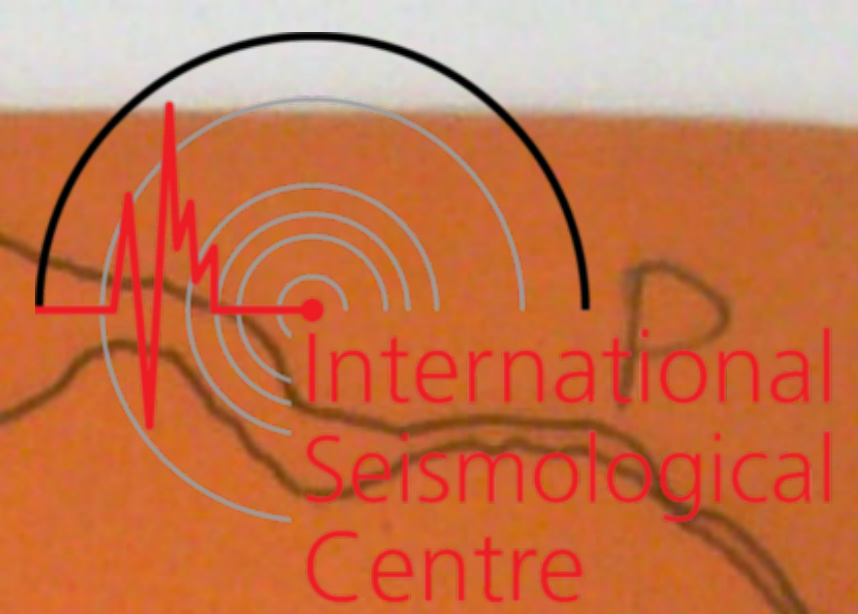


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OREGON STATE UNIVERSITY SEISMOLOGICAL BULLETIN No. 3

January 1 to March 31, 1964

C. E. Schatz and Peter Dehlinger

Air Force Cambridge Research Laboratories
Contract AF 19(628)-2778

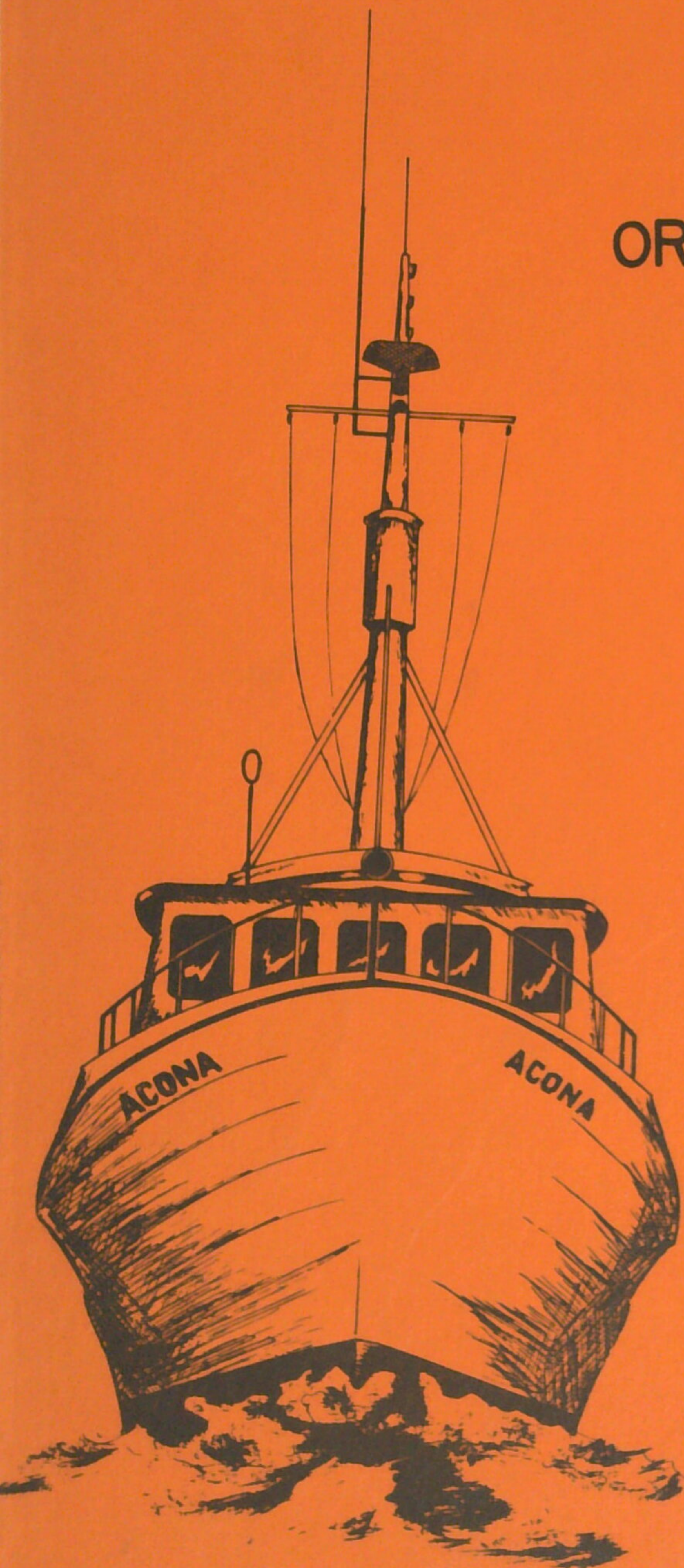
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Data Report No. 17

Reference 64-33

October 1964



DEPARTMENT OF OCEANOGRAPHY
Geophysics Research Group
OREGON STATE UNIVERSITY
Corvallis, Oregon

OREGON STATE UNIVERSITY
SEISMOLOGICAL BULLETIN NO. 3
January 1 to March 31, 1964

by

C. E. Schatz and Peter Dehlinger

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Oregon State University operates a World-Wide Standard Seismograph Station at Corvallis (COR) and a seismic station at Klamath Falls (KFO), Oregon.

The Corvallis station includes three short-period Benioff seismographs ($T_o = 1$ sec, $T_g = 0.75$ sec), three long-period Sprengnether seismographs ($T_o = 30$ sec, $T_g = 100$ sec), and a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec) to provide visual recording on the OSU campus.

The Klamath Falls station consists of a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec), with visual recording on the campus of the Oregon Technical Institute.

Station Constants:	Corvallis	Klamath Falls
Latitude	44° 35.1' N.	42° 16.0' N.
Longitude	123° 18.2' W.	121° 44.7' W.
Elevation	123 meters	1439 meters

Abbreviations:

i - impetus (sudden beginning of motion).

e - emersio (gradual beginning of motion).

(Z, N, E) (following phase of arrival) - recorded on vertical, north-south, east-west component seismometers, respectively.

c, r (following phase of arrival) - first motion arrived as a compression or rarefaction, respectively.

u, d, N, S, E, W (following phase of arrival) - first motion is up, down, north, south, east, or west, respectively.

M - magnitude.

h - depth of focus.

Δ - epicentral distance from Corvallis.

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
12 Jan.	COR	eP (Z)u	06:06:15.5	1.2	Fox Isle. USCGS (card 4-64): 53.2°N, 166.3°W; 06:00:13.2; h about 33 km; M 5.5. Δ about 3250 km.
		ePP (Z,N,E)	07:06	3	
		ePPP (Z)	07:28	5	
		eS (Z)	11:04	8	
		eS (N,E)	11:08	8	
		eLQ	12:25		
		e	13:16		
		eLR	13:42	20	
	KFO	eP? (Z)u.	06:06:34.8	1.5	
15 Jan.	COR	eP (Z)	21:47:34.5	1.5	Japan. USCGS (card 3-64): 29.1°N, 140.8°E; 21:36:05.0; h about 70 km; M 6 3/4 (PAS). Δ about 8400 km.
		eS (Z)	57:04	5	
		esS? (Z,N,E)	57:34	6	
		eSSS? (N)	22:05:40		
		eLR (Z)	09:40	36	
		eP? (Z)	21:47:48	1	
	KFO	eP? (Z)	21:47:48	1	
23 Jan.	COR	eP? (Z)	00:12:24	7	New Hebrides Isle. USCGS (card 9-64): 13.7°S, 165.9°E; 23:59:43.6; h about 33 km; M 6.0. Δ about 9500 km.
		ePPS? (E)	24:07	12	
26 Jan.	COR	eP (Z)d	09:21:15	2	Peru. USCGS (card 9-64): 16.3°S, 71.7°W; 09:09:33.9; h about 116 km; M 6.1. Δ about 8700 km.
		epP (Z)	21:47	9	
		eS (N,E)	30:54	14	
		eS (Z)	30:56	13	
		esS? (N,E)	31:44	28	
		eP (Z)d	09:21:02	0.5	
	KFO	eP (Z)d	09:21:02	0.5	
26 Jan.	COR	iP (Z,N,E)			Local.
		d,N,E	21:41:12.0	0.9	
		eS (N,E)	41:32.7	1.2	
28 Jan.	COR	eS (N)	14:34:22	15	Hindu Kush. USCGS (card 10-64): 36.5°N, 70.9°E; 14:09:17.1; h about 207 km; M 6.1. Δ about 11700 km.
		epS (N)	35:13	8	
		ePS (N,Z)	36:18	20	
29 Jan.	COR	eP (Z,N,E)			Local.
		u,N,E	18:33:56.3	0.8	
		eS (N,E)	34:12.3	1.2	
		eP (Z)d	18:33:58	1	
6 Feb.	COR	eP (Z,N,E)			Kodiak Isle. USCGS (card 14-64): 55.7°N, 155.8°W; 13:07:25.2; h about 33 km; M 6 3/4 (PAS). Δ about 2500 km.
		d,N,W	13:12:34	22	
		eS (N,E)	16:49	30	
		e (N,E)	17:42	24	
		e (Z)	18:00	20	
		e (Z)	18:32	20	
	KFO	eP (Z)u	13:12:57		

