

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—FERNDALE—FRESNO—MINERAL

From April 1, 1948, to June 30, 1948

BY
CARL F. ROMNEY
AND
JOHN E. MEEKER

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1949

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CALIFORNIA

CAMBRIDGE UNIVERSITY PRESS

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EARTHQUAKES IN NORTHERN CALIFORNIA

EARTHQUAKE INTENSITY SCALE

1943 - Pacific Standard Time

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

Year	Month	Day	Time	Intensity	Description	Magnitude	Latitude	Longitude	Excellence
Apr.		1	1:20	2.0		3.0	37° 53'	122° 32'	c
		2	03:24:47	2.3		3.0	36° 47'	121° 56'	d
		4	04:18:33	II	Felt by a few people only. Duration or direction not appreciable.	2.8	36° 47'	121° 56'	d
		5	07:29:53	III	Duration or direction appreciable.	2.8	36° 47'	121° 56'	d
		9	12:55:33	IV	Rattling of doors and windows; swinging of suspended objects.	3.3	36° 46'	121° 58'	b
		14	11:58:59	IV	Rattling of doors and windows; swinging of suspended objects.	3.3	36° 46'	121° 58'	b
		16	19:11:04	V	Disturbance of movable objects; plaster cracked.	2.8	37° 02'	121° 47'	c
		18	13:25:11	V	Disturbance of movable objects; plaster cracked.	2.8	37° 02'	121° 47'	c
		21	02:55:01	VI	Overthrow of movable objects; cracking of chimneys and other brickwork.	3.0	37° 24'	121° 33'	b
		26	12:57:22	VII	Fall of some chimneys; some damage to buildings.	4.0	36° 46'	121° 16'	a
		27	06:41:08	VII	Fall of some chimneys; some damage to buildings.	4.0	36° 46'	121° 16'	a
		27	12:23:25	VII	Fall of some chimneys; some damage to buildings.	4.4	36° 46'	121° 16'	a

VI at Hollister. 30 aftershocks reported at Mt. Hamilton, Pasadena 12:23:19.5; Santa Barbara 12:23:06.1.

13	May	3	18:34:15	2.4		3.0	37° 51'	122° 13'	c
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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.

14			02:57:02	2.0		3.0	37° 51'	122° 13'	c
15			09:02:28	1.9		3.0	37° 13'	122° 16'	c
16			04:59:06	3.3		3.0	36° 36'	121° 01'	e
17			15:17:32	3.3		3.0	36° 47'	121° 36'	b
18			10:29:33	3.5		3.0	37° 11'	122° 17'	c
19			06:59:21	1.7		3.0	36° 47'	121° 56'	d
20			01:39:53	2.8		3.0	36° 47'	121° 24'	b

IV 7 miles south of Hollister.

23			18:30:48	3.1		3.0	37° 05'	121° 29'	b
24			21:52:12	3.2		3.0	36° 39'	121° 24'	c
25			09:01:56	2.4		3.0	37° 50'	122° 35'	c
26			10:34:12	2.1		3.0	37° 02'	121° 46'	c
27	June	7	06:03:15	2.5		3.0	36° 47'	121° 43'	c
28		7	07:40:49	3.2		3.0	36° 47'	121° 43'	c
29		7	19:27:18	2.8		3.0	36° 47'	121° 43'	c
30		11	04:06:11	4.0		3.0	36° 46'	121° 16'	d
31		11	03:07:39	3.5		3.0	36° 46'	121° 16'	d
32		12	13:16:48	2.2		3.0	37° 55'	122° 11'	b
33		14	08:03:36	2.5		3.0	37° 09'	121° 46'	c
34		18	02:35:00	3.8		3.0	37° 01'	121° 17'	c

VI at Lakesport, Tehama, and Ukiah.

EARTHQUAKES IN NORTHERN CALIFORNIA

1948 - Pacific Standard Time

No.	Date	Time of Origin	Richter Magnitude	North Latitude	West Longitude	Weight
1	Apr. 1	19:01:10	2.0	37° 53'	122° 32'	c
2	2	03:24:47	2.3	36° 9'	121° 6'	d
3	4	04:18:34	3.4	37° 04'	121° 28'	c
4	5	07:29:51	2.8	38° 0'	122° 0'	d
IV in Martinez.						
5	9	12:55:12	2.8	36° 44'	121° 23'	c
6	14	11:56:59	3.3	36° 46'	121° 58'	b
7	16	19:11:04	2.8	37° 02'	121° 47'	c
8	18	13:25:10	3.6	38° 10'	122° 32'	c
Felt in Northern Bay Area. VI in Fairfax.						
9	21	02:55:01	3.0	37° 24'	121° 33'	b
10	26	12:57:23	1.8	37° 13'	122° 14'	c
11	27	08:41:08	4.0	36° 46'	121° 16'	a
12	27	12:22:25	4.4	36° 46'	121° 16'	a
VI at Hollister. 38 aftershocks recorded at Mt. Hamilton. Pasadena 12:23:19.8; Santa Barbara 12:23:06.1.						
13	May 3	18:34:15	2.4	37° 51'	122° 13'	c
IV in East Oakland.						
14	7	04:00:32	3.0	36° 2'	121° 9'	d
15	8	22:00:01	2.3	37° 4'	122° 0'	d
16	12	02:57:02	2.0	37° 8'	122° 2'	d
17	12	09:02:28	1.9	37° 13'	122° 14'	c
18	13	04:59:06	3.3	36° 38'	121° 01'	c
19	13	18:17:32	3.3	36° 47'	121° 36'	b
20	20	10:29:33	3.5	37° 11'	122° 17'	c
21	21	08:59:21	1.7	38° 0'	122° 3'	d
22	22	01:39:53	2.8	36° 47'	121° 24'	b
IV 7 miles south of Hollister.						
23	22	12:30:48	3.1	37° 05'	121° 29'	b
24	23	21:52:12	3.2	36° 39'	121° 24'	c
25	24	09:01:56	2.4	37° 50'	122° 35'	c
26	24	10:34:44	2.1	37° 02'	121° 46'	c
27	June 7	06:23:15	2.5	36° 47'	121° 43'	c
28	7	07:49:09	3.2	36° 47'	121° 43'	c
29	7	19:27:18	2.8	36° 47'	121° 43'	c
30	11	00:28:11	4.0	36° 6'	121° 2'	d
31	11	03:52:09	3.5	36° 6'	121° 2'	d
32	12	13:18:28	2.2	37° 55'	122° 11'	b
33	14	04:05:36	2.5	37° 09'	121° 46'	c
34	18	02:35:00	3.8	39° 04'	123° 17'	c

VI at Lakeport, Talmadge, and Ukiah.

<u>No.</u>	<u>Date</u>	<u>Time of Origin</u>	<u>Richter Magnitude</u>	<u>North Latitude</u>	<u>West Longitude</u>	<u>Weight</u>
35	June 19	20:25:17	2.3	36° 47'	121° 27'	c
36	20	12:34:38	3.2	36° 57'	121° 40'	b
IV at Watsonville.						
37	23	23:06:52	3.2	36° 35'	121° 06'	b
38	24	08:49:11	3.2	36° 35'	121° 06'	b
39	25	03:26:08	3.2	36° 35'	121° 06'	b
40	29	16:28:42	2.2	38° 02'	122° 49'	c
41	30	01:56:29	3.1	37° 14'	121° 28'	c

THE REGISTRATION OF EARTHQUAKES

SYMBOLS AND NOTATIONS EMPLOYED

Character of the Seismogram —

I. Perceptible II. Moderately Strong III. Strong

d (terrae motus domesticus) Local shock (origin less than 100 kilometers distant).

THE REGISTRATION OF EARTHQUAKES

v (terrae motus vicinus) Near shock (origin from 100 to 1,000 kilometers distant).

r (terrae motus remotae) Distant shock (origin from 1,000 to 5,000 kilometers distant).

u (terrae motus ultimae) Very distant shock or teleseism (origin more than 5,000 kilometers distant).

Nature of the Motion —

i (impetus) Sudden beginning of the motion.

g (gradatio) Gradual beginning of the motion.

BERKELEY
 THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
 BERKELEY, CALIFORNIA

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram --

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. Nature of the Motion --

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.

Bosch-Osori 100 kg.	X
Wiechart 80 kg.	2
Benioff	2
Richter	H

The letter O before a reading designates that the seismogram was from the Galilei instrument; W, Wiechart; B, Bosch-Osori; A, Wood-Anderson; N, Benioff; R, Richter.

BERKELEY

No.	Date	Char-acter	Phase	Time		Period	Remarks
				(G.C.T.)			
				h.	m.	s.	s.
	1948						
1	April 2	Id	i \bar{P} N iSN F	S 03 01	14.4		See list, p. 94
				S	17.2		
				03 03			
2	April 4	Id	ePNEZ iSNE F	AH 12 18	54.0		See list, p. 94
				SA	19 06.6		
				12 20			
3	April 5	IId	iPNEZ iSZ iSNE F	AH 15 29	55.6		See list, p. 94
				H	58.4		
				SA	58.9		
				15 31			
4	April 9	Iv	iPZ iN iSN iZ F	H 20 55	36.6		See list, p. 94
				S	38.1		
				S	56.6		
				H	56 02.1		
				20 57			
5	April 9	I	iPZ iN iN F	H 22 19	35.7		
				S	36.6		
				S	43.8		
				22 20			
6	April 10	I	eE F	G 00 31.4			
				01 21			
7	April 10	I	eN F	G 14 03.6		23	
				15 15			
8	April 11	Iu	ePZ eZ iSKSN eSKKSZ eSZ eLE F	G 09 02 18			
				G	07 45		
				G	12 45		
				G	13 12		
				G	14 15		
				G	31.5		
				12 05			
9	April 14	Iv	iP \bar{N} iSN F	S 19 57	19.5		See list, p. 94
				S	35.5		
				19 59			
10	April 15	I	ePZ F	G 20 16.9			
				21 20			
11	April 17	Id	iPZ iN iN iSN F	H 03 11	20.9		See list, p. 94
				S	25.9		
				S	27.9		
				S	32.5		
				03 13			

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Remarks
				h.	m.	s.		
	1948							
12	April 16	Iv	iPz iN iN iSN F	H S S S G	22 22 22 28 22	37.8 42.0 45.8 43.3 32		U.S.C.G.S.: 19°N, 69°W
13	April 17	Iu	iPz iPPz ez iSE iSKSE iE F	H G H G G G G	16 26 21 21 21 20	33.7 46 25 32 37 35 10 20 10		Compression U.S.C.G.S.: 33°N 13°5W. West Indies aftershock
14	April 17	IIId	iPNZ iSNZ F	SH SH G	22 22 22	35.3 46.3 24		West Indies aftershock
15	April 18	IIu	iPz iPPz iE iE iSKSN iSN iPSE iZ iE iN eLZ F	G G G G G G G G G G G G	12 37 44 44 03 11 12 12 13 13 15	50 46 56 12 16 46 45 04 46 42 52 58 01.0 04.0 05	20 27	B.C.I.S.: 30°S W, 20°E Lost in next shock
16	April 18	IIId	iPN iEZ iN iSE iE F	S AH S A A G	21 21 21 21 21 21	17.4 17.8 21.5 22.8 29.8 28		See list, p. 94 West Indies aftershock
17	April 20	Iu	iE iN eLNE F	G G G G	02 02 02 02	23 38 44 30.0 45	23	U.S.A.: 14°4N. 92°2W.
18	April 21	Id	iPNZ iSEZ iZ F	SH AH H G	10 10 10 10	55 15.5 26.9 28.1 56		See list, p. 94 See list, p. 94
19	April 21	Iu	ePz ePPz eScSNE eLNEZ F	G G G G G	15 15 15 16 16	33 48 38 22 45 16 00.1 16 45		B.C.I.S.: 13½°S, 166½°E.

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
20	April 21	IIIu	ePZ iN iN iN iN iSN eSSE eN F	G G S G G SG A S 21	20 30 53 31 00 32 43 33 06 35 09 38 06 42 14.5 46.8 48	35	U.S.C.G.S.: 19°N, 69½°W
21	April 21	Iu	ePN eSN F	S 21	21 08 02 14 44 17		West Indies aftershock
22	April 22	Iu	ePE iPZ iPPZ iSN iScSN iSSE iSSSZ eLE F	A G G G G G G G G 03	00 37 10 15 39 14 44 21 47 10 48 42 49 24 54.0 10		West Indies aftershock
23	April 22	IIu	eZ eN eZ iE eE eLN F	G G G G G G G	11 00 11 07 17 00 59 13 02 18 37 29.9		B.C.I.S.: 38°5' N, 20°6'E Lost in next shock
24	April 22	Iu	iN eN eFZ F	G G G 14	13 25 02 35.0 37.0 25		West Indies aftershock
25	April 23	IIu	iPZ iPPZ iE iSNE iScSN iSSE eLN F	G G G G G G G G 13	11 59 30 12 01 26 02 44 06 20 09 02 10 37 16.9 40	10 14 24	West Indies aftershock
26	April 27	Iv	iPZ iN iE iSE F	H S A A 16	16 41 30.7 31.9 35.9 52.9 43		See list, p. 94

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
27	April 27	I Iv	iPNZ iZ iN iE iSN F	SH H S A S 20 28	22 47.7 50.7 55.4 23 10.2 11.5		See list, p. 94
28	April 27	Iv	iPZ iNZ iSE iNZ F	H SH A SH 20 35	20 32 57.2 59.8 33 19.2 19.8		See list, p. 94
29	April 27	Iv	iPNZ iE iNZ iSNE iNE F	SH A SH SA SA 20 56	20 53 20.8 24.7 26.0 42.4 46.3		See list, p. 94
30	April 27	Iv	iPNZ iN iN iNE F	SH S S SA 21 03	21 00 36.0 38.2 48.7 59.6		See list, p. 94
31	April 27	Iv	ePNZ iZ iSN F	SH H S 22 50	22 46 49 53.9 47 12.2		See list, p. 94
32	April 27	Iv	iPN iZ iN iSNE F	S H S SA 23 20	23 18 37.3 39.3 43.2 54.7		See list, p. 94
33	April 28	Iv	iPN iN iN F	S S S 01 41	01 39 35.6 49.1 59.6		See list, p. 94
34	April 28	Iv	ePZ iN iSN iEZ F	H S S AH 07 27	07 25 03 04.1 24.1 24.6		See list, p. 94
35	April 28	Iv	ePZ iN iSN F	H S S 07 34	07 32 07 07.6 38.1		See list, p. 94

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
36	April 28	Iv	ePN eZ iN iSNE F	S H S SA 07 43	07 40 37.5 38.5 45.1 59.7		
37	April 28	Iu	ePZ iSN eLN F	G G G 12 53	12 11 48 20 09 32.1		J.S.A.: - 10°5N. 63° W.
38	May 1	Iv	ePNE iSNZ iNE F	SA SH SA 02 58	02 56 08 30.4 39.2		See list, p. 94
39	May 4	IId	iPNZ iSN iPZ F	SH S AH 02 35	02 34 16.4 09 17.3 18.0		See list, p. 94
40	May 7	Iv	ePZ eZ F	H H 12 02	12 01 01 07		See list, p. 94
41	May 7	Id	iPNZ iNE iZ iNE F	SH SA H SA 23 23	23 21 00.0 05.4 06.1 10.9		Blast? See list, p. 94
42	May 9	Iu	ePN iZ iZ iN iSNE iSKSE eNE F	S G G G G G G H 03 04	02 21 24 12 59 32 40 23 02 31 46 32 08 43.7		U.S.C.G.S.: 30°N, 129°E See list, p. 94
43	May 9	Id	ePN iSN F	S S 06 01	06 00 10.5 17.9		See list, p. 94
44	May 9	Iu	ePZ iSE iSN iE eLZ F	G G G C G 10 44	08 28 10 38 11 00 14 51 22 56.1		See list, p. 94
45	May 9	Iv	ePN iSN F	S S 12 45	12 43 30 51.1		

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
46	May 11	IIu	iPNZ iF iPPE iZ iZ iSE iN iSSNE eLNZ F	SH G G G G G G G G G	09 07 13.5 29 10 17 22 16 32 40 21 56 21 40 31.9 11 10		U.S.C.G.S.: 17°S, 71°W Surface waves
47	May 11	Iv	ePN iSN iN F	S S S F	10 42 25 40.7 50.2 10 44		
48	May 12	IIu	ePNE iPcPZ iN iE iZ iSE iPSN iZ iSSE eE F	SA G G G G G G G G A F	01 08 22 09 06 13 17 16 34 17 28 35 54 18 44 22 04 26 05 04 50		U.S.C.G.S.: - 38°N. 142°5E. U.S.C.G.S.: - 55°N. 161°W.
49	May 12	Id	iFNEZ iSNE F	SAH SA F	10 57 04.9 06.7 10 58		See list, p. 94
50	May 13	Iv	ePNZ iN iSN iN F	SH S S S F	12 59 35.5 38.5 55.1 13 00 02.3 13 02		See list, p. 94
51	May 14	Iv	iPZ iN iZ iN iSNEZ F	H S H S SAH F	02 17 54.8 55.9 56.9 18 10.1 12.5 02 19		See list, p. 94
52	May 14	I	eE eN eZ F	G G G F	18 58.9 19 06.9 11.5 20 15	20 20	See list, p. 94

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period s.	Remarks
				h.	m.	s.		
53	1948 May 14	IIIr	ePNZ iz iE eSEZ eLN iE F	SH G G AG S A 24	22 43 45 48 	38 05 16 42 12 .8 41 48	U.S.C.G.S.: - 54°5N. 161°W.	
54	May 15	I	eNZ F	G	18	32.5 19 06	Wellington: - 43°S. 171°E. Surface waves	
55	May 16	I	eN F	G	21	48.8 22 02		
56	May 16	Iv	iN iN F	S S	21	56 28.7 31.2 21 58		
57	May 17	I	ePN iE iN iz iN iSE eLEZ F	S G G G G G G 20	17 18 	54 56 55 04 00 54 56 06 58 22 00 03 03.3 50	U.S.C.G.S.: - 55°N. 161°W.	
58	May 17	Id	iPN iSN iM ₂ NZ F	S S SH	19	12 05.5 08.7 09.2 19 13		
59	May 18	I	ePN eZ iN eNEZ iNZ F	S H S G SH 10	10 	44 22.0 32 37.0 45 04 50 18.7 10 53	See list, p. 94	
60	May 21	Iv	iPNS iN iN iSNZ iN F	SH S S SH S 15	15 	39 36.2 39.6 43.0 40 36.3 37.9 42	Pas: - 33°N. 123°5W. U.S.C.G.S.: 30°W, 99°5E.	
61	May 21	Id	iPNZ iSN F	SH S	16	59 24.0 25.9 17 00	See list, p. 94	

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No.	Date	Char-acter	Phase	Time		Period	Remarks
				(G.C.T.)			
	1948			h.	m.	s.	
62	May 22	Iv	iPZ	H	09	40 16.3	See list, p. 94
			iNZ	SH		17.6	
			iN	S	18	31 19.6	
			iSN	S		36.4	
			iN	S	09	22 45.4	
			F		09	42	
63	May 22	Iu	ePPZ	G	19	39 36	Wellington:- 43°S. 171°E.
			eN	G		43 24.5	
			iN	S	11	44 39.6	
			iz	H		46.7	
			eE	G		48 10	
			eNE	G	20	02.7	
			eN	G	20	07.6	
			F		22	45	
							36
							26
64	May 22	Iv	iPNZ	SH	20	31 07.2	See list, p. 94
			iSN	S		20.3	
			iNZ	SH		21.4	
			iE	A		23.4	
			F		20	32	
65	May 23	Iu	iPZ	G	04	24 48	U.S.O.G.S.: 12°S. 77°W.
			eN	G		25 22	
			iz	G		30	
			eN	G		26 31	
			iSNZ	G	06	34 56	
			iSKSN	G		35 04	
			iN	G	03	36 14	
			iN	G		40 40	
			eLN	G	03	47.3	
			F		06	07	
66	May 24	Iv	iPZ	H	05	52 39.4	See list, p. 94
			iNZ	SH		41.7	
			iSNZ	SH	14	29 58.1	
			iz	H		01.1	
			F		05	54	
67	May 24	Id	iPNZ	SH	17	02 00.8	See list, p. 94
			iSNS	SH		04.5	
			F		17	03	
68	May 25	Iu	ePZ	G	07	25 35	U.S.O.G.S.: 30°N, 99°5E.
			iPPZ	G		29 44	
			iz	G	11	30 55	
			ePPPZ	G		32 35	
			eSZ	G	15	37 53	
			iz	G		39 32	
			eLE	G	08	05.6	
			F		10	10	

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
69	May 25	Iv	iPZ iNZ F	H 18 35 SH 18 37	03.0 21.0		See list, p. 94
70	May 26	Ir	iPZ iN iS _{NE} iN eL _E F	H 09 22 G G G G 11 44	49.0 23 20 27 37 29 08 29.2		U.S.C.G.S.: - 56°N. 156°W.
71	May 26	I	eZ iN F	G 14 03 G 15 05	07 29		
72	May 26	I	iPZ iZ iN iSZ iS _N F	H 19 36 H S H S 19 39	17.9 30.7 02.4 14.0 15.6		Pas: - 35° 42'N. 118° 02'W.
73	May 28	Iu	iPZ ipPZ iS _{NE} eL _E F	H 05 46 H G G 06 22	56.0 11.0 47 09.4		U.S.C.G.S.: - 12°S. 77°W.
74	May 31	I	iPZ eE F	H 03 16 G 03 47	16.0 17.9	17	
75	June 2	II	iPZ iN eL _{NE} F	H 13 45 G G 14 29	58.5 19 56.8	20	
76	June 4	Id	iPZ iS _{NEZ} F	H 10 03 SAH 10 04	34.3 39.2		
77	June 7	Iv	iPZ iZ iS _{NZ} iZ F	H 14 23 H SH H 14 25	37.0 39.2 54.5 58.4		See list, p. 94
78	June 7	Iv	iP _{NZ} iN iS _N iZ F	SH 15 06 S S H 15 09	13.2 18.8 52.0 56.0		Near Bishop

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
79	June 7	Iv	iPNZ iZ iSN iN F	SH H S S	15 49 31.3 33.0 47.6 50.6		See list, p. 94
80	June 8	Iv	iPZ iSN iZ F	H S H	03 27 39.5 56.6 59.5		See list, p. 94
81	June 8	Iu	iPZ iSZ iZ F	G G G	03 38 12 45 10 46 12		
82	June 11	Iv	iPZ iZ iZ iSZ iZ F	H H H H H	08 28 35.7 37.5 40.2 54.7 58.4		See list, p. 94
83	June 11	I	iPZ iN F	H S	10 28 31.1 34.1		
84	June 11	Iv	iPZ iZ iZ iZ iSZ iSN F	H H H H H S	11 52 32.8 37.6 47.0 52.1 55.5 56.6		See list, p. 94
85	June 12	IIId	iPNEZ iSN F	SAH S	21 18 29.5 30.5		See list, p. 94
86	June 14	Iu	eE eE eE F	G G G	10 20 34 40.3 43.0	36 24	
87	June 15	Iu	iPZ iZ iPPZ iSN eNE eLNE F	H H H G SA G	11 56 45.8 57 00.3 59 49.3 12 06 46 57 16.7		U.S.C.G.S.: 33°5N. 136°E
			F		14 36		

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
88	June 15	Id	iP _N iS _N iZ F	S 17 38 S H 09 40	27.7 32.9 38.9		
89	June 15	Id	iP _{NZ} i _N iS _{NZ} F	SH 17 55 S SH 17 57	53.7 57.1 58.5		
90	June 18	Iu	iPZ i _N i _N iE e _N e _N eE F	G 01 06 G G G G G G 01 38	43 08 23 03 59 30.0 33.0	36 18	See list, p. 95
91	June 18	Iv	eP _N i _N i _N iE iS _N eE F	S 10 35 S S A S G 11 55	25.0 28.7 35.2 41.7 45.2 43 12		See list, p. 94
92	June 19	I	e _N iZ iZ F	S 16 25 H H 16 27	37 39.2 46.7		
93	June 20	Iv	iPZ iZ iS _{NZ} i _N F	H 04 25 H SH S 04 27	40.0 46.3 56.9 26 02.2		See list, p. 95
94	June 20	I	e _N e _N eE e _N F	G 09 07 G G G 10 10	52 51 22.5 25.3		
95	June 20	Iv	iP _{NZ} i _N iS _N F	SH 20 34 S S 20 37	57.7 00.9 12.3		See list, p. 95

BERKELEY						
No.	Date	Char-acter	Phase	Time	Period	Remarks
				(G.C.T.)		
				h. m. s.	s.	
96	June 21	Iu	ez	G 12 19 27		
			eE	G 23 33		
			iEZ	G 58		
			iz	G 26 10		
			iEZ	G 30 14		
			iE	G 33 18		
			iE	G 34 42		
			F	15 08		
97	June 24	Iv	iPz	H 07 07 20.1		See list, p. 95
			iSz	H 42.5		
			iN	S 10 39 48.4		
			F	07 09		
98	June 24	Iv	iPz	H 16 49 38.8		See list, p. 95
			iz	H 42.3		
			iN	S 50 07.3		
			iN	S 12.3		
			F	16 51		
99	June 24	I	iPz	H 23 01 48.9		
			F	23 03		
100	June 25	Iv	iPz	H 11 26 34.8		See list, p. 95
			iz	H 36.8		
			iz	H 39.8		
			iSz	H 56.6		
			iN	S 57.1		
			F	11 28		
101	June 27	IIr	iPz	H 12 55 45.9		U.S.C.G.S.: - 17°N 85°W
			ipPz	H 58.5		
			iz	G 57 14		
			iEZ	G 23		
			iPPN	G 44		
			iSEZ	G 13 01 46		
			iN	G 04 41		
			iE	G 48		
			eLE	G 13 09.8		
			F	14 12		
			102	June 27	II	
iE	G 50 08					
eN	G 15					
eLEZ	G 52.8					
F	23 47					
103	June 28	IIu	iPz	H 07 25 21.1		U.S.C.G.S.: - 36°N, 136°5E
			iz	H 34.7		
			iz	G 26 16		
			iE	G 28 08		
			iPPz	G 25		

BERKELEY							
No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Remarks
				h.	m. s.		
	1948						
103	June 28 (cont.)	IIu	iSE iE iZ iN iZ iNE iNE eGNE iLN F	G G G G G G G G G G	35 10 23 52 36 04 37 42 58 40 12 45.4 46.7 10 27		
104	June 29	IIu	iPZ iPPN iN iSE iE iNE iLNE F	H G G G G G G G	10 39 53.9 41 49 44 08 49 10 35 50 14 58.2 13 28		U.S.C.G.S.: - 16°S, 172°W.
105	June 29	I	eE eN eN F	G G G G	16 35.6 17 00.6 17 07.0 17 28		
106	June 30	Iv	iPZ iN iN iNZ F	H S S S G	00 28 52.0 53.5 29 04.5 05.0 00 30		See list, p. 95
107	June 30	Iv	iFNZ iSNZ F	SH SH G	09 56 46.6 59.8 09 58		See list, p. 95
108	June 30	II	eE iN eN eEZ F	G G G G G	12 46.2 50 24 13 08.4 10.2 14 10	38	

MOUNT HAMILTON

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

1	April 3	Iv	17.2	21 27 36.6	
				21 29	
2	April 1	Id	17.2	21 16 15.1	
				21.7	
3	April 2	Iv	17.2	23 01 25.8	See 1180, p. 94
				25.9	
				26.9	
				27.7	

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\begin{aligned} \phi &= 37^{\circ} 20' 14'' \text{ N.} \\ \lambda &= 121^{\circ} 38' 16'' \text{ W.} \end{aligned}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

7	April 4	Id	17.2	22 37 28.7	
				28.7	

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

10	April 4	Id	17.2	13 45 22.2	
				23.6	
				13 46	
11	April 4	Iv	17.2	15 55 15.2	
				25.0	
				15 57	
12	April 4	Id	17.2	22 28 12.8	
				12.8	
				13.3	
				22 29	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
1	April 1	Iu	iPz F	21 27	36.6		See list, p. 94
2	April 1	Id	iPz iSz F	21 46	15.4 21.7		
3	April 2	Iv	iPz iz iz iSz iNE F	03 01	24.9 25.9 28.9 37.7 38.1		See list, p. 94
4	April 2	Id	iPz iS _{NEZ} F	11 24	55.6 01.8		See list, p. 94
5	April 2	Id	iPz iSz F	14 41	09.5 16.8		
6	April 2	IIId	iPz iS _{NEZ} F	21 27	12.0 13.4		
7	April 4	Id	iPz iS _{EZ} F	08 37	08.7 16.7		U.S.G.S.: 14°N, 90°W h = 200 km. ca.
8	April 4	Id	iPz iS _{NE} iSz F	09 43 44	55.4 07.7 08.5		U.S.G.S.: 7°S, 152°W
9	April 4	IIId	iP _{NEZ} iS _{NE} F	12 18	40.4 44.0		See list, p. 94
10	April 4	Id	iPz iS _{NEZ} F	13 45	22.2 23.6		
11	April 4	Iv	iPz iS _{NEZ} F	15 55	15.2 26.8		See list, p. 94
12	April 4	Id	iPz i _H iS _{EZ} F	22 28	12.8 14.8 15.3		
				22 29			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
13	April 5	Id	iPz eE iE iSNE F	15	30	04.2 05 14.8 15.7	See list, p. 94
14	April 5	Id	iPEZ iSZ iNE F	17	50	00.1 07.3 08.2	
15	April 9	Iu	iPz F	03	27	20.0	
				03	29		
16	April 9	Id	iPz iSZ eNE F	20	55	25.2 34.2 35	See list, p. 94 Pace- 111.0°W, 119.0°W
17	April 11	Iu	iPz F	16	08	16.1	
				16	10		
18	April 12	Id	iPz iSZ F	02	01	31.7 40.9	
				02	02		
19	April 12	I	iPz F	06	22	05.4	U.S.C.G.S.: 14°N, 90½°W h = 200 km ca.
				06	24		
20	April 12	Iu	iPz iZ F	09	02	16.4	B.C.I.S.: 7°S, 152½°E
					05	13	
				09	07		
21	April 12	Id	iPz iSZ F	11	52	12.0 24.0	U.S.C.G.S.: 33°N, 134°W
				11	53		
22	April 13	Id	iPz iSNEZ F	09	12	39.8 48.4	
				09	14		
23	April 14	IIId	iPz iNE iSNEZ iN F	19	57	11.4 12.1 20.6 21.4	See list, p. 94
				19	59		
24	April 15	Id	iPz iSNEZ F	09	09	46.0 47.0	
				09	10		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
25	April 15	Id	iPZ iSNEZ F	10 11 10 12	16.5 24.5	
26	April 15	Id	iPZ iSNEZ F	13 46 13 47	36.1 38.4	
27	April 16	Id	iPZ iSNEZ F	08 51 08 52	36.3 38.3	
28	April 16	Iv	ePZ iSz F	20 02 20 03	06 23.6	
29	April 16	Iv	iPZ eNE iZ iSz eE F	22 27 22 27 22 27 22 27 22 32	24.9 30 35.2 41.8 44	Pas:- 34.0°N, 119.0°W
30	April 16	Id	iPZ iSNEZ F	23 30 23 31	11.5 13.0	
31	April 17	Id	iPNEZ iSNZ iE iN F	03 11 03 11 03 11 03 12	10.5 15.0 15.3 15.7	See list, p. 94
32	April 17	Iu	iPZ eE eNZ eSNE eZ F	16 23 16 23 16 23 33 39 18 10	37.7 39 45 39 51	U.S.C.G.S.:- 33°N, 13.5°W
33	April 18	Id	iPNEZ iSN iZ F	12 30 12 30 12 31	18.2 21.2 21.7	See list, p. 94
34	April 18	I	iPZ eZ F	12 33 12 37 12 41	36.2 35 41	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
35	April 18	Iv	iPz iNE iE iSEZ iSN F	21	25	30.2 30.8 31.5 45.0 45.6	See list, p. 94 6 smaller aftershocks recorded
				21	28		
36	April 19	Id	iPz iSZ F	02	13	39.2 41.0	aftershock of previous
				02	14		
37	April 19	Iv	iPz eNE eN iSE iSZ F	09	43	40.7 41.2 55 58.2 58.7	Aftershock of previous
				09	45		
38	April 19	Id	iPz iSNEZ F	17	05	44.1 48.7	
				17	07		
39	April 20	Id	iPz iSZ F	02	07	25.3 29.3	
				02	08		
40	April 20	Ir	ePz iPz F	02	17	55 18 00.3	U.S.C.G.S.: 14°N, 92°W
				02	20		
41	April 20	Iu	iPz F	04	41	33.0	
				04	43		
42	April 20	Id	iPz iZ iSNZ iSE F	15	16	07.8 13.6 15.1 15.6	B.C.I.S.: probably 32°S, 180° See list, p. 94
				15	17		
43	April 20	Id	iPz iSZ F	17	03	31.4 38.4	See list, p. 94
				17	04		
44	April 21	IIId	iPNEZ iSNEZ F	10	55	03.0 04.5	See list, p. 94
				10	56		
45	April 21	Iu	ePz F	15	33	47	
				15	37		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time		Remarks
				(G.C.T.)		
	1948			h.	m. s.	
46	April 21	Iu	iPNEZ	20	30 54.3	U.S.C.G.S.: - 19°N, 69½°W 30 Aftershocks. Largest of these are listed 6 smaller aftershocks recorded
			iz		55.9	
			iN		57.3	
			iz	32	54.6	
			eSNE	37	59	
			eLN		47.1	
			eLE		47.5	
			F	22	06	
47	April 21	Iu	iPZ	37	04.7	Aftershock of Previous
			eN		07	
			iz		08.9	
			eE		09	
			eSN	44	17	
			eLN		54.9	
			F	01	18	
48	April 23	Iu	iPZ	11	59 05.6	Aftershock of previous
			eNE		07	
			F	12	04	
49	April 23	Iv	iPZ	15	24 31.1	
			iSz		47.5	
			F	15	27	
50	April 23	Iu	iPZ	17	28 06.5	
			F	17	30	
51	April 24	Id	iPZ	06	53 27.0	
			iSz		28.1	
			F	06	54	
52	April 26	Iu	iPZ	09	42 27.5	U.S.C.G.S.: - 51°W, 34°W
			F	09	44	
53	April 26	Id	iPZ	20	57 32.5	See list, p. 94
			iz		34.6	
			iSz		39.5	
			F	20	58	
54	April 27	IIId	iPNEZ	16	41 20.1	See list, p. 94
			iE		21.4	
			iN		29.4	
			iN		31.4	
			iSE		31.9	
			iN		32.3	
			F	16	43	

MT HAMILTON

No.	Date	Char-acter	Phase	Time			Remarks
				(G.C.T.)			
	1948			h	m.	s.	
55	April 27	IIId	iP _{NEZ}	20	22	37.8	See list, p. 94 38 Aftershocks. Largest of these are listed below.
			i _E			39.0	
			i _E			46.7	
			i _{S_N}			48.6	
			i _{S_E}			49.7	
			i _{N_F}	20	28	50.5	
56	April 27	Id	iP _Z	20	25	22.4	U.S.C.S.S. - 11'N, 63'W
			i _{S_Z}			33.4	
			i _{S_E}			33.9	
			i _{N_F}	20	27	35.9	
57	April 27	IIId	iP _{NEZ}	20	32	37.0	
			i _{N_F}			53.7	
			i _{S_N}			58.1	
			i _{S_E}			58.7	
			i _{S_N}	20	35	59.4	
58	April 27	Id	iP _Z	20	42	52.9	
			i _{S_Z}		43	04.4	
			e _{N_F}			05.4	
				20	44		
59	April 27	Id	iP _Z	20	51	46.4	
			i _{S_Z}			58.1	
			e _{NE_F}			58.4	
				20	52		
60	April 27	IIId	iP _{NEZ}	20	53	10.4	
			i _{N_F}			13.0	
			i _{S_{NE}}			21.8	
			i _{N_F}			23.5	
				20	54		
61	April 27	IIId	iP _{NEZ}	21	00	25.6	
			i _{S_{NE}}			36.7	
				21	01		
62	April 27	IIId	iP _{NEZ}	22	46	38.7	See list, p. 94
			i _E			47.8	
			i _{S_{EZ}}			49.7	
			i _{N_F}			50.5	
				22	49		
63	April 27	IIId	iP _{NZ}	23	18	25.5	
			i _E			26.5	
			i _{S_{NE}}			36.7	
				23	21		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
64	April 28	Id	iPZ iZ iZ iSEZ iE F	00	19	39.8 43.6 48.6 50.9 51.5	
65	April 28	Iu	iPZ eNE ipPZ iZ F	12	11	41.7 43 46.2 06.2	U.S.C.G.S.: - 11°N, 63°W
66	April 28	Iv	iPZ iZ iSZ iNE F	19	54	13.1 15.3 35.8 36.1	
67	April 29	Id	iPZ iS _{NEZ} F	09	51	55.7 58.5	
68	April 29	Id	iP _{NZ} iE iS _{NE} iZ F	12	07	23.7 24.0 29.7 30.2	
69	April 29	Iu	iPZ F	15	25	42	
70	April 29	Id	iPZ iNE iS _{NEZ} F	16	06	14.0 15.0 20.2	
71	April 30	IIId	iP _{NEZ} iS _{NE} F	05	52	39.6 40.8	
72	May 1	IIId	iP _{NZ} iS _{NE} F	02	55	57.6 56 09.2	See list, p. 94
73	May 1	Iu	iPZ F	22	51	36.9	
74	May 3	IIId	iPZ iE iS _{NE} F	09	04	26.6 27.4 28.6	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
75	May 3	Iu	iZ F	12 19 24.7 12 22	E.C.I.S.: 50°S 0°
76	May 3	Iu	ePZ F	13 42 44.5 13 45	
77	May 3	Iu	eZ F	14 02 47 14 05	Aftershock of No. 75
78	May 5	Id	iPZ iN iE F	21 55 03.2 11.1 12.1 21 56	
79	May 5	Id	iPZ iSZ iNE F	22 53 27.7 38.6 38.9 22 55	U.S.G.C.S.: 45°N, 151°E.
80	May 5	Id	iPZ iSNE iZ F	23 13 31.3 42.9 44.2 23 15	
81	May 5	Id	iPZ iZ iZ iSNE iZ F	23 16 47.5 49.5 58.1 58.8 59.1 23 18	U.S.G.C.S.: 30°N, 129°E
82	May 5	Id	iPZ iSEZ F	02 14 58.4 15 01.1 02 16	
83	May 6	Iu	iPZ F	03 03 38.6 03 06	
84	May 6	Id	iPZ eNE iSNE F	21 02 53.7 54 03 06.0 21 04	
85	May 7	Id	iPZ eNE iSNEZ F	12 00 53.9 55 01 13.4 12 02	See list, p. 94
86	May 7	Iv	iPZ iSZ eN F	23 21 12.3 25.4 31 23 23 11.1	Blast? See list, p. 94

