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THE MINERAL INDUSTRIES EXPERIMENT STATION
College of Mineral Industries
THE PENNSYLVANIA STATE UNIVERSITY

DEPARTMENT OF GEOPHYSICS AND GEOCHEMISTRY

SEISMOGRAPH REPORT XXV

1957

Tang to Dree



University Park, Pennsylvania

**PENNSYLVANIA'S
COLLEGE OF MINERAL INDUSTRIES**

Division of Earth Sciences

Geology - Mineralogy - Geophysics - Geochemistry - Meteorology - Geography

Division of Mineral Engineering

Mineral Economics - Mining - Mineral Preparation - Petroleum and Natural Gas

Division of Mineral Technology

Ceramic Technology
Fuel Technology
Metallurgy

THE PENNSYLVANIA STATE UNIVERSITY
MINERAL INDUSTRIES EXPERIMENT STATION
GEOPHYSICAL LABORATORY
Project C-19

Seismograph Report XXV
1957

College of Mineral Industries
Department of Geophysics and Geochemistry
University Park, Penna., U.S.A.

Locality: The station is located in a vault under the central wing of the School of Mineral Industries Building. The instruments are mounted on a concrete pillar separated from the foundations and anchored to bedrock (dolomite). The geographic coordinates are:

$\phi = 40^{\circ} 48' N$ $\lambda = 77^{\circ} 52' W$ $H = 354 m$

The geocentric coordinates are (according to Gutenberg and Richter):

$A = 40^{\circ} 36' N$ $\lambda = 77^{\circ} 52' W$ $H = + 3 km.$

Please address all communications to:

Geophysical Laboratory
220 Mineral Sciences Bldg.
University Park, Pennsylvania

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Date	Phase and component	G.M.C.T.	Remarks
✓ 2 Jan., 1957	eP Z iS N,E	00:49:37 ✓ 00:57:38 ✓	Epicenter 53°N, 168 1/2°W Fox Islands, Aleutian Islands O = 00:39:22 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 2 Jan., 1957	iP Z iS N,E	02:27:45 ✓ 02:35:48 ✓	Epicenter 52 1/2°N, 168°W Fox Islands, Aleutian Islands O = 02:17:35 Courtesy U.S.C.G.S. Δ = 6,760 km
✓ 2 Jan., 1957	iP Z iPcP Z	03:23:00 ✓ 03:23:43 ✓	Epicenter 53°N, 168°W Fox Islands, Aleutian Islands O = 03:12:52 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 2 Jan., 1957	iP Z eS E	03:58:51 ✓ 04:07:06 ✓	Epicenter 53°N, 168°W Fox Islands, Aleutian Islands O = 03:48:44 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 2 Jan., 1957	iP Z	04:13:38 ✓	Epicenter 52 1/2°N, 169°W Fox Islands, Aleutian Islands O = 03:12:52 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 2 Jan., 1957	eS N,E	11:07:42 ✓	Epicenter 52 1/2°N, 168°W Fox Islands, Aleutian Islands O = 10:49:32 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 3 Jan., 1957	N,E		Seismic activity observed from 01:10 to 01:35

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Date	Phase and component	G.M.C.T.	Remarks
✓ 3 Jan., 1957	iP Z	13:00:36 ✓	Epicenter 49°N , 130°E Southern Manchuria O = 12:48:27 h = 600 km Courtesy U.S.C.G.S. $\Delta = 10,200$ km
	iPP Z	13:02:47 ✓	
	iSKS N,E	13:10:13 ✓	
	iS N,E	13:10:45 ✓	
	isSP N	13:15:39	
	iSS N,E	13:17:18	
✓ 9 Jan., 1957	N,E,Z		Seismic activity observed from 08:23 to 09:30
✓ 24 Jan., 1957	N,E		Seismic activity observed from 07:33 to 08:10
✓ 24 Jan., 1957	N,E		Seismic activity observed from 15:16 to 15:25
✓ 24 Jan., 1957	N,E		Seismic activity observed from 16:47 to 16:55
✓ 24 Jan., 1957	N,E		Seismic activity observed from 17:16 to 17:25
✓ 25 Jan., 1957	iP Z	03:47:29 ✓	Epicenter $51\frac{1}{2}^{\circ}\text{N}$, 177°W Andreanof Islands, Aleutian Islands O = 03:36:47 Courtesy U.S.C.G.S. $\Delta = 7,200$ km
	eS N,E	03:56:00 ✓	
✓ 29 Jan., 1957	N,E		Seismic activity observed from 00:15 to 00:30
✓ 30 Jan., 1957	N,E		Seismic activity observed from 16:27 to 16:50
✓ 3 Feb., 1957	iP N,E,Z	✓ 17:36:26 17:46:02	Epicenter $53\frac{1}{2}^{\circ}\text{N}$, 159°E Kamchatka O = 17:24:50 Courtesy U.S.C.G.S. $\Delta = 8,200$ km
	eS N		