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DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
12 Feb.	COR	ePPS (Z,E)	20:57:28	15	Admiralty Isle. USCGS (card 15-64): 3.5°S, 146.6°E; 20:31:53.2; h about 33 km; M 5.4. Δ about 10,200 km.
		eSS? (E)	21:01:44	25	
		ePSPS? (E)	02:34	20	
		eR? (Z,E)	13:10	25	
		e (Z)	14:00	30	
14 Feb.	COR	iP (Z)u	12:07:58.9	0.7	Oregon. USCGS (card 16-64): 43.6°N, 126.0°W; 12:07:22.1; h about 33 km; M 4.5. Δ about 300 km.
		i (N,E)S,E	07:59.5	0.8	
		eS (N,E)	08:32.7	1.0	
14 Feb.	COR	eP (Z)	16:42:40	2.0	New Britain. USCGS (card 15-64): 5.1°S, 151.7°E; 16:29:45.0; h about 55 km; M 6 3/4 (PAS). Δ about 10,000 km.
		eS? (E)	53:36	16	
		ePPS? (E)	54:36	16	
		eSS (E)	59:36	30	
		eLq? (N)	17:06:35	--	
		eG? (N)	07:16	48	
		e (Z)	09:20	40	
20 Feb.	COR	eP (Z)	15:32:19	1.5	Local.
		e (Z)	35:17	3.0	
	KFO	iP (Z)	15:31:43.5	0.6	
26 Feb.	COR	eP (Z,N,E)	20:34:02.0	0.5	California. USCGS (card 16-64): 40.2°N, 124.6°W; 20:32:53.6; h about 27 km; M 4.6. Δ about 400 km.
		e (N)	29.3		
		eS? (E)	47.6	0.8	
		eS? (N)	49.8	0.8	
	KFO	i	20:33:40	--	
3 Mar.	COR	eP (Z)d	20:03:40.6	1.0	California. USCGS (card 18-64): 40.3°N, 125.1°W; 20:02:33.1; h about 33 km; M 4.8. Δ about 500 km.
		eS? (Z)	04:28		
	KFO	eP (Z)d	20:03:22.2	--	
15 Mar.	COR	eP (Z,N,E)			Strait of Gibraltar. USCGS (card 20-64): 36.2°N, 7.6°W; 22:30:26.0; h about 27 km; M 6 3/4 - 7 (PAS). Δ about 9000 km.
		u,S,W	22:42:39.2	2.0-10	
		eS (N,E)	52:48	12	
		e (N)	53:10	14	
		ePPS? (N)	53:40	24	
		e (E)	23:01:00	40	
		ePSPS? (Z)	02:40	40	
		e (Z)	03:46	24	
	KFO	e (E)	04:20	50	
		eP (Z)	22:42:43.2	1.5	
18 Mar.	COR	eP (Z)u	04:46:01.2	2.0	Sea of Okhotsk. USCGS (card 23-64): 52.5°N, 153.6°E; 04:37:26.9; h about 440 km; M 5.6. Δ about 5900 km.
		eS (N,E)	53:01	12	
		eScS? (N,E)	55:08	8	
		esSS? (N,E)	58:05	10	
		eSSS? (N,E)	59:07	14	
	KFO	eP (Z)u	04:46:16.1	1.5	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
19 Mar.	COR	eP (Z)	21:55:42.5	2.0	Samoa Isle. USCGS (card 24-64): 15.1°S, 172.6°W; 21:44:03.8; h about 33 km; M 5.6. Δ about 8300 km.
		eS (N,E)	22:05:20	16	
		eScS? (Z)	06:07	28	
		eLq? (N,E)	14:22	40	
		e (Z)	16:40	30	
		eLR? (Z)	17:48	36	
	KFO	eP (Z)	21:55:40.7	--	
20 Mar.	COR	eP (Z)	16:46:05.0	1.0	Local.
		eS? (N,E)S,E	26.1	1.4	
25 Mar.	COR	eP (Z)	08:47:22.2	1.0	Local.
		eS (N,E)	48:09.1	1.2	
	KFO	iP (Z)u	08:46:59.5	0.4	
26 Mar.	COR	eP (Z)	01:38:34.1	0.8	Local.
		eS (N,E)	38:43.3	1.4	
28 Mar.	COR	eP (Z,N,E)			Alaska. USCGS (card 28-64): 61.1°N, 147.6°W; 03:36:12.7; h about 20 km; M 8.4 (PAS). Δ about 2400 km.
		d,N,W	03:41:06.6	1.0	
	KFO	eP (Z)	03:41:34.2	--	
28 Mar.	COR	eP (Z)d	06:48:51	1.3	Alaska. USCGS (card 28-64): 58.3°N, 151.3°W; 06:43:57.4; h about 25 km; M 6.1. Δ about 2400 km.
	KFO	eP (Z)d	06:49:17.5	1.0	
28 Mar.	COR	eP (Z)d	07:15:10.4	1.6	Alaska. USCGS (card 28-64): 58.8°N, 149.5°W; 07:10:21.4; h about 20 km; M 6.2 (PAS). Δ about 2400 km.
	KFO	eP (Z)d	07:15:37	1.0	
28 Mar.	COR	eP (Z)d	07:35:24.4	1.4	Alaska. USCGS (card 28-64): 57.4°N, 151.7°W; 07:30:29.6; h about 15 km; M 5.7. Δ about 2400 km.
	KFO	eP (Z)u	07:35:49.5	1.5	
28 Mar.	COR	e (Z)	09:05:50.0	1.6	Alaska. USCGS (card 28-64): 56.5°N, 152.0°W; 09:01:00.5; h about 20 km; M 6.2 (PAS). Δ about 2200 km.
	KFO	e (Z)	09:06:17.1	1.5	
28 Mar.	COR	eP (Z)u	09:57:35.0	1.5	Alaska. USCGS (card 28-64): 59.7°N, 146.6°W; 09:52:55.7; h about 30 km; M 6.2 (PAS). Δ about 2300 km.
	KFO	eP (Z)u	09:58:02.6	--	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
28 Mar.	COR	e (Z)	10:40:08	1.3	Alaska. USCGS (card 28-64): 57.2°N, 152.4°W; 10:35:38.9; h about 33 km; M 6.3 (PAS). Δ about 2200 km.
	KFO	e (Z)	10:40:36.1		
28 Mar.	COR	eP (Z)d	11:13:17.9	1.2	Alaska. USCGS (card 28-64): 60.1°N, 148.4°W; 11:08:26.0; h about 15 km; M 5.7. Δ about 2400 km.
	KFO		11:13:43.2	1.6	
28 Mar.	COR	eP (Z)d	12:07:50.8		Alaska. USCGS (card 28-64): 60.3°N, 146.6°W; 12:03:16.5; h about 15 km; M 5.4. Δ about 2300 km.
	KFO	e (Z)u	12:08:29.9		
28 Mar.	COR	eP (Z)	13:05:59		Alaska. USCGS (card 28-64): 60.1°N, 147.0°W; 13:01:14.2; h about 20 km; M 5.1. Δ about 2300 km.
	KFO		13:06:26.2		
28 Mar.	COR	e (Z)	14:07:02		Alaska. USCGS (card 28-64): 56.5°N, 154.4°W; 14:01:57.6; h about 25 km; M 5.1. Δ about 2600 km.
	KFO	e (Z)	14:07:25.3	1.0	
28 Mar.	COR	e (Z)	14:51:09.5	1.1	Alaska. USCGS (card 31-64): 57.8°N, 151.3°W; 14:46:19.2; h about 33 km; M 4.8. Δ about 2400 km.
28 Mar.	COR	eP (Z)	14:51:31.6	1.1	Alaska. USCGS (card 31-64): 56.7°N, 153.6°W; 14:46:33.6; h about 33 km; M 4.9. Δ about 2400 km.
28 Mar.	COR	eP (Z)	14:52:22.0		Alaska. USCGS (card 28-64): 60.4°N, 146.5°W; 14:47:37.1; h about 10 km; M 6.3 (PAS). Δ about 2300 km.
	KFO	eP (Z)u	14:52:50.4		
28 Mar.	COR	eP (Z,N)d,N	20:33:57	12	Alaska. USCGS (card 28-64): 59.8°N, 148.7°W; 20:29:08.6; h about 40 km; M 6.6 (PAS). Δ about 2400 km.
		eS (Z)	37:55	13	
		e (N)	38:04	16	
		e (N)	38:18	8	
		e (N)	38:36		
		e (Z)	39:30		
		e (N)	39:38		
	KFO	e (Z)	20:34:23.7		

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
29 Mar.	COR	eP (Z)d	01:14:29	1.6	Alaska. USCGS (card 29-64): 59.8°N, 149.2°W; 01:09:36.4; h about 20 km; M 5.5. Δ about 2400 km.
	KFO	eP (Z)d	01:14:56.2	1.0	
29 Mar.	COR	eP (Z)	01:34:25.1	1.6	Alaska. USCGS (card 29-64): 57.5°N, 151.3°W; 01:29:33.7; h about 20 km; M 5.6. Δ about 2400.
	KFO	eP (Z)d	01:34:51.7	0.8	
29 Mar.	COR	eP (Z)d	01:49:18	1.5	
29 Mar.	COR	eP (Z)d	03:12:09.5	1.8	Alaska. USCGS (card 29-64): 59.7°N, 148.8°W; 03:07:19.5; h about 30 km; M 5.0. Δ about 2400 km.
	KFO	eP (Z)d	03:12:36.2	--	
29 Mar.	COR	eP (Z)d	03:43:33.1	1.8	Alaska. USCGS (card 29-64): 60.7°N, 149.1°W; 03:38:38.1; h about 40 km; M 5.1. Δ about 2600 km.
29 Mar.	COR	eP (Z)d	04:16:54.2	2.0	Alaska. USCGS (card 29-64): 60.2°N, 145.5°W; 04:12:15.7; h about 15 km; M 5.2 (PAS). Δ about 2300 km.
	KFO	eP (Z)d	04:17:23.2	1.0	
29 Mar.	COR	eP (Z)d	06:09:45.0	2	Alaska. USCGS (card 29-64): 56.1°N, 154.3°W; 06:04:44.5; h about 30 km; M 5.8 (PAS). Δ about 2500 km.
		eP (Z,N,E)			
		d, N, W	09:45.8	9	
		e (E)W	10:36	13	
		e (Z,N)u, S	10:40	13	
		eS (Z,N,E)			
		d, E, N	14:00	17	
		eLR (E)E	14:46	16	
		e (Z,N)u, S	14:52	17	
		e (Z)	15:23	22	
		e (E)	15:30	20	
	KFO	eP (Z)u	06:10:10.4	0.8	
29 Mar.	COR	eP (Z)d	07:57:41.3	1.2	Alaska. USCGS (card 29-64): 56.1°N, 154.2°W; 07:52:46.4; h about 25 km; M 4.9 (PAS). Δ about 2500 km.
	KFO	e	07:58:11	--	
29 Mar.	COR	eP (Z)u	10:12:53.4	2.0	Alaska. USCGS (card 29-64): 60.0°N, 148.6°W; 10:08:02.4; h about 20 km; M 5.3. Δ about 2400 km.
		eS (N,E)	17:09	7	
		eR (Z)	18:20	22	

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
29 Mar.	COR	eP (Z,N)u,N	16:45:41	2.5	Alaska. USCGS (card 31-64); 59.7°N, 147.0°W; 16:40:57.9; h about 15 km; M 5.8 (PAS). Δ about 2300 km. S wave of large amplitude on NS and EW seismometers, medium on the Z seismometer.
		e (Z,N,E)d,N,7	45:46	7	
		eS (Z,N,E)			
		d,S,W	49:43	13	
	KFO	eP (Z)d	16:46:10	--	
29 Mar.	COR	eP (Z)d	16:58:09.8	1.4	Alaska. USCGS (card 29-64); 60.3°N, 146.1°W; 16:53:26.6; h about 15 km; M 5.2. Δ about 2300 km.
	KFO	eP (Z)u	16:58:38.4		
29 Mar.	COR	eP (Z)d	17:57:42.3	2.0	Alaska. USCGS (card 29-64); 59.9°N, 146.1°W; 17:53:02.2; h about 15 km; M 5.0. Δ about 2300 km. Amplitude small.
	KFO		17:58:11.3		
30 Mar.	COR	eP (Z)	02:07:46	2.0	
	KFO	eP (Z)	02:08:14.6	1.2	
30 Mar.	COR	eP (Z)d	02:23:01.2	0.8	Alaska. USCGS (card 30-64); 56.6°N, 152.9°W; 02:18:06.3; h about 25 km; M 6.6 (PAS). Δ about 2400 km. Large amplitude waves.
		eP (Z,N,E)			
		d,N,W	23:02	15	
		eS (N,E)N,E	27:12	17	
	KFO	eP (Z)d	02:23:26.6		
30 Mar.	COR	eP (Z)u	07:14:13.5	2.0	Alaska. USCGS (card 30-64); 59.9°N, 145.7°W; 07:09:34.0; h about 15 km; M 6.2 (PAS). Δ about 2400 km. Amplitude of S waves large on NS and EW seismometers, small on Z seismometer.
		eP (Z,N,E)			
		u,S,E	14:13.5	7	
		eS (Z,N,E)			
		d,N,E	18:08	14	
	KFO	eP (Z)d	07:14:41.9	1.0	
30 Mar.	COR	eP (Z)u	12:10:28.5		Alaska. USCGS (card 30-64); 60.1°N, 147.0°W; 12:05:43.5; h about 25 km; M 5.0. Δ about 2300 km.
	KFO	eP (Z)u	12:10:55	1.0	
30 Mar.	COR	eP (Z)	13:08:29	1.2	Alaska. USCGS (card 31-64); 56.5°N, 152.7°W; 13:03:34.9; h about 20 km; M 5.3. Δ about 2400 km.
		eP (Z,N,E)			
	KFO	eP (Z)u	13:08:54	1.2	
30 Mar.	COR	eP (Z)u	13:37:14.5	1.2	Alaska. USCGS (card 30-64); 56.4°N, 152.6°W; 13:32:18.5; h about 15 km; M 4.8. Δ about 2400 km.

