

22 AUG 1967

University of Washington
Seattle, Washington
U.S.A.

Seismological Bulletin No. 13
Registration of Earthquakes from University
of Washington Seismic Net
1963
by
Norman H. Rasmussen

University of Washington, Geology Department
July, 1967

Seismograph Station

Longmire (LON) USC&GS World Wide Standard Seismograph Station

Latitude: 46° 45.0' N Elevation: 2800 ft.

Longitude: 122° 48.6' W Foundation: Volcanic Breccia

Instruments:

- SPZ Benioff, To 1.0 sec., Tg .75 sec.,Mag.100 K
- SPN-S Benioff, To 1.0 sec., Tg .75 sec.,Mag.100 K
- SPE-W Benioff, To 1.0 sec., Tg .75 sec.,Mag.100 K
- LPZ Sprengnether, To 30 sec., Tg 100 sec.,Mag.1500
- LPN-S Sprengnether, To 30 sec., Tg 100 sec.,Mag.1500
- LPE-W Sprengnether, To 30 sec., Tg 100 sec.,Mag.1500

Seattle (SEA)

Latitude: 47° 39.3 N Elevation: 98.5 ft.

Longitude: 122° 18.5 W Foundation: compact glacial till

Instruments:

- SPZ Sprengnether, To 1.4 sec., Tg 1.4 sec.,Mag.*
- SPN-S Sprengnether, To 1.4 sec., Tg 1.4 sec.,Mag.*
- SPE-W Sprengnether, To 1.4 sec., Tg 1.4 sec.,Mag.*
- LPN-S Sprengnether, To 15 sec., Tg 7.2 sec.,Mag.1200
- LPE-W Sprengnether, To 15 sec., Tg 7.9 sec.,Mag.1200

* Between Jan. 1st and June 6th SP magnification was 1200. From June 6th and Oct. 22nd magnification was 1800. From Oct. 22nd to Dec. 31st magnification was 1200.

Tumwater (TUM)

Latitude: 47° 00.9' N Elevation: 275 ft.

Longitude: 122° 54.5 W Foundation: Basalt

Instruments:

- SPZ Wilson-Lamison, To 1.0 sec. Tg .95 sec.,Mag.**
- SPN-S Sprengnether, To 1.4 sec. Tg. 1.4 sec.,Mag.1800
- SPE-W Sprengnether, To 1.4 sec. Tg. 1.4 sec.,Mag.1800

** Magnification is approximately 50 K

The epicenter locations are located by the U.S. Coast & Geodetic Survey. Epicenters located in Washington State are determined by the University of Washington.

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Jan. 1	LON	i P Z	03:27:21.5	Local (N. Central Pierce Co. after-shock 47.ON, 122.OW)
	SEA	e P N	27:25.0	
	TUM	i P Z	27:32	
		e S NE	27:38	
		i S Z	27:24.9	
Jan. 1	LON	e Z	03:27:32.4	
Jan. 1	LON	i P Z	20:53.0	
		i N	23:44:18.9	Alaska Peninsula h about 80 km 56.6N, 157.5W Mag. 6.5
		i ZE	48:31.1	
	SEA	e P Z	48:41.1	
		i S E	44:08	
		i S N	48:30	
	TUM	i P Z	48:42	
		e S E	44:12.5	
		e S N	48:48	
Jan. 2	LON	e E	23:48:49	
		e N	01:39	
		e E	42.2	
Jan. 2	LON	e E	01:42.9	
		e Z	15:41.2	
Jan. 2	LON	e E	15:42	
		e Z	16:37.7	
		e E	42.5	
		e N	42.6	
Jan. 3	LON	e Z	16:43.1	
		e E	16:21:24	
Jan. 4	TUM	i P Z	16:21:47	
Jan. 6	LON	e P Z	10:22:05.2	
		i P Z	06:27:33	Near coast of Ecuador, 1.8S, 80.7W h about 51 km Mag. 4.5
		e L E	27:45.5	
		e N	44.4	
		e E	45.3	
		e Z	46.5	
		e N	51.6	
Jan. 6	LON	e P Z	06:52.3	
		e P Z	17:30:51	Central Alaska, 62.7N, 151W h about 116 km
Jan. 6	LON	i P Z	18:09:28.5	Montana-Idaho border region
		i Z	09:45.6	44.7N, 112.0W h about 33 km
		i L E	11:26.5	
		e L N	11:29	
		e L Z	11:39	
Jan. 6	TUM	e ZNE	18:12	
Jan. 7	LON	isS N	07:30:14	South of Honshu, Japan
		eSSSE	37.3	33.8N, 137.5E h about 351 km
		e ZN	39:54	
		e N	07:40:56	
Jan. 7	LON	e L E	12:30.5	Halmahera region 0.6N, 126.0E
		e G N	31:15	h about 42 km Mag. 5.7
		i N	31:31	
		e L E	34.8	
		e E	12:36.6	
Jan. 7	SEA	e P NE	18:11.3	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Jan. 8	LON	e N e E e Z	17:03:16.5 03:17.5 17:03:20	
Jan. 9	LON	i P Z	03:25:08.3	Mariana Islands 18.7N, 145.4E h about 187 km
Jan. 12	TUM	i P Z	03:50:30C	Columbia 4.7N, 76.7W h = 84 km
Jan. 15	TUM	e P Z	17:51:12	
Jan. 15	TUM	i P Z	19:53:10.4	
Jan. 16	SEA	i P Z	19:38:15C	
Jan. 17	SEA	e P NE	22:55.1	
Jan. 18	TUM	e P Z	22:54:39	
Jan. 20	SEA	e Z e NE	10:58:13 11:00:07	
	TUM	e P Z	10:58:11	Vancouver Is. 50.2N, 129.5W h about 33 km
Jan. 22	LON	i P Z i S Z i S NE	04:14:16.5 14:40.3 04:14:40.8	
Jan. 24	LON	i P ZNE	21:43:24.5	Pierce County, Washington 47° 23'N, 122° 06'W, h about 17 km
	SEA	i P Z i S ZNE	21:43:18 43:24	
	TUM	i P Z i S E i S N	43:24.8C 43:40.4 21 43:35.3	
Jan. 24	LON	e P N i E i S N i S Z i S E	21:56:41.7 56:46.2 56:41.0 56:51.3 21:56:51.5	
Jan. 25	LON	e P ZNE i S ZNE	02:10:45 10:55	Local
	SEA	e P Z	02:10:19	
Jan. 25	LON	i P Z	13:01:17.4	Mariana Islands region 21.7N, 143.6E h about 190 km
	TUM	e P Z	13:01:13.5	
Jan. 26	LON	i P ZN i S ZNE	07:49:41.2 07:49:51.0	Local
Jan. 26	LON	i P Z	10:00:17.5	
Jan. 27	LON	e P Z	11:52:30	Gulf of Alaska 59.4N, 153.3W h about 80 km
	TUM	e P Z	11:52:22	
Jan. 27	LON	i P Z e S NE	15:26:09.3 27.7	Idaho 44.4N, 114.6W h about 32 km
	SEA	e P Z i S N	26:22 28:20	
	TUM	e P Z i Z e S N	26:22 26:25 15:28:09	
Jan. 27	TUM	e P Z	19:48:23.5	Eastern Caucasus Mag. 5.5 40.9N, 49.7E h about 65 km