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Date	Phase and component		G.M.C.T.	Remarks
✓ 4 Feb., 1957	E			Seismic activity observed from 09:15 to 09:24
✓ 5 Feb., 1957	iP eS	Z N,E	04:57:50 05:02:56	Epicenter 25 1/2°N, 45 1/2°W Mid-Atlantic Ocean O = 04:51:20 Courtesy U.S.C.G.S. Δ = 3,500 km
✓ 6 Feb., 1957	N,E			Seismic activity observed from 21:25 to 21:50
✓ 10 Feb., 1957	N,E			Seismic activity observed from 06:04 to 06:14
✓ 10 Feb., 1957	ePP ePS? e eSS	N,E N N N	23:11:50 23:21:47 23:26:34 23:28:30	Epicenter 10 1/2°N, 126 1/2°E Mindanao O = 22:50:52 Courtesy U.S.C.G.S. Δ = 14,100 km
✓ 11 Feb., 1957	N,E			Seismic activity observed from 01:50 to 03:28
✓ 17 Feb., 1957	iP ePP eS	N,Z N,Z N	15:52:50 15:53:28 15:57:50	Epicenter 16°N, 96 1/2°W Oaxaca, Mexico O = 15:46:45 h = 60 km Courtesy U.S.C.G.S. Δ = 3,400 km
✓ 18 Feb., 1957	iP eS	Z N	14:55:54 15:02:05	Epicenter 25 1/2°N, 45 1/2°W Mid-Atlantic Ocean O = 14:49:30 Courtesy U.S.C.G.S. Δ = 3,400 km
✓ 23 Feb., 1957	N,E,Z			Seismic activity observed from 13:26 to 13:47

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Date	Phase and component		G.M.C.T.	Remarks
✓ 23 Feb., 1957	ePP	N,Z	20:45:43	Epicenter 24°N, 122°E Formosa O = 20:26:12 Courtesy U.S.C.G.S. Δ = 12,700 km
	ePS	N,E	20:55:07	
	eSS	N,E,Z	21:01:18	
	eSSS	E	21:05:15	
✓ 2 March, 1957	iP	N,Z	00:32:42	Epicenter 18 1/2°N, 78°W Jamaica O = 00:27:33 Courtesy U.S.C.G.S. Δ = 2,600 km
	iPP	N,Z	00:33:27	
	i	N,Z	00:33:47	
	iS	N,E	00:36:50	
✓ 3 March, 1957		N		Seismic activity observed from 03:27 to 04:00
✓ 5 March, 1957		N,E		Seismic activity observed from 12:36 to 13:13
✓ 9 March, 1957	iP	Z	14:33:10	Epicenter 51°N, 175°W Andreanof Islands, Aleutian Islands O = 14:22:27 Courtesy U.S.C.G.S. Δ = 7,300 km
	iS	E	14:41:52	
✓ 9 March, 1957	iP	E,Z	20:49:28	Epicenter 52 1/2°N, 169 1/2°W Fox Islands, Aleutian Islands O = 20:39:15 Courtesy U.S.C.G.S. Δ = 6,700 km
	eS	N,E	20:57:31	
✓ 10 March, 1957	iP	N,E,Z	03:16:56	Epicenter 52°N, 176°W Andreanof Islands, Aleutian Islands O = 03:06:02 Courtesy U.S.C.G.S. Δ = 6,600 km
	EPP	Z	03:18:13	
	iPPP	N,Z	03:19:31	
	eS	N,E	03:25:05	
✓ 10 March, 1957	iP	N,E,Z	15:36:49	Epicenter 52°N, 173°W Andreanof Islands, Aleutian Islands O = 15:26:33 Courtesy U.S.C.G.S. Δ = 6,800 km
	eS	N,E	14:45:10	

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Date	Phase and component	G.M.C.T.	Remarks
✓ 11 March, 1957	iP N,E,Z ePP Z eS N,E,Z	03:23:25 03:25:13 03:32:11	Epicenter, 51°N, 177°W Andreanof Islands, Aleutian Islands O = 03:12:41 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 11 March, 1957	iP N,E,Z ePP N,E,Z eS N,E,Z	10:08:52 10:11:06 10:16:56	Epicenter 53°N, 164 1/2°W Fox Islands, Aleutian Islands O = 09:58:42 Courtesy U.S.C.G.S. Δ = 6,700 km
✓ 11 March, 1957	iP E,Z eS E,Z	15:06:05 15:14:46	Epicenter 51 1/2°N, 178 1/2°W Andreanof Islands, Aleutian Islands O = 14:55:19 Courtesy U.S.C.G.S. Δ = 7,200 km
✓ 12 March, 1957	iP N,E,Z eS N,E,Z	07:39:15 07:47:39	Epicenter 51 1/2°N, 173 1/2°W Andreanof Islands, Aleutian Islands O = 07:28:40 Courtesy U.S.C.G.S. Δ = 7,000 km
✓ 12 March, 1957	iP N,E,Z iPP Z iPPP Z iS N,E,Z	11:55:35 11:58:31 12:00:17 12:04:25	Epicenter 51°N, 177°W Andreanof Islands, Aleutian Islands O = 11:44:50 Courtesy U.S.C.G.S. Δ = 7,500 km
✓ 13 March, 1957	N,E		Seismic activity observed from 03:07 to 03:30
✓ 13 March, 1957	iP N,Z iPP Z eS N,E,Z eScS N	15:52:53 15:54:09 16:01:34 16:02:08	Epicenter 51 1/2°N, 179°W Andreanof Islands, Aleutian Islands O = 15:42:05 Courtesy U.S.C.G.S. Δ = 6,500 km