-8-

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
30 Mar.	COR	eP (Z)d	16:14:18.9	1.0	Alaska. USCGS (card 30-64): 56.6°N, 152.1°W; 16:09:28.4; h about 25 km; M 5.5 (PAS). Δ about 2400 km.
		eP (Z,N,E)			
		d,N,W	14:19	10	
		eS (N,E)N,?	18:24	14	
	KFO	eP (Z)d	16:14:45	1.0	
31 Mar.	COR	iP (Z)u	02:11:47.0	1.6	Oregon. USCGS (card 34-64): 43.6°N, 126.6°W; 02:11:07.1; h about 33 km; M 4.5. Δ about 300 km.
		e (E)	11:47.4	1.6	
		e (Z)	11:48	8	
		eS (Z)	12:27	--	
		e (E)	14:42	6	
	KFO	iP (Z)u	02:12:06.6	2	
31 Mar.	COR	eP (Z)u	09:03:25	8	Vancouver Island. USCGS (card 31-64): 50.8°N, 130.2°W; 09:01:30.2; h about 15 km; M 6 (PAS). Δ about 800 km.
		eP (Z)u	03:26.4	1.6	
		eS (N,E)S,E	04:50	26	
		e (Z)	05:16	12	
	KFO	eP (Z)u	09:04:01.4		

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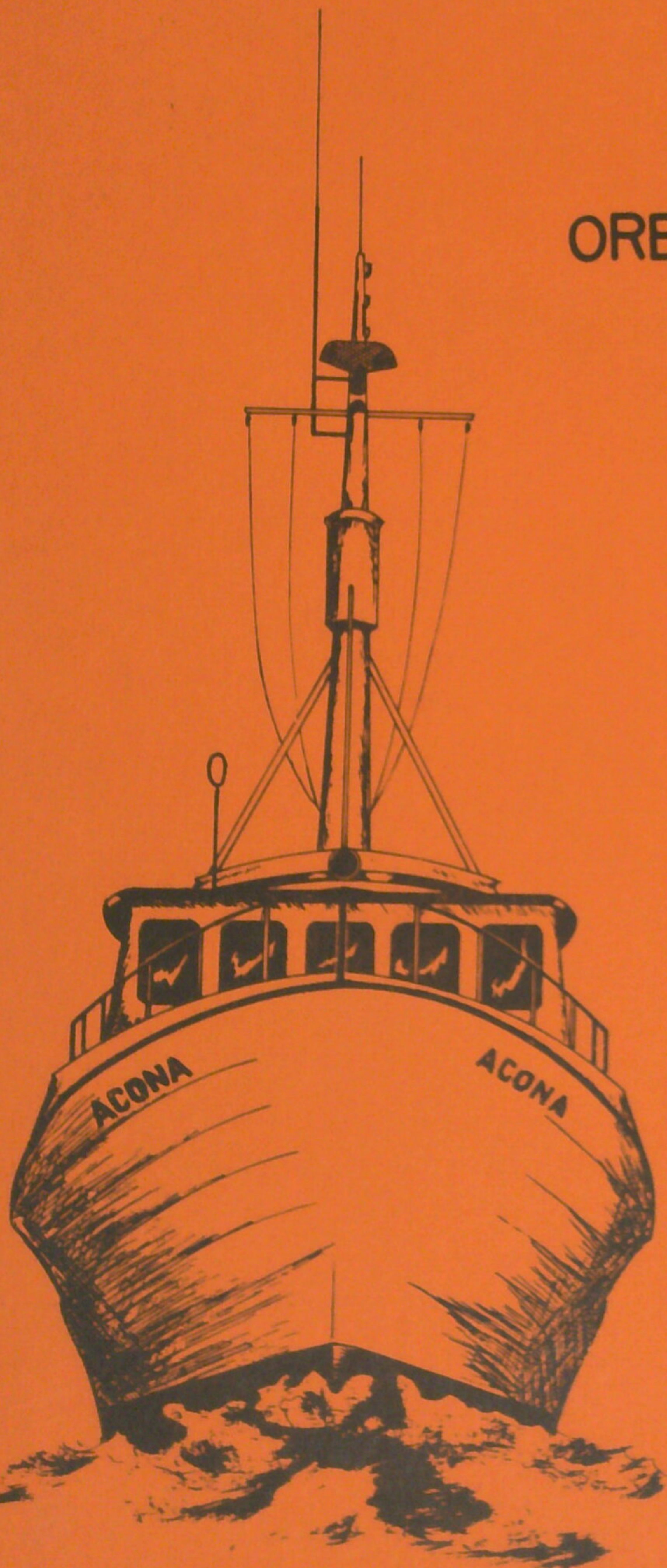
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OREGON STATE UNIVERSITY
SEISMOLOGICAL BULLETIN No. 4

April 1 to June 30, 1964

by
C. E. Schatz and Peter Dehlinger

Air Force Cambridge Research Laboratories
Contract AF 19(628)-2778

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Contract Nonr 1286(10) Project NR 083-102

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Chairman

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Oregon State University operates a World-Wide Standard Seismograph Station at Corvallis (COR) and a seismic station at Klamath Falls (KFO), Oregon.

The Corvallis station includes three short-period Benioff seismographs ($T_o = 1$ sec, $T_g = 0.75$ sec), three long-period Sprengnether seismographs ($T_o = 30$ sec, $T_g = 100$ sec), and a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec) to provide visual recording on the OSU campus.

The Klamath Falls station consists of a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec), with visual recording on the campus of the Oregon Technical Institute.

Station Constants:	Corvallis	Klamath Falls
Latitude	44°35.1'N.	42°16.0'N.
Longitude	123°18.2'W.	121°44.7'W.
Elevation	123 meters	1439 meters

Abbreviations:

i - impetus (sudden beginning of motion).

e - emersio (gradual beginning of motion).

(Z, N, E) (following phase of arrival) - recorded on vertical, north-south, east-west component seismometers, respectively.

c, r (following phase of arrival) - first motion arrived as a compression or rarefaction, respectively.

u, d, N, S, E, W (following phase of arrival) - first motion is up, down, north, south, east, or west, respectively.

M - magnitude.

h - depth of focus.

Δ - epicentral distance from Corvallis.

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DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
3 Apr.	COR	eP (Z)u	08:43:19.2	1.5	Alaska. USCGS (card 32-64): 59.6°N, 144.7°W; 08:38:42.8; h about 10 km; M 5.4. Δ about 2400 km.
		e (Z)u,S	43:20	6	
		e (Z)	44:26	6	
		eS (E)	47:12	8	
		eS (Z)	47:20	8	
		e (N)	47:40	10	
		e (E)	47:52	12	
	KFO	eP (Z)u	08:43:43.7	1.6	
3 Apr.	COR	eP (Z)d	22:38:37.4	1.6	Alaska. USCGS (card 32-64): 61.6°N, 147.6°W; 22:33:42.2; h about 40 km; M 6 (PAS). Δ about 2600 km.
		eS (N)	42:40	16	
		eS (E)	42:42	12	
		eS (Z)	42:46	12	
		e (N,E)	43:28	24	
	KFO	iP (Z)u	22:39:04.3	1.0	
4 Apr.	COR	eP (Z,N,E) d,N,W	04:58:44.0	2.0	Alaska. USCGS (card 32-64): 60.1°N, 146.7°W; 04:54:01.7; h about 40 km; M 5.6. Δ about 2400 km.
		eP (Z)u	58:45	8	
		ePP (Z)d	59:11	12	
		eS (N)	05:02:50	16	
		eS (E)	02:52	16	
		e (Z)	03:00	12	
		e (E)	03:14	8	
		e (N)	03:17	10	
		e (N)	03:44	14	
		e (Z)	03:50	16	
		e (Z)	04:05	24	
		e (E)	04:09	24	
		eLR (N)	04:24	20	
	KFO	eP (Z)u	04:59:10.5	1.6	
4 Apr.	COR	eP (Z,N,E) d,?,?	08:45:24.5	1.6	Alaska. USCGS (card 32-64): 56.5°N, 152.6°W; 08:40:29.8; h about 15 km; M 6.0 (PAL). Δ about 2600 km.
		eP (Z)	45:26	10	
		eP (Z)	45:28	10	
		eS (E)	49:28	14	
		eS (N)	49:30	20	
		eS (Z)	49:34	16	
		e (Z)	49:40	--	
		eSS (N)	50:08	26	
		eSSS (Z)	50:22	10	
		eLR (Z)	50:56	30	
		eLR (E)	51:00	16	
		eLR (N)	51:16	28	
	KFO	eP (Z)d	08:45:49.1	1.0	
4 Apr.	COR	eP (Z)u	09:15:53.5	1.4	Alaska. USCGS (card 32-64): 56.9°N, 152.7°W; 09:10:55.1; h about 15 km; M 5.9. Δ about 2600 km.
		eS (N,E)	20:02	12	
	KFO	eP (Z)u	09:16:17.7	1.6	

