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SEISMOLOGICAL BULLETIN

Lamont Geological Observatory
Columbia University

Palisades, N. Y.

January 1 - April 30, 1951

By

HENRY OWEN and FRANK PRESS

Lamont Geological Observatory

Contribution No. 31



STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS

Latitude 41° 00' 25" North
 Longitude 73° 54' 31" West
 Elevation 70 meters
 Bedrock Palisades diabase Triassic Age

INSTRUMENTS

Three component Columbia University seismographs
 To = 12 sec. Tg = 15 sec.

Three component Benioff seismographs. Short period To = 1 sec.
 Tg = 0.2 sec. Long period To = 1 sec. Tg = 75 sec.

One vertical Columbia University seismograph. To = 0.2 sec.
 Tg = 0.2 sec.

Three component Columbia University visual recording
 seismographs To = 12 sec.

One Columbia University vertical seismograph for visual
 recording To = 1 sec.

Benioff Microbarograph Tg = 0.2 sec.

ABBREVIATIONS

Dil. = Dilation

Com. = Compression

i. = Sudden beginning of the motion (impetus)

e. = gradual beginning of the motion (emersio)

Lg. = short period continental surface shear wave

Rg. = Continental Rayleigh wave

All times are G.C.T.

Time - I.B.M. mercurial pendulum clock corrected by Naval Observ-
 atory time signals every 4 hours.

Date	Phase	h	m	s	Remarks
Jan.					
1	e	20	37	17	New Hebrides
	e	20	54	14	USCGS 0 = 20:16:20 18°S, 169°E
3	iP	12	28	29.5	Off coast of Colima, Mexico
	iS	12	34	15	USCGS 0 = 12:21:31 18°N, 106°W
	eLg	12	41	16	Mag. 6½ Pas.
	eRg	12	44	24	
3	e	03	18	50	
3	eP	13	11	23	Aftershock of 12:21:31
	eS	13	17	11	USCGS 0 = 13:04:24
	eLg	13	24	11	Mag. 6¼ - ½ Pas.
	eRg	13	27	18	
5	eP	00	59	23	Southern coast of Panama
	ePP	01	00	40	USCGS 0 = 00:52:40 7°N, 81°W
	iS	01	04	50	h ~ 100 km. Mag. 6.7 Pas.
	e	01	05	48	PZ 1¼ μ 9 sec.
	e(SS)	01	06	41	SH 3½ μ 13 sec.
	eLR	01	08.1		Max H 14 μ 18 sec.
6	iP	05	30	24.8	N.E. Afghanistan
	epP	05	31	18	USCGS 0 = 05:17:19 36¼°N, 70¼°E
	i	05	42	14	Mag. 6.8 Pas. h = 250 km.
	i	05	43	56	
6	iP	07	58	13.5	Southern Panama
	ePcP	08	00	45	USCGS 0 = 07:51:31 7½°N, 81°W
	e	08	03	07	h ~ 100 km. Mag. 7 Pas.
	iS	08	03	40	PH 3½ μ 6 sec.
	eSS	08	06	10	SH 15 μ 15 sec.
	eLR	08	07.8		
10	eLR	11	12.6		Kermadec Islands Region USCGS 0 = 10:12:48 23°S, 177½°W h ~ 50 km.
10	eLR	09	27.1		Tonga Islands Region USCGS 0 = 08:26:56 23°S, 176°W h ~ 100 km.
10	iP	19	14	34.7	Aleutian Islands
	eL	19	38.8		USCGS 0 = 19:03:35 h ~ 100 km.
14	eLR	11	17.4		Tonga Islands Region USCGS 0 = 10:19:24 23°S, 176°W h ~ 100 km.

Date	Phase	h	m	s	Remarks
Jan.					
15	iPKP	04	30	56	New Hebrides Islands
	ipPKP	04	31	23	USCGS 0 = 04:12:14 15°S, 167°E
	eSKS	04	37	44	h ~ 150 km. Mag. 6¼ - ¾ Pas.
	iSKKS	04	39	16	SKSH 2 μ 11 sec.
	ePS	04	42	19	SSH 16 μ 20 sec.
	iPPS	04	43	49	
	eSS	04	49	08	
	eLR	05	09.0		
18	iP	21	26	35.8	Aleutian Islands
	iPcP	21	27	05.9	USCGS 0 = 21:15:50 52°N, 177°W
	eS	21	35	23	h ~ 60 km. Mag. 6¼ - ½ Pas.
	eLR	21	49.7		
19	iP	01	47	00.2	Off coast of El Salvador
					USCGS 0 = 01:40:48 13°N, 88°W h ~ 100 km.
20	eLR	13	27.5		Near Mexico-Guatemala Border USCGS 0 = 13:12:20
21	e	13	03	04	
22	e(LR)	11	34.0		Kermadec Islands Region USCGS 0 = 10:30:45 33°S, 178°W
22	e(LR)	13	19.1		Mozambique Channel USCGS 0 = 12:16:02 17¼°S, 41°E
23	e	07	21	18	S. Pacific Ocean
	eLR	07	46.0		USCGS 0 = 06:52:42 55°S, 136°W
24	e(S)	07	29	26	Imperial Valley, California
	e	07	32	20	USCGS 0 = 07:17:01 33°N, 115¼°W
	iLg	07	34	50	Mag. 5¼ Pas. 6¼ - ½ Berk.
	iRg	07	37	39	
24	iP	05	08	26	Sandwich Islands
	eSKS	05	14	37	USCGS 0 = 04:49:28
	ePS	05	17	44	PZ 2¼ μ 7 sec. PH 1¼ μ 8 sec. Weak Surface Waves
25	e	17	20	38	
26	iP	03	28	12.0	Δ ~ 130 km.
	iS	03	28	27.8	
27	iP	00	46	44.2	Argentina
					USCGS 0 = 00:36:12 h ~ 500 km.

Date	Phase	h	m	s	Remarks
Jan.					
29	eLR	06	07.6		Off Cape Mendocino, California USCGS 0 = 05:43:47 43°N, 128°W
29	iP	10	34	01.8	Mexico, S. coast of Chiapas USCGS 0 = 10:27:59 15½°N, 92°W h ~ 100 km.
30	e	11	28	46	
30	iP	19	07	09.7	Off Southern coast of Mexico USCGS 0 = 19:00:30 15½°N, 99°W Mag. 6¼ - ½ Pas. PZ 1½ μ 7 sec. SH 3 μ 12 sec.
	eS	19	12	31	
30	iP	23	19	42.5	Near Cyprus USCGS 0 = 23:07:40 33°N, 33°E h ~ 100 km.
	iS	23	29	51	
	eSS	23	35	20	
31	eLR	12	05.8		North Atlantic USCGS 0 = 11:51:46 21°N, 46°W
Feb.					
8	iP	00	31	49.9	
10	eP?	03	47	02	
10	iP	15	35	32.3	
10	e	22	30	38	Off N. coast of New Guinea USCGS 0 = 21:52:19
12	e(PS)	03	51	43	Aleutian Islands USCGS 0 = 03:31:50 52°N, 179°E h ~ 200 km.
12	iP	17	33	22.8	Near Verkhoyanski Mtns., Siberia USCGS 0 = 17:22:02 66°N, 136°E
	eS	17	42	37	
	eLR	18	01.9		Mag. 6½ Pas.
13	e	06	34	09	Lower California USCGS 0 = 06:16:30
13	iP	08	56	30.4	Off coast of Guatemala USCGS 0 = 08:50:10 13°N, 91°W h ~ 100 km.
	eS	09	01	31	
13	ePP	12	14	20	Samoa Islands Region USCGS 0 = 11:55:50 15°S, 175°W
	iSKS	12	20	04	
	eSKKS	12	21	04	h ~ 250 km. Mag. 7 Pas.
	iPS	12	23	16	SKSH 10 μ 21 sec.
	eSS	12	29	22	
13	iP	22	22	16.9	150 miles east of Alaskan Penn. USCGS 0 = 22:12:58 56°N, 155½°W
	iPP	22	24	24	

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Date	Phase	h	m	s	Remarks
Feb. (cont'd)					
13	iPS	22	29	53	Mag. 7 Pas.
	iScS	22	32	02	PH 5 μ 12 sec.
	eL	22	41.1		PPH 4 μ 15 sec. SH 45 μ 12 sec.
15	e	05	39	56	Off coast of Colima, Mexico USCGS 0 = 05:20:20
17	e	21	25	49	Southeastern New Guinea USCGS 0 = 21:06:58 7°S, 146°E
	iPKP	21	26	01	h ~ 100 km. Mag. 7¼ - ½ Pas.
	i	21	26	48	
	iPP	21	28	18	PKPZ 4½ μ 4 sec.
	i	21	29	03	PPZ 10 μ 5 sec.
	i	21	29	08	SKSH 13 μ 10 sec.
	iPKS	21	29	27	
	iSKS	21	32	53	
	iSKKS	21	34	56	
	ePS	21	38	18	
	ePPS	21	40	07	
	eSS	21	45	38	
	eLR	22	08.0		
19	iP	22	23	46	West of Easter Island USCGS 0 = 22:11:54 25°S, 117°W
	iS	22	33	37	
	e	22	44	18	Mag. 6½ Pas.
20	iP	00	08	11	
20	eP	15	35	49	Pacific Ocean USCGS 0 = 15:24:18 22°S, 114°W
	e	16	01	11	Mag. 6 Pas.
21	e	08	21	53	Kermadec Islands Region USCGS 0 = 07:19:23
21	iP	20	45	39	Off N. coast of Dominican Republic USCGS 0 = 20:40:39 18½°N, 69°W
	iS	20	49	50	h ~ 100 km.
23	e	03	20	53	Off coast of Oregon USCGS 0 = 02:56:42 44½°N, 129½°W
27	e	18	58	52	
Mar.					
2	e	01	47	33	North Atlantic USCGS 0 = 01:32:39 53°N, 35°W
4	iP	11	27	01	Near coast of Southern Peru USCGS 0 = 11:17:33 16°S, 74°W
	iPP	11	27	27	h ~ 150 km. Mag. 6¼ - 7 Pas.
	i(SP)	11	27	57	
	ePP	11	29	08	
	eS	11	34	46	
	eLR	11	43.6		