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
87	May 8	Id	iPz iSz F	00	35	06.1 17.6	
88	May 8	Id	iPz iz iSNZ iz F	00	36	23.5 24.8 30.8 32.6	
89	May 8	Iu	iPz iz F	00	46	08.8 45.3	
90	May 8	Iu	iPz iz iz F	02	56	57.7 10.1 33.7	U.S.C.G.S.: 46 $\frac{1}{2}$ °N, 151°E.
91	May 8	Id	iPz iSNZ F	03	10	38.7 41.0	
92	May 8	Iu	iPz F	07	56	05.5	
93	May 9	Iu	iPz eE iPPz eN iPPz F	02	21	29.2 38 43.6 46 44.0	U.S.C.G.S.: 30°N, 129°E
94	May 9	Id	iPz iSz F	02	50	45.3 47.0	
95	May 9	Id	iPz iSz F	03	49	17.8 21.8	
96	May 9	Iv	iPz iSz eNE iS2Z iN eE F	04	04	06.0 43.8 46 48.1 49.1 51.0	
97	May 9	Id	eN iPEZ iSNE iN F	06	00	05 05.9 09.6 11.1	See list, p. 94
				06	01		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
98	May 9	Iu	ePz iPz iZ F	08 28	07.3 09.0 30.8	Auckland: eS? 08:20.3 eL 08:23.2
99	May 9	Id	iPz eN eE iS _Z iS _{NE} F	12 43	16.9 17 18 22.5 23.1	
100	May 9	IIId	iPz i _{NE} iS _E F	23 11	12.1 12.4 13.5	Afterhook of preceding
101	May 9	Id	iPz i _{NE} iS _Z F	23 14	28.4 29.6 30.1	
102	May 10	Iu	iPz iZ iZ eE iZ F	09 18	05.5 20.3 48.4 50 53.5	
103	May 10	Id	iPz eNE iZ iS _{NE} F	13 36	35.7 37 46.9 47.1	
104	May 10	Iv	ePNE iS _{1E} iN iS _{2E} F	13 36	41.0 44.7 46.3 50.5	
105	May 10	Id	iPz eNE iS _Z eE F	13 42	47.1 49 53.8 55	
106	May 10	Iv	iPz iS _Z eNE F	23 37	30.3 38 10.8 11.0	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
107	May 11	Iu	iPz ipPz F	03 08 42.3 45.8 03 10	See list, p. 94
108	May 11	Iu	iPz ePNE iZ eZ eNE F	09 07 08.5 09 26 16 29 32 09 41	U.S.C.G.S.: 17°S, 71°W.
109	May 11	Iu	iPNEZ iZ F	09 45 14.6 27.2 09 47	Aftershock of preceding
110	May 11	Id	iPNEZ iE iSNEZ F	10 42 10.8 19.9 20.5 10 44	See list p. 94
111	May 12	Iu	iPz eNE eSNE F	01 08 23.9 27 17 44 01 50	U.S.C.G.S.: 38°N, 142 $\frac{1}{2}$ °E.
112	May 12	Iu	iPz F	01 54 56.9 01 57	Aftershock?
113	May 12	Iv	iPz iSZ F	09 01 39.7 56.2 09 03	U.S.C.G.S.: 50 $\frac{1}{2}$ °N, 161°W.
114	May 12	Iv	iPz iSZ F	10 07 32.5 49.0 10 09	
115	May 12	Id	iPz iZ iMz F	10 57 15.2 25.7 27.2 10 58	See list, p. 94
116	May 12	Id	iPz iSZ F	17 02 37.6 44.3 17 05	See list, p. 94
117	May 12	IIId	iPNEZ iSNE F	18 17 23.5 24.7 18 18	Aftershock of No. 120
118	May 13	Id	iPz iSZ F	03 48 09.3 13.4 03 49	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
119	May 13	Iv	iPZ eNE iNE iSE iN F	12	59	23.2 24 24.5 36.3 36.6	See list, p. 94
120	May 13	Id	iPZ iSZ F	15	00	41.7 43.5	
121	May 13	Iu	iPZ F	15	02	55.7	
122	May 14	Iu	iPZ F	00	09	11.6	
123	May 14	IIId	iPZ iS _{NE} F	02	17	42.7 50.3	See list p. 94
124	May 14	Id	iPZ iSZ F	05	12	56.1 58.6	U.S.C.G.S.:- 55°N, 161°W.
125	May 14	Id	iPZ iSZ iE F	10	14	01.8 05.7 07.3	Distant
126	May 14	Ir	iPZ eE eSEZ iZ eLE F	22	38	09.7 15 43 24 46.7	U.S.C.G.S.:- 54½°N, 161°W.
127	May 14	Ir	iPZ F	22	44	45.2	Separate shock?
128	May 15	Id	iPZ iSZ eE F	00	03	57.6 59.4 04 01	
129	May 15	I	iPZ ipPZ i Z F	02	48	15.8 25.8 55 04.3	Aftershock of No. 126
130	May 15	Id	iPZ iSEZ F	03	05	37.8 49.3	
130	May 15		F	03	07		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
131	May 15	Id	iPz iz iSz iz F	10	06	34.0 35.1 45.5 46.8	
				10	08		
132	May 16	Id	iPz eNE iz iz iNE F	21	56	03.3 34 35.0 37.0 41.0	
				21	58		
133	May 16	Id	iPz iz iz eE iz iNE F	23	48	36.3 38.1 40.3 41 42.5 45.0	
				23	50		
134	May 17	Ir	iPz iz eNE iz eSNE F	17	55	00.8 02.2 04 57 50.6 18 00 13	U.S.C.G.S.: 55°N, 161°W.
				18	05		
135	May 18	I	ePz iPz eN iz eE iz F iz F	10	44	36 38.4 43 49.4 51 45 16.3	Distant
				13	48		
				10	50	21.8	Separate shock?
				10	53		
136	May 19	Iv	iPz iN iSz iNEZ F	23	49	05.4 35.6 39.6 46.2	
				23	51		
137	May 19	Id	iPz iSz F	23	54	05.5 15.5	
				23	55		
138	May 20	Id	iPz eE iSz iNE F	01	32	16.6 19 26.7 27.6	Wellington: Bear 43°S, 171°E.
				01	33		

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
139	May 20	Id	iPz iSz F	08 13	48.6 50.4		See list, p. 94
140	May 20	Id	iPz iz eN iSE F	18 29	43.6 48.3 48.7 50.2		See list, p. 94
141	May 21	Id	iPz iSNEZ F	00 12	22.0 23.4		
142	May 21	Iv	iPz iE iN iSz iSN iSE F	15 39	33.6 34.5 35.4 28.0 28.4 29.1		Pas: 33°N, 123°5W.
143	May 21	Iv	iPz F	16 59	37.8		See list, p. 94
144	May 21	Id	iPz iSE iSz iSN F	02 17	29.0 38.5 39.0 39.5		
145	May 22	Iv	iPNEZ iN iSNEZ iN iE F	09 40	04.5 08.0 13.0 14.5 15.5		See list, p. 94
146	May 22	I	ePz iz iz F	17 25	28 30.6 56.6		See list, p. 94
147	May 22	I	ePz iPz eE iz F	19 43	30.0 30.6 32 46.6		
148	May 22	Iu	ePPz iPPSZ F	19 39	18 48 58.6		Wellington: Near 43°S, 171°E.
				19 52			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time			Remarks
				(G.C.T.)			
	1948			h.	m.	s.	
149	May 22	Id	iP ⁻ EZ iN iN iS ₂ iE F	20	30	53.3 53.6 54.6 57.2 57.6	See list, p. 94
150	May 22	Id	iPZ iSNEZ F	20	34	40.3 44.3 20 35.2	U.S.C.G.S.: 30°N, 99°E. Strasbourg 30°50', 100°00'.
151	May 22	Id	iPZ eN iSNEZ F	20	35	24.1 25 28.1 20 37	U.S.C.G.S.: 43°N., 127°W
152	May 22	Id	iPNZ iSNEZ F	20	39	31.3 35.6 20 41	
153	May 23	Iu	iPZ iZ iZ iZ iZ F	04	24	49.1 25 09.1 12.1 33.1 28 03.6 04 30	U.S.C.G.S.: 18°S, 169°E See list, p. 94
154	May 23	Iu	iPZ iZ F	09	25	55.6 28 44.6 09 30	
155	May 23	Id	iPZ iS ₂ F	12	23	21.8 23.2 12 24	
156	May 23	Iu	iPZ F	20	19	00.7 20 21	U.S.C.G.S.: 56°N 156°W
157	May 24	Id	iP ⁻ Z iN iE iSN iSE F	05	52	26.7 27.2 28.2 38.4 39.9 05 55	See list, p. 94
158	May 24	Id	iPZ iS ₂ F	08	36	40.7 52.2 08 38	Paris 35° 42' N. 118° 02' W.
159	May 24	Iu	iPZ eZ F	10	39	41.7 45 17 10 47	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
160	May 24	Iv	iPZ iSZ F	13	25	02.2 30.2	
161	May 24	Id	iPZ iSZ F	17	02	12.4 25.7	See list, p. 94
162	May 25	Iu	ePZ iZ eN eZ eLNE F	07	25	37.3 29 31.8 30 23 40 18 58 08 50	U.S.C.G.S.: 30°N, 99½°E. Strasbourg: 30°5N., 100°0E..
163	May 25	Iv	iPZ eNE iSE eLE eLN F	15	14	57.2 59 16 15.3 17 30 46 15 36	U.S.C.G.S.: 43½°N., 127°W
164	May 25	Id	iPNZ iE iNE F	18	34	51.0 52.3 59.2 18 36	See list, p. 94
165	May 25	Iv	ePZ iSZ F	20	26	38 53.3 20 28	U.S.C.G.S.: 45°N, 26°W h = 150 km
166	May 25	Id	iPZ iSZ F	22	02	01.3 09.3 22 03	
167	May 25	Ir	ePZ eZ F	09	22	51.4 28 21 09 43	U.S.C.G.S.: 56°N 156°W
168	May 26	Iv	iPZ iSZ F	12	02	05.9 37.0 12 03	
169	May 26	Iu	ePZ F	14	03	09 14 06	
170	May 26	Iv	iPZ eNE iZ iSZ eNE iNE F	19	36	05.2 09 25.5 46.5 47 55 19 39	Pas: 35° 42' N. 118° 02' W.

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
171	May 26	Iv	iPz iSz F	20 01 38.5 02 05.0 20 03	
172	May 27	Id	iPz iSz eNE F	02 42 12.1 21 08 20.7 23.5 02 43	
173	May 27	Id	iPz eE iSz iN eE F	10 47 57.7 48 05 13 45 06.6 07.1 13 42 09.6 10 49	
174	May 28	Iu	iPz eNE iz iz F	05 46 52.1 56 47 04.6 23.4 05 53	U.S.C.G.S.: 12°S 77°W
175	May 28	Id	iPz eN	11 03 18.8 24	
176	May 29	Iu	iSzNEZ F	11 04 28.8 20.6	B.C.I.S.: 45°3/4N, 26°1/2E h = 150 km
177	May 29	Id	iPz iz eN iSz F	04 58 41.7 43.2 52.5 59 43.2 05 01 52.4 05 03	See list, p. 94
178	May 31	Iu	iPz iz F	05 51 31.4 32.4 34 42.8 05 52	
179	May 31	Id	iPz iSz F	03 16 25.1 18 43.6 03 21	Near Bishop
180	May 31	Iu	iPz iz F	04 55 20.5 21.9 04 56	
181	May 31	Iu	iPz F	08 35 35.2 36 52.9 08 39	
				19 30 18.2 19 33	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
182	June 1	Id	iPNZ iz eN iSEZ iz F	21 03	24.1 25.1 30.7 31.1 35.2		See list, p. 94
183	June 3	Id	iPZ iSNEZ F	09 59 10 00	36.5 38.2		See list, p. 94
184	June 3	Id	iPZ iSNEZ F	13 40 13 41	23.8 25.7		B.C.L.S.: 35°S, 55°E
185	June 3	Id	iPZ eSNEZ F	15 46 15 47	30.3 32.5		
186	June 3	Iv	iPZ eE iS?Z F	16 06 16 07	20.5 32.0 33.0		
187	June 5	Id	iPZ iSNEZ F	04 49 04 50	18.3 20.6		
188	June 7	Id	iPZ eSNEZ F	02 15 02 16	31.4 36.7		
189	June 7	Iu	iPZ iz iz F	03 35 37 38 03 40	29.7 19.2 11.7		
190	June 7	Id	iPZ eE iSEZ iN F	14 23 14 25	26.2 27 33.3 34.0		See list, p. 94
191	June 7	Iv	iPZ eE iN iSNE iME iN F	15 06 15 09	05.8 06 07.2 40.5 44.0 44.3		Near Bishop See list, p. 94

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
192	June 7	IIId	iP _N e _E P _Z iS _E iS _N F	15 49 19.3 19.5 19.7 26.7 27.5 15 51	See list, p. 94
193	June 8	Id	iP _Z iS _{NE} F	03 27 28.4 35.9 03 30	See list, p. 94
194	June 8	Iu	eP _Z e _Z F	03 32 49 38 10.4 03 42	B.C.I.S.: 35°S, 55°E Aftershock
195	June 8	Iu	iP _Z F	04 02 09.4 04 04	
196	June 8	Id	iP _Z iS _Z F	09 35 54.1 36 01.8 09 37	See list, p. 94
197	June 8	Iu	eP _Z i _Z i _Z F	11 07 48 53.3 58.3 11 11	
198	June 9	Iu	iP _Z F	02 21 47.1 02 24	Aftershock
199	June 9	Iu	iP _Z i _Z F	13 21 15.4 24.9 13 23	
200	June 9	Id	iP _Z iS _Z F	13 48 26.9 39.6 13 49	
201	June 10	Iv	iP _Z i _Z e _{NE} iS _{?Z} F	21 20 16.5 22.0 49 50.8 21 22	See list, p. 94
202	June 11	Id	iP _Z iS _Z F	05 05 55.1 57.6 05 06.5	
203	June 11	IIId	iP _{NZ} i _E i _N iS _E	08 28 27.4 28.1 30.7 38.8	See list, p. 94

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
203	June 11 (cont.)	IIId	iSN iME iMN iE F	09 31 09 31 09 31 08 31	39.4 40.1 40.6 48.1	
204	June 11	Id	iPZ iSZ eE iN F	09 36 10 10 09 37	26.0 37.5 38.0 38.2	Aftershock of Previous
205	June 11	Id	iPZ eN iSZ eNE F	11 50 12 07 11 51	24.1 25 36.0 36.5	Aftershock
206	June 11	Id	eN iPZ eE iZ iSN iSE F	11 52 17 38 11 53	24.0 24.6 25 32.3 36.3 37.0	See list, p. 94
207	June 11	Id	iPZ iZ iE eN iSE iSZ F	16 59 17 58 17 00	11.6 12.6 14.4 17 18.1 18.6	Aftershock
208	June 12	Iu	iPZ F	07 14 07 16	53.2	
209	June 12	Id	iPZ eNE eN iSEZ F	21 18 21 20	42.2 43 53 53.4	See list, p. 94
210	June 12	Iu	iPZ F	22 45 22 46	03.9	
211	June 13	Id	iPZ iSZ iZ F	03 48 03 49	33.4 37.6 38.4	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
212	June 13	Iv	ePz iSz F	09 51 07.3 47.0 09 53	
213	June 14	Iu	iPz iz F	09 29 07.9 12.4 09 31	
214	June 14	Iu	iPz iz F	10 10 05.6 33.4 10 12	U.S.C.G.S.: 05° 3' 155° E See list, p. 94
215	June 14	IIId	iP ^E NEZ iS ^E NEZ F	12 05 40.2 42.9 12 07	See list, p. 94
216	June 15	Iu	iPz eNE iz F	11 56 50.2 52 57.2 12 10	U.S.C.G.S.: 33° 1/2' N 136° E
217	June 15	Iv	eP ^E NEZ iS ^E Z eE F	17 38 39.4 52.4 57 17 41	
218	June 15	Iv	eP ^E NEZ eNE iz ilz F	17 56 04.8 25 32.2 40.2 17 58	See list, p. 95
219	June 15	Iu	iPz F	21 15 01.1 21 17	
220	June 16	Iv	eP ^E NEZ iz iS ^E NZ iS ^E i ^E NZ i ^E F	12 37 11 17.7 39.5 40.0 43.7 50.3 12 40	Pas: 37° 19' N 118° 46' W
221	June 17	Iv	ePz eE iz iz eE iN F	00 54 40.5 44 49.8 55 30.1 30 31.0 00 57	Near Haiwee

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
222	June 17	Iv	ePZ iz eE iz eN F	00 58 49 53.2 59 32 32.3 38.5 01 01	
223	June 17	Iu	ePN F	01 07 01 01 12	U.S.C.G.S.: 06° S 155° E
224	June 18	Iv	ePN iN iN iN F	10 35 35 42.7 07 36 13.0 19.4 10 39	See list, p. 94
225	June 19	Iv	ePN eE iS _{NE} iN iE F	16 25 30 31.6 55.1 26 00.6 01.5 16 28	
226	June 19	I	eN eE eN F	22 18 08 10 12 22 20	
227	June 20	I	eP _{NE} iS _{NE} F	04 25 28 36.1 04 27	See list, p. 95
228	June 20	Id	iS _N iS _E F	06 15 08.5 09.0 06 16	
229	June 20	IIId	iP _{NE} iS _{NE} iM _{NE} F	20 34 45.6 51.0 53.4 20 36	See list, p. 95
230	June 21	Id	iS _{NE} F	03 32 10.9 03 33	
231	June 21	Id	eNE eN iS _E F	21 00 30 34.1 36.6 21 01	
232	June 24	Id	iPZ iS _{?Z} eNE iz F	00 59 39.2 46.6 48 48.6 01 01	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
233	June 24	Id	iPz iSz eN iE F	04 14 54.3 57.6 58 58.6 04 16	Aftershock of 16h 49m
234	June 24	Iv	iPz eNE iz iSE iSN iz F	07 07 09.8 10.6 20.5 23.6 24.1 24.8 07 09	See list, p. 95
235	June 24	Iu	iPz F	23 59 58.6 00 01	
236	June 24	Id	iPz iz iSN iSz F	10 30 40.1 42.6 45.6 47.6 10 32	
237	June 24	Iv	iPz eNE iE iz iN F	12 14 35.8 37 49.5 52.0 54.0 12 16	
238	June 24	Iv	iPz eNE iSNE iz F	16 49 28.5 29.5 42.9 43.5 16 51	See list, p. 95 See list, p. 95
239	June 24	Iv	iPz eE iSN iSz F	16 51 52.2 54 52 06.0 07.0 16 53	Aftershock Aftershock
240	June 24	Iv	ePz iPz eE eN iSNE iSz F	17 42 00.0 01.0 02 04 14.5 15.5 17 43	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
241	June 24	Iv	iPZ	17 49 43.6	Aftershock of 16 ^h 49 ^m
			iNZ	44.6	
			eE	45	
			iSN	57 57.4	
			iz	13 08 58.2	
			eE	58.5	
			iE F	07 50 00.2 17 51	
242	June 25	Iv	iPZ	00 19 11.5	
			iSZ	45.2	
			eE	45.7	
			eN F	08 18 48.7 00 21	
243	June 25	Id	iPZ	00 33 44.4	
			iSEZ	57.8	
			F	00 35	
244	June 25	Id	iPZ	07 14 33.1	
			iSZ	37.6	
			F	07 15	
245	June 25	Id	iPZ	07 56 42.9	See list, p. 95
			iSZ	47.5	
			F	07 58	
246	June 25	Iu	iPZ	09 28 35.5	
			iz	47.5	
			F	09 31	
247	June 25	Iv	iPZ	11 26 24.7	See list, p. 95
			eNE	25.0	
			iSNE	37.3	
			iz	38.0	
			F	11 28	
248	June 25	Iv	iPZ	22 09 02.4	Aftershock
			iNZ	03.3	
			iN	16.0	
			iSE	16.9	
			iz	06 15 17.3	
			iN	17.8	
			F	22 11	
249	June 26	Iu	iPZ	01 41 47.4	
			F	01 44	
250	June 26	Iu	ePNEZ	12 14 59	See list, p. 95
			F	12 16	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
251	June 27	Ir	e ^P NEZ iZ iZ e ^E Z F	12 55 40.9 54.1 56 03.6 57 13 13 06	U.S.C.G.S.: 17°N 85°W
252	June 28	Iu	iPZ e ^{NE} eZ e ^{SN} e ^E e ^{LN} F	07 25 25.1 26 37.4 35 33 48 46.1 08 10	U.S.C.G.S.: 36°N 136° ¹ / ₃ E
253	June 28	Id	iPZ e ^N i ^S NEZ F	19 52 34.2 34 41.6 19 53	
254	June 29	Iu	e ^P NEZ e ^{SN} e ^{SE} e ^{LE} F	10 39 55 49 07 13 01.1 11 16	U.S.C.G.S.: 16°S 172°N
255	June 30	Iv	ePZ iZ eE iE e ^{NE} F	00 29 04.2 05.2 06 25.3 28 00 30	See list, p. 95
256	June 30	Id	iPZ iSZ eE F	01 39 30.1 31.1 32.2 01 40	
257	June 30	Id	eE iPZ iSNE iSZ F	06 14 20.3 20.7 23.3 25.1 06 15	
258	June 30	Id	iPZ iSNEZ F	08 13 10.6 11.7 08 14	
259	June 30	IIId	i ^P NEZ i ^S NE F	09 56 33.5 36.8 09 58	See list, p. 95

PALO ALTO

THE BRANNER STATION, STANFORD UNIVERSITY
PALO ALTO, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 37^{\circ} 25' 11'' \text{ N.}$$

$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
1	April 2	Id	eP _{NE} iN iS _N iE F	03	01	21 29.4 30.7 33.4	See list, p. 94
				03	03		
2	April 2	Id	eP _N iS _N iE F	11	25	06 10.0 12.3	See list, p. 94
				11	26		
3	April 4	Iv	eN eNE F	09	44	02 17	See list, p. 94
				09	45		
4	April 4	Id	iPE iN iE iN F	12	18	47.7 48.5 55.3 56.4	See list, p. 94
				12	40		
5	April 5	Id	iPE iN iE iS _{NE} F	15	30	02.8 03.4 10.9 11.7	See list, p. 94
				15	32		
6	April 7	IIId	iP _{NE} iS _{NE} iPE iN F	21	13	46.5 47.8 49.0 49.7	See list, p. 94
				21	15		
7	April 9	Iv	iP _N iS _{NE} F	20	55	32.2 46.7	See list, p. 94
				20	57		
8	April 12	Id	iP _N iE iS _{NE} iNE F	17	40	48.2 48.7 51.5 53.0	See list, p. 94
				17	42		
9	April 14	IIId	iP _{NE} iE iS _{NE} F	19	57	12.9 23.0 23.9	See list, p. 94
				19	58		
10	April 15	Id	eN iNE F	10	11	31 34.8	See list, p. 94
				10	13		

PALO ALTO

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
21	April 21	Iu	ePNE iN eSN eLN F	20 30 58 31 13.2 38 05 47.9 21 20	USCGS: 19°N 89°5W
22	April 26	IIId	iPN iE iSNE iE F	19 16 22.6 23.2 24.4 25.3 19 17	
23	April 26	Id	iPN iSN F	20 57 27.0 00 00 30.0 20 58	See list, p. 94
24	April 27	IIId	iPE iE iSE iE F	16 41 25.8 28.9 39.0 40.9 16 45	See list, p. 94
25	April 27	IIId	iPE F	20 22 42.6 20 27	See list, p. 26 aftershocks recorded. Largest of these are listed below.
26	April 27	IIId	iPE iSE F	20 31 51.1 32 06.6 20 33	
27	April 27	IIId	iPE	20 53 15.4	
28	April 27	IIId	iPE iSE	21 00 30.6 46.1	
29	April 27	IIId	iPE iSE	22 46 44.0 59.8	
30	April 28	IIId	ePE iPE iE iS1E iS2E F	07 23 56 56.4 24 03.0 09.4 11.7 07 26	
31	April 29	Id	ePNE iSE iN F	12 07 28 33.1 36.0 12 09	

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
32	April 29	Id	ePNE iSNE F	16 06 16 08	18 26.4	
33	May 1	Iv	iPE iNE iSNE iN F	02 56 02 57	02.9 03.3 18.3 19.4	See list, p. 94
34	May 3	Id	ePNE iSNE F	09 04 09 05	36 39.2	
35	May 3	Id	iPE iN iSNE iN F	22 28 22 29	37.1 37.7 40.4 42.9	
36	May 4	Id	iPNE iSNE F	02 34 02 35	24.3 30.7	See list, p. 94
37	May 4	Id	ePN iSE F	19 17 19 18	13 17.6	
38	May 5	Id	ePNE eNE iN F	21 55 21 57	09 19.8 21.1	
39	May 5	Id	iPNE iSN iSE F	22 38 22 40	37.3 39.3 40.3	
40	May 5	Iv	ePNE iSE iN F	22 53 22 55	33.1 47.6 48.6	
41	May 5	Iv	ePNE iSN iSE F	23 13 23 15	37.0 51.7 52.4	See list, p. 94
42	May 5	Iv	ePNE iE iN F	23 16 23 18	52.9 17 08.3 10.9	

PALO ALTO

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
				h. m. s.	
	1948				
43	May 6	Iv	ePNE iE iN F	21 02 58.9 14.5 15.4 21 04	See list, p. 94
44	May 7	Iv	iPNE iE iN F	12 00 56.9 01 16.9 19.2 12 02	See list, p. 94
45	May 7	IIId	iPNE iE iSN iLN F	19 00 13.5 14.5 15.0 16.1 19 01	
46	May 7	Iv	iPNE iSE iSN iLN F	23 21 02.9 26.2 26.9 58.4 23 23	Blast?
47	May 9	Id	ePNE iN iE F	06 00 04 07.9 08.9 06 01	See list, p. 94
48	May 9	Iv	ePNE iSE iN F	12 43 20 36.0 38.8 12 45	
49	May 10	Iv	ePNE eSNE F	13 41 52 42 08 13 43	
50	May 11	Iu	ePNE eSE eSN F	09 07 12 16 37 39 09 22	USCGS: 17°S 71°W
51	May 11	Iv	ePN iSNE F	10 42 16 29.3 10 44	
52	May 12	Id	iPNE iSNE iE iN F	17 02 32.4 35.5 36.8 39.8 17 03	See list, p. 94

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
53	May 13	Iv	iP _N iS _N iN F	12	59	31.2 46.2 48.9	See list, p. 94
				13	01		
54	May 13	Id	iP _N iS _N F	19	02	08.2 11.4	See list, p. 94
				19	03		
55	May 14	IIv	iP _{NE} iE iE iS _N iE F	02	17	47.6 48.8 57.6 58.8 59.6	See list, p. 94
				02	19		
56	May 14	Id	eP _{NE} iE iNE F	10	14	09 15.3 18.8	
				10	15		See list, p. 94
57	May 14	Id	eP _E iS _{NE} F	21	12	36 43.0	
				21	13		
58	May 14	Ir	eP _E iN eS _{NE} eL _{NE} F	22	38	08 21.2 43 46.4	USCGS: 54°5N 161°W
				23	49		USCGS: 18°N 160°E
59	May 17	Ir	eP _{NE} eS _E F	17	55	58 12 18 08	USCGS: 55°N 161°W
				18	08		
60	May 18	Iv	eP _E eN F	10	44	44 45 10	See list, p. 94
				10	47		
61	May 18	IIId	iP _N iE iNE iNE iN F	18	45	08.8 09.2 10.1 10.9 11.4	
				18	46		
62	May 19	Id	eNE eNE F	00	07	58 08 05	
				00	09		See list, p. 94

PALO ALTO

No.	Date	Char-acter	Phase	Time		Remarks
				(G.C.T.)		
	1948			h.	m. s.	
63	May 19	Id	eP ^{NE} iS ^N iS ^E F	23 55	10 22.7 23.2	USCGS: 30°N 99°E
64	May 20	IIId	iP ^{NE} iS ^{NE} iE F	18 29	37.8 41.3 42.2	See list, p. 94
65	May 21	Iv	iP ^E iE iS ^E iS ^N F	15 39	33.1 42.8 40 26.6 28.1	Pas: 33°N 123°5W
66	May 22	Iu	iP ^{NEZ} F	19 43	26.9	
67	May 22	Iv	iP ^Z iN ^Z iE ^Z iS ^{NZ} iS ^E	20 31	00.7 01.5 03.0 11.4 12.5	See list, p. 94
68	May 23	I	iN iz F	04 25	06.8 12 15.1 30.8	USCGS: 18°S 169°E
69	May 24	Iv	iP ^Z iP ^Z iN ^E iE iS ^Z iS ^N iS ^{NEZ} iN F	05 52	31.5 32.2 32.7 43.4 46.2 47.3 48.1 50.7	See list, p. 94
70	May 24	Iu	iP ^Z iz F	10 45	14.4 18.9	
71	May 24	I	iP ^Z F	17 02	06.1	See list, p. 94
	June 2	IIId		17 03		S-P= 1.0 sec.

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
72	May 25	Iu	eE F	08 05.8 08 28	USCGS: 30°N 99°5'E
73	May 25	Iv	iPz iz eE eN F	15 14 51.0 15 07.5 16 17 17 35 15 28	USCGS: 43°5'N 127°W
74	May 25	Iv	iPz iz eNE iz iz iE iE iN iMz F	18 34 54.0 54.9 56 59.4 35 05.0 08.4 09.4 09.9 13.7 18 37	See list, p. 94
75	May 25	Id	ez eNE iSz F	22 02 07.9 18 18.9 22 04	See list, p. 94
76	May 26	Ir	iPz iz F	09 22 49.7 24 46.7 09 30	USCGS: 56°N 156°W
77	May 26	Iv	iPz iz iS1z iN iS2z iE iN F	19 36 07.0 17.7 59.5 37 02.5 09 09.5 10.0 11.5 19 40	Pas: 35°42'N 118°02'W
78	May 29	I	iPz eN iz eE F	04 58 36.1 41 43.2 44 05 02	Aftershock
79	May 31	Iu	iPz iz eNE F	03 16 22.5 27.5 30 03 18	Aftershock
80	June 1	IIId		13 02 ca	S-P= 3.5 sec.
81	June 2	IIId		19 04 ca	S-P= 1.0 sec.

PALO ALTO

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
82	June 7	Iv	ePZ iPZ iSZ iNE iz iN F	14 23 30.0 31.5 41.5 45.5 46.5 47.8	See list, p. 94
83	June 7	Iv	iPZ iz iNEZ iz iN iE F	15 06 12.0 17.5 20.6 45.2 48.8 49.8	Near Bishop
84	June 7	Iv	iPZ iz iNE iN F	15 19 23.2 35.2 36.0 38.5	See list, p. 94
85	June 8	Iv	iPZ iNEZ iE iNZ F	03 27 32.4 44.5 45.5 47.5	See list, p. 94
86	June 10	IIId	ePNEZ iM F	17 35 43.5 45.7	
87	June 11	Iv	iPZ iNZ iN iSN iLN F	08 28 30.9 31.6 32.0 47.8 29.1	See list, p. 94
88	June 11	Iv	iPZ F	09 36 30.6 09 37	Aftershock
89	June 11	Iv	iPNEZ iSNE F	11 50 29.4 45	Aftershock
90	June 11	Iv	iPNEZ iSNE F	11 52 28.6 44.3 11 54	See list, p. 94

PALO ALTO

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
91	June 11	Iv	iPNZ iN F	16 59 06.0 10.3 17 00	Aftershock
92	June 12	Id	iPNZ iNE F	21 18 38.3 43.9 21 20	See list, p. 94
93	June 14	I	iPNZ iNE F	12 05 44.8 54 12 06	See list, p. 94
94	June 15	I	iPNZ F	00 35 39 00 37	
95	June 15	Iu	iPNZ eNE F	11 56 47.4 57 01 11 59	USCGS: 33°5'N 136°E
96	June 15	IIId	iPNZ iSNE iMNE F	17 34 54.5 56 57 17 35	
97	June 15	I	iPNZ iN iNE iE iN F	17 38 33.3 46 53 39 14 24 17 40	
98	June 16	Iv	iPNZ iSNE iNE F	12 37 15.6 49.2 38 03 12 40	Pas: 37°19'N 118°46'W
99	June 17	Iv	ePNZ eE F	00 54 57 59 00 57	Near Haiwee
100	June 18	Iv	ePEZ iEZ iPNZ iE iNE F	10 35 30.1 35.8 37.4 43 36 06 10 40	See list, p. 94
101	June 18	IIId	iPNZ iSN iMN F	18 15 41.2 42 43.5 18 16	

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
102	June 19	Iv	iPNEZ iEZ F	16 25 34.9 38.0 16 28	
103	June 20	Iv	ePNEZ iMZ iSNZ iNE F	04 25 34 35.3 45.8 49.3 04 27	See list, p. 95
104	June 20	IIId	iPNEZ iNE iSNE iNE F	20 34 50.3 51.2 59.6 35 23 20 37	See list, p. 95
105	June 21	IIId	iPNEZ iSNE F	21 00 23.7 26.8 21 02	
106	June 22	I	iPEZ iN iEZ F	20 53 37.3 40.8 48 20 55	
107	June 23	I	iPEZ iNEZ F	17 07 31.0 39 17 08	
108	June 24	Iv	iPNEZ iE iNE iNE F	07 07 15.0 29.1 39 41.1 07 08	See list, p. 95
109	June 24	I	ePz iz F	10 30 45 59 10 31	
110	June 24	I	iPEZ F	12 14 43.8 12 16	
111	June 24	I	iPNEZ F	16 40 50.8 16 41	
112	June 24	Iv	ePNEZ iSE iN iE F	16 49 33.7 51.8 55 57 16 51	See list, p. 95

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
113	June 24	I	iP _{NEZ} F	16 51 57.7 16 53	Aftershock 136758
114	June 24	I	iP _{NZ} iE iN F	17 49 48.6 50 10.7 00 11.5 17 51	Aftershock
115	June 24	I	iP _Z eN F	23 01 58.1 02 00 23 03	
116	June 25	Iv	iP _{NZ} iN iN F	11 26 29.4 48.4 56.3 11 28	See list, p. 95
117	June 25	Id	iP _{NZ} iN iN F	16 55 42.2 44 46.7 16 56	See list, p. 95
118	June 25	Id	iP _{NZ} iN F	16 57 06 11 16 58	See list, p. 95
119	June 25	Id	iP _{NZ} iN F	16 58 13 16 16 59	
120	June 25	Id	iP _Z iN iN F	16 59 11.2 13 14 17 00	
121	June 25	Id	iP _{NZ} iN F	17 07 04.1 06.8 17 08	
122	June 25	Iv	iP _Z iP _{NE} iNEZ F	22 09 07.7 08.4 28.5 22 11	
123	June 27	Iv	eP _{NEZ} iP _{NZ} iNEZ F	12 55 45 45.2 58 13 00	USCGS: 17°N 85°W
124	June 27	I	eP _Z F	21 45 23.1 21 47	

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
125	June 28	Iu	ePz iPNEZ eSNE F	07 25 22.6 23.0 35 20 08 03	USCGS: 36°N 136°5E
126	June 28	I	iPz F	07 31 36.8 07 33	
127	June 29	Iu	ePz iPNEZ eSNE eLNE ez F	10 39 51.8 53.8 49 08 11 01.1 07 44 11 10	USCGS: 16°S 172°W
128	June 29	I	iPEZ iE F	16 33 11 13 16 34	
129	June 30	Iv	iPz iNE F	00 28 58.5 30 19.4 00 31	See list, p. 95
130	June 30	Id	iPNZ iSNE iE F	09 56 40.6 49.3 52 10 01	See list, p. 95

Apparatus	Component
Wood-Anderson	E 15° S W

No.	Date	Char-acter	Phase	Time	Remarks				
SAN FRANCISCO									
1948 THE SAN FRANCISCO STATION, UNIVERSITY OF SAN FRANCISCO SAN FRANCISCO, CALIFORNIA									
1	April 2	III		03 02	See list, p. 94 5-7* 2.0 sec.				
2	April 3	Id		18 59					

3	April 5	III		25 20	See list, p. 94 5-7* 2.0 sec.				
4	April 27	IV			CONSTANTS UNION 33°N 125°W				
CONSTANTS OF THE STATION									
Latitude and longitude:									
5	April 27	IV			$\phi = 37^{\circ} 16' 14''$ N. $\chi = 122^{\circ} 27' 12''$ W. See list, p. 94				
Time -- All determinations are reduced to Greenwich Civil Time.									
Altitude -- 100 meters (328 feet) above mean sea level.									
6	April 27	IV		20 31 58.5 20 32 18.2 20 32 19.0 20 32 23.5 20 36					
7	April 27								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Apparatus</th> <th style="width: 40%;">Component</th> </tr> </thead> <tbody> <tr> <td>Wood-Anderson</td> <td style="text-align: center;">E 15° S N</td> </tr> </tbody> </table>						Apparatus	Component	Wood-Anderson	E 15° S N
Apparatus	Component								
Wood-Anderson	E 15° S N								
8	April 27	IV		21 03 21 03 21 03					
9	April 27	IV		22 16 50.6 22 17 09.0 22 18 00 13.6 22 18					
10	April 27	IV		23 12 35.6 23 12 48 23 12 57 23 19 59.6					

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
1	April 2	IIId	iPNE F	03 01 03 02	See list, p. 94 S-P= 2.0 sec.
2	April 3	Id	iSN F	12 59 13 00	
3	April 5	IIId	iPN F	15 30 15 31	See list, p. 94 S-P= 1.5 sec.
4	April 27	Iv	ePN eE iSN iNE F	16 42 32 33 51.1 53.4 16 44	USCGS: 33°N 13°5W
5	April 27	IIv	iPN iPE iS1E iN iS2E F	20 22 49.4 50.1 23 07.8 09.1 10.6 20 25	See list, p. 94
6	April 27	IIv	ePN iN iS1E iS2E F	20 32 58.5 33 18.2 19.0 23.5 20 36	
7	April 27	Iv	ePN eE iN iS2E F	20 53 21 27 40.5 43.5 20 55	
8	April 27	IIv	ePN iE iN iS1E F	21 01 37 42.5 56.0 58.5 21 03	USCGS: 31°N 142°E
9	April 27	Iv	ePNE iN iS1E F	22 46 50.4 47 09.0 00 11.4 22 49	
10	April 27	Iv	eN eE iN iF	23 18 39.4 42 57 59.4 23 19	See list, p. 94 S-P= 2 sec. See list, p. 94 S-P= 3.5 sec.

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
11	April 28	Iv	eN eE iS _{NE} F	07 25 02 04 22.1 07 28	
12	April 28	Iv	eP _{NE} iS _E iN F	07 32 08 26.4 27.6 07 34	
13	April 28	Iv	eP _{NE} iS _{NE} F	07 40 39 58.9 07 42	
14	May 4	IIId	iP _{NE} iS _{NE} F	02 34 19.2 22.2 02 35	See list, p. 94
15	May 7	Id	iNE iE iE iN iE F	23 20 57.9 58.4 21 03.4 07.4 10.4 23 22	Blast?
16	May 9	Iv	eNE F	12 43 49 12 45	
17	May 12	Iv	iS _E F	10 57 10.1 10 58	See list, p. 94
18	May 14	Iv	eP _{NE} iS _N iS _E F	02 17 57 09.6 10.3 02 19	See list, p. 94
19	May 14	Iu	eP _{NE} eS _{NE} eL _{NE} F	22 38 13 43 18 46.2 24 03	USCGS: 54° $\frac{1}{2}$ N 142° $\frac{1}{2}$ E
20	May 18	Iv	eN iS _{?N} F	10 44 36 45 06.5 10 46	
21	May 24	IIId	iP _E F	17 04 17 05	See list, p. 94 S-P= 2 sec.
22	May 12	Id	ePN F	21 09 21 11	See list, p. 94 S-P= 3.5 sec.

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time		Remarks
				(G.C.T.)		
	1948			h. m. s.		
23	May 15	I	e _E F	11 48		
				11 49		
24	May 15	Id	i _P _E F	17 29		S-P= 5.6 sec.
				17 31		
25	June 15	Id	i _P _E F	17 47		S-P= 5.6 sec.
				17 49		
26	June 17	Iv	e _P _N F	22 35		S-P= 23 sec.
				22 37		
27	June 20	IIv	e _P _E F	20 35		S-P= 16.5 sec.
				20 36		
28	June 28	I	e _E F	07 25		
				07 26		
29	June 29	I	e _E F	10 40		
				10 42		

Apparatus	Component
Woodward-Smith 25 cm	E N

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

No. 1 Date 1936 Character Id Station FERNDALE
 THE FERNDALE STATION
 FERNDALE, CALIFORNIA

No. 2 Date April 13 Character Id

No. 3 Date April 21 Character Id
 CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 40^{\circ} 34' \text{ N.}$$

$$\lambda = 124^{\circ} 16' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Bosch-Omori 25 kg.	E N

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

No. 9 Date June 18 Character Id

No. 10 Date June 20 Character Id

FERNDALE

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
1	April 3	Id	ePNE iSNE F	07 05 55 06 03 07 07	Felt in Ferndale and Seattle
2	April 13	Iu	ePE eN eSNE F	16 22 24 23 37 33 03 18 04	USCGS: 36°N 128°W
3	April 21	Iu	ePE eN iSE eLE eLN F	20 31 05 17 38 23 50 00.6 51 00.8 22 01	USCGS: 36°N 127°W
4	May 11	Iu	ePNE eSNE F	09 07 36 17 14 09 23	
5	May 14	Ir	ePE eN eE eN iSE iSN F	22 37 32 38 06 42 22 00 32 44 26 48 23 47	USCGS: 54.5N 161°W
6	May 18	Iv	iE iN iN F	10 44 42 52 57 10 46	
7	May 25	I	eLN eLE F	07 50 53 08 52	
8	May 25	Iv	ePNE eSN eE F	15 14 10 14 52 15 04 15 38	USCGS: 43.5N 127°W
9	June 18	Iv	eSE eSN eN F	10 35 41 45 36 13 10 38	See list, p. 94
10	June 20	Id	ePE ePN iSNE F	19 25 04 06 10 19 26	

FERNDALE

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
11	June 24	Id	iPE iPN iSNE F	03 51 12 14 20 03 52		Felt in Ferndale and Scotia
12	June 28	Iu	ePE eSN eE F	07 34 08 45 38 47 04 08 14		USCGS: 36°N 136°5E
13	June 29	Iu	ePE eSN F	10 39 37 48 40 11 16		USCGS: 16°S 172°W

Latitude and longitude

$\phi = 36^{\circ} 16' 11''$
 $\lambda = 136^{\circ} 47' 18''$

Time — All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Sprague	W N E

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 Greenwich Civil Time.