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
4 Apr.	COR	eP (Z)d	17:51:11.8	1.6	Alaska. USCGS (card 32-64): 53.6°N, 154.4°W; 17:46:08.6; h about 25 km; M 6. Δ about 2300 km.
		eP (Z)d,N,W	51:12	14	
		eS (N)	55:00	16	
		eS (E)	55:08	30	
		eSS (Z)	55:22	24	
		eSS (E)	55:26	16	
		eSS (N)	55:28	24	
		e (E)	56:14	24	
		eLR (Z)	56:56	16	
4 Apr.	KFO	eP (Z)d	17:51:35	1.0	Alaska. USCGS (card 34-64): 56.4°N, 154.5°W; 17:59:43.3; h about 25 km; M 5.5. Δ about 2600 km.
5 Apr.	COR	eP (Z)	01:27:10.8	2.0	Alaska. USCGS (card 33-64): 56.2°N, 153.5°W; 01:22:13.3; h about 25 km; M 6. Δ about 2400 km.
		eP (Z)	27:11	12	
		eS (E)	31:18	20	
		eS (N)	31:19	24	
		eSS (N)	32:00	24	
		e (Z,E)	32:14	18	
5 Apr.	KFO	eP (Z)u	01:27:35.5	0.6	Alaska. USCGS (card 33-64): 56.2°N, 153.3°W; 01:41:45.0; h about 35 km; M 5 3/4. Δ about 2500 km.
5 Apr.	COR	eP (Z)d	01:46:40.0	1.6	Alaska. USCGS (card 33-64): 60.2°N, 146.7°W; 19:28:18.1; h about 15 km; M 5 1/4. Δ about 2300 km.
		eS (N)	50:57	16	
5 Apr.	KFO	eP (Z)u	19:33:32	1.0	Alaska. USCGS (card 33-64): 55.7°N, 151.9°W; 19:28:24.7; h about 20 km; M 5.6. Δ about 2400 km.
7 Apr.	COR	eP (Z)d	19:33:12.4	1.6	Alaska. USCGS (card 33-64): 45.8°N, 150.8°E; 10:58:09.1; h about 40 km; M 5.5. Δ about 6300 km.
		eP (Z)	33:15	8	
		eS (E)	37:15	8	
		eS (Z)	37:20	10	
		e (E)	37:36	14	
		eSSS (Z)	38:09	20	
8 Apr.	KFO	eP (Z)u	19:33:38	1.0	Kurile Island. USCGS (card 34-64): 45.8°N, 150.8°E; 10:58:09.1; h about 40 km; M 5.5. Δ about 6300 km.
8 Apr.	COR	eP (Z)	11:07:58.1	1.6	Kurile Island. USCGS (card 34-64): 45.8°N, 150.8°E; 10:58:09.1; h about 40 km; M 5.5. Δ about 6300 km.
		e (Z)	08:10.8	--	
		eS (E)	15:57	12	
		eS (N)	15:59	8	
		ePS (N)	16:12	10	
		eScS (N)	17:46	8	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
8 Apr. (cont.)		e (N)	11:20:19	14	
		e (N)	22:18	22	
		eLQ (N)	22:26	48	
		eLQ (E)	22:30	40	
		eLR (Z)	24:10	40	
8 Apr.	COR	eP (Z)	19:38:02.8	2.0	Alaska. USCGS (card 33-64): 59.6°N, 147.0°W; 19:33:19.0; h about 15 km; M 5.1. Δ about 2400 km.
		eS (E)	42:06	10	
		eSSS? (E)	43:09	20	
	KFO	eP (Z)u	19:38:31	1.0	
8 Apr.	COR	eP (Z)u	19:55:01.2	1.6	Alaska. USCGS (card 34-64): 60.4°N, 145.9°W; 19:50:16.8; h about 10 km; M 5.3. Δ about 2300 km.
		eS (E)	59:03	8	
		eLR (E)	20:00:34	32	
	KFO	eP (Z)u	19:55:29	2	
9 Apr.	COR	eP (Z)d	13:10:53.9	2.0	Alaska. USCGS (card 34-64): 59.6°N, 146.1°W; 13:06:15.2; h about 15 km; M 5.1. Δ about 2200 km.
		ePPP (Z)	11:28	8	
		eS (E)	14:46	16	
		eS (N)	14:51	6	
		eSS (N)	15:16	16	
	KFO	eP (Z)	13:11:23	1.8	
10 Apr.	COR	eP (Z)d	19:10:44.7	1.6	Alaska. USCGS (card 33-64): 59.7°N, 148.2°W; 19:05:52.6; h about 15 km; M 5.2. Δ about 2400 km.
		eSS (E)	15:46	12	
		eSSS (Z)	15:53	24	
		eLR? (E)	16:30	20	
10 Apr.	COR	eP (Z)	21:49:26.0	2.2	Alaska. USCGS (card 34-64): 60.1°N, 153.7°W; 21:44:06.7; h about 10 km; M 5.6. Δ about 2600 km.
		eS (E)	53:46	20	
		eSS (N)	54:32	28	
		eSS (E)	54:34	24	
		eLR (Z)	55:11	24	
12 Apr.	COR	iP (Z)u, E	01:29:23.0	1.2	Alaska. USCGS (card 35-64): 56.6°N, 152.2°W; 01:24:31.2; h about 22 km; M 5.6. Δ about 2400 km.
		eP (Z)d, N, W	29:23	14	
		eS (N)	33:27	24	
		eS (E, Z)	33:30	16, 18	
		eSS (E, N)	34:03	36, 28	
		eLR (Z)	34:50	26	
		eLR (E)	34:52	16	
	KFO	eP (Z)d	01:29:48.5	0.8	
12 Apr.	COR	eP (Z)	12:52:48.5	1.6	Alaska. USCGS (card 35-64): 56.6°N, 151.3°W; 12:48:02.2; h about 33 km; M 5.0, Δ about 2500 km.
		eS (E)	56:54	16	
		eSS (N)	57:24	20	
		e (E)	58:20	14	
		e (Z)	59:05	16	
		e (Z)	59:51	14	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
13 Apr.	COR	eP (Z)d	12:30:16.0	2.0	Alaska. USCGS (card 44-64): 59.4°N, 143.9°W; 12:25:36; h about 40 km; M 4.9. Δ about 2300 km.
13 Apr.	COR	eP (Z)u	14:09:50.6	2.0	Alaska. USCGS (card 36-64): 57.6°N, 151.2°W; 14:05:00; h about 25 km; M 5 1/4 (PAL). Δ about 2300 km.
	KFO	eP (Z)u	14:10:17	1.2	
13 Apr.	COR	eP (Z)u	21:47:39.2	3.0	Alaska. USCGS (card 35-64): 59.4°N, 143.1°W; 21:43:16.5; h about 33 km; M 5.1. Δ about 2000 km.
14 Apr.	COR	eP (Z)d	16:00:05.0	1.5	Alaska. USCGS (card 35-64): 61.3°N, 147.3°W; 15:55:10.9; h about 30 km; M 5.4. Δ about 2400 km.
		eS (N)	04:12	16	
		eSS (E)	04:57	12	
	KFO	eP (Z)u	16:00:27	1.0	
14 Apr.	COR	eP (Z)u	23:00:30.1	1.0	Alaska. USCGS (card 35-64): 58.0°N, 152.6°W; 22:55:31.3; h about 30 km; M 5.4. Δ about 2400 km.
		eS (E,N)	04:40	20	
		eSS (E,N)	05:09	36	
		eSSS (N)	05:22	40	
15 Apr.	COR	eP (Z)d, N, W	15:35:48.0	2.0	Alaska. USCGS (card 35-64): 56.5°N, 154.4°W; 15:30:47.1; h about 35 km; M 5.5. Δ about 2500 km.
		eP (Z)	35:48	8	
		ePPP (N)	36:30	24	
		eS (N,E)	40:04	20, 12	
		eLR (Z)	41:34	24	
	KFO	eP (Z)d	15:36:03	1.0	
16 Apr.	COR	eP (Z)d	19:31:50.6	1.4	Alaska. USCGS (card 35-64): 56.4°N, 152.9°W; 19:26:57.4; h about 30 km; M 5.5. Δ about 2100 km.
		eP (Z)d, N, W	31:51	16	
		eS (N)	35:06	12	
		eSSS (N)	36:00	16	
		eSSS (E)	36:02	10	
	KFO	eP (Z)d	19:32:26	0.8	
17 Apr.	COR	eP (Z)d	04:54:25.5	1.6	Alaska. USCGS (card 35-64): 56.4°N, 152.9°W; 04:49:30.5; h about 25 km; M 5.3. Δ about 2300 km.
		eP (Z)d, N, W	54:26	12	
		eS (N,Z)	58:33	18, 16	
		eS (E)	58:34	16	
		eSS (E)	59:09	30	
		eSS (N)	59:12	28	
		eLR (Z)	59:58	28	
	KFO	eP (Z)u	04:54:51	1.6	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
17 Apr.	COR	eP (Z)u	09:14:03.9	2.0	Alaska. USCGS (card 35-64): 57.7°N, 151.4°W; 09:09:07.8; h about 20 km; M 5.4. Δ about 2400 km.
		eP (Z)u	14:05	--	
		eS (N)	18:10	16	
		eS (E)	18:12	18	
		eLR (Z)	19:28	24	
	KFO	eP (Z)d	09:14:26	1.0	
17 Apr.	COR	iP (Z)d	14:06:22.2	0.6	Local. Δ about 150 km.
		iS (N)	06:38.0	0.6	
18 Apr.	COR	eP (Z)	20:13:21	--	Alaska. USCGS (card 35-64): 56.1°N, 153.7°W; 20:08:19.7; h about 15 km; M 4.9. Δ about 2400 km.
		eS (N,E)	17:30	16	
		e (Z)	18:46	28	
20 Apr.	COR	iP (Z)u,S	12:01:36.7	0.8	Alaska. USCGS (card 37-64): 61.4°N, 147.3°W; 11:56:41.6; h about 30 km; M 5.7. Δ about 2400 km.
		eP (Z,E)			
		u,S,E	01:37	14	
		ePP (Z)	01:50	10	
		ePPP (E)	02:09	10	
		eS (N)	05:37	16	
		eS (E)	05:38	14	
		eSSS (E)	06:20	20	
		eSSS (N)	06:24	16	
		eLR (Z)	07:04	20	
	KFO	eP (Z)u	12:02:02	1.0	
21 Apr.	COR	eP (Z)u	05:06:28.7	3.0	Alaska. USCGS (card 36-64): 61.5°N, 147.4°W; 05:01:35.7; h about 40 km; M 5.4. Δ about 2500 km.
		eS (N,E)	10:36	9	
	KFO	eP (Z)u	05:06:54	1.4	
23 Apr.	COR	ePP (Z)d	03:51:02	14	Australia. USCGS (card 36-64): 5.3°S, 134.0°E; 03:32:50.3; h about 33 km; M 6.4. Δ about 11,200 km.
		eS (N)	58:35	8	
		ePPS (E)	04:00:25	24	
		eSS (N)	06:08	20	
		eSS (E)	06:10	20	
		eLQ (N)	15:12	52	
		eLR (Z)	19:48	32	
24 Apr.	COR	eP (Z)d,N,W	03:55:34	8	Alaska. USCGS (card 38-64): 59.5°N, 144.5°W; 03:51:05.0; h about 33 km; M 5.3. Δ about 2200 km.
		ePPP (E)	56:06	8	
		eS (N)	59:17	8	
		eS (E)	59:21	12	
		eSS (N)	59:44	12	
		eLR (Z)	04:00:32	12	
		eLR (N)	00:38	16	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
24 Apr.	COR	eP (Z)d	06:09:26	12	NE New Guinea. USCGS (card 39-64): 5.1°S, 144.2°E; 05:56:10.1; h about 106 km; M 6.3. Δ about 10,300 km.
		epP (Z)	10:00	12	
		ePP (Z)	13:12	12	
		eSKS (E)	19:51	16	
		eSKS (N)	19:53	8	
		eS (N,E)	20:34, 35	16, 20	
		esS (N)	21:15	16	
		esPS (E)	22:38	28	
		esSS (N)	27:45	32	
		eSSS? (N)	31:18	32	
		eG (N)	35:00	60	
27 Apr.	COR	eP (Z)	23:55:26.5	0.6	Local. Δ about 140 km.
		eS (N)	55:41.2	0.8	
28 Apr.	COR	eP (Z)	12:25:26	1	SE coast of Alaska. USCGS (card 38-64): 59.0°N, 138.7°W; 12:21:25.6; h about 33 km; M 4.6. Δ about 1800 km.
		eLR (Z)	29:40	25	
	KFO	eP (Z)u	12:25:56	2	
1 May	COR	iP (N)S	22:07:36.2	0.4	Microseisms, large. Δ about 70 km.
		iS	07:45.5	0.5	
2 May	COR	iP (Z)u	16:20:52.2	0.9	Kurile Islands. USCGS (card 38-64): 45.5°N, 150.3°E; 16:11:00.2; h about 35 km; M 5.7. Δ about 6500 km.
		eP (Z)u	20:52	10	
		eS (Z)d	28:54.8	4.8	
		eSS (E)	32:33.6	11.6	
		eLQ (N)S	35:07	56	
		eLR (Z)	38:24.8	31	
6 May	COR	iP (Z,E)d,W	15:31:28.4	2	Alaska. USCGS (card 38-64): 56.7°N, 152.1°W; 15:26:35.5; h about 15 km; M 5.4. Δ about 2400 km.
		ePcP (Z)	35:34	7	
		eS (E,N)	35:40.6	--	
7 May	COR	iP (Z)u,S,E	08:09:12.1	1.1	N coast of Honshu, Japan. USCGS (card 40-64): 40.4°N, 139.0°E; 07:58:14.3; h about 33 km; M 6.2. Δ about 7500 km.
		eSSS? (N)	25:35	--	
	KFO	eP (Z)u	08:09:26	1.4	
7 May	COR	iP (Z)u,W,N	20:23:45.4	1.2	W coast of Honshu, Japan. USCGS (card 38-64): 40.5°N, 139.0°E; 20:12:49.3; h about 33 km; M 5.9. Δ about 7400 km.
8 May	COR	iP (Z,N,E)			Oregon coast. USCGS (card 40-64): 43.4°N, 126.6°W; 10:04:16; h about 33 km; M 4.3. Δ about 330 km.
		u,N,E	10:04:58.4	0.4	
		eS (Z,E)	05:33.2	--	