Date	Phase	h	m	s	Remarks
Mar.					
5	ePP	20	30	14	Ryukyu Islands Region
	e	20	31	13	USCGS 0 = 20:11:45 29°N, 128°E
	iSKS	20	36	15	h ~ 150 km. Mag. 7 Pas.
	iS	20	37	29	
	ePS	20	39	36	
9	iPKP	20	03	52.9	Flores Sea Region
	eLR	20	53.6		USCGS 0 = 19:44:16 8°S, 124½°E Mag. 6½ Pas.
10	iPKP	22	16	11	New Hebrides Islands
	iPP	22	17	42	USCGS 0 = 21:57:37 15½°S, 167½°E
	eSKS	22	23	02	h ~ 200 km. Mag. 7¼ - ½ Pas.
	eSKKS	22	24	07	
	i	22	26	37	
	ePS	22	27	44	
	eSS	22	34	04	
	eLR	22	54.4		
16	i(P)	17	41	26	
16	iP	17	47	51	
	i	17	48	01	
	e(S)	17	52	00	
16	iP	19	45	45	Aleutian Islands
	iPcP	19	46	25	USCGS 0 = 19:35:31 52½°N, 167½°W
16	e	20	10	35	
17	eL	05	20.1		Eastern Tibet
					USCGS 0 = 04:27:35 32°N, 97°E
17	e	10	48	29	
19	eLR	03	20	45	North Atlantic Ocean
					USCGS 0 = 03:07:31 35½°N, 35°W
19	e	10	31	32	
19	e	20	27	34	
19	iP	20	40	20	Northern Kamchatka
					USCGS 0 = 20:28:55 57°N, 160°E
21	iP	18	01	57.9	
23	ePKP	21	57	14	Kermadec Islands Region
	iSKS	22	03	51	USCGS 0 = 21:38:54 31°S, 180°
	iSKKS	22	05	24	h ~ 300 km. Mag. 7.1 Pas.
	i	22	07	03	
	iPS	22	08	45	

(cont'd)

Date	Phase	h	m	s	Remarks
Mar.					
(cont'd)					
23	i	22	15	13	
	i	22	18	16	
	eL	22	30.8		
24	iPKP	00	36	14	Santa Cruz Islands
	eL	01	11.3		USCGS 0 = 00:17:38 11°S, 166°E h ~ 150 km.
24	iP	20	58	47	Off Southern coast of El Salvador
	i	20	59	01	USCGS 0 = 20:52:36 13°N, 88°W
	iS	21	03	49	
	eLR	21	06.9		
24	iP	21	58	47	
26	e	12	19	18	
28	iPKP	02	13	35	New Zealand Region
	e	02	32	18	USCGS 0 = 01:54:44 35°S, 178°E
28	eSKKS	10	30	49	New Hebrides
					USCGS 0 = 10:03:11 17½°S, 167°E
28	iP	23	16	47	Quarry?
	iS	23	17	07	
30	iP	03	51	05	Quarry?
	iS	03	51	27	
30	iP	07	44	21	
	iS	07	48	21	
31	iP	09	29	12	Southern Alaska
	i(pP)	09	29	56	USCGS 0 = 09:20:34 60½°N, 154°W h ~ 250 km.
April					
1	e	19	41	17	Off Cape Mendocino, California
					USCGS 0 = 19:21:10 40½°N, 125°W
2	iP	00	19	56	Off coast of El Salvador
	eS	00	25	05	USCGS 0 = 00:13:34 13°N, 90°W
	eLR	00	29	15	Mag. 6¼ - ½ Pas. SH 4½ μ 15 sec.
2	eLR	14	56.2		
6	iP	23	06	21	North of Hokkaido, Japan
					USCGS 0 = 22:53:30 46°N, 142°E
8	iP	21	50	14	Near South-central coast of Turkey
					USCGS 0 = 21:38:20 37°N, 35°E h ~ 100 km.

Date	Phase	h	m	s	Remarks
April					
9	iP	20	45	50	
10	ePP	11	14	18	Samoa Islands
	eSKS	11	20	41	USCGS 0 = 10:55:41 15°S, 173½°W
	eS	11	22	01	Mag. 6¼ Pas.
	ePS	11	23	44	PPZ ½ μ 7 sec.
	eSS	11	29	45	
	eLR	11	46	50	
11	e	23	04	19	
12	e	04	28	09	
12	e	06	38	36	Arizona-Mexico border USCGS 0 = 06:20:10 32°N, 113°W Mag. 4¼ Pas.
13	iPKP	10	34	25	About 300 miles east of Java
	i(pPKP)	10	34	39	USCGS 0 = 10:14:38 10°S, 119°E
13	i	12	56	17	
14	iP	00	55	44	Northern Argentina
	e(pP)	00	56	27	USCGS 0 = 00:45:28 24°S, 66½°W
	iS	01	04	09	h ~ 250 km. Mag. 7 Pas.
	ePS	01	05	17	PZ 2¼ μ 7 sec. SH 8½ μ 10 sec.
14	eS	04	34	03	Southeastern Turkestan
	e	04	36	01	USCGS 0 = 04:10:05
14	iP	13	44	43	Eastern Siberia
	eS	13	54	11	USCGS 0 = 13:32:59 61°N, 136°E
	ePP	13	47	23	Mag. 6¼ Pas.
	eLR	14	08.7		SH 3½ μ 10 sec. PPZ 1½ μ 8 sec.
14	ePP	23	59	59	Assam
	eSKS	00	06	04	USCGS 0 = 23:40:51 28½°N, 94°E
	e	00	29	23	
	eLR	00	41.5		
15	iP	05	49	33	
22	iP	12	43	18	Baffin Bay
	eLg	12	54	24	USCGS 0 = 12:36:16 76°N, 73°W
	eRg	12	57	45	
23	iP	01	03	45	Near S. coast of Island of Hawaii
	e	01	03	51	USCGS 0 = 00:52:21 19°N, 155½°W
	eS	01	13	06	Mag. 6¼ Pas.

Date	Phase	h	m	s	Remarks
April					
23	iPKP	07	09	15	North Island
	eSKKS	07	17	58	USCGS 0 = 06:50:15
	e	07	18	57	Mag. 6½ Pas.
	e	07	43	40	
	eLR	07	50.1		
23	iPKS	12	20	28	USCGS Banda Sea 0 = 11:57:21
23	iP	13	26	54	USCGS Southern Bolivia
	iS	13	34	51	0 = 13:17:00 20½°S, 67°W
	iScS	13	36	20	h ~ 250 km. Mag. 6¼ - ½ Pas.
	i	13	38	08	SH 1¼ μ 12 sec. SSH 1¼ μ 14 sec.
26	iP	20	50	38	Possibly Quarry
26	i	21	52	13	Possibly Quarry
	i	22	08	01	
	i	22	08	04	
	i	22	08	11	
27	iP	18	25	34	Local Quake
	iS	12	25	48	
28	eLR	22	23.4		New Britain USCGS 0 = 21:19:38 5¼°S, 151°E
29	iP	07	45	43	Arctic Ocean
	e	08	00	15	USCGS 0 = 07:35:46 80¼°N, 121°E
29	iPP	19	57	29	Celebes Region
30	iPP	15	48	59	Solomon Islands Region
	iSKS	15	54	22	USCGS 0 = 15:28:00 8°S, 153°E
	eSKKS	15	56	00	Mag. 6¼ - ½ Pas.
	ePPS	16	00	33	PPZ 1¼ μ 3 sec.
	eSS	16	06	00	
	eLR	16	28.5		
30	i	20	01	43	Possibly Quarry
	i	20	01	50	
	i	20	01	55	

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FRANK PRESS and LOIS MCGINNIS



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 To = 12 sec. Tg = 15 sec.

Three component Benioff seismographs. Short period To = 1 sec.
 Tg = 0.2 sec. Long period To = 1 sec. Tg = 75 sec.

One vertical Columbia University seismograph. To = 0.2 sec.
 Tg = 0.2 sec.

Three component Columbia University visual recording
 seismographs To = 12 sec.

One Columbia University vertical seismograph for visual
 recording To = 1 sec.

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 atory time signals every 4 hours.

Date	Phase	h	m	s	Remarks
May					
1	iPKP ₁	05	22	23	About 400 miles south of Tasmania
	iPKP ₂	05	22	30	USCGS 0 = 05:02:41 50½°N, 149°E
	iPKS	05	25	58	Mag. 7 Pas.
	eLR	06	12.5		Max. SH 5 μ 19 sec.
2					Seismic activity between 1700-1800
3	iP	04	14	26	Leeward Islands
	i(PP)	04	15	12	USCGS 0 = 04:08:49 15½°N, 61°W
	iS	04	19	01	h ~ 150 km.
	i	04	19	52	SH 1½ μ 9 sec.
4	iP	12	05	41	Hokkaido, Japan
	ipP	12	06	37	USCGS 0 = 11:53:05 44°N, 142°E
	iSKS	12	15	48	h ~ 200 km.
	iS	12	16	08	SH 2½ μ 10 sec.
	iSP	12	17	09	
6	eP	21	48	53	Near northwest coast of Costa Rica
	eLR	21	59.3		USCGS 0 = 21:42:20 11°N, 85½°W
6	iP	23	09	37	Eastern El Salvador
	e(S)	23	14	34	USCGS 0 = 23:03:35 13½°N, 88°W
	eL	23	18.8		h ~ 150 km. SH 4 μ 10 sec.
6	iP	23	14	07	Eastern El Salvador aftershock
					USCGS 0 = 23:08:04 13½°N, 88°W h ~ 150 km.
7	e(S)	20	33	40	Eastern El Salvador aftershock
	eL	20	37.7		USCGS 0 = 20:22:37 13½°N, 88°W h ~ 150 km.
8	iP	20	09	36	Near coast of northern Peru
					USCGS 0 = 20:01:08 7½°S, 80°W h ~ 200 km.
10	iPP	09	38	20	Southern Mozambique
	eSKS	09	44	18	USCGS 0 = 09:18:25 21°S, 33°E
	e	09	45	37	
	e	09	48	08	
	eLR	10	14.8		from E
10	iP	21	44	34	Near coast of central Chile
					Dil. from S USCGS 0 = 21:33:02 34°S, 72°W h ~ 100 km.
	iS	21	54	11	
	iSS	21	59	18	PZ 1 μ 7 sec.
	i	22	00	12	SH 2 μ 8 sec.

