E iSKS _N eL _{NE} F	G 17 31	27.5		Wellington: 22°S 167°E
				G 17 32	16.0		
				G 17 32	16.5		
				G 17 43.1			
				18 48			
172	Sept. 29	Id	iPz iS _{NEZ} F	H 21 02	36.1		
				AH 21 02	37.5		
				23 03			
173	Sept. 29	Id	iPz ePN iS _{NEZ} F	H 23 10	44.0		
				A 23 10	44.5		
				AH 23 10	45.3		
				23 11			



BERKELEY

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
174	Sept. 30	Id	iP _Z iS _{NEZ} F	H 23 33 34.0 AH 23 33 36.5 23 34	
175	Sept. 30	Id	iP _{EZ} iS _{EZ} F	AH 23 42 00.0 AH 23 42 01.4 23 42	

MOUNT HAMILTON
 THE LICK OBSERVATORY STATION, UNIVERSITY OF CALIFORNIA
 MOUNT HAMILTON, CALIFORNIA



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	ϵ
Wood-Anderson	E	3000	1	15
	N	3000	1	15

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	July 1	IIV	iP _{NE} iS _E iS _N F	07	51	48.0 24.5 25.0 08	Pasadena epicenter near Ventura
2	July 1	Iv	eP _{NE} iN iN iN iN iE F	07	51	48.0 54.3 05.6 28.7 56.1 33.2 12	
3	July 1	I	eN eE iE iN F	08	19	51.5 58.0 37.6 38.8	Aftershock of Ventura quake. (Runs into following shock)
4	July 1	I	eE eN F	08	22	20.5 22.0	(Runs into next shock)
5	July 1	I	eE eN F	08	23	20.5 27.0 25	After shock of previous
6	July 1	I	eE eN F	08	26	01.5 02.5 28	
7	July 1	I	eN eE F	08	31	28.0 33.0 34	
8	July 1	I	eN eE F	08	49	25.0 35.0 52	After shock
9	July 1	I	eN eE F	09	06	00 09.0 08	After shock
10	July 1	I	eNE F	09	46	13.5 48	After shock
11	July 1	Id	iP _{NE} iS _{NE} F	12	26	49.6 51.0 27	



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
12	July 1	Id	iP _{NE} iS _E iNE F	16 14 39.8 16 14 46.7 16 14 48.8 16 17			
13	July 3	Iu	ePN ePE eSE eSN F	07 24 23.5 07 24 25.5 07 34 55.4 07 35 06.9 07 39	USCGS: 33°S 68°W Pasadena: P 07:24:00 S 07:34:11 L 07:50.8		
14	July 6	Iu	ePN ePE F	00 46 18.0 00 46 18.5 ?	URSS: 33°N 142°E		
15	July 6	Id	iP _{NE} eS _N iS _{NE} F	03 50 49.2 03 50 53.0 03 50 53.6 03 53	See list, page 112		
16	July 6	Id	eP _{NE} iS _{NE} F	19 42 52.5 19 42 54.5 19 44			
17	July 9	Id	iP _{NE} iS _{NE} F	15 48 13.2 15 48 15.0 15 50			
18	July 10	Iu	ePN ePE F	09 41 09.0 09 41 09.5 09 43	Pasadena: Deep (h=120 km) Approx. 18°S 70°W		
19	July 11	I	eP _{NE} F	01 25 16.0 17 26	USCGS 5.5°N 83.1°W		
20	July 11	I	ePE ePN F	02 08 14.0 02 08 14.5 02 10	After shock		
21	July 12	Id	ePN iE iSN F	10 51 33.0 10 51 35.7 10 51 36.0 10 52			
22	July 12	Iv	ePN ePE eN eSN iN iN	16 19 46.5 16 19 53.5 16 20 11.5 16 20 22.0 16 20 50.4 16 20 57.6	Pasadena: After shock of Sta. Barbara of July 1 07h		



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
22	July 12 (cont.)	Iv	iE iE iE F	16	20	41.2 53.5 04.2 24	
23	July 13	Id	eP ⁻ NE iS ⁻ NE F	23	51	18.6 25.2 54	See list, page 112
24	July 14	I	ePE ePN eN eE F	01	45	29.0 34.0 03.5 12.0 48	
25	July 14	Id	ePNE iSNE F	17	58	40.0 41.2 59	
26	July 14	Id	iPNE iSNE F	18	12	53.5 54.9 13	
27	July 14	I	ePE ePN eE eN eNE F	23	38	51.5 52.0 56.0 56.5 00.0 40	
28	July 15	Id	eP ⁻ E eS ⁻ N F	20	37	59.5 06.0 39	See list, page 112
29	July 16	Iu	e ^o PE e ^o PN eN eE e ^o SN eSE eLNE F	03	17	28.5 31.0 56.0 57.0 39.0 40.0 57.0 37	JSA: 24.9°N 109°0 W O = 03:13:30
30	July 18	Iv	ePNE eP ^o eE iS ^o N iSE F	03	54	41.0 46.5 19.0 24.3 27.4 20	Near Fallon



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
31	July 18	Iv	eP iP _{NE} e _N e _{SE} i _{SE} F	18	48	45.5 46.1 56.0 57.0 57.8 50	San Benito County?
32	July 19	Iu	eP _E eP _N F	09	35	23.5 24.0 38	URSS: 39°N 37.5°W
33	July 19	Iu	eP _E eP _N F	15	25	39.5 37.5 28	URSS: 33°N 135°E
34	July 19	Id	e _E e _{SN} F	18	28	34.5 42.0 29	See list, page 112
35	July 21	Id	eP _N i _{SE} e _{SN} F	10	47	30.0 34.0 34.5 48	
36	July 23	Id	eP _{NE} i _{SE} i _{SN} F	21	12	38.5 52.7 53.2 15	See list, page 112
37	July 24	Iu	eP _N eP _{NE} F	14	05	26.5 27.0 07	URSS: 26°N 127°E
38	July 25	Id	iP _{NE} i _{SNE} F	10	49	08.1 10.6 50	
39	July 26	I	e _{NE} e _N e _E F	16	51	06.5 17.5 18.0 52	See list, page 112
40	July 26	Iu	eP _N eP _E e _{SN} F	20	23	46.5 47.0 34 35.5 36	
41	July 28	Id	iP _{NE} i _{SNE} F	17	21	56.1 04.2 ?	See list, page 112