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Jan. 28	SEA	e P Z	13:06:25	Alaska Peninsula, h about 14 km 54.7N, 161.7W Mag. 6.5
		i S E	10:54	
		i S N	11:08	
		TUM	e P Z	
		e E	13:10:53	
Jan. 29	LON	e Z	07:46:53	
Jan. 29	LON	e P Z	09:30:14	Kurile Islands h about 130 km 49.8N, 155.0E
		e N	30:20.5	
		i Z	30:27.0	
		e N	30:29	
		i S E	37:38	
		i S N	37:39	
Jan. 29	TUM	e P Z	09:30:22	
Jan. 30	SEA	e P Z	10:29:12	
Jan. 30	TUM	e P Z	10:29:09	
Jan. 31	LON	i P Z	05:19:12	East China Sea h about 33 km 27.1N, 126.7E Mag. 6.1
		e E	42.5	
		e N	10.8	
		SEA	i P Z	
	TUM	e P Z	19:08	
		i Z	05:19:10.3	
Feb. 1	LON	e P Z	08:31:41	
		i Z	08:31:43.5	
Feb. 1	LON	i P Z	16:40:22.3	Central Idaho h about 33 km 44.3 N, 114.5 W
		e ZN	42:02	
		e N	42:02	
		SEA	e E	
		e N	42:24	
		e Z	42:40	
	TUM	e P Z	16:40:35.0	
Feb. 2	LON	e N	11:43:10	
		e ZE	43:14	
Feb. 2	LON	e ZNE	11 49:04	
		i NE	11:49:20.6	
Feb. 2	LON	e ZE	13:56:34	
		e Z	13:56:36	
Feb. 4	LON	i P Z	23:30:21.7	Kurile Islands h about 78 km 48.7N, 155.1E
Feb. 5	LON	e ZNE	07:30.4	Alaska h about 118 km 60.3N, 150.6W
Feb. 5	LON	e S N	21:03:16	Near coast of Central Chile 38.5S, 73.5W h about 33 km
		e L Z	21:26:42	
Feb. 6	LON	i P Z	07:10:49.6	Near south coast of Panama 7.4N, 82.6W h about 61 km
Feb. 6	LON	e Z	18:25.3	h about 36 km, 55.7N, 166.2E
Feb. 6	LON	e ZNE	11:02.6	Komandorski Is. region 55.7N, 166.2E h about 3 km

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
Feb. 7	LON	e P ZNE	00:00:02	Solomon Islands, Mag. 3.0 (CGS) 10.0S, 160.7E h about 40 km	
		i ZE	00:16.3		
		i ZN	00:16.8		
Feb. 10	LON	i E	00:00:17.3	Eastern New Guinea Mag. 4.3 (CGS) 4.7S, 144.5E h about 70 km	
		i P Z	15:07:23.3C		
		i P Z	13:04:25.5R		
Feb. 12	LON	i Z	13:04:25.7R		
Feb. 12	TUM	i P Z	23:18:48.7		
Feb. 13	LON	i P Z	00:30:34.8R	Near south coast of Guatemala 13.9N, 91.0W, h about 81 km Mag. 5 (CGS)	
	TUM	e P Z	00:30:39		
Feb. 13	LON	i P Z	09:02:54.6C	Northern Formosa, h about 47 km Local 7½ (Pas) 24.5N, 121.8E	
		e N	12.5		
		e S E	13 16		
		e S N	13 22		
		e S E	13 23		
		e S Z	13 36		
		e E	42.0		
		e L Z	45.0		
		e N	59.1		
		SEA	i P Z		02:54.0
			e S NE		13:16
		Feb. 13	TUM		i P Z
e S N	09:13:32				
e P Z	17:35:15				
Feb. 13	SEA	e P Z	18:26:47	Solomon Is. h about 30 km Mag. 6.2	
		i S NE	37:33		
Feb. 14	LON	e P Z	18:26:45.7	Solomon Is. h about 30 km Mag. 6.2	
		i P Z	00:26:48.4		
		e N	34.3		
		e E	35.5		
		e Z	37.2		
		i E	37.18		
Feb. 14	LON	e N	00:37:40	Bonda Sea, felt at Darwin, Australia 7.4S, 128.2E h about 197 km Mag. 5.8 (CGS)	
		e P Z	07:22:49		
		eSKSZ	29.49		
		iSP Z	32:33		
		iSS N	38:44		
		e N	48:08		
		i N	48:34		
		e E	55.3		
		SEA	e Z		23:17
		TUM	e Z		07:22:49
Feb. 14	LON	e Z	12:22.3	Central Mid-Atlantic Ridge 0.8N, 30.2W h about 32 km Mag. 5.0 (CGS)	
		e E	33:13		
		e E	37.6		
		i E	39:25		
		e Z	39:41		
		e N	46:18		
		e Z	12:46:25		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Feb. 14	LON	e S Z	15:47:50.6	Solomon Islands, Mag.5.0(CGS)
		e S NE	47:51	10.0S, 160.7E h about 60 km
		e S N	15:47:53.6	
Feb. 14	LON	e Z	21:43.5	
		e NE	21:43:41.7	
Feb. 14	LON	i P Z	22:21:15.3C	Eastern New Guinea Mag.6.5(CGS)
		ePP Z	25:25	4.9S, 144.5E h about 70 km
		eSKSE	31:37	
		e S N	32:30	
		eSP Z	33:47	
	SEA	e Z	21:15	
	TUM	e P Z	22:21:11	
Feb. 14	LON	i P Z	23:23:33.6C	Local
		i S NE	23:23:36.4	
Feb. 15	LON	i P Z	07:02:10.6C	Local
		i S ZNE	02:15.6	
	TUM	i P Z	07:02:13.6	
Feb. 15	LON	e P Z	12:38:54.6	
		i P Z	12:38:57.6	
Feb. 15	LON	e P ZE	15:24:02	
Feb. 15	TUM	e Z	23:25:28	
Feb. 16	LON	e P Z	03:03:28.7	Southwestern Montana Mag.4.5(CGS)
		e Z	03:36.5	46.1N, 111.0W
		e S N	05:35	
		e S E	05:36	h about 33 km
	SEA	e Z	05.2	
	TUM	e Z	03:05	
Feb. 16	LON	i P ZNE	13:18:31.8	
		i S Z	18:34.0	
		i S NE	13:18:34.6	
Feb. 17	LON	e P Z	08:26:09	
		i Z	08:26:35.0	
Feb. 18	LON	e Z	19:27.4	
Feb. 19	LON	e P ZNE	14:31:45.6	
		i ZE	31:47.1	
		i N	14:31:47.6	
Feb. 20	LON	e ZE	05:19:16	
		e Z	05:19:20	
Feb. 20	LON	e L Z	09:26:24	Loyalty Is. region Mag. 5(CGS)
		e L E	09:27.0	22.4S, 170.5E h about 33 km
Feb. 20	LON	e E	17:49:24	
		e N	49:31	
		e Z	17:49.8	
Feb. 21	LON	e P Z	12:02:55	Near coast of northern California
				40.4N, 124.8W h about 33 km
Feb. 21	LON	i P Z	13:28:25.9	Tonga Is. region h about 13 km
				20.7S, 175.1W Mag. 5.2(CGS)
Feb. 21	LON	e P Z	14:40:47	Tonga Is. region h about 29 km
		e L E	15:03:46	Mag. 5.0(CGS)
		e L Z	06:04	
		e E	15:10:30	20.5S, 174.2W