Date	Phase	h	m	s	Remarks
May					
10	iP	19	55	53	Aleutian Islands
	eLR	20	22	30	USCGS 0 = 19:44:52 51°N, 180° from N h ~ 60 km.
11	iP	02	21	59	Near coast of Nicaragua
					Com. from S USCGS 0 = 02:15:51 13°N, 87½°W h ~ 100 km.
	iS	02	27	00	
	eLR	02	30	52	PZ 1½ μ 7 sec. from S SH 2 μ 7 sec.
13	iP	10	04	49	Near south coast of Cuba
	iS	10	08	31	USCGS 0 = 10:00:10 20°N, 75°W h ~ 100 km.
13	eLR	18	05	03	New Hebrides region
					USCGS 0 = 17:02:03
13	iP	11	43	28	
	eS	11	47	30	
14	eLR	04	59	14	Northeastern Baluchistan
					USCGS 0 = 04:07:34 30°N, 70°E
14	eP	13	09	08	Off coast of Costa Rica
	ePP	13	10	20	USCGS 0 = 13:02:40 90°N, 86°W
	eS	13	14	26	h ~ 100 km.
	eLR	13	19	15	PZ ½ μ 8 sec. PPZ 1 μ 8 sec.
15	iP	05	28	55	Northern Chile
	ipP	05	29	11	USCGS 0 = 05:18:46 21°S, 69½°W
	eS	05	37	04	h ~ 100 km. Mag. 6½ - 6 3/4 Pas.
	ePS	05	37	37	PZ 2 μ 6 sec. PH 1½ μ 5 sec. SH 1½ μ 6 sec.
16	eLR	15	13.2		
17	eLR	02	44.5		New Hebrides region
					USCGS 0 = 01:41:38 19°S, 170°E
17	eLR	13	18.8		from E
20	eLR	04	22	38	Near coast of Costa Rica
					USCGS 0 = 04:02:55
20	i	07	27	36	
		07	30	57	

Date	Phase	h	m	s	Remarks
May					
20	iP	15	46	22	
	i	15	46	57	
20	eLR	16	46.6		
20	iP	19	21	11	
21	eLR	05	00.6		
21	iPKP	08	46	07	Solomon Islands
	iPP	08	47	51	USCGS 0 = 08:27:21 6°S, 154½°E
	e(SS)	09	05	00	h ~ 150 km. Mag. 7 Pas.
	eLR	09	25.9		PPZ 1 μ 9 sec.
					from W
25	iP	22	58	52	
26	iP	04	19	45	Near Adak, Aleutian Islands USCGS 0 = 04:09:03 51°N, 173°W
26	e	13	54	24	
26	eLR	21	52	00	
26	iP	19	35	56	Quarry?
27	eLR	04	44.9		North Atlantic Ocean USCGS 0 = 04:30:55 23½°N, 45°W
29	i	06	24	35	Northern New Guinea
	iPP	06	24	51	USCGS 0 = 06:03:06 3°S, 138½°E
	iPKS	06	26	04	Mag. 6½ - 6¾ Pas.
	iPS	06	34	57	PPZ 1½ μ 8 sec.
	eLR	07	08	17	
					from W
30	iP	01	05	23	Near Adak, Aleutian Islands USCGS 0 = 00:54:46 52°N, 178½°W h ~ 150 km.
30	iPKP	20	16	30	Molucca Islands
	iPKS	20	20	05	USCGS 0 = 19:57:01 3°S, 126½°E
	e	20	21	03	6¼ - 6¾ Pas.
	eSS	20	37	29	
	e	20	39	05	
	eLR	21	06.5		
31	iP	02	14	01	
31	iP	21	02	07	Local?

Date	Phase	h	m	s	Remarks
May					
31	ePKP	21	14	40	Off north coast of Luzon
	ePP	21	16	00	USCGS 0 = 20:56:00 19°N, 121°E
	iSKS	21	21	31	h ~ 100 km.
	eSKKS	21	22	51	PPZ 1 μ 6 sec.
	ePS	21	25	27	
	eSS	21	32	17	
June					
1	e	17	17	57	
1	i	20	11	08	
1	iP	20	12	34	Aleutian Islands
	iPP	20	13	00	USCGS 0 = 20:02:14 52½°N, 172°W
	iS	20	20	57	h ~ 100 km.
	ePPS	20	21	42	SH 1 μ 10 sec.
1	iP	20	15	00	Aleutian Islands aftershock
	iPP	20	15	38	USCGS 0 = 20:04:53 52½°N, 172°W h ~ 100 km.
2	ePKP	07	07	07	Near North coast of Borneo
	ePP	07	09	21	USCGS 0 = 06:47:52 7°N, 117°E
	eSS	07	26	53	PPZ 1 μ 9 sec.
	eLR	07	55.0		
4	eLR	18	07.1		
5	iP	01	40	52	Near coast of Costa Rica
	iPP	01	42	04	USCGS 0 = 01:34:20 9½°N, 86°W
	eS	01	46	11	h ~ 60 km.
	eLR	01	51		
5	iP	17	11	50	South of Kyushu, Japan.
	ePP	17	16	08	USCGS 0 = 16:57:47 30°N, 132°E
	ePPP	17	18	21	h ~ 100 km. Mag. 6¼ - 7 Pas.
	eSKS	17	22	48	PPZ ½ μ 6 sec.
	e(S)	17	23	43	
	e	17	25	48	
	eSS	17	30	58	
6	iP	16	19	00	Jan Mayen Island
	iPP	16	19	13	USCGS 0 = 16:10:52 71½°N, 8°W
	ePP	16	20	48	h ~ 60 km. Mag. 7 Pas.
	iS	16	25	38	PZ 3 μ 6 sec.
	iScS	16	28	48	SH 30 μ 17 sec.
	eLR	16	33.2		
7	eLR	12	34.3		
7	e	23	04	43	

Date	Phase	h	m	s	Remarks
June					
7	ePP	23	18	57	Kermadec Islands region
	eSKS	23	24	42	USCGS 0 = 22:59:00 27½°S, 176°W
	ePS	23	28	32	Mag. 6¼ Berk.
	e	23	35	25	
	eLR	23	59.3		from W
8	eLR	23	22.7		Tonga Islands region USCGS 0 = 22:21:19 26°S, 176°W h ~ 100 km.
9	eLR	12	14	51	Western Iran USCGS 0 = 11:22:05
10	iP	17	21	10	Off coast of Rhode Island
	iS	17	21	35	Felt in Westerly, Newport, Hope Valley, New London, suburbs of Providence.
12	iP	21	50	39	
	i	21	51	02	
13	iP	01	11	47	North of Leeward Islands
	ipP	01	12	01	USCGS 0 = 01:06:40 19½°N, 63°W
	i	01	16	24	h ~ 60 km.
	e	01	41	14	
13	iP	09	04	45	
	i	09	05	10	
14	iP	16	28	30	
15	eLR	21	37.4		
16	e	06	13	21	
16	iP	12	44	59	Local
	iS	12	45	24	
16	iP	15	54	43	Local
	iS	15	55	06	
16	iP	21	28	34	
16	ePP	23	56	16	Foreshock off coast of Oregon
	eLg	00	08	21	USCGS 0 = 23:46:58 44½°N, 130°W Mag. 5½ Pas. PPZ 1 μ 6 sec.
17	eP	09	47	59	About 300 miles off coast of Oregon
	ePP	09	49	37	USCGS 0 = 09:40:15 44½°N, 130°W
	e(S)	09	54	16	Mag. 6 Pas.
	e	09	57	22	PZ ½ μ 8 sec.