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
8 May	COR	iP (Z)d,N,W	16:26:50.7	1.2	Alaska. USCGS (card 38-64): 56.7°N, 154.0°W; 16:21:49.8; h about 25 km; M 5.3. Δ about 2500 km.
		eS (N)	31:04.0	10.2	
	KFO	eP (Z)d	16:27:16	0.2	
8 May	COR	iP (Z)d,N,W	21:39:14.2	1.2	Alaska. USCGS (card 38-64): 60.8°N, 143.6°W; 21:34:40.6; h about 35 km; M 5.4. Δ about 2300 km.
	KFO	eP (Z)u	21:39:42	1.0	
12 May	COR	iP (Z)u	18:21:35.4	1.1	Alaska. USCGS (card 42-64): 56.6°N, 152.4°W; 18:16:41.9; h about 10 km; M 5.3. Δ about 2500 km.
		iP (Z)d,N,W	21:37	7	
		eS (N)	25:41	--	
	KFO	eP (Z)d	18:22:02	1.0	
17 May	COR	iP (Z)u	00:54:38.4	1.8	Alaska. USCGS (card 43-64): 59.4°N, 142.7°W; 00:50:17.9; h about 35 km; M 5.1. Δ about 2300 km.
		eS (E)	58:21.6	6	
		eS (N)	58:24	--	
17 May	COR	iP (Z)d	19:36:57.2	1.1	N Atlantic Ocean. USCGS (card 45-64): 35.2°N; 35.9°W; 19:26:20.6; h about 33 km; M 5.6. Δ about 7600 km.
		eS? (Z)	45:40.4	7	
		ePKKP? (Z)	56:25	44	
19 May	COR	iP (Z)d	23:13:40.0	0.8	Ecuador. USCGS (card 43-64): 0.7°S, 80.2°W; 23:03:41.8; h about 54 km; M 5.4. Δ about 6500 km.
		eS (Z,N,E)	21:24	9	
		eLR (N,E)	30:00	--	
21 May	COR	eP (Z)d,N,W	15:41:11	--	Alaska. USCGS (card 45-64): 59.0°N, 153.5°W; 15:36:01.5; h about 15 km; M 5.3. Δ about 2600 km.
		eS (N,E)	45:36	11	
		eSS (N,E)	46:26	--	
23 May	COR	eP (Z)u	11:33:35.1	--	Bonin Islands. USCGS (card 43-64): 28.6°N, 139.4°E; 11:22:33.3; h about 409 km; M 5.1. Δ about 8300 km.
23 May	COR	eP? (Z)	18:32:51.1	--	Local. Δ about 180 km?.
		eS? (E)	33:12.2	--	
26 May	COR	eP (Z,N)u	11:14:37.5	11	Sandwich Islands. USCGS (card 46-64): 56.2°S, 27.8°W; 10:59:12.3; h about 120 km; M 7 (PAL). Δ about 12,800 km.
		ePKP (Z)u	18:12.0	5	
		eSKS (N)	25:08.4	3	
		eS (N)	27:02.9	3.5	
29 May	COR	eP (Z)u,N,E	10:22:20.1	0.8	Alaska. USCGS (card 43-64): 60.2°N, 146.3°W; 10:17:34.5; h about 5 km; M 5.6. Δ about 2400 km.
		eS	26:13	5	
		eLR (Z)	27:39	40	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
30 May	COR	iP (Z)u, E	03:22:58.1	0.8	Alaska. USCGS (card 43-64): 59.5°N, 148.5°W; 03:18:08.3; h ?; M 5.5. Δ about 2400 km.
30 May	COR	eP (Z) eS (N, E) eSSS (N, E)	14:41:50.9 50:56.6 58:38	-- 6 16	E coast of Honshu, Japan. USCGS (card 43-64): 36.2°N, 141.1°E; 14:30:45.3; h about 49 km; M 5.4. Δ about 7500 km.
31 May	COR	iP (Z)u, S, E eS (E) eLQ (N)	00:50:49.2 59:06.2 01:05:56.2	0.9 4 20	Kurile Islands. USCGS (card 43-64): 43.5°N, 146.8°E; 00:40:36.4; h about 48 km; M 6.3. Δ about 6800 km.
	KFO	eP (Z)u	01:01:05	2	
1 June	COR	iP (Z)d, N, W iS (N)S	01:38:50.1 39:05.8	--	Local. Δ about 130 km.
1 June	COR	iP (Z)u	13:51:28.6	0.4	N coast of California. USCGS (card 54-64): 40.3°N, 126.1°W; 13:50:16; h about 33 km; M 5.4. Δ about 560 km.
8 June	COR	iP (Z)d, E eS	16:16:35.7 16:47.9	-- --	Local. Δ about 80 km.
11 June	COR	iP (Z)u, W eS (Z)	22:19:30.6 20:23.5	0.4 14	N coast of California. USCGS (card 50-64): 40.3°N, 126.1°W; 22:18:19.8; h about 33 km; M 5.4. Δ about 600 km.
13 June	COR	iP (Z)u, S, E iS	23:35:43.9 35:53.2	0.2 0.4	Local. Δ about 80 km.
16 June	COR	eP? (Z)d, E	04:12:46.3	1.0	W coast of Honshu, Japan. USCGS (card 51-64): 38.3°N, 139.1°E; 04:01:44.3; h about 57 km; M 6.1. Δ about 7800 km.
16 June	COR	iP (Z)d	07:04:11.2	0.2	Local.
16 June	COR	iP (Z)d	07:26:04.1	0.2	Local.
23 June	COR	iP (Z)u, S, E iS (E) eSKS (N, E) e (Z, N, E)	01:36:50.6 45:09.6 52:02.0 55:08	1.6 2.5 20 24	Kurile Islands. USCGS (card 53-64): 43.3°N, 146.1°E; 01:26:37.0; h about 77 km; M 6.1. Δ about 6900 km.
	KFO	eP (Z)u	01:37:07	1	

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DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
28 June	COR	iP (Z)d	19:13:54.9	0.4	Alaska. USCGS (card 52-64): 58.3°N, 150.2°W; 19:09:05.4; h about 23 km; M 5.5. Δ about 2500 km.
		eS (N,E)	18:10.2	9	
			19:24.9	14	
	KFO	e (Z)d	19:14:22	1	
29 June	COR	eP (Z)d	13:26:53.0	1.2	
		e	31:24.5	7	
29 June	COR	iP (N)N,W	23:18:52.2	0.2	Local. Δ about 65 km.
		iS	19:01.0	--	
30 June	COR	eP (Z)u,E	20:18:04.1	0.9	Sea of Okhotsh. USCGS (card 52-64): 46.6°N, 144.6°E; 20:08:28.5; h about 383 km; M 5.5. Δ about 6700 km.
		epP	19:28.5	1.6	
		eScS (N,E)	26:56.7	6	
	KFO	eP (Z)	20:18:21	1	

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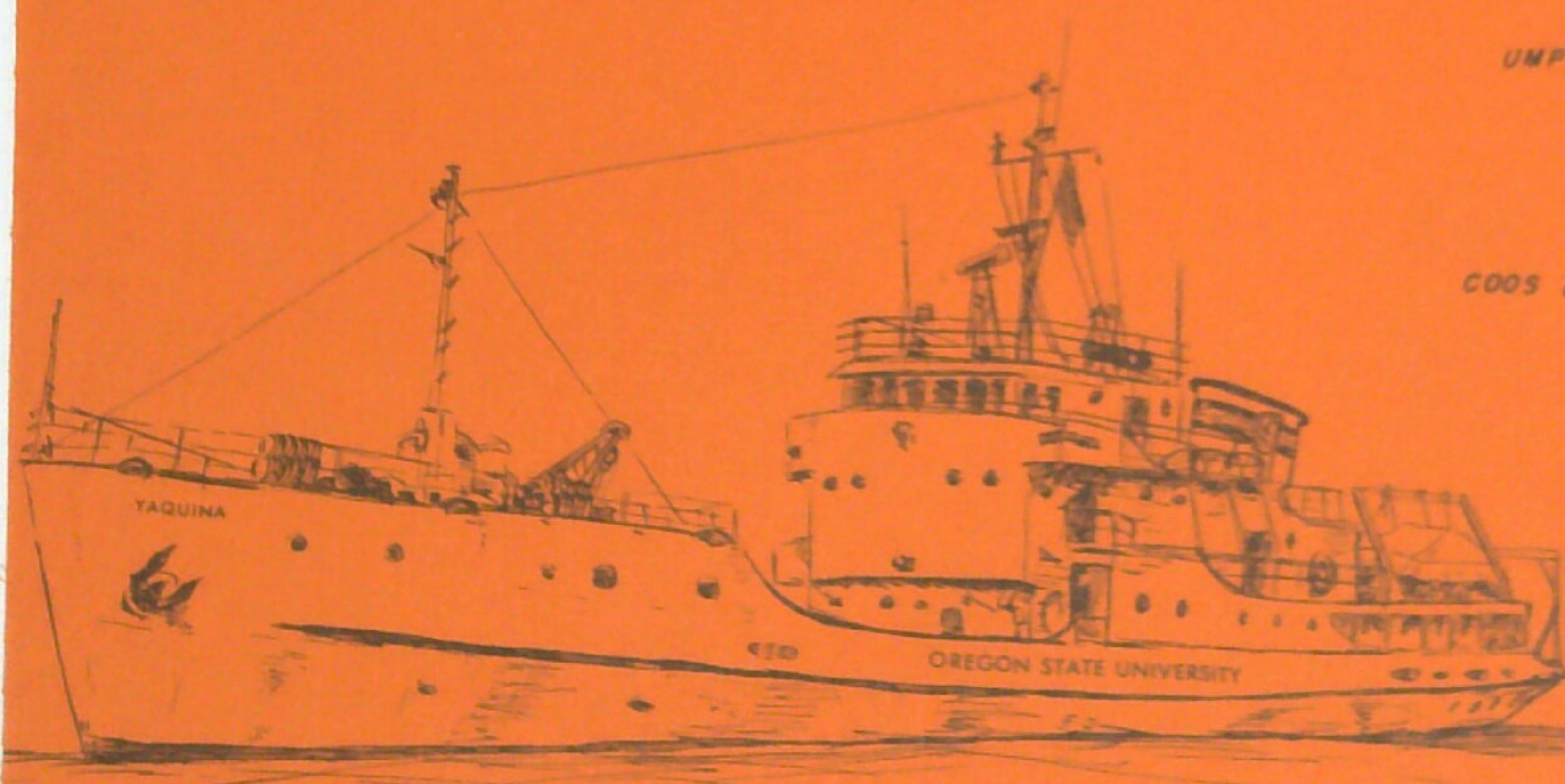
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**OREGON STATE UNIVERSITY
SEISMOLOGICAL BULLETIN No. 5
July 1 to September 30, 1964**

by

C. E. Schatz and Peter Dehlinger

Air Force Cambridge Research Laboratories
Contract AF 19(628)-2778

Office of Naval Research
Contract Nonr 1286(10) Project NR 083-102

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Date Report No. 19

Reference 65-17

August 1965

DEPARTMENT OF OCEANOGRAPHY
Geophysics Research Group
OREGON STATE UNIVERSITY
Corvallis, Oregon

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Wayne V. Burt
Chairman

Reproduction in whole or in part is permitted for any purpose of the
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Oregon State University operates a World-Wide Standard Seismograph Station at Corvallis (COR) and a seismic station at Klamath Falls (KFO), Oregon.

The Corvallis station includes three short-period Benioff seismographs ($T_o = 1$ sec, $T_g = 0.75$ sec), three long-period Sprengnether seismographs ($T_o = 30$ sec, $T_g = 100$ sec), and a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec) to provide visual recording on the OSU campus.

The Klamath Falls station consists of a small short-period vertical Benioff seismograph ($T_o = 1.0$ sec, $T_g = 0.2$ sec), with visual recording on the campus of the Oregon Technical Institute.

Station Constants:	Corvallis	Klamath Falls
Latitude	44°35.1'N.	42°16.0'N.
Longitude	123°18.2'W.	121°44.7'W.
Elevation	123 meters	1321 meters

Abbreviations:

i - impetus (sudden beginning of motion).

e - emersio (gradual beginning of motion).

(Z, N, E) (following phase of arrival) - recorded on vertical, north-south, east-west component seismometers, respectively.

c, r (following phase of arrival) - first motion arrived as a compression or rarefaction, respectively.

u, d, N, S, E, W (following phase of arrival) - first motion is up, down, north, south, east, or west, respectively.

Mag - magnitude

h - depth of focus.

Δ - epicentral distance from Corvallis.

