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Em.H.*

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

DEPARTMENT OF GEOPHYSICS AND GEOCHEMISTRY

SEISMOGRAPH REPORT XXIV

1956



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 XXIV
1956
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 Mineral Industries Building. The instruments are mounted on a concrete pillar separated from the foundations and anchored to the bedrock (dolomite).

The geographic coordinates are:

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

The geocentric coordinates are (courtesy of Gutenberg and Richter):

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

Please address all communications to:

Geophysical Laboratory
College of Mineral Industries
University Park, Penna., U.S.A.

During 1956 three seismographs were in continuous operation except for brief intervals during adjustments and record changing. All components were recorded photographically at a rate of 1.56 cm per minute. The East-West component was also recorded using a pen galvanometer at a rate of 1.70 cm per minute during most of 1956. The free periods of the instruments when last measured were:

| <u>Component</u> | <u>Seismometer Period</u> | <u>Galvanometer Period</u> |
|------------------|---------------------------|----------------------------|
| North - South | 16.7 sec. | 2.6 sec. |
| East - West | 17.0 sec. | Not measured |
| Vertical | Not measured | 4.8 sec. |

The east - west instrument was checked on January 22, 1953, and found to have a damping ratio of 2.3:1.

The damping and sensitivity of the recorders have not been kept constant .

The time is controlled by a Stromberg clock, which is compared daily with signals from radio station WWV. The time accuracy of the records is estimated to be about ± 1.5 seconds.

| Date | Phase and component | G.M.C.T. | Remarks |
|-----------------|-------------------------------------|--|---|
| 8 Jan., 1956 ✓ | iP N,Z i N,Z eS N,E | 07:17:41 ✓ 07:18:02 ✓ 07:23:06 ✓ | Epicenter 17°N, 99 1/2°W Guerrero, Mexico O = 07:11:26 Courtesy U.S.C.G.S. Δ = 3,400 km |
| 8 Jan., 1956 ✓ | iP N,Z PSP Z eS N,E,Z | 21:04:24 ✓ 21:05:13 ✓ 21:12:29 ✓ | Epicenter 19°S, 70°W Northern Chile O = 20:54:13 Courtesy U.S.C.G.S. Δ = 6,700 km |
| 10 Jan., 1956 | N,E,Z | | Seismic activity observed between the hours of 09:13 and 12:00 |
| 13 Jan., 1956 | N,E | | Seismic activity observed between 04:04 and 04:21 |
| 14 Jan., 1956 ✓ | eS N,E | 14:27:36 ✓ | Epicenter 51 1/2°N, 173°W Fox Islands, Aleutians O = 14:08:41 Courtesy U.S.C.G.S. Δ = 7,000 km |
| 16 Jan., 1956 ✓ | iP N,E,Z iPP Z iPPP N iS Z | 23:45:30 ✓ 23:46:41 ✓ 23:47:08 ✓ 23:50:43 ✓ | Epicenter 1/2°S, 80 1/2°W Near coast of Ecuador O = 23:37:37 Courtesy U.S.C.G.S. Δ = 4,500 km |
| 1 Feb., 1956 ✓ | eS N,E eSP N,E,Z eSPP N | 14:07:08 14:08:55 14:09:57 | Epicenter 19°N, 145 1/2°E Marianas Islands O = 13:41:44 Depth = about 350 km Courtesy U.S.C.G.S. Δ = 12,000 km |
| 2 Feb., 1956 | N | | Seismic activity observed between 16:06 and 16:46 |