Date	Phase	h	m	s	Remarks
June					
17	eL	10	02	00	PPZ 1½ μ 8 sec.
	eRg	10	05	21	
17	eL	11	23	16	Aftershock off coast of Oregon USCGS 0 = 10:58:43 44½°N, 130°W
18	eLR	07	44	13	North Atlantic Ocean USCGS 0 = 07:31:40 33½°N, 41°W
18	iP	17	50	47	Costa Rica - Nicaragua border
	ipP	17	51	09	USCGS 0 = 17:44:27 11°N, 85°W
	iPP	17	51	53	h ~ 100 km.
	iS	17	55	55	SH 2 μ 10 sec.
	eSS	17	57	51	PZ 1 μ 6 sec.
	eLR	17	59	56	PPZ 2 μ 4 sec.
19	e(P)	17	59	58	
20	eLg	18	49	26	Northern New Mexico - Texas border USCGS 0 = 18:37:10 35½°N, 103°W Ottawa records eLg 18:49:08 Ottawa velocity of Lg = 3.54 km./sec. Palisades velocity of Lg = 3.47 km./sec.
20	eLR	22	54.0		Northern Formosa USCGS 0 = 21:50:20 25°N, 121°E
21	eLR	08	30.3		
21	iP	15	16	56	
21	i	15	17	05	
22	i	18	01	41	
23	i	07	54	57	
23	eLg	03	50	59	Gulf of California USCGS 0 = 03:32:40 31½°N, 113½°W
24	ePPS	11	25	06	Mariana Islands region USCGS 0 = 10:55:40 19°N, 146½°E
24	iPKP	17	08	16	Solomon Islands
	epPKP	17	08	39	USCGS 0 = 16:49:13 5°S, 154°E
	ePP	17	10	03	
	eLR	17	48.6		
24	i(PKP)	05	00	48	Interpretation doubtful
	i(pPKP)	05	01	05	
	e(PP)	05	02	53	
	i(PKS)	05	04	07	
	eLR	05	43	52	

Date	Phase	h	m	s	Remarks
June					
25	e	03	48.7		South of Alaska USCGS 0 = 03:18:23 56°N, 154°W
25	iP	16	21	08	Southern Alaska
	iPcP	16	22	34	USCGS 0 = 16:12:32 61°N, 150°W
	eS	16	28	09	h ~ 100 km. Mag. 6¼ Pas.
	eLg	16	37	45	PZ ½ μ 4 sec.
	i	16	37	16	SH ½ μ 6 sec.
25	i	19	30	20	
	i	19	30	44	
25	i	20	35	46	
25	eLR	20	36	00	About 300 miles off coast of Ecuador USCGS 0 = 20:16:26 1°N, 85°W
26	e	04	00	26	
	iP	13	20	56	USCGS 0 = 13:17:50 45°N, 57°W
	eS	13	22	55	
	eLg	13	24	44	
28	e	01	08	44	
	i	01	09	03	
29	iP	03	54	44	North of Puerto Rico
	eS	03	58	50	USCGS 0 = 03:49:35 19½°N, 66°W
29	eP	18	41	16	About 300 miles south of Panama USCGS 0 = 18:34:00 4½°N, 82°W h ~ 100 km.
July					
1	eLR	19	07	15	
2	iP	05	25	27	Near South coast of Mindanao, Philippines
	e	05	25	42	USCGS 0 = 05:06:23 6°N, 124½°E
	ePKS	05	28	45	h ~ 100 km.
2	e	22	16	10	Tonga Islands region
	eLR	22	41	32	USCGS 0 = 21:46:30 21°S, 176°W Mag. 6 Pas. 6 - 6¼ Berk.
2	iP	08	08	39	
	i	08	08	49	
8	ePKP	06	03	24	Panay Island, Philippines
	iPP	06	05	22	USCGS 0 = 05:44:20 11°N, 122°E
	e(PKS)	06	06	40	Mag. 6½ Pas.
	e(SKS)	06	10	46	PPZ 3½ μ 10 sec.
	eSKKS	06	12	17	
	ePS	06	15	29	
	ePPS	06	17	00	
	i	06	20	14	
	eSS	06	22	25	
	eLR	06	45	25	

Date	Phase	h	m	s	Remarks
July					
9	iP	00	10	15	Near coast of Oaxaca, Mexico
	ipP	00	10	21	USCGS 0 = 00:03:54 16°N, 96°W
	i(PPP)	00	11	32	h ~ 60 km. Mag. 6¼ Pas.
	iS	00	15	28	PZ 1 μ 4 sec.
	e	00	18	49	SH 1 μ 6 sec.
	eLR	00	19	38	
9	eLR	21	33	32	Near coast of Costa Rica USCGS 0 = 21:17:00 11°N, 85°W
10	eLR	06	34	25	Near coast of New Guinea USCGS 0 = 05:34:00 5°S, 138½°E
11	e	18	36	54	Bonin Island region
	e	18	37	45	USCGS 0 = 18:22:00 28½°N, 139½°E
11	ePP	18	39	33	h ~ 550 km. Mag. 7 Pas.
	ePPP	18	41	52	PPZ 1 μ 4 sec.
	iSKS	18	45	00	SH 3½ μ 10 sec.
	eS	18	46	08	
	e	18	47	54	
	eSS	18	53	50	
11	iP	23	49	10	Eastern Dominican Republic
	i	23	53	39	USCGS 0 = 23:44:10 18°N, 69½°W h ~ 100 km.
13	eLg	02	23	20	Off coast of British Columbia
	eRg	02	26	15	USCGS 0 = 02:02:25 50°N, 130°W
13	e(Lg)	16	01	42	
	e(Rg)	16	05	19	
13	ePKP	20	12	53	Solomon Islands
	ePP	20	14	53	USCGS 0 = 19:54:00 7°S, 156°E
	ePKS	20	16	13	h ~ 100 km.
	eLR	20	53	45	
					from NW
13	iP	22	38	56	
	i	22	39	16	
13	e	23	19	42	
	i	23	20	12	
14	e	06	54	56	
	eLQ	07	06	13	
	eLR	07	13	09	
14	iP	07	30	34	Kurile Islands
	e	08	10	00	USCGS 0 = 07:18:12 47°N, 154½°E

Date	Phase	h	m	s	Remarks
July					
15	e	09	11	40	
16	ePKP	10	59	20	Eastern New Guinea
	e	10	59	52	USCGS 0 = 10:40:23 6°S, 146°E
	ePP	11	01	31	h ~ 200 km. Mag. 6½ Pas.
	ePKS	11	02	31	
	e	11	03	18	
	ePS	11	11	30	
	e	11	14	02	
	e(SS)	11	19	02	
	eLR	11	40	38	from NW
17	eLR	08	16	36	Samoa Islands USCGS 0 = 07:23:23 14°S, 173°W from W
18	iP	09	16	11	Mid-Atlantic Ocean
		Dil. from SE			
	ipP	09	16	23	USCGS 0 = 09:06:16 1°N, 27°W
	eS	09	24	17	Mag. 6½ Pas. 6¼ Berk.
	eLR	09	32	47	PZ 11 μ 9 sec. from SE SH 23 μ 11 sec.
	eP'P'	09	45	58	
19	i	20	41	20	Quarry?
19	iP	20	52	12	Near Adak, Aleutian Islands
		Com. from N			USCGS 0 = 20:41:25 51½°N, 177½°W
	iPcP	20	52	33	
	iS	20	01	04	h ~ 60 km. Mag. 5¼ - 6 Pas. 6¼ Berk.
	eScS	21	02	07	PZ 2 μ 8 sec.
	eLg	21	15	40	
	eLR	21	15	46	SH 3 μ 12 sec.
21	ePP	01	51	31	Northern Assam
	ePPP	01	53	51	USCGS 0 = 01:32:21
	ePS	02	00	49	
23	ePcP	20	16	46	Southern Kamchatka USCGS 0 = 20:04:40
24	eP	17	52	07	Southern Mexico
	epP	17	52	32	USCGS 0 = 17:45:40 18½°N, 101½°W h ~ 100 km.
25	e	00	26	00	
25	eLR	11	03	59	North Atlantic Ocean USCGS 0 = 10:47:30 47°N, 27°W

Date	Phase	h	m	s	Remarks
July					
25	iP	12	24	50	Nicaragua Foreshock USCGS 0 = 12:18:49 13°N, 87½°W h ~ 200 km.
25	iP	18	48	26	Off coast of Guatemala
	ipP	18	48	56	USCGS 0 = 18:42:14 14°N, 90½°W
	iPP	18	49	27	h ~ 100 km. Mag. 6¼ Pas.
	iS	18	53	20	SH ½ μ 7 sec.
26	iP	10	13	02	South of Hokkaido, Japan
	eS	10	24	02	USCGS 0 = 10:00:00 41°N, 143°E
	ePS	10	25	25	h ~ 100 km. Mag. 6¼ Pas.
	eLR	10	46	32	PZ ½ μ 6 sec. from N SH ½ μ 5 sec.
27	iP	00	22	23	
	i	00	25	44	
27	eLR	01	26	23	
28	eS	23	28	51	Off east coast of Honshu, Japan USCGS 0 = 23:04:33 37°N, 143°E Mag. 5¼ - 6 Pas.
29	i	05	22	41	
	e	05	23	28	
29	eLg	11	13	16	Near west-central coast of California USCGS 0 = 10:53:44 36½°N, 121½°W Mag. 5¼ - 5½ Pas. 4½ - 4¾ Berk.
29	iPKP	23	52	11	
	ePP	23	55	01	
	iPKS	23	55	49	
	eLR	00	37	40	
30	iP	16	57	49	Near west coast of Costa Rica
	ipP	16	58	19	USCGS 0 = 16:51:25 10½°N, 85°W
	eLR	17	08	34	h ~ 100 km.
30	i	04	35	25	
	i	04	38	32	
31	i	13	48	09	
	i	13	48	39	
	i	13	51	29	
Aug.					
1	eP	03	30	03	Off coast of Colombia
	ePP	03	31	27	USCGS 0 = 03:22:46 3°N, 84°W
	ePcP	03	32	09	h ~ 100 km. Mag. 6¼ Pas.
	eS	03	36	03	PZ ½ μ 5 sec.
	eLR	03	41	07	PPZ ½ μ 6 sec. SH ½ μ 12 sec.