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

Apparatus	Component
Sprengnether	N
	E
	Z

09 10

23 27 10.0

11.5

14.2

15.6

25.0

11.0

17.2

50.3

51.5

21 25 58

21 30

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
1	April 1	I	iPZ eZ F	19 21 14.7 22 00 19 24	
2	April 4	Iv	iS ⁻ Z F	12 19 21.9 12 22	See list, p. 94
3	April 7	I	eZ F	20 22 23 20 25	
4	April 9	Iv	iS ⁺ NE iS ⁺ EZ F	20 55 53.2 55.5 20 56	See list, p. 94
5	April 9	Iu	ePZ F	23 06 06 23 08	
6	April 10	Iu	ePZ F	13 51 22 13 53	
7	April 10	I	ePZ eZ eN eE iN F	22 08 00 09 23 00 27 00 33 00 36.0 22 16	
8	April 12	Iu	ePZ eN eE F	06 21 49 54 22 09 06 26	
9	April 12	Iu	ePZ iZ iPPZ F	09 02 23 35.0 05 33.0 09 10	
10	April 16	IIV	iPZ iE iN iZ iN iE iS ⁺ NZ iN iZ F	22 27 10.0 11.5 14.2 15.6 25.0 44.0 47.2 50.3 51.5 22 35	Pas: 34:ON 119:OW
11	April 19	I	ePZ F	21 25 58 21 30	

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
12	April 20	Id	iPz iSz F	09 43 41.6 53.1 09 46	
13	April 21	Ilu	iPz iz ez F	20 30 39.0 40 55.5 49.1 21 34	USCGS: 19°N 69°5W
14	April 21	Iu	iPz F	21 34 58.5 21 38	
15	April 21	Iu	iPz F	22 11 09.5 22 17	
16	April 22	Iu	iPz ez ez F	00 36 53.5 49 55 57.6 01 13	USCGS: 17°N 71°W
17	April 22	Iu	iPz iz F	10 56 24.0 11 00 17.0 11 05	Trace of aftershock at 0925 OCT
18	April 22	Iu	ePz F	12 17 35 12 25	
19	April 25	I	ePn in F	12 41 22 37.9 12 43	Aftershock
20	April 26	Iu	iPz eSz F	09 42 23.0 50 35.0 09 56	USCGS: 51°N 34°W
21	May 1	Iv	ePz eSz F	02 56 06 23 02 57	See list, p. 94
22	May 1	Iu	iPz F	22 51 47.5 22 59	See list, p. 94
23	May 3	Iu	ePz F	12 19 22 12 25	See list, p. 94
24	May 3	Iu	ePz F	14 02 41 14 10	See list, p. 94
25	May 7	Iv	iPz iz iz en F	12 00 57.0 01 02.5 16.5 19 12 05	USCGS: 54°N 161°W See list, p. 94

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
26	May 9	Iu	iPz eN iz F	02 21 37.5 46 51.5 02 28	
27	May 9	Iv	iPz iz iz F	04 03 44.0 04 04.5 13.0 04 06	
28	May 10	I	iPz iz F	09 18 14.5 19 12.3 09 25	
29	May 11	Iu	ePz ez F	03 08 53.5 09 16.5 03 12	
30	May 11	IIu	iPz ipPz iNz iz iN iPPz iz eSNz F	09 06 59.0 07 15.0 24.2 08 53.5 58.5 09 57.0 10 11.0 16 12.7 09 26	USCGS: 17°S 71°W Trace of aftershock at 0935 GCT
31	May 11	Iu	iPz F	09 45 04.0 09 49	Aftershock
32	May 12	Iu	ePz iz ePPz eSz eLz F	01 08 32 41.5 11 18.5 18 01.0 32.0 01 50	USCGS: 38°N 142°5E
33	May 13	Iv	iPz iSN iNz iN F	12 59 25.2 38.8 13 00 11.0 01 20.0 13 04	See list, p. 94 Wellington: near 43°S 171°E
34	May 14	Iv	ePz F	02 17 58 02 23	See list, p. 94
35	May 14	IIr	iPz iz eLz F	22 38 25.8 43 53.3 47.3 24 07	USCGS: 54°S 161°W See list, p. 94

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
36	May 15	I	ePz iz F	02	48	30.0 40.0	
37	May 17	Iu	ez F	13	46	40	
				13	53		
38	May 17	Ir	ePz iz iz ez F	17	55	16 37.3 54.6	USCGS: 55°N 161°W
				18	01	05	
				18	08		
39	May 18	Iv	ePz iz iz iz iz F	10	45	06.5 24.5 55.4 16.5 30.2	
				10	55		
40	May 21	Iv	iPz iSz F	15	39	38.2	Pas: 33°N 123°5W
					40	40.7	
				15	45		
41	May 22	Iv	ePz ez F	01	12	43	
				00	13	44.0	
				01	16		
42	May 22	Iv	iPz iz iN eN F	09	10	16.4 33.7 34.7 28.2	See list, p. 94
				09	45		
43	May 22	I	ez iz ez ez F	17	25	15 39.5 56.0	
					26	16	
				17	29		
44	May 22	Iu	ePz ePPz F	19	35	10	Wellington: near 43°S 171°E
					39	18	
				19	43		
45	May 22	Iu	iPz iz F	19	43	42.9	Compression
					44	04.9	
				19	49		
46	May 22	Iv	ePz iSz ez F	20	31	13	See list, p. 94
					00	31.5	
				03	34	09	
				20	36		

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
47	May 23	Iu	iPz ez ez F	04 24 56.0 25 13.0 28 10 04 34	USCGS: 18°S 169°E
48	May 23	Iu	ez F	04 56 09 04 59	
49	May 23	Iu	ePz iz F	20 19 06.5 15.5 20 24	Near Bishop
50	May 24	Iv	ePz ez F	05 52 36.0 55 03.5 05 08	See list, p. 94 See list, p. 94
51	May 24	I	ePz iN ie F	10 39 27 40 17.9 25.4 10 47	
52	May 25	Iu	ePz ePPz ez ez eLz F	07 25 23 29 42.0 33 21.5 36 35 08 08.4 08 48	USCGS: 30°N 99°5E
53	May 25	IIv	iPz F	15 15 17.3 15 31	USCGS: 43°5N 127°W
54	May 26	Ir	ePz iPPz iz F	09 23 05.0 09 24 11.0 49.5 09 35	USCGS: 56°N 156°W
55	May 26	Iu	ePz F	14 02 58.5 14 08	
56	May 27	IIv	ePz iPz iS F	19 35 43 44.2 36 05.7 19 43	USCGS: 06°S 155°E
57	May 28	Iu	ePz ePz F	05 46 41.0 49.5 05 53	USCGS: 12°S 77°W See list, p. 94
58	May 31	Iu	ez ez F	03 16 43 19 00 03 24	

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Remarks
	1948				
59	June 2	Iu	ePz ez F	13 45 28 13 46 47 13 50	
60	June 4	I	ez iN iz F	07 29 01 30 27.9 30.4 07 36	
61	June 7	IIv	iP _{NZ} iS _N F	15 05 45 06 02 15 10	Near Bishop
62	June 11	Iv	eM iS _{II} F	08 28 36 51.9 08 34	See list, p. 94
63	June 13	I	ez ez F	09 51 07 52 39.0 09 55	
64	June 15	Iu	ePz iPz iz iz iN F	11 56 58 57 00.7 10.7 21.7 23.2 12 10	USCGS: 33°51'N 136°E
65	June 16	Iv	iPz iN iS _Z iS _M F	12 36 51.9 53.1 37 06.2 07.2 12 41	Pas: 37°19'N 118°46'W
66	June 17	I	ez ez F	10 46 03 47 35 10 49	USCGS: 03°N 126°E
67	June 18	Iu	iPz ipPz iz ez eS _Z eS _N F	01 06 51.0 07 05.0 18.0 10 20.5 17 17.5 19.0 01 23	USCGS: 06°S 155°E
68	June 18	Iv	ePz eN iN iz iN F	10 35 56.5 59.2 36 52.7 56.2 58.7 10 41	See list, p. 94

FRESNO					
No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
69	June 18	IIV	eP _N eP _Z iN _Z iN iN iz iN _Z F	16 25 20 22.0 32.6 35.1 26 44.4 45.9 50.9 16 30	See list, p. 95 Afternoon
70	June 18	Iu	eP _Z F	16 59 40 17 03	
71	June 19	I	eZ F	20 48 48 20 51	
72	June 19	I	eN F	21 17 06 21 20	
73	June 19	Iu	eP _Z iN _Z F	23 07 27.5 36.5 23 09	See list, p. 95
74	June 19	I	eP _Z F	23 24 06 23 27	
75	June 20	Iv	eP _Z iS _{NZ} F	20 35 05.0 25.1 20 40	See list, p. 95 Afternoon
76	June 20	I	eN _Z F	21 17 05.5 21 19	
77	June 20	I	iz eN F	22 22 20.3 23 19 22 26	Compression followed by very
78	June 21	Iu	eP _Z iz F	12 22 49 23 16.8 12 29	USCGS: 03°N 126°E Depth: 17" 85"
79	June 24	Iv	eP _Z iS _Z iS _N eN _Z iN iz F	07 07 12.5 25.8 26.8 08 42 09 01.8 05.3 07 12	
80	June 24	Iv	eP _{NZ} eS _{NZ} F	12 14 50 16 06 12 18	

FRESNO					
No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
81	June 24	Iv	ePz eN iNZ ez eNZ F	14 49 32 40 44.8 50 51 51 02.0 14 55	See list, p. 95
82	June 24	Iv	iPz ez eN F	17 50 00.0 51 09 16 17 54	Aftershock
83	June 24	Iv	eN ez F	23 19 08 12 23 21	
84	June 25	Iu	ePz F	09 28 23.5 09 33	
85	June 25	Iv	iPz iz iN ez eNZ F	11 26 26.0 42.8 44.3 27 43.8 28 04.8 11 31	See list, p. 95
86	June 25	Iv	iS _{NZ} eN F	22 09 19.5 10 58.5 22 12	Aftershock
87	June 26	Iu	iPz ez F	12 15 05.2 18 22.5 12 20	
88	June 27	Iir	iPz ipPz iPc ^P N iPcPz iNZ eSSN F	12 53 26.2 55 37.2 00 48.7 00 49.2 56 55.2 13 05 22 13 10	Compression followed by very sharp dilatation USCGS: 17°N 85°W
89	June 27	I	ePz eN F	21 45 39.5 46 43 21 52	
90	June 28	Iu	iPz iz iN iPc ^P Z iN eSN ez F	07 25 35.7 37.7 38.7 46.9 49.7 35 39 49 07 47	

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Remarks
	1948			h. m. s.	
91	June 28	Iu	ePz F	23 40 14.5 23 43	
92	June 29	Iu	ePz iz F	05 12 23 26.7 05 16	
93	June 29	IIu	iPz iP _C Pz iN iz eN eS _Z eLz F	10 39 59.6 40 26.6 42 00.6 00 34.1 47 37.5 49 32 11 00.5 11 27	USCGS: 16°S 172°W
94	June 29	Iu	ePz F	11 07 47.5 11 13	
95	June 29	Iu	iPz iPlz eSKSN F	16 20 13.5 24 15.5 30 53.5 16 37	
96	June 30	Iv	ePz eSN F	09 56 56.8 57 15.5 10 03	See list, p. 95
97	June 30	Iu	ePz iz eN eSN F	12 34 45.5 55.1 56.5 45 20.0 12 54	USCGS: 38°5N 20°5E Strasbourg: 38°50'N 20°40'E Destructive on the Ionian Is.

No.	Date	Char-acter	Place	Time	Remarks						
MINERAL											
1	April 2	Id	THE MINERAL STATION MINERAL, CALIFORNIA								
2	April 5	Id		12 26 21.7 12 28 21.0	5 foreshocks and 3 aftershocks						

3	April 11			15 07 23.0 15 10							
4	April 13			06 27 19.0 07 58.5							
CONSTANTS											
5	April 12	Id	CONSTANTS OF THE STATION	05 51.8 09 23							
6	Latitude and longitude:			11 04 08.4 09.1							
				$\phi = 40^{\circ} 21' N.$							
				$\lambda = 121^{\circ} 35' W.$							
7	April 16	Id		12 26 21.7	Peak 310W 1150W						
Time -- determinations are reduced to Greenwich Civil Time.											
Altitude -- 1495 meters (4906 feet) above mean sea level.											
8	April 17	Id		02 43 22.6 03.1							
9	April 17			03 33							
<table border="1" data-bbox="359 1257 1146 1520"> <thead> <tr> <th>Apparatus</th> <th>Component</th> </tr> </thead> <tbody> <tr> <td>Wood-Anderson</td> <td>E N</td> </tr> <tr> <td>Benioff</td> <td>Z</td> </tr> </tbody> </table>						Apparatus	Component	Wood-Anderson	E N	Benioff	Z
Apparatus	Component										
Wood-Anderson	E N										
Benioff	Z										
10	April 17	Id		10 27 23 11.0	SCOD; 11'N 1.5'W						
11	April 17	Id		15 50 21.8 15 52 16.8							
12	April 17	Id		15 52 07.4 15.6 16 53							

No.	Date	Char-acter	Phase	MINERAL		Remarks
				Time (G.C.T.)		
				h.	m.	s.
1	1948 April 2	Id	iP _Z iS _{NEZ} F	05 17	43.8 47.7	3-7 on Duffell + 0.5 sec.
2	April 5	IIId	iP _N iS _N F	18 26	01.7 04.0	5 foreshocks and 6 aftershocks
3	April 11	I	iP _Z F	16 07	43.0 16 10	
4	April 12	I	iP _Z iZ F	06 22	19.0 58.5	
5	April 12	Iu	iP _Z iZ F	09 02	19.3 05 53.8	
6	April 16	Id	iP _Z iS _{EZ} F	14 04	08.4 09.4	
7	April 16	Iv	iP _Z eE iZ iZ F	22 28	06.3 09 09.8 29 36.3 45.8	Pas: 34°ON 119°OW
8	April 17	Id	iP _Z iS _{EZ} F	01 43	32.8 35.3	3-7 on Duffell + 1.5 sec.
9	April 17	Id	iP _Z iE iS _{NZ} F	12 17	05.7 10.3 10.9	
10	April 17	Ir	eP _N F	16 23	23 17 05	USCGS: 33°N 13°5W
11	April 17	Id	iP _N iS _N F	16 50	21.8 26.8	
12	April 17	IIId	iP _N iS _N F	16 52	07.6 13.6	

No.	Date	Char-acter	Phase	MINERAL		Remarks
				Time (G.C.T.)	h. m. s.	
	1948					
13	April 17	Id	iSN F	20 38 27.4 20 39		S-P on Benioff = 0.5 sec.
14	April 17	Id	iSN F	20 48 02.3 20 49		S-P on Benioff = 2.0 sec.
15	April 18	Iv	iPNEZ iP*Z iE iZ iSNEZ F	21 25 51.0 53.3 56.6 26 07.0 23.1 21 29		
16	April 19	Id	iPNE iSN F	16 38 48.3 51.4 16 39		See list, p. 54 5 aftershocks
17	April 19	IIv	iPNZ iNE iN iE iE iSNE iE F	22 10 12.7 13.7 17 59 18.9 18 00 20.2 25.0 26.0 27.7 22 12		S-P on Benioff = 2.0 sec. S-P on Benioff = 3.0 sec.
18	April 20	Id	iPNEZ iSNE F	05 20 56.0 58.7 05 22		
19	April 20	Id	iSE F	05 21 39.0 05 22		S-P on Benioff = 2.8 sec.
20	April 21	IIId	iPNE iSNE F	01 31 20.0 28.1 01 32		
21	April 21	Iu	ePE eE eLE F	20 30 54 36 59 48.4 21 42		USCGS: 19°N. 69°5W
22	April 23	Id	iPNE iSNE F	23 05 43.6 46.4 23 06		
23	April 25	IIId	iPE iSE F	07 59 44.0 46.2 08 00		
				09 07 20.6 16 51 09 22		USCGS: 17°S 71°W At least one aftershock

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
24	April 25	Id	iPE iSE F	08 16	59.7 17 02.0 08 18		
25	April 26	Iu	iPZ iZ F	09 42	10.0 11.5 09 46		
26	April 26	IIv	iPE iN iS _{NE} F	18 58	08.2 08.9 29.5 19 00		
27	April 27	Iv	iP _{NE} iE iE iE F	20 23	22.5 29.2 24 11.6 16.6 20 27	See list, p. 94 5 aftershocks	
28	April 28	Id	iSE F	17 59	31.2 18 00	S-P on Benioff = 2.0 sec.	
29	April 28	Id	iSE F	18 23	56.0 18 24	S-P on Benioff = 3.0 sec.	
30	May 5	Id	iPE iSE F	05 51	37.4 39.4 05 52		
31	May 5	Id	iSE F	05 52	58.0 05 53	S-P on Benioff = 2.0 sec.	
32	May 5	Id	iPZ iSE F	06 02	26.8 28.8 06 03		
33	May 6	IIId	iPE iE iSE F	22 28	25.5 27.5 28.0 22 29	4 small aftershocks	
34	May 8	Id	ePE iSE F	08 11	26.9 29.9 08 12		
35	May 9	Id	iPE iSE F	05 03	41.2 44.4 05 04		
36	May 11	Iu	ePE eSE F	09 07	20.6 16 51 09 22	USCGS: 17°S 71°W At least one aftershock	

MINERAL

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
37	May 13	Id	iS _E F _E	17 44 36.6 17 45	S-P on Benioff = 3.0 sec.
38	May 13	Id	eP _E iS _E F _E	19 22 50 52.5 19 24	
39	May 14	Ir	eP _E eS _E eL _E F _E	22 37 58 42 51 45.0 23 48	USCGS: 54.5°N 161°W
40	May 16	Iv	eP _E iS _E iL _E F _E	21 55 51.2 57.2 56 10.8 12.4 21 57	
41	May 17	Iu	eP _E eS _E F _E	17 54 45 59 40 18 02	USCGS: 55°N 161°W
42	May 18	Iv	eP _E iE iF _E	10 44 18 19.4 37.3 10 47	
43	May 25	Iu	eL _E F _E	08 07.7 08 31	USCGS: 30°N 99°5E
44	May 25	Id	iP _E iS _E F _E	23 14 35.7 37.8 23 15	
45	May 25	Id	iP _E iS _E F _E	23 15 48.4 50.9 23 16	
46	May 26	Iv	eP _E iE iF _E F _E	19 36 52 37 58.9 38 01.9 19 40	
47	May 27	IIId	iP _E iS _E F _E	07 57 45.5 48.4 07 58	About 30 shocks in this series, ending 1200 May 27 - S-P= 2.5 sec.
48	May 27	IIId	iP _E iS _E F _E	11 39 55.9 58.4 11 41	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Remarks
				h.	m.	s.	
	1948						
49	May 28	Id	iP _E iS _E F _E	11	51	33.9 37.9	
				11	53		
50	May 28	Id	iP _E iS _E F _E	12	37	26.1 27.9	There were 20 shocks of S-P= 3.0 sec. - starting 0500, June 13, ending 1115, June 13.
				12	38		
51	May 28	Id	iS _E F _E	12	38	19.9	Aftershock 11 shocks in this series - S-P varying from 2.5 to 3.0 sec. - started 0500, June 14 - ended 1100 June 14.
				12	39		
52	June 2	Iu	iP _Z i _Z eL _Z F _Z	13	45	53 46 07.5	
				14	01	3	
				14	10		
53	June 7	Iu	iP _Z F _Z	03	35	14.8	
				03	40		
54	June 8	Iu	eP _Z e _Z F _Z	03	34	12.8 38 04.8	
				03	45		
55	June 8	Iu	iP _Z ip _Z F _Z	04	02	21.5 28.1	
				04	04		There was one foreshock and 3 aftershocks
56	June 8	Iu	eP _Z i _Z i _Z F _Z	11	07	58.8 08 02.3 08.5	
				11	14		USCGE: 33°54' 136°E
57	June 9	Iu	iP _Z i _Z F _Z	13	21	26.0 38.4	
				13	25		
58	June 10	Iv	eP _Z i _Z i _{NE}	08	29	09 20.0 25.0	
				12	30	11.5	
				12	26	12.0	
						12.5	
70	June 16	Iv	i _N F _N		33		
59	June 11	Iv	iP _Z i _Z i _{NE} i _N i _E i _N i _F	06	27	41.3 47.6 48.4 52.3 52.8 57.3 58.0	
				06	29		

No.	Date	Char-acter	Phase	MINERAL		Remarks	
				Time (G.C.T.)			
	1948			h.	m.	s.	
60	June 12	Iu	eP _Z F	07 15	02.9		
				07 18			
61	June 13	IIId	iP _{NEZ} i _E iS _N F	10 37	49.5 52.1 52.7	There were 20 shocks of S-P= 3.0 sec. - starting 0400, June 13, ending 1115, June 13.	
				10 38			
62	June 14	Id	iP _{NEZ} i _N iS _E F	05 32	57.5 59.9 00.5	There were 14 shocks in this series - S-P varying from 2.5 to 3.0 sec. - started 0500, June 14 - ended 1100 June 14.	
				05 34			
63	June 14	Iu	iP _Z i _Z F	09 29	18.2 30.0		
				09 33			
64	June 14	Iu	eP _Z e _Z e _Z F	10 10	10.6 33.1 39.1		
				10 19			
65	June 14	Iu	iP _Z F	11 06	13.4		
				11 09			
66	June 15	IIId	iP _{EZ} i _Z iS _E F	05 40	19.8 22.3 22.8	There was one foreshock and 3 aftershocks	
				05 42			
67	June 15	Iu	iP _Z e _E i _Z e _Z F	11 56	40.6 45 50.6	USCGS: 33°5N 136°E	
				12 06	50		
				12 11			
68	June 15	Iu	eP _Z F	12 09	35		
				12 12			
69	June 15	Iu	eP _Z F	12 23	28		
				12 26			
70	June 16	Iv	iP _Z i _Z i _Z e _E iS _Z i _E F	12 37	33.2 37.5 06.9 25 25.5 30.2		
				12 40			
71	June 17	Iv	eP _Z i _Z e _N F	00 55	20.4 27.4 28		
				00 58			

No.	Date	Char-acter	Phase	MINERAL			Remarks
				Time (G.C.T.)			
				h.	m.	s.	
	1948						
72	June 17	Iv	ez iz F	00 59 22 01 00 29.9 01 03			
73	June 18	Iu	ePz ePPz eSz F	01 06 43.5 09 47 17 18.5 01 22			USCGS: 06°S 155°E
74	June 18	Iv	ePz iPNz iN iSN F	10 35 30.9 32.1 37.7 58.0 10 39			See list, p: 94
75	June 18	Iu	iPz iz F	16 59 44.6 54.6 17 08			
76	June 18	Iv	iPz eE iz iNE F	17 09 35.7 37.2 43.7 10 08.9 17 11			
77	June 18	Iv	iPz iz F	19 44 41.1 47.4 19 46			
78	June 19	Id	iPz iSEz F	16 10 39.5 46.0 16 12			
79	June 19	Iv	ePz eSz eE F	16 26 13 27 09 16 16 30			
80	June 19	Iv	iPz eE iz iSNEz F	20 47 14.1 19 19.5 59.8 20 50			Felt in Peru and Bolivia
81	June 19	Iv	ePz iz iz iN iSE iSN iz F	21 16 33.7 39 41.6 45.7 17 22.7 23.2 24.2 21 19			

No.	Date	Char-acter	Phase	MINERAL		Remarks
				Time (G.C.T.)		
				h.	m.	s.
	1948					
82	June 20	Iu	ePz F	08 57	18	
				09 02		
83	June 20	Iv	iPNZ iz iSE iN iE F	19 25	32.2 40.8 59.2 26 01.4 14.6	
				19 27		
84	June 20	Iv	iP*Z iE iz F	20 35	37.3 21.5 26.8	See list, p. 95
				20 37		
85	June 20	Iv	iPz F	21 04	03.4	
				21 06		
86	June 20	Iv	iPz iz iSz iSE F	22 21	53.5 22 00.2 23 40.4 40.9	
				22 24		
87	June 21	Iu	ePz F	04 38	21.5	
				04 41		
88	June 21	Iu	ePz F	07 52	37.2	
				07 58		
89	June 21	Iu	ePz ez F	12 19	36.7 23 49 33 18	
				12 38		
90	June 23	Id	iPz iS ₁ NEZ F	21 16	09.5 13.5	
				21 17		
91	June 24	Iv	iP ₁ NEZ iz eN iSE iz iz F	03 51	39.8 49.6 52 06 06.9 07.3 10.2	Felt in Ferndale and Scotia
				03 54		
92	June 24	Iv	iPz iz iz iz eE F	16 50	08.4 24.1 51 02.1 07.5 15	
				16 53		

No.	Date	Char-acter	Phase	MINERAL		Remarks	
				Time (G.C.T.)			
	1948			h.	m.	s.	
93	June 25	Iu	ePz F	09 28	45.5		
				09 32			
94	June 25	Iv	ePz	11 27	07		
105	June 25	Id	iz		19.8		
			eE		31		
			eE	28	11.8		
			iz		26		
106	June 25	Id	F	11 30			
95	June 26	IIId	iPz iSNEZ F	21 16	58.2	2 foreshocks and 2 aftershocks	
				21 17	00.3		
				21 18			
96	June 27	Id	iPz iSNEZ F	11 52	02.7		
					04.9		
				11 53			
97	June 27	Ir	ePz iPz eN	12 55	49.4		
					50.6		
					55		
109	June 28	Id	iz		56 02.9		
			iPPz F		19.9		
				13 26			
98	June 27	IIId	iPEZ iSNEZ F	16 26	34.6		
					36.9		
110	June 27	Id	F	16 27			
99	June 27	IIId	iPz iSNE F	16 27	49.8		
					51.6		
111	June 27	IIId	F	16 28			
100	June 27	IIId	iPz iSNEZ F	16 29	06.6		
					08.8		
112	June 27	I	F	16 30			
101	June 27	Ir	iPz	21 45	06.6	USCGS: 56°N 158°W	
113	June 27	Iu	iz		09.3		
			iz		34.8		
			eLz		52.8		
			F	22 00			
102	June 28	Id	iPz iz iSE F	04 15	57.8		
					16 00.3		
					01.0		
115	June 27	I	F	04 17			
103	June 28	Iu	iPz	07 25	09.8	USCGS: 36°N 136.5E	
116	June 27	I	eNE		16		
			eZ		18.1		
			eZ		20.5		
117	June 27	Id	iPPz F	27	53.3		
				07 36			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Remarks
				h.	m. s.	
	1948					
104	June 28	Iu	iPz iz F	07 31	28.9 32.1	Aftershock
				07 35		
105	June 28	Id	iPz iSz F	09 28	46.9 49.5	
				09 29		
106	June 28	Iu	iPz iz iz F	11 48	11.2 19.0 23.7	
				11 53		
107	June 28	Id	iPEZ iSNEZ F	17 22	07.8 09.8	
				17 23		
108	June 28	Id	iz iSNEZ F	17 50	49.5 49.8	
				17 51		
109	June 28	Iu	iPz iz iz F	23 39	43.2 52.4 00.2	
				23 43		
110	June 29	Id	iPz iSNEZ F	00 34	46.1 50.2	
				00 35		
111	June 29	IIId	iPz iSNEZ F	00 58	16.1 18.2	
				00 59		
112	June 29	I	ez F	05 12	31.7	
				05 15		
113	June 29	Iu	iPz eLz F	10 40	04.4	USCGS: 16°S 172°W
				11 02	3	
				11 36		
114	June 29	I	ePz iz F	11 04	40 41.5	
				11 12		
115	June 29	I	iPz F	11 24	51.5	
				11 26		
116	June 29	I	ePz F	15 01	35	
				15 03		
117	June 29	Id	iPz iSNEZ iMz F	15 18	22.1 23.0 23.7	
				15 19		

MINERAL

No.	Date	Char-acter	Phase	Time	Remarks
				(G.C.T.)	
	1948			h. m. s.	
118	June 29	Iu	iPz iz F	16 19 57.8 23 54.3 1 35	
119	June 30	Id	iPEZ iSNEZ F	11 54 15.3 22.7 11 55	
120	June 30	Iu	iPz iz ez F	12 34 34.8 41.3 13 16.9 13 27	
121	June 30	IId	iPEZ iE iN F	15 20 49.7 52.1 52.4 15 21	
122	June 30	Id	iPz iz F	15 55 38.2 41.0 15 56	
123	June 30	Id	iPNEZ iSNE iMz F	15 55 59.8 56 02.0 03.4 15 57	
124	June 30	Id	iPEZ iSEZ F	16 14 56.8 59.1 16 15	
125	June 30	Id	iSNZ F	18 00 21.9 18 01	
126	July 1	Iu	iPz F	01 52 44.8 01 54	
127	July 2	IId	iPz iSNEZ F	03 20 02.7 05.1 03 21	

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

From July 1, 1948, to September 30, 1948

BY
CARL F. ROMNEY
AND
JOHN E. MEEKER

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1949

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BERKELEY AND LOS ANGELES,
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1948 - Pacific Standard Time

<u>No.</u>	<u>Date</u>	<u>Time of Origin</u>	<u>Richter Magnitude</u>	<u>North Latitude</u>	<u>West Longitude</u>	<u>Weight</u>
1	July 5	01:18:32	1.7	37° 7'	121° 8'	d
2	7	18:36:23	2.9	37° 49'	122° 34'	b
IV in San Francisco, III in Berkeley and Ross. Tiny aftershocks at 19:08 and 01:10 July 8.						
3	11	11:58:43	3.6	37° 17'	121° 46'	b
4	14	20:10:54	2.1	37° 43'	121° 43'	c
5	17	07:07:40	3.5	36° 56'	121° 33'	b
6	17	17:07:59	3.0	36° 36'	121° 20'	b
7	19	21:30:22	2.3	37° 2'	121° 8'	d
8	20	00:11:41	3.7	37° 27'	121° 49'	b
VI in Milpitas, V in Coyote, Gilroy and San Jose.						
9	21	13:29:17	2.4	37° 53'	122° 16'	b
IV in Berkeley. Depth about 6 km.						
10	24	05:23:20	4.2	40° 20'	124° 58'	c
11	25	18:23:30	2.6	36° 39'	121° 17'	c
12	25	19:23:47	2.4	37° 12'	121° 52'	c
13	27	17:30:57	3.1	36° 03'	120° 32'	c
14	29	09:57:06	2.2	37° 8'	122° 6'	d
15	29	12:32:52	2.2	37° 8'	122° 6'	d
16	Aug. 1	13:21:02	3.3	36° 53'	121° 33'	b
17	3	08:40:03	3.4	36° 49'	121° 44'	b
18	6	16:10:46	3.6	36° 54'	121° 37'	b
19	8	09:47:09	3.0	40° 25'	124° 07'	c
20	9	03:44:49	3.3	40° 25'	124° 07'	c
21	9	23:02:47	3.0	37° 51'	121° 52'	a
V in San Ramon.						
22	18	11:11:57	5.0	40° 5'	124° 7'	d
V in Eureka, Ferndale, Fields Landing and Loleta. Felt along the coast from Orick to Punta Gorda.						
23	19	21:53:41	2.5	37° 4'	121° 6'	d
24	27	12:59:45	4.0	39° 6'	120° 8'	d
25	31	08:31:14	3.3	37° 29'	121° 47'	b
26	31	13:37:54	2.2	37° 49'	122° 34'	c
27	31	14:45:54	2.2	37° 49'	122° 34'	c
28	Sept. 1	13:27:47	3.3	38° 20'	122° 35'	b
Felt in Santa Rosa and Cotati.						
29	2	12:03:29	2.8	36° 44'	121° 17'	c
30	2	14:39:16	2.5	37° 11'	122° 14'	c
31	7	20:28:13	4.0	40° 15'	124° 16'	b
III in Eureka						
32	26	22:28:13	2.7	37° 28'	121° 49'	c

SYMBOLS AND NOTATIONS EMPLOYED

I. Character of the Seismogram --

I. Perceptible II. Moderately Strong III. Strong

d (terrae motus domesticus) Local shock (origin less than 100 kilometers distant).

THE REGISTRATION OF EARTHQUAKES

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).

II. Form of the Motion --

s (sarpens) Sudden beginning of the motion.

g (gradualis) Gradual beginning of the motion.

III. Compression --

c Compression.

d Dilatation.

BERKELEY

THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram --

I. Perceptible II. Moderately Strong III. Strong

Latitude and longitude:

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. Nature of the Motion --

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.

3. Trace Motion --

c	Compression.
d	Dilatation.

The letter W before a reading designates that the seismogram was from the Wiechert instrument; W, Wiechert; B, Bosch-Guori; A, Wood-Anderson; V, Vischer; S, Slichter.

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From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
1	July 2	Id	iPZ iSZ F	H 07 00 H 07 01	42.0 51.0			
2	July 2	Id	iPZ iZ iSZ F	H 10 45 H 10 46	15.4 18.8 25.1	5.5 8.0 7.0		
3	July 3	Iu	iPZ iSNE iPSE F	H 13 01 G 13 10 G 13 11 13 40	21.7 37 07			
4	July 4	Iu	eN eLN eLZ F	G 15 28 G 15 35 G 15 35 15 05	28.0 35.1 35.4			
5	July 5	Id	ePZ F	H 09 18 09 19	43			See list, p.185
6	July 7	Iu	ePZ iPZ iPZ eZ eZ iN iN eLNE F	H 02 31 G 02 32 H 02 33 G 02 40 G 02 41 G 02 46 G 02 52 04 28	14.1 17.5 21.5 21 32 11 13.5 52.0	4.5 12.5		
7	July 8	I	iZ iNZ iZ F	H 01 12 SH 01 19 H 01 14	20.1 32.5 35.8			
8	July 8	IIId	iPZ iSEZ iN F	H 02 36 AH 02 36 S 02 36 02 38	27.9 31.6 32.0			See list, p.185
9	July 8	Id	iPZ iSZ iN F	H 03 01 H 03 01 S 03 01 03 02	31.2 35.2 35.9			
10	July 8	Id	iPZ iZ iSEZ F	H 03 08 H 03 08 AH 03 08 03 09	28.2 31.5 32.4			Aftershock of 02 ^h 36 ^m
11	July 8	Id	iPZ iNZ F	H 09 10 SH 09 11	49.9 53.3			Aftershock of 02 ^h 36 ^m

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No.	Date	Char-acter	Phase	Time		Period	Trace motion	Remarks
				(G.C.T.)				
	1948			h.	m.	s.	s.	
12	July 8	I	iNZ F	SH	12 29	33.9		
13	July 8	IIu	ePZ iPZ eZ eSE iPSNE eE eSSN eLE eMZ F	H G G G G G G G G G	12 45 12 15 12 49 12 53 12 42 12 54 12 57 13 08 13 11 13 13	04 5 52 23.5 42.5 37.5 30 08.2 11.1 45	5.5 8.0 7.0	c U.S.C.G.S. 71°N, 6°W. U.S.C.G.S.: 4°S, 142°E
14	July 8	Iu	iPZ F	H	14 02	11.1		
15	July 9	Id	iPZ iN iZ iN F	H S H S	18 00 18 00 18 00 18 01	49.9 50.9 57.2 00.2		See list, p. 185
16	July 10	Iu	eLNZ F	G	00 24 00 45	2 2		U.S.C.G.S.: 10°N, 104°W
17	July 10	Id	iPZ iSZ iZ F	H H H	20 17 20 17 20 18	51.1 58.2 02.7		Runs into next shock
18	July 10	Id	iPNZ iN F	SH S	20 18 20 18	45.0 50.7		U.S.C.G.S.: 14°5N, 92°W
19	July 10	Id	iPZ iZ iN F	H H S	23 25 23 25 23 25	22.3 26.5 30.0		h = 100 km
20	July 11	Id	iPZ iN iSZ iN F	H S H S	05 23 05 24 05 24 05 25	57.3 04.2 07.2 07.9		Foreshock of next? Lost in next shock U.S.C.G.S.: 14°5N, 92°W
21	July 11	IIId	iPNEZ iNE iZ iSNE F	SAH SA H SA	19 58 19 58 19 59 19 59 20 02	56.4 57.1 05.1 06.4		See list, p. 185
22	July 11	Id	iPZ iSN F	H S	20 01 20 02	53.7 04.1		Aftershock

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
29	July 17	Iv	iPNZ	SH	15 08	00.2		See list, p. 185	
			iZ	H		01.2			
			iSZ	H	21 30	14.7			
			iZ	H		16.2			
			iE	A	23 05	19.0			
			F		15 10	13.4			
30	July 17	Iv	iPZ	H	15 19	44.5			
			iSZ	H	20 20	01.0			
			eN	S		05.0			
			F		15 21				
31	July 18	Iv	iPZ	H	01 08	27.6		See list, p. 185	
			iZ	H		35.6			
			iZ	H		57.3			
			F		01 10			Lost in next	
32	July 18	Id	iPZ	H	11 52	44.5			
			iZ	H		49.5			
			iSZ	H	53	05.8			
			iN	S		06.5			
			F		11 54				
33	July 20	Iu	eZ	G	00 23	50			
			eE	G	00	46.8	30		
			F					Lost in next	
34	July 20	Iu	iPZ	G	00 54	26.0		c	
			eSKSZ	G	01 04	07	8		
			eSN	G	05 00		5		
			iPSE	G	06 28.5		18		
			eSSN	G	10 56		12		
			eLE	G	22.0		26		
			F		03 44				
35	July 20	IIId	iPNZ	SH	08 11	52.2		See list, p. 185	
			iN	S		54.6			
			iE	A		58.2			
			iSE	A	12 00.4				
			F		08 14				
36	July 21	IIu	iPZ	H	11 13	33.0		d	
			iPNZ	G		34.0	6.5	c	
			ipPZ	H		49.0			
			iZ	G	16 31		6		
			iN	G		48			
			iSE	G	22 43		6		
			iPSE	G	23 27		7.5		
			iE	G	27 45		13		
			eZ	G		31.2			
			eGE	G		33.0	38		
			F		13 40				

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No.	Date	Char-acter	Phase	Time		Period	Trace motion	Remarks
				(G.C.T.)				
	1948			h.	m.	s.		
37	July 21	IIId	iPNEZ iSE F	H 21 29	18.5 19.4			See list, p. 185
38	July 21	Id	iPZ iSNEZ F	H 22 05 SAH 22 06	11.9 13.4			Aftershock
39	July 22	IIr	iPZ iZ iSZ iE iN iE F	H 20 08	37.3 40		d	U.S.C.G.S.: 49°5N, 130°5'W
				G 11 14	18	11		
				G 20 11	37	12		
				G 13 08				Lost in next
40	July 22	Iv	ePZ iN eZ iN F	G 20 55	47 55.5			U.S.C.G.S.: 49°5N, 130°5'W
				G 58 25		9		
				G 22 43	56.5			
41	July 23	Iu	ePZ ePPPE eN eSKSN ePSE iN eSSSE eLZ F	G 12 34	34 53			See list, p. 185
				G 39 53		8		
				G 41 49				
				G 45 04				
				G 46 40				
				G 47 43		10		
				G 52 09				See list, p. 185
				G 13 03.4		30		
				F 15 25				
42	July 24	Iu	ePZ eZ ePPNEZ iZ iSKSN iZ iPPSZ iE eGE F	H 06 17	03 15			U.S.C.G.S.: 35°N, 24°E
				G 01 21	16			
				G 01 27	38.5	8		
				G 01 28	00.5			
				G 07 31	33.5	9		
				G 35 40.5		13		
				G 50.2		40		
				F 09 00				
43	July 24	Iv	iPZ iZ iSN F	H 13 24	10.5 16.0			See list, p. 185
				S 13 26	49.0			
44	July 24	Iu	iPZ ipPZ eN eE F	H 14 33	57.0 06.5			
				H 14 34				
				G 14 42	59			
				G 14 45	34			
				F 15 15				