| Date | Phase and component | | G.M.C.T. | Remarks |
|-----------------|---------------------|-------|----------|---|
| 9 Feb., 1956 | N,E,Z | | | Seismic activity observed between 19:05 and 19:13 |
| ✓ 10 Feb., 1956 | iS | Z | 18:23:35 | Epicenter 31 1/2°N, 116°W Lower California Aftershock O = 18:12:53 Courtesy U.S.C.G.S. Δ = 3,200 km |
| | e | Z | 18:24:21 | |
| | e | Z | 18:24:39 | |
| 11 Feb., 1956 | N | | | Seismic activity observed between 06:42 and 06:45 |
| ✓ 12 Feb., 1956 | ePP | N,Z | 12:09:33 | Epicenter 19°N, 119 1/2°E off northwest coast of Luzon O = 11:49:20 Courtesy U.S.C.G.S. Δ = 13,000 km |
| 14 Feb., 1956 | N | | | Seismic activity observed between 15:02 and 15:06 |
| ✓ 14 Feb., 1956 | iP | Z | 18:40:03 | Epicenter 31 1/2°N, 115°W Lower California aftershock O = 18:33:22 Courtesy U.S.C.G.S. Δ = 3,500 km |
| | eS | N | 18:45:15 | |
| ✓ 15 Feb., 1956 | eP | Z | 01:27:06 | Epicenter 31 1/2°N, 115°W Lower California aftershock O = 01:20:36 Courtesy U.S.C.G.S. Δ = 3,500 km |
| | eS | N | 01:32:22 | |
| ✓ 18 Feb., 1956 | e? | N,Z | 07:49:16 | Epicenter 30°N, 137 1/2°E South of Honshu, Japan O = 07:34:16 Depth - about 450 km Courtesy U.S.C.G.S. Δ = 11,400 km |
| | iPP | N,Z | 07:51:46 | |
| | eSKS | N,E,Z | 07:57:08 | |
| | e | N,E | 07:57:54 | |
| | eS | N,E,Z | 07:58:29 | |
| | eSP | N,E,Z | 07:59:55 | |

| Date | Phase and component | G.M.C.T. | Remarks |
|------------------|--|--|--|
| 19 Feb. 1956 ✓ | eS N,E | 02:31:07 | Epicenter 52°N, 13 1/2°W Queen Charlotte Islands O = 02:18:00 Courtesy U.S.C.G.S. Δ = 4,200 km |
| 19 Feb. 1956 | N,E | | Seismic activity observed between 04:40 and 04:58 |
| 20 Feb. 1956 | N | | Seismic activity observed between 21:11 and 21:17 |
| 23 Feb. 1956 ✓ | eP N,Z eS N | 01:27:16 01:32:25 | 31°N, 42°W North Atlantic Ocean Courtesy U.S.C.G.S. Δ = 3,400 km |
| 3 March, 1956 | E | | Seismic activity observed between 00:51 and 01:16 |
| 13 March, 1956 ✓ | iP Z iPP N,Z ePcP ? N,Z eS N,E | 13:19:58 ✓ 13:21:14 ✓ 13:22:21 ✓ 13:25:16 ✓ | 7°N 82°W Off south coast of Panama e = 13:13:10 Courtesy U.S.C.G.S. Δ = 3,800 km |
| 22 March, 1956 ✓ | iP N,Z ipP Z isP N,Z iPP N,Z esPP N,Z e S N,E,Z | 06:42:00 ✓ 06:42:23 ✓ 06:42:34 ✓ 06:43:44 ✓ 06:44:17 ✓ 06:48:26 ✓ | 3 1/2°S 79°W Ecuador O = 06:33:55 h = 100 km Courtesy U.S.C.G.S. Δ = 5200 km |
| 2 April, 1956 | E | | Seismic activity observed between 11:01 and 11:27 |
| 6 April, 1956 | E | | Seismic activity observed between 00:15 and 00:26 |
| 18 April, 1956 ✓ | eS N | 11:19:36 ✓ | 52°N 178°W Andreanof Islands, Aleutian Islands O = 11:00:13 Courtesy U.S.C.G.S. Δ = 7000 km |