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Date	Phase and component	G.M.C.T.	Remarks
✓ 13 March, 1957	iP N,Z	20:09:13	Epicenter 54°N , 166°W Fox Islands, Aleutian Islands O = 19:59:23 Courtesy U.S.C.G.S. $\Delta = 6,400$ km
	ePcP Z	20:10:08	
	ePP N,Z	20:11:20	
	eS N,Z	20:17:06	
	e N,Z	20:17:27	
✓ 14 March, 1957	iP N,E,Z	14:58:24	Epicenter $51\frac{1}{2}^{\circ}\text{N}$, 177°W Andreanof Islands Aleutian Islands O = 14:47:45 Courtesy U.S.C.G.S. $\Delta = 7,200$ km
	eS N,E,Z	15:07:06	
✓ 14 March, 1957	N,E		Seismic activity observed from 02:22 to 02:50
✓ 14 March, 1957	N,E		Seismic activity observed from 03:17 to 03:38
✓ 15 March, 1957	iP N,Z	03:02:07	Epicenter 53°N , 167°W Fox Islands, Aleutian Islands O = 02:52:08 Courtesy U.S.C.G.S. $\Delta = 6,500$ km
	eS N,E	03:10:10	
	eScS N,E	03:11:56	
✓ 16 March, 1957	iP N,E,Z	02:44:57	Epicenter 52°N , 179°W Andreanof Islands, Aleutian Islands O = 02:34:12 Courtesy U.S.C.G.S. $\Delta = 7,200$ km
	ePP N,E,Z	02:47:18	
	iPPP Z	02:48:34	
	eS N,E	02:53:48	
✓ 17 March, 1957	iP Z	08:04:40	Epicenter 51°N , 179°W Andreanof Islands Aleutian Islands O = 07:53:51 Courtesy U.S.C.G.S. $\Delta = 7,400$ km
	eS N,E	08:13:27	
✓ 17 March, 1957	iP N,E,Z	22:54:34	Epicenter 54°N , 166°W Fox Islands, Aleutian Islands O = 22:44:44 Courtesy U.S.C.G.S. $\Delta = 6,300$ km
	ePP N,Z	22:56:42	
	eS N,E	23:02:25	
	eScS N,E	23:04:23	
	eSS(?) N,Z	23:06:24	

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Date	Phase and component	G.M.C.T.	Remarks
✓ 17 March, 1957	N,E		Seismic activity observed from 15:41 to 17:09
✓ 18 March, 1957	iP	02:35:41	Epicenter 52 1/2°N, 171°W Fox Islands, Aleutian Islands O = 02:24:39 Courtesy U.S.C.G.S. Δ = 7,000 km
	e	02:36:04	
	eS	02:43:56	
✓ 18 March, 1957	N,E		Seismic activity observed from 05:43 to 06:09
✓ 18 March, 1957			Seismic activity observed from 19:14 to 19:20
✓ 19 March, 1957	iP	11:39:29	Epicenter 51 1/2°N, 176 1/2°W Andreanof Islands, Aleutian Islands O = 11:28:50 Courtesy U.S.C.G.S. Δ = 7,200 km
	eS	11:48:07	
✓ 19 March, 1957	iP	13:01:26	Epicenter 51 1/2°N, 175°W Andreanof Islands, Aleutian Islands O = 12:50:51 Courtesy U.S.C.G.S. Δ = 7,100 km
	eS	13:10:09	
✓ 20 March, 1957	N,E		Seismic activity observed from 00:52 to 01:17
✓ 21 March, 1957	N,E		Seismic activity observed from 08:56 to 09:15
✓ 21 March, 1957	N,E		Seismic activity observed from 18:16 to 18:32

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Date	Phase and component		G.M.C.T.	Remarks
✓ 22 March, 1957	iP eS	N,E,Z N,E	14:30:57 14:38:57	Epicenter 54°N , 166°W Fox Islands, Aleutian Islands O = 14:21:06 Courtesy U.S.C.G.S. $\Delta = 6,400$ km
✓ 23 March, 1957	eP' ePP	Z N,Z	05:32:34 05:34:28	Epicenter $5\ 1/2^{\circ}\text{S}$, 131°E Banda Sea O = 05:12:31 h = 100 km Courtesy U.S.C.G.S. $\Delta = 15,200$ km
✓ 24 March, 1957		N,E		Seismic activity observed from 11:32 to 12:17
✓ 24 March, 1957		N,E		Seismic activity observed from 09:09 to 09:45
✓ 24 March, 1957		N,E		Seismic activity observed from 10:40 to 11:04
✓ 26 March, 1957		N,E		Seismic activity observed from 03:23 to 04:12
✓ 28 March, 1957		N,E		Seismic activity observed from 20:35 to 21:35
✓ 29 March, 1957	iP ePP eS eScS	N,E,Z N,Z N,E,Z N	05:19:22 05:21:27 05:27:26 05:29:14	Epicenter $53\ 1/2^{\circ}\text{N}$, 167°W Fox Islands Aleutian Islands O = 05:10:28 Courtesy U.S.C.G.S. $\Delta = 5,800$ km
✓ 29 March, 1957	iP eS	Z N,E	22:59:54 23:08:00	Epicenter 53°N , 169°W Fox Islands, Aleutian Islands O = 22:49:51 Courtesy U.S.C.G.S. $\Delta = 6,400$ km

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Date	Phase and component		G.M.C.T.	Remarks
✓ 30 March, 1957	N			Seismic activity observed from 09:37 to 10:00
1 April, 1957	N,E			Seismic activity observed from 12:08 to 12:23
✓ 2 April, 1957	iP	Z	✓ 00:50:10	Epicenter 51°N , 173°W Andreanof Islands, Aleutian Islands O = 00:39:42 Courtesy U.S.C.G.S. $\Delta = 6,700$ km
2 April, 1957	N,E			Seismic activity observed from 20:48 to 21:28
✓ 2 April, 1957	iP	Z	✓ 21:38:27	Epicenter 51°N , 173°W Andreanof Islands, Aleutian Islands O = 21:27:54 Courtesy U.S.C.G.S. $\Delta = 6,600$ km
✓ 4 April, 1957	eP eS	Z N	✓ 00:21:54 00:29:34	Epicenter 58°N , $155\frac{1}{2}^{\circ}\text{W}$ Alaska Peninsula O = 00:13:08 Courtesy U.S.C.G.S. $\Delta = 5,900$ km
✓ 5 April, 1957	iP eS	Z N,Z	✓ 03:00:06 03:08:29	Epicenter 52°N , $172\frac{1}{2}^{\circ}\text{W}$ Fox Islands, Aleutian Islands O = 02:49:39 Courtesy U.S.C.G.S. $\Delta = 6,400$ km
7 April, 1957	N,E			Seismic activity observed from 11:20 to 11:48
8 April, 1957	N,E,Z			Seismic activity observed from 20:25 to 21:09
9 April, 1957	N			Seismic activity observed from 00:53 to 01:26