Date	Phase	h	m	s	Remarks
Aug.					
1	iP	18	10	52	
2	iPKP	03	58	32	New Britain Island region
	epPKP	04	00	59	USCGS 0 = 03:40:27 4°S, 154½°E
	eSKS	04	04	50	h ~ 500 km. Mag. 6 - 6½ Pas.
2	eSKS	10	40	21	1700 miles south of Easter Island
	ePS	10	42	31	USCGS 0 = 10:16:03
	eLQ	10	57	14	Mag. 6½ Pas. 6½ - 6¾ Berk.
	eLR	11	03	03	from S
2	iP	20	36	29	Near south coast of Nicaragua foreshock
	iS	20	41	27	USCGS 0 = 20:30:17 13°N, 87½°W h ~ 100 km. Mag. 5½ Pas.
3	iP	00	30	07	Near south coast of Nicaragua
	eS	00	35	08	USCGS 0 = 00:23:58 13°N, 87½°W
	eLR	00	38	06	h ~ 100 km. Mag. 6 Pas. Berk. SH 1½ μ 8 sec.
3	e	16	30	32	
3	e(S)	16	57	06	
	eLR	17	02	14	from S
6	eP	08	15	08	Near south coast of Nicaragua
	eS	08	20	09	USCGS 0 = 08:08:56 13°N, 87½°W
	eLR	08	25	58	h ~ 100 km. SH 1 μ 8 sec.
6	ePKP	15	29	46	New Britain Island
					USCGS 0 = 15:10:42 6°S, 152°E
6	eLg	23	06	03	Rock burst at Kirkland Lake
7	iP	04	17	37	Off coast of Peru
					USCGS 0 = 04:08:54 6½°S, 85°W
8	iP	09	38	46	
8	eLg	13	04	00	Off coast of Vancouver Island
					USCGS 0 = 12:43:07 49°N, 129°W
8	eLg	14	34	38	Vancouver aftershock
					USCGS 0 = 14:13:08
8	e	22	50	00	
	e	22	52	37	

Date	Phase	h	m	s	Remarks
Aug.					
10	iP	05	40	45	Atlantic Ocean, 700 miles off north coast of Brazil
	iS	05	47	12	USCGS 0 = 05:32:33 8½°N, 40°W
	eLR	05	52	40	PZ ½ μ 7 sec. SH 2 μ 11 sec.
					from S
10	iLg	06	29	39	Rock burst at Kirkland Lake
10	i	15	53	00	
	e	15	53	31	
10	e	16	13	55	
10	i	19	28	39	
	e	19	28	54	
10	iP	23	12	35	Off north coast of Hokkaido, Japan
	Com. from N				USCGS 0 = 23:00:21 46°N, 143½°E
	epP	23	13	54	h ~ 300 km.
	iS	23	22	31	PZ 1 μ 5 sec. SH 1 μ 6 sec.
12	eLR	22	15	32	Near north coast of New Guinea
	from N				USCGS 0 = 21:10:00 3½°S, 141°E
13	iP	18	45	17	Black Sea, off north coast of Turkey
	Dil. from NE				USCGS 0 = 18:33:40 43°N, 32½°E
	iS	18	54	42	Mag. 6½ Pas. 6½ Berk.
	eLR	19	08	42	PZ 4 μ 6 sec. SH 5 μ 8 sec.
					from NE
14	e	00	25	57	
14	i	13	11	03	
14	i	15	05	54	
	i	15	07	54	
14	iP	18	55	38	
14	i	19	08	58	Quarry
	i	19	09	28	
14	e	22	02	24	
15	e	07	07	25	
16	eLg	02	50	05	
16	i	15	44	10	

Date	Phase	h	m	s	Remarks
Aug.					
17	e	00	16	17	
18	ePKP	03	57	35	Gilolo Island region USCGS 0 = 03:38:19
18	i	04	01	02	
20	iP	05	56	44	Gulf of California
	eS	06	02	07	USCGS 0 = 05:49:58 23½°N, 108°W
	e	06	07	49	Mag. 5½ Pas. 5¼ Berk.
	iLg	06	08	01	
	eRg	06	11	01	
20	e	09	04	39	Dominican Republic USCGS 0 = 08:55:51 19°N, 69°W h ~ 60 km.
20	e	11	55	45	
21	e	02	36	50	
21	iP	11	08	21	Near west coast of Hawaii, damage on
	eS	11	17	44	Kona coast
	eLR	11	33	44	USCGS 0 = 10:56:57.5 19¼°N, 156°W
					Mag. 6¼ Pas. 7 Berk. PH 3 μ 9 sec. SH 8 μ 11 sec.
21	e	19	18	44	
22	eP	05	48	00	Costa Rica
	eS	05	52	57	USCGS 0 = 05:41:31 10°N, 83°W
	e(PcS)	05	53	41	
	eLR	05	57	07	
22	e	09	09	08	Hawaii aftershock USCGS 0 = 08:47:51
23	iP	01	13	16	Aleutian Islands
	i(pP)	01	13	52	USCGS 0 = 01:03:02 53°N, 169°W
24					Seismic activity between 0330 and 0400
24	iP	14	33	46	Kurile Islands
	i(S)	14	43	51	USCGS 0 = 14:21:15 47°N, 151°E
					Mag. 6½ Pas.
24	iP	19	38	33	
25	e	11	00	29	
	e	11	02	23	

Date	Phase	h	m	s	Remarks
Aug:					
25	e	12	40	53	
25	i	15	56	45	
	i	15	57	07	
26	iP	18	45	08	Gulf of California
	eLg	18	56	19	USCGS 0 = 18:38:23 24°N, 109°W
27	eP	01	37	54	Dominican Republic USCGS 0 = 01:32:56
31	i	23	43	10	

LAMONT GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY
PALISADES, NEW YORK



SEISMOLOGICAL BULLETIN

By

FRANK PRESS

and

LOIS A. MCGINNIS

September 1 - December 31, 1951

LAMONT GEOLOGICAL OBSERVATORY

Contribution No. 52

STATION CONSTANTS, INSTRUMENTS AND
ABBREVIATIONS

Latitude 41° 00' 25" North
Longitude 73° 54' 31" West
Elevation 70 meters
Bedrock Palisades diabase Triassic Age

INSTRUMENTS

Three component Columbia University seismographs
To = 12 sec., Tg = 15 sec.

Three component Beniff seismographs. Short period To = 1 sec.,
Tg = 0.2 sec. Long period To = 1 sec. Tg = 75 sec.

One Columbia University vertical seismograph. To = 0.2 sec.
Tg = 0.2 sec.

Three component Columbia University visual recording
seismographs To = 12 sec.

One Columbia University vertical seismograph for visual
recording To = 1 sec.

To = 10 sec., Tg = 75 sec.
One Columbia University vertical seismograph

One Columbia University Microbaragraph To = 10 sec.,
Tg = 75 sec.

One Hot Wire Microphone

ABBREVIATIONS

Dil. = Dilatation

Com. = Compression

i. = Sudden beginning of the motion (impetus)

e. = gradual beginning of the motion (emersio)

Lg. = short period continental surface shear wave

Rg. = Continental Rayleigh wave

All times are G.C.T.

Time - I.B.M. mercurial pendulum clock corrected by Naval Observatory time
signals every 4 hours.

PALISADES, NEW YORK

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Date	Phase	h	m	s	Remarks
Sept.					
1	eS	05	03	17	Easter Island Region USCGS O = 04:40:40 33°S, 110°W Mag. 5¼ Pas.
1	eP eS eLR	09 09 09	01 11 28	38 55 48	Easter Island USCGS O = 08:49:18 33°S, 110°W Mag. 6½ Pas. PZ 1½ μ 8 sec. SH 2¼ μ 12 sec.
2	eLg	16	46	25	Northwest coast of lower California USCGS O = 16:27:32 31°N, 117°W Mag. about 5 Pas. Lg velocity = 3.52 km/sec.
3	iP iS Fordham Gives P S i	21 21 21 21 21	26 26 26 26 26	32.5 36.5 34.2 40.0 42.0	USCGS: Maximum intensity at Green- wood Lake and Tompson's Cove
4	i	17	22	20.5	
4	e i	18 18	24 25	47 15	
5	eLR	08	44	19	Mariana Islands USCGS O = 07:52:15
6	iP i iS	18 18 18	38 38 39	44.4 45.1 17.2	
8	eLR	06	53	34	North Atlantic Ocean USCGS O = 06:40:23 28½°N, 43°W from E T = 25 sec.
8	eLR	07	05	50	North Atlantic Ocean USCGS O = 06:52:40 29°N, 43½°W from E T = 30 sec.
8	e eLR	11 12	58 00	02 02	North Atlantic Ocean USCGS O = 11:47:23 28½°N, 43°W from E T = 30 sec.
9	eSKS ePPS e eLR	05 05 05 05	08 12 18 35	55 06 16 10	Samoa Islands region. Felt in Apia. USCGS O = 04:43:00 16°S, 173°W Mag. 6½ - 6¾ Pas. 6¼ - 6½ Berk. from W T = 35 sec.

Date	Phase	h	m	s	Remarks
Sept.					
11	iP	19	00	41	
11	iP	19	08	19	
	iS	19	08	40.5	
11	iP	21	48	23	
	iS	21	48	44	
	e	21	48	45.4	
12	iP	15	22	57	Kurile Islands region USCGS O = 15:10:18 45½°N, 151°E Heavy microseisms
		Compression			
13	iP	20	55	20	
	iS	20	56	09	
	i	20	56	11.5	
14	e(Lg)	07	28	46	Off west coast of Vancouver Island USCGS O = 07:07:21 49°N, 128½°W
15	eP	08	16	35	Near San Juan, Puerto Rico. Felt.
	ipP	08	16	47	USCGS O = 08:11:14
	iS	08	20	50.5	h ~ 100 km.
	Tmax	08	40	09	
16	e	02	25	06	New Hebrides Islands USCGS O = 01:31:58 15°S, 167½°E h ~ 100 km.
16	e	12	08	44	Hawaiian Islands
	e	12	15	56	USCGS O = 11:42:57 20°N, 155½°W
17	eSKS	12	22	45	Tonga Islands
	eSS	12	31	21	USCGS O = 11:57:39 18°S, 173°W
	eSSS	12	36	00	Mag. 6½ Pas.
	eLR	12	49	32	
		T = 40 sec.			
17	iP	14	19	42.3	
	iS	14	20	05.3	
17	iP	18	12	07.5	
	iS	18	12	12.0	
17	e	22	07	49	
18	iP	07	09	35.2	About 50 miles EL of Bermuda
	i	07	09	36.2	USCGS O = 07:06:45
	e(S)	07	11	28.4	Bda.—C, iP 07:06:59.0
	Tmax	07	20	03.9	
18	iP	19	27	51.3	
	iS	19	28	06	
	i	19	28	10.5	