| Date | Phase and component | G.M.C.T. | Remarks |
|------------------|------------------------------|--|--|
| 22 April, 1956 | N | | Seismic activity observed between 05:52 and 06:14 |
| ✓ 22 April, 1956 | iP N,Z eS N,E | 17:31:32 ✓ 17:39:06 ✓ | 54°N, 162°W South of Alaska Peninsula O = 17:21:53 Courtesy U.S.C.G.S. Δ = 6,100 km |
| ✓ 23 April, 1956 | iP N,Z eS N,E | 03:44:31 ✓ 03:55:11 ✓ <small>13 11</small> | 42 1/2°N 144°E Off coast Hokaido, Japan O = 03:31:40 Courtesy U.S.C.G.S. Δ = 9,900 km |
| 24 April, 1956 | N,E | | Seismic activity between 09:26 and 09:46 |
| 25 April, 1956 | N,E | | Seismic activity observed between 17:17 and 17:35 |
| 26 April, 1956 | E | | Seismic activity observed between 09:43 and 09:54 |
| 6 May, 1956 | N,E | | Seismic activity observed between 21:26 and 21:42 |
| ✓ 7 May, 1956 | ipP N,E,Z i N e S Z | 08:23:33 ✓ 08:23:41 ✓ 08:27:40 ✓ | 14 1/2°N, 90 1/2°W Guatemala O = 08:17:03 h = 200 km Courtesy U.S.C.G.S. Δ = 3,300 km |
| ✓ 7 May, 1956 | eS N,E,Z eSS N,Z e N,E | 11:23:53 ✓ 11:30:42 ✓ 11:31:41 ✓ | 46 1/2°S, 96°E South Indian Ocean O = 10:58:12 Courtesy U.S.C.G.S. Δ = 11,400 km |

| Date | Phase and component | G.M.C.T. | Remarks |
|--------------|--|--|---|
| 14 May, 1956 | N,E | | Seismic activity observed between 08:52 and 09:03 |
| 18 May, 1956 | N,E | | Seismic activity observed between 10:17 and 10:26 |
| 19 May, 1956 | N,E | | Seismic observed between 02:34 to 02:51 |
| 19 May, 1956 | eP [!] Z e N e N,E | 1958 20:02:15 ✓ 20:24:36 ✓ 20:26:30 ✓ | 40°S, 43°E Indian Ocean O = 20:02:15 Courtesy U.S.C.G.S. Δ = 13,800 km |
| 23 May, 1956 | iP N,E,Z epP Z iPP N,E,Z iSPP Z ePPP Z eSKS E eS N | 21:02:07 ✓ 21:03:46 ✓ 21:06:39 ✓ 21:08:48 ✓ 21:09:24 ✓ 21:12:06 ✓ 21:13:41 | 15 1/2°S, 179°W Fiji Islands O = 20:48:30 h = 450 km Courtesy U.S.C.G.S. Δ = 12,300 km |
| 24 May, 1956 | N,E | | Seismic activity observed between 02:43 to 02:51 |
| 26 May, 1956 | eS N eSP Z eSS N | 20:46:16 ✓ 20:48:30 ✓ 20:54:15 ✓ | 19°S, 178 1/2°W Fiji Islands O = 20:21:14 h = 550 km Courtesy U.S.C.G.S. Δ = 12,700 km |
| 3 June, 1956 | iP N,Z ePP N eS N | 05:27:18 ✓ 05:28:58 ✓ 05:33:36 ✓ | 79 1/2°N, 118 1/2°W Arctic Ocean Courtesy U.S.C.G.S. Δ = 4,700 km |
| 4 June, 1956 | iP Z eS N eScS | 07:19:35 ✓ 07:27:49 ✓ 07:29:23 ✓ | 52°N, 170 1/2°W Fox Islands, Aleutians O = 07:09:18 Courtesy U.S.C.G.S. Δ = 6,700 km |