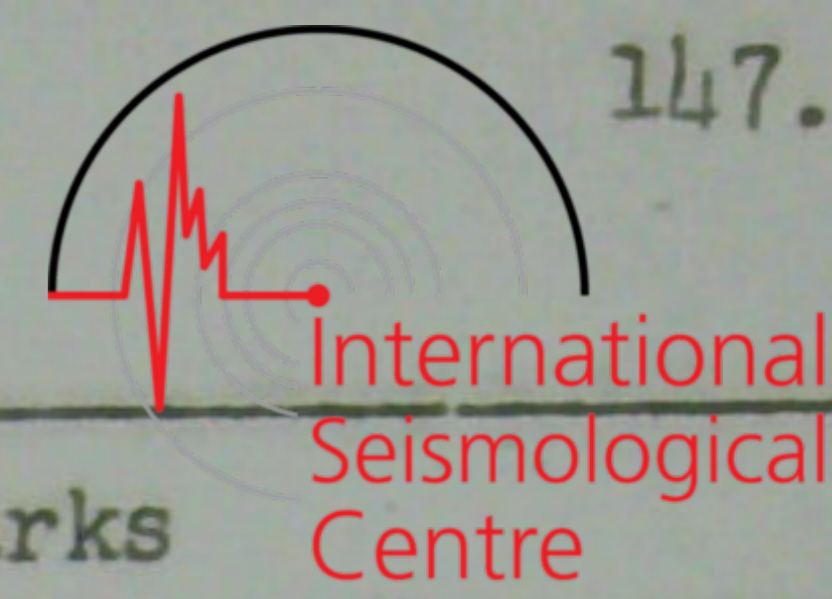


MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
42	July 30	Ir	ePE ePN eE eN eSE eN eLE eN F	01 57	34.5 35.0 47.5 43.5 51.5 08.5 51.5 06.4		USCGS: 60°9 N 149°2 W
43	July 30	Id	ePNE eSNE F	21 36	09.0 19.5		See list, page 112
44	Aug. 2	Iu	ePNE ePcPN eE eN eN eSE eSN eLN eLE F	11 54	02.0 12.5 22.5 25.0 38.5 36.0 31.6 19.2 19.5		Deep? USCGS 30°S 178°5 W (Raul Is., Kermadecs)
45	Aug. 2	Id	ePN ePE eSNE F	13 21	03.5 04.0 09.5		See list, page 112
46	Aug. 2	IIId	iPE iPN iSE iSN F	17 35	44.2 45.6 48.2 50.0		See list, page 112
47	Aug. 4	II d	ePNE eSE eSN F	04 34	43.7 45.0 45.5		
48	Aug. 4	Ir	ePN ePE epPE ePPN eE eSE eSN eE F	11 01	06.5 12.0 19.0 20.5 10.5 41.5 43.0 08.0		USCGS: 52°N 176°5W Deep
				11 13			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
49	Aug. 4	Id	ePE ePN eS _{NE} F	21 35	59.0 00.5 04.0		
50	Aug. 6	Ir	ePN ePE epPN epPE ePPN eN eE eS _E eE eE F	06 21 06 21 06 22 06 22 06 23 06 24 06 24 06 27 06 27 06 27 06 34	30.5 31.0 02.0 03.0 05.0 12.0 13.0 36.0 40.5 41.0	USCGS: 55.5°N 160°W Deep	
51	Aug. 8	Id	e _{PE} e _{PN} e _{SE} e _{SN} i _{SN} F	23 44 23 44 23 44 23 44 23 44 23 45	00.5 01.0 07.5 08.0 08.8	See list, page 112	
52	Aug. 15	Iu	ePE ePN eE eN eS _E eS _N eLN F	06 21 06 21 06 22 06 22 06 25 06 25 06 49 07 17	52.5 53.0 05.5 17.0 10.0 11.5 .3	USCGS: 19°N 27°W O = 06:09.5	
53	Aug. 19	Iv	ePN ePE eE eE eN F	21 10 21 10 21 11 21 11 21 11 21 16	41.5 43.5 26.5 56.5 59.0	See list, page 112	
54	Aug. 20	I	ePNE eN F	08 32 08 32 08 35	21.5 40.5		
55	Aug. 23	Id	i _{PN} ePE e _E i _{NE} F	05 29 05 29 05 29 05 29 09 32	45.6 46.5 52.5 54.8	See list, page 112	



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
56	Aug. 25	Id	ePN ePE iSE iSN F	19	40	32.0 34.0 39.9 40.8 42	See list, page 112
57	Aug. 26	Id	ePN ePE eSE eSN F	04	31	42.5 43.5 50.0 50.5 34	See list, page 112
58	Aug. 27	Iv	ePNE eSNE F	21	32	55.5 31.8 34	Pasadena local, near Convict Lake
59	Aug. 28	I	eN eE F	06	50	00.0 05.0 52	JSA: 19.6°N 109.1°W
60	Aug. 29	Iv	ePN ePE eN eE eN eSE iSN iSE eE eE eN eN F	13	10	57.5 04.5 13.5 15.0 58.5 14.5 16.7 19.1 45.5 07.5 36.0 46.5	JSA: 43.0°N 123.8°W (Runs into following)
61	Aug. 29	Iv	ePNE eSNE iE F	13	18	24.5 29.5 30.8 40	After shock of preceeding
62	Aug. 30	Iu	eE eN eE eN eE F	09	48	35.0 36.5 47.5 25.5 28.5 50	Pasadena: 19°N 147°E O=09-36-23
63	Aug. 30	Iu	eN eE eE eN F	13	19	0.00 06.5 21.0 58.5 24	Pasadena: 17.5°N 146.5°E O=13-06-56



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
64	Aug. 30	Iv	ePE ePN eE eN eE eN F	13	30	09.5 10.0 13.5 14.0 24.0 28.5 34	Pasadena: After shock of Aug. 29 - 13h (43°N 124°W approx.)
65	Aug. 31	Id	ePN iSNE F	07	52	37.0 39.2 53	Small
66	Aug. 31	I	eN eN eE eN F	08	23	14.5 21.0 24.5 04.0 36	
67	Sept. 2	Iv	ePE iPN iN iN eSE iSN iSE F	05	48	19.0 19.4 28.1 33.6 38.0 38.5 38.8 53	See list, page 112
68	Sept. 3	I	ePN ePE iN iE eN F	01	37	31.0 32.5 40.0 40.1 45.5 39	See list, page 112
69	Sept. 4	Iu	ePE ePN iN eE eN eE eE eE eE e(L?)N eE eE F	10	34	42.5 43.5 29.9 35.0 21.5 59.5 11.5 13.5 56.3 02.3 17.3 25	Deep, Felt at Rabaul Wellington: 6°S 151°5 E
70	Sept. 5	Iu	ePN ePE F	23	30	32.5 33.5 35	JSA: 54°0 N 172°5E O=23:22:00



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
71	Sept. 7	Iu	eNE F	01 01 24.5 01 03			BCIS: 71°5N 235W O=00:50:09
72	Sept. 8	Iv	ePN ePE eSN eSE iSE F	03 13 37.0 03 13 40.5 03 14 21.5 03 14 24.0 03 14 32.5 03 19			Pasadena: Aftershock of July 1 07 ^h . 34°20'N 119°35'W O=03:12:45
73	Sept. 9	Iu	ePNE eN F	07 32 40.0 08 04 24.0 08 10			USCGS: 7°S 153°E
74	Sept. 12	Id	ePN ePE iSNE F	19 56 19.0 19 56 19.5 19 56 27.5 19 58			See list, page 112
75	Sept. 13	Ir	ePNE iE iN iE iN eSE eLNE F	18 19 55.0 18 19 56.7 18 20 00.5 18 20 18.7 18 20 22.5 18 23 32.0 18 26.8 19 40			Pasadena: Deep? USCGS: 18.7°N 106°9W O=18:49.9
76	Sept. 14	Iv	iPNE iSN iSE iE F	16 44 12.6 16 44 42.8 16 44 43.7 16 44 59.8 ?			Foreshock of 18 ^h 39 ^m (Runs into next shock)
77	Sept. 14	I	eN eNE F	16 51 31.5 16 52 01.0 16 53			
78	Sept. 14	Iv	iPNE iSN F	16 55 41.1 16 56 46.3 16 60			
79	Sept. 14	I	ePNE iNE F	17 02 22.5 17 02 55.4 17 04			
80	Sept. 14	Iv	eN eE eSNE F	17 29 47.0 17 29 47.5 17 30 15.5 17 32			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
81	Sept. 14	Iv	ePE ePN eSN eSE F	18	16	53.5 54.0 22.5 23.0 19	
82	Sept. 14	IIv	iPE iPN iSE iSN F	18	21	59.4 00.7 30.1 30.6 36	Foreshock of 18 ^h 39 ^m
83	Sept. 14	I	eN eE F	18	25	29.0 30.5 26	
84	Sept. 14	IIv	iPE iPN iSN iSE F	18	39	52.7 53.5 22.2 23.0 56	Pasadena: Epicenter Owens Valley (37°34'N 118°44'W) O=18-19-12 Magnitude 6 Numerous aftershocks
85	Sept. 14	Id	ePN eSN F	19	20	03.0 12.0 21	
86	Sept. 14	Iv	iPNE iSNE F	21	15	43.7 14.2 20	After shock of Owens Valley
87	Sept. 15	Iv	ePNE eN eE eE F	01	37	58.0 02.0 04.5 23.0 42	
88	Sept. 15	Iv	ePE ePN iSNE F	02	55	05.0 05.5 30.0 58	
89	Sept. 15	Iv	ePN eSN eE F	04	04	58.0 21.0 30.0 07	
90	Sept. 15	Id	ePN eSNE eN F	04	42	55.0 00.5 03.0 44	See list, page 112