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
45	July 25	Iu	ePZ eE eLNE F	G G G 01	00 31 40.5 44	58 12 5		See list, p. 185	
46	July 29	Id	iPNE iZ eSNE F	SA H SA 18	17 57 26.2 30.5 00	20.1 26.2 30.5		See list, p. 185	
47	July 29	Id	iPN iZ iN iZ iSZ F	S H S H H 20	20 33 05.7 06.6 10.7 12.1 16.6 35		See list, p. 185		
48	July 31	Iu	iPZ iSN iZ iN F	H G G G 20	19 12 54.0 58.5 17.5 56.5 03		c U.S.C.G.S.: 7°N, 82°W		
49	Aug. 1	Iv	iPNZ iNZ iSNZ iNZ F	SH SH SH SH 22	21 21 23.4 24.4 37.9 40.1 23		See list, p. 185 U.S.C.G.S.: 17°58N, 95°58W		
50	Aug. 3	Iv	iPZ iN iSZ iSNE F	H H H SA 16	16 40 24.7 25.5 40.3 41.0 43		See list, p. 185 Aftershock of 0703, Aug. 30		
51	Aug. 4	Id	iPZ iSNZ F	H SH 01	01 31 05.4 08.9 32				
52	Aug. 4	Iv	iPZ iZ iSN iZ F	H H S H 07	07 39 53.2 40 03.1 29.4 34.8 42				
53	Aug. 4	Iv	iPZ iSNZ F	H SH 10	10 22 45.3 23 19.5 24				
54	Aug. 6	Iv	iPZ iN iZ iZ iSE iMN F	H S H H A S 04	04 22 45.6 54.0 54.9 12.4 24.9 27.4 26				

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
55	Aug. 7	Iv	iPN iSNE F	S 00 11	07.0 21.8			See list, p. 185
56	Aug. 7	IIu	iPZ iSN iE eN F	G 14 51 G 15 01 G 09 24.5 G 19 10.8 18 23	48.5 21.5 24.5 8	12 12		U.S.C.G.S.: 34°N, 142°E
57	Aug. 8	Id	iPNZ iSNZ iZ F	SH 22 45 SH 19 22 H 22 46	21.3 24.6 25.0			
58	Aug. 10	IIId	iPNZ iSNE iE F	SH 07 02 SA 03 12.0 07 05	54.0 58.7 12.0			See list, p. 185
59	Aug. 10	Iv	iPZ iSN iZ F	H 18 15 S 16 H 20 07 18 17	15.8 41.5 43.5 5.5			U.S.C.G.S.: 5°N, 82°W
60	Aug. 11	IIr	ePNZ iN iZ eSNE F	SH 10 42 G H 45 SA 21 47 11 21	31.3 33 25.5 34		c	U.S.C.G.S.: 17°5N, 95°5W
61	Aug. 11	Id	iPNZ iZ iSNEZ F	SH 21 33 H SAH 21 35	22.3 23.9 27.2			See list, p. 185 Aftershock of 0703, Aug. 10
62	Aug. 12	Iu	ePZ eZ eE eLNE F	H 22 43 G 45 G 23 01 G 34.4 24 04	49.5 45 58 4			U.S.C.G.S.: 21°5, 63°W
63	Aug. 15	Iu	eN eN eN eN eLN F	G 01 38 G 44 G 52 G 54 G 02 01.0 02 57	13.5 18.5 48.5 20.5 01.0 57			
64	Aug. 17	Iu	ePZ eLN F	H 17 20 G 18 06	23.5 39.9			

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From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
65	Aug. 17	Iu	ePZ	H	17	35	01		
			eSZ	H		42	26		
			iSSE	G		46	17		
			eZ	G			26		
			eLE	G		48.9			
			F		18	05			
66	Aug. 18	Iv	iPZ	H	19	12	47.3		See list, p. 185
			iEZ	AH			53.3		
			iZ	H	13		14.3		
			iSE	A			21.8		
			F		19	22			
67	Aug. 19	Iu	iPZ	H	11	08	31.7		
			iZ	H		09	01.0		
			F		11	11			
68	Aug. 19	Iu	iPZ	G	13	56	52		
			ipPNE	G		57	11.0		
			eSN	G	14	04	13.0		
			F		14	46			
69	Aug. 19	Iu	ePZ	H	20	07	44.9	d	U.S.C.G.S.: 5°N, 82°W
			iPNEZ	G			45.5	c	
			eSN	G	14		39.5		
			iN	G			53.5		
			iNE	G	18		30.5		
			eLE	G			23.0	d	U.S.C.G.S.: 15°S, 171°E
			F		21	01			
70	Aug. 20	Id	iPZ	H	05	53	53.9		See list, p. 185
			iNZ	SH			54.9		
			iSNZ	SH	54		03.9		
			iNZ	SH			04.9		
			F		05	55			
71	Aug. 23	Iv	iPZ	H	03	31	46.0		
			iSZ	H		32	02.0		
			F		03	33			
72	Aug. 25	Iu	iPZ	G	06	21	47	c	U.S.C.G.S.: 24°S, 63°W
			iPZ	H			47.2	d	
			iZ	H			49.7		
			iSNE	G		36	04		
			eGE	G		44.4			
			eLE	G		51.4			
			F		08	16			
73	Aug. 25	Iu	iPZ	H	20	01	38.4	c	
			F		20	04			

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
74	Aug. 26	Iu	ePZ eSNE eLNE F	H 14 G 29 G 41.5 15 01	19 56.5 57.5 41.5 01			San Benito County
75	Aug. 27	Iv	iPZ iZ iN iSN iE F	H 21 H S S A 21 02	00 19.1 22.5 34.6 47.8 48.8 02			See list, p. 185
76	Aug. 28	Iu	ePZ eN iSE iE eLN eE F	H 02 G G G G G 03 31	37 05.5 40 36.5 43 36.5 44 12.5 49.7 54.3 31			U.S.C.G.S.: 57°N, 161°E See list, p. 185
77	Aug. 28	Iu	ePZ eE eSNE eE eN F	H 12 G G G G 13 31	36 13 41 08 45 58 13 02.7 03.0 31			Lost in next
78	Aug. 29	IIu	iPZ iSNE iPSN iE eGNE eLEZ F	H 17 G G G G G 19 41	49 04.7 58 31 56 59 02 18 07.1 09.9 41	d		U.S.C.G.S.: 15°55', 171°E See list, p. 185
79	Aug. 29	Iu	ePZ F	H 18 18 44	41 58 44			U.S.C.G.S.: 16°5' N, 107°W
80	Aug. 29	Iv	iPZ iZ F	H 23 H 23 43	41 55.0 42 17.5 43			See list, p. 185
81	Aug. 30	Iu	iPZ F	H 19 19 37	35 25.9 37	d		
82	Aug. 30	Iv	iPZ iN iZ iN F	H 20 S H S 21 00	58 59.2 59 20.7 26.5 27.9 00			San Benito County U.S.C.G.S.: 10°N, 125°E

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
83	Aug. 30	Iv	iPZ iN iZ F	H S H 21 14	21 13 15.7 16.2			San Benito County	
84	Aug. 31	Id	iPZ iN iSZ iN F	H S H S 16 33	16 31 25.8 33.0 34.1			See list, p. 185	
85	Aug. 31	Id	iPNEZ iN iE F	SAH S A 21 40	21 37 38 08.4			See list, p. 185 68.5°W	
86	Aug. 31	Id	iPN iN iE iN F	S S A S 22 48	22 45 46 03.8 09.3 09.9			See list, p. 185	
87	Sept. 1	Iu	iPZ iZ eN F	H G G 19 21	19 21 59.0 24.4			See list, p. 185 Lost in next	
88	Sept. 1	Iv	ePZ iZ eNE F	H AS 20 12	19 57 17 30.7 01.7			U.S.C.G.S.: 21°S, 176°W	
89	Sept. 1	Id	iPZ iSNEZ F	H SAH 21 29	21 27 28 05.9			See list, p. 185	
90	Sept. 2	Iu	iPZ ipPZ F	H 00 08	00 06 28.4 37.7		c		
91	Sept. 2	Iv	iPZ iZ iSN iN F	H H S S 20 05	20 03 04 10.6 14.2			See list, p. 185	
92	Sept. 2	IIu	ePZ eN iZ iE iN iE eZ F	G G G G G G G 20 41	23 51 52 53 23 59 00 06 11 20.3 41			U.S.C.G.S.: 10°N, 125°E	

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
93	Sept. 3	Iu	iPZ iZ iZ F	H H H 09	51 37.0 59.0 53	08.0		d	
94	Sept. 4	Id	iPNZ iE iNZ iSN F	SH A SH S 00	04 46.9 50.4 53.1 06	46.2			
95	Sept. 6	IIu	iPZ iN iZ iE iN eE eE eNE F	G G G G G G G G G 10	08 32 16.5 21.0 36 37 50.8 53.1 27	24 11.0 16.5 21.0 56.5 08 18 19		U.S.C.G.S.: 24°5S, 68.5°W	
96	Sept. 8	Iv	iPZ eN iZ iSNZ F	H S H SH 04	04 58.5 29 31.7 30	58.1		c See list, p. 185	
97	Sept. 8	IIIu	iPZ iZ iPNE eNE iNE iNE iE iN iZ eSMEZ iE eE iE eE eLN F	H H G AS AS G G G H SAH G A G A S 04	15 21 02.0 02.5 22.5 15 21 23 24 30 30 31 34 40.4 41.3 22	01.0 02.0 02.0 02.5 22.5 42.0 40.0 59.0 04.5 46 47.5 31 12.0 40.4 19		U.S.C.G.S.: 21°S, 174°W	
98	Sept. 8	Iu	iPZ F	H 04	16 41 27.2 43			c	
99	Sept. 8	Iu	iPZ iZ iZ F	H H H 17	16 59 02.7 11.2 15.2 04			d	
100	Sept. 8	Iu	iPZ F	H 17	15 55.2 18				

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
101	Sept. 8	Iu	iPZ F	H 20	10	32.9		d	Frankbourg: 37°N, 24°E
102	Sept. 9	Iu	iPZ iPZ iZ eE iZ eN eE eSN eNZ F	G 06 H 00 H 09 G 09 H 03 G 03 G 30 G 30 G 38 G 08	21 00 01 06 09 13 44 43 55 38	00.0 01.0 06.7 09 13.0 44 43 55 38.5		d c	
103	Sept. 9	Iu	eNE eZ iZ F	G 12 G 10 H 36 12	02 10 09 52	3 6 09.8 52			
104	Sept. 9	Iu	eZ iZ eNZ eE eNE eZ F	H 14 G 09 G 26 G 21 G 36 G 43 15	16 37 24 27 36 43 49	34 39.5 24 18 5 5 00.0		d	U.S.C.G.S.: 13.5°N, 95°W
105	Sept. 10	IIu	ePNE iPZ eZ eNE iPZ iN iN iSN iE eSNE iZ eN eE F	G 13 H 20 G 20 SA 22 G 22 G 14 G 07 G 08 SA 08 G 08 S 09 A 17 17	59 16 19 17 22 00 00 07 08 08 01 09 21 59	16 16.6 19 21 22.0 30.0 43.0 49.5 01.0 01 01 18.6 21.7 59		c	U.S.C.G.S.: 44°N, 146.5°E
106	Sept. 10	Iu	eZ eSE eSN eLN eLE eLZ F	G 23 G 44 G 23 G 55 G 56 G 57 00	37 44 26 55 56 57 00	21 21 26 55.6 56.5 57.6 00		d	

BERKELEY



No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks	
				h.	m. s.				
	1948								
107	Sept. 11	Iu	ePZ ePPPN ePPSE eN eE F	G G G G G H	09 10 43 17 24 24 22 39.9 40.9 09 58			Strasbourg: 37°N, 24°E	
108	Sept. 12	Iu	iPZ iPZ eNE eE eSE eSN eSZ eLNE eLZ F	G H SA G G G G G G G	03 31 36.0 08 36.1 37 37.5 41 21.5 01 23.5 09 25.0 51.4 52.8 04 55		c c		
109	Sept. 12	Iu	iPZ F	H H	06 35 25.6 06 37			d	
110	Sept. 13	IIr	ePZ eE iN iSN iSE eLE eLN eLZ F	G G G G G G G G G	21 14 44 57 08 15 28 20 20.0 22.0 25.1 08 26.2 28.2 22 17			U.S.C.G.S.: 52°N, 178°W U.S.C.G.S.: 13.5°N, 95°W	
111	Sept. 14	Iu	iPZ iZ eSN eSE eSZ eLNE F	G G G G G G G	08 24 42.0 42.5 34 22 29 31 44.9 09 25			c	
112	Sept. 14	Id	iPZ iSN F	H S H	13 56 57.0 57 04.9 13 58				
113	Sept. 14	Iu	iPZ eLNE F	G G H	20 14 46.7 36.9 20 16			d	
114	Sept. 14	Iv	iPZ iN iZ	H S H	23 00 13.5 01 07 14.3 15.3				
125	Sept. 23	Iu	iSiZ eE F	SH A H	12 44 28.3 12 45 29 23 02				

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
115	Sept. 17	Id	iPN iZ eE iSN eE iZ F	S H A S A H H	23 02 48.3 48.5 50 55.2 56 56.4 23 03			
116	Sept. 18	Iu	ePZ eZ eNE eLN eLE F	H G G G G G	08 44 28.0 41 51 14 09 00.7 01.2 09 24	22		U.S.C.G.S.: 8°N, 84°W
117	Sept. 19	Iu	iPZ eN eE F	H G G G	04 57 08.4 05 17.9 18.1 06 05			
118	Sept. 19	IIu	iPZ eN iZ eNE iE iN eNE F	H S H G G G G G	06 21 50.0 51 58.5 06 22 01.0 28 03.0 03.5 31.7 08 35	10 7 32		U.S.C.G.S.: 52°N, 178°W
119	Sept. 19	Iu	iPZ eN F	H G G	20 28 03.3 21 07.3 21 23		c	U.S.C.G.S.: 23°N, 94°E
120	Sept. 21	Iu	ePZ eZ F	H H H	17 52 44 53 06.1 17 57			Inyo County
121	Sept. 22	Iu	iPZ F	H G	00 04 21.6 00 06		d	
122	Sept. 22	Iu	iPZ F	H G	05 12 27.3 05 14			
123	Sept. 22	Iu	iPZ iZ F	H H H	07 29 53.6 30 45.5 07 33		d	
124	Sept. 23	Iu	ePZ F	H G	01 03 43.6 01 07			
125	Sept. 23	Iu	iPZ F	H G	12 44 57.0 12 45		c	

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
126	Sept. 23	Id	iPZ eN iSZ iSN F	H S H S H	13 58 21.5 22 31.2 31.7 14 00			
127	Sept. 24	Id	iPZ iSNZ F	H SH H	22 08 43.7 47.0 22 09			
128	Sept. 24	Id	iPNZ iN iSNZ F	H S SH H	23 03 49.5 04 00.0 01.3 23 05			
129	Sept. 26	Iv	iPZ eN iS?Z F	H S H H	01 11 55.4 58 12 24.1 01 15			
130	Sept. 27	Id	iPZ iN eE iSZ iSN iSE F	H S A H S A H	06 28 24.7 25.8 27 32.6 33.9 35.6 06 30		See list, p. 185	
131	Sept. 28	I	iE eN eZ iN eE F	G G G G G G	22 03 29.5 04 25.5 05 24.0 06 59.0 15 22.5 23 26	8	U.S.C.G.S.: 23°N, 94°E	
132	Sept. 29	Iv	iPZ eN iZ eE iN iSN iZ iSN F	H S H A S S H S H	04 07 41.4 42.4 56.4 08 02 05.4 23.4 26.3 28.7 04 11		Inyo County	
133	Sept. 29	Iv	iPZ iZ eN iN iZ iSN F	H H S S H S S	13 42 53.5 58.5 59 43 06.6 17.8 20.9 13 45			

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
134	Sept. 29	Iv	iZ iZ eN iSN iZ F	H 21 03 H S S H 21 05	03.7 09.9 10.5 25.9 27.4			
135	Sept. 30	Iu	iPZ F	H 02 14 02 16	28.6		c	
136	Sept. 30	Iu	iPZ F	H 19 04 19 05	17.9			

UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

CONSTANT OF THE STATION

Latitude and Longitude:

$\phi = 37^{\circ} 20' 14''$ N.
 $\lambda = 121^{\circ} 31' 16''$ W.

Time — All observations are reduced to Greenwich Civil Time.

Altitude — 1221 meters (4205 feet) above mean sea level.

Apparatus	Component
.....	E
.....	N
.....	S

MT. HAMILTON

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

1	July 3	18	1PHE2 F	05 51 30.3 05 53
2	July 3	24	1PE eSNE F	07 00 40.5 45.9 07 02
3	July 3	28	1PE2 eSNE F	10 45 13.9 19.0 10 46
4	July 3	28	1PE eSNE F	10 40 30.9 36 10 42

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 37^{\circ} 20'14 \text{ N.}$$

$$\lambda = 121^{\circ} 38'16 \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

8	July 3	1	eS F	13 01 22.2 13 05
9	July 4	24	1PE eS F	08 05 36.2 40.2 08 07
10	July 4	24	eS F	03 25 11.9 21.7
11	July 5	24	1PE eS F	00 05 36.2 40.2 00 07
12	July 5	24	1PE eSNE F	00 09 22.7 26.2 00 10
13	July 5	24	1PHE2 eS 1EN F	00 42 19.7 23.3 23.7 00 44
14	July 5	24	1PE eSNE F	09 18 40.1 45.6 09 20

See list, p. 185

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
15	July 5	Iv	ePZ iPZ iZ eNE F	10	11	34 34.9 36.1 36			
16	July 6	Ir	ePZ F	02	17	14.0 02 19			
17	July 7	Iu	ePZ eZ F	02	31	19 26 02 36			
18	July 7	Id	iPZ eSNE F	02	50	52.7 54.0 02 51			
19	July 7	Id	ePZ eSE eSNZ F	15	35	02.6 13 14 15 36			
20	July 8	Id	iPZ iZ ePNE iSNE F	02	36	39.0 40.0 41.0 52.1 02 39		See list, p. 185	
21	July 8	Id	ePZ iPZ iSZ eSNE F	03	08	39.9 40.7 52.8 52.8 03 10		Aftershock of last character	
22	July 8	Id	iPZ iSZ F	09	11	01.0 14.0 09 12		Aftershock	
23	July 8	Iv	iPZ iZ eSNE F	12	28	48.8 51.8 29 30 12 31			
24	July 8	Iu	ePZ eZ F	12	45	06 47 29 12 48		U.S.C.G.S.: 71°N, 06°W	
25	July 8	Ir	ePZ F	14	02	15.1 14 04		See list, p. 185	
26	July 9	Id	iPZ eSNE F	05	10	09.0 20 05 12			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
27	July 9	Id	iPZ eSE F	18 00 18 02	46.1 53.8			
28	July 10	Id	iPZ eSN F	18 36 18 37	11.9 17.9			
29	July 10	Id	iPZ F	20 18 20 19	01			
30	July 10	Id	iPZ eSN F	20 18 20 21	56.9 19 02			
31	July 10	Iv	iPZ eSNE F	23 25 23 26	11.1 27			
32	July 11	Id	iPZ eSNE F	05 23 05 25	55.8 24 02			
33	July 11	I	iPZ iZ F	07 48 07 50	48.9 58.0		S?	
34	July 11	IIIId	iP̄NZ F	19 58 20 01	44.8			See list, p. 185 9 aftershocks of Id character
35	July 11	IIId	iPNEZ iSNE F	20 01 20 04	42.4 44.0			Aftershock
36	July 13	I	iPZ F	11 03 11 06	35.9			
37	July 14	Id	iPZ iSNEZ F	11 16 11 17	22.9 34.9			
38	July 14	Id	iPZ iSZ F	14 35 14 36	52.3 54			See list, p. 185
39	July 14	Id	iP̄Z iSNE F	04 11 04 12	01.0 06.1			See list, p. 185
40	July 15	Iv	iPZ F	05 33 05 35	48.4			See list, p. 185

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
41	July 15	Ir	ePZ eZ eN eE F	11 08 13 15 17.8 18.6 11 29	26.6			U.S.C.G.S.: 10°N, 104°W
42	July 15	I	ePZ F	19 30 19 32	30.9			
43	July 16	Ir	ePZ eN eEZ F	07 19 17 31 35 33.1 07 23	17.7			U.S.C.G.S.: 14.5°N, 92°W
44	July 16	Ir	ePZ iNZ eE eSN eSE eZ F	07 26 22 33.4 34.0 04 32 06 05 00 10 05 01 45 07 35	30.1			U.S.C.G.S.: 14.5°N, 92°W
45	July 16	Id	iPNEZ iSNE F	07 50 07 54.5 07 52	52.1			
46	July 17	I	ePZ F	03 43 03 44	12.2			
47	July 17	Iv	iPZ eSE eSH F	09 27 58 59 09 29	42.4			Probably San Benito County U.S.C.G.S.: 35°W, 91.5°W
48	July 17	Iu	ePZ iZ F	09 37 56.7 09 39	41.6			
49	July 17	Id	iPNZ eSN eSE F	13 52 35.7 36.2 13 54	30.2			See list, p. 185
50	July 17	IIId	iPNEZ iSNE F	15 07 53.7 15 10	48.0			See list, p. 185
51	July 17	I	ePZ F	15 20 15 22	08			Aftershock
52	July 18	Id	iPNEZ iSNE F	01 08 27.1 01 10	14.8			See list, p. 185

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
53	July 18	Id	iPNZ ePE eSE eSN F	01 52	23.0 23.8 34.8 35			Aftershock
54	July 18	Id	iPZ iSNE F	12 24 12 25	05.7 10.3			U.S.C.G.S.: 17°N, 74.5°W
55	July 18	Id	iPZ iSNZ F	17 54 17 55 17 56	59.5 02.5			
56	July 18	I	ePZ F	22 42 22 44	43			Aftershock?
57	July 19	Id	iPZ iSZ F	04 59 05 00 05 01	54.1 00.0			
58	July 19	Id	iPNEZ iSNE F	07 00 07 01	26.7 29.3			
59	July 19	Iv	iPZ iZ iZ F	17 20 17 21 17 23	23.9 02.6 07.8			S? See list, p. 185
60	July 19	Ir	ePZ eZ F	22 33 22 35 22 36	10 41			U.S.C.G.S.: 15°N, 91.5°W S?
61	July 20	I	ePZ F	00 54 00 56	29			
62	July 20	Id	iPNEZ iSNE F	05 30 05 32	25.2 27.3			See list, p. 185
63	July 20	IIId	iPNEZ iMN iME F	08 11 08 16	45.3 46.7 48.7			U.S.C.G.S.: 19°N, 130.5°W See list, p. 185
64	July 20	Id	iPNEZ iSZ iSNE F	08 45 08 46	12.3 15.1 15.4			Aftershock
				01 09 01 10	15.8 17.7			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
65	July 20	Id	iPZ iSZ iSNE F	08 53 49.0 52.1 52.5 08 55			Aftershock
66	July 20	Iu	ePZ iPZ ePNE F	11 13 29 29.8 29.8 11 19			U.S.C.G.S.: 17°S, 74.5°W
67	July 20	I	ePZ F	11 41 33 11 43			U.S.C.G.S.: 35°N, 24°E
68	July 20	Id	iPZ iSZ F	16 49 04.8 07.8 16 50			Aftershock? See list, p. 185
69	July 20	Id	iPZ iSNE F	18 00 50.5 57.5 18 02			37
70	July 21	I	ePZ F	15 59 53.7 16 02			
71	July 21	Id	iPZ iSZ F	18 41 06.0 11.1 18 42			
72	July 21	Id	iPZ iSZ F	21 29 31.8 32.0 21 30			See list, p. 185
73	July 22	Id	iPZ iSZ F	13 34 09.4 18.3 13 35			See list, p. 185
74	July 22	Id	iPZ iSZ F	14 27 39.6 42.6 14 28			
75	July 22	Ir	ePZ F	20 08 26 20 20			U.S.C.G.S.: 49.5°N, 130.5°W
76	July 22	I	iPZ F	20 55 59.4 20 58			
77	July 22	Id	iPZ iSZ F	21 24 43.1 52.1 21 26			
78	July 23	Id	iPZ iSNE F	01 09 14.8 17.7 01 10			

MT. HAMILTON



No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
93	July 26	Iu	iPZ F	19 12 19 14	43.0				
94	July 28	Iv	iPZ iNZ eSNE F	01 31 01 34	24.3 26.4 42.8			See list, p. 185	
95	July 28	Id	iPZ iSZ F	05 46 05 47	25.1 30.2				
96	July 28	Id	iPNEZ eN iSNE F	06 51 06 52	51.4 53.6 54.1				
97	July 28	I	ePZ F	08 23 08 24	07				
98	July 28	I	ePZ F	14 30 14 32	25.8				
99	July 28	I	ePZ F	15 14 15 16	16				
100	July 29	Iv	iPNEZ eSN eSE F	17 57 17 59	31.4 50 51.1			See list, p. 185	
101	July 29	Iv	iPZ eSNE F	20 33 20 35	17.3 44.7			See list, p. 185	
102	July 30	I	ePZ iZ F	15 46 15 48	21.7 33.2				
103	July 31	Id	iPZ iSZ F	12 15 12 16	13.1 14.7				
104	July 31	Iu	ePZ F	19 12 19 14	47.4			U.S.C.G.S.: 7°N, 82°W	
105	Aug. 1	Id	iPZ iSZ F	11 52 11 53	36.3 37.7			See list, p. 185	
106	Aug. 1	IIId	iPNEZ iSNE F	21 21 21 23	11.1 17.8			See list, p. 185	

MT. HAMILTON



No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
107	Aug. 2	Id	iPZ iSZ F	10 18 10 19	41.5 43.2			
108	Aug. 3	IIId	iPEZ iN iE iN iSE F	16 40 16 41 16 42 16 43 16 44	13.6 15.2 16.0 19.0 20.7			See list, p. 185
109	Aug. 4	Iv	iPNZ eSNE F	07 39 07 40 07 42	47.2 17.0			
110	Aug. 4	Iv	iPZ eSN eSE F	10 22 10 23 10 24	25.0 53 54			
111	Aug. 4	I	ePZ iPZ F	18 13 18 15	51.1 51.4			
112	Aug. 6	Id	iPZ eSNE F	02 55 02 56	10.1 21.6			
113	Aug. 6	Iv	iPEZ ePN iSE iSN F	04 22 04 23 04 24	39.0 39.9 14.9 16.0			See list, p. 185
114	Aug. 6	Id	ePZ iSNEZ F	10 05 10 07	22.9 30.1			
115	Aug. 6	Iv	iPZ iZ iSZ F	23 57 23 58 23 59	55.8 02.6 32.2			
116	Aug. 7	Iv	iPZ iSZ F	00 04 00 05 00 06	55.3 31			
117	Aug. 7	IIId	iPNEZ iSNE F	00 10 00 11 00 12	55.0 01.1			See list, p. 185
118	Aug. 7	Id	iPEZ iSNE F	03 29 03 31	51.0 56.9			Aftershock

MT. HAMILTON



No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
119	Aug. 7	I	ePZ eZ F	14	51	46 19 28			U.S.C.G.S.: 34°N 142°E
120	Aug. 7	Id	iPEZ iSNE F	16	03	13.7 14.8			
121	Aug. 7	Id	iPZ iSNE F	16	30	48.6 51.1			
122	Aug. 8	Iu	ePZ F	16	25	59 27			
123	Aug. 8	Id	iPZ iZ F	22	45	28.5 36			S? U.S.C.G.S.: 17.5°N, 95.5°W
124	Aug. 9	Iv	iPZ iZ iSZ F	00	36	16.3 17.1 42			
125	Aug. 9	Iu	iPZ F	12	36	48.6 38			
126	Aug. 10	Id	iPZ iSZ F	00	41	20.0 22.2			After shock of 0703 10 August
127	Aug. 10	Id	iPNEZ iNE F	07	02	58.3 03 12.2 06			See list, p. 185
128	Aug. 10	Id	iPZ iSZ F	09	38	24.6 30.4			
129	Aug. 10	Iv	iPZ iSZ F	14	40	07 21			
130	Aug. 10	Iv	iPZ eSN eSE F	18	15	15.1 47 49			
131	Aug. 10	Id	iPZ iSZ F	18	59	00.2 03.7			

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From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
132	Aug. 10	Iv	iPZ iZ iSZ F	19 26	07.1 08 43				
133	Aug. 10	Iv	iPZ iZ iSZ F	19 27	55.5 56.6 28 32				
134	Aug. 10	Id	iPNEZ iSNE F	21 51	19.4 21.8 21 52				
135	Aug. 11	Id	iPZ iSNE F	03 42	50.0 51.4 03 43				
136	Aug. 11	Ir	iPZ ePNE iPPZ eSN eSE eZ eZ F	10 42	24.6 25.0 45 24.2 47.3 47.4 51.2 51 53 11 03			U.S.C.G.S.: 17.5°N, 95.5°W	
137	Aug. 11	Id	iPZ eSE F	21 33	26.8 39 21 34			Aftershock of 0703 10 August	
138	Aug. 12	Id	iPZ iSZ F	07 05	41.8 46.8 07 06				
139	Aug. 12	I	ePZ F	22 43	48.4 22 46			Near Cape Mendocino	
140	Aug. 13	Id	iPZ iSNE F	06 48	41.6 43.5 06 49				
141	Aug. 13	Id	iPZ iSNE F	06 59	56.7 58.4 07 01			U.S.C.G.S.: 62°N, 151°W	
142	Aug. 13	I	ePZ F	11 25	12.9 11 29				
143	Aug. 13	Id	iPZ iSNE F	23 54	55.3 56.0 23 56			U.S.C.G.S.: 57°N, 82°W	

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From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
144	Aug. 14	I	ePZ eZ F	17 07 17 09	24.8 36.5			U.S.C.G.S.: 34°N 141°E
145	Aug. 17	Id	iPZ eSE eSN F	14 07 14 08	15.7 22.4 23			
146	Aug. 18	Id	iPZ iSZ F	02 16 02 17	12.4 14			
147	Aug. 18	Id	iPZ iSEZ iSN F	14 47 14 48	29.3 32.9 33.6			
148	Aug. 18	Iv	iPEZ eSE eSN F	19 12 19 13 19 19	57.3 40.9 41.4			See list, p. 185
149	Aug. 19	Id	iPZ iSZ F	01 16 01 17	30.7 34.1			
150	Aug. 19	I	ePZ F	01 27 01 29	42			J.S.A.: 125°N 90°W
151	Aug. 19	Id	iPZ iSNE F	01 33 01 34	11.4 19.1			
152	Aug. 19	Iv	ePZ iPZ iZ F	10 55 10 56 10 58	33.4 34.5 23.9			Near Cape Mendocino S? U.S.C.G.S.: 25°S 68°W
153	Aug. 19	Iu	iPZ F	11 08 11 11	20.9			See list, p. 185
154	Aug. 19	Iu	ePZ ePNE iZ eZ F	13 56 13 59 14 03 14 05	58.0 59 10.3 26.5			U.S.C.G.S.: 62°N, 151°W S?
155	Aug. 19	Iu	iPEZ ePN F	20 07 20 11	40.5 41.2			U.S.C.G.S.: 5°N, 82°W

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
156	Aug. 20	IIId	iPNEZ iSNE F	05 53 05 55	42.8 44.3			See list, p. 185 2 foreshocks 1 aftershock
157	Aug. 20	I	ePZ F	07 42 07 43	01.7 55.8			San Benito County
158	Aug. 22	Iv	iPZ iSNEZ F	00 42 00 44	19.4 37 51.3			San Benito County
159	Aug. 22	Iv	iPZ iZ F	15 14 15 16	09 44			S?
160	Aug. 23	Id	iPZ iSZ F	17 45 17 46	40.6 41.9			
161	Aug. 25	Iu	ePZ F	20 01 20 03	30.5 41.3			
162	Aug. 26	Id	iPZ iSNEZ F	01 42 01 44	54.7 57.3			
163	Aug. 26	Iu	iPZ eZ eZ F	20 49 20 50 20 51 20 52	09.1 55 14			S? S?
164	Aug. 27	Iv	iPZ iZ eSNE F	09 22 09 23	01.9 14.0 15			See list, p. 185
165	Aug. 27	I	iPZ F	17 00 17 04	06 04			See list, p. 185 U.S.C.G.S.: 25°S 68°W
166	Aug. 27	Iv	iPZ iSNE F	21 00 21 04	21.8 53			See list, p. 185 See list, p. 185
167	Aug. 29	Iv	iPZ eSNE F	23 07 23 09	17.0 31			See list, p. 185
168	Aug. 29	I	ePZ eZ F	23 42 23 44	09 22			B.C.I.S.: 28°N 132°E
169	Aug. 30	Iv	iPZ iZ F	16 45 16 47	33.4 46 16			U.S.C.G.S.: 18°S 66.5W S? h = 100 km

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No.	Date	Character	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
183	Sept. 3	I	iPZ eE eN iZ iZ F	11 43 21 27 31 58.3 44 16 11 46			
184	Sept. 3	I	iPZ iZ F	12 04 58.5 05 18 12 06			S?
185	Sept. 5	Iu	iPZ F	10 11 41.8 10 12			
186	Sept. 5	Id	iPZ iSZ F	13 05 46.7 56.5 13 07			U.S.C.G.S.: 21°S, 174°W
187	Sept. 5	Id	iPZ iSZ F	14 00 13.0 14.5 14 01			7 aftershocks
188	Sept. 5	Id	iPZ eSN iSZ eSE F	21 56 27.1 37.5 37.5 38.0 21 57			
189	Sept. 6	Id	iPZ iSNE F	03 04 33.6 35.1 03 05			
190	Sept. 6	Iu	ePZ F	08 22 14 08 25			U.S.C.G.S.: 24½°S 68½°W h = 100 km
191	Sept. 6	Iu	ePZ F	08 53 37 08 55			B.C.I.S.: 16½°S 177½°W
192	Sept. 6	Ir	iPZ F	16 41 50.1 16 45			U.S.C.G.S.: 14°N 93½°W
193	Sept. 6	I	iPZ F	18 09 44 18 10			
194	Sept. 6	Id	iPZ iSZ F	19 55 34.9 37.2 19 56			
195	Sept. 7	Id	iPZ iSZ F	01 33 13.3 22.9 01 34			

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
196	Sept. 7	Id	iPZ iSZ F	11 56	33.4 36.0				
197	Sept. 8	Iv	iPZ eNE iZ eSNE iSZ F	04 29	08.0 09 14.7 50.3 50.8			See list, p. 185	
198	Sept. 8	Iv	iPZ eNE iSNEZ F	14 05 14 07	33.2 34 42.1				
199	Sept. 8	IIu	iPZ eNE iN iE eSN eSE eSZ eE eN eZ F	15 21 15 30 15 40 15 43 15 46 15 49 16 40 16 40 16 43 18 22	01.7 03.2 08.2 08.7 44 46 49 40 40 43 21.2		d	U.S.C.G.S.: 21°S, 174°W 7 aftershocks	
200	Sept. 8	I	ePZ iS?Z F	16 23 16 24 16 26	10 16.2			U.S.C.G.S.: 18°W, 185.5°E	
201	Sept. 8	Id	iPZ iSZ F	23 26 23 27	31.8 38.6				
202	Sept. 9	Iu	eP	05 39	26	5.5			
203	Sept. 9	Iu	iP	06 15	19	5.5	c		
204	Sept. 9	Iu	iP	07 16	46	5.5			
205	Sept. 9	Iu	iPZ eZ F	12 35 12 36 12 38	10.5 30.0	5.5	d		
206	Sept. 9	Iu	eP	14 15	34.0	5.4			
207	Sept. 9	Iv	iPZ eSN iSEZ iMEZ F	03 29 03 30 03 31 03 31	02.7 34 34.6 38.3				

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No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
208	Sept. 9	Iu	iPZ iZ eNE iZ F	06 21 01.0 07.3 09 12.9 06 25		c	
209	Sept. 9	I	eZ eZ F	07 00 41 01 46 07 03			P? S?
210	Sept. 9	Id	iPZ iSNE iZ F	13 44 40.6 42.0 42.6 13 45			
211	Sept. 9	Iu	iPZ F	18 30 55.4 18 33			
212	Sept. 10	I	iPZ iZ F	01 50 13.8 25.3 01 51			
213	Sept. 10	I	iPZ iZ F	12 13 05.2 52.7 12 16			
214	Sept. 10	Iu	iPZ eNE iZ eSNE eLE eLN F	13 59 21.2 25 26.0 14 08 11 18.4 19.6 15 07		c	U.S.C.G.S.: 44°N, 146.5°E
215	Sept. 10	Iu	iPZ F	15 45 04.1 15 46		c	
216	Sept. 10	Iu	ePZ F	23 34 29 23 36			
217	Sept. 11	Id	eNE iPZ iSNEZ F	03 32 38.5 39.0 41.6 03 33			
218	Sept. 11	Id	iPZ eNE iSZ iSNE F	09 08 41.6 42 44.2 44.6 09 09			
219	Sept. 11	Iv	iPZ iZ eNE iSZ F	12 03 11.9 15.4 37 37.9 12 05			U.S.C.G.S.: 13.5°N, 93°W

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No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
220	1948 Sept. 11	Iu	ePZ F	16 13 21.8 16 16			
221	Sept. 11	Iu	iPZ F	20 08 50.3 20 10		d	
222	Sept. 11	I(d)	iPZ iZ F	20 48 12.3 15.3 20 49			S?
223	Sept. 11	Iu	iPZ F	23 41 53.7 23 43		c	
224	Sept. 12	Iu	iPZ eNE iZ F	03 31 36.2 37 32 21.9 03 35		c	
225	Sept. 12	Iu	iPZ iZ F	06 35 25.6 43.9 06 37		c	
226	Sept. 12	I(d)	iPZ iSEZ iN F	08 32 57.6 33 09.1 09.6 08 34			
227	Sept. 12	Id	iPZ iSZ F	11 26 00.7 11.5 11 27			
228	Sept. 12	Id	iPNEZ iSZ iSNE F	23 42 05.4 07.4 07.8 23 43			
229	Sept. 13	Id	iPZ iN iSZ iE F	06 11 54.2 55.5 55.7 55.9 06 12			
230	Sept. 13	Iv	iPZ iZ iZ F	06 33 17.7 19.7 28.2 06 34			S?
231	Sept. 13	Iu	ePZ iZ F	15 21 35.5 50.2 15 24			
232	Sept. 13	Iu	ePZ F	21 14 33 21 16			U.S.C.G.S.: 13.5°N, 93°W

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No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
1948				h. m. s.	s.		
233	Sept. 13	Id	iPZ iSZ F	22 48 09.6 10.7 22 49			
234	Sept. 14	Id	iPNEZ iSNEZ F	08 00 56.6 58.4 08 01			
235	Sept. 14	Iu	ePZ F	08 24 42.3 08 30		c	
236	Sept. 14	Iu	ePZ F	20 14 47 20 16			
237	Sept. 14	I(v)	iPZ F	23 00 24.0 23 01			
238	Sept. 15	Id	iPZ iNE iSZ iSE F	22 48 47.2 48.5 49.2 49.9 22 50			
239	Sept. 17	Iu	iPZ F	21 25 31.4 21 27		d	
240	Sept. 17	Iv	iPZ eNE iZ F	23 02 59.9 03 00.4 31.7 23 05			SP
241	Sept. 18	Iu	iPZ ipPZ F	08 03 27.8 30.9 08 05			
242	Sept. 18	Iu	iPZ F	08 44 22.6 08 47		d	U.S.C.G.S.: 8°N, 84°W
243	Sept. 18	Id	iPZ iSNEZ F	09 40 34.2 42.2 09 42			
244	Sept. 18	Iv	iPZ iSZ F	09 50 30.6 44.1 09 52			
245	Sept. 18	Iu	iPZ F	21 46 13.5 21 47		c	2 small aftershocks
246	Sept. 19	Iu	iPZ F	01 41 02.3 01 43		d	
247	Sept. 19	Iu	ePZ F	04 57 12.5 05 00			

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No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
1948							
248	Sept. 19	Iu	ePZ eE ipPZ F	06 21 56.0 59 22 02.5 06 30		c	U.S.C.G.S.: 52°N, 178°W
249	Sept. 19	Id	iPZ iNE iSZ F	16 16 42.6 43.1 51.6 16 18			
250	Sept. 19	Iu	iPZ F	20 28 03.5 20 31			
251	Sept. 19	Iu	iPZ F	21 53 57.9 21 54		c	Sharp
252	Sept. 20	Iu	ePZ F	00 23 25.0 00 25			
253	Sept. 20	Id	iPZ iZ iSNEZ F	05 12 34.4 39.3 44.4 05 14			U.S.C.G.S.: 47°N 172°W
254	Sept. 20	Id	iPZ iS?Z F	08 12 44.9 46.9 08 13.5			U.S.C.G.S.: 41°N 142°E
255	Sept. 21	Iv	iPZ iZ iSNEZ F	06 59 25.0 31.9 07 00 01.0 07 01			
256	Sept. 21	Iu	iPZ F	14 59 01.8 15 01		d	
257	Sept. 21	Iu	ePZ F	15 31 03.8 15 33		c	
258	Sept. 22	Iu	iPZ ipPZ F	00 04 24.6 29.1 00 07		d d	
259	Sept. 22	Iu	iPZ F	02 33 23.1 02 35		d	
260	Sept. 22	Id	iPEZ iZ iSNE F	03 03 01.6 02.1 03.2 03 04			2 small aftershocks
261	Sept. 22	Iu	iPZ ipPZ F	05 12 36.0 44.5 05 15		d d	

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
262	Sept. 22	Iu	iPZ eNE iZ F	07 29	49.9 51		d c	U.S.C.G.S.: 22°S, 68°W	
263	Sept. 22	Id	iPZ eN iSEZ F	11 15 23 06	24.0 53.0				
264	Sept. 22	Id	iPZ iSEZ F	13 12 13 13	34.9 37.4				
265	Sept. 22	Id	iNEZ F	21 33 21 33	18.4			Sharp	
266	Sept. 22	Iu	ePZ iZ F	21 37 21 39	25.2 28.0		d		
267	Sept. 23	Iu	iPZ F	01 03 01 07	51.8			U.S.C.G.S.: 17½°N 82°W	
268	Sept. 23	Iu	iPZ F	08 36 08 38	03.4		c	J.S.A.: 41°N 142°E	
269	Sept. 23	Iu	iPZ F	12 44 12 46	57.8		c		
270	Sept. 23	Id	iPZ eNE iZ eS?NE iZ F	14 05 14 07	04.7 05 17.1 17 21.0				
271	Sept. 23	Id	eNE iPZ iSZ iZ F	14 14 14 15	33.8 34.0 37.5 39.6				
272	Sept. 23	Id	iPZ eNE iZ F	14 15 14 16	30.1 31 38.8				

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Trace motion	Period
				h. m. s.	s.		
	1948						
273	Sept. 23	IIId	iPNEZ iSNE F	18 38	34.9 36.2		
274	Sept. 23	Id	iPZ iSNEZ F	23 06 23 07	53.0 59.7		
275	Sept. 27	IIId	P	06 28			See list, p.185 S - P = 2.3 sec.