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DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
2 July	COR KFO	iP (Z)d eP (Z)d	01:23:45.1 01:24:13	1.2 0.6	Alaska. USCGS (card 53-64): 60.1°N, 146.0°W; 01:19:02.7; h about 14 km; Mag 5.1. Δ about 2250 km.
2 July	COR	iP (Z)d iS	15:10:24.4 11:21.0	0.6 1.1	Off coast of Washington. USCGS (card 56-64):47.6°N, 128.7°W; 15:09:13.5; h about 33 km; Mag 4.0. Δ about 500 km.
2 July	COR	iP (Z,N,E) d,N,W iS	17:04:52.0 05:47.8	0.7 1.2	Off coast of Washington. USCGS (card 55-64):47.7°N, 128.3°W; 17:03:42.4; h about 33 km; Mag 4.9. Δ about 440 km.
2 July	COR	iP (Z,N,E) d,N,W iS	17:18:50.0 19.45.6	0.6 1.2	Off coast of Washington. USCGS (card 53-64):47.7°N, 128.8°W; 17:17:34.4; h about 14 km; Mag 5.0. Δ about 530 km.
5 July	COR	iP (Z)u	03:19:13.4	1.5	Alaska. USCGS (card 53-64): 60.8°N, 144.9°W; 03:14:33.3; h about 30 km; Mag 4.9. Δ about 2300 km.
5 July	COR	eP (Z,N,E) d,S,E eS (Z,E)	19:12:41.2 16:50	2.2 ---	Gulf of California. USCGS (card 53-64):26.7°N, 110.2°W; 19:07:57.8; h about 29 km; Mag 6.0. Δ about 2400 km.
5 July	COR	P (Z,N)d,S S (Z,N,E) LQ (Z,N,E) LR (N,E)	23:45:59.3 54:06 24:00:39.6 03:36	0.6 6 22 16	Kurile Is. USCGS (card 53-64):44.8°N, 149.6°E; 23:36:01.5; h about 54 km; Mag 5.5. Δ about 6500 km.
6 July	COR	eP (Z)u eS	02:19:17.9 22:51.7	1.8 12	Gulf of California. USCGS (card 55-64):26.2°N, 110.4°W; 02:14:36.0; h about 33 km; Mag 6. Δ about 2350 km.
6 July	COR	iP (Z,N,E) d,S,E	07:28:34.8	1.8	Guerrero, Mexico. USCGS (card 53-64):18.3°N, 100.4°W; 07:22:11.7; h about 100 km; Mag 6.3. Δ about 3550 km.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
7 July	COR	iP (Z,N,E) u, N, E iS (Z,N,E)	13:45:30.3 46:10.2	0.9 9	Off coast of Oregon. USCGS (card 53-64):43.4°N, 127.2°W; 13:44:40; h about 7 km; Mag 5.7. Δ about 350 km.
9 July	COR	iP (Z)u iS (N,E) eSS (N,E) eLQ (N,E) eLR (N,E)	11:34:27.0 44:45.7 49:56.9 55:55.3 59:26.9	1.8 9.6 12 23 20	Tonga Is. USCGS (card 58-64):23.3°S, 175.7°W; 11:22:05.4; h about 43 km; Mag 5.7. Δ about 9200 km.
11 July	COR	eP (Z,N,E) u, S, E?	20:30:17.3	1.8	Alaska. USCGS (card 56-64): 59.7°N, 146.2°W; 20:25:40.3; h about 40 km; Mag 5.6.
	KFO	e (Z)d	20:30:40.0	1	Δ about 2300 km.
11 July	COR	iP (Z,N,E) u, N, E iS (?)	21:43:08.4 43:11.1	0.6 --	Local. Δ about 27 km.
12 July	COR	eP (Z,N,E) u, N, E	01:56:33.3	0.8	W coast Honshu, Japan. USCGS (card 55-64):38.6°N, 139.2°E; 01:45:25.6; h about 13 km; Mag 6.0.
	KFO	eP (Z)u	01:56:41.0	1	Δ about 7700 km.
12 July	COR	eP (Z,N,E) eS (?)	21:19:15.0 19:28.4		Local. Δ about 135 km (?).
13 July	COR	iP (Z,N,E) u, W eS	06:49:04.1 49:59.2	0.2 6	Off coast of Oregon. USCGS (card 56-64):44.7°N, 129.9°W; 06:47:54; h about 33 km; Mag 5.5. Δ about 520 km.
13 July	COR	iP (Z,N,E)u eS (Z,N) e (Z,N)	11:55:39.7 56:22.6 56:36.9	1.8 2.4 17	Coast of Oregon. USCGS (card 58-64):42.5°N, 126.7°W; 11:54:50.7; h about 33 km; Mag 5.6; Δ about 350 km.
	KFO	e (Z)u	11:55:45.4	0.5	
14 July	COR	iP (Z,N,E) d, S eS (Z,N,E) eSS (?) e	12:48:14.1 48:50.6 48:53.0 49:14.3	1.0 2 -- 7	N California. USCGS (card 56-64):41.8°N, 125.7°W; 12:47:25.6; h about 33 km; Mag 5.4. Δ about 350 km.
15 July	COR	iP (Z,N,E) d, S, E iS (Z,N,E)	16:59:13.1 59:26.4	0.2 --	Local. 16:58:56.5. Δ about 100 km.

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DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
23 July	COR	eP (Z,N,E)	19:12:56.2	0.8	Alaska. USCGS (card 59-64): 59.9°N, 149.2°W; 19:08:06.6; h about 55 km; Mag 5.4. Δ about 2400 km.
24 July	COR	iP (Z,N,E)	01:03:01.8	0.2	Local.
24 July	COR	eP (Z,N,E) d,N,W	07:00:25.5	1.8	Kurile Is. USCGS (card 60-64): 46.9°N, 153.9°E; 06:50:52.8; h about 33 km; Mag 5.9. Δ about 6100 km.
24 July	COR	eP	08:22:12	2	Kurile Is. USCGS (card 59-64): 47.2°N, 153.8°E; 08:12:40.0; h about 33 km; Mag 5.9. Δ about 6000 km.
27 July	COR	iP (Z,N,E) eS	18:41:34.7 42:11.4	1.2 1.2	Oregon coast. USCGS (card 64-64): 42.4°N, 125.3°W; 18:40:53.4; h about 33 km; Mag 4.5. Δ about 300 km.
29 July	COR	iP (Z,N,E)d iS	19:21:15.6 21:24.6	0.8 0.4	Local. 19:21:05.8. Δ about 80 km.
30 July	COR	eP (Z,N,E) d,S,E ePP (Z)	05:24:25.8 26:03.0	1.6 1.4	Near W coast of Costa Rica. USCGS (card 59-64): 11.1°N, 86.2°W; 05:16:03.3; h about 42 km; Mag 5.7. Δ about 5000 km.
31 July	COR	eP	06:05:22.9	12.0	New Britain. USCGS (card 61-64): 6.1°S, 149.4°E; 05:52:18.8; h about 63 km; Mag 5.9. Δ about 10,100 km.
2 Aug.	COR	eP (Z,N,E) d,S,E eS (Z,N,E)	08:40:55.9 44:48.6	2.4 10.4	Alaska. USCGS (card 60-64): 56.2°N, 149.9°W; 08:36:16.9; h about 31 km; Mag 5.4. Δ about 2300 km.
5 Aug.	COR	iP (N,E)E eS (E)	00:08:23.4 08:44.7	0.6 1.2	Local. 00:07:54.5. Δ about 180 km.
5 Aug.	COR	eP (N,E)S S (E)	00:54:04.0 54:06.6	0.3 0.6	Local. 00:54:01.0. Δ about 15 km.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
5 Aug.	COR	eP (Z) epP (Z) eSKS (N,E)S,W eS (Z,N,E)N,E eSP (Z,N) ePS (N,E) eSS (N,E)	11:18:47.9 19:43 28:57 29:31 30:44 31:18 35:47	1.0 6 16 20 12 10 16	Kermadec Is. USCGS (card 63-64): 32.1°S, 179.8°E; 11:06:02.6; h about 235 km; Mag 5.8. Δ about 10,200 km.
6 Aug.	COR	iP (Z,N,E) d,N,E eS (Z)	10:47:10.2 47:49.6	0.6 10	Oregon coast. USCGS (card 61-64): 43.4°N, 126.7°W; 10:46:28.9; h about 33 km; Mag 5.3. Δ about 300 km.
8 Aug.	COR	eP (Z,N,E) d,N,W eS (N,E)	18:29:41.6 33:50.0	12 16	Alaska. USCGS (card 60-64): 56.9°N, 152.1°W; 18:24:50.5; h about 39 km; Mag 5.6. Δ about 2400 km.
8 Aug.	COR	eP (Z,N,E) u,W	15:53:13.3	1.5	W coast of Nicaragua. USCGS (card 61-64): 12.5°N, 87.8°W; 15:45:10.9; h about 63 km; Mag 5.8. Δ about 4800 km.
9 Aug.	COR	iP (Z,N,E) d,W iS (Z,N,E)	23:49:13.2 49:15.7	0.3 0.3	Local. 23:49:09.5. Δ about 20 km.
11 Aug.	COR	iP (Z,N,E)u iS (Z,N,E)	01:40:42.8 40:45.2	0.2 0.8	Local. 01:40:39.5. Δ about 20 km.
11 Aug.	COR	iP (Z,N,E) d,E iS (Z,N,E)	14:42:40.4 42:52.8	0.2 0.5	Local. 14:42:25.5. Δ about 90 km.
12 Aug.	COR	iP (Z,N,E)W iS (N,E)	00:51:35.2 51:37.8	0.3	Local. 00:51:31.5. Δ about 20 km.
13 Aug.	COR	eP (Z,N,E) d,W esP (Z) eS (E)	00:43:25.6 45:54.0 53:21.6	1.2 4 6	Solomon Is. USCGS (card 65-64): 5.4°S, 154.3°E; 00:31:14.1; h about 383 km; Mag 6.0. Δ about 9800 km.
13 Aug.	COR	iP (Z,N,E) d,E eS (E)	06:36:28.8 37:06.0	1.0 0.4	Oregon coast. USCGS (card 65-64): 42.2°N, 126.1°W; 06:35:39.0; h about 33 km; Mag 4.9. Δ about 350 km.
13 Aug.	COR	iP (Z,N,E)E eS (Z,N,E)	08:51:30.0 52:06.8	0.6 1.0	Oregon coast. USCGS (card 65-64): 42.3°N, 125.5°W; 08:50:46; h about 33 km; Mag 4.9. Δ about 300 km.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
18 Aug.	COR	e (Z)d	00:37:35.2	0.8	Local (?).
		e (E)	37:44.6	0.6	
		e (E)	37:50.8	1.0	
		e (Z)	38:13.2	0.8	
18 Aug.	COR	iP (Z,E)u,W	02:14:50.9	0.1	Local. 02:14:17.8.
		eS (E)	15:16.1	1.0	Δ about 220 km.
18 Aug.	COR	eP (Z,N,E)	04:57:35.8	1.0	Coast N Chile. USCGS (card
		u,N,W			64-64): 26.4°S, 71.5°W;
		eS (Z,N,E)	05:08:03.1	8	04:44:58.0; h about 8 km;
		eSS (N,E)	14:00	22	Mag 6.4. Δ about 9700 km.
		eLR (Z,N)	26:12	24	
	KFO	e (Z)u	05:59:21	1	
18 Aug.	COR	e (Z,N,E)W	23:57:33	1.0	
21 Aug.	COR	iP (Z,N,E)E	00:15:23.4	0.6	Local (?).
		e (Z,N,E)	15:37.7	0.8	
21 Aug.	COR	eP (Z,E)W	23:55:35.3	0.3	
22 Aug.	COR	e (Z,E)W	00:26:16.1	0.6	
24 Aug.	COR	eP (Z,E)u,W	22:01:45.5	1.0	Alaska. USCGS (card 67-64):
					58.4°N, 150.3°W; 21:56:54.2;
					h about 22 km; Mag 5.8.
					Δ about 2400 km.
25 Aug.	COR	iP (Z)u	13:56:17.6	0.7	Severnaya Zemlya. USCGS (card
		ePPP (N)S	59:04	6	66-64): 78.2°N, 126.6°E;
		eS (N,E)	14:03:38	10	13:47:20.6; h about 50 km;
		eLR (N)	10:20	18	Mag 6.1. Δ about 5400 km.
	KFO	eP (Z)u	14:56:16	1	
26 Aug.	COR	eP (Z,E)u,E	05:49:52.0	1.0	NW of Kurile Is. USCGS
		e (Z)	50:03.7	1.2	(card 67-64): 47.2°N, 148.4°E;
		epP (Z)	50:59.9	1.4	05:40:27.1; h about 308 km;
					Mag 5.3. Δ about 6400 km.
26 Aug.	COR	e (Z,E)W	23:48:22	0.8	
31 Aug.	COR	e (Z,N,E)W	22:06:35	0.8	
31 Aug.	COR	i (Z,N,E)	23:48:18.0	0.8	
		d,N,W			
1 Sept.	COR	e (E)E	20:59:12.6	0.6	
1 Sept.	COR	e (E)E	21:42:56	0.8	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
1 Sept.	COR	e (E)	23:51:09	1.0	
15 Sept.	COR	iP (Z)u eS (N,E)S,E	12:55:55.5 56:00.3	2 1.6	Local. 12:55:49.2. Δ about 35 km.
15 Sept.	COR	e (Z,N,E)E	23:23:28.5	0.5	Local.
16 Sept.	COR	eP (Z,N)d,N eLR (Z)	01:55:16.5 02:00:50	2 14	Gulf of Alaska. USCGS (card 74-64): 60.0°N, 147.1°W; 01:50:33.9; h about 29 km; Mag. 5.5. Δ about 2400 km.
16 Sept.	COR	e (Z,N,E)u,W e (E)	08:05:52.5 06:00.8	0.8 1.0	Local (?).
18 Sept.	COR	e (Z,N,E) u,N,E	23:49:56	--	
19 Sept.	COR	ePP (Z,N,E)u eLR? (Z,N,E)	05:15:33 28:12	2 12	Oaxaca, Mexico. USCGS (card 74-64): 25.3°N, 94.0°W; 05:08:15.1; h about 42 km; Mag 5.3. Δ about 3400 km.
22 Sept.	COR	e (Z)u e (Z)	23:05:40.9 10:25	1.0 --	
27 Sept.	COR	eP (Z)d ePP (N,E) S,E	15:55:44.6 55:56	1.2 --	Kodiak Is. USCGS (card 76-64): 56.6°N, 152.0°W; 15:50:54.7; h about 27 km; Mag 5.4. Δ about 2400 km.
28 Sept.	COR	eP (Z,N,E) u,N,E eS (Z)	15:43:58.2 44:34	1 4	Oregon coast. USCGS card (76064): 43.5°N, 127.1°W; 15:43:13.6; h about 33 km; Mag 4.8. Δ about 310 km.
29 Sept.	COR	eP (E)E	00:28:14.2	1.0	Local.
30 Sept.	COR	iP (N)S	00:05:33.8	0.8	Local.