Date	Sta.	Phase	Time G.O.T.	Remarks
1963				
Feb. 21	LON	e Z	17:12:56	
		e N	56:18	
		e Z	17:59:11	
		e E	18:01:07	
Feb. 21	LON	e S ZE	19:02:07	Near coast of Libya Mag.4.5(CGS)
		e S E	02:07.6	32.6N, 21.0E h about 5 km
		e Z	19:02:40	
Feb. 22	LON	i P Z	07:19:00.7C	North Polar region Mag. 5 (CGS)
		e S N	25:58	
		e L Z	32:44	
		e L N	32:56	85.0N,100.1E h about 13 km
		e L E	35:57	
		e L E	37:19	
	SEA	e P Z	18:56	
		e S E	37:47	
	TUM	e P Z	18:59	
Feb. 22	LON	i P Z	07:31:49.7	85.0N, 100.6E, Mag.4.8(CGS), N.Polar
Feb. 22	LON	i P Z	08:10:21.9	Fiji Is. region Mag. 5.0(CGS)
				17.9S, 178.7W h about 543 km
	TUM	i P Z	08:10:20.0	
Feb. 22	LON	e P Z	21:22:59.2	Near s.coast of Dominican Republic
		e N	21:38:30	18.1N, 71.4W h about 17 km
				Mag. 5.5(CGS)
Feb. 22	LON	i P Z	23:12:38.5	
		i Z	12:41	
		i NE	12:57	
		e N	23:36	
		e Z	23:37	
		e Z	29:00	
	SEA	e N	27:24	
		e E	27:27	
	TUM	e P Z	23:12:50	
Feb. 23	LON	i P Z	06:45:01.0	South Pacific Ocean, Mag. 4.7(CGS)
				36.1S, 102.5W h about 33 km
Feb. 23	LON	e P Z	19:10:53	
		i Z	19:11:00.0	
Feb. 24	LON	i P ZNE	13:41:47.3C	Central Guatemala Mag. 5.7(CGS)
		iPcPZE	43 45.0	14.7N, 91.3W, h about 119 km
		iPcP N	43 45.5	Felt in Western El Salvador
		e S N	47 49	
		e G Z	50 56	
		e G N	51 04	
		e G E	51 10	
		e Z	54 48	
		e E	55:35	
	SEA	i P Z	41:55.5	
	TUM	i P Z	41:52.9	
		i Z	13:43:46.5	
Feb. 24	LON	e Z	14:02:27	
		i Z	14:03:25	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Feb. 24	LON	i P Z	17:28:02.9	
		i N	28:30.0	
		i ZE	17:28:30.5	
Feb. 24	LON	e Z	23:04:14	
		e E	23:05:26	
Feb. 25	LON	i P Z	08:21:18.5R	San Luis Province, Argentina 28.1S, 65.6W h about 20 km Mag. 5.3(CGS)
Feb. 25	LON	e L N	09:27:17	Off coast of El Salvador 12.3N, 88.2W, h about 58 km Mag. 4.2
Feb. 25	LON	e P Z	16:14:21.0R	
		i S ZNE	16:41:31.0	
Feb. 25	LON	i P Z	17:23:50.8	Near east coast of Formosa 24.4N, 123.5E h about 52 km Mag. 5.3(CGS)
Feb. 26	SEA	i P Z	20:27:22.2	East New Guinea
		e ZN	31:17	7.5S, 146.1E h about 156 km
		i E	37:42	
		i E	37:44	
		e N	37:47	
		e N	20:37:59	
March 2	SEA	I P Z	16:30:38.5C	
		e N	31:07	
		e E	31:10	
March 2	TUM	i P Z	16:30:25.3	
March 2	TUM	e P Z	23:10:35	
March 3	SEA	e E	17:44:07	
		e N	44:08	
		e Z	17:44:25	
March 4	TUM	e Z	07:50:19	North of Svalbard, 83.ON, 06.4W h about 33 km Mag. 5.2
March 4	SEA	e E	08:06.3	
March 4	TUM	e Z	13:51:33	Taiwan, 24.5N, 121.8E. h about 33 km
March 4	SEA	e E	14:30	
March 4	TUM	i P Z	15:53:29.5C	Near coast of N. Peru. 4.5S, 81.6W. h about 23 km
March 4	SEA	e E	16:15.4	
		e N	15.6	
		e E	19.4	
		e N	16:19.7	
March 5	TUM	i P Z	07:15:28.1C	Near coast of N. Peru; 4.5S, 81.5W. h about 22 km
March 7	SEA	e P Z	05:33:43	Easter Island region; Mag. 6.2
		e S N	43.28	26.8S, 113.4W. h about 33 km
		e S E	05:43:34	

Time
G.C.T.