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Date	Phase and component	G.M.C.T.	Remarks
9 April, 1957	N,E		Seismic activity observed from 11:21 to 12:07
✓ 10 April, 1957	iP N,E,Z iS N,E	05:18:28 05:23:33	Epicenter 15 1/2°N, 98°W Oaxaca, Mexico O = 05:12:08 Courtesy U.S.C.G.S. Δ = 3,400 km
✓ 10 April, 1957	iP N,E,Z ePP N eS N,E	11:39:00 11:40:52 11:46:08	Epicenter 56°N, 154°W Kodiak Island O = 11:29:58 Courtesy U.S.C.G.S. Δ = 5,700 km
13 April, 1957	N,E,Z		Seismic activity observed from 04:00 to 04:40
✓ 14 April, 1957	iP Z iPP Z eSKS? N,E eS N	19:32:04 19:36:21 19:42:46 19:43:58	Epicenter 15 1/2°S, 173°W Samoa Islands O = 19:17:57 Courtesy U.S.C.G.S. Δ = 11,500 km
15 April, 1957	N,E		Seismic activity observed from 22:03 to 22:40
✓ 16 April, 1957	eP' N,E,Z epP' N,Z esP' N ePKS? E epPKS N e N iSKKP? E esS N,E	04:22:35 04:24:55 04:25:49 04:26:14 04:28:24 04:29:17 04:33:30 04:43:40	Epicenter 4 1/2°S, 107 1/2°E Western Java Sea O = 04:04:04 h = 600 km Courtesy U.S.C.G.S. Δ = 15,800 km
17 April, 1957	N,E		Seismic activity observed from 13:55 to 14:25
✓ 19 April, 1957	iP N,Z eS N	15:54:59 16:03:10	Epicenter 51 1/2°N, 168 1/2°W Fox Islands, Aleutian Islands O = 15:44:53 Courtesy U.S.C.G.S. Δ = 6,400 km

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Date	Phase and component	G.M.C.T.	Remarks
✓ 19 April, 1957	iP N,E,Z ePP N,Z ePPP N,Z eS E eP' N,E ePKS? E	22:29:18 22:31:34 22:32:40 22:37:16 22:38:16 22:42:04	Epicenter 52°N, 166 1/2°W Fox Islands, Aleutian Islands O = 22:19:26 Courtesy U.S.C.G.S. Δ = 6,400 km
✓ 21 April, 1957	iP N,Z iPP N,Z eS E	21:19:18 21:20:26 21:24:49	Epicenter 7°N, 72°W Colombia-Venezuela border O = 21:12:26 Courtesy U.S.C.G.S. Δ = 3,900 km
✓ 24 April, 1957	iP Z eS N,E,Z	19:22:06 19:31:57	Epicenter 36 1/2°N, 29°E Turkey O = 19:10:05 Courtesy U.S.C.G.S. Δ = 8,700 km
✓ 25 April, 1957	iP N,Z iPP Z eS N,E	02:37:33 02:40:30 02:47:26	Epicenter 36 1/2°N, 29°E Turkey O = 02:25:36 Courtesy U.S.C.G.S. Δ = 8,700 km
✓ 25 April, 1957	iP Z eS N,E	07:25:43 07:34:08	Epicenter 52°N, 173 1/2°W Andreanof Islands, Aleutian Islands O = 07:15:15 Courtesy U.S.C.G.S. Δ = 6,900 km
25 April, 1957	N,E,Z		Seismic activity observed from 14:30 to 14:40
25 April, 1957	N,E,Z		Seismic activity observed from 22:10 to 22:35
25 April, 1957	N,E,Z		Seismic activity observed from 22:40 to 23:15
26 April, 1957	N,E,Z		Seismic activity observed from 10:47 to 11:15

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Date	Phase and component	G.M.C.T.	Remarks
28 April, 1957	N		Seismic activity observed from 01:55 to 02:05
28 April, 1957	N		Seismic activity observed from 15:10 to 15:50
29 April, 1957	N		Seismic activity observed from 04:58 to 05:30
✓ 2 May, 1957	iP N,Z eS N,E	04:02:04 04:07:09	Epicenter 72°N, 67 1/2°W Baffin Bay O = 03:55:34 Courtesy U.S.C.G.S. Δ = 3,300 km
2 May, 1957	N,E		Seismic activity observed from 11:27 to 12:41
12 May, 1957	N		Seismic activity observed from 05:13 to 05:25
✓ 12 May, 1957	iP' N,Z	11:48:54	Epicenter 8 1/2°S, 107 1/2°E Near south coast of Java O = 11:29:07 Courtesy U.S.C.G.S. Δ = 14,500 km
16 May, 1957	N		Seismic activity observed from 02:21 to 02:35
17 May, 1957	N,E		Seismic activity observed from 21:01 to 21:15
18 May, 1957	N,E		Seismic activity observed from 05:54 to 06:30
✓ 19 May, 1957	eP N,Z ePP N,Z eS N	21:06:41 21:07:36 21:11:53	Epicenter 12°N, 87°W Near coast of Nicaragua O = 21:00:36 h = 100 km Courtesy U.S.C.G.S. Δ = 3,400 km