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
91	Sept. 15	I	ePN ePE iN eN F	05	55	16.5 21.0 51.3 55.5 58	
92	Sept. 16	Iu	iPNE eSE eSE eLN eLE eMN eME F	21	51	39.9 03.5 06.0 17.4 17.6 22.4 22.8 57	USCGS: 28.5°S 178°W O=21:39.1
93	Sept. 17	IIId	iPNE iSNE F	13	45	50.7 52.3 47	Foreshock of Sept. 18 7 ^h 33 ^m .
94	Sept. 17	IIId	iPNE iSNE F	14	08	20.3 22.9 10	
95	Sept. 17	Id	ePNE iSNE F	14	13	08.5 10.5 14	
96	Sept. 17	II	iPNE iSNE F	14	14	16.1 17.8 16	Foreshock of Sept. 18 07 ^h 33 ^m
97	Sept. 17	IIIId	iPNE iSNE F	14	23	39.0 40.5 25	Foreshock of Sept. 18, 07 ^h 33 ^m See list, page 112
98	Sept. 18	IIIId	iPN F	07	33	28.5 38	S-P=1.5s on fore & after shocks. 30 foreshocks; 44 aftershocks. See list, page 112
99	Sept. 18	IIId	iPN iSN F	08	08	32.3 33.9 09	After shock of previous
100	Sept. 18	IIId	iPN iSN iN F	08	16	41.4 42.9 44.8 17	After shock of 7 ^h 33 ^m



MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
101	Sept. 18	IIId	iP _N iS _N F	11 01 46.0 11 01 47.6 11 03			Strong after shock of 7 ^h 33 ^m
102	Sept. 18	Iu	iP _N ip _N iS _N eS _N e _N F	13 25 09.9 13 25 35.7 13 25 46.1 13 33 46.0 13 34 11.0 13 40			USCGS: 13°S 73°W Deep h = 100 km Peru
103	Sept. 18	IIId	iP _N iS _N F	15 32 27.7 15 32 29.3 15 33			After shock of 7 ^h 38 ^m
104	Sept. 19	IIId	iP _{NE} iS _{NE} i _N F	13 25 03.2 13 25 04.8 13 55 06.6 13 26			After shock of Sept. 18, 7h38m
105	Sept. 19	Iv	eP _{NE} iS _{NE} F	20 14 16.0 20 14 48.7 20 16			
106	Sept. 20	IIIId	iP _N iS _N F	19 04 58.3 19 04 59.8 19 07			After shock of Sept. 18, 7 ^h
107	Sept. 21	Iv	e _N i _N i _N F	07 46 34.0 07 47 07.5 07 47 11.0 07 48			
108	Sept. 21	IIv	eP _N eP _E i _{NE} i _{SE} i _{SN} i _{NE} i _N F	19 53 59.0 19 53 59.5 19 54 01.9 19 54 53.4 19 54 56.2 19 54 59.1 19 55 09.1 20 05			Pasadena: Near Gorman 34°52'N 118°56'W
109	Sept. 21	I	iS _{NE} F	22 45 43.7 22 46			
110	Sept. 22	Iv	eP _{NE} iS _N F	03 56 39.8 03 57 09.0 03 59			Pasadena: Owens Valley

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
111	Sept. 24	Iu	ePN ePR ₁ E ePR ₁ N ePR ₂ N eSN eSE eLN eLE F	01 01 01 01 01 01 01 01 01	10 13 13 14 18 18 26 27 50	49.5 07.0 10.5 02.5 44.0 46.0 26.1 27.2 50	Pasadena: Deep USCGS: 52°N 158°E (approx.) JSA: h=100 km O=01-01-27
112	Sept. 24	I	eNE iN iE F	13 13 13 13	49 49 49 50	39.0 42.0 42.5 50	See list, page 113
113	Sept. 25	Ir	eP _E eP _N eS _E eS _N eL _{NE} F	17 17 18 18 18 19	55 55 01 01 04 10	31.0 34.5 03.5 06.5 04.2 10	Pasadena: Strong on Hawaii USCGS: 19°N 155°W Normal
114	Sept. 26	Id	iP _{NE} iS _{NE} F	01 01 01	54 56 57	55.1 03.0 57	See list, page 113
115	Sept. 26	Id	eP _N eP _E iN iS _E iS _N F	07 07 07 07 07 07	07 07 07 07 07 09	29.5 30.5 32.6 36.1 37.5 09	See list, page 113
116	Sept. 26	Iv	eP _{NE} iS _N F	20 20 20	25 25 26	02.5 11.6 26	See list, page 113
117	Sept. 27	Iv	eP _{NE} eS _{NE} F	19 19 19	49 49 51	19.5 48.5 51	Owens Valley
118	Sept. 28	Iv	eP _N eP _E eS _E iS _{NE} F	15 15 15 15 15	05 05 06 06 08	57.0 58.0 28.0 30.9 08	Owens Valley
119	Sept. 30	Iu	eP _{NE} F	08 08	32 35	06.0 35	Wellington: 10°S 160°E O=08:19.2

PALO ALTO

THE BRANNER STATION, STANFORD UNIVERSITY
PALO ALTO, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

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

Time -- All determinations are reduced to Universal Time.

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

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	ε
Wood-Anderson	E	3000	1	15
	N	3000	1	15

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	July 1	Iiv	eP [#] N iP ^{NE} iN iS [#] N iS ^N iN F	07	51	53.5 58.6 15.5 44.0 52.0 02.5 14	Pasadena; Epicenter in Ventura County
2	July 1	Iv	eN eE iE iN iNE F	08	19	59.0 04.0 32.5 35.5 38.7 25	After shock of previous
3	July 1	Iv	eNE F	10	26	19.3 28	After shock
4	July 1	Id	eP ^{NE} iS ^{NE} F	16	14	44.0 55.0 16	See list, page 112
5	July 1	Id	iP ^{NE} iSE F	20	52	53.8 55.1 54	
6	July 1	Iv	eP ^N eE eE eN eE eSE eSN F	23	54	38.5 39.5 54.5 00.5 20.0 36.5 37.5 58	Ventura after shock
7	July 6	Id	iP ^E eSE iSE F	03	50	56.3 03.5 05.6 53	See list, page 112
8	July 8	Iv	eP ^{NE} eE F	02	30	30.0 41.5 32	
9	July 8	Id	ePE eSE F	15	48	23.5 28.5 50	
10	July 8	Id	ePE eSE F	18	01	10.0 12.0 02	



PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
11	July 8	Id	ePE eSE F	18 02	46.0 48.5		
12	July 8	Id	ePE eSE F	18 04	16.5 19.0		
13	July 10	Id	ePE e N eSNE F	20 45	17.0 17.5 20.0		
14	July 12	IIId	iPNE iSE i N F	00 02	20.8 21.1 22.2		
15	July 12	Iv	ePN e E iSE eSN eE eN E F	16 19	50.0 53.0 55.4 57.5 06.0 07.5 09.0	After shock of Ventura quak	
16	July 13	IIId	ePE iPE i N eSE iSNE F	23 51	14.0 14.7 15.1 16.5 17.8	See list, page 112	
17	July 15	Id	iPNE iSE i N F	18 15	11.2 12.8 13.2		
18	July 15	IIId	iPNE iSNE F	20 37	52.9 55.9	See list, page 112	
19	July 16	Ir	ePN e E iN iE iN eE	03 17	23.5 25.5 56.2 59.1 05.5 16.0	Normal JSA: 24.9°N 109.0°W O=03:13:30	



PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
19	July 16 (cont.)	Ir	eGE eGN eLE F	03	21.9 22.3 23.4 36		
20	July 18	Iv	eP [*] NE iN iS [*] E e N F	03	54 48.8 55 12.6 55 33.6 55 34.5 59	Near Fallon, Nev.	
21	July 18	Iv	iPNE iSE i N F	18	48 50.1 49 06.3 49 06.7 51	San Benito County?	
22	July 19	Id	iPE iSE F	18	28 28.1 28 31.7 29	See list, page 112	
23	July 23	IIId	iP [*] NE iE iSN i E F	21	12 35.4 12 37.0 12 44.2 12 45.6 15	See list, page 112	
24	July 26	Iv	ePE iN iE F	16	51 06.5 51 14.3 51 15.1 52	See list, page 112	
25	July 28	Id	ePE iPNE iSNE F	17	22 01.0 22 01.5 22 11.5 24	See list, page 112	
26	July 29	Id	iPN iSN F	19	57 06.2 57 09.5 58		
27	July 30	Ir	ePE e N eSE e N eLNE eME F	01	57 30.5 57 31.5 02 02 10.5 02 02 22.0 02 06.2 02 09.2 17	USCGS: 60.9°N 149.2°W O = 01:51.5	
28	July 30	Id	ePE iSNE F	21	36 07.0 36 14.5 37	See list, page 112	

No.	Date	Char-acter	Phase	PALO ALTO			Remarks	
				Time (U.T.)				
				h.	m.	s.		
29	July 31	Id	iPNE	00	02	29.0		
			iSNE	00	02	30.5		
			F	00	03			
30	Aug. 2	Iu	ePN	11	54	00.5	USCGS: 30°S 178.5°W h=100 km Wellington: Major earth- quake; strong on Raoul I., Kermadecs.	
			e E	11	54	01.0		
			iNE	11	54	12.4		
			ipPE	11	54	22.2		
			eSN	12	04	23.0		
			e E	12	04	34.0		
			iN	12	04	42.9		
			iE	12	05	08.9		
			eLN	12	19.5			
			eLE	12	19.9			
			eMN	12	24.0			
			eME	12	25.8			
			F	12	44			
			31	Aug. 2	Id	ePNE		
eE	13	21				14.5		
eN	13	21				21.0		
F	13	22						
32	Aug. 2	IIId	iPE	17	35	50.4	See list, page 112	
			iPN	17	35	51.0		
			i E	17	35	51.2		
			iSNE	17	36	00.4		
			F	17	38			
33	Aug. 4	Iu	iPN	11	01	08.0	USCGS: 52°N 176.5°E h=100 km	
			iPE	11	01	08.7		
			iSE	11	07	34.9		
			eSN	11	07	37.5		
			F	11	12			
34	Aug. 6	Ir	iPNE	06	21	28.2	Deep USCGS: 55.5°N 160.0°W h=200 km	
			ipPE	06	22	59.2		
			eScPE	06	27	40.5		
			e N	06	27	41.5		
			iSE	06	31	40.3		
			N	06	31	45.0		
			F	06	37			
35	Aug. 8	Id	ePE	18	21	42.0		
			iSNE	18	21	45.6		
			F	18	23			
36	Aug. 8	IIId	iPNE	23	43	54.9	See list, page 112	
			iSNE	23	43	58.3		
			F	23	45			

PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
37	Aug. 10	Id	ePE eSE F	04	41	59.5 07.5	
				04	43		
38	Aug. 10	Ir	eN ePE iE iE F	05	10	32.5 34.0 51.0 15.7	Pasadena: S.E. Alaska?
				05	15		
39	Aug. 10	Id	ePE iS _{NE} F	14	38	49.1 50.1	
				14	39		
40	Aug. 10	IIId	iP _{NE} iS _{NE} iS _N F	16	20	49.8 51.2 52.2	
				16	21		
41	Aug. 10	Iu	eP _{NE} F	17	12	20.0	Pasadena: S. America
				17	14		
42	Aug. 13	IIId	iP _{NE} iS _{NE} F	17	55	07.4 08.5	
				17	56		
43	Aug. 15	Iu	ePE eN eSE eN iE eLN eMN F	06	21	52.5 54.5 49.0 12.5 12.9 49.3 53.9	USCGS: 19°N 27°W
				06	55		
44	Aug. 19	Iv	ePE eN eN eE F	21	10	36.5 37.5 12.5 13.5	See list, page 112
				21	13		
45	Aug. 20	I	eP _{NE} F	08	32	11.5	
				08	35		
46	Aug. 20	IIId	iP _{NE} iS _{NE} F	22	50	14.5 15.8	
				22	51		



PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
47	Aug. 22	Id	iP _{NE} eS _{NE} iS _N F	23 57 11.8 23 57 13.0 23 57 13.9 23 57.6	
48	Aug. 23	Id	eP _E eS _N iS _E F	05 29 50.0 05 29 58.0 05 29 58.5 05 31	See list, page 112
49	Aug. 25	Iv	eP _N eP _E iS _{NE} F	19 40 38.0 19 40 42.0 19 40 51.0 19 40	See list, page 112
50	Aug. 26	Iv	eP _E iS _{NE} F	04 31 47.5 04 32 01.2 04 33	See list, page 112
51	Aug. 27	Id	eP _E eS _E F	07 54 35.0 07 54 38.0 07 56	
52	Aug. 27	IIId	iP _{NE} iS _N iS _E F	23 09 21.5 23 09 23.1 23 09 24.2 23 10	
54	Aug. 27	Id	iP _E eS _{NE} iS _{NE} F	23 12 19.4 23 12 20.5 23 12 21.3 23 59	
55	Aug. 29	Iv	eP _E iP _{NE} iS _E i _N F	13 11 05.5 13 11 15.3 13 12 15.5 13 12 17.6	USA: 43.0°N 123.8°W (Runs into next shock)
56	Aug. 29	Iv	e _N eP _E e _N iS _E e _N F	13 30 12.5 13 30 13.0 13 31 13.0 13 31 14.5 13 31 15.0 13 33	After shock of 13 ^h 11 ^m ?
57	Aug. 29	Iv	eP _E iS _N iS _E F	19 15 35.0 19 16 37.0 19 16 43.0 19 19	After shock of 13 ^h 11 ^m ?