Latitude and longitude:
 $\phi = 37^{\circ} 25' 11''$ N.
 $\lambda = 122^{\circ} 10' 18''$ W.
 Time — All determinations are reduced to Greenwich Civil Time.
 Altitude — 83 meters (272 feet) above mean sea level.

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

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 THE BRANNER STATION, STANFORD UNIVERSITY
 PALO ALTO, CALIFORNIA

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Latitude and longitude:

$$\varphi = 37^{\circ} 25' 11'' \text{ N.}$$

$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
1	July 5	I	iPZ ePE ePN F	09 18	41.4 41.5 42.7			See list, p. 185
2	July 5	I	iPZ ePNE F	10 11	33.3 35.3			
3	July 8	IIId	iPEZ F	02 39 02 41				See list, p.185 S-P= 9 sec. 1 Aftershock at 03-11
4	July 11	Id	iPZ	20 01				See list, p. 185 S-P=4.5 sec.
5	July 15	Id	iPZ	04 10				See list, p. 185 S-P=5.5 sec.
6	July 16	Ir	ePE eSE F	07 26 32 07 34	35.6 17.1			USCGS: 14.5°N - 92°W
7	July 17	Id	ePZ eE iSZ F	13 52 31 29 13 53	34.9 39.4 47.9			See list, p. 185
8	July 17	IIId	iPZ iPE iE iZ F	15 07 11 08 15 10	54.1 55.0 59.7 01.2			See list, p. 185
9	July 18	Iv	iPZ ePE iZ F	01 08 17 11 01 09	19.3 19.6 38.9			See list, p. 185
10	July 20	Id	iPZ eSE iSZ F	02 33 02 34	05.9 10.6 10.6			See list, p. 185
11	July 20	Id	iPZ ePE iZ F	05 30 05 31	29.4 29.4 36.9			See list, p. 185
12	July 20	Id	iPEZ iSE F	08 10 08 15	47.4 51.5			See list, p. 185

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No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
13	July 20	Id	iPZ ePE iSE iSZ F	08 45 14.3 14.3 18.5 19.2			Aftershock
14	July 20	Id	iPE iPZ iSEZ F	08 53 51.2 52.1 55.9			Aftershock
15	July 20	Iv	iPZ ePE F	11 13 31.0 32.0			USCGS: 17°S - 74.5°W
16	July 20	IIId	iPEZ iSEZ F	18 00 45.3 48.3			
17	July 20	IIId	iPZ iPE iSZ iSE F	19 01 30.9 32.7 36.2 38.3			
18	July 21	Id	iPZ F	21 29 26.5 21 30			See list, p. 185
19	July 24	Iu	iPZ ePN iSZ F	14 33 56.6 58.4 03.9			
20	July 24	IIId	iPNZ iSN iSZ F	17 39 58.5 40 04.0 04.5			
21	July 26	Iv	iPZ ePEN iSZ eSE F	02 23 49.2 49.6 04.1 04.1			See list, p. 185
22	July 26	Id	iPZ ePE ePN iSNEZ F	03 23 53.8 53.9 54.4 58.9			See list, p. 185
23	July 26	I	iPZ ePNE F	17 50 57.2 57.7			

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No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
24	July 27	Id	iPZ iSNE iSZ F	23 55	09.4 14.5 16.0				
25	July 28	Iv	iPZ ePNE	01 31	29.1 30.1			See list, p. 185	
	Aug. 6	Iu	iSZ iSN F	10 05 10 06 01 34	58.4 59.5				
	Aug. 7	IIId	iPNEZ	00 11	01.0			See list, p. 185	
26	Aug. 1	IIId	iPZ iPE iPN iSE iSN	21 21	16.6 17.1 17.5 26.8 27.3			See list, p. 185	
	Aug. 7	Id	iZ F	03 29 21 23	29.4			Aftershock	
27	Aug. 2	IIId	iPNEZ iSNEZ F	17 52	54.7 56.3				
	Aug. 10	IIId	iPNEZ	07 02	57.5			See list, p. 185	
28	Aug. 3	IIId	iPNEZ iZ iSN iSE	16 40	17.3 25.0 26.8 28.3			See list, p. 185	
	Aug. 18	Iv	F	16 43				See list, p. 185 3-P- 40 sec.	
29	Aug. 4	Iv	iPZ ePN ePE iPZ eSE eSN iSZ F	07 39	52.0 53.1 54.2 40 00.2 25.5 30.5 33.6				
30	Aug. 4	Iv	iPZ ePE ePN eN iSE iSZ F	10 22	32.3 33.3 35.4 59 04.8 05.7			San Benito County	
	Aug. 30	Id	iSE iSZ F	21 23 13 15 10 32	04.8 05.7			San Benito County	
31	Aug. 5	IIId	iPNEZ iSNE iSZ F	20 34	00.8 03.9 04.7			See list, p. 185	
	Aug. 31	IIId	iPE	18 01	07.1				
32	Aug. 6	Iv	iPZ ePNE eSE F	02 55	15.1 16.2 25.2				
			F	02 56					

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
33	Aug. 6	IIv	iPZ ePE ePN iN iEZ F	04 22	44.3 44.7 45.1 51.8 53.0			See list, p. 185
34	Aug. 6	Iu	ePZ F	10 05 10 06	32.7			
35	Aug. 7	IIId	iPNEZ iSZ iSE iSN F	00 11	01.0 11.0 11.9 12.3			See list, p. 185
36	Aug. 7	Id	ePEN iPE iSEZ iSN F	03 29 30 04 30 07 03 31	54.4 54.6 04.9 06.4			Aftershock See list, p. 185
37	Aug. 10	IIId	iPNZ iN iSZ F	07 02 20 03 07 05	57.5 04.1 05.4			See list, p. 185 See list, p. 185
38	Aug. 18	Iv	iPE F	19 14 19 22				See list, p. 185 S-P= 40 sec.
39	Aug. 27	Iv	iPE iSE F	21 00 21 02	23.8 55.9			
40	Aug. 29	I	iPZ eE F	23 07 23 09	21.1 24.1			
41	Aug. 30	Id	iPE iSE F	20 58 20 59 21 00	50.6 03.7			San Benito County
42	Aug. 30	Id	ePE iSE F	21 12 21 13 21 14	57.5 10.4			San Benito County
43	Aug. 31	IIId	iPE iSE F	16 31 16 33	20.8 25.8			See list, p. 185
44	Aug. 31	IIId	iPE iSE F	18 01 18 02	07.1 08.1			

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No.	Date	Char-acter	Phase	Time (G.C.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1948						
55	Sept. 15	IIId	iPZ iNE iZ iS?E iN iE F	18 03	40.4 40.9 41.4 42.0 43.1 43.8		Starsbock?
56	Sept. 15	Id	iPZ iNE iSNZ iE F	22 16	02.5 02.7 05.9 06.7		
57	Sept. 22	Iu	iPZ eNE F	00 04	20 24 00 06	d	
58	Sept. 22	Iu	ePZ ipPZ F	05 12	27 41 05 15	d d	Inyo County
59	Sept. 22	Iu	iPZ eNE F	07 29	51 52 07 32	d	USCGS: 17.5°N - 82°W
60	Sept. 23	Id	iPZ iZ iZ F	14 05	01 12 16 14 06		
61	Sept. 23	Id	iPZ iSZ F	14 14	30 33 14 15		
62	Sept. 23	Id	iPZ iS?Z F	14 15	26 34 14 16		
63	Sept. 23	Id	iPZ iN iE iSNZ iE F	23 06	47 48 49 51 52 23 07.5		
64	Sept. 26	Iu	iPZ F	01 11	56.0 01 14		Elast?
65	Sept. 27	IIId	iPNZ iE iSN iSE iZ F	06 28	19.4 19.7 24.4 25.2 26.0 06 30		See list, p. 185

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
66	Sept. 27	Id	iPZ iE iSEZ	06	31	22.4 22.9 28.1			Aftershock?
77	Sept. 30	Id	F	06	32	31.6 31.1			Blast?
67	Sept. 27	Iu	iPZ	21	32	43.4			
78	Sept. 30	Id	ipPZ eZ iZ F			48.4 34 59.4 35 23.4 21 36	c c		
68	Sept. 28	Id	iPEZ iN iSNZ iZ iN F	22	36	03.5 03.9 06.9 08.0 11.6 22 37			
69	Sept. 29	Iv	iPZ eNE iZ iE iN iZ iN F	04	07	38.2 39 50.8 08 22.9 25.2 30.9 46.9 04 11			Inyo County
70	Sept. 29	I(v)	iPZ eNE eN eE F	13	43	04.2 04.5 29 31 13 45			
71	Sept. 29	I(v)	iPZ eE eN F	21	03	12.4 14 16 21 04			
72	Sept. 29	Id	iPZ eE iSZ iSNE F	21	05	45.2 45.5 47.6 48.6 21 06			
73	Sept. 30	Iu	iPZ F	02	14	49.6 02 16			
74	Sept. 30	Id	iPZ iSZ	16	48	39.9 42.3			Blast?
75	Sept. 30	Id	iPZ iSZ	16	49	30.1 32.6			Blast?

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
76	Sept. 30	Id	iPZ iSZ	16 50	37.5 39.9			Blast?
77	Sept. 30	Id	iPZ iSZ	16 51	31.6 34.1			Blast?
78	Sept. 30	Id	iPZ iSZ F	16 52	24.3 26.7			
				16 53				

CONSTANTS OF THE STATION

Latitude and longitude:
 $\phi = 37^{\circ} 16' 14''$ N.
 $\lambda = 122^{\circ} 27' 12''$ W.

Time — All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Remarks
SAN FRANCISCO						
1	July 8	IIId	1PSE	02.5		See list, p. 185
2	July 8	Id	ePE	03.2		See list, p. 185
3	July 8	Id	ePNE	09.4		See list, p. 185
4	July 11	IIId	1PSE	20.0		See list, p. 185

5	July 17	Iv	ePE	15.2		See list, p. 185
6	July 20	IIId	ePE	08.2		See list, p. 185
CONSTANTS						
CONSTANTS OF THE STATION						
8	July	Latitude and longitude:				
9	July 29	IIId	1PNE	$\phi = 37^{\circ} 46' 14''$ N. $\lambda = 122^{\circ} 27' 12''$ W.		
10	July	Time -- All determinations are reduced to Greenwich Civil Time.				
		Altitude -- 100 meters (328 feet) above mean sea level.				
11	Aug. 3	IIId	ePN	16.7		See list, p. 185
12	Aug. 10	Id	1PNE	07.2		See list, p. 185
13	Aug. 18	Iv	ePNE	21 00 31		See list, p. 185
14	Aug. 27	Iv	ePE	21 00 31		See list, p. 185
				21 03		
15	Aug. 31	IIId	1PSE	21 37	55.4	See list, p. 185
					55.6	
				38	03.1	
					05.1	
				22	12	
16	Aug. 31	IIId	1PNE	22 45	56.1	See list, p. 185
					56.2	
				22	18	
17	Sept. 1	Iv	eE	20 02.9	14.0	
			eN	03.7		
			P	20 12		

Apparatus	Component
Wood-Anderson	E
	N

SAN FRANCISCO



From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
1	July 8	IIId	iPNE	02	5			See list, p. 185 S-P= 1.8 sec.	
2	July 8	Id	ePE	03	2			Aftershock	
3	July 8	Id	ePNE	09	2			Aftershock	
4	July 11	IIId	iPE	20	0			See list, p. 185 S-P= 10.5 sec.	
5	July 17	Iv	ePE	15	2			See list, p. 185 S-P= 15.0 sec.	
6	July 20	IIId	ePE	08	2			See list, p. 185 S-P= 8.0 sec.	
7	July 21	Id	ePE	13	5			See list, p. 185 S-P= 3.0 sec.	
8	July 26	I	ePNE	19	0				
9	July 29	IIId	iPNE	19	0			See list, p. 185 S-P= 10.0 sec.	
10	July 29	IIId	iPNE	20	5			See list, p. 185 S-P= 9.0 sec.	
11	Aug. 3	IIId	ePN	16	7			See list, p. 185 S-P= 16.0 sec.	
12	Aug. 10	Id	iPNE	07	2			See list, p. 185 S-P= 6.0 sec.	
13	Aug. 18	Iv	ePNE	19	2			See list, p. 185 S-P= 33.0 sec.	
14	Aug. 27	Iv	ePE iSNE F	21 00 31 51.7 21 03				See list, p. 185	
15	Aug. 31	IIId	iPE iN iE iN F	21 37 55.4 55.6 38 03.1 05.1 21 40				See list, p. 185 See list, p. 185	
16	Aug. 31	IIId	iPNE iE iN F	22 45 56.1 46 03.8 05.6 22 48				See list, p. 185	
17	Sept. 1	Iv	eE eN F	20 02.9 03.7 20 12		14.0			

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
	1948			h. m. s.	s.		
18	Sept. 1	IIId	iPNE iN iSE iMN F	21 27 58.7 28 07.2 07.7 09.0 21 30			See list, p. 185
19	Sept. 8	Iv	ePNE eSN eSE F	04 28 58 29 30 31 04 31			See list, p. 185
20	Sept. 8	IIu	ePNE iN eSN eSE eLN eLE F	15 21 02 17.8 30 44 49.3 39.9 41.2 17 49	14		USCGS: 21°S - 174°W
21	Sept. 10	Iv	ePN iSE iSN F	01 50 01 20.5 21.6 01 52			
22	Sept. 10	Iu	ePNE eSNE eLN eLE F	13 59 21 14 08 00 18.6 19.7 15 01			USCGS: 44°N - 146.5°E
23	Sept. 14	Id	eE iSNE F	22 36 52.7 57.0 22 38			
24	Sept. 14	Id	eE iN iE iN iE F	23 00 24 28.0 29.7 32.4 32.9 23 02			Component P? E N } S?
25	Sept. 27	Id	ePNE iSN iSE F	06 28 25.7 34.9 35.2 06 30			See list, p. 185
26	Sept. 29	I	eNE eNE F	13 46 00 19 13 48			P? S?

FERNDALE

No.	Date	Hour- arter	Phase	Time (G.C.T.)	Period	Remarks				
	1920									
						FERNDALE				
1	July 22	Ir	eSE eSW F	20 10 55 20 58 00 21 01 34 21 07		USCGS: 129.5°W - 130.5°W				
						THE FERNDALE STATION FERNDALE, CALIFORNIA				
2	July 22	Ir	eSE eSW F	20 57 15 58 00 21 01 34 21 07						
3	Aug. 8	Id	eSE eSW F	17 51 18 52 17 52		See list, p. 185.				
4	Aug. 9	Id	eSE eSW F	11 54 51 52 11 55		See list, p. 185.				
						CONSTANTS				
						CONSTANTS OF THE STATION				
5	Aug. 11	Ir	eSE eSW F	10 53 02 54 10 55		USCGS: 129.5°W - 130.5°W				
						Latitude and longitude:				
						$\phi = 40^{\circ} 34' N.$				
						$\lambda = 124^{\circ} 16' W.$				
6	Aug. 11	I	eSE eSW F	12 58 25 59 12 59						
						Time -- All determinations are reduced to Greenwich Civil Time.				
						Altitude -- 17 meters (55 feet) above mean sea level.				
7	Aug. 18	IIId	eSE eSW F	19 18 08 19 19 19		See list, p. 185.				
8	Aug. 19	IIId	eSE eSW F	20 51 12 52 20 52						
						<table border="1"> <thead> <tr> <th>Apparatus</th> <th>Component</th> </tr> </thead> <tbody> <tr> <td>Bosch-Omori 25 kg.</td> <td>E N</td> </tr> </tbody> </table>	Apparatus	Component	Bosch-Omori 25 kg.	E N
Apparatus	Component									
Bosch-Omori 25 kg.	E N									
9	Aug. 19	Id	eSE eSW F	11 00 20 01 11 01		After shock				
10	Aug. 26	Iv	eSE eSW F	12 07 09 12 10						
						The station is operated by Mr. Joseph Bognuda, of Ferndale, in cooperation with the University of California.				
11	Aug. 29	Iv	eSE eSW F	13 07 09 13 10		USCGS: 129.5°W - 130.5°W				

FERNDALE

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Period s.	Trace motion	Remarks
	1948						
1	July 22	Ir	eNE eSE F	20 10 02 14 10 20 29			USCGS: 49.5°N - 130.5°W
2	July 22	Ir	ePE ePN eSE F	20 57 45 58 00 21 01 34 21 07			See list, p. 185
3	Aug. 8	Id	ePN eSNE F	17 51 18 24 17 52			See list, p. 185
4	Aug. 9	Id	iPN iSE iSN F	11 44 51 54 55 11 46			See list, p. 185
5	Aug. 11	Ir	ePNE eSE eSN F	10 43 02 48 16 13 10 30 11 10			USCGS: 17.5°N - 95.5°W
6	Aug. 11	I	iE eN F	12 46 26 28 12 47			
7	Aug. 18	IIIId	iPNE iSNE F	19 12 08 14 19 19			See list, p. 185
8	Aug. 19	IIId	iPN iPE iSN iSE F	10 54 42 46 46 50 10 56			Aftershock
9	Aug. 19	Id	iPE ePN iSN F	11 08 29 29 34 12 09			Aftershock
10	Aug. 28	Iv	iPNE iSN F	01 04 02 17 01 05			
11	Aug. 29	Iu	eE eN eN F	18 07 09 16 18 46			USCGS: 15.5°S - 171°E

FERNDALE

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
12	Sept. 1	Ir	ePNE eSNE F	20	01	43 05 12 20 24			
13	Sept. 8	Id	ePNE iSN iSE F	04	28	22 27 28 04 30		See list, p. 185	
14	Sept. 8	IIu	ePN iPE iPN eSN eSE eE eN eE eN eE eNE F	15	21	11 28 29 30 49 58 31 29 47 40 15 43 43 04 15 47 18 10		USCGS: 21°S - 174°W	
15	Sept. 10	Iu	ePE eN eSE eN eE F	13	59	02 08 14 07 30 19 07 22 04 16 06		USCGS: 44°N 146½°E	

Apparatus	Component
Springmeter.....	N E Z

No.	Date	Character	Phase	Time (G.C.T.)	Period	Trace notation	Remarks
FRESNO							
1	July 1	In	eP2	01 58 28			
THE FRESNO STATION, FRESNO STATE COLLEGE FRESNO, CALIFORNIA							
2	July 1	In	eP2	12 58 18.5			
3	July 1	In	eP2	01 31 29			
4	July 2	In	eP2	02 36 15			
5	July 3	In	eP2	01 39 12			
CONSTANTS							
CONSTANTS OF THE STATION							
6	July 3	In	eP2	01 24 13			
Latitude and longitude:							
$\phi = 36^{\circ} 46' 11''$ N.							
$\lambda = 119^{\circ} 47' 18''$ W.							
7	July 3	In	eP2	01 25 30.5			
Time -- All determinations are reduced to Greenwich Civil Time.							
Altitude -- 88.4 meters (290 feet) above mean sea level.							
8	July 4	In	eP2	14 53 24			
9	July 4	In	eP2	14 57 10			
10	July 5	In	eP2	10 11 51			
11	July 5	In	eP2	14 12 15			
12	July 7	In	eP2	02 11 26	1.7		

Apparatus	Component
Sprengnether.....	N
	E
	Z

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.) h. m. s.	Period s.	Trace motion	Remarks
1	1948 July 1	Iu	ePZ iZ F	01 50 50 53 09.1 01 56			
2	July 1	Iu	ePZ F	12 59 18.5 13 02		d	USCGS: 71°N - 6°W
3	July 2	Iu	ePZ eZ F	01 31 29 34 57 01 37		d	
4	July 2	Iu	ePZ F	02 36 45 02 41			
5	July 3	Iu	ePZ ePPZ F	01 39 12 41 45 01 46			See list, p. 185
6	July 3	Iu	ePZ eZ F	04 24 13 25 30.5 04 28			USCGS: 10°N - 104°W
7	July 3	Iu	iPZ	13 01 26.0		d	USCGS: 14.5°N - 92°W h = 100 km
8	July 4	I	eZ F	14 53 14 14 57		c	USCGS: 14.5°N - 92°W h = 100 km Probably San Benito County
9	July 4	Iu	ePNZ F	18 46 55.0 18 50			
10	July 5	Iv	ePZ eN eNZ iN iZ F	10 11 53.5 55 12 49 52.9 54.8 10 15			See list, p. 185 S?
11	July 5	Iu	eZ eZ eZ F	14 12 15 22 48 26 40 14 32			S? - list, p. 185 SS?
12	July 7	Iu	ePZ iZ iZ eN iZ eN F	02 31 26 35.0 58.5 41 34 38.6 41 24 02 47	1.7	c	See list, p. 185

FRESNO

No.	Date	Character	Phase	Time (G.C.T.) h. m. s.	Period s.	Trace motion	Remarks
	1948						
13	July 8	Iu	ePZ eZ F	04 46 40 17 10 04 48			USCGS: 17°S - 141°W
14	July 8	Iu	iPZ eN iZ ePPZ F	12 45 07.8 09.5 24.8 48 09.5 12 53		d d	USCGS: 19.5°N - 134.5°W USCGS: 71°N - 6°W USCGS: 25°N - 34°E
15	July 8	Ir	ePZ eN F	14 02 21.5 23 14 05			
16	July 11	Iv	iPZ iPN iSN iSZ F	19 59 11.6 12.0 32.0 33.4 20 04			VI at Weldon See list, p. 185 See list, p. 185
17	July 15	Ir	ePN F	11 08 15.4 11 32			USCGS: 10°N - 104°W
18	July 16	Ir	iPN F	07 19 14.0 07 23			USCGS: 7°N - 82°W USCGS: 14.5°N - 92°W h = 100 km
19	July 16	Ir	iPN F	07 26 20.8 07 34			USCGS: 14.5°N - 92°W h = 100 km
20	July 17	Id	iPN iSN F	09 27 43.1 52.1 09 31			Probably San Benito County
21	July 17	Iu	iPN F	09 37 43.1 09 39			
22	July 17	Iv	ePN iSN F	15 08 09.9 22.9 15 11			See list, p. 185
23	July 18	Iv	ePN iSN F	01 05 08 24.1 01 07			
24	July 18	Iv	ePN iN eN F	01 08 22.3 35.0 10 43.8 01 12			See list, p. 185 See list, p. 185
25	July 20	Iv	iPN iSN eN F	08 12 12.2 34.7 18 32 08 20			See list, p. 185

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
26	July 20	Iu	iPN F	11 13	19.2			USCGS: 17°S - 74°W h = 50 km	
27	July 22	Ir	iPN F	20 09	03.4			USCGS: 49.5°N - 130.5°W	
28	July 24	Iu	ePN eP'N ePPN	06 17	04.0			USCGS: 35°N - 34°E	
	Aug. 19	Iu	eSKSN eSKKSN F	11 27	38.0			USCGS: 62°N - 151°W	
	Aug. 19	Iu	F	06 38					
29	July 26	IIv	iPN iSN F	17 50	30.3			USCGS: 5°N - 82°W VI at Weldon	
	Aug. 20	I	F	18 00	51.0				
30	July 28	Id	iPN iSN iN F	01 31	14.9			See list, p. 185	
	Aug. 22	I	F	01 36	28.0				
	Aug. 25	Iu	F	01 36	55.5				
31	July 31	Iu	ePN F	19 12	36.2			USCGS: 7°N - 82°W	
	Aug. 1	Iv	F	19 15					
32	Aug. 1	Iv	eN iSN F	21 21	39.4			See list, p. 185	
	Aug. 26	I	F	21 25	46.9				
33	Aug. 3	Iv	ePN iSN F	16 40	32			See list, p. 185	
	Aug. 27	I	F	16 46	50.7				
34	Aug. 4	Iv	iPN iSN F	07 39	28.2				
	Aug. 27	Iv	F	07 42	42.5				
35	Aug. 4	Id	iPN iSN F	10 32	16.0			See list, p. 185	
	Aug. 27	Iv	F	10 36	28.6				
36	Aug. 6	IIId	iPN iSN F	04 22	19.2				
	Aug. 28	I	F	04 28	31.9				
37	Aug. 7	Iv	ePN iSN eN F	00 11	17.8			See list, p. 185	
	Aug. 29	Iu	F	00 15	31.8				
	Aug. 29	Iu	F	13 10	10.6				
	Aug. 29	Iu	F	17 14	07.3			USCGS: 15.5°S - 171°W	
38	Aug. 10	I	ePN F	18 16	00.7				
	Aug. 29	Iu	F	18 17	57.6			USCGS: 15.5°N - 107°W	

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
39	Aug. 11	Ir	iPN iSN eLN F	10 42 11.9 47 55.6 51 56.7 11 04				USCGS: 17.5°N - 96.5°W h = 50 km	
40	Aug. 18	Iv	iPN iSN F	19 13 20.3 14 19.9 19 27				See list, p. 185	
41	Aug. 19	Iu	ePN F	13 58 11.3 14 06				USCGS: 62°N - 151°W	
42	Aug. 19	Iu	ePN F	20 07 26.4 20 13				USCGS: 5°N - 82°W	
43	Aug. 20	I	iN F	02 21 17.0 02 22					
44	Aug. 22	I	iPN F	23 27 01.4 23 30				See list, p. 185	
45	Aug. 25	Iu	iPN eSN F	06 21 36.4 31 38.5 06 38				USCGS: 24°S - 63°W	
46	Aug. 26	Iu	ePN F	20 49 28.4 20 54				USCGS: 21°S - 174°W	
47	Aug. 26	I	ePN F	20 58 47.5 21 01					
48	Aug. 27	I	iPN F	09 22 03.5 09 25				Reported as preceding	
49	Aug. 27	Iv	iPN iSN F	17 00 27.9 01 16.0 17 05					
50	Aug. 27	Iv	iPN iSN F	21 00 31.4 01 07.2 21 05				See list, p. 185	
51	Aug. 28	I	ePN F	02 52 21.6 02 59					
52	Aug. 28	I	ePN F	12 51 17.1 12 54					
53	Aug. 29	Iu	iPN eLN F	17 49 21.1 18 14 19 18 27				USCGS: 15.5°S - 171°W	
54	Aug. 29	Iu	ePN F	18 41 57.6 18 45				USCGS: 16.5°N - 107°W	

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
55	Aug. 30	Iv	iPN iSN F	19 03	15.0 47.6			
				19 06				
56	Sept. 1	Ir	iPN eN F	19 56	49.2 46.2			
				20 02				
				20 11				
57	Sept. 1	Iv	ePN iSN F	19 20	54.1 19.4			
				19 23				
58	Sept. 3	Iv	iPN iSN F	23 43	07.8 42.5			
				23 48				
59	Sept. 6	Iu	ePN F	16 41	37.3			
				16 46				
60	Sept. 8	I(v)	eN eN F	04 29	32 31.7			See list, p. 185
				04 34				
61	Sept. 8	I	eN F	06 12	15			
				06 14				
62	Sept. 8	IIu	ePN iSN eLN F	15 21	06.5 56.0			USCGS: 21°S - 174°W
				15 43	1			
				18 48				
63	Sept. 8	Iu	eN F	16 59	09			Superimposed on preceding shock
				17 05				
64	Sept. 8	Iu	eN F	20 11	39			
				20 16				
65	Sept. 9	Iv	ePN iSN F	03 28	44 59.3			
				03 31				
66	Sept. 9	Iu	ePN iN F	06 21	08 19.6			Inyo County
				06 26				
67	Sept. 9	Iu	eN F	12 36	17			
				12 40				
68	Sept. 9	Iu	eN F	14 16	47			
				14 20				
69	Sept. 10	Iu	ePN iN eN F	13 59	33 11.9 47.9			USCGS: 44°N - 146.5°E
				14 02				
				08				
				14 37				

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
70	Sept. 11	II d	ePN iSN F	12 02	49 54.5			
71	Sept. 12	Iu	ePN F	03 21	41.5 03 36			
72	Sept. 12	Iu	ePN F	06 35	31 06 38			
73	Sept. 14	Iu	iPN F	08 24	48.6 08 29			
74	Sept. 15	Iv	ePN eSN F	05 56	20.8 37.8 05 58			
75	Sept. 18	Iu	ePZ iPZ eNE F	16 57	16 18.5 19 17 00			
76	Sept. 18	Iu	ePZ eE eN iZ F	18 22	08.5 10 16 41.0 18 30			
77	Sept. 21	Iu	ePZ F	17 51	03 18 01			
78	Sept. 22	Iu	iPZ eE eZ F	00 04	32.7 34 05 10.2 00 08		d	Component
79	Sept. 22	Iu	ePZ F	02 33	27.2 02 35			
80	Sept. 29	IIv	iPE iN iE iN iSE iSN F	04 07	12.4 13.2 16.3 19.1 28.3 28.7 04 15			Inyo County

No.	Date	Time	Phase	Time (hr. min. sec.)	Amplitude	Remarks
MINERAL						
1	July 1	I	eP1 13 F	23 00		THE MINERAL STATION MINERAL, CALIFORNIA
2	July 3	IIa	eP2 1pP2 13 F	13 01 31.5 33.8 51.0 13 07		
3	July 4	IIIa	1P2 1E 1P2 1P2 F	08 27 11.9 15.2 17.2 20.2 08 28		
CONSTANTS						
CONSTANTS OF THE STATION						
5	July					Latitude and longitude: 38 10.1
						$\phi = 40^{\circ} 21' N.$
						$\lambda = 121^{\circ} 35' W.$
6	July 4	I	eP2	12 10 17.1		Time -- All determinations are reduced to Greenwich Civil Time.
						Altitude -- 1495 meters (4906 feet) above mean sea level.
7	July 5	IIIa	1P2 F	10 10 26.2 10 11		Ten aftershocks recorded on vertical
8	July 5	Id	1P2	10 15 31.8		Aftershock?
9	July 5	Id	1E 1E F	10 19 34.1 34.1 10 19		Aftershock?
10	July 5	Id	1E 1E F	10 20 18.5 19.1 19.1		Aftershock
11	July 5	Id	1E 1E 1E 1E F	10 21 58.1 25 01.1 01.1 07.1 07.1 10 26		Aftershock
12	July 5	Id	1E 1E F	11 25 13.2 28.9 11 26		

Apparatus	Component
Wood-Anderson	Aftershock? E N
Benioff	Aftershock Z

MINERAL



From the ISC collection scanned by SISMOS

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
1	July 1	I	ePZ iZ F	23	26	34 45.9			
2	July 3	Iu	ePZ ipPZ iZ F	13	01	31.5 33.8 54.0			
3	July 4	IIId	iPZ iE iSEZ IME F	08	27	14.9 15.2 17.2 20.2			
4	July 4	Id	iPZ iSZ F	09	01	59.7 02.2			
5	July 4	IIId	iPZ iSZ F	11	38	10.1 13.7			
6	July 4	I	iPZ iZ iZ F	12	40	47.4 18.0 24.4			
7	July 5	IIId	iPNZ F	10	10	46.2		Ten aftershocks recorded on vertical	
8	July 5	Id	iPZ iSZ F	10	15	23.8 27.9		Aftershock?	
9	July 5	Id	iPZ iZ F	10	18	49.7 52.4		Aftershock?	
10	July 5	Id	iPZ iZ F	10	20	42.5 45.4		Aftershock	
11	July 5	Id	iPZ iNZ iZ iN iZ F	10	24	58.4 01.1 04.9 07.4 07.8		Aftershock	
12	July 5	Id	iPZ iNZ F	11	25	33.2 35.9			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
13	July 6	IId	iPNZ iE iSNE F	02 16	24.0 24.2 26.4			
14	July 6	Id	iSN F	20 35 20 36	22.3			
15	July 8	IId	iPNEZ iNE F	21 10 21 11	08.8 10.2			
16	July 8	Id	iSN F	21 18 21 19	15.5			
17	July 8	Id	iSN F	21 21 21 22	00.5			
18	July 8	Id	iSN F	21 31 21 32	34.6			USCGS: 10° - 104°W
19	July 9	Id	iPEZ iSNE iZ F	06 51 06 52	34.6 36.7 37.0			
20	July 9	Id	ePEZ iSEZ F	09 05 09 06	34 36.4			
21	July 10	Id	iPZ iSNEZ F	06 21 06 22	11.0 13.4			
22	July 10	Id	iPZ iSZ F	07 32 07 33	28.9 31.3			
23	July 11	Iv	iPZ iZ eE iZ iZ F	19 59 20 00 20 02	30.5 34.9 37.3 21.8 26.5			See list, p. 185
24	July 12	Id	iPEZ iSE iZ iE F	07 19 07 21 07 21	33.7 39.5 41.2 42.7			USCGS: 14.5°N - 92°W
25	July 13	IId	iPNEZ iSE iN F	11 02 11 05	53.5 57.7 58.1			USCGS: 14.5°N - 92°W

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
26	July 13	Id	iPZ iSZ F	14 11	53.7 58.7			
				14 13				
27	July 14	Id	ePZ iSZ F	06 10	06.3 08.3			
				06 11				
28	July 14	IIId	iPZ eE iSNEZ iZ F	09 59	24.5 25 26.6 27.6			
				10 00				
29	July 14	Id	iPZ iZ	11 21	20.4 23.8			
		Id	iSEZ F	11 22	27.9			
30	July 15	Ir	ePZ iPZ ipPZ eZ F	11 08	48.3 50.3 54.3 13.8		d c	USCGS: 10° - 104°W
				11 25				
31	July 15	Iu	ePZ F	11 53	42.8			
				11 56				
32	July 15	Iu	ePZ F	19 30	39.3			
				19 33				
33	July 15	IIId	iPZ iNE iSNE iZ F	22 20	01.3 01.6 10.8 11.4			
				22 21				
34	July 16	IIId	iPZ eNE iSNE iNEZ F	04 05	16.5 16.8 25.0 25.6			
				04 06				
35	July 16	Ir	ePZ iPZ iZ iZ iZ	07 19	31.4 33.4 36.6 52.4 08.9			USCGS: 14.5°N - 92°W
36	July 16	Ir	ePZ iPZ iZ F	07 26	43.3 47.1 49.9			USCGS: 14.5°N - 92°W
				08 04				
		IIId	iPZ F	17 19	35.4			Start of swarm of local- 3-P= 2.0 sec. About 82 shocks
				17 21				

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
37	July 16	Iu	ePZ F	11 11	50 15			Part of swarm continued from
38	July 16	Id	iPE iNZ iZ iSNE F	20 21	57.9 58.1 59.7 00.0 23			See list, p. 185
39	July 17	Ir	iPZ iN iSEZ iN	07 34	12.4 52.0 52.5 54.9			
40	July 17	Id	iPZ iSZ F	08 39	59.1 01.6 41			Part of swarm of July 19-20
41	July 17	I	ePZ iZ F	09 37	55.9 02.9 42			
42	July 17	Iv	iPZ iE iZ iN iE iN	15 19	44.6 48.2 50.5 51.8 59.0 09.0			15 more shocks from the same source in the following 15 hours
43	July 18	Iu	eZ F	07 01	53 17			
44	July 18	IIId	iPZ iE iZ iSNE F	13 52	09.7 10.4 11.7 12.3 53			
45	July 19	Id	eNE iPZ iSNEZ F	09 03	21.6 21.7 26.8 04			USCGS: 19.5°N - 130.5°W
46	July 19	Ir	ePZ iSZ iSZ F	11 17	30.6 58.1 01.8 19			
47	July 19	IIId	iPNEZ F	17 19	35.9 21			Start of a swarm of locals- S-P= 2.0 sec. About 82 shocks

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
48	July 20	Id	iPNEZ iSNEZ F	00 53	45.8 47.8			Part of swarm mentioned above
49	July 20	Iv	ePNEZ iZ iNZ iSE iSZ iE iN F	08 12	28.7 33.5 38.2 13 03.2 04.4 06.7 08.8			See list, p. 185
50	July 20	Iu	ePZ eN eE F	11 13	39.7 40 42			
51	July 20	Id	iPNE iZ iSNEZ F	01 03	40.7 40.9 43.0			One of swarm of July 19-20
52	July 21	Iu	ePZ F	15 59	59.8 16 03			
53	July 21	IIId	iPZ iZ	18 14	01.4 29 55.8			15 more shocks from the same source in the following 15 hours
54	July 22	IIId	iPNEZ iSNEZ F	14 50	06.6 08.6 14 51			
55	July 22	Id	iPZ iE iSNEZ F	19 12	41.9 42.4 44.2			
56	July 22	Id	iPZ iSNEZ F	19 15	05.6 08.0 19 16			
57	July 22	Iv	ePZ iPZ eNE iZ eSZ eLE F	20 08	10.6 14.2 15 06 16 22.6 10 15.6 12.3 20 32	d	USCGS: 49.5°N - 130.5°W	
	July 24	Iu	iZ eSZ eLE F	06 16	22.6 10 15.6 12.3 20 32		USCGS: 35°N - 24°W	
	July 24	I	ePZ F	06 24	24.4 06 26		Superimposed on trace of preceding shock	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
58	July 22	Iv	ePZ iPZ eNE iZ eZ F	20	55	26.2 28.6 30 36.6 59.3			USCGS: 49.5°N - 130.5°W
59	July 22	IIId	iPNEZ iSNE F	23	13	36.6 38.8			
60	July 23	Id	iPE iSNE F	03	10	00.6 02.8			
61	July 23	Id	iPNEZ iSNEZ F	04	36	04.6 06.8			
62	July 23	Id	iPEZ iSNEZ F	07	19	50.6 52.8			
63	July 23	Id	iSNE iMZ F	16	30	35.5 36.0			
64	July 23	IIId	iPZ iSNEZ F	16	31	27.5 29.5			
65	July 24	Id	iPZ iNE iSNEZ F	00	59	43.4 43.6 45.6			
66	July 24	IIId	iPNEZ iE iSN iZ F	01	36	37.0 41.0 41.7 42.0			
67	July 24	Id	iPZ iSEZ F	01	46	52.5 57.4			
68	July 24	Iu	ePZ iZ iZ iZ F	06	16	52.5 08.5 26.2 41.0			USCGS: 35°N - 24°E
69	July 24	I	ePZ F	06	34	24 36			Superimposed on trace of preceding shock