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Date	Phase and component	G.M.C.T.	Remarks
✓ 20 May, 1957 ✓	eP Z eS N,E	02:01:44 02:10:36	Epicenter 51°N, 180 W Andreanof Islands, Aleutian Islands O = 01:50:54 Courtesy U.S.C.G.S. Δ = 7,400 km
✓ 21 May, 1957 ✓	iP' N,E,Z i N eSKS N,E eSKKS N e N,E e N,E	01:30:33 01:36:33 01:37:10 01:38:01 01:39:40 01:40:21	Epicenter 21 1/2°N, 144°E Mariana Islands region O = 01:11:58 h = 100 km Courtesy U.S.C.G.S. Δ = 13,000 km
✓ 22 May, 1957 ✓	iP N,E,Z eS N,E	13:40:36 13:49:13	Epicenter 50°N, 177°W Andreanof Islands, Aleutian Islands O = 13:29:44 Courtesy U.S.C.G.S. Δ = 7,500 km
✓ 24 May, 1957 ✓	iP N,Z ePP N,Z eS N,E	02:44:56 02:46:18 02:50:38	Epicenter 3°N, 76 1/2°W Columbia O = 02:37:37 Courtesy U.S.C.G.S. Δ = 4,200 km
✓ 26 May, 1957 ✓	iP N,E,Z ePP N,E,Z eS N,E	06:45:24 06:48:19 06:55:13	Epicenter 41°N, 31°E Bolu Province, Turkey O = 06:33:31 Courtesy U.S.C.G.S. Δ = 8,500 km
26 May, 1957	N		Seismic activity observed from 17:16 to 17:20
30 May, 1957	N,E		Seismic activity observed from 01:14 to 01:31
✓ 31 May, 1957 ✓	iP N,E,Z ipP N,Z ePP Z iS N,E,Z	02:26:41 02:28:39 02:29:26 02:35:05	Epicenter 27 1/2°S, 63°W Santiago del Estero Province, Argentina O = 02:16:27 h = 600 km Courtesy U.S.C.G.S. Δ = 7,700 km

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Date	Phase and component	G.M.C.T.	Remarks
✓ 11 June, 1957	iP Z eS N,E	00:04:33 00:13:10	Epicenter 52°N, 176°W Andreanof Islands, Aleutian Islands O = 23:53:57 Courtesy U.S.C.G.S. Δ = 7,100 km
✓ 12 June, 1957	iP Z eS N	08:41:38 08:52:18	Epicenter 41 1/2°N, 142 1/2°E Hokkaido, Japan O = 08:28:34 Courtesy U.S.C.G.S. Δ = 10,000 km
✓ 13 June, 1957	iP N,Z eS N,E,Z	10:51:12 10:59:48	Epicenter 51 1/2°N, 175°W Andreanof Islands, Aleutian Islands O = 10:40:38 Courtesy U.S.C.G.S. Δ = 7,100 km
✓ 14 June, 1957	iP Z eS N	06:34:56 06:43:27	Epicenter 52°N, 175 1/2°W Andreanof Islands, Aleutian Islands O = 06:24:20 Courtesy U.S.C.G.S. Δ = 7,100 km
✓ 15 June, 1957	eP N,Z eS N	18:28:44 18:36:53	Epicenter 52°N, 171°W Fox Islands, Aleutian Islands O = 18:18:20 Courtesy U.S.C.G.S. Δ = 6,800 km
✓ 22 June, 1957	iP N,Z iPP N,Z eS N	06:25:02 06:25:51 06:29:35	Epicenter 16°N, 94°W Near coast of Chiapas, Mexico O = 06:19:06 Courtesy U.S.C.G.S. Δ = 3,000 km
✓ 22 June, 1957	iP' Z iPP Z iPPP N,Z ePS N eSS N,E	00:09:42 00:11:53 00:14:11 00:22:44 00:30:04	Epicenter 1 1/2°S, 137°E Near north coast of New Guinea O = 23:50:23 Courtesy U.S.C.G.S. Δ = 14,700 km

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Date	Phase and component		G.M.C.T.	Remarks
✓ 23 June, 1957	iP	Z	03:34:50	Epicenter 58 1/2°N, 137°W Near coast of S.E. Alaska O = 03:27:02 Courtesy U.S.C.G.S. Δ = 4,800 km
	ePP	N,Z	03:36:22	
	eS	N	03:41:08	
✓ 27 June, 1957	iP	N,E,Z	00:21:56	Epicenter 56 1/2°N, 116°E N.E. of Lake Baikal, U.S.S.R. O = 00:09:28 Courtesy U.S.C.G.S. Δ = 9,400 km
	ePPP	N,Z	00:26:57	
	eS	N,E	00:32:11	
✓ 29 June, 1957	iP	N,Z	07:58:17	Epicenter 51 1/2°N, 166°W Fox Islands, Aleutian Islands O = 07:48:18 Courtesy U.S.C.G.S. Δ = 6,500 km
	eS	N	08:06:15	
1 July, 1957		N,E		Seismic activity observed from 19:56 to 20:55
✓ 2 July, 1957	iP	N,E	00:55:29	Epicenter 36°N, 53°E Northern Iran O = 00:42:23 Courtesy U.S.C.G.S. Δ = 10,200 km
	ePP	N,E	00:59:10	
	eS	N,E	01:06:02	
3 July, 1957		N,E		Seismic activity observed from 09:30 to 09:50
✓ 3 July, 1957	eP	N,E,Z	12:35:32	Epicenter 50 1/2°N, 179°W Andreanof Islands, Aleutian Islands O = 12:24:37 Courtesy U.S.C.G.S. Δ = 7,600 km
	eS	N,E,	12:44:24	
4 July, 1957		N,E		Seismic activity observed from 22:41 to 23:03
4 July, 1957		N,E		Seismic activity observed from 23:43 to 23:58