Date	Phase	h	m	s	Remarks
Sept.					
19	iP	00	36	56	
19	e	04	41	04	Near coast of Northern Chile USCGS O = 04:14:09 17°S, 71°W h ~ 100 km.
19	e	05	30	39	
19	iP	08	24	47	
19	i	18	13	12	
19	eLR	20	47	10	Tonga Islands Region USCGS O = 19:49:10
		from W			
		T = 24 sec.			
20	ePS	01	40	44	Kermadec Islands Region
	eSSP	01	47	36	USCGS O = 01:11:00
	e	01	58	26	
	eLR	02	08	32	
		from WSW			
20	iP	11	30	54	
20	i(Lg)	13	03	39	Central Alaska
	i(Rg)	13	06	24	USCGS O = 12:38:40 65°N, 154°W
	Rgmax	13	06	53	Lg velocity = 3.65 km./sec. Rg velocity = 3.27 km./sec.
20	eLR	17	32	09	Aleutian Islands preshock USCGS O = 17:00:35 52°N, 168°W h ~ 100 km.
21	eP	04	26	55	Dominican Republic
	e(S)	04	30	43	USCGS O = 04:22:11 19°N, 70°W
		T < 1 sec.			
	eS	04	30	55	h ~ 100 km.
	Tmax	04	47	26	SH 1 μ 11 sec.
21	iPKS	09	33	09	Molucca Passage USCGS O = 09:10:16
21	eLR	19	43.2		Kermadec Islands USCGS O = 18:44:57 28½°S, 178°W
		from W			
22	eLg	10	37	37	Off coast of Vancouver Island USCGS O = 10:17:00 48°N, 127°W Lg velocity = 3.46 km./sec.
22	eP	23	47	21	North Atlantic Ocean
	eS	23	52	49	USCGS O = 23:40:37 16½°N, 47°W
	eLR	23	56.2		SH 1½ μ 9 sec.

Date	Phase	h	m	s	Remarks
Sept.					
24	e	13	23	00	Kurile Islands USCGS O = 13:10:41 49½°N, 156°E h ~ 100 km.
27	iP	13	58	07	Windward Islands USCGS O = 13:51:46 16°N, 62°W
	i(S)	14	02	30	Compression T < 1 sec.
27	iP	19	31	49	Off coast of Vancouver Island, B.C. USCGS O = 19:24:12 49°N, 129°W
	i	19	33	06	Mag. 5¼ Berk.
	eLR	19	44	13	
28	eLR	02	23.6		About 300 miles South of Fiji Islands USCGS O = 01:25:22
28	iP	03	51	28	PZ 3 μ 6 sec.
28	iP	12	13	33	Near South coast of Nicaragua USCGS O = 12:07:24 11½°N, 86°W
	i	12	13	42	h ~ 200 km. Mag. 6 Pas.
	ePP	12	14	40	PZ 1 μ 5 sec.
	e	12	19	16	PPZ 1 μ 11 sec.
	eLR	12	22	55	SH 2 μ 20 sec. from S
28	eP	14	57	25	Aftershock near South coast of Nicaragua
	ePP	14	58	41	USCGS O = 14:51:17 11½°N, 86°W
	e(S)	15	02	59	h ~ 200 km.
	eLR	15	08.1		PZ 1 μ 5 sec. SH 5 μ 20 sec.
28	eLR	15	39	27	Off coast of Vancouver Island, B.C. USCGS O = 15:18:27 50½°N, 130°W
28	e	23	48	14	Kermadec Islands
	ePS	23	58	26	USCGS O = 23:28:37 30°S, 178°W
	eLR	24	25	56	Mag. 6½ Pas.
29	e	17	39	21	Kermadec Islands Region USCGS O = 16:36:12
30	e	05	24	34	Kermadec Islands Region USCGS O = 04:21:28
30	e	09	50	26	Kermadec Islands Region USCGS O = 08:47:39
30	eP	19	02	47	Off South coast of Mexico USCGS O = 18:56:00

Date	Phase	h	m	s	Remarks
Oct.					
1	iP	10	21	43.5	Fox Islands, Aleutian Islands USCGS O = 10:11:40 55°N, 166°W
	i	10	21	46	SH 1 μ 12 sec.
	eS	10	29	38	Lg velocity = 3.49 km./sec.
	iLg	10	42	44	
3	iP	02	06	15	Leeward Islands USCGS O = 02:00:06 16½°N, 61°W
	e	02	11	00	
	i	02	11	08	
	Tmax	02	32	23	
3	eLR	21	37	02	Kermadec Islands USCGS O = 20:34:00
3	iP	21	54	38	
3	e	23	11	08	
4	eLR	15	06.5		
5	eLR	07	31.6		Kermadec Islands Region USCGS O = 06:30:48
5	eLR	12	37.9		Kermadec Islands Region USCGS O = 11:37:30 28½°S, 177°W
	from W				
6	eLR	04	29.6		Kermadec Islands Region USCGS O = 03:28:45
	from W				
8	iP	04	17	56	Off Cape Mendocino, California USCGS O = 04:10:35 40°N, 125°W
	ePP	04	19	20	Mag. 5¼ Pas. 5¼ - 6 Berk.
	i(S)	04	23	52	PZ 1½ μ 7 sec.
	e(SS)	04	26	46	SH 4 μ 10 sec.
9	iP	05	08	39	
11	iPKP	01	56	37	New Britain Island USCGS O = 01:37:31 5°S, 152°E
	Dilatation				
	e(PKS)	01	59	49	Mag. 6¼ Pas. 7 Berk.
	iSKS	02	03	41	
11	eSKKS	02	05	21	
	ePS	02	08	22	
	eSS	02	15	36	
	e	02	32	40	
	eLR	02	35	41	from NW
12	iP	21	54	22	
13	e(Lg)	20	06	26.6	Off coast of Oregon USCGS O = 19:45:06 43½°N, 127°W Lg velocity = 3.36 km./sec.

Date	Phase	h	m	s	Remarks
Oct.					
13	i	21	05	29.6	
13	ePP ePS e	22 22 23	47 56 02	12 47 57	Sandwich Island Region USCGS O = 22:28:06 60°S, 19°W
14	iPKP ipPKP	09 09	49 49	19.3 39.3	Java Sea USCGS O = 09:29:39 PKPZ 3 μ 6 sec. pPKPZ 3 μ 7 sec.
15	eL	21	50	51	Off South coast of Shikoku, Japan USCGS O = 21:01:57 33°N, 134°E
16	eP ePP eS eLR	07 07 07 07	03 05 10 17	18 15 27 26	Arctic Ocean USCGS O = 06:54:33 76°N, 5°E
18	iP ipP iS isS iPS iPPS eLR	08 08 08 08 08 08 09	39 39 50 50 51 52 11	29 46 10 57 33 06 47	Near South coast of Hokkaido, Japan USCGS O = 08:26:25 42°N, 142°E h ~ 100 km. Mag. 6¼ Pas. SH 2 μ 11 sec.
21	eP ePKP ePP iSKKS eS iPS eL	21 21 21 22 22 22 22	49 52 54 00 01 03 22	14 58 01 51 32 33 41	Off East coast of Formosa—foreshock USCGS O = 21:34:13 24°N, 122°E Mag. 6¼ Pas. 6¼ - 7 Berk. PPZ 6 μ 13 sec. PPH 3½ μ 7 sec.
					T = 40 sec.
21	e	22	03	41	
22	ePKP ePP i(SKKS) iS iPS eLQ	03 03 03 03 03 04	48 49 56 56 58 17	00 04 11 48 30 26	Off East coast of Formosa USCGS O = 03:29:26 24°N, 122°E Mag. 7 Pas. 6½ Berk. PPZ 2 μ 7 sec. PPH 1½ μ 7 sec.
					T = 19 sec.
22	ePP	06	02	33	Off East coast of Formosa USCGS O = 05:43:01 24°N, 122°E Mag. 6¼ - 6½ Pas.
22	eP	10	10	37	Peru-Ecuador border USCGS O = 10:02:47 2½°S, 76°W h ~ 150 km.

Date	Phase	h	m	s	Remarks
Oct.					
22	ePS eLQ	11 12	40 06	13 36	Formosa aftershock USCGS O = 11:11:02 24°N, 122°E
22	eLQ	13	42	26	Formosa aftershock USCGS O = 12:48:38 24°N, 122°E
22	eL	15	44	36	
22	eLQ	16	21	11	Formosa aftershock USCGS O = 15:29:47 24°N, 122°E T = 36 sec.
22	eL	19	41	46	
22	eL	21	23	56	
23	e	00	41	06	
23	ePP eS eSS e e eLQ eLR	01 01 01 01 02 02 02	39 46 54 58 00 03 10	16 45 48 26 07 10 28	Formosa aftershock USCGS O = 01:19:35 24°N, 122°E T = 34 sec. T = 70 sec. from N
23	ePP ePKS eS e(PPS) e(SSS) eLR	09 09 09 09 09 09	14 17 22 25 34 56	53 42 26 45 26 16	Formosa aftershock USCGS O = 08:55:13 24°N, 122°E T = 32 sec.
23	e	19	17	54	
24	e eLR	04 04	18 42	02 34	
24	e	19	05	14	
24	iP eS	19 20	59 00	47 15	Local quake
24	e	22	14	57	Local
25	e eS i eLR	04 04 04 04	09 17 21 23	26 33 17 18	Near coast of Guatemala USCGS O = 04:06:00 15°N, 93°W Mag. 5¼ Pas. SH ½ μ 6 sec. T = 25 sec. from SSW