9.

<u>Date</u>	<u>Sta.</u>	<u>Phase</u>	<u>Time</u> <u>G.C.T.</u>	<u>Remarks</u>
1963				
March 7	SEA	i P Z	23:54:13.0C	N.W. Oregon; 44.9N, 123.5W
		i S NE	54:49.5	h about 33 km
		e NE	55:04	
		e NE	55:11	
	TUM	i P Z	54:02.0	
		e Z	54:09	
		e E	23:54:29	
March 8	SEA	e P Z	00:30:17	
		e N	30:24	
		e N	30:30	
		i N	00:31:04	
March 8	SEA	e P Z	02:57:32	New Hebrides, h about 5 km
				19.3S, 169.8E
March 8	SEA	e Z	08:40:25	Yellowstone Park, h about 33 km
				44.8N, 110.2W
March 10	SEA	e Z	01:31:13	Kodiak Is. h about 29 km
				56.3N, 153.6W. Mag. 5.0
	TUM	e Z	01:30:49	
March 10	SEA	e Z	03:06:27	Taiwan, h about 33 km
				24.6N, 122.1E. Mag. 5.6
	TUM	e Z	03:06:22	
March 10	TUM	e Z	11:04:40	Near coast of central Chile
				30.0S, 71.2W; h about 60 km. Mag. 6.
March 16	LON	e P Z	01:55:36	
March 16	LON	i P Z	08:54:16.5C	Kurile Isl. Region. Mag. 6.2 (CGS)
		i S N	09:02:02	46.6N, 154.8E; h about 46 km
		i G N	09:07.3	
	SEA	e Z	08:54:13	
		e E	09:01:51	
		e N	09:02:00	
	TUM	e P Z	08:54:11	
		e Z	08:54:15	
		e E	09:01:00	
		e Z	09:10:27.5	
March 17	LON	i P Z	08:06:55.5C	
March 20	LON	i P Z	11:41:27.3C	Yellowstone Park, Wyo.
		e S Z	43:40	44.8N, 110.7W; h about 33 km
		e S E	43:43.5	
		e S N	11:43:46	
March 20	LON	i P Z	12:34:21.3	Yellowstone Park, Wyo.; Mag. 4.0 (CGS)
				44.7N, 110.6W; h about 33 km
March 20	LON	e N	17:49:28	
March 21	LON	e P Z	03:36:52	
March 21	LON	e Z	04:11:12	Near east coast of Honshu, Japan
				36.4N, 141.1E; h about 38 km
				Mag. 5.2 (CGS)
March 21	LON	e Z	13:56:12	
		e Z	56:14.5	
		e Z	56:17	
		i S N	13:56:23.6	
March 21	LON	i P Z	18:20:56.3R	Vancouver Isl. region. h about 60 km
				50.8N, 129.2W; Mag. 4.0 (CGS)
	TUM	e P Z	18:20:20	

Date	Sta.	Phase	Time	Remarks	
March 22	LON	i P Z	04:36:41.3C	Yellowstone Park, Wyo. Mag. 4.1(C) Felt. 44.8N, 110.5W; h about 34 k	
		e L N	37:36		
		e N	38:42		
		i N	38:51		
March 22	SEA	e NE	39.3	Local	
		e NE	04:39:27		
		i P Z	07:50:14.5C		
March 22	LON	i S E	50:31.0	Local	
		e S N	07:50:30		
		i P Z	23:42:34.4		
March 23	TUM	i S Z	23:42:37.6		
		i P Z	02:25:55.5R		
March 24	LON	i P Z	02:31:25.5R	Sumba Isl. region. Mag. 6.2(CGS) 9.7S, 120.5E; h about 12 km	
March 24	LON	i P Z	02:31:25.5R	Andreanof Isl. Aleutian Islands 51.6N, 173.3W; h about 55 km Mag. 4.7 (CGS)	
		e N	21:42:25.6C		
		e N	48:00		
		e N	50.6		
March 24	SEA	i P Z	42:11.3	New Hebrides Is. h about 120 km 19.1S, 169.0E; Mag. 3.8	
		e E	42:18		
		e N	42:20		
		i P Z	42:24.1C		
March 24	TUM	i S ZE	21:42:25.9		
		e E	09:36.2		
March 25	SEA	e E	09:36.2	S. Nevada; h about 19 km 36.ON, 114.8W. Mag. 4.9	
		e E			
March 26	LON	i P Z	10:01:21.3C	Kermadec Isls. Mag. 6.8 29.7S, 177.9W; h about 48 km.	
		i S N	11:55		
		e S N	18.6		
		e L N	25.0		
		e P Z	01:26		
		e NE	01:36		
	March 26	SEA	e E	11:45	Kermadec Is.; Mag. 7.2 (CGS) 29.9S, 178.0W; h about 40 km
			e N	11:49	
			e E	12:24	
			e N	12:28	
			e P Z	02:21	
			i Z	02:31	
March 26	LON	e N	12:14	Kermadec Isl. Mag. 6.2 (CGS) 29.9S, 177.9W; h about 48 km	
		e E	10:12:19		
		e P Z	13:38:04.6		
		i Z	38:07.6		
		i S N	48:40		
		e S S N	58:46		
March 26	SEA	e Z	13:38:11	New Hebrides; Mag. 6.2 (CGS) 19.1S, 169.0E; h about 120 km	
		e E	14:07.6		
		e P Z	13:38:06		
		i P Z	21:46:05.1C		
March 26	LON	i P Z	21:46:05.1C	Near east coast of Honshu, Japan 36.9N, 135.7E; h about 16 km Mag. 6.5 (CGS)	
		e N	55:31		
		e E	46:03.2		
		e N	55:22		
March 27	LON	e E	21:55:36	Yellowstone Park, Wyo. Mag. 4.2(C) 44.3N, 110.7W; h about 33 km.	
		e E	22:23.5		
		i P Z	07:24:08.0C		
		i P Z	09:28:24.4C		