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Date	Phase and component		G.M.C.T.	Remarks
5 July, 1957	N,E			Seismic activity observed from 01:14 to 01:34
7 July, 1957	N,E			Seismic activity observed from 17:14 to 17:40
✓ 8 July, 1957	iP eS	N,Z N,E	15:36:21 15:42:13	Epicenter 14 1/2°N, 91°W Guatemala O = 15:30:33 h = 150 km Courtesy U.S.C.G.S. Δ = 3,450 km
✓ 10 July, 1957	iP e eS	N,Z N,E	09:10:51 09:12:45 09:16:16	Epicenter 8°N, 82 1/2°W Near coast of Panama O = 09:04:08 Courtesy U.S.C.G.S. Δ = 3,700 km
13 July, 1957	N,E			Seismic activity observed from 01:29 to 02:11
✓ 14 July, 1957	iPP esPP e ePS e eSS	N,E,Z N,E,Z N N,E N,E,Z N,E	06:43:20 06:44:23 06:50:47 06:52:55 06 :54:11 06:58:59	Epicenter 27 1/2°S, 177°W Tonga Islands region O = 06:23:50 h = 200 km Courtesy U.S.C.G.S. Δ = 16,900 km
14 July, 1957	N,E			Seismic activity observed from 09:00 to 10:10
17 July, 1957	N,E			Seismic activity observed from 11:30 to 12:09
21 July, 1957	N			Seismic activity observed from 06:13 to 06:43
✓ 23 July, 1957	iP eS	Z E	00:55:52 01:04:30	Epicenter 52°N, 177°W Andreanof Islands, Aleutian Islands O = 00:45:12 Courtesy U.S.C.G.S. Δ = 7,200 km

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Date	Phase and component		G.M.C.T.	Remarks
24 July, 1957	E			Seismic activity observed from 08:14 to 08:46
✓ 28 July, 1957	iP	N,E,Z	08:46:17	Epicenter 17°N, 99°W Guerrero, Mexico O = 08:40:04 Courtesy U.S.C.G.S. Δ = 3,400 km
	i	N,E,Z	08:46:31	
	eS	N,E,Z	08:51:26	
✓ 29 July, 1957	iP	N,Z	17:25:56	Epicenter 23 1/2°S, 71 1/2°W Near coast of Chile O = 17:15:14 Courtesy U.S.C.G.S. Δ = 7,250 km
	ePP	N,Z	17:28:21	
	ePPP	N	17:30:04	
	iS	N,E,Z	17:34:31	
4 August, 1957	N,E			Seismic activity observed from 01:00 to 02:10
✓ 4 August, 1957	iP	N,Z	06:12:52	Epicenter 17°N, 100°W Mexico O = 06:06:36 Courtesy U.S.C.G.S. Δ = 3,400 km
	eS	N,E,Z	06:18:03	
4 August, 1957	N,E			Seismic activity observed from 01:00 to 02:10
4 August, 1957	iP	N,Z	06:12:52	Epicenter 17°N, 100°W Mexico O = 06:06:36 Courtesy U.S.C.G.S. Δ = 3,400 km
	eS	N,E,Z	06:18:03	
✓ 4 August, 1957	eP	Z	11:34:41	Epicenter 17°N, 99 1/2°W Mexico O = 11:28:24 Courtesy U.S.C.G.S. Δ = 3,400 km
	eS	N	11:39:54	
5 August, 1957	N,E			Seismic activity observed from 17:55 to 18:15
8 August, 1957	N,E			Seismic activity observed from 04:58 to 05:19

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Date	Phase and component		G.M.C.T.	Remarks
8 August, 1957	E			Seismic activity observed from 23:10 to 23:19
9 August, 1957	N,E			Seismic activity observed from 03:35 to 04:22
11 August, 1957	N,E			Seismic activity observed from 22:05 to 23:10
✓ 16 August, 1957	iP	N,E,Z	23:39:15	Epicenter 10 1/2°N, 104°W Pacific Ocean O = 23:31:55 Courtesy U.S.C.G.S. Δ = 4,200 km
✓	iPP	N,E,Z	23:40:35	
	eS	N,E,Z	23:45:06	
18 August, 1957	E			Seismic activity observed from 09:15 to 10:20
✓ 18 August, 1957	eP	N	21:17:35	Epicenter 16 1/2°N, 99°W Mexico O = 21:10:42 Courtesy U.S.C.G.S. Δ = 3,100 km
	eS	N	21:22:27	
✓ 18 August, 1957	iP	N,Z	21:54:31	Epicenter 50°N, 157°E Kurile Islands O = 21:42:30 Courtesy U.S.C.G.S. Δ = 8,800 km
	eS	N,E	22:04:39	
19 August, 1957	E			Seismic activity observed from 12:50 to 13:00
20 August, 1957	E			Seismic activity observed from 07:30 to 08:00
20 August, 1957	E,Z			Seismic activity observed from 13:00 to 14:00
23 August, 1957	N,E			Seismic activity observed from 02:26 to 03:37