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
82	July 25	Id	iPZ iSZ F	15 19	30.6 33.0			See list, p. 185	
83	July 25	Id	iPNEZ iPNEZ F	16 46	07.4 09.5				
84	July 26	Iv	iPNEZ iE F	00 06	55.0 21.3				
85	July 26	Iv	iPZ iS?Z F	01 34	31.3 46.8				
86	July 26	Iu	iPZ ipPZ F	03 42	40.3 51.8				
87	July 26	Id	iPZ iSZ eSNE F	14 55	11.9 13.9 15				
88	July 26	Id	iPZ iSN iSE F	15 35	49.8 50.6 51.7				
89	July 26	Id	iPEZ iSNEZ F	16 46	58.4 00.7				
90	July 26	Id	iPZ iSNZ F	23 59	03.9 06.2				
91	July 26	Iu	ePZ F	17 35	31				
92	July 26	Iu	ePZ F	19 12	46				
93	July 26	Iv	iPZ iZ eN iSZ eSE iN F	17 51	25.9 36.7 45.1 46.9 47.2 50.1			USCGS: 7°N - 82°W	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948					s.		
94	July 28	Iv	iP*Z iZ iZ F	01 32 20.8 33 18 01 35	14.6 20.8 18 18			See list, p. 185
95	July 28	I	ePZ iPZ F	08 22 41.7 08 26	40.7 41.7 26			
96	July 28	Id	iPZ iSNZ iSE F	22 35 12.5 13.0 22 36	10.8 12.5 13.0 36			
97	July 29	I	ePZ eZ eZ F	00 43 26 39 47 27.1 00 48	26 39 27.1 48			S?
98	July 29	Id	iPZ iSNEZ F	01 58 01.1 03.5 01 59	01.1 03.5 59			
99	July 29	Id	iPZ iSNEZ F	02 01 05.1 07.9 02 02	05.1 07.9 02			Superimposed on a distant shock
100	July 30	Id	iPZ iSNZ F	04 33 41.9 45.0 04 34	41.9 45.0 34			
101	July 30	Id	iPZ eSN F	04 34 07.7 10.3 04 35	07.7 10.3 35			See list, p. 185
102	July 30	Id	iPZ iSN F	05 16 47.2 50.4 05 17	47.2 50.4 17			
103	July 30	Id	iPEZ iSE F	05 42 04.9 07.0 05 43	04.9 07.0 43			
104	July 31	Iu	ePZ F	19 12 59 19 15	59 15			USCGS: 7°N - 82°W
105	July 31	Id	iPZ iSNZ F	20 07 15.1 18 20 18	15.1 18 18			
106	July 31	Id	iPZ iSNZ F	20 16 14.9 17.8 20 17	14.9 17.8 17			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
107	July 31	Id	iPZ iSNEZ F	21 40	02.4 03				
108	Aug. 1	Iv	iPZ eE iZ F	21 22	03.2 49 50.8			S?	
109	Aug. 1	Id	iPZ iSEZ F	17 15	10.3 13.3				
110	Aug. 2	Id	iPZ iSEZ F	09 18	16.4 19				
111	Aug. 3	I	ePZ F	09 38	21				
112	Aug. 3	I	iPZ F	11 23	37.0				
113	Aug. 3	Id	iPZ iSZ F	09 40	39.1 40.9			Superimposed on a distant shock	
114	Aug. 3	Id	iPZ iSNEZ F	15 58	45.3 48.3			See list, p. 185	
115	Aug. 3	Ir	ePZ iPZ eE eN eE F	16 40	57.7 01.1 30 05 08			See list, p.185	
116	Aug. 4	Iv	ePZ iZ eNE iZ eE iE F	07 40	11.0 55.8 59 00.1 03 06.4			Between 1200 (Aug. 6) and 0500 (Aug. 7) about 60 shocks recorded of S-P= 1.5 sec.	
117	Aug. 4	Iv	ePZ iZ F	10 23	10 20.6			From 0900 (Aug. 7) to 0500 (Aug. 8) - about 30 shocks recorded of S-P= 7 sec.	
118	Aug. 4	Id	iPZ iSZ iSE F	17 22	50.9 53.1 53.6				

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
119	Aug. 6	Iv	iPZ iZ iEZ iN iE F	04 23 54.3 24 04	22 06.6 56 00 27	59		} S? See list, p. 185	
120	Aug. 6	I	ePZ F	08 08	05 06	11			
121	Aug. 6	I	ePZ F	10 10	05 08	37		Between 1100 (Aug. 8) and 1200 (Aug. 9) about 35 shocks recorded of S-P= 1.6 sec.	
122	Aug. 6	Iv	iPZ iSZ F	16 16	43 44	18 37			
123	Aug. 6	Iv	iPZ iSZ F	17 17	17 18	04 31		See list, p. 185	
124	Aug. 6	Iv	iPZ iPZ F	18 18	17 18	21 38			
125	Aug. 6	Iv	iPZ iSZ F	18 18	22 23	11 27			
126	Aug. 7	Iv	iP*Z eE iZ F	00 12 00	11 31.3 14	47 34.4		} See list, p. 185 1.7 and 1.8 sec. S-P in following minutes	
127	Aug. 7	IIId	iPNEZ iSNE F	05 05	49 51	21.8 23.3		Between 1200 (Aug. 6) and 0500 (Aug. 7) about 60 shocks recorded of S-P= 1.5 sec.	
128	Aug. 7	IIId	iPNEZ iSNE F	05 05	50 52	34.1 35.6			
129	Aug. 7	IIId	iPNEZ iSNE F	06 06	09 10	12.1 13.6			
130	Aug. 7	Id	iPZ iSNEZ F	17 17	25 26	14.8 16.7		From 0900 (Aug. 7) to 0500 (Aug. 8) - about 30 shocks recorded of S-P= 2 sec.	
131	Aug. 8	Id	iPZ iSNEZ F	01 01	26 27	44.1 46.1			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period s.	Trace motion	Remarks
				h.	m. s.			
	1948							
132	Aug. 8	Iu	ePZ F	16 26 16 27	06			
133	Aug. 8	Iv	iPZ iZ F	17 51 52 16 17 53	17		See list, p. 185	
134	Aug. 9	I	ePZ F	06 28 06 29	01			
135	Aug. 8	Id	iPZ iSNEZ F	21 26 21 27	09.8 11.6		Between 1100 (Aug. 8) and 0500 (Aug. 9) about 35 shocks recorded of S-P= 1.8 sec.	
136	Aug. 8	Id	iP iSNE F	21 27 21 28	25.7 27.5		Total of 24 shocks recorded of S-P= 1.5 sec. from 0700 (Aug. 10) to 2300 (Aug. 10)	
137	Aug. 9	Iv	iPZ iN iE iSE F	11 45 11 46 11 47 11 48	22.0 19.6 50.3 55.2		See list, p. 185	
138	Aug. 9	Iu	ePZ iPZ F	12 36 12 37 12 38	54.3 55.1			
139	Aug. 10	Id	iPZ iSNEZ F	06 12 06 13	04.1 05.8		11 more shocks of 1.7 and 1.8 sec. S-P in following 4 minutes	
140	Aug. 10	Id	iPZ iSNEZ F	06 14 06 13	14.1 15.9			
141	Aug. 10	I	ePZ iZ eE iZ F	07 03 07 04 07 04 07 06	30.0 34.0 35 12 15.0		See list, p. 185	
142	Aug. 10	Id	iPZ iSNEZ F	05 52 05 53	40.0 42.1		P blotted out by previous shock	
143	Aug. 10	Id	iPNEZ iSNE F	07 41 07 42	10.5 13.2		P blotted out by previous shock 5 more shocks within next minute	
144	Aug. 10	IIId	iPZ iSNEZ F	07 49 07 52	36.9 40.1			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
145	Aug. 10	Id	iPZ iSNE F	11 33	02.6 04.5			
146	Aug. 10	Id	iPZ iSNEZ F	14 06	44.2 46.2			
147	Aug. 10	Id	iPZ iSNEZ F	14 29	08.3 10.2			
148	Aug. 10	IIId	ePNEZ iSNE F	23 20	47.1 53.4			
149	Aug. 10	Id	iPN iSN F	23 32	05.1 06.6			Total of 24 shocks recorded of S-P= 1.5 sec. from 0700 (Aug. 10) to 2300 (Aug. 10)
150	Aug. 11	IIr	ePZ iPZ eE eN eZ eZ F	10 42	38.8 40.2 52 54 53 04 57.7			USCGS: 17.5°N - 95.5°W L?
151	Aug. 11	Id	iPZ iSNE F	20 02	43.7 45.9			
152	Aug. 11	Id	iPZ iSNE F	20 34	18.6 20.4			P blotted out by previous shock
153	Aug. 11	Id	iPZ iSNE F	21 16	44.4 46.4			
154	Aug. 11	Id	iPZ iSNE F	23 22	09.3 11.0			
155	Aug. 11	IIId	iSNE F	23 22	16			P blotted out by previous shock
156	Aug. 11	Id	iSNE F	23 23	14.4			P blotted out by previous shock
157	Aug. 11	Id	iPZ iSNE F	23 28	23.2 24.9			5 more shocks within next minute

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
158	Aug. 12	Id	iPZ iSNE F	00 10 00 11	09.7 12.9			
159	Aug. 13	Iv	iPZ eNE eE iSNE F	06 37 06 38 06 39	04.1 07 37 38.4			
160	Aug. 12	Id	iPNZ iSNE F	20 15 20 16	57.2 59.0			
161	Aug. 12	Id	iPZ iSNEZ F	21 46 21 47	08.2 09.0			
162	Aug. 13	Id	ePZ iSNEZ F	07 12 07 13	28.1 29.9			
163	Aug. 13	Id	iPZ iSNEZ F	07 20 07 21	48.3 50.1			
164	Aug. 13	Id	iPZ iSNE F	07 34 07 35	54.0 55.3			
165	Aug. 13	Id	iSNE F	07 34 07 36	56.9			P blotted out by previous shock
166	Aug. 13	Id	iPZ iSNE F	07 36 07 37	38.3 40.6			
167	Aug. 13	Id	iPZ iSNE F	08 22 08 23	26.4 28.4			
168	Aug. 13	Id	iPZ iSNE F	08 24 08 25	17.3 19.3			
169	Aug. 13	Id	iPZ iSNE F	08 33 08 34	04.1 06.1			
170	Aug. 13	I	ePZ F	09 42 09 46	26.2			
171	Aug. 13	I	ePZ eZ F	11 25 11 30	26 43			



MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
172	Aug. 13	Id	iPNZ iSNE F	15 36	41.0 43.9				
173	Aug. 13	Id	iPNZ iSNE F	21 17	42.2 44.1				
174	Aug. 13	Id	iPNZ iSNE F	21 56	36.9 39.3			See list, p. 185	
175	Aug. 14	Id	iPNZ iSNE F	11 23	22.9 25.6				
176	Aug. 14	I	ePZ F	10 54	53				
177	Aug. 14	I	ePZ F	12 37	28.4				
178	Aug. 14	Id	ePNE iSNE F	19 42	49 50.4				
179	Aug. 14	Id	ePNE iSNE F	21 46	04 06.9				
180	Aug. 16	Id	iPZ iSN F	04 05	00.6 04.0				
181	Aug. 16	I	ePZ F	05 45	52.1				
182	Aug. 17	Iv	iPZ iZ eSN F	02 04	17.0 46 47				
183	Aug. 17	I	ePZ eZ F	05 31	37 41				
184	Aug. 17	Id	iPNZ iSN F	19 04	38.5 40.9			USGS: 21°S - 63°W	
185	Aug. 18	Id	iPNZ iSN F	02 33	11.5 14.6				



MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
186	Aug. 18	I	ePZ F	09	21	08.7			
187	Aug. 18	Id	iPZ iSNZ F	16	30	26.7 30.1			
188	Aug. 18	IIv	ePN iPN iN iN iSN F	19	12	35.4 35.9 41 13 00 04		See list, p. 185	
189	Aug. 19	Iv	ePN iN iN iN iSN F	10	55	12.1 14 17 23 39		Aftershock of last	
190	Aug. 21	Id	iPZ iSNZ F	18	09	09.4 10.7			
191	Aug. 22	I	iPZ iZ F	00	43	37 59		S?	
192	Aug. 22	Id	iPZ iSNZ F	17	54	51.9 53.7		See list, p. 185	
193	Aug. 23	I	ePZ F	12	00	55		USCGS: 57°N - 161°E	
194	Aug. 24	Id	iPNZ iSN F	04	49	27.7 29.7			
195	Aug. 25	Iv	iPZ eSN F	00	15	30.1 16 04			
196	Aug. 25	I	iPZ F	02	25	04.9			
197	Aug. 25	Iu	ePZ iPZ iZ eZ F	06	21	50.3 52.0 22 10 32.6		USCGS: 24°S - 63°W	
198	Aug. 25	Iu	ePZ F	20	01	38			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
212	Aug. 28	Iu	ePZ iPZ eZ F	12	36	23.2 23.9 32			
				12	39				
213	Aug. 28	Id	iPZ iSNZ F	21	57	57.5 59.3			
				21	58				
214	Aug. 29	Iu	ePZ iPZ F	17	43	15 16.2		USCGS: 15.5°S - 171°W	
				17	47				
215	Aug. 29	I	ePZ eZ F	23	42	59 43 12			
				23	44				
216	Aug. 30	Id	iPZ iSZ F	01	15	59.6 16 02			
				01	17				
217	Aug. 30	Id	iPZ iSZ F	01	57	12 15		4 more shocks in next minute	
				01	58				
218	Aug. 30	I	ePZ F	07	14	07			
				07	16				
219	Aug. 30	Id	iPZ iSN F	18	13	11.0 13.0			
				18	14				
220	Aug. 30	I	iPZ eZ F	19	35	24.2 37 39		2 more quakes in same minute	
				19	38				
221	Aug. 31	Id	iPZ eSN F	08	51	02.7 08.7			
				08	52				
222	Sept. 1	Id	iPZ iSNZ F	05	58	25 27			
				05	59				
223	Sept. 1	I	ePZ eZ F	19	21	15 42			
				19	23				
224	Sept. 1	Iv	ePNZ iZ eZ F	19	57	35 43.5			
				20	04	19			
					05	10			
				20	15				

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
225	Sept. 2	Id	iPZ iSN F	07	05	32.9 34.7			
226	Sept. 2	I	ePZ eZ F	09	51	12 54			
227	Sept. 3	I	iPZ iZ F	18	03	42.1 03			
228	Sept. 3	I	iPZ iZ F	21	31	01.0 18			
229	Sept. 4	Iu	ePZ eZ eZ eZ eZ F	15	14	10 36 49 43 55 36		See list, p. 185	
230	Sept. 4	Id	iPNZ iSN F	20	51	28.2 39.3			
231	Sept. 4	Id	iPZ iSNZ F	21	09	24.7 36.7			
232	Sept. 5	Id	iSZ F	06	45	42.3 46		2 more quakes in same minute	
233	Sept. 5	Iv	iPZ iZ iSNZ iZ F	09	48	02.3 11.7 30 34			
234	Sept. 5	Iu	ePZ eZ F	10	11	32 33.3			
235	Sept. 6	Iu	ePZ F	08	22	22 25			
236	Sept. 6	Iu	ePZ F	08	53	47 55			
237	Sept. 6	I	ePZ F	11	36	43 37			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
238	Sept. 6	Iu	iPZ F	16	42	05.2 16 46		d	
239	Sept. 6	Iu	iPZ F	18	09	53.0 18 11		c	
240	Sept. 7	Id	iPZ iN iSN F	04	40	40.7 40.9 44.1 04 41			
241	Sept. 7	Iu	iPZ F	04	43	23.6 04 45			
242	Sept. 7	Iu	ePZ iZ iZ F	08	28	58.5 32 57.4 33 58.9 08 37			
243	Sept. 8	Id	iPZ iN iN iN iN F	04	28	47.0 47.6 50.7 53.7 29 15.9 04 32		c	See list, p. 185
244	Sept. 8	Id	iPZ eN iSNZ F	06	01	44.6 45 48.4 06 02			
245	Sept. 8	Iu	ePZ F	06	10	16 06 13			
246	Sept. 8	Iu	iPZ eN iN eZ eSN eN eLNZ F	15	21	11.3 14 33.8 30 49 31 07 36 10 44 17 46		d	USCGS: 21°S - 174°W USCGS: 41°N - 140°E
247	Sept. 9	I	iPZ iS?Z F	03	29	25.9 30 15.7 03 31			
248	Sept. 9	Iu	ePZ F	05	40	36.5 05 44			
249	Sept. 9	Id	iPZ iN iSN iZ F	06	15	39.7 40.0 41.9 43.2 06 16			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
250	Sept. 9	Iu	ePZ F	06	31	31 33			
251	Sept. 9	Iu	iPZ iZ F	06	36	11.7 23.7 41			
252	Sept. 9	I	ePZ eZ F	07	00	51 55 03			
253	Sept. 9	I	iPZ iZ F	07	17	29.5 55.5 20			
254	Sept. 9	Iu	eZ F	11	41	20 42			
255	Sept. 9	Iu	iPZ iPPZ F	12	36	19.2 37 39.7 39	d		
256	Sept. 9	Iu	ePZ iZ F	12	40	10 17.7 44			
257	Sept. 10	Iv	ePZ iZ iZ eN F	01	50	01.6 08.5 17.9 25.5 52		S?	
258	Sept. 10	Iu	iPZ iZ F	12	13	15.1 14 17.6 16	c	USCGS: 13.5°N - 93°W	
259	Sept. 10	Iu	iPZ eN iZ iZ eSNZ F	13	59	09.6 11 12.6 22.6 14 08 10.5 15 10	c	USCGS: 44°N - 140 $\frac{1}{2}$ °E	
260	Sept. 10	Iu	ePZ F	14	13	37 14 16			
261	Sept. 10	Iu	ePZ F	14	27	59 14 36			
262	Sept. 10	Iu	iPZ F	15	45	14.6 15 47	d		
263	Sept. 11	Iu	iPZ eZ F	09	06	20.0 09 46 14	c		

MINERAL

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
264	1948 Sept. 11	Iu	ePZ F	13 44 48.5 13 46		c	
265	Sept. 11	Iu	ePZ F	16 13 34.5 16 16			
266	Sept. 11	Iu	iPZ F	22 54 20.5 22 56		d	
267	Sept. 11	Iu	iPZ F	23 42 04.0 23 46		d	
268	Sept. 12	Iu	ePZ	03 31 46.1		c	
268	Sept. 12	Iu	eN	03 31 47.5			
268	Sept. 12	Iu	iPZ	03 31 47.8		r	
268	Sept. 12	Iu	iZ	03 32 17.1			
268	Sept. 12	Iu	F	03 37			
269	Sept. 12	Iu	iPZ	06 35 34.6		d	
269	Sept. 12	Iu	iZ	06 35 35.4		c	
269	Sept. 12	Iu	eN	06 35 35.6			
269	Sept. 12	Iu	F	06 40			
270	Sept. 12	Id	iPZ	15 20 58.9			
270	Sept. 12	Id	eN	15 20 59			
270	Sept. 12	Id	iSNZ	15 21 01.8			
270	Sept. 12	Id	F	15 22			
271	Sept. 13	IIId	iPZ	06 20 49.6			
271	Sept. 13	IIId	iN	06 20 50.2			
271	Sept. 13	IIId	iNZ	06 20 53.1			
271	Sept. 13	IIId	F	06 21			
272	Sept. 13	Iu	ePZ	21 14 40			USCGS: 13.5°N - 93°W
272	Sept. 13	Iu	eLZ	21 28.8			
272	Sept. 13	Iu	F	21 40			
273	Sept. 14	Iu	iPZ	08 24 52.2		c	
273	Sept. 14	Iu	iZ	08 25 14.2			
273	Sept. 14	Iu	F	08 31			
274	Sept. 16	Iu	iPZ	02 44 18.5			
274	Sept. 16	Iu	F	02 47			
275	Sept. 16	Id	iPZ	04 51 08.0			
275	Sept. 16	Id	iN	04 51 08.5			
275	Sept. 16	Id	iSZ	04 51 10.1			
275	Sept. 16	Id	iSN	04 51 10.6			
275	Sept. 16	Id	F	04 52			
276	Sept. 16	Id	iPZ	04 56 04.2			
276	Sept. 16	Id	iN	04 56 05.1			
276	Sept. 16	Id	iZ	04 56 07.5			
276	Sept. 16	Id	iSN	04 56 07.9			
276	Sept. 16	Id	F	04 57			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
277	Sept. 16	Iu	iPZ F	08 21	47.0 08 24		c	
278	Sept. 16	Id	iPZ iN iSN iZ F	22 29	52.4 52.8 55.2 55.9 22 30.5			
279	Sept. 17	Id	iPZ iSZ iSN F	09 38	42.2 46.9 47.9 09 39			
280	Sept. 17	Id	iPZ iSZ F	11 14	57.6 15 00.9 11 16			
281	Sept. 18	Iu	ePZ F	08 44	33 08 47			USCGS: 08°N - 84°W
282	Sept. 18	Iu	ePZ F	16 07	46.7 16 09			
283	Sept. 18	Iu	iPZ F	18 06	18.7 18 07		c	
284	Sept. 19	Iu	iPZ F	01 42	11.1 01 44		c	
285	Sept. 19	Iu	ePZ F	04 57	23 04 59			
286	Sept. 19	Ir	iPZ iZ F	06 21	41.6 49.6 06 29		c	USCGS: 52°N - 178°W
287	Sept. 19	Id	iPZ iSNZ F	10 53	35.8 39.9 10 54			
288	Sept. 19	Id	iPN iPZ iSN iZ F	19 56	06.6 07.3 10.6 12.1 19 57			
289	Sept. 19	Iu	iPZ F	20 28	13.9 20 31		c	
290	Sept. 20	IIId	iPNZ iSNZ F	04 36	34.6 37.4 04 37			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
291	Sept. 20	Id	iPZ iSNZ F	17	52	58.5 01.5 54			
292	Sept. 21	Id	iPZ iSNZ F	05	32	10.1 12.7 33			
293	Sept. 21	Id	iPZ iSNZ F	05	36	12.6 15.1 37			
294	Sept. 21	Id	iPZ iSNZ F	06	32	28.1 30.5 33			
295	Sept. 21	Id	iPZ iSNZ F	06	33	59.0 01.7 34.5			
296	Sept. 21	Id	iPZ iSNZ F	06	45	32.6 35.1 46			
297	Sept. 21	Iu	ePZ F	08	11	08.0 12			
298	Sept. 21	Iu	iPZ F	15	31	10.4 33	d		
299	Sept. 21	Iu	ePZ iP'Z iPPZ F	17	50	31.0 39.8 28.5 58			
300	Sept. 22	Iu	ePN F	07	29	58 31			
301	Sept. 22	Iu	iPZ F	21	37	32.4 40	d		
302	Sept. 23	Iu	iPZ F	01	03	40.2 06	d		
303	Sept. 23	Iu	iPZ F	12	44	44.4 46	c	Ingo County	
304	Sept. 23	Iu	ePZ F	15	21	47 23			
305	Sept. 23	Id	iPZ iSNZ F	15	29	09.4 11.6 30			

MINERAL

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
306	Sept. 23	Id	iPZ iSNZ F	23 41 58.5 42 00.8 23 42.5			
307	Sept. 24	Id	iPZ iSNZ F	03 20 52.4 54.6 03 21			
308	Sept. 24	Id	iPZ eN iSNZ F	03 21 28.8 29 30.7 03 22			
309	Sept. 24	Id	iPZ eN eN iSZ F	16 49 27.9 28 35.8 37.1 16 50			
310	Sept. 25	Iv	iPZ iZ iN iSN iSZ iZ F	10 27 50.0 54.1 54.7 28 07.4 07.9 13.5 10 30			
311	Sept. 25	Iv	iPZ iZ eN iS?Z iZ F	11 27 35.6 40.2 40.7 56.8 28 01.4 11 29			
312	Sept. 25	Id	iPZ iZ iSNZ F	13 05 57.8 59.4 06 00.4 13 06.5			Component
313	Sept. 25	Id	iPZ iSNZ F	16 48 56.4 58.7 16 49			
314	Sept. 29	Iv	ePN eSN F	04 08 13 09 26 04 11			Inyo County
315	Sept. 30	Iu	iPZ ipPZ F	14 44 50.9 45 12.5 14 47			
316	Sept. 30	Iu	ePZ F	19 03 13 19 04			

No.	Date	Char-acter	Time	Period	Remarks
ARCATA					
1	July 22	II	05 20 16		USCIS: 35°N - 124°W
THE ARCATA STATION, HUMBOLDT STATE COLLEGE ARCATA, CALIFORNIA					
2	July 22	II	20 58 16		USCIS: 35°N - 124°W
3	July 24	III	05 20 16		USCIS: 35°N - 124°W
4	July 24	IV	13 23 36.6		See list, p. 185
CONSTANTS					
CONSTANTS OF THE STATION					
Latitude and longitude:					
5	July 24	III			$\phi = 40^{\circ} 52' 16''$ N. $\lambda = 124^{\circ} 04' 15''$ W.
Time -- All determinations are reduced to Greenwich Civil Time.					
Altitude -- 60 meters above mean sea level.					
7	Aug. 5	III	17 20 17.3		
8	Aug. 8	III	17 20 17.5		
9	Aug. 9	III	17 20 17.5		
10	Aug. 29	III	17 20 17.5		
11	Sept. 1	IV	20 58 00		
12	Sept. 3	III	18 03 22		
13	Sept. 8	III	04 28 25.7		See list, p. 185

Apparatus	Component
Sprengnether	N E Z

ARCATA

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
1	July 22	Ir	eN eN eN F	20 07 54.5 11 27 13.9 20 36			USCGS: 49.5°N - 130.5°W
2	July 22	Ir	eN F	20 58 16 21 14			USCGS: 49.5°N - 130.5°W
3	July 24	Iu	eZ eN F	06 20 56 21 00 06 25			USCGS: 35°N - 24°E
4	July 24	Iv	iPNZ iN iZ iN iN iZ F	13 23 36.6 41.6 43.7 46.3 56.8 57.8 13 26			See list, p. 185
5	July 24	Iu	iPZ F	14 34 01.2 14 35			
6	July 26	Iv	eZ eN F	17 53 10 43 17 55			
7	Aug. 6	IIId	iPZ iSZ F	17 16 33.3 36.9 17 17.5			
8	Aug. 8	Id	iPNZ iSZ F	17 51 23.4 29.9 17 53			See list, p. 185
9	Aug. 9	IIId	iPNZ iSNZ F	11 44 58.1 45 04.8 11 47			See list, p. 185
10	Aug. 29	Iu	ePZ F	17 50 10.0 17 51			USCGS: 15.5°S - 171°E
11	Sept. 1	Iv	ePZ F	20 58 00 21 01			
12	Sept. 3	Id	ePZ iSZ F	18 03 22 28.0 18 05			
13	Sept. 8	IIId	iPZ iSZ F	04 28 25.7 34.2 04 31			See list, p. 185

ARCATA

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
14	Sept. 8	IIu	iPZ	15 21 10.4			USCGS: 21°S - 174°W
			iZ	21.4			
			eSZ	31 13			
			eLZ	46.4			
			F	18 11			
15	Sept. 10	Iu	iPZ	13 58 43.6			USCGS: 44°N - 146.5°E
			iZ	57.6			
			eSZ	14 07 13			
			F	14 41			
16	Sept. 19	Iu	ePZ	06 21 27			USCGS: 52°N - 178°W
			F	06 25			

Bulletin of the Seismographic Stations

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EARTHQUAKES IN NORTHERN CALIFORNIA
AND NEVADA
AND
THE REGISTRATION OF EARTHQUAKES
AT
BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO
MINERAL—ARCATA—RENO

From October 1, 1948, to December 31, 1948

BY
CARL F. ROMNEY
AND
JOHN E. MEEKER

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1949

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EARTHQUAKE INTENSITY SCALE

Intensities are given by Roman numerals in the list of California and Nevada earthquakes on the following page, when sufficient information on the effects of the shock is available. Criteria of the Modified Mercalli Scale which are used to rate the intensity are:

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.

EARTHQUAKE MAGNITUDE SCALE

Richter Magnitudes shown in the list of epicenters on the next page are found from the Wood Anderson amplitudes, using the nomogram given by Nordquist, Bull. Seism. Soc. Am., 32:164.

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 AND NEVADA

1948 - Pacific Standard Time

<u>No.</u>	<u>Date</u>	<u>Time of Origin</u>	<u>Richter Magnitude</u>	<u>North Latitude</u>	<u>West Longitude</u>	<u>Weight</u>
1	Oct. 3	01-09-38	1.9	37° 50'	122° 35'	b
		Depth about 12 km.				
2	Oct. 7	17-26-23	3.0	37° 26'	121° 44'	a
		Depth about 17 km.				
3	Oct. 10	03-21-08	2.9	36° 9'	121° 8'	d
		V at Moss Landing, IV at Watsonville.				
4	Oct. 14	01-51-23	2.5	37° 22'	121° 32'	c
5	15	16-06-53	3.9	40° 16'	124° 16'	b
6	16	21-21-47	2.1	37° 43'	122° 32'	b
		Depth about 15 km. IV at Daly City and San Francisco.				
7	Oct. 19	23-38-18	2.6	36° 49'	121° 38'	c
8	20	06-41-50	2.4	37° 2'	122° 2'	d
9	21	15-42-31	1.8	37° 43'	122° 32'	c
		Depth about 15 km. Six small aftershocks recorded at Berkeley.				
10	Oct. 23	15-21-34	3.3	37° 25'	121° 43'	a
11	28	11-01-15	2.5	37° 2'	122° 2'	d
12	Nov. 3	10-34-44	2.0	37° 47'	122° 34'	b
		Blast?				
13	Nov. 8	10-03-45	2.5	37° 2'	122° 2'	d
14	8	15-04-45	2.0	37° 4'	121° 7'	d
15	12	15 10-25	4.5	40° 24'	124° 19'	b
		Felt at Petrolia.				
16	Nov. 13	20-43-50	2.4	37° 12'	121° 42'	c
17	14	23-32-09	2.2	37° 43'	122° 15'	c
18	15	15-25-01	2.4	37° 2'	122° 2'	d
19	22	10-04-44	2.4	37° 2'	122° 2'	d
20	25	13-34-52	2.8	37° 34'	121° 57'	b
21	Dec. 1	14-43-25	1.8	37° 2'	122° 2'	d
22	5	09-29-22	4.1	40° 4'	123° 6'	d

One of five shocks recorded at Arcata Dec. 5.

<u>No.</u>	<u>Date</u>	<u>Time of Origin</u>	<u>Richter Magnitude</u>	<u>North Latitude</u>	<u>West Longitude</u>	<u>Weight</u>
23	Dec. 7	10-02-59	2.5	37°2	122°2	d
24	12	04-08-52	2.4	37°1	121°5	d
25	17	18-19-40	3.0	39°9	119°9	d
26	29	04-53-28	6.0	39° 33'	120° 05'	b

Felt for about 100 miles in all directions from Reno, Nevada. Maximum intensity of VII (fall of chimneys, some damage to buildings) at Floriston, California, and at Reno and Verdi, Nevada. Five fore-shocks were felt at Reno on December 27, and more than 750 after-shocks, many large enough to be felt at Reno, were recorded on the new Sprengnether seismographs at the University of Nevada before noon of January 1.

27	Dec. 31	06-35-46	4.6	35° 40'	121° 24'	b
----	---------	----------	-----	---------	----------	---

Felt along the coast from Lompoc to Moss Landing. Maximum intensity (VI) was reported at San Simeon, where canned goods were thrown from shelves.

28	Dec. 31	17-17-54	4.5	36° 54'	121° 37'	b
----	---------	----------	-----	---------	----------	---

Felt from San Francisco south to King City. Maximum intensity of VII was assigned by the U.S.C.G.S. to a small region near the Pajaro River.

SYMBOLS AND NUMBERS EMPLOYED

1. Character of the Shocks —

- I. Inappreciable II. Slightly Strong III. Strong

THE REGISTRATION OF EARTHQUAKES

- a (strong shocks) Near shock (origin from 100 to 1,000 kilometers distance).
- b (strong shocks) Distant shock (origin from 1,000 to 5,000 kilometers distance).
- c (strong shocks) Very distant shock or explosion (origin more than 5,000 kilometers distance).

2. Nature of the Motion —

- 1 (sudden) Sudden beginning of the motion.
- 2 (gradual) Gradual beginning of the motion.

3. Form of Motion —

- a Compression.
- b Distension.

THE UNIVERSITY STATION, UNIVERSITY OF CALIFORNIA
 BERKELEY, CALIFORNIA

SYMBOLS AND NOTATIONS EMPLOYED

1. Character of the Seismogram --

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. Nature of the Motion --

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.

3. Trace Motion --

c	Compression.
d	Dilatation.

The letter O before a reading designates that the seismogram was from the following instruments: O, Woodworth's A, Woodworth's B, Woodworth's C, Woodworth's D, Woodworth's E, Woodworth's F, Woodworth's G, Woodworth's H, Woodworth's I, Woodworth's J, Woodworth's K, Woodworth's L, Woodworth's M, Woodworth's N, Woodworth's O, Woodworth's P, Woodworth's Q, Woodworth's R, Woodworth's S, Woodworth's T, Woodworth's U, Woodworth's V, Woodworth's W, Woodworth's X, Woodworth's Y, Woodworth's Z.

BERKELEY

THE BERKELEY STATION, UNIVERSITY OF CALIFORNIA
 BERKELEY, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 37^{\circ} 52' 13'' \text{ N.}$$

$$\lambda = 122^{\circ} 15' 16'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Bosch-Omori 100 kg.	E
Wiechert 80 kg.	N
Wood-Anderson	Z
Galitzin	E
	N
	Z
Benioff	Z
Slichter	N

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; S, Slichter.

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948					s.		
1	Oct. 1	Iu	iPZ eN ipPZ iPPZ F	H S H H 11 44	11 39 02.7 03 23.4 12 15.7		d d	U.S.C.G.S.: 17°N 99°W h = 100 km.
2	Oct. 2	Iu	iPZ iZ F	H H 14 36	14 34 32.8 52.6		d	
3	Oct. 3	Id	iPZ iZ iSNEZ F	H H HSA 09 10.5	09 09 43.5 46.4 47.6			See list, p. 283
4	Oct. 5	I	iPZ iZ iZ eNE iN iZ F	H H G G G G 12 25	12 10 53.0 55.0 12 24.5 42 14 19.0 24.0			
5	Oct. 5	IIu	iPZ iN iP'Z iZ eN iN eE iPPE iZ iN iSMSN iScSE iSE iPSZ ePSN eE eN F	G G H G S G A G G G SG G G G S A S 00 42	20 26 19.5 25.5 30 16.0 28.5 37 43.5 54 31 04.5 32 39.0 36 14.0 57.0 38 17.0 39 53.5 40 34.0 51 21 04.6 05.1	40	d	U.S.C.G.S.: 38°N, 58°E
6	Oct. 7	Iu	iPZ iZ F	H H 18 56	18 54 05.1 29.2		d	
7	Oct. 7	Iv	iPZ iN iZ iSZ iSN F	H S H H S 21 26	21 24 14.9 18.1 25.8 33.9 36.0			San Benito County?

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
8	Oct. 8	Id	iPZ iNE iSN iEZ iN F	H SA S AH S F	01 26 35.0 36.0 43.5 44.0 44.7 01 29		c	See list, p. 283
9	Oct. 8	Iu	iPZ F	H F	06 49 37.7 06 51		c	
10	Oct. 8	Iu	iPZ eN eE eZ F	H G G G F	09 15 58.6 24 49 25.0 26.9 09 37		d	
11	Oct. 9	Iu	ePZ F	H F	02 34 39 02 37			
12	Oct. 10	Iv	iPNZ eE iZ iSNZ iMN F	SH A H SH S F	11 21 27.3 28 33.6 40.0 40.6 11 23			See list, p. 283
13	Oct. 11	Iv	iZ iZ F	H H F	08 04 40.7 05 08.7 08 07			Lassen Park
14	Oct. 14	Id	iPZ iN iNEZ F	H S SAH F	09 51 38.8 39.1 51.1 09 52			See list, p. 283
15	Oct. 14	Iu	iPZ F	H F	11 57 28.0 11 59		c	
16	Oct. 14	Iu	iPZ iN iZ eZ F	H S H H F	21 53 47.5 48.3 51.2 55 07.3 21 58		c	
17	Oct. 15	Iu	iPN F	S F	18 42 08.5 18 43			
18	Oct. 15	Iu	eN eZ eNE F	G G G F	23 16.3 16.5 22.2 00 59			
19	Oct. 16	Iu	eNEZ F	G F	02 36.1 03 07			

BERKELEY

No.	Date	Char-acter	Phase	Time		Period	Trace motion	Remarks
				(G.C.T.)				
				h.	m.	s.	s.	
	1948							
20	Oct. 17	Id	iPNEZ iNZ iSNEZ F	SAH 05 21 SH SAH 05 23	53.4 55.8 57.7			See list, p. 283
21	Oct. 18	Id	iPNZ iSNEZ F	SH 07 10 SAH 07 12	48.7 52.7			Aftershock of Oct. 17 05 21.
22	Oct. 20	Iv	iPZ iSNZ F	H 07 38 SH 07 39.5	39.9 56.7			See list, p. 283
23	Oct. 21	Iu	eN eE eZ F	G 02 G G 03 08	36.4 39.7 41.4			
24	Oct. 21	Iu	iPZ iZ eN eE F	H 04 57 H G 05 G 11.4	44.0 52.6 06.9			U.S.C.G.S.: 12.5°N 88°W Lost in next shock.
25	Oct. 21	Iu	ePZ iPZ iZ iPPPE iE iZ iSKSN iE iE iScSN iSE iPSN iE eN eE F	H 05 14 G G G G G G G G G G G G G G G 08 02	32.0 35.5 06.5 54.5 33.5 28.5 30.5 33.5 02.5 19.5 32.5 15.5 28.0 38.4 40.9	10	c	U.S.C.G.S.: 8°S 155°E
26	Oct. 21	Iu	eE eZ F	G 09 G 10 03	17.5 24.9			
27	Oct. 21	Id	iPNZ iSN iSZ F	SH 23 42 S H 23 43	36.8 40.8 41.0			See list, p. 283
28	Oct. 22	Iu	iPZ F	H 14 16 14 18	48.9		c	

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
29	Oct. 23	Iu	iPZ eN iZ F	H 04	33	41 43 52		c	
30	Oct. 23	Iu	iPZ F	H 15	55	02.9 15 56		d	
31	Oct. 23	IIId	iPZ iN iE iSN iSEZ iN F	H 23	21	46.9 47.3 47.8 56.3 56.9 57.6		c	See list, p. 283
32	Oct. 26	Iu	eE eN F	G 08	45.8	46.0 09 23			
33	Oct. 27	Iu	iPZ F	H 18	47	07.2 18 49		d	U.S.C.G.S.: 17°N 61°W
34	Oct. 28	Iv	iZ eE F	G 14	21	33 21.7 15 18			
35	Oct. 28	Iu	iPZ F	H 16	17	23.4 16 19		d	
36	Oct. 28	Iu	iE iPZ iZ iZ eN iN iPcPZ iPPZ iE iN eE eE eN F	G 20	56	50.0 57.4 08.8 11.4 13 14.5 29.3 58 56.3 21 06 27.5 29.0 11 02 15.6 19.4 22 34	22	d	U.S.C.G.S.: 36°N 141°E
37	Oct. 29	Iu	eN eE F	G 11	20.6	23.7 11 53			
38	Oct. 29	Iv	iPZ iNZ iSN iSZ eE F	H 13	02	38.4 42.0 59.9 03 00.4 01 13 05			San Benito County?