<u>Date</u>	<u>Sta.</u>	<u>Phase</u>	<u>Time</u> <u>G.C.T.</u>	<u>Remarks</u>
March 27	TUM	i P Z	23:59:39.8	Local
		i S Z	00:00:06.9	
March 28	SEA	e Z	00:25:22	Iceland; h about 33 km
		e E	32:30	66.1N, 20.1W; Mag. 7.2
		e E	36:18	
		e N	36:31	
		e E	41:12	
		e N	41:37	
		e N	43:13	
		e N	43:18	
		e E	43:27	
		e N	44:50	
	TUM	e P Z	25:06	
		e E	42.4	
		e N	43.5	
March 29	LON	i P Z	06:38:37.6R	
March 30	LON	i P Z	00:36:16.6R	Queen Charlotte Isl. h about 33 km
				51.1N, 129.4W; Mag. 4.2 (CGS)
	SEA	e N	00:38.2	
March 30	LON	i P Z	02:06:12.2C	New Hebrides Is. h about 156 km
		e Z	30:52	19.1S, 169.0E; Mag. 5.6
		e N	30.56	
		e Z	34.35	
	SEA	i P Z	02:06:16.5	
March 30	LON	i P Z	02:58:17.7R	Local
		i S N	58:42.3	
		i S Z	58:42.4	
		i S E	02:58:42.6	
March 30	TUM	i P Z	17:01:55.0	Kurile Isl.; Mag. 6.3 (CGS)
				44.1N, 148.0E; h about 61 km
	LON	i P Z	02:00.0C	
		eSS N	14:24	
		e N	17:00	
		e Z	20:09	
		e N	17:52:06	
March 31	LON	e N	05:16:14	Near coast of S. Peru; Mag. 5.2(CG)
		e N	:18:18	6.6S, 81.2W; h about 31 km
March 31	SEA	e N	05:29.3	
March 31	LON	e P Z	05:43:51	Kermadec Isl. Mag. 6.2 (CGS)
		e S N	54:33	29.9S, 177.9W; h about 55 km
		e PSN	05:55:35	
		e L N	06:07:23	
		e L Z	06:11 26	
March 31	LON	e Z	07:36:47	New Britain; Mag. 6.2 (CGS)
		eSSSN	42:06	6.1S, 149.1E; h about 55 km
		e L N	45.58	
		e L Z	50:58	
		i Z	07:51:54	
March 31	LON	i P Z	19:35:56.8C	Kermadec Is. Mag. 6.2 (CGS)
		eSKSN	46:25	30.1S, 178.2W; h about 39 km
		eSKSZ	46:33	
		i PSZ	48:10	
		iPPSN	19:48:23	
		e L Z	20:04:17	
	TUM	e P Z	19:35:56	
	SEA	e Z	19:36:18	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Apr. 1	LON	i P Z	04:38:47.7	
Apr. 1	LON	e P Z	11:55:01.5	
Apr. 2	LON	e L Z	04:39:15	Kamchatka Mag. 4.9 (CGS) 55.2N, 160.3E h about 40 km
Apr. 2	LON	i P Z	16:25:12.5	
		i E	30:14	
		i Z	30:15	
		e Z	30:15	
		i N	30:16	
		i Z	31:25.8	
	SEA	e P Z	25.3	
	TUM	i P Z	25:05.6	
		e P Z	16:25:37.9	
Apr. 2	LON	i P Z	17:57:58.0	Local
		i S E	58:14.9	
		i S Z	17:58:15.5	
Apr. 3	LON	e E	15:30:32	
		e N	30:34	
		e E	35:16	
		e N	15:35:48	
Apr. 3	LON	i P Z	15:59:29.2C	
		e N	16:06:00	
Apr. 4	TUM	e P Z	05:29:18.1	Local
		i S ZNE	05:29:29.3	
Apr. 4	LON	e P Z	15:10:51.5	Local
		i S ZNE	15:11:02.6	
Apr. 4	LON	e P Z	15:29:17.7	Local
		i S Z	29:27.7	
		i S NE	29:28.0	
	SEA	i P NE	29:18.0	
		e P Z	29:18	
		i S NE	15:29:20	
Apr. 5	LON	e P Z	18:50:15.7	Local
		i S NE	18:50:19.0	
Apr. 6	LON	e Z	02:23:47	
Apr. 6	LON	i P Z	07:14:31.6	Fiji Islands region Mag. 5.1(CGS) 17.6S, 178.7W h about 529 k
Apr. 6	LON	e P Z	11:23:53	Central Alaska Mag. 5.5 (CGS) 63.4N, 149.6W h about 42 km
		i P P Z N	24:23.8	
		e N	24:32	
		e E	24:36	
		e Z	24:38	
	SEA	i P Z	24:15.0C	
		e E	31:20	
		e N	31:27	
Apr. 6	TUM	i P Z	11:24:17.8	
Apr. 6	LON	e P Z	12:12:09	Central Alaska h about 49 km 63.6N, 149.7W Mag. 4.5(CGS)
Apr. 6	LON	e G N	22:13:24	New Britain h about 65 km
		e L E	22:17:23	6.1S, 149.8E