| Date | Phase and component | G.M.C.T. | Remarks |
|---------------|---------------------------------------|--|---|
| 9 June, 1956 | iP N,Z iPP Z eS N,E | 10:19:50 ✓ 10:22:30 ✓ 10:29:05 ✓ | 30 1/2°S, 70 1/2°W Central Chile O = 10:08:32 h = 150 km Courtesy U.S.C.G.S. Δ = 8,000 km |
| 9 June, 1956 | iP N,Z iPP Z iPPP N,E iS N,E | 23:27:31 ✓ 23:30:58 ✓ 23:33:30 ✓ 23:38:14 ✓ | 35°N, 67 1/2°E Afghanistan O = 25:13:51 Courtesy U.S.C.G.S. Δ = 10,400 km |
| 14 June, 1956 | eS N,E | 14:27:36 | 51 1/2°N, 173°W Fox Islands, Aleutians O = 14:08:41 Courtesy U.S.C.G.S. Δ = 7,000 km |
| 23 June, 1956 | iP N,E eS N,E | 02:29:21 ✓ 02:38:25 ✓ | 56 1/2°N, 163 1/2°E Near east coast of Kamchatka O = 02:18:02 Courtesy U.S.C.G.S. Δ = 8,000 km |
| 24 June, 1956 | N,E | | Seismic activity between 22:00 and 22:27 |
| 3 July, 1956 | N,E | | Seismic activity observed between the hours 15:57 and 16:35 |
| 4 July, 1956 | N,E | | Seismic activity observed between the hours 04:48 and 05:18 |
| 6 July, 1956 | N,E | | Seismic activity observed between the hours 02:38 and 03:00 |

| Date | Phase and component | G.M.C.T. | Remarks |
|---------------|------------------------|------------|--|
| 9 July, 1956 | iP N,E,Z | 03:23:33 ✓ | Epicenter 37°N, 26°E Greece O = 03:11:39 Courtesy U.S.C.G.S. Δ = 8,500 km |
| | iPPP? N,Z | 03:28:33 ✓ | |
| | e Z | 03:31:49 ✓ | |
| | i S N,E,Z | 03:33:23 ✓ | |
| 9 July, 1956 | iP N,E,Z | 10:00:56 ✓ | Epicenter 20°N, 73°W Near coast of Haiti O = 09:56:13 h = 100 km Courtesy U.S.C.G.S. Δ = 2,400 km |
| | i Z | 10:03:21 ✓ | |
| | eS N,E,Z | 10:04:54 ✓ | |
| | i Z | 10:10:44 ✓ | |
| | e N,E,Z | 10:11:20 ✓ | |
| 16 July, 1956 | iPP N,Z | 15:27:08 ✓ | Epicenter 32 1/2°N, 96°E Central Burma O = 15:07:06 Courtesy U.S.C.G.S. Δ = 12,400 km |
| | eSKS? N | 15:32:09 ✓ | |
| 17 July, 1956 | iP ¹ N,Z | 07:52:41 ✓ | Epicenter 7°S, 126 1/2°E Banda Sea O = 07:34:07 h = 450 km Courtesy U.S.C.G.S. Δ = 16,000 km |
| | ipP ¹ N,Z | 07:54:34 ✓ | |
| | isP ¹ N,E,Z | 07:55:39 ✓ | |
| | iPP N,E,Z | 07:56:26 ✓ | |
| | ipPP N,E | 07:58:08 ✓ | |
| | epPPP N | 08:01:52 ✓ | |
| 18 July, 1956 | iP ¹ N,Z | 06:38:41 ✓ | Epicenter 5°S, 130°E Banda Sea O = 06:19:15 Courtesy U.S.C.G.S. Δ = 15,000 km |
| | i Z | 06:39:36 ✓ | |
| | ePP N | 06:41:29 ✓ | |
| | iPKS N,E,Z | 06:42:05 ✓ | |
| 19 July, 1956 | N,E,Z | | Seismic activity observed between the hours 23:34 and 00:24 |
| 21 July, 1956 | N,E | | Seismic activity observed between the hours 16:01 and 17:08 |
| 28 July, 1956 | N,E | | Seismic activity observed between the hours 00:05 and 00:27 |
| 30 July, 1956 | N,E | | Seismic activity observed between the hours 07:36 and 08:12 |