Date	Phase	h	m	s	Remarks
Oct.					
25	eP	07	08	55.2	Local quake
	i	07	08	59.6	
	e	07	09	09	
	eS	07	09	51	
25	ePPPS	12	49	56	Formosa aftershock
	eLR	13	20	57	
		from NW			USCGS O = 12:19:38 24°N, 122°E
		T = 30 sec.			
26	e	06	29	41	
26	e	20	22	20	
26	iP	20	36	46	
28	e	02	55	27	
28	iPKP	07	07	15	Very questionable interpretation
	iPKS	07	10	31	
	iPP	07	11	13	
	e	07	16	12	
	e	07	20	03	
	e	07	20	54	
	ePS	07	22	04	
	eSS	07	30	27	
	eLR	08	00	09	
		from SW			
31	ePKP	07	15	47	Malacca Straits
	ePP	07	18	40	
	eLR	08	10.6		
		USCGS O = 06:56:21 3°N, 101°E			
		Mag. 6½ - 6¾ Pas.			
		Many microseisms			
31	ePKP	10	41	46	Near West coast of Sumatra
		USCGS O = 10:22:17			
31	eLR	12	37	19	
31	e	21	03	02	
Nov.					
1	e	12	06	29	Fiji Islands Region
		USCGS O = 11:25:37 23°S, 179°E			
		h ~ 500 km.			
2	iP	21	21	44	
2	eLR	22	44	28	Northern Caucasia
		T = 18 sec.			
		USCGS O = 21:55:52 44°N, 45°E			
4	iPKP	09	13	22	Near Northeast coast of New Guinea
	i(PKS)	09	16	18	
		USCGS O = 08:54:30 5½°S, 146°E			

Date	Phase	h	m	s	Remarks
Nov.					
4	iPKP	11	28	44	Samar Island, Philippines Felt: Catabalogan USCGS O = 11:09:41 11½°N, 125°E
	ePS	11	40	33	
	eSS	11	47	18	
	eLQ	12	15	44	
		T = 30 sec.			
5	e	19	59	28	
6	iP	15	09	37	Kurile Islands foreshock USCGS O = 14:57:15 47°N, 154°E
	ipP	15	09	47	
	i	15	23	28	
	e	15	32	35	
6	iP	16	52	27.5	Kurile Islands USCGS O = 16:40:06 Mag. 7 - 7¼ Pas. 7¼ Berk. PZ 10 μ 9 sec. PH 4 μ 10 sec. SH 38 μ 17 sec.
		Com. from NNW			
	ipP	16	52	44	
	iS	17	02	40	
6	iP	17	55	43.8	Clinton County, N.Y., felt in Northern N.Y. and Vermont USCGS O = 17:54:41.5 45.0°N, 73.6°W
	iPg	17	55	51	
	iS	17	56	42	
6	iP	19	02	49	Kurile Islands aftershock USCGS O = 18:50:27 47°N, 154°E
8	eP	13	55	00	Off South coast of Alaska Peninsula Mag. 6¼ Pas. 7 Berk. PZ 2¼ μ 13 sec. SH 5¼ μ 14 sec.
		Com. from NW			
	iP	13	55	16	
	e	13	58	58	
	iS	14	02	37	
8	eP	19	45	43	Near Southwest coast of Hawaii USCGS O = 19:34:13 19°N, 155¼°W
9	eS	08	20	03	Kurile Islands aftershock USCGS O = 07:57:28 46½°N, 154°E
9	e	06	52	05	Beginning of seismic activity near Northern coast of Formosa USCGS O = 05:52:47
9	eP	22	18	11	Chile-Bolivia border USCGS O = 22:07:53 22°S, 68°W h ~ 100 km. Mag. about 6¼ Berk. SH 4 μ 15 sec. PcPH 3 μ 8 sec.
		Compression			
	ipP	22	18	46	
	iS	22	26	29	
	i	22	27	29	
	i	22	28	55	
	eLQ	22	33	58	
		T = 55 sec.			
	eLR	22	37	57	
		T = 60 sec.			

Date	Phase	h	m	s	Remarks
Nov.					
10	eLR	06	29	38	Fiji Islands Region USCGS O = 05:31:54
					T = 25 sec.
10	eLR	08	26	29	
					T = 25 sec.
11	e	05	14	18	
11	eP	12	27	56	Kurile Islands
	eLR	13	08	17	USCGS O = 12:15:28 47°N, 152°E
					T = 20 sec.
12	eP	08	21	52	Kurile Islands
	iS	08	32	10	USCGS O = 08:09:26 47°N, 154°E
	eSS	08	37	14	Mag. 6½ - 6¾ Berk.
	eLR	08	54	02	PZ 2 μ 10 sec.
					SH 5 μ 15 sec.
					from NW
					T = 30 sec.
12	ePKP	09	31	48	South of Fiji Islands
					USCGS O = 09:13:50 23½°S, 179°W
					h ~ 400 km. Mag. 6 Pas.
12	eP	09	42	06.3	Leeward Islands. Felt in Antigua
	ipP	09	42	40	USCGS O = 09:36:36 17°N, 61°W
	e(S)	09	47	06	h ~ 100 km. Mag. 5¾ Pas.
					T < 1 sec.
	eS	09	47	09	
	iSS	09	52	31	
12	eP	19	24	51	Aleutian Islands
					USCGS O = 19:14:50 53°N, 166°W
					h ~ 100 km.
12	iP	19	33	50	Kurile Islands
					USCGS O = 19:21:30 47½°N, 155°E
12	e	20	11	29	
13	eLR	08	58	29	Mariana Islands
					USCGS O = 07:57:40
					T = 34 sec.
					from W
13	e(LR)	11	44	37	Off Cape Mendocino, California
					USCGS O = 11:24:46 40½°N, 125°W
					Mag. 4½ Berk.
14	e	06	54	54	
14	e(LR)	08	59	48	Off Cape Mendocino, California
					USCGS O = 08:39:51 40½°N, 124°W
					Mag. 4½ - 4¾ Pas. 4.4 Berk.
14	e	14	47	00	
					T = 220 sec.

Date	Phase	h	m	s	Remarks
Nov.					
15	eP	08	37	33	Kamchatka foreshock
	iP	08	37	42	USCGS O = 08:25:53 52½°N, 160½°E
	eS	08	47	12	h ~ 60 km.
	eSS	08	52	08	
	eSSS	08	55	20	
	eLQ	09	03	37	
					T = 28 sec.
15	eLQ	10	40	44	Kamchatka foreshock
					USCGS O = 10:02:42 52½°N, 160½°E
					h ~ 60 km.
15	iP	10	43	15	Kamchatka foreshock
	eLQ	11	09	20	USCGS O = 10:31:33 52½°N, 160½°E
					h ~ 60 km.
					T = 22 sec.
15	i	15	14	40	
15	iP	19	53	53	Near East coast of Kamchatka
					Compression
	ipP	19	54	05	USCGS O = 19:42:12 52½°N, 160½°E
	ePP	19	56	53	h ~ 60 km. Mag. 6¼ - 6½ Pas. 6½ Berk.
					PZ 3 μ 8 sec.
15	ePPP	19	58	38	SH 2 μ 10 sec.
	eS	20	03	28	
	ePPS	20	04	34	
	iSS	20	08	26	
	eLQ	20	19	30	
					T = 24 sec.
	eLR	20	21	30	
					T = 21 sec.
					from N
15	iP	21	19	54	
15	iP	22	11	04	Kamchatka aftershock
					USCGS O = 21:59:18
					h ~ 60 km.
	e	22	19	51	
	iPS	22	21	30	
	iPPP	22	15	48	
	eLQ	22	37	30	
					T = 30 sec.
16	iP	15	15	07	Near East coast of Kamchatka
	eL				USCGS O = 15:03:26 52½°N, 160½°E
	eL	15	41	30	h ~ 60 km.
					T = 30 sec.
16	iP	15	32	25	Aftershock near East coast of Kamchatka
					USCGS O = 15:20:44 52½°N, 160½°E
					h ~ 60 km.
16	iP	15	40	45	Kamchatka aftershock
					USCGS O = 15:29:05 52½°N, 160°E
					h ~ 60 km.

Date	Phase	h	m	s	Remarks
Nov					
16	eLR	18	29	52	Kermadec Islands USCGS O = 17:33:22 29½°S, 178°W h ~ 60 km.
17	eLR	05	46	30	Eastern Tibet foreshock USCGS O = 04:46:00
17	eP	20	36	39	Kamchatka aftershock USCGS O = 20:24:50 52½°N, 160½°E h ~ 60 km.
18	iP eL	04 05	50 18	14 00	Kamchatka aftershock USCGS O = 04:38:35 53°N, 161°E h ~ 60 km.
18	iPP	09	45	23	Eastern Tibet foreshock Felt North of Lhasa USCGS O = 09:26:33 31°N, 90½°E
18	eP ePP iSKS	09 09 10	50 54 00	16 36 52	Eastern Tibet Felt North of Lhasa USCGS O = 09:35:43 31°N, 90½°E
18	iPS iSS iPPS eLR	10 10 10 10	03 09 04 26	53 48 55 30	Mag. about 7½ Pas. Max H 60 μ 20 sec.
					T = 24 sec. from NE
19	iP	20	07	24	
19	eLR	22	01	06	Tonga Islands USCGS O = 21:03:35 16½°S, 172°W from W
21	eLR	08	58	46	from ESE
22	iPKP eLR	02 03	23 03	56 20	New Britain USCGS O = 02:04:49 5°S, 151½°E Mag. 6 - 6¼ Pas. 6 - 6¼ Berk.
					T = 46 sec. from NW
22	eLR	13	49	30	Kermadec Islands Region USCGS O = 12:52:30 26°S, 177°W
23	iP iS iLg eLR	06 06 06 06	45 45 45 46	35.8 52.2 56.8 03	