Date	Sta.	Phase	Time G.C.T.	Remarks	
Apr. 6	LON	e E	23:54:14	Tanimbar Is. region h about 33 km 7.3S, 132.6E	
		e Z	55:08		
		e N	56:16		
Apr. 7	LON	e N	23:56:51	Jan Mayen Is. region Mag. 4.6(CGS) 71.5N, 12.9W h about 33km	
		e Z	11:41:24		
		e Z	11:42:55		
Apr. 7	LON	i P Z	15:34:03.4C	Fox Is., Aleutian Is. Mag. 6.0(CGS) 53.7N, region h about 174 170.0W km.	
Apr. 7	TUM	i P Z	15:33:57.9		
Apr. 7	LON	e Z	18:48:56		
Apr. 7	LON	i P Z	22:54:55.0	Near southwest coast Mag.6.1(CGS) 4.8S,103.3E Sumatra h about 70 km	
		e SSE	23:13:56		
		e E	34:26		
		e Z	56:24		
		e N	23:56:44		
		e N	24:06:20		
		e E	24:07:14		
Apr. 7	SEA	i P Z	22:54:55.5R		
Apr. 7	TUM	i P Z	22:54:53.8		
Apr. 8	LON	i N	15:04:19		
		e Z	07:10		
		e E	15:07:22		
Apr. 8	LON	i Z	22:59:00.0	S. Fiji Is. region Mag. 4.9(CGS) 24.8S, 179.8W h about 427 km	
Apr. 8	TUM	i P Z	22:59:01.2		
Apr. 9	TUM	i P Z	23:08:33.3	Santa Cruz, h about 86 km 11.5S, 166.1E	
Apr. 10	LON	e NE	08:15:06	Timor, Mag. 5.2(CGS) 9.1S, 125.1E h about 33 km	
Apr. 13	LON	i P Z	02:21:17.6	Local	
Apr. 13	LON	i S Z	02:21:31.4	Northern Peru Mag. 6.7(CGS) 6.3S, 76.7W h about 125 km	
		i P Z	02:31:35.1		
		e S E	40:16		
		e S N	40:19		
		e S S N	47:52		
		e G E	48:09		
		SEA	i P Z		31:41.0C
		TUM	e P E		31:39.0
			e P N		02:31:39.5
Apr. 13	LON	i P Z	13:12:30.6	N. Peru, Mag. 6.3 6.3S, 76.5W h about 125 km	
Apr. 13	LON	e N	15:03:56	Local	
		e E	13:01		
		e N	13:15		
		e E	15:17:43		
Apr. 13	LON	i P Z	18:12:09.7	Local	
Apr. 13	LON	i P Z	19:26:59.6	Local	
		i S Z E	19:27:04.6		
Apr. 15	LON	e ZNE	13:58:33.6		
Apr. 16	LON	e E	01:37.9		

Date	Sta.	Phase	Time G.C.T.	Remarks			
Apr. 16	LON	e E	01:44.4	Halmahera region Mag. 7.2(CGS) 0.9S, 128.6E h about 6 km			
		e N	47.2				
		e P E	47.7				
		e N	53.7				
		eSKSE	01:54.28				
		eSSSN	02:08.4				
		SEA	e E		01:52:53		
			e E		53:20		
			e E		53:48		
			e E		54:16		
Apr. 16	LON	e N	01:54:50	Halmahera region Mag. 6.3(CGS) 1.1S, 128.6E h about 42 km			
		ePKSZ	01:58.6				
		e SSN	02:12.4				
		ePSPSE	02:12.6				
		TUM	e Z		13:43		
			e E		23:16		
Apr. 16	LON	e Z	02:23:42	Local			
		e P Z	10:17:11.0				
Apr. 16	LON	i Z	10:17:17.7	Local			
		e P Z	14:19:43.2				
Apr. 16	LON	i Z	14:20:37.8	Local			
		e P Z	21:42:58				
Apr. 17	LON	e P Z	02:23:50.3	Fiji Islands Mag. 6.7(CGS) 19.7S, 178.3E h about 125 km			
		e Z	23:59.6				
		e E	34:20				
		i N	34:34				
		SEA	e Z		02:24:00		
Apr. 17	LON	e L N	18:17.1	North Atlantic Ocean h about 33 km 58.3N, 32.1W			
		i P ZNE	18:25:49.3R				
Apr. 17	LON	i S ZNE	18:25:52.0	Local			
		e N	19:21.9				
Apr. 17	LON	eScSE	19:27.5	S. of Panama Mag. 4.2(CGS) 5.4N, 81.6W h about 14 km			
		i P Z	07:48:25.8CR				
Apr. 19	LON	e N	57:30	Local			
		i E	07:59:31				
		i N	08:00:45				
		SEA	e P Z		07:48:24		
			e N		59:03		
			e E		59:19		
			e N		59:22		
		Apr. 20	LON		e E	07:59:25	Local
					e E	08:23.7	
					i P Z	07:48:23.5	
i P ZNE	20:46:28.6C						
i S E	46:29.6						
i S N	46:29.9						
Apr. 21	LON	i S Z	20:46:30.1	Local			
		i P Z	04:51:14.2C				
		e E	05:01:40				
		e N	02:05				
		e N	19.0				
		e Z	05:19.5				
SEA	i P Z	04:51:12.5	Local				
	LON	i P Z		05:21:01.9			

Date	Sta.	Phase	Time G.C.T.	Remarks	
Apr. 21	LON	e L Z	11:19.9	Bismarck Sea 3.2S, 146.9E	
		e L E	11:20.6		
Apr. 22	LON	e P Z	07:53:35	Mag. 6.0(CGS) h about 33 km	
Apr. 23	LON	i P Z	19:05:19.5C	Local	
		i S ZE	05:21.2		
		i S N	19:05:21.4		
Apr. 24	LON	e P Z	07:18:33	Local	
		i S Z	18:40.7		
		i S N	07:18:41.9		
Apr. 24	LON	i P Z	21:54:21.6	Fiji Is. region 20.8S, 179.0W Mag. 5.1(CGS) h about 600 km	
Apr. 25	LON	i P ZNE	15:04:48.0R	Local	
		i S ZNE	15:04:49.7		
Apr. 25	LON	e L Z	17:24.1	Halmahera region 1.4S, 128.8E Mag. 4.7(CGS) h about 15 km	
		e E	17:24.5		
Apr. 25	LON	i P Z	18:02:20.1C		
Apr. 26	LON	i P Z	20:37:27.0	Local	
		i S ZE	20:37:28.6		
Apr. 26	LON	i P Z	23:05:41.8	Local	
		i S E	23:05:45.2		
Apr. 26	LON	i P ZE	23:17:49.2	Local	
		i S E	23:17:51.2		
Apr. 27	LON	i P Z	04:55:49.0C	Yellowstone Natl Park, Wyoming 44.8N, 110.3W Mag. 4.4(CGS) ful h about 33 km	
Apr. 27	LON	e PSZ	09:10.7	Halmahera region 0.9S, 128.4E Mag. 4.9(CGS) h about 27 km	
		i Z	14:08		
		e G N	09:25:50		
Apr. 27	LON	i P Z	10:02:51.1	Local	
		i S E	02:56.0		
		i S N	10:02:56.5		
Apr. 27	LON	e P Z	15:14:52	Southern Alaska 61.4N, 147.2W h about 33 km	
Apr. 29	LON	i P Z	07:54:10.0C		
Apr. 29	TUM	i P Z	10:16:04.0C		
		e E	10:27:30		
Apr. 29	LON	i P Z	15:10:54.1C		
Apr. 29	LON	e P Z	20:42:57.5		
		i Z	20:42:59.1		
Apr. 29	LON	e P Z	21:51:35	Andreanof Is., Aleutian Is. 51.3N, 178.7E Mag. 6.0(CGS) h about 56 km	
		i P Z	51:37		
		eScPN	57:28		
		eScPZ	57:29		
		ePcSE	57:30		
		i S E	21:57:33		
		i G E	22:00:26		
		i G N	22:00:27		
		SEA	e P Z		21:51:46
			e E		57:19
	e N	57:26			
	TUM	i P Z	21:51:28.0		