PALO ALTO					Remarks
No.	Date	Char-acter	Phase	Time (U.T.)	
				h. m. s.	
58	1941 Aug. 29	Iv	ePE	23 18 25.0	Aftershock?
			iSE	23 19 26.6	
			eN	23 19 27.3	
			F	23 22	
59	Sept. 2	Iv	ePN	05 48 15.5	See list, page 112
			ePE	05 48 16.0	
			eP*E	05 48 18.0	
			iSNE	05 48 30.3	
			F	05 51	
60	Sept. 3	Iv	ePNE	01 37 37.0	See list, page 112
			iSE	01 37 48.1	
			iN	01 37 49.6	
			F	01 38	
61	Sept. 5	Iu	ePE	10 34 53.5	Deep Wellington 6°S 151.5°E
			eN	10 34 57.0	
			eSN	10 46 03.5	
			eSE	10 46 06.0	
			eLE	11 02.0	
			eN	11 03.8	
			F	11 14	
62	Sept. 7	Id	iPN	22 34 01.0	
			iPE	22 34 02.1	
			iSNE	22 34 02.3	
			F	22 34.6	
63	Sept. 8	IIv	ePE	03 13 45.0	Santa Barbara: aftershock
			iPN	03 13 59.7	
			iPE	03 14 00.2	
			iSN	03 14 29.0	
			iSE	03 14 31.5	
			iNE	03 14 48.5	
			F	03 19	
64	Sept. 9	Iu	ePE	07 32 38.0	Wellington: 5.5°S 155°E
			eN	07 32 38.5	
			eE	07 42 49.5	
			eN	07 42 50.5	
			eLE	08 03.4	
			F	08 29	
65	Sept. 11	Iv	ePE	09 04 34.5	Near Hollister?
			eSNE	09 04 45.5	
			F	09 05	

PALO ALTO					Remarks
No.	Date	Char-acter	Phase	Time (U.T.)	
	1941			h. m. s.	
66	Sept. 12	Iv	e \bar{P} E i \bar{S} E i \bar{N} F	19 56 24.5 19 57 37.0 19 57 39.1 19 56	See list, page 112
67	Sept. 13	Ir	iPNE iE iN eSN eSE F	18 20 00.3 18 20 19.8 18 20 22.2 18 24 18.5 18 24 21.5 19 15	USCGS: 18.7°N 106.9°W
68	Sept. 14	Iv	iPNE iPNE iE iSE F	16 44 18.6 16 44 27.5 16 44 46.6 16 44 53.2 ?	(Runs into next shock)
69	Sept. 14	Iv	iPNE iPE iSN iSE F	16 55 46.6 16 55 55.3 16 56 22.2 16 56 23.2 17 00	
70	Sept. 14	I	eE F	17 02 30.5 17 04	
71	Sept. 14	I	eE eN F	17 29 57.0 17 30 23.5 17 31	
72	Sept. 14	I	eE F	18 17 07.0 18 18	
73	Sept. 14	Iv	iPNE iPNE iSE iN iSE F	18 22 05.4 18 22 14.2 18 22 40.9 18 22 45.4 18 22 55.6 18 31	
74	Sept. 14	Iv	iPNE iPNE iSE F	18 39 59.0 18 40 06.2 18 40 35.5 18 55 ca	Owens Valley
75	Sept. 14	I	eE eN iN F	18 55 11.5 18 55 14.5 18 55 43.0 18 57	

No.	Date	Char-acter	Phase	PALO ALTO			Remarks
				Time (U.T.)			
	1941			h.	m.	s.	
76	Sept. 14	I	eP _{NE} F	20	12	22.5	
				20	13		
77	Sept. 14	I	eP _{NE} eE F	20	21	45.5	
				20	22	02.0	
				20	24		
78	Sept. 14	Id	eP _{NE} iS _{NE} F	20	28	27.0	
				20	28	30.7	
				20	29		
79	Sept. 14	Iv	eP _{NE} iP _{NE} iS _N F	21	15	49.3	Aftershock of Owens Valley
				21	15	57.7	
				21	16	23.4	
				21	19		
80	Sept. 14	I	eE F	21	37	30.0	
				21	38		
81	Sept. 14	I	eE eE F	21	45	42.0	
				21	45	45.0	
				21	47		
82	Sept. 14	Iv	ePE iE eE eN F	23	03	50.5	
				23	04	01.0	
				23	04	25.5	
				23	04	30.5	
				23	17		
83	Sept. 15	Iv	ePE eN eE eN iE F	01	38	01.0	
				01	38	03.0	
				01	38	19.0	
				01	38	20.5	
				01	38	44.0	
				01	44		
84	Sept. 15	Iv	ePE iE iN iSE iN F	02	55	10.5	
				02	55	16.6	
				02	55	17.8	
				02	55	44.1	
				02	55	45.7	
				02	57		
85	Sept. 15	I	ePE eE F	04	05	10.0	
				04	05	37.5	
				04	06		
86	Sept. 15	Iv	eP _N ePE iE iSE F	04	43	01.5	See list, page 112
				04	43	02.5	
				04	43	10.0	
				04	43	11.8	
				04	44		



PALO ALTO					Remarks
No.	Date	Char-acter	Phase	Time (U.T.)	
				h. m. s.	
87	Sept. 15	I	ePE	05 55 32.0	
			iE	05 55 40.0	
			eN	05 55 43.0	
			iE	05 55 44.0	
			iE	05 56 20.4	
			F	05 59	
88	Sept. 15	I	ePE	19 39 40.5	
			iE	19 39 47.0	
			iE	19 39 51.8	
			iN	19 39 54.0	
			F	19 40	
89	Sept. 15	Iv	ePE	20 05 15.0	
			eSE	20 05 52.5	
			F	20 06	
90	Sept. 15	Iv	ePNE	22 55 49.5	
			eSNE	22 56 11.5	
			F	22 57	
91	Sept. 15	Iv	ePE	23 22 45.5	
			iS _{NE}	23 23 11.4	
			F	23 24	
92	Sept. 16	Iv	ePE	03 04 51.0	
			eSE	03 05 17.5	
			F	03 06	
93	Sept. 16	Iv	ePE	08 36 12.0	
			iS _{NE}	08 36 45.0	
			F	08 38	
94	Sept. 16	Iu	iPNE	21 50 37.9	USCGS: 28°5S 178°W
			iN	21 50 51.7	
			ipPE	21 50 52.7	
			eSE	22 01 58.0	
			eN	22 02 02.0	
			eN	22 14.3	
			eE	22 14.5	
			eLE	22 17.2	
			eN	22 17.3	
			eN	22 22.1	
			eME	22 22.4	
			F	22 41	
			95	Sept. 17	
iSE	13 46 02.7				
F	13 47				



PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
96	Sept. 17	Iv	eP _E iS _{NE} i _E F	14 08 26.5 31.0 31.4 14 09	Foreshock
97	Sept. 17	Iv	eP _{NE} i _E i _{NE} F	14 14 21.0 14 14 26.0 14 14 28.0 14 15	
98	Sept. 17	Iv	eP _{NE} iP _{NE} iS _E iS _E F	14 23 44.7 14 23 45.2 14 23 48.7 14 23 50.5 14 25	See list, page 112
99	Sept. 17	Id	iP _{NE} iS _{NE} F	20 46 07.9 20 46 09.0 20 47	
100	Sept. 18	Id	eP _E eS _E F	06 57 42.5 06 57 47.5 06 59	Foreshock
101	Sept. 18	Id	iP _{NE} iS _{NE} F	07 28 56.0 07 29 01.8 07 30	
102	Sept. 18	IIIId	iP _{NE} F	07 33 33.8 07 39	S-P=6s in foreshocks See list, page 112
103	Sept. 18	Id	eP _E iS _E F	08 16 48.0 08 16 53.3 08 17	Aftershock
104	Sept. 18	Id	eP _E e _N iS _E i _N F	11 01 52.0 11 01 52.5 11 01 58.5 11 01 59.0 11 03	
105	Sept. 18	Iu	iP _E i _N iP _E i _N eS _E e _N F	13 25 12.2 13 25 15.8 13 25 36.5 13 25 37.1 13 34 15.8 13 34 18.5 13 39	Peru - Deep



PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
106	Sept. 18	Iv	eP _{NE}	15 32 33.5	
			iS _{NE}	15 32 39.5	
			F	15 33	
107	Sept. 19	Iv	eP _E	13 25 09.5	
			eS _E	13 25 14.5	
			F	13 26	
108	Sept. 19	Iv	eP _E	20 14 25.0	
			eS _E	20 15 00.5	
			F	20 16	
109	Sept. 19	IIId	iP _{NE}	21 40 56.0	
			iS _{NE}	21 40 57.2	
			F	21 41	
110	Sept. 20	I	iP _{NE}	19 05 03.5	
			iS _{NE}	19 05 09.5	
			F	19 07	
111	Sept. 21	I	iP _{NE}	19 54 04.5	Pasadena: Near Gorman
			i _E	19 54 19.6	
			i _E	19 54 42.8	
			i _E	19 55 05.3	
			F	20 02	
112	Sept. 22	Iv	eP _E	03 56 45.5	Pasadena: Owens Valley
			iS _{NE}	03 57 18.6	
			F	03 58	
113	Sept. 24	Iu	i _N	01 10 56.0	USCGS: 52°N 158°E
			iP _E	01 10 57.5	
			eS _E	01 18 44.5	
			e _N	01 18 49.3	
				01 25.2	
			eL _E	01 27.3	
			e _N	01 27.4	
			eM _N	01 31.4	
			F	01 44	
114	Sept. 24	Id	eP _E	03 39 40.5	
			iS _E	03 39 44.1	
			F	03 40	
115	Sept. 24	Id	eP _E	13 49 40.0	See list, page 112
			i _{NE}	13 49 44.0	
			F	13 50	

PALO ALTO					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
116	Sept. 25	Iv	ePE iSE F	05 14 04.5 05 14 49.9 05 16	Pasadena: Felt at Sta. Barbara
117	Sept. 25	Ir	ePE eSE eNE eL N eE eM E eM N F	17 55 29.5 18 00 59.0 18 03.1 18 04.3 18 04.4 18 06.1 18 07.2 18 49	USCGS: 19°N 155°W
118	Sept. 25	Id	ePE iN iPE iSNE F	20 43 15.5 20 43 16.0 20 43 16.4 20 43 19.0 20 44	
119	Sept. 25	Id	iPNE iNE iS NE F	21 18 01.6 21 18 02.0 21 18 04.8 21 19	
120	Sept. 26	Id	ePNE iPN iE iSE F	01 55 01.0 01 55 02.8 01 55 07.6 01 55 14.2 ?	See list, page 113
121	Sept. 26	Iv	ePE iE iSN iSE F	07 07 35.0 07 07 45.2 07 07 45.9 07 07 47.4 07 09	See list, page 113
122	Sept. 26	Iv	eP [*] N eE iS [*] N iNE F	20 25 11.5 20 25 12.5 20 25 24.0 20 25 26.5 20 26	See list, page 113
123	Sept. 28	Iv	ePE eSNE F	15 06 03.0 15 06 38.0 15 08	Owens Valley



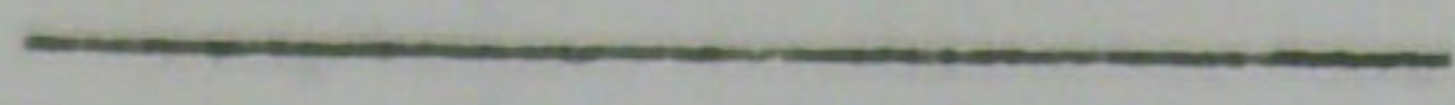
PALO ALTO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941				
124	Sept. 29	Id	ePNE	18 33 19.5	
			iPNE	18 33 20.2	
			iSNE	18 33 23.4	
			iME	18 33.5	
			F	18 34	
125	Sept. 29	Iv	ePE	18 37 20.0	
			eSE	18 37 31.5	
			F	18 38	



SAN FRANCISCO

THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO
SAN FRANCISCO, CALIFORNIA



CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\begin{aligned} \phi &= 37^{\circ} 46.14 \text{ N.} \\ \lambda &= 122^{\circ} 27.12 \text{ W.} \end{aligned}$$

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 ₀	ε
Wood-Anderson	E 15° S	1500	1	15
	N	3000	1	15



SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	July 1	Iv	ePN eE iE iN iSE iSN F	07	52	00.5 02.5 30.2 30.6 15.1 15.7 07	Pasadena: Epicenter in Ventura County
2	July 1	Iv	eE eN iN eN F	08	20	30.0 37.0 23.2 24.0 24	Ventura aftershock
3	July 1	Iv	eN eE iSN iSE F	16	14	52.0 52.5 06.3 06.8 16	See list, page 112
4	July 1	Iv	eE eN F	23	54	55.5 36.5 58	Aftershock of Ventura quake.
5	July 6	Iv	ePN eE eSN eSE F	03	51	03.0 05.5 19.0 19.5 52	See list, page 112
6	July 18	Iv	ePNE iSNE F	03	54	. 55 57	Near Fallon, Nev. (No time) S-P = 44s
7	July 23	IIId	iPE iSE F	21	12	 12 15	See list, page 112 (No time) S-P = 4.7s
8	July 30	Ir	iPN eLN F	01	57	 06 24	(No time) S-P = 4m 56s U.S.C.&G.S.: 60.9°N 149.2°W O = 01h 51.5m
9	August 2	Ir	iPE eSE eLE F	11	54	 05 20 44	(No time) U.S.C.&G.S.: 30°S 178.5°W Magnitude 7 S-P = 11m
10	August 2	Iv	iPE iSE F	17	36	 36 38	See list, page 112 (No time) S-P = 12s

SAN FRANCISCO

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No.	Date	Char-acter	Phase	Time	Remarks
				(U.T.)	
1941				h. m. s.	
11	August 4	Ir	iPN	11 01	(No time) S-P = 1m 24s U.S.C.&G.S.: 52°N 176.5W
			eSN	11 07	
			F	11 29	
12	August 6	Ir	iPN	06 21	(No time) U.S.C.&G.S.: 55.5 N 160° W
			ePN	06 23	
			F	06 30	
13	August 8	I	iPNE F	23 44 ?	See list, page 112 (No time)
14	August 26	I	iPNE F	04 31 04 32	See list, page 112 (No time)
15	August 29	Iv	ePN	13 11	J.S.A.: 43.0°N 123.8°W (No time) S-P = 1m
			eSN	13 12	
			F	13 19	
16	August 29	Iv	ePE	19 14	(No time) Pasadena: Aftershock of 13h
			eN	19 15	
			F	19 16	
17	Sept. 2	Id	iPNE	05 46	See list, page 112
			iSNE	05 46	
			F	05 49	
18	Sept. 8	I	ePNE	03 13	(No time)
			iNE	03 14	
			F	03 18	
19	Sept. 13	Ir	iPNE	18 20	(No time) S-P = 4m 13s U.S.C.&G.S.: 18.7°N 106.9°W
			eSNE	18 24	
			eLNE	18 28	
			F	18 49	
20	Sept. 14	IIv	iPNE	16 44	(No time) S-P = 37s Pasadena: Foreshock to 18h
			iSE	16 45	
			F	16 57	
21	Sept. 14	Iv	iPNE	16 56	(No time) S-P = 37s Foreshock to 18h
			iSNE	16 56	
			F	17 01	
22	Sept. 14	IIv	iPNE	18 22	(No time) S-P = 37s Foreshock to 18h 40m
			eSNE	18 23	
			F	18 33	
23	Sept. 14	IIv	iPE	18 40	(No time) S-P = 37s Pasadena: Major earthquake, Owens Valley.. Many after- shocks..
			eSE	18 41	
			F	18 54	



SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
24	Sept. 14	Iv	eP ^{NE} eS ^{NE} F	21 16 21 17 21 19	(No time) S - P = 37s
25	Sept. 15	Ir	eP ^E eL ^E F	21 52 22 17 22 46	(No time) U.S.C.&G.S.: 28.5°N 178°W
26	Sept. 17	Id	iP ^{NE} iS ^{NE} F	14 24 14 24 14 26	(No time) S-P = 8.4s
27	Sept. 18	IIId	iP ^{NE} F	07 34 07 38	(No time) S-P = 10.5s See list, page 112
28	Sept. 18	I	eP ^{NE} iS ^E F	11 06 11 06 11 07	(No time) S-P = 6.3s.
29	Sept. 20	Id	eP ^{NE} eS ^{NE} F	19 05 19 05 19 06	(No time) S-P = 10s
30	Sept. 21	Iv	eP ^N i ^N F	19 54 19 55 20 01	(No time) S-P = 44s Pasadena: Near Gorman
31	Sept. 25	I	eP ^N eP ^E e ^N eL ^N e ^N F	17 55 26.5 17 55 27.0 18 00 55.5 18 02 57.5 18 03 59.5 18 26	U.S.C.&G.S.: 19°N 155°W approx. Pasadena: Normal
32	Sept. 29	Id	eP ^E eP ^N eS ^E F	23 33 12.5 23 33 16.0 23 33 16.5 23 38	

FERNDALE

THE FERNDAL STATION
FERNDAL, CALIFORNIA



CONSTANTS

CONSTANTS OF THE STATION

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.

CONSTANTS OF THE SEISMOGRAPHS

Apparatus	Component	V	T ₀	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					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
				h. m. s.	
1	1941 July 1	IIv	eE	07 53 21	Pasadena: Epicenter in Ventura County
			eN	07 53 30	
			eN	07 54 18	
			eE	07 54 23	
			iL _{NE}	07 55 02	
			F	08 35	
2	July 29	Ir	ePN	01 57 06	U.S.C.&G.S.: 60.9°N 149.2°W
			eE	01 57 16	
			eSE	02 01 10	
			eN	02 01 14.5	
			eLE	02 03.8	
			eN	02 04.2	
			F	02 22	
3	August 2	Iu	ePN	11 54 15	U.S.C.&G.S.: 30°S 178.5°W
			eE	11 54 25	
			iSN	12 04 43	
			eE	12 04 52	
			eLE	12 16.4	
			eN	12 20.2	
			F	13 05	
4	August 4	Ir	eE	11 00 53	U.S.C.&G.S.: 52°N 176.5°W
			ePN	11 00 55	
			eSN	11 06 53	
			eSE	11 06 57	
			F	11 20	
5	August 6	Ir	ePE	06 21 09	U.S.C.&G.S.: 55.5°N 160°W
			ePN	06 21 14	
			eSN	06 26 53	
			eLN	06 28 06	
			F	06 37	
6	August 15	I	eE	06 21 44	U.S.C.&G.S.: 19°N 27°W
			iN	06 22 15	
			iE	06 22 23	
7	August 15	I	eSE	06 32 19	U.S.C.&G.S.: 19°N 27°W
			eN	06 32 29	
			eLN	06 48.5	
			F	07 06	
8	August 19	Id	ePNE	21 09 55	See list, page 112 Felt in Ferndale
			iS _{NE}	22 00 01	
			F	22 01	

FERNDALE

No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
9	August 29	Iv	eP _E eP _N iS _E iS _N F	13 11 09 13 11 13 13 12 06 13 12 08 13 17	J.S.A.: 43.0°N 123.8°W
10	Sept. 3	Id	eP _E e _N iS _{NE} F	11 53 12 11 53 14 11 53 17 11 54	
11	Sept. 4	Iu	iP _N i _E iP _{PE} iP _{PN} eS _E eS _N eL _N F	10 35 06 10 35 08 10 38 07 10 38 09 10 45 08 10 45 32 10 58.1 11 30	Wellington: 6°S 151.5°E Deep h = 100 km
12	Sept. 9	Iu	eP _{NE} eS _N eS _E F	07 32 30 07 43 12 07 43 13 08 27	J.S.A.: 5°S 155.6°E
13	Sept. 13	Ir	eP _F e _N eS _E e _N F	18 20 06 18 20 07 18 24 32 18 24 39 19 22	U.S.C.&G.S.: 18.7°N 106.9°W
14	Sept. 14	Iv	eS _E e _N F	16 46 12 16 46 16 16 54	Foreshock of 18h 40m
15	Sept. 14	Iv	eS _N eS _E F	18 23 54 18 23 58 18 34	Foreshock of 18h 40m
16	Sept. 14	Iv	eP _E eS _N eS _E iS _N i _E F	18 40 28 18 41 43 18 41 50 18 42 06 18 42 07 19 00	Owens Valley, main shock.
17	Sept. 16	Iu	eP _N eP _E eS _E e _N eL _N F	21 51 49 21 51 53 22 02 11 22 02 14 22 17.1 23 00	U.S.C.&G.S.: 28.5°S 178°W



FERNDALE

No.	Date	Character	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
18	Sept. 18	Id	ePE iSNE F	05 50 45 05 50 53 05 52	
19	Sept. 20	Id	ePE ePN iSNE F	00 27 26 00 27 28 00 27 32 00 29	
20	Sept. 24	Iu	ePN ePE F	01 18 12 01 18 14 01 35	U.S.C.&G.S.: 52°N 158°E approx.
21	Sept. 26	Id	eN iE iN F	22 04 41 22 04 45 22 04 46 22 05	
22	Sept. 27	Id	eNE iPNE iSE F	20 43 09 20 43 10 20 43 13 20 44	



FRESNO

THE FRESNO STATION, FRESNO STATE COLLEGE
FRESNO, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\begin{aligned} \phi &= 36^\circ 46'11 \text{ N.} \\ \lambda &= 119^\circ 47'18 \text{ W.} \end{aligned}$$

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 ₀	ε
Wood-Anderson	N	3000	0.9	15



FRESNO

No.	Date	Char-acter	Phase	Time (U.T.)			Remarks
				h.	m.	s.	
	1941						
1	July 1	Iv	ePN F	07 51	34.0		Pasadena: Epicenter in Ventura County
2	July 1	Iv	ePN iSN F	08 19 08 20	39.0 12.3		Aftershock of Ventura (Runs into next shock)
3	July 1	Iv	eN F	08 25 08 29	34.0		Ventura aftershock
4	July 1	Iv	ePN eSN F	08 31 08 31 08 35	03.5 36.0		Ventura aftershock
5	July 1	Iv	ePN eSN F	08 48 08 49 08 53	59.0 32.5		Ventura aftershock
6	July 1	Iv	ePN eSN F	09 45 09 46 09 48	37.0 10.5		Ventura aftershock
7	July 1	Iv	ePN iSN F	10 25 10 26 10 30	54.5 38.0		Ventura aftershock
8	July 1	Iv	ePN eSN F	13 01 13 02 13 04	58.0 36.0		
9	July 1	Iv	eN iSN F	16 15 16 15 16 16	08.5 17.0		See list, page 112
10	July 1	I	ePN eN F	16 30 16 30 16 02	09.0 21.5		
11	July 1	I	ePN F	18 20 18 22	49.0		
12	July 1	I	ePN F	20 15 20 18	33.0		
13	July 1	Iv	iPN eSN F	23 54 23 54 00 03	22.5 56.0		Pasadena: Normal, after-shock of 07h
14	July 2	Iv	ePN iN F	08 46 08 46 08 50	12.0 55.0		Ventura County?