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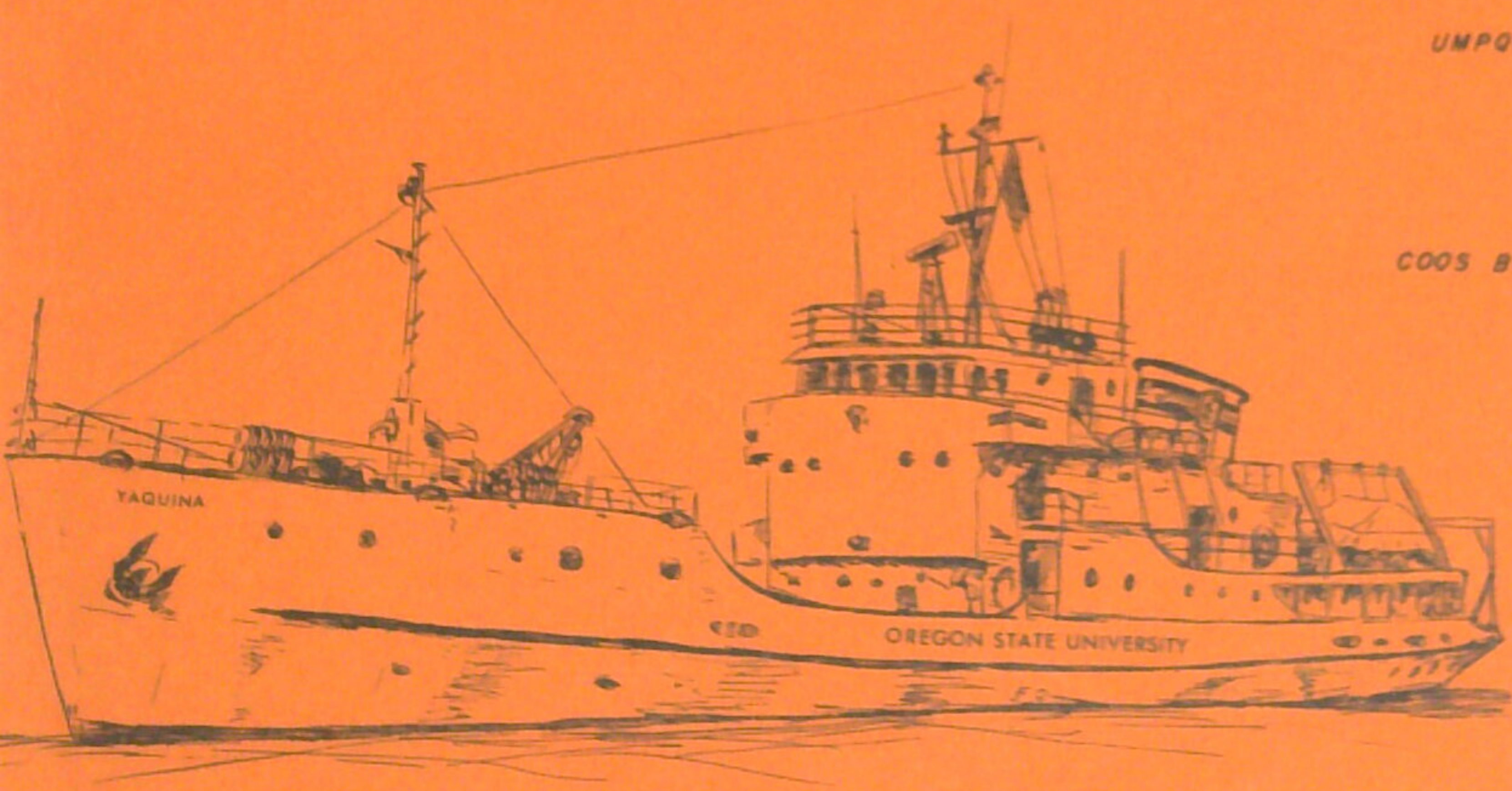
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13. Abstract:

This report includes seismic data recorded at the Corvallis and Klamath
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DEPARTMENT of OCEANOGRAPHY

SCHOOL of SCIENCE

OREGON STATE UNIVERSITY



OREGON STATE UNIVERSITY
SEISMOLOGICAL BULLETIN No. 6
October 1 to December 31, 1964

by
J. N. Gallagher and Peter Dahlinger

Air Force Cambridge Research Laboratories
Contract AF 19(628)-2778

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Data Report No. 20 Reference 65-18

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Oregon State University operates a World-Wide Standard Seismograph Station at Corvallis (COR) and a seismic station at Klamath Falls (KFO), Oregon. Data recorded at the Portland (PTD), Oregon, seismic station, operated by the Oregon Museum of Science and Industry, are included in this Seismological Bulletin.

The Corvallis station includes three short-period Benioff seismographs ($T_0 = 1$ sec, $T_g = 0.75$ sec), three long-period Sprengnether seismographs ($T_0 = 30^g$ sec, $T_g = 100$ sec), and a small short-period vertical Benioff seismograph ($T_0 = 1.0$ sec, $T_g = 0.2$ sec) to provide visual recording on the OSU campus.

The Klamath Falls station consists of a small short-period vertical Benioff seismograph ($T_0 = 1$ sec, $T_g = 0.2$ sec), with visual recording on the campus of the Oregon Technical Institute.

The Portland station consists of a short-period vertical Wilson-Lamison seismograph ($T_0 = 1$ sec, $T_g = 1.5$ sec) with visual recording at the Museum.

Station Constants:

	Latitude	Longitude	Elevation
Corvallis	44°35.1'N	123°18.2'W	123 meters
Klamath Falls	42°16.0'N	121°44.7'W	1321 meters
Portland	45°30.5'N	122°43.0'W	208 meters

Abbreviations:

i - impetus (sudden beginning of motion).

e - emersio (gradual beginning of motion).

(Z, N, E) (following phase of arrival) - recorded on vertical, north-south, east-west component seismometers, respectively.

c, r (following phase of arrival) - first motion arrived as a compression or rarefaction, respectively.

u, d, N, S, E, W (following phase of arrival) - first motion is up, down, north, south, east, or west, respectively.

Mag - magnitude.

h - depth of focus.

Δ - epicentral distance from Corvallis.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
Oct. 1	COR	ip (Z,N)d	12:31:44	1.0	Washington-Oregon border.
		e (Z,N)u,S	32:06	1.0	Felt: Portland-Vancouver area.
	KFO	eP (Z)	12:31:59.4	.9	USCGS (card 82-64): 45.7°N, 122.8°W; 12:31:24.6; h about 33 km. Mag 4 3/4 (BRK). Δ about 120 km.
Oct. 1	COR	iP _n (Z,N,E) u,E	18:31:31.8	0.6	Vancouver Is. region. USCGS (card 79-64): 49.3°N, 128.8°W;
		eP* (E)W	31:43	1.6	18:30:01.9; h about 9 km;
		eS? (N)	32:47	16	Mag 5.3. Δ about 660 km.
Oct. 2	COR	eP (Z,E)u,E	13:13:22.8	1.8	Solomon Is. USCGS (card 77-64):
		eP (Z,N,E) u,S,E	13:31.6	1.0	10.5°S, 162.4°E; 13:00:39.7; h about 68 km; Mag 6.0. Δ about 9700 km.
Oct. 3	COR	iP (Z,N,E) u,N,W	00:40:01.2	1.0	Local.
Oct. 3	COR	eP (Z,N)d,S	13:44:31.4	1.6	S Alaska. USCGS (card 78-64):
	KFO	eP (Z)	13:44:42.2	1.2	61.4°N, 147.1°W; 13:39:39.9; h about 48 km; Mag 5.2. Δ about 2400 km.
Oct. 6	COR	eP (Z)u	14:44:29	2.0	Turkey. Widely felt: extensive
		eP (Z,E)d,E	44:32	5.0	damage in W Turkey. USCGS
		eSSS (Z)u	15:05:50	20	(card 81-64): 40.3°N, 28.2°E;
	PTD	eP (Z)	14:44:26	2.2	14:31:19.2; h about 10 km; Mag 6.0. Δ about 10,200 km.
Oct. 7	COR	iP _n (Z,N,E) d,S,W	09:06:03.1	0.8	Local. 09:05:15.4. Δ about 330 km.
		iS _n	06:39.8	1.0	
Oct. 7	COR	iP (Z,N,E) d,S,W	18:27:02.5	0.8	Local.
Oct. 9	COR	iP (Z,E)d,E	18:02:06.6	0.6	Local. 18:01:50.
		iS (Z,E)d,W	02:18.9	1.2	Δ about 200 km.
Oct. 10	COR	eP (Z)u	19:43:29.3	2.0	S Alaska. USCGS (card 79-64): 60.4°N, 146.1°W; 19:38:47.7; h about 44 km; Mag 5.3. Δ about 2300 km.
Oct. 10	COR	eP (Z,N,E) u,S	20:11:20.4		S Alaska. USCGS (card 78-64): 60.5°N, 145.4°W; 20:06:39.8; h about 31 km; Mag 5.4. Δ about 2400 km.