Date	Sta.	Phase	Time G.C.T.	Remarks	
Apr. 30	LON	eSKKSNE	01:23:14	Halmahera region 0.9S, 128.8E	Mag. 6.7(CGS) h about 33 km
		e S N	24:19		
		e S N	24:19		
	SEA	iSKPP'N	41:08		
		i Z	46:12		
		e E	24.3		
Apr. 30	LON	e N	25.0		
		e E	01:53.0		
		e E	02:02.4		
		e E	02:13.0		
Apr. 30	LON	e P Z	03:33:24	Andreanof Islands Aleutian Islands 51.2N, 178.6E	h about 60 km
Apr. 30	LON	e P Z	07:15:13	Andreanof Islands 51.3N, 178.6E	Mag. 5.1(CGS) h about 45 km
Apr. 30	LON	e P Z	16:16:42		
May 1	LON	i P Z	01:11:56.2C	Andreanof Is. 52.2N, 174.6W	Mag. 5.2(CGS) h about 34 km
May 1	LON	i P Z	10:16:07.0	New Hebrides Is. 19.0S, 168.9E	Mag. 6.2(CGS) h about 142 km
		i S N	26:41		
		esPPE	28:49		
		esSSN	33:48		
	SEA	i E	40:28		
		i N	40:42		
		i P Z	16:09.3		
		i Z	16:21.8		
May 2	LON	i Z	16:45.8		
		e N	26:54		
		e E	10:27:29		
		i P Z	23:18:26.5	Central Alaska 63.1N, 149.9W	Mag. 6.1 h about 79 km
May 8	SEA	e N	08:56.3	Near coast of N. Calif. 40.6N, 124.3W	Calif. h about 33 km
		e Z	56:31		
		e E	08:56.4		
		e NE	09:02.0		
May 8	SEA	e P Z	10:03:10		
		e NE	03.2		
		i NE	10:42:10		
May 9	SEA	e P Z	05:08:31	Local	
		i S NE	08:40.2		
		TUM	08:37.7		
May 10	SEA	i S ZE	05:08:49		
		e P Z	22:33:12		
May 12	SEA	e E	22:55:31		
		i P Z	20:14:28.5C		
May 12	TUM	i E	15:16		
		e N	20:18:16		
		i P Z	20:33:27.8		
		e N	37:31		
May 15	LON	i Z	37:36.7		
		e E	20:37:41		
		e N	03:31.1		
		e E	03:35.1		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
May 15	LON	e N	12:39.5	Azores region h about 33 km
		e E	12:40.4	38.0N, 26.6W
May 16	LON	e SSE	22:40.4	South of Hokkaido Japan Mag. 5.0(CGS)
				41.6N, 142.0E h about 65km
May 17	LON	e L E	04:33.2	Kurile Islands Mag. 5.9(CGS)
				45.5N, 150.9E h about 51 km
May 17	LON	e E	06:54.1	Near west coast of Luzon, P.I. Mag. 5.5(CGS)
				15.7N, 120.1E h about 99 km
May 17	LON	e L N	12:35.2	S. Hokkaido, Japan Mag. 4.8(CGS)
		e G E	12:35.8	41.6N, 142.0E h about 72 km
May 18	LON	e E	06:10.4	
May 18	LON	e E	12:53.9	
May 19	SEA	e E	00:27:48	
May 19	LON	e E	02:27.6	
		e E	02:45.6	
May 19	LON	i S E	21:54:58	North Atlantic Ocean Mag. 6.2(CGS)
		i L E	22:05:25	23.8N, 46.0W h about 10km
May 19	SEA	e Z	21:46.5	
		i N	47:47.0	
		e E	21:55:10	
		e N	22:02:22	
		e N	06:44	
		e E	22:10:29	
May 20	LON	i P E	11:51:10	Kermadec Is. region Mag. 6.7(CGS)
		i E	12:01:39	30.7S, 178.3W h about 68 km
		i L E	12:19:56	
May 20	SEA	e P Z	11:51:26	
May 20	TUM	i P Z	11:51:08.5	
		e S?E	12:01.6	
May 21	LON	e L Z	17:53:14	Near east coast of Honshu, Japan Mag. 4.1(CGS)
		e L E	53:19	h about 96 km
		e L Z	17:58:43	36.1N, 139.6E
		e L Z	18:09:41	
		e L E	10:00	
	SEA	e L E	18:11.2	
May 22	LON	e S E	04:36:10	Off west coast of Mexico Mag. 4.6(CGS)
		e S N	36:12	h about 35 km
		e E	38:08	18.1N, 106.0W
		e N	40 00	
* May 22	LON	e P Z	05:16:10	
		i Z	16:36.3	
		i N	05:16:35.5	
May 22	LON	e P Z	14:06:03.4	Kurile Is. region Mag. 6.5(CGS)
		e S N	13:28	48.7N, 154.8E h about 54 km
		e S E	13:35	
		e G N	19.0	
		e L E	22:00	
		e N	14:22:17	
	TUM	i P Z	14:05:49.2	
* May 22	SEA	e E	04:42.7	