| Date | Phase and component | G.M.C.T. | Remarks |
|-----------------|-----------------------------|----------------------------------|---|
| 1 August, 1956 | N,E | | Seismic activity observed between the hours 20:37 and 21:00 |
| 4 August, 1956 | N,E | | Seismic activity observed between the hours 10:53 and 11:32 |
| 12 August, 1956 | N,E | | Seismic activity observed between the hours 16:23 and 17:40 |
| 20 August, 1956 | N,E | | Seismic activity observed between the hours 05:39 and 06:18 |
| 23 August, 1956 | iP N,Z ePP N,E eS N,E | 13:58:12 14:00:21 14:05:59 | Epicenter 15 ^o S, 68 ^o W Bolivia O = 13:48:30 h = 100 km Courtesy U.S.C.G.S. Δ = 6,300 km |
| 24 August, 1956 | iP N,Z iPcP? Z eS N,E | 04:38:39 04:39:04 04:47:41 | Epicenter 53 ^o N, 172 1/2 ^o E Near Islands, Aleutian Islands O = 04:27:33 Courtesy U.S.C.G.S. Δ = 7,500 km |
| 25 August, 1956 | eL N | 16:14:23 | Epicenter 30 1/2 ^o N, 115-1/2 ^o W Baja, California O = 15:57:43 Courtesy U.S.C.G.S. Δ = 4,400 km |
| 30 August, 1956 | eS N | 04:41:49 | Epicenter 54 ^o N, 164 ^o W Unimak Islands, Aleutian Islands O = 04:24:24 Courtesy U.S.C.G.S. Δ = 6,200 km |
| 30 August, 1956 | iP Z | | Epicenter 41 ^o N, 126 1/2 ^o W Off coast of northern California Courtesy U.S.C.G.S. Δ = 4,000 km |

| Date | Phase and component | G.M.C.T. | Remarks | |
|----------------|---------------------|----------|---|--|
| 11 Sept., 1956 | N,E,Z | | Seismic activity observed between the hours 10:01 and 10:37 | |
| 16 Sept., 1956 | N,E | | Seismic activity observed between the hours 9:29 and 10:05 | |
| 2 Oct., 1956 | N | | Seismic activity observed between the hours 16:10 and 16:20 | |
| 8 Oct., 1956 | N,E | | Seismic activity observed between the hours 15:52 and 16:20 | |
| 9 Oct., 1956 | E | | Seismic activity observed between the hours 07:16 and 07:40 | |
| 11 Oct., 1956 | iP | N,E,Z | 02:36:57 | Epicenter $46^{\circ}N$, $150\ 1/2^{\circ}E$ Kurile Islands O = 02:24:33 h = 100 km Courtesy U.S.C.G.S. $\Delta = 9,300$ km |
| | ipP | N,Z | 02:37:20 | |
| | i | Z | 02:38:07 | |
| | iPP | N,E,Z | 02:40:10 | |
| | ePPP | N,E,Z | 02:42:00 | |
| | iS | N,E,Z | 02:47:04 | |
| | isS | N,E,Z | 02:47:50 | |
| | eSS | N | 02:52:36 | |
| 11 Oct., 1956 | iP | N,E,Z | 16:55:58 | Epicenter $40\ 1/2^{\circ}N$, $126\ 1/2^{\circ}W$ Off Cape Mendocina, California O = 16:48:46 Courtesy U.S.C.G.S. $\Delta = 4,000$ km |
| | i | N,E,Z | 16:56:35 | |
| | iPP | E,Z | 16:57:12 | |
| | ePPP | E,Z | 16:57:30 | |
| | eS | N,E | 17:01:41 | |
| 12 Oct., 1956 | iP | N,Z | 02:47:24 | Epicenter $15^{\circ}S$, $74\ 1/2^{\circ}W$ Near coast of Central Peru O = 02:37:43 Courtesy U.S.C.G.S. $\Delta = 6,200$ km |
| | eS | N,E | 02:55:12 | |

