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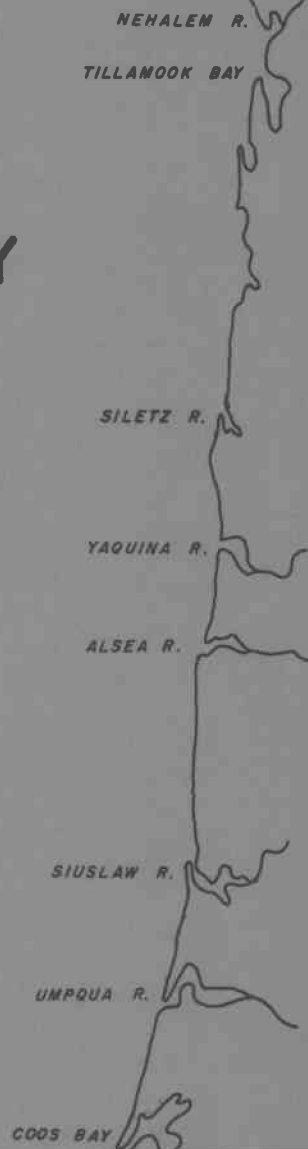
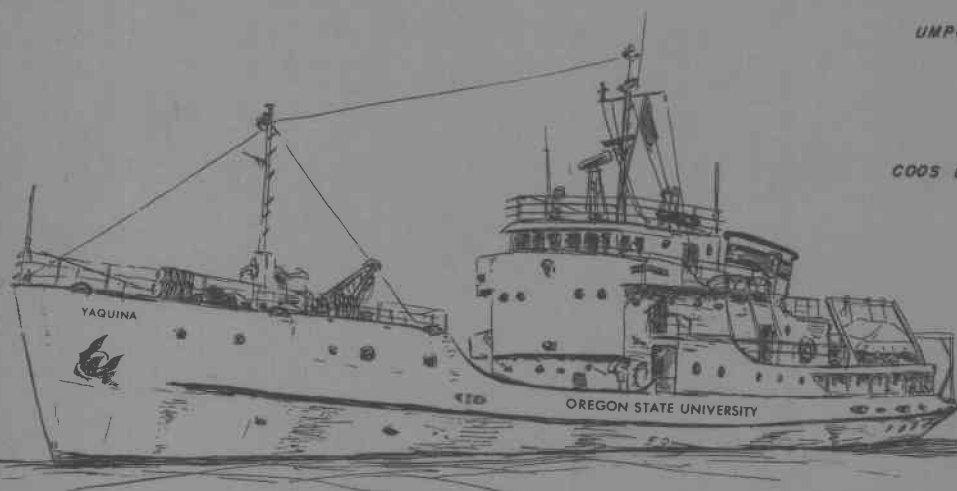
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DEPARTMENT of OCEANOGRAPHY

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 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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Data Report No. 20

Reference 65-18

August 1965

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

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Wayne V. Burt
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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)	18:31:31.8	0.6	Vancouver Is. region. USCGS
		u,E			(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)	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.
		u,S,E			
Oct. 3	COR	iP (Z,N,E)	00:40:01.2	1.0	Local.
		u,N,W			
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)	09:06:03.1	0.8	Local. 09:05:15.4.
		d,S,W			Δ about 330 km.
		iS _n	06:39.8	1.0	
Oct. 7	COR	iP (Z,N,E)	18:27:02.5	0.8	Local.
		d,S,W			
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)	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.
		u,S			

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.
	PTD	eP (Z)	14:33:08	0.5	Δ about 360 km.
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;
	PTD	eP (Z)	06:46:04	2.5	Mag 4.7. Δ about 500 km.
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; Mag 3 1/2 (BRK). Δ about 470 km.
	KFO	eP (Z)	21:18:07.5	1.0	
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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