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Date	Phase and component		G.M.C.T.	Remarks
✓ 26 August, 1957	iP ePP eS	N,Z Z E	11:39:07 11:41:24 11:47:31	Epicenter 19°S, 63°W Southern Bolivia O = 11:28:50 Courtesy U.S.C.G.S. Δ = 6,900 km
✓ 26 August, 1957	iP ePP eS	N,Z Z E	14:06:56 14:08:25 14:13:09	Epicenter 2°S, 81°W Ecuador O = 13:58:48 Courtesy U.S.C.G.S. Δ = 4,800 km
2 Sept., 1957		E		Seismic activity observed from 01:00 to 01:24
2 Sept., 1957		E		Seismic activity observed from 10:39 to 11:00
✓ 7 Sept., 1957	iS e eScS	N,E N,E N	10:26:11 10:26:42 10:27:23	Epicenter 51 1/2°N, 178 1/2°W Andreanof Islands, Aleutian Islands O = 10:06:47 Courtesy U.S.C.G.S. Δ = 7,800 km
9 Sept., 1957		E		Seismic activity observed from 01:00 to 02:15
9 Sept., 1957		E		Seismic activity observed from 09:55 to 10:21
✓ 12 Sept., 1957	iP iPP eS	N,E,Z N,E N,E	00:33:38 00:34:32 00:37:48	Epicenter 17 1/2°N, 85°W About 100 miles north of Honduras O = 00:28:02 Courtesy U.S.C.G.S. Δ = 2,900 km
15 Sept., 1957		E		Seismic activity observed from 22:49 to 23:07

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Date	Phase and component	G.M.C.T.	Remarks
✓ 24 Sept., 1957	iP' N,Z ePP N,E ePKS N,E eSS N,E	08:40:17 08:42:28 08:43:45 09:00:03	Epicenter $5\ 1/2^{\circ}\text{N}, 127^{\circ}\text{E}$ Near south coast of Mindanao, Philippine Islands O = 08:21:05 $\Delta = 14,200\text{ km}$
25 Sept., 1957	E		Seismic activity observed from 05:58 to 06:39
27 Sept., 1957	E		Seismic activity observed from 05:12 to 05:41
✓ 28 Sept., 1957	ePP E,Z ePPP N,E eSKS N,E iS N,E - iPS? N esS N,E	14:38:19 14:41:11 14:43:18 14:45:08 14:48:07 14:49:01	Epicenter $20\ 1/2^{\circ}\text{S},$ 178°W Fiji Islands O = 14:20:00 h = 650 km Courtesy U.S.C.G.S. $\Delta = 12,400\text{ km}$
✓ 2 Oct., 1957	iP N,Z ePP N eS N	12:34:31 12:35:41 12:40:01	Epicenter $11^{\circ}\text{N}, 63^{\circ}\text{W}$ Venezuela O = 12:27:55 Courtesy U.S.C.G.S. $\Delta = 3,700\text{ km}$
✓ 4 Oct., 1957	iP N,Z ePP N,Z - ePPP N,Z eS N,E	05:32:40 05:33:47 05:34:03 05:38:00	Epicenter $11^{\circ}\text{N}, 63^{\circ}\text{W}$ Venezuela O = 05:26:09 h = 60 km Courtesy U.S.C.G.S. $\Delta = 3,600\text{ km}$
10 Oct., 1957	N,E		Seismic activity observed from 19:18 to 19:49
✓ 12 Oct., 1957	iP' N,Z i? N,Z ePP N	19:16:46 19:17:04 19:20:08	Epicenter $8^{\circ}\text{S}, 111^{\circ}\text{E}$ Java O = 18:57:02 Courtesy U.S.C.G.S. $\Delta = 16,400\text{ km}$
13 Oct., 1957	N,E		Seismic activity observed from 04:30 to 05:40

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Date	Phase and component	G.M.C.T.	Remarks
13 Oct., 1957	N,E		Seismic activity observed from 21:50 to 22:30
15 Oct., 1957	N,E		Seismic activity observed from 04:16 to 04:29
✓ 19 Oct., 1957	ePP N,Z ePS N ePPS N e N,Z	18:48:25 18:58:08 18:59:16 19:00:23	Epicenter 23 1/2°N, 122° Formosa O = 18:28:50 Courtesy U.S.C.G.S. Δ = 12,700 km
✓ 19 Oct., 1957	iP N,Z eS N,E	21:54:27 22:04:39	Epicenter 44 1/2°N, 146°E N.E. coast off Hokkaido, Japan O = 21:41:59 h = 150 km Courtesy U.S.C.G.S. Δ = 9,500 km
✓ 20 Oct., 1957	iP N,E,Z iPP Z eS N,E	12:12:34 12:14:23 12:19:06	Epicenter 11 1/2°N, 42°W Atlantic Ocean O = 12:04:22 Courtesy U.S.C.G.S. Δ = 5,000 km
✓ 23 Oct., 1957	eP N eS N,E	04:44:09 04:48:47	Epicenter 19°N, 64°W Puerto Rico O = 04:38:30 Courtesy U.S.C.G.S. Δ = 3,000 km
✓ 23 Oct., 1957	iP N,E,Z ePP N iS N,E	06:07:01 06:09:17 06:15:09	Epicenter 52 1/2°N, 169 1/2°W Fox Islands, Aleutian Islands O = 05:56:52 Courtesy U.S.C.G.S. Δ = 7,000 km
24 Oct., 1957	N,E		Seismic activity observed from 01:16 to 01:56