| Date | Phase and component | G.M.C.T. | Remarks |
|---------------|----------------------------------|----------------------------------|---|
| 12 Oct., 1956 | N,E | | Seismic activity observed between the hours 10:02 and 10:08 |
| 19 Oct., 1956 | eP N,Z eS N,E | | Epicenter 52°N, 177°E Rat Islands, Aleutian Islands O = 20:47:33 Courtesy U.S.C.G.S. Δ = 7,500 km |
| 20 Oct., 1956 | N,E | | Seismic activity observed between the hours 00:17 and 00:27 |
| 21 Oct., 1956 | N,E | | Seismic activity observed between the hours 08:56 and 09:08 |
| 22 Oct., 1956 | N,E | | Seismic activity observed between the hours 08:01 and 08:25 |
| 23 Oct., 1956 | iP Z eS N,E | 08:15:20 08:21:37 | Epicenter 3°N, 95°W NW of Galapagos O = 08:07:35 Courtesy U.S.C.G.S. Δ = 4,500 km |
| 24 Oct., 1956 | iP N,E,Z iPPP N,E,Z iPcP Z | 14:48:27 14:49:44 14:50:53 | Epicenter 12°N, 87°W Near coast of Nicaragua O = 14:42:11 Courtesy U.S.C.G.S. Δ = 3,400 km |
| 25 Oct., 1956 | eP Z eS N,E | 05:28:01 05:33:16 | Epicenter 12°N, 87°W Nicaragua O = 05:21:40 Courtesy U.S.C.G.S. Δ = 3,400 km |
| 26 Oct., 1956 | N,E,Z | | Seismic activity observed between the hours 23:40 and 00:50 |
| 27 Oct., 1956 | N,E | | Seismic activity observed between the hours 15:45 and 16:05 |

| Date | Phase and component | G.M.C.T. | Remarks |
|---------------|-----------------------------|----------------------------------|---|
| 28 Oct., 1956 | iPP Z eSKS E eSKKS? E | 03:48:43 03:54:18 03:55:42 | Epicenter 32 ^o S, 179 ^o W Kermadec Islands O = 03:28:41 Courtesy U.S.C.G.S. Δ = 13,200 km |
| 28 Oct., 1956 | N,E | | Seismic activity observed between the hours 11:50 and 12:15 |
| 10 Nov., 1956 | N,E | | Seismic activity observed between the hours 00:25 and 00:40 |
| 16 Nov., 1956 | N,E | | Seismic activity observed between the hours 03:41 and 03:46 |
| 17 Nov., 1956 | eP(?) Z eS N,E | 20:36:11 20:40:47 | Epicenter 54 1/2 ^o N, 134 ^o W Queen Charlotte Island O = 20:27:15 Courtesy U.S.C.G.S. Δ = 4,400 km |
| 18 Nov., 1956 | N,E | | Seismic activity observed between the hours 19:15 and 19:58 |
| 26 Nov., 1956 | iP Z eS N,E | 19:00:44 19:09:34 | Epicenter 26 ^o S 70 1/2 ^o W N. Chile O = 18:49:56 h = 100 km Courtesy U.S.C.G.S. Δ = 7,300 km |
| 27 Nov., 1956 | E | | Seismic activity observed between the hours 00:00 and 02:25 |
| 28 Nov., 1956 | iP N,Z iS N,E i N,E | 19:39:18 19:49:10 19:49:31 | Epicenter 49 1/2 ^o N, 155 ^o E Northern Kurile Islands O = 19:27:11 Courtesy U.S.C.G.S. Δ = 8,900 km |
| 29 Nov., 1956 | N,E | | Seismic activity observed between the hours 09:48 and 10:51 |