No.	Date	Char-acter	Phase	FRESNO			Remarks
				Time (U.T.)			
	1941			h.	m.	s.	
15	July 2	Iv	ePN iSN F	22	49	42.0 13.5 52	
16	July 3	I	ePN iN F	07	24	16.0 22.1 29	Pasadena: Normal U.S.C.&G.S.: 33°S 68°W
17	July 3	Iv	iPN eN iSN F	11	17	13.7 29.0 33.8 18	
18	July 3	Iv	ePN eSN F	19	27	19.0 52.0 29	
19	July 6	Iv	i ⁻ SN iN F	03	51	28.2 32.2 53	See list, page 112
20	July 16	Ir	ePN iPN eN F	03	17	04.0 17.4 17.5 39	Pasadena: Normal J.S.A.: 24.9°N 109.0°W
21	July 18	Iv	ePN eSN F	03	54	42.5 22.0 00	Near Fallon, Nev.
22	July 22	Iv	ePN eSN eN F	18	53	44.5 50.5 57.5 59	Pasadena: Local, 32° 34°W 115-27W
23	July 24	Iv	eN F	01	54	10.0 55	Pasadena: Local 36.0°N 117.8°W
24	July 28	I	eN eSN F	17	22	19.0 28.0 24	See list, page 112
25	July 30	Ir	ePN eN F	01	57	42.0 49.0 20	Pasadena: Deep? U.S.C.&G.S.: 60.9°N 149.2°W
26	August 2	Iu	ePN eSN eLN F	11	53	59.5 37.0 20.2 46	Pasadena: Deep? U.S.C.&G.S.: 30.0°S 178.5°W Major earthquake, mag 7 Wellington: Strong on Raowl I., Kermadecs



No.	Date	Char-acter	Phase	FRESNO			Remarks
				Time (U.T.)			
				h.	m.	s.	
27	1941 August 2	Id	iSN F	13 21	38.1		See list, page 112
28	August 2	Iv	ePN iSN F	17 37	06.5 21.9		See list, page 112
29	August 4	Ir	ePN iPN iSN F	11 01	23.0 31.0 04.4		Pasadena: Deep U.S.C.&G.S.: 52°N 176.5°W
30	August 6	Ir	ePN iPN F	06 21	39.5 45.0		Pasadena: Deep U.S.C.&G.S. 52.5°N 160°W h = 200 km
31	August 15	Ir	ePN F	06 21	48.5		U.S.C.&G.S.: 19°N 27°W J.S.A.: h = 35 km
32	August 16	Iv	ePN eSN F	18 07	07.0 23.5		
33	August 17	Iv	iPN eN F	11 14	45.0 06.0		Pasadena: Local, near Lone Pine
34	August 25	Iv	iSN F	19 41	06.8		See list, page 112
35	August 26	Iv	eSN F	04 32	17.0		See list, page 112
36	August 27	Iv	iPN iSN F	21 32	37.0 51.5		Pasadena: Local, near Convict Lake
37	August 29	Iv	iPN iN iN iSN F	13 11	07.9 19.1 28.5 20.3		Pasadena: Normal J.S.A.: 43°N 123.8°W Runs into next shock
38	August 29	Iv	ePN iN F	13 18	32.0 34.5		Aftershock of 13h
39	August 30	I	ePN eSN F	13 30	19.5 20.0		Pasadena: Aftershock of 29 August 13h



No.	Date	Char-acter	Phase	FRESNO			Remarks
				Time (U.T.)			
				h.	m.	s.	
40	1941 Sept. 2	I	eN eN iN iSN F	05	48	39.0 40.0 58.9 10.3	See list, page 112
41	Sept. 4	Iu	ePN F	10	35	04.5	Pasadena: Deep Wellington: 6°S 151.5°E
42	Sept. 8	IIv	iPN iPN iSN F	03	13	25.4 30.0 57.5	Pasadena; Normal; after- shock of July 1, 07h 34°20'N 119°35'W
43	Sept. 13	Ir	iPN iPN eN L F	18	19	39.0 01.0 11.0	Pasadena: Deep U.S.C.&G.S.: 18.7°N 106.9°W
44	Sept. 14	I	iPN F	16	43	54.4	Runs into next shock
45	Sept. 14	Iv	iPN iSN F	16	55	08.3 22.3	
46	Sept. 14	I	iN F	17	02	17.0	
47	Sept. 14	Iv	ePN iSN F	17	29	34.0 47.5	
48	Sept. 14	Id	ePN iSN F	18	16	36.0 48.9	
49	Sept. 14	I	iPN F	18	21	41.3	
50	Sept. 14	I	iPN F	18	39	34.5	Owens Valley Runs into next shock
51	Sept. 14	Iv	iPN iSN F	18	54	41.2 56.3	
52	Sept. 14	I	iSN F	19	25	04.3	

No.	Date	Char-acter	Phase	FRESNO			Remarks
				Time (U.T.)			
				h.	m.	s.	
53	Sept. 14	I	eN	19	55	05.0	
			iSN	19	55	11.9	
			F	19	56		
54	Sept. 14	I	iPN	21	15	24.6	Aftershock of Owens Valley
			iSN	21	15	40.5	
			F	21	21	ca	
55	Sept. 14	I	eN	23	03	33.0	
			iSN	23	03	42.9	
			F	23	05		
56	Sept. 15	I	iPN	01	37	46.4	
			iN	01	38	19.2	
			iN	01	38	25.5	
			F	01	45		
57	Sept. 15	Iv	ePN	04	04	37.5	
			iSN	04	04	52.2	
			F	04	05		
58	Sept. 15	I	iN	04	45	27.2	
			F	04	46		
59	Sept. 15	Iv	ePN	05	55	07.5	
			iSN	05	55	21.5	
			F	05	56		
60	Sept. 16	Iu	iPN	21	51	42.7	Pasadena: Normal U.S.C.&G.S.: 28.5°S 178°W
			eSN	22	02	27.5	
			eLN	22	28.1		
			F	22	57		
61	Sept. 18	IIId	iPN	07	33	55.3	See list, page 112
			iSN	07	34	16.3	
			F	07	40		
62	Sept. 21	I	ePN	19	53	41.5	Pasadena: Near Gorman
			iSN	19	54	08.1	
			iN	19	54	19.0	
			F	20	05		
63	Sept. 22	Iv	ePN	03	56	19.0	Pasadena: Owens Valley
			iN	03	56	21.4	
			iSN	03	56	36.0	
			F	03	58		
64	Sept. 22	Id	ePN	08	05	58.0	
			iSN	08	06	12.3	
			F	08	07		



FRESNO					
No.	Date	Char-acter	Phase	Time (U.T.)	Remarks
	1941			h. m. s.	
65	Sept. 26	Iv	iN	01 55 14.4	See list, page 113
			iSN	01 55 26.0	
			iSN	01 55 29.8	
			iSN	01 55 31.0	
			F	01 57	
66	Sept. 26	Iv	iSN	20 25 31.2	See list, page 113
			F	?	
67	Sept. 27	IIv	iPN	19 49 00.6	Pasadena: Local, Owens Valley
			iSN	19 49 14.9	
			F	19 51	
68	Sept. 28	IIv	iPN	15 05 30.5	Owens Valley
			iSN	15 05 45.1	
			F	15 07	