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Date	Phase and component		G.M.C.T.	Remarks
✓ 24 Oct., 1957	iP eS	E,Z N	21:50:49 21:55:49	Epicenter 25°N, 109 1/2°W Gulf of California O = 21:44:28 Courtesy U.S.C.G.S. Δ = 3,500 km
✓ 25 Oct., 1957	iP ePP eS	N,Z N N,E	10:15:29 10:18:27 10:25:16	Epicenter 50 1/2°N, 156 1/2°E Kamchatka O = 10:03:32 Courtesy U.S.C.G.S. Δ = 8,600 km
✓ 27 Oct., 1957	iP eS	Z N	22:44:20 22:53:40	Epicenter 56°N, 161°E Kamchatka O = 22:32:25 Courtesy U.S.C.G.S. Δ = 8,400 km
30 Oct., 1957		N,E		Seismic activity observed from 02:40 to 03:18
✓ 31 Oct., 1957	iP ePP ePcP eS	N,Z N,Z N N,E	10:14:47 10:15:49 10:16:54 10:20:12	Epicenter 6 1/2°N, 83°W Panama O = 10:07:54 Courtesy U.S.C.G.S. Δ = 3,800 km
31 Oct., 1957		N,E		Seismic activity observed from 16:34 to 17:15
2 Nov., 1957		N,E		Seismic activity observed from 19:28 to 20:02
11 Nov., 1957		N,E		Seismic activity observed from 03:43 to 04:00
11 Nov., 1957		N,E		Seismic activity observed from 21:12 to 21:29
✓ 13 Nov., 1957	ePP ePS eSS	Z E N,E	17:43:12 17:52:50 17:59:08	Epicenter 33°S, 179°W Kermadec Islands O = 17:22:41 Courtesy U.S.C.G.S. Δ = 13,150 km

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Date	Phase and component	G.M.C.T.	Remarks
16 Nov., 1957	N,E		Seismic activity observed from 02:27 to 02:35
17 Nov., 1957	N		Seismic activity observed from 00:01 to 00:07
17 Nov., 1957	N,E		Seismic activity observed from 07:00 to 07:07
18 Nov., 1957	N,E		Seismic activity observed from 10:49 to 11:14
✓ 20 Nov., 1957	iP N,Z iPP N,Z eS N,E	12:50:20. 12:52:27 12:59:00.	Epicenter 54°N , 165°W Unimak Island O = 12:40:23 Courtesy U.S.C.G.S. $\Delta = 6,900$ km
23 Nov., 1957	N,E		Seismic activity observed from 01:24 to 02:03
25 Nov., 1957	N,E		Seismic activity observed from 19:15 to 22:44
✓ 29 Nov., 1957	iP N,E,Z e? N,E,Z eS N,E,Z	22:29:54 22:31:02 22:38:00	Epicenter 21°S , 66°W Southern Bolivia O = 22:19:38 h = 200 km Courtesy U.S.C.G.S. $\Delta = 7,000$ km
1 Dec., 1957	N,E		Seismic activity observed from 22:38 to 23:03
2 Dec., 1957	N,E		Seismic activity observed from 01:53 to 02:16
✓ 4 Dec., 1957	iP N,E,Z iPP Z eS E,Z	03:51:09 03:54:40 04:02:08.	Epicenter $45\ 1/2^{\circ}\text{N}$, $99\ 1/2^{\circ}\text{E}$ Outer Mongolia O = 03:37:45 Courtesy U.S.C.G.S. $\Delta = 10,200$ km

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Date	Phase and component	G.M.C.T.	Remarks
7 Dec., 1957	N,E		Seismic activity observed from 22:34 to 22:40
9 Dec., 1957	N,E,Z		Seismic activity observed from 22:28 to 22:48
10 Dec., 1957	N,E		Seismic activity observed from 15:02 to 17:00
✓ 13 Dec., 1957	iP N,E,Z ePP N iS N,E	01:38:35 01:39:50 01:44:03	Epicenter 7°N, 76°W Columbia O = 01:31:57 h = 100 km Courtesy U.S.C.G.S. Δ = 3,700 km
✓ 13 Dec., 1957	eS N,E	20:44:42	Epicenter 52 1/2°N, 170°W Fox Islands, Aleutian Islands O = 20:26:22 Courtesy U.S.C.G.S. Δ = 6,800 km
✓ 16 Dec., 1957	iP N,Z eS N,E	17:34:44 17:40:16	Epicenter 50°N, 127°W Vancouver Island O = 17:27:47 Courtesy U.S.C.G.S. Δ = 3,900 km
✓ 17 Dec., 1957	iP N,Z ePP Z ePPP N eS N,E	05:21:41 05:24:39 05:26:17 05:31:20	Epicenter 43 1/2°N, 162°E Near east coast of Kamchatka O = 05:10:11 Courtesy U.S.C.G.S. Δ = 8,200 km
✓ 17 Dec., 1957	eP' N,E,Z e N,E,Z iPP N,E,Z e E ePS? N,E eSS(?) N,Z	14:09:17 14:10:00 14:10:38 14:17:34 14:19:52 14:26:42	Epicenter 12°S, 167°E Santa Cruz Islands O = 13:50:05 Courtesy U.S.C.G.S. Δ = 13,500 km
23 Dec., 1957	N,E		Seismic activity observed from 12:45 to 13:30

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Date	Phase and component	G.M.C.T.	Remarks
✓ 25 Dec., 1957	✓ iP N,Z	16:32:42	Epicenter 10 1/2°N, 62 1/2°W Venezuela O = 16:26:01 Courtesy U.S.C.G.S. Δ = 3,700 km
	ePP N	16:33:44	
	ePcP N	16:35:11	
	iS N	16:37:28	
26 Dec., 1957 ✓	eP Z	12:27:48	Epicenter 41 1/2°N, 127°W Off coast of California O = 12:20:35 Courtesy U.S.C.G.S. Δ = 4,000 km
	eS N	12:33:39	
31 Dec., 1957	N,E		Seismic activity observed from 10:37 to 10:53
31 Dec., 1957	N,E		Seismic activity observed from 12:19 to 12:30

We acknowledge with thanks receipt of the following bulletins and other publications between 15 January, 1958 and 29 May, 1958.

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The Geophysical Laboratory
College of Mineral Industries
University Park, Penna., U.S.A.
B. F. Howell, Jr., Director
R. J. Watson, Graduate Assistant
J. A. Ryan, Graduate Assistant
M. B. Duke, Graduate Assistant
29 May, 1958