| Date | Phase and component | | G.M.C.T. | Remarks |
|---------------|---------------------|-------|----------|--|
| 3 Dec., 1956 | N,E | | | Seismic activity observed between the hours 07:48 and 08:51 |
| 4 Dec., 1956 | N,E | | | Seismic activity observed between the hours 11:11 and 11:32 |
| 4 Dec., 1956 | eP | N,E,Z | 23:07:24 | Epicenter 15°N , 92°W Guatemala O = 23:01:35 h = 150 km Courtesy U.S.C.G.S. $\Delta = 3,200$ km |
| | epP | N,Z | 23:07:41 | |
| | esS | N,E | 23:12:53 | |
| | e | E,Z | 23:15:32 | |
| 8 Dec., 1956 | iP | N,Z | 16:21:13 | Epicenter 51°N , $179^{\circ} 1/2^{\circ}\text{W}$ Andreanof Islands, Aleutian Islands O = 16:10:27 Courtesy U.S.C.G.S. $\Delta = 7,300$ km |
| | eS | N,E | 16:29:58 | |
| | e | N,E | 16:30:55 | |
| | e | N,E | 16:32:46 | |
| 13 Dec., 1956 | N,E | | | Seismic activity observed between the hours 13:32 and 13:41 |
| 16 Dec., 1956 | iP | N,E,Z | 01:48:43 | Epicenter $6^{\circ} 1/2^{\circ}\text{N}$, 78°W Near W coast of Columbia O = 01:41:52 Courtesy U.S.C.G.S. $\Delta = 3,700$ km |
| | e | N,E | 01:49:13 | |
| | eS | N,E | 01:54:17 | |
| 18 Dec., 1956 | iP | N,E,Z | 02:41:56 | Epicenter $25^{\circ} 1/2^{\circ}\text{S}$, $68^{\circ} 1/2^{\circ}\text{W}$ Chile, Argentina border O = 02:31:00 Courtesy U.S.C.G.S. $\Delta = 7,500$ km |
| | ePP | N,Z | 02:44:05 | |
| | ePPP | N,E,Z | 02:46:33 | |
| | eS | N,E | 02:50:43 | |
| | eScS | N,E | 02:51:51 | |
| | e | N,E | 02:53:11 | |
| | eSS | N,E | 02:54:38 | |
| | e | N,E | 02:56:05 | |
| 20 Dec., 1956 | E | | | Seismic activity observed between the hours 11:56 and 12:18 |
| 21 Dec., 1956 | iP | N,E,Z | 09:06:10 | Epicenter 51°N , 131°W Queen Charlotte Islands O = 08:58:53 Courtesy U.S.C.G.S. $\Delta = 4,000$ km |
| | ePP | E,Z | 09:07:30 | |
| | eS | N,E | 09:11:52 | |

| Date | Phase and component | | G.M.C.T. | Remarks |
|---------------|---------------------|-------|----------|--|
| 25 Dec., 1956 | iP | N,E,Z | 09:39:41 | Epicenter 48-1/2 ^o N, 28 ^o W North Atlantic Ocean O = 09:33:37 Courtesy U.S.C.G.S. Δ = 3,200 km |
| | eS | N,E | 09:45:21 | |
| 27 Dec., 1956 | iPP | N,E,Z | 00:33:22 | Epicenter 24 ^o S, 177 ^o W Tonga Islands region O = 00:14:15 h = 300 km Courtesy of U.S.C.G.S. Δ = 12,700 km |
| | eSP | N,E,Z | 00:42:26 | |
| | eSS | N,E,Z | 00:48:38 | |
| 28 Dec., 1956 | | N,E | | Seismic activity observed between the hours of 15:27 and 15:41 and 19:35 and 19:55 |
| 29 Dec., 1956 | | N,E | | Seismic activity observed between the hours 21:19 and 21:44 |

We acknowledge with thanks receipt of the following bulletins and other publications between 28 February, 1957 and 14 January, 1958.

| | |
|--|---|
| Arkansas Univ., Seis. Bull. | Vol. V, No. 4, Vol. VI, No. 1-2 |
| Australia Bur. Min. Res. Geoph. Obs. Report | Vol. 4, No. 10-12; Vol. 5, No. 1-9; Reports No. 31 and 32. |
| Barcelona, Seis. Bull. | 1956 |
| Bratislava, Seis. Bull. | Jan., Feb., March 1957 |
| Bucarest, Seis. Bull. | Nov.-Dec., 1956; Jan. thru Oct. 1957 |
| Buenos Aires, Seis. Bull. | March 1957, May 1937 |
| California Univ., Seis. Bull. | Oct.-Dec., 1954; Jan.-Dec., 1955; Jan.-June, 1956. |
| Cartuja Monthly Bull. Prov. Seis. Bull. | 1955; 1956; Feb.-Oct., 1957 |

| | |
|--|--|
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