Date	Phase	h	m	s	Remarks
Nov.					
24	e eL	02 02	17 25	00 40	T = 33 sec.
24	iP e(LR)	04 05	41 07	08 47	Adrianof Islands, Aleutian Islands Felt at Adak USCGS O = 04:30:24 51½°N, 176½°W h ~ 60 km.
24	e	07	40	02	
24	iPP iPPP eLR	19 19 19	06 09 48	58 23 03	Foreshock near East coast of Formosa Heavy casualties and extensive property damage USCGS O = 18:47:13 23°N, 121½°E Mag. 6¼ Pas. PPZ 2½ μ 12 sec. PPH 1½ μ 12 sec.
					T = 50 sec. from N
24	eP iPP iSKKS iSS eLR	19 19 19 19 19	05 10 16 26 57	06 00 50 06 16	Near East coast of Formosa Heavy casualties and extensive property damage USCGS O = 18:50:19 23°N, 121½°E Mag. about 7¼ Pas. about 7 Berk. PPZ 6½ μ 13 sec. PPH 3μ 13 sec.
					T = 18 sec.
26	ePS eLQ eLR	07 07 07	07 29 35	48 43 43	Formosa aftershock USCGS O = 06:38:29 23°N, 121½°E
					T = 45 sec.
					T = 40 sec. from N
27	iP iS	21 21	00 00	10 38.5	
28	iP	17	20	03.5	
28	iP i	20 20	59 59	38 42	
29	e ePKP ePP iPKS	05 05 05 05	04 05 07 08	53 06 44 30	Northern Celebes Island USCGS O = 04:45:44 1°N, 121°E
30	i	00	22	19.5	
30	i	00	22	56	
30	iP	02	28	46	

Date	Phase	h	m	s	Remarks
Nov					
30	e(P)	07	57	20	North Atlantic Ocean USCGS O = 07:51:17 32°N, 41°W T = 38 sec.
	eLR	08	03	57	
30	iP	19	04	56	
Dec.					
2	iP	08	02	51	
4	eLR	09	06	38	About 600 miles Southeast of Greenland USCGS O = 08:50:50 T = 30 sec.
4	iP	18	24	28.6	
	iS	18	24	51.6	
	i	18	24	52.5	
4	iP	20	58	19.8	
	iS	20	58	43	
	i	20	58	44	
5	eLR	08	00	38	USCGS O = 06:58:35 23°N, 122½°E Formosa T = 30 sec.
5	iP	23	03	44.6	
	iS	23	04	29	
6	e	12	49	29	T = 10 sec.
6	iP	14	36	23	Near West coast of Colombia USCGS O = 14:29:18 5½°N, 77½°W T = 24 sec.
	eS	14	41	51	
	eScS	14	46	39	
	e	14	47	12	
	eL	14	47	56	
8	iP	04	37	09.9	Local quake felt near Poughkeepsie iS 04 37 17.9
	iS	04	37	17.9	
8	iPKP	04	33	34.9	Indian Ocean about 900 miles SE of Madagascar USCGS O = 04:14:20 34°S, 56½°E h ~ 100 km. Mag. 7¼ Pas. PKPZ 10 μ 9 sec. PPH 10 μ 8 sec.
	e	04	36	27.9	
	ePP	04	36	40.9	
	i	04	36	49.9	
	iPPP	04	39	58.9	
	e	04	41	27.9	
	e	04	44	03.9	
	e	04	45	10.9	
	iPPS	04	49	09.9	
	e(SS)	04	55	28.9	
	e	04	56	29.9	
	9	iP	23	31	
iS		23	32	23.3	

Date	Phase	h	m	s	Remarks	
Dec.						
10	iP	19	57	32.2		
	iS	19	57	54.5		
12	iP	01	43	40	Oaxaco, Mexico, slight property damage Felt Mexico City USCGS O = 01:37:34 17°N, 94½°W h ~ 100 km. Mag. 7 Pas. 6½ - 6¾ Berk. PZ 4 μ 6 sec. SH 10 μ 12 sec. Continuous high frequency activity from P through Rayleigh waves.	
	ipP	01	44	02		
	i	01	44	23		
	iPP	01	44	39		
	iPPP	01	44	57		
	iS	01	48	41		
	i	01	49	24		
	i(S)	01	49	51		
						T < 1 sec.
	i	01	51	41		
eLR					T < 1 sec.	
		01	52	06	T = 45 sec.	
12	iP	20	45	45.4		
	iS	20	46	08.8		
14	iP	02	27	34		
14	iP	19	24	27.5		
	iS	19	24	51.4		
14	iP	21	45	41.5		
	iS	21	46	03.4		
15	iP	10	03	48	Fox Islands, Aleution Islands USCGS O = 09:53:14 52°N, 173°W	
15	iP	20	39	00.9		
	iS	20	39	20.4		
	i	20	39	23.2		
15	e	10	30		Atmospheric oscillations recorded also on microbarograph T = 8 min.	
16	iP	12	12	19.9		
17	iP	17	57	52	Off SW coast of Nicaragua USCGS O = 17:51:34 11°N, 86½°W h ~ 100 km.	
17	iP	17	30	20.3		
	iS	17	30	38.0		
	i	17	30	39.2		
17	iP	19	28	42.4		
	i	19	28	43.4		
	iS	19	29	03.3		
	i	19	29	05.5		

Date	Phase	h	m	s	Remarks
Dec.					
18	eLR	15	02	54	Tonga Islands USCGS O = 14:09:03 19°S, 174½°W h ~ 60 km. Mag. 6¼ Pas. Heavy microseisms
18	iP	19	55	28.0	
	iS	19	55	50.5	
18	iP	23	08	07.0	
	iS	23	08	29.5	
19	iP	12	57	10	
	iS	12	57	53.5	
20	iP	19	52	10.3	
	iS	19	52	32	
20	iP	21	29	23.5	
	iS	21	29	45.0	
21	eLR	09	35	10	Yunnan Province, China USCGS O = 08:37:28 26½°N, 100°E
21	iP	17	01	12.2	
	iS	17	01	35.6	
21	e	20	07	22	
	i	20	07	33	
	i	20	07	45	
	i	20	07	59	
21	e	21	23	38	T = 5 min.
22	e	03	54	38	T = 2½ min.
22	iP	15	41	57.2	
	iS	15	42	05.5	
22	iP	18	52	59.5	
	iS	18	53	23.9	
23	eLR	01	18	31	Tonga Islands Region USCGS O = 00:21:06 24½°S, 177°W h ~ 100 km.
23	iP	07	03	48	Windward Islands felt
	iS	07	08	30	USCGS O = 06:57:20 15°N, 61°W h ~ 100 km.
	i	07	08	39	T < 1 sec.

Date	Phase	h	m	s	Remarks
Dec.					
23	eLR	07	46	27	T = 40 sec. from SW
23	eLR	23	15	02	
24	e	06	06	25	About 200 miles off coast of Colima, Mexico
	eLR	06	09	33	USCGS O = 05:50:41
25	e	07	08	57	
25	e	16	44	19	Kurile Islands USCGS O = 15:58:28 49°N, 155½°E h ~ 60 km.
26	iP	00	53	57	Pacific Ocean off coast of Southern California. Felt.
	iPP	00	55	19	USCGS O = 00:46:49 32.6°N, 118.7°W
	iPcP	00	56	22	Mag. 5½ - 5¾ Pas.
	eS	00	59	39	SH 1½ μ 7 sec.
	e(SS)	01	02	00	Lg velocity = 3.53 km./sec.
	iLg	01	05	55	
26	iP	03	19	18	Fox Islands, Aleutian Islands
	iPcP	03	19	45	USCGS O = 03:08:48
26	e	04	30	37	T = 6 min.
26	eLR	11	04	02	Eastern Tibet USCGS O = 10:06:57 32°N, 91°E
					T = 30 sec.
26	e	17	16	52	
	eLR	17	24	30	T = 34 sec.
27	e	03	03	37	Northern Kurile Islands USCGS O = 02:21:46 49°N, 156°E
27	iP	19	05	22.7	
	iS	19	05	46.0	
27	iP	19	26	46.5	
	iS	19	27	08.5	
28	iP	09	26	52	Guerrero, Mexico. Felt.
					USCGS O = 09:20:25 17°N, 98½°W
	ipP	09	27	02	Mag. 7¼ - 7½ Pas., 6¾ - 7 Berk.
	iPP	09	28	07	PH 14 μ 8 sec.
	i	09	31	22	PZ 23 μ 8 sec.
	iSH	09	32	14	SH 11 μ 13 sec.
					T = 18 sec.
	iSV	09	32	27	
	eLR	09	35	27	

Date	Phase	h	m	s	Remarks
Dec.					
28	iP	20	11	46.0	
	iS	20	12	08.8	
29	iP	13	00	23	Southwestern Mexico USCGS O = 12:53:55 18½°N, 101°W
	iP	19	41	15.0	
	iS	19	41	37.0	
29	e	23	01	02	About 100 miles South of Formosa USCGS O = 22:04:05
	e	23	24	37	T = 5 min.
30	iP	17	50	56	Southern Alaska
	ipP	17	51	07	USCGS O = 17:42:28 62½°N, 146°W
	i	17	52	23	h ~ 100 km.
	iPP	17	52	35	Lg. velocity = 3.47 km./sec.
	e	18	05	13	
	iLg	18	07	13	
	eLR	18	07	54	
30	eLR	19	10	01	Near Southern coast of Iran USCGS O = 18:21:05
	iP	22	29	51	Pacific Ocean foreshock
	iS	22	39	38	USCGS O = 22:17:51 28°S, 114½°W Mag. 6½ Pas.
30	iP	22	35	01	Pacific Ocean foreshock
	i	22	35	16	USCGS O = 22:23:05 28°S, 114½°W
	iS	22	44	52	Mag. 6½ Pas.
	i	22	45	24	SH 4 μ 13 sec.
	eLR	22	59	57	Max. H 8 μ 18 sec. T = 60 sec.
31	iP	20	12	02.5	
	eLR	20	20	57	T = 40 sec.
31	e	21	50		Also on microbarograph
			to		Amp. = .02 inch Hg
		00	30		T = 8 min.