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
39	Oct. 30	Iu	iPZ F	H 05	01	06.2		c	
						05 03			
40	Nov. 1	Iu	iPZ ipPZ eN eE eN F	H 10	01	31		c	
				H		35			
				S		37			
				G	05	.7			
				G	06	.2			
					10	10			
41	Nov. 1	Iu	ePZ ipPZ eN eE eZ F	H 11	48	27			
				H		31.3			
				S		31.5			
				G	52	.7			
				G	54	.2			
					11	59			
42	Nov. 1	Iu	ePZ ipPZ eN eE eN eE eZ F	H 12	14	59		d	U.S.C.G.S.: 57°N 161°E
				H	15	11		c	
				S		16			
				G	22	.4			
				G	26	.6			
				G	27	.7			
				G	29	.3			
					13	13			
43	Nov. 1	Iu	iPZ iZ iZ iZ iZ F	H 23	59	04.3		c	
				H		08.1		c	
				H		10.2		c	
				H		19.2		d	
				H		44.0			
					00	02			
44	Nov. 3	Iu	iPZ ePZ eNE iZ iZ iZ eZ eZ eZ eZ eZ eZ eZ F	H 05	31	34.4		d	
				G		36.2	3.5	c	
				SA		37			
				G		43.2			
				H		44.3		c	
				H		53.9		d	
				H	32	02	4.0		
				G	36	28			
				G	37	20			
				G	40	40			
				G	43	24			
				G	46	12			
				G	51	23			
				G	06	09.9			
					07	08			

BERKELEY

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
45	Nov. 3	Id	iPNEZ	SAH 18 34	49.3	c	See list, p. 283
			iN	S	53.4		
			iZ	H	56.0		
			iE	A	56.5		
			iN	S	57.0		
			F	18 37			
46	Nov. 5	Iu	iPZ	H 20 46	43.3	d	
			F	20 48			
47	Nov. 8	Iu	iPNZ	SH 18 02	38.9	c	
			F	18 05			
48	Nov. 8	Id	iPZ	H 23 04	59.0	d	See list, p. 283
			iSN	S	05 08.6		
			iZ	H	09.5		
			F	23 06			
49	Nov. 9	IIr	eZ	H 20 41	01		
			eE	A	43 31		
			iN	G	46.5		
			eSNZ	SH	47		
			iE	G	50.5		
			iZ	G	55.5		
			F	20 53			
50	Nov. 10	Iv	iPZ	H 23 57	33.4	d	Near Barstow
			iN	S	48.6		
			iN	S	59 31.4		
			F	00 01			
51	Nov. 12	Iv	iPZ	H 23 11	12.4	c	See list, p. 283
			eSN	S	46.0		
			iSZ	H	47.1		
			F	23 11			
52	Nov. 13	Iu	iPZ	H 07 12	08.8	c	
			eN	S	14		
			iPZ	G	17.5	c	
			eE	G	20		
			iZ	G	32.5	c	
			iSN	G	21 58.0		
			iSE	G	59.0		
			iZ	G	22 33.0		
			iSKSN	G	40.0		
			iN	G	24 45.0		
			eLE	G	32.9		
			eLN	G	33.2		
			eN	S	33 54		
			F	09 52			

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
53	Nov. 13	Iv	iPZ iN eE iZ iSNEZ iNE F	H S A H SAH SA	12 59 04.0 06 09.2 34.1 36.0	02.3	d	Felt in Reno
			F		13 03			
54	Nov. 14	Id	iPN iSN F	S S	04 44 16.2	06.0		See list, p. 283
			F		04 45			
55	Nov. 15	Iu	iPZ F	H	05 00 05 02	52.4	c	
56	Nov. 15	Id	iPNZ iNEZ F	SH SAH	07 32 15.2	11.3		See list, p. 283
			F		07 33			
57	Nov. 16	Iv	iPZ eN iZ iZ F	H S H H	04 24 47 25 06.8 21.6	40.3	c	Humboldt County
			F		04 27			
58	Nov. 19	IIu	iPZ eNE iPNZ ipPZ iE iZ iZ iPPN iZ iZ eN iSE iSN iE eGNE eZ F	H SA G H G H H G H H S G G G G G G	01 12 30.5 30.5 31.5 31.5 54.9 13 24.9 54.9 14 12.7 33.0 19 10 11.5 13.0 20 27.5 25 29.9 02 37	30.0	c d	U.S.C.G.S.: 9°N 84°W h = 100 km
59	Nov. 21	IIu	iPZ iE iPZ eNE iZ iZ iZ iN iSE eN	G G H SA H H H G G G	19 22 41.0 41.5 41.7 44 45.2 23 24.4 27.3 28 32 48 33.1	41.0	c c d d d c	U.S.C.G.S.: 11°S 167°E h = 150 km

BERKELEY

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
59	Nov. 21 (cont.)	IIu	eZ	G 19 34.7	25		
			eLE	G 49.3			
			eLN	G 50.7			
			F	20 59			
60	Nov. 22	IIr	iPZ	H 09 14 49.2	8.5 11.0	c d	U.S.C.G.S.: 51°N 180°
			iZ	H 59.5			
			iE	G 15 05.5			
			iE	G 21 04.5			
			iN	G 26.5			
			eZ	G 43.5			
			eN	G 24.7			
			eEZ	G 26.2			
			F	10 32			
61	Nov. 25	Id	iPZ	H 21 34 00.2		c	See list, p. 283
			iSZ	H 05.7			
			iSN	S 06.5			
			eE	A 07			
			F	21 35			
62	Nov. 26	IIu	iPZ	H 05 49 57.6	32 36 32 30ca	d c d d	U.S.C.G.S.: 5°S 145°E
			iZ	H 50 19.2			
			eE	A 20			
			eZ	H 53 44			
			iPZ	G 50.0			
			ipPZ	G 54 05.5			
			eE	G 06 00 33.5			
			iZ	G 02 30.5			
			iE	G 45.5			
			iE	G 03 03.5			
			iN	G 52.5			
			iN	G 06 57.5			
			iE	G 58.5			
			eN	G 17.3			
			eE	G 18.5			
			eZ	G 20.3			
eLE	A 20.8						
F	08 22						
63	Nov. 29	Iu	iPZ	H 06 24 33.2		c	
			F	06 26			
64	Nov. 29	Iu	iPZ	H 06 43 04.4		c	
			F	06 44			
65	Dec. 4	IIIr	iPNEZ	G 00 27 37.5			U.S.C.G.S.: 21.5°N 106.5°W
			F	02 43ca			
66	Dec. 4	Iu	iPZ	H 16 02 02.2		c c	
			ipPZ	H 06.5			
			eE	G 47			
			F	16 53			

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
67	Dec. 4	Iu	iPZ iZ F	H 16 37	32.5 38.2		c d	
68	Dec. 4	IIIv	iPN iZ iNE iNE iNE iN iE iE iN iNE iE iN iE iN iLE F	S 23 44 H SA SA G S A 45 A S SA A S A S A 46 S A 01 17	47.8 48.2 48.8 53.2 53.5 56.3 01.9 14.5 17.7 36.2 46.7 59.7 09.4 13.7 30.2		c	U.S.C.G.S.: 33.9°N 116.4°W
69	Dec. 5	IIu	iPZ iNE iSE iSN iE iN eE F	G 06 47 G G G G 07 02 G G 09 28	42.0 56.5 14.0 16.0 23.0 46.0 14.6		c	
70	Dec. 8	Iu	iPZ F	H 22 34 22 36	13.4		d	
71	Dec. 9	Iu	iPZ iZ iSE eN eLE eLZ F	H 09 51 H G G 10 G G 10 15	22.7 46.3 52.0 04.2 08.8 09.2 15	9.0 20 22	d c	U.S.C.G.S.: 57°N 163°E
72	Dec. 12	Iu	iPZ iZ F	H 06 48 H 06 49	21.0 33.4		d d	
73	Dec. 12	Iu	eNE F	G 07 07 50	19.2			
74	Dec. 12	IIu	ePN iZ iZ iPZ iN	S 13 25 H H G G	28 28.8 39.9 41.5 46.5	6.0 6.0	d d d	U.S.C.G.S.: 52°N 178°E

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
74	Dec. 12 (cont.)	IIu	eSN	S 13 31 59			
			iSN	G 32 03.5	6.5		
			iSE	G 05.5			
			iZ	G 25.5			
			eN	G 35 19	18.0		
			iE	G 32.5	16.0		
			eZ	G 37.9	27.0		
			F	15 03			
75	Dec. 15	Iu	iPZ	H 19 23 17.0		c	U.S.C.G.S.: 22°N 143°E h = 200 km
			eNE	SA 18			
			ipPZ	H 21.8		d	
			iPZ	G 40.5		c	
			iZ	H 24 14.0			
			iZ	G 25.5		c	
			eN	S 33 01			
			iSN	G 02.5	6.5		
			iSE	G 03.5	7.0		
			iZ	G 05.5	11.0		
			eE	A 06			
			iZ	G 42.5			
			iE	G 54.0			
			iN	G 56.0			
			iE	G 37 20.5			
			F	20 54			
76	Dec. 15	Iu	iPZ	H 22 02 39.2		d	
			iZ	H 03 03.2		d	
			F	22 04			
77	Dec. 15	Iu	iPZ	H 22 37 40.9		d	
			F	22 40			
78	Dec. 16	IIu	iPZ	G 07 29 17.0		c	U.S.C.G.S.: 20°S 179°W
			iPZ	H 30 19.7		d	
			iE	G 38 56.5	6.5		
			iE	G 41.0	6.0		
			iN	G 40 01.5	11.0		
			iE	G 41 44.0			
			iZ	G 46.5			
			eG?E	G 49.0	30		
			eG?N	G 49.7	34		
			eZ	G 53.9	20		
			F	09 13			
79	Dec. 18	Iu	eN	G 14 51.9	24		
			eZ	G 53.1			
			eE	G 53.6	20		
			F	15 27			

BERKELEY

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
80	Dec. 18	Iv	iPNZ	H 23 46 34.5		d	Near Barstow
			iZ	H 42.1			
			iSZ	H 47 39.6			
			F	23 50			
81	Dec. 20	Iv	iPN	S 04 43 23.7		d	Near Piedras Blancas Point
			iPZ	H 25.0			
			eEZ	AH 26.1			
			iE	A 28.8			
			eNEZ	G 31			
			iN	S 31.2			
			iZ	H 33.7			
			iN	S 56.3			
			iN	G 57.0			
			iSN	S 44 00.3			
			iSE	A 00.8			
			iZ	H 01.2			
			iZ	H 02.6			
			iN	G 03.0			
			iZ	G 05.0			
			iN	S 06.3			
			iE	G 06.5			
iZ	H 06.6						
F	04 49						
82	Dec. 23	Iu	iPZ	H 07 24 37.6	21 18	d	U.S.C.G.S.: 30°S 177°W
			eN	G 46.4			
			eE	G 47.2			
			eZ	G 52.9			
			F	08 41			
83	Dec. 23	IIu	iPZ	G 08 50 04.5	6.0 6.0 7.0	c d	U.S.C.G.S.: 56°N 166°E
			iPZ	H 05.3			
			iN	G 05.5			
			iE	G 07.5			
			iZ	H 20.2			
			iZ	G 51 11.0			
			iN	G 21.5			
			iZ	H 25.7			
			iSN	G 57 17.5			
			iSE	G 33.0			
			iSE	G 53.5			
			eZ	G 09 07.6			
F	11 13						
84	Dec. 23	Ir	iE	G 15 44 51.0	8.0 9.0 20.0 16.0 14.0		
			iZ	G 56.0			
			iN	G 57.5			
			eE	G 46.8			
			eZ	G 48.4			
			eN	G 48.4			
			F	16 08			

BERKELEY

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
85	Dec. 24	Iu	iPZ iZ iZ F	H 07 40 35.4 H 41.1 H 48.1 07 42		c c c	
86	Dec. 26	Iu	iPZ F	H 07 24 23.6 07 27		c	U.S.C.G.S.: 22.5°S 69°W
87	Dec. 28	Iu	iPZ iZ iZ F	H 00 27 48.2 H 52.6 H 55.4 00 29.5		c c c	
88	Dec. 28	Iv	iPZ eE iSE iZ F	H 01 12 10.7 A 16.7 A 44.7 H 45.7 01 15		d	
89	Dec. 28	Iv	iPZ iZ eE iZ iZ iSZ iSE F	H 02 26 19.1 H 20.1 A 20.8 H 27.1 H 42.5 H 51.6 A 53.3 02 31		d c	
90	Dec. 28	Iv	iPZ iZ iE iE iZ iE iE F	H 05 26 44.5 H 46.5 A 49.0 A 59.3 H 27 02.5 A 15.5 A 16.8 05 30		d c	
91	Dec. 29	Iu	eN eE eE eZ eN F	G 06 15 32 G 33 G 26.2 G 26.4 G 28.2 07 28	14 16 28 12		
92	Dec. 29	IIv	iPEZ iE iN iE iZ iE iE F	AH 12 54 07.8 G 08.5 G 09.5 A 09.8 G 10.5 A 10.8 A 22.9 13 00		d d c	See list, p. 284

BERKELEY

No.	Date	Char-acter	Phase	Time		Period	Trace motion	Remarks		
				(G.C.T.)						
	1948			h.	m.	s.	s.			
93	Dec. 30	IIIr	iPZ	S	23	53	22.0	d	U.S.C.G.S.: 51°N 131°W	
			iPNZ	G			22.5			
			iZ	H			23.3			2.3
			iEZ	GS			24.0			
			iZ	S			29.3			
			iZ	H			29.7			
			iE	A			30.0			
			iZ	H			36.7			
			iE	G	56	10.0				
			iZ	G		20.0				
			iSZ	S		31.5				
			eSE	A		32.0				
			iSN	G		32.0	9.5			
			iN	G		49.0	9.0			
			eLE	A	58	06	10.5			
F		02	38							
94	Dec. 31	Iv	iPZ	H	14	18	08.9	d	Foreshock of next	
			eN	S			09.4			
			iNZ	SH			16.1			
			iNEZ	SAH			17.4			
			iSEZ	AH			45.7			
			iSN	S			46.4			
			F		14	20				
95	Dec. 31	IIv	iPNZ	SH	14	36	23.9	d	See list, p. 284	
			iNZ	SH			26.8			
			eE	A			27.0			
			iZ	H			30.0			
			iN	S			31.5			
			iNE	SA			33.3			
			iSNE	SA	37	01.5				
			eNEZ	G			32.5			
			iN	G			45.5			
			iZ	G			55.5			
			iE	G	38	03.0				
F		14	44							
96	Jan. 1 1949	IIv	iZ	H	01	18	14.2	c d	See list, p. 284	
			iE	A			14.5			
			iE	A			15.1			
			iSE	A			29.7			
			iE	A			31.4			
			F		01	24				

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

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 37^{\circ} 20' 14'' \text{ N.}$$
$$\lambda = 121^{\circ} 38' 16'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
1	Oct. 1	Iu	iPZ ipPZ F	22 58	06.1 11.9				
2	Oct. 2	Iu	ePZ iZ F	00 16 00 18	35 37.6				
3	Oct. 2	Iu	iPZ iZ F	04 57 04 59	04.5 45.5				
4	Oct. 2	Iu	iPZ F	06 46 06 48	43.7		d		
5	Oct. 2	Iu	iPZ ipPZ F	14 34 14 37	43.6 52.6				
6	Oct. 2	Iu	iPZ F	16 05 16 06	13.4				
7	Oct. 3	Id	iPNZ iSZ iN F	09 09 10 05 09 11	54.0 05.5 06.5			See list, p. 283	
8	Oct. 4	Iu	iPZ iZ F	06 10 06 12	12.2 24.2				
9	Oct. 4	Iv	iPZ iZ iZ F	14 23 14 26	11.4 28.2 12.4				
10	Oct. 5	Iu	iPZ F	12 11 12 13	04.5		d		
11	Oct. 5	Iu	iPZ iZ eN iZ iZ eE iZ eSN eN eGE eLN eLZ F	20 29 20 30 20 41 20 52 20 30 20 50 20 31 20 39 20 41 20 04 20 12 20 13 20 21	16.4 33.4 44 52.9 33.6 50 24.9 48 07 4.2 12.0 13.4 49		d c	U.S.C.G.S.: 38°N 58°E	
						40			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
12	Oct. 6	Iu	iPZ F	23 02 23 03	02.7		c	
13	Oct. 7	Iu	iPZ iZ iZ iZ F	18 54 18 57	05.2 08.8 11.7 29.6		c c d c	
14	Oct. 7	Iv	iPNZ eE iSNE iSZ F	21 24 21 25	02.3 03 13.7 14.8			San Benito County?
15	Oct. 8	IIId	iPNEZ iSNEZ F	01 26 01 29	27.1 29.9			See list, p. 283
16	Oct. 8	Iu	iPZ iZ F	06 49 06 51	38.4 41.4		c d	
17	Oct. 8	Iu	iPZ iZ iZ F	09 16 09 20	04.8 11.1 26.3		d d d	
18	Oct. 9	Iu	ePZ F	05 20 05 21	45.0		d	
19	Oct. 9	Iu	ePZ F	18 34 18 36	34.0		d	
20	Oct. 10	IIId	iPEZ eN iZ iNE F	11 21 11 24	17.2 17.4 21.5 22.5		c	See list, p. 283
21	Oct. 11	Iu	ePZ F	04 17 04 19	43.0		d	
22	Oct. 11	Iv	ePZ iPZ iZ eNE iZ iZ F	08 04 05 02 08 08	50.5 51.2 55.2 25.8 34.3		c d	Lassen Park
23	Oct. 12	Iu	iPZ iZ F	02 52 02 54	50.5 55.7		c c	

MT. HAMILTON

No.	Date	Char. acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
24	Oct. 12	Iu	iPZ F	13 49 45.5 13 52			
25	Oct. 14	IIId	iPNEZ iSNE F	09 51 25.5 26.8 09 53			See list, p. 283
26	Oct. 14	Iu	iPZ eNE iZ iZ iZ iZ iZ F	21 53 47.9 48.5 54 02.4 56 02.4 05.4 19.9 57 05.2 12.5 22 00		c d d c c d d	
27	Oct. 15	Iu	iPZ eZ F	23 02 54.2 05 01 23 08		d	U.S.C.G.S.: 60°S 20°W
28	Oct. 16	Iv	iPZ iSZ F	01 07 48.7 08 31.7 01 10		c	See list, p. 283
29	Oct. 16	Iu	eZ F	02 07 37.0 02 11		d	
30	Oct. 16	Iu	iPZ F	04 43 22.7 04 44		c	
31	Oct. 16	Iu	iPZ iZ iZ F	04 53 15.2 20.2 55 58.2 04 57		d d	
32	Oct. 17	Id	iPZ eNE iZ iSEZ iN F	05 22 02.5 03.0 11.7 13.5 14.2 05 24		c	See list, p. 283
33	Oct. 18	Id	iPZ iE iNE F	07 10 57.7 11 08.4 09.2 07 12			Aftershock of last
34	Oct. 20	Id	iPNEZ iSZ iSNE F	07 38 28.4 35.0 36.0 07 39			See list, p. 283
35	Oct. 20	Iu	iPZ F	11 07 56.1 11 10			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
		1948							
36	Oct. 20	Iu	iPZ F	11 19 11 21	18.6				
37	Oct. 20	Id	iFZ eNE iSNEZ F	14 41 42 00 14 43	59.4 06.7			See list, p. 283	
38	Oct. 20	Iu	iPZ F	20 15 20 16	01.5		c		
39	Oct. 21	Iu	iPZ F	04 36 04 38	10.4			d	
40	Oct. 21	Iu	iPZ iZ F	04 57 58 03 05 03	39.4 03.6			c U.S.C.G.S.: 12.5°N 88°W	
41	Oct. 21	Iu	eZ F	05 14 05 22	33			c U.S.C.G.S.: 8°S 155°E	
42	Oct. 21	Id	iPZ eE iSZ F	23 42 46 23 44	45.7 56.8			See list, p. 283	
43	Oct. 22	Iu	iPZ F	02 34 02 36	22.7			d	
44	Oct. 22	Iu	iPZ F	14 16 14 20	53.6			d	
45	Oct. 22	Iu	iPZ F	22 43 22 45	31.6				
46	Oct. 23	Iu	iPZ iZ F	04 33 34 02 04 38	47.3 02.6			c c	
47	Oct. 23	Iu	iPZ F	05 00 05 03	22.3			c	
48	Oct. 23	Iu	iPZ iZ F	15 55 17.1 15 59	07.9			d d	
49	Oct. 23	Iu	iPZ F	21 12 21 13	47.0			c	
50	Oct. 23	IIId	iPNEZ iSNE F	23 21 23 25	36.7 38.6			See list, p. 283	
51	Oct. 24	Iu	iPZ F	17 09 17 11	05.8			c	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948					s.		
52	Oct. 25	Iu	iPZ iZ iZ F	12 39	09.9 15.1 17.9		d d d	
53	Oct. 26	Iu	iPZ F	08 22 08 25	54.4		c	
54	Oct. 27	Iu	iPZ F	18 47 18 49	02.8		c	U.S.C.G.S.: 17°N 61°W
55	Oct. 28	Iu	ePZ F	14 20 14 22	06		d	
56	Oct. 28	Iu	iPZ iZ F	14 32 14 34	04.3 09.5		c c	
57	Oct. 28	Id	iPZ iSN iSEZ F	19 01 19 03	24.9 31.5 32.0		c	See list, p. 283
58	Oct. 28	Iu	ePZ eNE iZ iZ iZ F	20 57 21 02	03.1 11 12.7 15.1 17.2		c c c c	U.S.C.G.S.: 36°N 141°E
59	Oct. 29	Iu	iPZ iZ F	03 19 03 21	23.0 32.9		c c	U.S.C.G.S.: 19°S 71°W h = 100 km
60	Oct. 29	Iu	iPZ F	10 12 10 13	33.9		c	
61	Oct. 29	Ir	iPZ F	11 14 11 16	37.0		c	U.S.C.G.S.: 5°N 101°W
62	Oct. 29	Id	iPNEZ iN iSE iSN F	13 02 13 04	30.2 31.8 39.0 39.5			San Benito County
63	Oct. 30	Iu	iPZ F	05 01 05 02	09.6		c	
64	Nov. 1	Iu	iPZ iZ iZ F	10 01 10 03	17.1 21.6 22.4		d d c	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948			h. m. s.	s.		
65	Nov. 1	Iu	iPZ iZ iZ F	11 48 16.8 18.4 22.6 11 50			
66	Nov. 1	Iu	iPZ iZ iZ eZ F	12 15 04.7 14.5 36.7 19 13.2 12 22		d c	U.S.C.G.S.: 57°N 161°E
67	Nov. 1	Iu	iPZ iZ F	23 59 09.9 24.8 00 03		c d	
68	Nov. 2	Iu	iPZ F	01 38 09.1 01 39		d	
69	Nov. 3	Iu	iZ eNE iZ F	05 31 44.8 46.0 55.5 05 41		c d	U.S.C.G.S.: 20.5°S 169.5°E
70	Nov. 3	Iv	iPZ eN iZ iSZ iSE iZ F	18 35 02.2 01 01.8 13.8 14.2 19.5 18 37		c	See list, p. 283
71	Nov. 4	Iu	iPZ iZ F	13 27 27.2 46.5 13 30		d c	
72	Nov. 5	Iu	iPZ F	08 45 12.9 08 46		d	
73	Nov. 5	Iv	iPZ iZ iZ iZ F	14 29 10.5 12.4 13.8 17.5 14 31		c c c	Sonoma County
74	Nov. 6	Iu	iPZ iZ F	14 21 40.4 45.9 14 23		c c	
75	Nov. 7	Id	iPZ eNE eSNE iSZ F	21 26 53.3 56.6 27 06.6 07.4 21 28		c	San Benito County

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
76	Nov. 8	Iu	iPZ F	04	45	54.7 47		d	
77	Nov. 8	Iu	iPZ eNE F	18	03	38.8 39.3		d	Runs into next shock
78	Nov. 8	Id	iPZ eNE iSNEZ F	18	03	54.7 55.3 04 01.5 18 05		c	See list, p. 283
79	Nov. 8	IId	iPNEZ iSNE F	23	04	47.5 49.0 23 06		.	See list, p. 283
80	Nov. 9	I	ePZ eNE iZ iZ iZ iZ eE iZ eN iZ iZ F	20	40	45 51 41 23.2 29.8 38.3 43 35.7 44.2 46.7 50.2 44 19.7 53 27.2 20 59		c c d d d d d	
81	Nov. 10	Iu	iPZ iZ F	13	10	12.9 21.8 13 12		d d	
82	Nov. 10	Iv	iPZ eNE iZ iZ iZ eE eN F	23	57	23.1 25 25.9 39.2 59 15.6 16.0 51.0 00 01		c d	Near Barstow
83	Nov. 11	Iu	iPZ F	07	17	04.4 07 18		d	
84	Nov. 11	Iu	iPZ iZ F	07	52	00.3 14.1 07 53		c d	
85	Nov. 12	Iu	iPZ F	17	45	31.8 17 47		d	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
86	Nov. 12	Iv	iPZ iZ iSZ F	23	11	22.3 24.1 04.8 13		c c	See list, p. 283
87	Nov. 13	Iu	iPZ iZ F	07	12	14.2 16.0 16		c c	
88	Nov. 13	Iv	iPZ eNE iZ iZ eN iZ iZ eE iSNZ F	12	59	00.2 01 03.7 04.3 06.5 06.9 08.2 37.5 39.8 02		d d c	Felt in Reno
89	Nov. 13	Iu	iPZ F	23	00	24.1 03		d	
90	Nov. 14	IIId	iPNEZ iSNE F	04	43	52.9 54.0 45			See list, p. 283
91	Nov. 14	Iu	iPZ F	06	26	58.7 29		d	
92	Nov. 14	Iu	iPZ iZ F	14	01	48.2 02 02.4 03		c c	
93	Nov. 15	Iu	iPZ iZ iZ F	05	00	56.4 01 05.1 05.8 02		c d c	
94	Nov. 15	Id	iPZ iZ iMZ F	07	32	20.6 29.7 31.8 33		c	See list, p. 283
95	Nov. 15	Iu	iPZ F	10	33	24.0 34		c	
96	Nov. 15	Id	iPZ eNE iZ iSNEZ F	23	25	10.9 11.2 11.9 17.6 26		c d	See list, p. 283

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
97	Nov. 16	Iv	iPZ iZ F	04 24 25 04 26	50.5 19.2		c	Humboldt County	
98	Nov. 17	Iu	iPZ F	01 14 01 16	33.8		c		
99	Nov. 18	Iu	iPZ ipPZ F	13 14 13 15	26.1 36.1				
100	Nov. 19	Iu	iPZ eNE iZ iZ iZ F	01 12 26.3 26.4 42.7 13 15.0 01 24		c d c c	U.S.C.G.S.: 9°N 84°W h = 100 km		
101	Nov. 20	Iu	iPZ F	07 04 07 05	10.9		c		
102	Nov. 20	Iu	ePZ F	08 26 08 28	44.9		d		
103	Nov. 21	Iu	iPZ iZ iZ iZ eZ F	19 22 46.8 49.8 23 26.1 26 00.3 19 30		d d c d	U.S.C.G.S.: 11°S 167°E h = 150 km		
104	Nov. 22	Ir	ePZ eZ F	09 14 20 09 22	54.5 33.5		d d	U.S.C.G.S.: 51°N 180°	
105	Nov. 22	Id	iPZ eNE iSNEZ F	18 05 48.6 55.0 18 07	48.2		c	See list, p. 283	
106	Nov. 22	Iu	iPZ F	23 42 23 44	55.7		d		
107	Nov. 24	Iu	iPZ ipPZ F	06 46 51.9 06 48	47.5		d d		
108	Nov. 25	Iu	iPZ ipPZ iZ iZ F	14 57 46.9 52.2 58 07.7 15 01		c d d c			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
109	Nov. 25	Id	iPZ	21 33 58.6		c	See list, p. 283
			iZ	34 01.5			
			iSNEZ	03.1			
			F	21 34.5			
110	Nov. 26	Iu	ePZ	05 50 00.4	28	c	U.S.C.G.S.: 5°S 145°E
			iZ	17.1			
			eE	18			
			iZ	21.9			
			ePFE	53 51			
			iPPZ	52.9			
			ePPN	54			
			eE	06 20.8			
F	06 29						
111	Nov. 27	Iu	iPZ	06 24 29.5		d	
			F	06 26			
112	Nov. 27	Iu	iPZ	06 43 01.5		c	
			F	06 45			
113	Nov. 28	Iu	ePZ	01 54 52.1		c	
			F	01 56			
114	Nov. 28	Iu	iPZ	23 56 36.8		d	
			F	23 58			
115	Nov. 29	Iu	iPZ	02 15 50.0		c	
			F	02 17			
116	Nov. 30	Iu	iPZ	08 40 48.3		d	
			iPPZ	42 51.3		d	
			F	08 44			
117	Dec. 1	Id	iPZ	22 43 34.7		d	See list, p. 283
			iSNEZ	41.7			
			F	22 44			
118	Dec. 4	Ir	iPZ	00 27 27.5		c	U.S.C.G.S.: 21.5°N 106.5°W
			eNE	28.1			
			ipPZ	29.0			
			iZ	28 38.1			
			eSE	31 33.6			
			eSN	36.1			
			eNE	32.2			
			F	01 23			
119	Dec. 4	Iu	iPZ	03 57 25.0			
			F	03 58			
120	Dec. 4	Iu	iPZ	16 01 58.4		d	
			F	16 03			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
121	Dec. 4	Iu	iZ	16 37 18.5		d	
			iZ	37.2			
			iZ	48.4			
			F	16 39			
122	Dec. 4	IIv	iPZ	23 44 37.9		c	U.S.C.G.S.: 33.9°N 116.4°W
			eNE	38.4			
			iN	40.2			
			iN	42.6			
			iE	44.9			
			iE	48.4			
			iN	51.4			
			iE	52.9			
			iN	58.2			
			iE	45 00.0			
			iN	14.9			
			iN	20.6			
			iSN	35.9			
			iSE	43.1			
			iN	55.5			
			iE	56.4			
			iN	46 06.6			
iE	13.7						
F	00 01						
123	Dec. 5	Iu	eZ	06 45 09.5		d	U.S.C.G.S.: 53°S 158°E
			F	06 48			
124	Dec. 6	Iu	eZ	12 23 16.0			U.S.C.G.S.: 16°S 168°E
			F	12 25			
125	Dec. 7	Iu	iPZ	09 24 10.9		c	U.S.C.G.S.: 18°N 69.5°W
			F	09 27			
126	Dec. 7	Iu	iPZ	14 05 25.7		c	
			iZ	27.7			
			F	14 07			
127	Dec. 7	Id	iPZ	18 03 09.5		c	See list, p. 284
			eNE	10			
			iSNEZ	16.4			
			F	18 04			
128	Dec. 8	Iu	eZ	11 54 59.5		d	
			F	11 56			
129	Dec. 8	Iu	iPZ	16 31 03.3		c	
			F	16 32			
130	Dec. 10	Iu	iPZ	09 51 27.9		d	U.S.C.G.S.: 57°N 163°E
			iZ	44.7			
			iZ	55.8			
			F	09 55			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
131	Dec. 11	Iu	iPZ iZ F	03 13	27.3 43.3		c c	
132	Dec. 12	Iu	iPZ F	06 32	10.3		d	
133	Dec. 12	Iu	iPZ F	06 48	22.9		c	
134	Dec. 12	Iu	iPZ iZ F	09 32	23.0 29.5		c d	
135	Dec. 12	Id	iPZ iSNEZ F	12 08	57.8		d	See list, p. 284
				09	01.8			
				12	10			
136	Dec. 12	Iu	iPZ iZ iZ eN iZ iSZ eN F	13 25	33.5 43.0 32.5 35.0 29.0 16.5 11.5		d c c c	U.S.C.G.S.: 52°N 178°E
137	Dec. 14	Iu	iPZ F	09 35	28.5		d	
				09	37			
138	Dec. 15	Iu	iPZ eN iZ iZ eSNZ F	19 23	21.8 22 25.0 38.9 07.6		c d c	U.S.C.G.S.: 22°N 143°E h = 200 km
				19	37			
139	Dec. 15	Iu	iPZ iZ F	22 02	44		d d	
				03	07			
				22	05			
140	Dec. 16	Iu	iPZ F	07 30	13.7		c	U.S.C.G.S.: 20°S 179°W
				07	32			
141	Dec. 18	Iv	iPZ iSZ eN F	02 20	26.7 59.3		c	See list, p. 284
				21	00.7			
				02	22			

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
142	Dec. 18	Iv	iPZ eN iZ iZ iSN iSZ iN F	23 46	24.8 25.0 33.3 40.5 47 34.5 35.0 41.0		c d d d	Near Barstow
143	Dec. 20	IIv	iPZ iZ eE iN iE iN iN iE F	04 43	16.4 17.7 19 26.0 28.5 33.7 42.5 43.4		d d	Near Piedras Blancas Point
144	Dec. 21	Iu	iPZ F	17 49 17 51	58.0	1.2	c	
145	Dec. 21	Iu	iPZ F	20 22 20 24	20.7		d	U.S.C.G.S.: 19°N 69.5°W
146	Dec. 23	Iu	iPZ F	07 24 07 26	39.3		c	U.S.C.G.S.: 30°S 177°W
147	Dec. 23	Iu	iPZ eN iZ iZ F	08 50 12 51 08 55	10.4 19.3 29.7		c d d	U.S.C.G.S.: 56°N 166°E
148	Dec. 24	Iu	iPZ iZ F	07 40 07 42	33.7 50.2		c c	
149	Dec. 26	Iu	iPZ F	07 24 07 27	20.0		c	U.S.C.G.S.: 22.5°S 69°W
150	Dec. 26	Iu	iPZ iZ F	00 27 00 29	54.2 57.9		c d	
151	Dec. 28	Iv	iPZ iZ iZ F	02 00 02 02	12.5 14.5 49.0		d d	

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
152	Dec. 28	IIv	iPZ iNZ iNE iN iE F	02	26	22.0 22.9 26.3 57.1 58.2		c	
				02	30				
153	Dec. 28	IIv	iPZ iNZ eE iN iE iN iE F	05	26	46.9 47.7 48.0 58.2 27 19.9 21.4 22.2		d	
				05	31				
154	Dec. 29	Iu	iPZ iZ F	11	02	40.6 03 01.1		d c	
				11	04				
155	Dec. 29	IIv	iPZ iNE iNE F	12	54	10.2 13.1 14.6		c	See list, p. 284
				13	00				
156	Dec. 29	Iu	iPZ iZ iZ F	23	19	39.2 40.6 20 26.9		c d	
				23	22				
157	Dec. 30	Ir	ePZ eN iZ iE iZ eN eZ eN eE F	23	53	29.5 31.5 31.9 36 38.2 55 03 57.1 57.2 57.4		c c	U.S.C.G.S.: 51°N 131°W
							15		
				00	47				
158	Dec. 31	IIv	iPZ eNE iZ iN iE iN iSN iSE iN F	14	18	00.9 01.5 04.3 05.0 05.8 08.8 26.8 27.3 29.3		c c	Foreshock of next
				14	22				

MT. HAMILTON

No.	Date	Char-acter	Phase	Time (G.C.T.)		Trace motion	Remarks
				h. m. s.	s.		
159	Dec. 31	IIv	iPZ	14 36	15.3	c	See list, p. 284
			eN		16.0		
			eE		17.5		
			iN		19.0		
			iE		20.7		
			iE		25.5		
			iN		28.0		
			iSNE		41.5		
			iN		43.6		
			F	14 45			
160	Jan. 1	IIv	iPNEZ	01 18	03.8		See list, p. 284
			iSE		10.3		
			iN		16.5		
			F	01 29			

PALO ALTO

THE BRANNER STATION, STANFORD UNIVERSITY
PALO ALTO, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 37^{\circ} 25' 11'' \text{ N.}$$
$$\lambda = 122^{\circ} 10' 18'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
		1948						
1	Oct. 1	Iu	iPZ eNE ipPZ eNE iPPZ F	11 39	01.7 02 22.2 23 42 17.0		d d	U.S.C.G.S.: 17°N 99°W h = 100 km
2	Oct. 2	Iu	ePZ F	00 16	29 00 18			
3	Oct. 3	Id	iPZ iSZ iZ F	09 09	49.1 56.8 59.8			See list, p. 283
4	Oct. 7	Iv	iPZ iNE iZ iSE iSNZ F	21 24	06.9 07.5 09.3 21.6 22.7			San Benito County?
5	Oct. 8	IId	iPNEZ iSN F	01 26	30.3 35.3			See list, p. 283
6	Oct. 8	Iu	iPZ F	09 16	01.3 09 17		d	
7	Oct. 10	IId	iPNEZ iSNE F	11 21	20.4 28.1			See list, p. 283
8	Oct. 11	Iv	iPZ eNE ipPZ F	08 04	51.1 53 55.9		d d	Lassen Park
9	Oct. 14	Id	iPZ eNE iSNEZ F	09 51	33.6 34 40.8		c	See list, p. 283
10	Oct. 14	Iu	iPZ eNE ipPZ iPPZ F	21 53	47.1 47.6 51.1 56 05.1		c c	
11	Oct. 15	Iu	iPZ F	23 02	54.7		d	U.S.C.G.S.: 60°S 20°W

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
12	Oct. 16	Iv	iPZ iEZ eN F	01 07 08 12.0 13 01 10	44.7 12.0 13		d	See list, p. 283
13	Oct. 16	Iu	iPZ F	04 53 04 55	12.4		c	
14	Oct. 17	Id	iPZ iZ eNE iNEZ F	05 21 56.7 57 22 03.5 05 24	55.5 56.7 57 03.5		d	See list, p. 283
15	Oct. 20	Id	iPZ eNE iSN iSEZ F	07 38 33 44.6 45.1 07 40	32.6 33 44.6 45.1		c	See list, p. 283
16	Oct. 20	IIId	iPNEZ iSNE F	14 41 57.7 14 42	54.4 57.7			See list, p. 283
17	Oct. 21	Iu	ePZ iZ F	04 57 59 51.9 05 01	43 51.9		d	U.S.C.G.S.: 12.5°N 88°W
18	Oct. 21	Id	iPZ iZ iNE iSNEZ F	23 42 40.3 41 46.1 23 44	39.6 40.3 41 46.1		d c	See list, p. 283
19	Oct. 22	Iu	ePZ iPZ F	14 16 51.5 14 18	51.0 51.5		d c	
20	Oct. 23	Iu	iPZ iZ F	04 33 44.4 50.5 04 35	44.4 50.5		c c	
21	Oct. 23	IIId	iPNZ iE iSNE F	23 21 41.6 42.3 47.5 23 23	41.6 42.3 47.5			See list, p. 283
22	Oct. 25	Iu	iPZ F	12 39 12 40	08.0		d	
23	Oct. 27	Iu	iPZ eNE iZ F	18 47 06.3 07 13.7 18 48	06.3 07 13.7		d c	U.S.C.G.S.: 17°N 61°W

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948					s.		
24	Oct. 28	Iu	iPZ ipPZ F	14 31 32 14 33	58.3 05.0		d d	
25	Oct. 28	IId	iPEZ iN iZ iSNEZ F	19 01 19 02	19.3 19.7 21.2 22.5		c	See list, p. 283
26	Oct. 28	Iu	iPZ iZ iZ F	20 57 20 58	01.7 09.6 12.7		c d d	U.S.C.G.S.: 36°N 141°E
27	Nov. 1	Iu	iPZ iZ F	10 01 10 03	32.1 48.3		c d	
28	Nov. 1	Iu	iZ iZ F	12 15 12 18	02.0 11.7		c d	U.S.C.G.S.: 57°N 161°E
29	Nov. 1	Iu	iPZ iZ iZ F	23 59 00 02	06.6 12.6 19.3		d d d	
30	Nov. 3	Iu	iPZ eNE iZ iZ F	05 31 05 35	34.9 43 44.4 04.0		c c d	U.S.C.G.S.: 20.5°S 169.5°E
31	Nov. 3	Iv	iPZ iNZ iE iZ iE iZ eN F	18 34 18 36	53.8 54.4 55.3 59.7 01.0 08.8 09.0		d d	See list, p. 283
32	Nov. 5	Id	iPZ eNE iZ F	14 29 14 30	06.4 06.5 11.6		d	Sonoma County
33	Nov. 7	Id	iPZ iZ eNE iSNEZ F	21 26 27 21 28	59.3 00.1 00.5 13.9		d d	San Benito County

PALO ALTO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
	1948			h. m. s.	s.		
34	Nov. 8	Iu	iPZ eNE F	18 02 37.3 38 18 03		c	
35	Nov. 8	IId	iPZ iE iN iSN iSE iE iN F	18 03 49.3 49.5 50.2 52.0 52.9 54.3 57.0 18 04		c	See list, p. 283
36	Nov. 8	Id	iPZ eNE iEZ iN F	23 04 53.0 53.5 05 00.3 00.8 23 06		c	See list, p. 283
37	Nov. 9	I	iZ eZ eZ eN eE F	20 41 01.0 28.0 43 35.0 48 53 20 50		c	
38	Nov. 10	Iv	iPZ eNE iZ eE iZ F	23 57 28.1 37 38.4 48 50.5 00 00		c	Near Barstow
39	Nov. 11	Iu	iPZ F	07 17 05.8 07 18		d	
40	Nov. 11	Iu	iZ iZ F	07 52 00.5 13.7 07 53		e	
41	Nov. 12	Iu	ePZ F	17 45 36 17 51		d	
42	Nov. 13	Iv	iPZ iZ eNE iZ iZ iSN iSE F	12 59 02.1 06.9 07.5 13.7 41.2 43.3 43.9 13 01		c d	Felt in Reno
43	Nov. 13	Iu	eZ F	23 00 22 23 02			

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
44	Nov. 14	Id	iP̄NZ iE iSEZ iZ F	04 43 44 00 06.6 09.6 04 45	59.2 00.5 06.6 09.6		c	See list, p. 283
45	Nov. 15	Iu	iPZ F	06 26 06 28	55.9		d	
46	Nov. 14	Iu	iPZ F	14 01 14 04	45.8		c	
47	Nov. 15	Iu	iPZ F	05 00 05 03	53.9		c	
48	Nov. 15	Id	iP̄Z eNE iS̄NE iEZ F	07 32 15 19.4 21.9 07 34	14.5 15 19.4 21.9		c	See list, p. 283
49	Nov. 15	Iu	iPZ F	10 34 10 36	21.0		d	
50	Nov. 15	IIId	iP̄NEZ iS̄NZ iE iE F	23 25 08.2 09.0 10.1 23 26	05.3 08.2 09.0 10.1			See list, p. 283
51	Nov. 18	Iu	iPZ F	13 14 13 16	23.2		d	
52	Nov. 19	Iu	ePZ iPZ eN eE iZ eSN F	01 12 29.1 29.5 32.0 14 12.5 18 44 01 21	27.5 29.1 29.5 32.0 12.5 44		c d c	U.S.C.G.S.: 9°N 84°W h = 100 km
53	Nov. 21	Iu	iPZ iZ F	19 22 23 24.7 19 25	41.2 24.7		c c	U.S.C.G.S.: 11°S 167°E h = 150 km
54	Nov. 22	Ir	iPZ iZ F	09 14 15 02.9 09 17	52.0 02.9		c c	U.S.C.G.S.: 51°N 180°

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
55	Nov. 22	Id	iPNE iE iSZ iSN iSE iME iZ F	18 05	42.8 43.1 45.6 45.9 46.2 47.8 48.1		c	See list, p. 283
				18 07				
56	Nov. 25	IIId	iPNEZ iZ iSEZ iE F	21 33	57.0 00.4 00.7 01.1			See list, p. 283
				21 35				
57	Dec. 1	Id	iPE iSNE F	22 43	29.6 32.8			See list, p. 283
				22 45				
58	Dec. 4	Ir	iPNE eSE eSN eLN eE F	00 27	34.6 37.5 44.0 33.6 35.8	5 24		U.S.C.G.S.: 21.5°N 106.5°W
				00 53				
59	Dec. 4	IIv	iPZ iZ eN eE iZ iN iE iN iE iN iE iE F	23 44	43.1 43.6 44.0 44.5 45.3 45.9 46.5 55.5 57.9 45 15.1 46 06.1 06.7 14.6 16.9		c d	U.S.C.G.S.: 33.9°N 116.4°W
				00 05				
60	Dec. 7	Iu	iPZ iZ F	09 24	14.1 41.2		c d	U.S.C.G.S.: 18°N 69.5°W
				09 27				
61	Dec. 7	IIId	iPNZ iE iN iE iSN iSE iN iN F	18 04	04.1 04.5 05.4 06.0 07.1 07.6 09.0 12.0		c	See list, p. 284
				18.6				

PALO ALTO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1948						
62	Dec. 10	Iu	iPZ iZ F	09 51 49.7 09 53	24.8	d c	U.S.C.G.S.: 57°N 163°E
63	Dec. 12	Id	iPZ eNE iZ iZ iNE F	12 09 05.0 07.3 14.9 15.2 12 10	04.5	c d	See list, p. 284
64	Dec. 12	Iu	iPZ eE iZ eN iN iZ iE F	13 25 34.0 34.9 38.0 47.1 47.4 48.1 13 27	30.3	d c c	U.S.C.G.S.: 52°N 178°E
65	Dec. 18	Iv	iPZ eNE iZ eN eE F	23 46 32.0 33.0 47 29.5 35.5 23 50	29.9	d c	Near Barstow Time marks failed during remainder of this quarter.