DATE 1964	STA.	PHASE	TIME (GCT) h,m,s	PERIOD sec	REMARKS
Oct. 11	COR	iP _n (Z,N,E) u,N,W e (Z,N,E)	06:11:16.1 11:52.2	0.1 0.6	Off coast of Oregon. USCGS (card 85-64): 43.8°N, 129.3°W; 06:10:09.0; h about 33 km; Mag 4.6. Δ about 480 km.
Oct. 11	COR	iP (Z,N,E) u,N	10:14:02	0.1	Hawaii region. Felt throughout islands. USCGS (card 80-64): 19.1°N, 156.6°W; 10:06:44.9; h about 33 km; Mag 5.3. Δ about 4150 km.
Oct. 12	COR KFO	eP (Z)d eP (Z)	22:07:22.9 22:07:23	2.0 1.5	Easter Is. region. USCGS (card 79-64): 31.3°S, 110.8°W; 21:55:33.2; h about 33 km; Mag 6.0. Δ about 8500 km.
Oct. 13	COR	iP (E)W	00:23:37.7	0.5	
Oct. 14	COR	iP (E)W	23:45:51	0.3	
Oct. 15	COR	eP _n (N,E) N,E eS _n (N,E) S,E	14:33:29.6 34:08.9	0.6	Washington. Felt Seattle area. USCGS (card 88-64): 47.7°N, 122.1°W; 14:32:38; h about 33 km; Mag 4.1. Δ about 360 km.
	PTD	eP (Z)	14:33:08	0.5	
Oct. 16	COR	eP (Z)d eP (Z) eS (N,E)S,E eG (N)	07:09:39.3 09:55 17:51 24:28.6	0.9 1.6 6.0 24	Kurile Is. 06:59:20. Mag 6 1/2 (BRK). Δ about 6800 km.
Oct. 17	COR	iP _n (Z,N) u,N iS _n (N)N	12:35:09.4 35:51.0	1.2 1.2	Local. 12:34:14.2. Δ about 385 km.
Oct. 18	COR	eP _n (Z,N,E) d,N,E eS _n (N)S	05:48:32.6 49:10	0.8 1.2	Local. 05:47:44. Δ about 340 km.
Oct. 18	COR	eLR (Z)u	06:49:55.6	2.0	Kurile Is. USCGS (card 84-64): 44.4°N, 149.7°E; 06:16:35.2; h about 33 km; Mag 5.1. Δ about 6600 km.
Oct. 21	COR	iP _n (Z,N,E) d,N,E iSS? (E)E e (Z) e (N)	07:40:41.8 42:49.2 43:28 43:46	1.2 1.0 16 4.0	Hebgen Lake region. Felt. USCGS (card 88-64): 44.8°N, 111.6°W; 07:38:31.0; h about h about 33 km; Mag 5.8. Δ about 960 km.
	PTD	eP (Z)	07:40:36	2.0	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
Oct. 22	COR	eP (Z,N,E) u, S, E iS (E)E i (Z)	16:57:06.6 57:16.5 57:20.9	0.4 0.8	Local. 16:56:55. Δ about 70 km.
Oct. 23	COR	eP (Z,N,E) u, E eS (N)N eLQ (N) e (Z)u	02:06:11.2 14:27 20:42 27:05	2.0 9.0 19 14	N Atlantic Ocean. USCGS (card 85-64): 19.8°N, 56.0°W; 01:56:03.2; h about 31 km; Mag 6.4. Δ about 6600 km.
	PTD	eP (Z)u	02:06:15	3.5	
Oct. 23	COR	i (N,E)N,W	23:54:41.7	0.4	Local.
Oct. 24	COR	iP _n (Z,N,E) u, S, W e (Z)	06:45:47.4 46:47	1.0 10	Off coast of Oregon. USCGS (card 87-64): 44.4°N, 130.0°W; 06:44:38; h about 33 km; Mag 4.7. Δ about 500 km.
	PTD	eP (Z)	06:46:04	2.5	
Oct. 28	COR	ePS? (N,E) S, W ePS? (E)E	00:47:05.9 47:10.2	0.4 1.4	Central Chile. USCGS (card 84-64): 29.6°S, 70.7°W; 00:22:07.3; h about 45 km; Mag 4.9. Δ about 10,100 km.
Oct. 30	COR	e (N,E)S, W	00:55:29.6	1.4	Off coast of central Chile. USCGS (card 87-64): 38.9°S, 74.1°W; 00:22:48.8; h about 33 km; Mag 4.7. Δ about 10,600 km.
Nov. 1	COR	eG (N)N	05:49:40		Mindoro, Philippine Is. Felt: Hinatuan. USCGS (card 88-64): 13.7°N, 120.6°E; 05:15:48.4; h about 94 km; Mag 4.9. Δ about 10,800 km.
Nov. 1	COR	iP (Z,N,E) eS (E)	20:26:27.5 26:49	0.2 0.6	Local. 20:25:59.2. Δ about 180 km.
Nov. 3	COR	ip (Z,N,E) d, N, E is (E)W	01:26:56.5 26:59.2	1.0	Local. 01:26:53. Δ about 20 km.
Nov. 5	COR	ip	00:47:19		Local.
Nov. 5	COR	ip (Z,N,E) d, N, W is (N,E)S, W	19:54:34.7 54:40.3	0.1 0.4	Local. 19:54:28. Δ about 40 km.
Nov. 6	COR	ip (Z,N,E) u, S, E is (Z,N,E)N, W	06:16:28.6 16:41.9	0.1 1.0	Local. 06:16:12. Δ about 100 km.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
Nov. 6	COR	iP _n (Z,N,E) u,S,E	12:15:10.7	0.8	Off coast of Oregon. USCGS (card 89-64): 43.5°N, 126.6°W; 12:14:29.8; h about 33 km; Mag 4.6. Δ about 280 km.
	PTD	eP (Z)	12:15:21.6	4.0	
Nov. 16	COR	eP (Z,N,E) d,S,E	02:48:40.8	1.6	Central California. Minor damage locally. USCGS (card 96-64): 36.9°N, 121.8°W; 02:46:43; h about 33 km; Mag 5.2. Δ about 870 km.
		e (N)	02:49:36	2.0	
	PTD	eP (Z)	02:48:47	4.0	
Nov. 17	COR	eP (Z,N,E) d,S,E	08:28:43.2	2.4	New Britain region. Felt strongly. USCGS (card 92-64): 5.7°S, 150.7°E; 08:15:39.3; h about 45 km; Mag 6.7. Δ about 10,200 km.
		eG (N)	53:05	40	
Nov. 18	COR	eSP (Z)u	15:00:16	4	New Britain region. Felt. USCGS (card 92-64): 6.0°S, 148.2°E; 14:34:54.5; h about 49 km; Mag 6.1. Δ about 10,300 km.
		eLR (Z)u	17:56	16	
Nov. 19	COR	i (Z,N,E)u,W	00:47:14.3	.2	Possibly local.
		i (E)E	47:20.4	.2	
Nov. 19	COR	eP (Z)u	23:48:16.3	0.8	New Britain region. Slight damage. USCGS (card 95-64): 6.0°S, 150.8°E; 23:35:06.0; h about 3 km; Mag 6.0. Δ about 10,100 km.
		ePPS (N)N	00:12:04	40	
		eG (Z)u	15:42	60	
		eLR (Z)u	18:00	48	
Nov. 24	COR	esSS (N,E) S,W	07:05:08		Fiji Is. region. USCGS (card 95-64): 20.2°S, 179.2°W; 06:35:14.5; h about 660 km; Mag 4.8. Δ about 9250 km.
		e (Z)d	07:00	20	
Nov. 28	COR	iP (Z,N,E) d,N,E	16:51:45.9	0.6	W Brazil. USCGS (card 94-64): 7.7°S, 71.2°W; 16:41:33.4; h about 620 km; Mag 5.4. Δ about 7700 km.
		iPcP (N)N	51:56.6	1.6	
	KFO	eP (Z)d	16:51:07	0.8	
Nov. 28	COR	eP _n (Z,N,E) u,E	19:30:45.5	0.4	Local. 19:30:04.4. Δ about 280 km.
		iS _n (N,E) N,E	31:16.8	0.8	
Nov. 30	COR	i (Z,E)d,W	07:14:41.8	0.3	Local. 07:13:44.0. Δ about 410 km.
		i (Z)d	:15:26.5	0.8	

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
Dec. 1	COR	i (Z,E)d	00:43:34.7	0.2	Local.
Dec. 1	COR	i (Z,N,E) u,S,E	23:52:55.6	0.4	Local.
Dec. 3	COR	i (E)W	00:44:39.8	0.3	Local.
Dec. 9	COR	i (Z,N,E) d,E	07:47:42.8	1.2	Local.
Dec. 10	COR	iP (Z,N,E)d eS (E)E e (Z,N)N	15:22:03.3 31:02 50:06	1.0 14 32	E Sea of Japan. USCGS (card 103-64): 40.4°N, 138.9°E; 15:11:05.5; h about 33 km; Mag 6.0. Δ about 7500 km.
Dec. 12	COR	eP (Z,N,E) dSE eS (E)W eLg (N)	21:18:28.5 19:15 19:30	0.2 1.2	Off coast of N California. USCGS (card 99-64): 40.3°N, 125.1°W; 21:17:21.0; h about 33 km;
	KFO	eP (Z)	21:18:07.5	1.0	Mag 3 1/2 (BRK). Δ about 470 km.
Dec. 13	COR	eLR (Z)	00:49:04		Alaska. Felt: Nome. USCGS (card 102-64): 64.9°N, 165.7°W; 00:33:24.7; h about 15 km; Mag 5.4. Δ about 3600 km.
Dec. 15	COR	esS? (N)S	12:27:26		Guatemala. Felt. USCGS (card 101-64): 14.7°N, 91.7°W; 12:13:25.8; h about 118 km; Mag 5.4. Δ about 4400 km.
Dec. 17	COR	eP (Z)u (N)N eS (E)W	00:44:20.7 44:22.4 44:28.6	0.4 0.4 0.4	Local. 00:44:12. Δ about 50 km.
Dec. 17	COR	e (Z)u	11:26:53	2	Off coast of N California. USCGS (card 106-64): 40.3°N, 127.3°W; 11:25:32; h about 33 km; Mag 4.2. Δ about 590 km.
Dec. 17	COR	eP _n (Z,N,E) d,N,W ep (E) eP (E) e (E) e (Z)	12:12:41 12:50.2 12:54.3 13:23.7 13:25	0.8 1.6 1.2 2.2 1.4	Off coast of N California. USCGS (card 105-64): 41.9°N, 126.0°W; 12:11:52; h about 33 km; Mag 4.6. Δ about 340 km.

DATE 1964	STA.	PHASE	TIME (GCT) h, m, s	PERIOD sec	REMARKS
Dec. 20	COR	ip (Z,E)d,W es (N,E)	11:29:24.5 29:38.7	0.3 1.2	Local. 11:29:07. Δ about 105 km.
Dec. 22	COR	eP (N)N eP (Z,N)d,S epP (Z,E)	08:10:14.7 10:19.4 10:48	2.0 1.0 2.0	Mona Passage. Felt widely in Puerto Rico. USCGS (card 102-64): 18.4°N, 68.8°W; 08:01:12.6; h about 115 km; Mag 5.6. Δ about 5800 km.
Dec. 22	COR	eP (E,Z)u	20:58:02	1.5	Off W coast of Baja California. Minor damage locally. USCGS (card 105-64): 31.9°N, 117.1°W; 20:54:35.3; h about 14 km; Mag 6.3. Δ about 1600 km.
Dec. 25	COR	e (Z,N,E) u,N,E esP' (Z)d	16:47:30 50:10	4 10	Near coast of Guerrero, Mexico. USCGS (card 105-64): 18.0°N, 101.2°W; 16:30:01.9; h about 81 km; Mag 4.8. Δ about 3600? km.
Dec. 26	COR	eS (N) eLR (Z,N) u,N	08:28:54 33:00	20	Near coast of Guerrero, Mexico. USCGS (card 104-64): 16.7°N, 99.6°W; 08:16:28.9; h about 33 km; Mag 5.4. Δ about 3900 km.
Dec. 26	COR	eP (Z,E)u,W eS (N,E)	14:39:21.4 46:30	1	Kamchatka. USCGS (card 104-64): 51.8°N, 156.8°E; 14:30:29.1; h about 136 km; Mag 5.7. Δ about 5700 km.
Dec. 28	COR	eP (Z,E)d e (E) eS (N) esS (N,E)	16:27:41.3 27:55.1 37:18 41:06	1 2 8 12	S of Fiji Is. USCGS (card 104-64): 22.1°S, 179.6°W; 16:16:11.0; h about 611 km; Mag 6.2. Δ about 9400 km.

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