SAN FRANCISCO

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

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Latitude and longitude:

$$\phi = 37^{\circ} 46' 14'' \text{ N.}$$
$$\lambda = 122^{\circ} 27' 12'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Wood-Anderson	E N

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Trace motion	Remarks
				h. m. s.	s.		
	1948						
1	Oct. 1	Iu	ePNE F	11 39 03 11 41			U.S.C.G.S.: 17°N 99°W h=100 km
2	Oct. 3	IIId	iPNE iSNE F	09 09 40.8 42.7 09 10			See list, p. 283
3	Oct. 5	Iu	eE eN F	21 04.9 06.3 21 39			U.S.C.G.S.: 38°N 58°E
4	Oct. 7	Iv	ePE eE iN F	21 24 20 33.0 36.5 21 25			San Benito County?
5	Oct. 8	IIId	ePN iE iSN iSE F	01 26 35.8 36.5 44.9 45.3 01 28			See list, p. 283
6	Oct. 10	IIId	iPNE iN iSNE iN F	11 21 27.2 29.6 38.1 39.8 11 23			See list, p. 283
7	Oct. 17	IIId	iPNE iSNE F	05 21 50.4 52.4 05 23			See list, p. 283
8	Oct. 18	IIId	eNE iSNE F	07 10 45.2 47.1 07 11			Aftershock of Oct. 17 05 21
9	Oct. 21	Id	iPNE iSNE F	23 42 33.6 35.6 23 43			See list, p. 283
10	Oct. 23	IIId	iPNE iSN iSE F	23 21 47.5 56.6 57.1 23 23			See list, p. 283
11	Oct. 29	Iv	ePNE iPZ iPN iSE iSN F	13 02 43 45.1 45.6 58.4 59.6 13 04			San Benito County

SAN FRANCISCO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
12	1948 Nov. 3	IIId	iPNE iN iE F	18 34 46.1 50.6 51.4			See list, p. 283
13	Nov. 5	Iv	ePNE eSE eN F	14 28 59.8 29 14.8 16.5			Sonoma County
14	Dec. 4	Ir	iPNE eSE eSN eLE eLN F	00 27 37.6 31 48 50 33 04 08 00 56			U.S.C.G.S.: 21.5°N 106.5°W
15	Dec. 4	IIv	iPN iPE iE iN iSE iSN iN iN F	23 44 49.6 50.8 45 15.8 16.2 57.8 59.0 46 27.6 41.7 00 01			U.S.C.G.S.: 33.9°N 116.9°W
16	Dec. 28	Iv	iPNE iSE iSN F	01 12 14.7 45.6 46.6 01 04			Foreshock
17	Dec. 28	Iv	iPNE iSNE F	02 26 22.5 55.5 02 29			
18	Dec. 28	Iv	iPNE iSNE F	05 26 49.0 20.5 05 30			
19	Dec. 29	IIv	iPN iSN F	12 54 10.3 44.3 13 08			See list, p. 284
20	Dec. 30	Ir	ePNE eSN eSE eN eE F	23 53 23 56 32 38 57 29 57 00 15			U.S.C.G.S.: 51°N 131°W
21	Dec. 31	IIv	iPN iPE iN iE iSNE F	14 36 26.3 27.2 31.6 32.1 55.8 14 41			See list, p. 284

FERNDALE

THE FERNDALE STATION
FERNDALE, CALIFORNIA

CONSTANTS

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Latitude and longitude:

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

Time -- All determinations are reduced to Greenwich Civil Time.

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

Apparatus	Component
Bosch-Omori 25 kg.	E N

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

FERNDALE

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
1	Oct. 5	Iu	eE eN eLE F	20 31 21 22	30 31 05 27	10 40		U.S.C.G.S.: 38°N 58°E	
2	Nov. 12	Id	iPNE iE iN F	23 23	10 12	32 37 38		See list, p. 283	
3	Nov. 16	Id	iPNE iSNE F	04 04	24 25	02 05			
4	Dec. 4	Ir	ePN eSN eMN F	00 01	28 03	04 42 28		U.S.C.G.S.: 22.5°N 106.5°W	
5	Dec. 4	IIv	ePE eE eSE F	23 00	47 07	30 02 18		U.S.C.G.S.: 33.9°N 116.9°W	
6	Dec. 5	Id	iPE iSNE F	03 03	52 53	04 10	(or earlier)	Humboldt County	
7	Dec. 5	Id	iPNE iSNE F	17 17	29 31	36 46		See list, p. 283	
8	Dec. 30	Ir	eE eN iE iN eNE iE iN F	23 00	52 55 56	44 48 56 58 04 04 28		U.S.C.G.S.: 51°N 131°W	

FRESNO

THE FRESNO STATION, FRESNO STATE COLLEGE
FRESNO, CALIFORNIA

CONSTANTS

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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 Greenwich Civil Time.

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

Apparatus	Component
Sprengnether	N E Z

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h. m. s.	s.			
	1948							
1	Oct. 1	Iu	ePNE iN iN iE iN iE eSE eN F	11 38 39	44.0 50.8 08.9 10.9 20.4 23.4 28 37			U.S.C.G.S.: 17°N 99°W h = 100 km
2	Oct. 2	Iu	eP?NE eNE F	14 34 14 38	42.5 59.5			
3	Oct. 2	Iu	eNE F	16 05 16 10	07			
4	Oct. 5	Iu	ePZ eZ eN iPPZ eE iZ eE iZ eE eN eZ F	20 26 29 30 30 40 31 32 32 33 21 21	21 39.5 18.0 40.6 44.5 54.1 50.0 31.1 17.0 45.0 07.5 50	30		U.S.C.G.S.: 38°N 58°E
5	Oct. 10	Iv	eZ eZ F	11 22 24	48.0 33.5			See list, p. 283
6	Oct. 11	Iv	ePZ eSZ F	08 05 06 08 08	08.5 00.5			Lassen Park
7	Oct. 20	Iu	ePZ F	11 08 11 10	00.0			
8	Oct. 21	Iu	ePZ F	02 01 02 04	09.1		d	
9	Oct. 21	Iu	ePZ iZ F	04 57 59 05 02	24 06.1		d d	U.S.C.G.S.: 12.5°N 88°W
10	Oct. 21	Iu	ePZ iZ eLZ F	05 14 15 52.8 06 12	40 08.6		d d	U.S.C.G.S.: 8°S 155°E

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
11	Oct. 21	Iu	ePZ F	07 08	23.1 11		d	
12	Oct. 21	Iu	ePZ F	08 44	56 47		d	
13	Oct. 23	Iv	iPEZ eE eZ F	23 22	03.6 35 55 27			See list, p. 283
14	Nov. 13	Iu	ePEZ iZ F	23 00	24 30.9 06		d	
15	Nov. 14	Iu	iPZ eZ F	06 27	08.0 21.5 30		d c	
16	Nov. 14	Iu	iPZ eZ F	14 01	53.1 58.5 04		d d	
17	Nov. 19	Ir	ePZ ePN ePE F	01 12	11 13 15 23			U.S.C.G.S.: 9°N 84°W h = 100 km
18	Nov. 21	Iu	ePZ ePNE eZ F	19 22	47 53 33 29			U.S.C.G.S.: 11°S 167°E h = 150 km
19	Nov. 22	Ir	iPEZ iPN F	09 15	08.3 09.3 20			U.S.C.G.S.: 51°N 180°
20	Nov. 26	Iu	ePZ ePN ePE ePPE ePPZ ePPN eLZ F	05 50	23 30 32 03 21.5 25 36 27			U.S.C.G.S.: 5°S 145°E
21	Dec. 4	IIr	iPNEZ iPPNZ iE iN eMN eME F	00 27	12.7 19.5 17.8 20.8 01 55 30			U.S.C.G.S.: 21.5°N 106.5°W

FRESNO

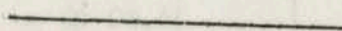
No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
22	Dec. 4	IIIv	iPNE iN iNE iN iE F	23	44	17.8 18.5 21.7 28.7 29.8			U.S.C.G.S.: 33.9°N 116.9°W
				00	05				
23	Dec. 15	Iu	iPZ ePNE iSN iSE iSZ F	19	23	28.9 30.5 33 23.0 23.5 26.0			U.S.C.G.S.: 22°N 143°E h = 200 km
				19	39				
24	Dec. 16	Iu	iPZ F	07	30	20.6			U.S.C.G.S.: 20°S 179°W
				07	35				
25	Dec. 18	Iv	iPZ iPNE iZ iNE iSEZ iSN F	23	46	03.6 05.2 09.4 10.4 46.3 50.3			Near Barstow
				23	53				
26	Dec. 20	IIv	iPZ iPNE iZ iNE iNEZ F	04	43	14.3 15.5 16.3 17.3 23.3			Near Piedras Blancas Point
				04	55				
27	Dec. 21	Iu	ePZ F	20	22	08			
				20	24				
28	Dec. 23	Iu	iPZ iPNE eLZ F	08	50	21.0 23.6			U.S.C.G.S.: 56°N 166°E
				09	10	50			
				09	21				
29	Dec. 28	Iv	iPZ iPNE iZ iSNE F	01	12	19.2 19.6 47.2 56.0			
				01	17				
30	Dec. 28	IIv	iPNZ iPE iZ iSNEZ iN F	02	26	28.0 29.0 56.4			
				27	04.9				
				29	24.9				
				02	33				

FRESNO

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
31	Dec. 28	IIv	iPZ iPNE iZ iSE iSN iN F	05 26 27 30.8 31.2 35.6 05 33	53.0 53.9 22.1			
32	Dec. 29	IIv	iPZ iN iNZ iNE F	12 54 13 05	14.0 15.8 16.7 17.7	d	See list, p. 284	
33	Dec. 30	IIr	iPN iPEZ iSZ eN eE F	23 53 56 57 00 45	44.9 46.8 34.3 14 27		U.S.C.G.S.: 51°N 131°W	
34	Dec. 31	IIv	iPZ iPNE iSN iSEZ iZ iN iE iN iZ F	14 36 37 14 47	15.2 16.2 35.1 45.0 00.5 15.3 17.3 28.0 28.6		See list, p. 284	
35	Jan. 1	IIr	ePZ ePE iNE iEZ iNEZ iN iE iNE F	01 18 01 33	19.9 20.8 21.4 22.8 24.6 39.7 40.0 41.3		See list, p. 284	

MINERAL

THE MINERAL STATION
MINERAL, CALIFORNIA



CONSTANTS

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Latitude and longitude:

$\phi = 40^{\circ} 21' N.$
 $\lambda = 121^{\circ} 35' W.$

Time -- All determinations are reduced to Greenwich Civil Time.

Altitude -- 1495 meters (4906 feet) above mean sea level.

Apparatus	Component
Wood-Anderson	E N
Benioff	Z

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
1	Oct. 1	Iu	iPZ iZ iZ iZ iPPZ F	11 39	14.3 19.0 35.0 47.1 42 20.1			U.S.C.G.S.: 17°N 99°W h = 100 km	
2	Oct. 2	Iu	ePZ iZ F	16 05	29 06 08.6				
3	Oct. 4	Iu	ePZ iZ F	06 10	05 16.8		c		
4	Oct. 5	Iu	ePZ iZ F	12 10	25.5 40.5				
5	Oct. 5	Iu	iPZ iZ F	12 42	28.9 40.7		d		
6	Oct. 5	Iu	ePZ eN eE iZ iZ eN eE eN eZ F	20 26	07 19 30 15 15.6 31 29.6 39 10 21 04.0 04.9 08.1 21 58			U.S.C.G.S.: 38°N 58°E	
7	Oct. 7	Iu	iPZ F	18 54	15.3		d		
8	Oct. 8	Iv	ePZ iZ eN iZ eSNE iZ F	01 27	14 17.7 19 40.5 49.0 49.2 01 29			See list, p. 283	
9	Oct. 8	Iu	iPZ F	06 49	48.9		c		
10	Oct. 8	Iu	iPZ F	09 15	50.1		d		
11	Oct. 9	Iu	ePZ F	05 20	56 05 22				

MINERAL

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
12	Oct. 9	Iu	ePZ iZ iZ F	07 43 18.5 24.2 32.9 07 46			
13	Oct. 9	Iu	iPZ F	17 38 05.3 17 39		c	
14	Oct. 9	Iu	ePZ F	18 34 49.0 18 37			
15	Oct. 10	Iv	ePZ iS?Z F	11 22 04 23 00.1 11 24			See list, p. 283
16	Oct. 11	IIId	iPNEZ	08 04 01.4			
17	Oct. 12	Iu	iPZ F	02 47 41.2 02 50		c	
18	Oct. 12	Iu	ePZ F	02 52 57 02 55			
19	Oct. 12	Iu	iPZ F	13 49 54.9 13 53		d	
20	Oct. 14	Iu	iPZ eNE iE iPPZ eS?Z F	21 53 55.8 57.0 54 08.8 56 16.3 22 03 08 22 04		c	
21	Oct. 15	Iu	iPZ F	11 02 06.3 11 04		d	
22	Oct. 16	Iv	iPE iNE iPE iZ iZ iSE iSN F	01 07 28.1 28.5 35.1 39.5 47.3 54.7 55.5 01 09		c	See list, p. 283
23	Oct. 16	Iu	eZ F	02 08 44.5 02 10			
24	Oct. 16	Iu	iPZ F	04 43 29.1 04 45		c	
25	Oct. 16	Iu	iPZ F	04 52 57.2 04 55		d	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948						s.		
26	Oct. 16	Iu	iPZ F	04 55 04 57	56.9		c		
27	Oct. 17	Iu	iPZ eZ F	20 42 20 44	04.2 38.2		c		
28	Oct. 18	Iu	iPZ F	09 13 09 15	36.9		c		
29	Oct. 20	Iu	iPZ F	03 23 03 25	36.5		c		
30	Oct. 20	Iu	iPZ F	11 08 11 09	06.8		c		
31	Oct. 21	Iu	iPZ iZ iZ F	04 54 58 05 00	51.6 55.8 18.9		d c	U.S.C.G.S.: 12.5°N 88°W	
32	Oct. 21	Iu	eZ F	05 14 05 16	34.5			U.S.C.G.S.: 8°S 155°E	
33	Oct. 22	Iu	ePZ F	14 11 14 13	36.3		d		
34	Oct. 22	Iu	iPZ iZ F	14 16 14 19	37.2 50.5		d d		
35	Oct. 23	Iu	iPZ iZ F	04 33 04 37	32.0 51.0		d c		
36	Oct. 23	Iu	iPZ F	05 00 05 03	14.2		c		
37	Oct. 24	Iu	iPZ F	17 09 17 11	13.1		c		
38	Oct. 25	Iu	iPZ iZ iZ F	12 38 39 12 41	54.5 58.6 05.7		d c d		
39	Oct. 26	Iu	ePZ F	08 24 08 26	05.1		d		
40	Oct. 26	Iu	iPZ F	20 04 20 06	36.9		c		

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
41	Oct. 27	Iu	iPZ iZ iZ iNE F	18 46	53.1 54.0 55.5 56.6		c d d	U.S.C.G.S.: 17°N 61°W	
42	Oct. 28	Iu	eZ iZ F	00 42 00 44	05.0 10.0		d c		
43	Oct. 28	Iu	eZ F	14 21	51			Runs into next shock	
44	Oct. 28	Iu	iPZ iZ iZ F	14 31 14 42	36.0 38.8 39.1		d d d		
45	Oct. 28	Iu	ePZ iZ iZ F	20 56 21 02	56 01.6 05.6		c d c	U.S.C.G.S.: 36°N 141°E	
46	Oct. 29	Iu	ePZ F	03 19 03 22	07			U.S.C.G.S.: 19°S 71°W h = 100 km	
47	Oct. 29	Iu	iPZ iZ F	06 01 06 03	52.1 53.7		d c		
48	Oct. 29	Iu	iPZ F	10 12 10 14	42.4		d		
49	Oct. 29	Ir	iPZ F	11 14 11 16	56.8		c	U.S.C.G.S.: 5°N 101°W	
50	Oct. 30	Iu	iPZ iZ F	05 01 05 02	02.0 05.7		c d		
51	Nov. 1	Iu	eN eE F	12 14 12 17	48 54			U.S.C.G.S.: 57°N 161°E	
52	Nov. 3	Iu	eE eN F	05 31 05 34	53 56			U.S.C.G.S.: 20.5°S 169.5°E	
53	Nov. 8	Iu	iPZ eNE iZ iZ F	18 02 18 05	47.7 48.5 53.8 01.1		c c d		

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
54	Nov. 9	Iu	ePZ F	04 57	44.5 04 59			
55	Nov. 9	I	iPZ eZ iZ iZ eNE iZ iZ F	20 40 41 44 40.7 48 49.2 54	47.7 30.5 19.7 40.7 48 49.2 32.7		d d d c d	
56	Nov. 10	I	iPZ iZ F	13 10	05.4 14.4 13 12		d d	
57	Nov. 10	Iv	ePZ iPZ iZ eNE iZ eE F	23 57 58 18.0 25 59 49	51.5 13.9 18.0 25 30.8 49	1.5	d d c c	Near Barstow
58	Nov. 11	Iu	iPZ F	07 17 07 19	14.6		c	
59	Nov. 11	Iu	iPZ iZ F	07 52	06.9 42.9		c d	
60	Nov. 11	Iu	iPZ iZ F	20 32 20 34	12.4 21.9		d c	
61	Nov. 12	IIv	iPNEZ iE iN iE F	23 11	00.4 02.2 02.5 09.8		c	See list, p. 283
62	Nov. 13	Iu	ePZ F	02 45 02 47	45.9		c	
63	Nov. 13	Iu	ePZ iZ F	04 58 05 00	20.9 33.9		c d	
64	Nov. 13	Iu	ePZ iPZ F	07 12 07 16	23.9 26.4		d c	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
65	Nov. 13	I Iv	ePZ	12 58	44.3		d	Felt in Reno
			eE		45.3			
			iZ		46.3		c	
			iE		46.5			
			iSE	59	07.5			
			iE		08.7			
			F	13 02				
66	Nov. 13	Iu	ePZ	23 00	31.1		c	
			iZ		35.1		c	
			F	23 05				
67	Nov. 14	Iu	ePZ	02 50	55.5		d	
			F	02 53				
68	Nov. 14	Iu	iPZ	06 26	49.0		d	
			F	06 29				
69	Nov. 15	Iu	iPZ	05 00	47.7		c	
			F	05 02				
70	Nov. 16	Iv	iPZ	04 24	28.5			Humboldt County
			iZ		36.7			
			iZ		41.2			
			iMZ	25	00.0			
			F	04 27				
71	Nov. 17	Iu	ePZ	15 56	50.5		d	
			iZ		53.5		d	
			F	15 58				
72	Nov. 18	Iu	iPZ	13 14	09.8		d	
			F	13 16				
73	Nov. 19	Iu	ePZ	01 12	34.7		c	U.S.C.G.S.: 9°N 84°W h = 100 km
			iZ		36.7		d	
			eNE		38			
			iZ	13	16.7		c	
			iZ	14	14.3		d	
			F	01 22				
74	Nov. 20	Iu	ePZ	07 04	19.0		c	
			iPZ		20.0		d	
			iZ		25.2		d	
			F	07 07				
75	Nov. 20	Iu	ePZ	08 27	06.5		c	
			iZ		10.3		c	
			F	08 29				
76	Nov. 20	Iu	iPZ	10 20	01.7		d	
			F	10 23				

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)		Period	Trace motion	Remarks
				h.	m. s.			
	1948							
77	Nov. 21	Iu	iPZ iZ iZ iZ eZ F	19 22 23 32.1 44.6 50.1 26 47.1 19 29	48.8 32.1 44.6 50.1 47.1	5.0	d c c c	U.S.C.G.S.: 11°S 167°E h = 150 km
78	Nov. 22	Ir	iPZ iZ F	09 14 09 20	41.0 44.3			U.S.C.G.S.: 51°N 180°
79	Nov. 22	Iu	ePZ F	12 10 12 12	13.0		d	
80	Nov. 22	Iu	ePZ iZ F	23 42 23 46	38.0 47.9		c c	
81	Nov. 23	Iu	iPZ F	15 00 15 02	07.9		d	
82	Nov. 25	Iu	iPZ iZ iZ iZ F	14 57 59 15 02	52.2 55.7 01.7 02.7		d d d d	
83	Nov. 26	Iu	iPZ iZ eZ F	05 50 06 02 06 05	06.9 18.1 38	2.7 5.5	d c	U.S.C.G.S.: 5°S 145°E
84	Nov. 27	Iu	iPZ F	06 24 06 26	39.6			
85	Nov. 27	Iu	ePZ F	06 43 06 45	13.5		c	
86	Nov. 28	Iu	iPZ F	01 54 01 56	16.9		c	
87	Nov. 28	Iu	iPZ F	23 56 23 58	47.7		c	
88	Nov. 29	Iu	iPZ F	02 16 02 17	00.1		d	
89	Nov. 30	Iu	ePZ iZ ePPZ eSZ F	08 40 43 50 08 52	55.5 58.0 02.5 46.5		d d	

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
90	Dec. 2	Iu	eZ iPZ F	04	37	35.5 38.3		d	
91	Dec. 4	Ir	iPZ eNE iN iN eSN eSE eG?E eLNE F	00	27	51.8 52.5 00.8 13.8 11.5 15.0 25 31 27	20 11.5	c	U.S.C.G.S.: 21.5°N 106.5°W
92	Dec. 4	Iu	iPZ F	16	02	23.4		d	
93	Dec. 4	Iu	iZ iE iN iZ F	16	37	13.4 18.4 19.1 26.9		c	
94	Dec. 4	IIv	iPZ iNZ iE iZ iNE iE iPN iE iN iE iN iN iE F	23	45	11.2 12.2 13.4 14.5 21.5 22.6 46.2 48.0 21.8 23.8 15.2 20.4 21.6			U.S.C.G.S.: 33.9°N 116.9°W
95	Dec. 5	IIv	iPZ iPE iN iE iN iN iSNE iMNE F	03	52	13.1 13.6 15.0 15.7 16.1 20.2 34.6 35.7		c	Humboldt County
96	Dec. 5	Iv	iPZ eNE iZ iN	07	37	37.0 37.5 38.6 42.4		c	Aftershock of preceding. Humboldt County

MINERAL

No.	Date	Char-acter	Phase	Time		Period	Trace motion	Remarks
				(G.C.T.)				
	1948			h.	m. s.	s.		
96	Dec. 5 (cont.)	Iv	iE	07	37	45.1		
			iN			46.5		
			iSE			58.4		
			iSN			59.4		
			iME	38		01.6		
			iMN			02.4		
			F	07	39			
97	Dec. 5	Iv	iPZ	09	45	15.5	d	Aftershock Humboldt County
			eN			16	d	
			iZ			18.7		
			iE			36.8		
			iSNE			38.1		
			iN			42.0		
			iE			44.3		
F	09	47						
98	Dec. 5	IIv	iPNZ	16	34	08.9		Trinity County?
			iE			09.7		
			iZ			12.4		
			iN			18.7		
			iE			20.1		
			iN			35.0		
			iSE			36.0		
			iSN			36.5		
			iMN			40.2		
iME			41.8					
F	16	36						
99	Dec. 5	IIv	iPEZ	17	29	49.3	c	See list, p. 283
			eN			50.0		
			iE			51.3		
			iN			52.0		
			iE			52.5		
			iN	30		01.3		
			iSNE			10.6		
			iMNE			15.3		
			F	17	32			
100	Dec. 7	Iu	iPZ	09	24	12.3	c	U.S.C.G.S.: 18°N 69.5°W
			F	09	27			
101	Dec. 8	Iu	iPZ	22	34	18.7	c	
			iZ			28.0	c	
			F	22	37			
102	Dec. 9	Iu	ePZ	04	44	25	d	
			F	04	46			
103	Dec. 9	Iu	iPZ	06	06	52.3	c	
			F	06	08.5			

MINERAL

No.	Date	Char-acter	Phase	Time (G.C.T.)			Period	Trace motion	Remarks
				h.	m.	s.			
	1948								
104	Dec. 9	Iu	iPZ iZ iZ F	06 06	31 33	01.6 03.9 46.9	d d d		
105	Dec. 9	Iu	ePZ iPZ iZ F	07 07	45 47	08.5 09.8 52.4	d d		
106	Dec. 9	Iu	iPZ F	13 13	44 46	40.5	c		
107	Dec. 10	Iu	ePZ iZ F	09 09	51 57	11.0 22.4	d	U.S.C.G.S.: 57°N 163°E	
108	Dec. 10	Iu	eZ F	13 13	24 26	30.5			
109	Dec. 12	Iu	iPZ F	06 06	32 34	20.0	c		
110	Dec. 12	Iu	iPZ F	06 06	48 50	31.0	c		
111	Dec. 12	Iu	iPZ eNE iZ F	13 13	25 29	18.9 20 24.3	d d	U.S.C.G.S.: 52°N 178°E	
112	Dec. 14	Iu	iPZ iZ F	09 09	35 38	12.1 37.3	d d	1.3	
113	Dec. 14	Iu	ePZ iPZ F	16 16	21 23	09.5 14.2	c c		
114	Dec. 15	Iu	iPZ F	02 02	19 21	45.9	c		
115	Dec. 15	Iu	iPZ eNE iZ iZ eNEZ F	19 19	23 35	15.1 17 18.7 24 12.5 32 59.1	c c	U.S.C.G.S.: 22°N 143°E h = 200 km	
116	Dec. 15	Iu	iPZ iZ iZ F	22 22	02 07	31.2 54.8 37.1	c c c		

MINERAL

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
117	Dec. 15	Iu	iPZ	22 38 33.2		c	
			iZ	39 03.3		d	
			F	22 41			
118	Dec. 16	Iu	iPZ	07 30 24.5		d	U.S.C.G.S.: 20°S 179°W
			F	07 35			
119	Dec. 17	Iu	ePZ	11 40 23.0	1.5	d	
			iZ	31.3		c	
			F	11 42			
120	Dec. 18	Iv	iPZ	02 20 05.0		d	See list, p. 284
			eNE	07			
			iZ	07.2		c	
			iZ	09.4		d	
			iSEZ	22.2			
			iN	24.2			
			iMZ	25.2			
			F	02 22			
121	Dec. 18	Iu	ePZ	14 25 59.5		c	
			F	14 28			
122	Dec. 18	Iv	ePZ	23 46 57.0		d	Near Barstow
			iZ	47 09.3		d	
			iZ	15.4		c	
			eE	18			
			iS ₁ Z	48 30.0			
			iS ₂ EZ	40.0			
			eN ²	41.5			
			F	23 50			
123	Dec. 19	Iu	iPZ	04 09 42.1		d	
			F	04 14			
124	Dec. 20	Iv	iPZ	04 43 59.5		c	Near Piedras Blancas Point
			iZ	44 00.5		c	
			iZ	04.4		d	
			iNE	04.9			
			iZ	15.8		c	
			iNZ	38.1			
			iZ	54.7			
			iSE	45 00.7			
			iE	09.8			
			iZ	10.9			
			F	04 48			
125	Dec. 20	Iu	iPZ	17 36 59.4			
			iZ	37 01.3			
			F	17 39			
126	Dec. 20	Iu	iPZ	23 20 35.4		d	
			iZ	50.4		d	
			F	23 23			

ARCATA

THE ARCATA STATION, HUMBOLDT STATE COLLEGE
 ARCATA, CALIFORNIA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\phi = 40^{\circ} 52' 16'' \text{ N.}$$

$$\lambda = 124^{\circ} 04' 5'' \text{ W.}$$

Time -- All determinations are reduced to Greenwich Civil Time.

Altitude -- 60 meters above mean sea level.

Apparatus	Component
Sprengnether	N E Z

ARCATA

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948						
1	Oct. 1	Iu	ePZ iZ F	11 39 29.0 50.3 11 42			U.S.C.G.S.: 17°N 99°W h = 100 km
2	Oct. 5	Iu	eZ eZ F	20 30 09 21 07.9 21 31			U.S.C.G.S.: 38°N 58°E
3	Oct. 11	Iv	iPZ F	08 04 36.2 08 07			Lassen Park
4	Oct. 14	Iu	iPZ F	21 53 57.3 21 55		d	
5	Oct. 16	IIId	iPZ iSZ F	01 07 05.6 14.2 01 08		c	See list, p. 283
6	Nov. 3	Iu	iPZ ipPZ F	05 31 47.3 55.8 05 33		d c	U.S.C.G.S.: 20.5°S 169.5°E
7	Nov. 12	IIId	iPNZ iN iSNZ F	23 10 36.5 40.5 44.0 23 13		d	See list, p. 283
8	Nov. 19	Iu	iPZ eN F	01 12 54.2 56.0 01 15		d	U.S.C.G.S.: 9°N 84°W h = 100 km
9	Nov. 21	Iu	ePZ eZ F	19 22 52.0 23 25.5 19 26		d c	U.S.C.G.S.: 11°S 167°E h = 150 km
10	Dec. 4	Ir	iPZ iN iZ eSZ eSN eZ eLN eMZ F	00 28 09.1 14.4 15.7 32 19 36 34 24 35.4 38.5 01 08		d d	U.S.C.G.S.: 21.5°N 106.5°W
					22		
11	Dec. 4	IIv	ePZ iZ iN iZ iN iZ F	23 45 35 41.9 46 13.2 47 34.2 55.8 59.8 00 11		c	U.S.C.G.S.: 33.9°N 116.4°W

ARCATA

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948						
12	Dec. 5	IIId	iPNEZ iZ iSNZ iE iMZ F	17 29 34.0 36.4 42.7 43.6 46.3 17 31			See list, p. 283
13	Nov. 15	Iu	iPZ iZ F	19 23 09.3 24 05.5 19 26		d c	U.S.C.G.S.: 22°N 143°E h = 200 km
14	Nov. 29	IIv	ePZ iZ iZ iNEZ iN iZ iE iSN iN iE F	12 54 22.6 23.7 26.5 29.2 31.7 34.2 36.1 55 00 02.7 07.7 13 05			See list, p. 283

RENO

THE RENO STATION, UNIVERSITY OF NEVADA
RENO, NEVADA

CONSTANTS

CONSTANTS OF THE STATION

Latitude and longitude:

$$\begin{aligned}\phi &= 39^{\circ} 32' 13 \text{ N.} \\ \lambda &= 119^{\circ} 46' 18 \text{ W.}\end{aligned}$$

Time -- All determinations are reduced to Greenwich Civil Time.

Altitude -- 1375.3 meters above mean sea level.

Apparatus	Component
Sprengnether	N E Z

RENO

No.	Date	Char-acter	Phase	Time (G.C.T.)	Period	Trace motion	Remarks
	1948						
1	Dec. 15	Iu	iPZ iN iZ iN iN iZ F	19 23 25.7 25.8 24 27.0 39.0 34 16.5 18.0 19 39			U.S.C.G.S.: 22°N 143°E h = 200 km
2	Dec. 15	Iu	iPZ iN iZ F	22 02 43.3 45.8 03 07.3 22 06			
3	Dec. 15	Iu	iPZ F	22 38 44.8 22 41			
4	Dec. 18	IIId	iPZ iN iZ iSN F	02 19 46.3 47.2 50.5 51.0 02 22			See list, p. 284
5	Dec. 18	Iv	iPNZ iZ iN iZ iN iN F	23 46 56.7 47 42.1 48.8 48 03.6 04.5 14.6 23 53			Near Barstow
6	Dec. 20	IIv	ePZ iN iN iZ iN iZ iN F	04 42 54.0 57.3 43 07.2 07.7 40.9 41.9 45.4 04 50			Near Piedras Blancas Point
7	Dec. 23	Iu	iPZ F	07 24 53.3 07 28		d	U.S.C.G.S.: 30°S 177°N
8	Dec. 23	Iu	iPZ iN iZ iN iSN F	08 50 07.2 08.7 15.7 22.7 57 19.2 09 08	3.0	c	U.S.C.G.S.: 56°N 166°E
9	Dec. 23	Iu	eNZ eZ iN iZ iN F	15 34 13 41 03.5 04.0 10.5 15.5 15 44			

RENO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
	1948			h. m. s.	s.		
10	Dec. 23	Iu	iPZ F	18 58 10.8 19 01		c	
11	Dec. 24	Iu	iPZ F	04 53 18.4 04 55		d	
12	Dec. 24	Iu	iPZ F	07 40 35.7 07 43		c	
13	Dec. 26	Iu	iPZ ipPZ iZ F	07 24 22.8 42.8 25 58.6 07 29		c d	U.S.C.G.S.: 22.5°N 69°W
14	Dec. 28	Iu	iPZ F	00 28 04.7 00 30			
15	Dec. 28	IIId	iPNZ iSN F	01 11 32.7 34.2 01 17			
16	Dec. 28	IIId	iPZ iSNZ F	01 17 59.5 18 02.4 01 20		c	
17	Dec. 28	IIId	iPZ iSZ iN iN F	01 59 32.2 34.7 35.2 36.5 02 02		c	
18	Dec. 28	IIId	iPZ iSNZ F	02 20 35.9 38.7 02 22		c	
19	Dec. 28	IIId	iPNZ F	02 25 42.0 02 32			
20	Dec. 28	IIId	iPZ iSNZ F	03 00 48.2 51.3 03 02		c	
21	Dec. 28	IIId	iPNZ iSNZ F	04 24 01.8 04.6 04 27			
22	Dec. 28	IIId	iPZ iZ iN F	04 25 42.0 44.5 45.1 04 27		c	

RENO

No.	Date	Char-acter	Phase	Time	Period	Trace motion	Remarks
				(G.C.T.)			
				h. m. s.	s.		
	1948						
23	Dec. 28	IIId	iPNZ F	05 26 07.6 05 33			
24	Dec. 28	IIId	iPNZ iZ iN iN F	06 05 16.6 18.5 19.1 20.7 06 09			
25	Dec. 28	IIIId	iPNZ F	12 53 30.4 ?			See list, p. 284
26	Dec. 30	IIr	iN iN eLN F	23 53 13.7 22.7 58.0 01 19	2.3 13		U.S.C.G.S.: 51°N 131°W
27	Dec. 31	IIv	iN iN iSN F	14 18 51.5 19 02.5 42.7 14 23			Foreshock of next
28	Dec. 31	IIv	eN iN iN iN F	14 36 51.4 37 05.7 28.0 38 02.0 14 46			See list, p. 284
29	Jan. 1 1949	IIv	iPN iN iN iSN F	01 18 46.4 48.6 51.4 19 30.9 01 30			See list, p. 284