Date	Sta.	Phase	Time G.C.T.	Remarks	18.
1963					
May 22	LON	e P Z	15:42:37.8	Nevada Test Site STONES 37°06'40"N, 116°02'21"W	Mag. 5.4(CGS) h=498.5 metr
May 23	LON	e S E e E e N e E	03:54:20 03:59:03 04:11:43 04:15:18	Fiji Is. region 19.7S, 176.2W	Mag. 5.4(CGS) h about 302km
May 23	LON	e S E e E e N	08:01:06 10.0 08:10:18	Leeward Is. region 19.2N, 64.5W	Mag. 5.4(CGS) h about 47 km
May 23	LON	e S E	09:14:02	Baja California Norte 32.8N, 115.9W	Mag. 4.6(Pas) h about 14 km
May 23	LON	e E e E	15:57.3 16:01:27	Baja California Norte 32.5N, 115.6W	Mag. 4.6 h about 15km
	SEA	i E	02:13		
		e N	16:02:18		
May 23	LON	e E e S E eScSN	18:32.5 34.0 18:38.3	Off west coast of Mexico 14.5N, 105.2W	h about 33 km
May 25	LON	ePP Z e L Z e N	16:29:22 17:08:18 17:11:31	Sandwich Islands region 56.7S, 24.8W	h about 33 k
May 26	LON	e P Z eSN E	23:15:28 23:22:24	Near east coast of Kamchatka 55.2N, 160.1E	h about 34 km
May 27	LON	e S E e S N e N	04:14:14 14:15 04:19:16	Near east coast of Kamchatka 55.2N, 160.1E	Mag. 5.7 (CGS) h about 49 km
	SEA	e P Z	04:07:15		
May 30	LON	e N e E e E	07:49.1 49.3 07:54.7		
June 1	LON	ePPSE	21:35.5	Loyalty Is. region 22.2S, 169.6E	Mag. 4.8(CGS) h about 13 km
June 2	LON	e L Z e E	10:40:51 10:41:17	Solomon Is. region 6.2S, 154.4E	Mag. 5.8(CGS) h about 50km
June 2	LON	ePPPZ ePPPE eScSScSN	21:26:26 26.5 44.0	Kermadec Is. region 33.6S, 178.6W	Mag. 5.1(CGS) h about 33km
		e E	21:44:27		
		e Z	22:09.3		
June 3	LON	e S E	07:56:40	Honshu, Japan 34.1N, 138.7E	Mag. 5.3(CGS) h about 21
	SEA	e P Z	07:47:14		
June 3	LON	e E	11:49:52		
June 4	LON	e P Z e E i E	05:27:46 28:15.0 05:28:15.5		
June 4	LON	e Z	12:35.1		
June 4	LON	eSKSE e G N	21:29:26 21:48:26	Halmahera region 1.2S, 127.3E	Mag. 5.7(CGS) h about 33 km

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
June 5	LON	i P Z	04:45:37.5C	Local
		i S E	04:45:51.1	Local
June 5	LON	e Z E	14:44.0	Tonga Is. region 17.2S, 176.8W Mag. 4.5(CGS) h about 33 km
June 6	LON	i P Z	05:32:08.7C	Off north coast of Luzon, P. Is. 19.9N, 120.5E Mag. 5.6(CGS) h about 33 km
		SEA e P Z	05:32:08	
June 6	LON	e Z	13:29.3	
June 7	TUM	e P Z	16:11:11	
June 7	LON	i P Z	19:38:21.0R	Clipperton Is. region 8.5N, 103.1W Mag. 4.9(CGS) h about 33 km
		i S E	44:39	
		i S N	44:42	
		e L E	19:47:44	
June 7	LON	i P Z	21:36:30.9	Clipperton Is. region 8.7N, 102.8W Mag. 4.7(CGS) h about 33 km
June 7	LON	i P Z	22:49:25.4C	Samoa Is. region 15.2S, 172.8W Mag. 4.6(CGS) h about 33 km
		i S Z	22:59:13	
June 8	LON	i P Z	16:50:23.3R	Local
		i S N	59:30.4	
		i S E	16:59:30.6	
June 8	SEA	e E	19:48:42	
		e E	19:52.0	
June 9	TUM	i P Z	16:59:25.3	Local
		i SZNE	16:59:34.6	
June 10	LON	e P'Z	04:35:39	West of Macquarie Is. 55.3S, 146.2E Mag. 6.1(CGS) h about 33 km
		eSS E	54:44	
		eSS N	04:55:00	
		e G N	05:09:18	
		e G E	09:21	
		e L E	05:15:05	
June 10	LON	e P'Z	06:58:08.1R	800 km west of Macquarie Is. 55.2S, 146.1E Mag. 6.0(CGS) h about 19 km
		eSS E	07:17:22	
		eSS N	17:33	
		e G E	31.4	
		e G N	31:51	
		e L E	07:38:02	
		e Z	08:01:34	
		e N	08:17.1	
June 10	LON	e P Z	10:55:35	Off coast of Kamchatka 51.0N, 160.1E Mag. 5.9(CGS) h about 44 km
		i P Z		
June 10	LON	i P Z	16:20:15.3R	Local
		i S N	20:31.5	
		i S E	16:20:31.9	
	SEA	i P Z	20:04.5	Tonga Is. 20.4S, 174.2W Mag. 5.3(CGS) h about 33 km
		i E	20:11.0	
		i S?N	20:15.5	
	TUM	i S?E	20:14.5	Near south coast of Tonga 8.2S, 102.2E Mag. 5.3(CGS) h about 59 km
		i P Z	20:07.4	
		i S?ZE	20:18.6	
		i S?N	16:20:19	

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
June 11	LON	e S E	13:17:51	Central Alaska 62.2N, 151.4W	
		e S Z	17:59		
		e E	21.3		
	SEA	e E	13:21:17		
June 11	LON	e S E	15:30.5	Baja, Calif. 31.8N, 116.2@	
		e Z	31:38		
		e E	32:16		
	SEA	e P Z	27:36		
		e S?E	15:32:30		
June 12	LON	i P E	05:15:40.5	Local	
		e Z	15:41.0		
		i S ZE	05:16:06.5		
June 13	LON	e E	18:08.0	New Britain 4.7S, 153.2E	
June 14	LON	e Z	14:21:45		
June 14	LON	e S Z	23:39:43.7C	Off coast of Van- couver Island 50.8N, 129.7W	
	SEA	e ZE	23:41.2		
June 15	LON	e ZNE	02:08:39		
June 15	LON	e P Z	15:43:17	Off coast of central Chile 36.3S, 98.9W	
June 16	LON	e E	06:44.0	Near coast of Guerrero, Mexico 16.6N, 100.3W	
		e L E	06:46.4		
June 16	LON	i P ZNE	09:21:30.5R	Vancouver Is. region 50.8N, 129.5W	
		e S E	23.1		
	SEA	e P ZNE	21.3		
		e S NE	23.2		
	TUM	e Z	21:18		
		i Z	09:21:19.7		
June 17	LON	i P Z	18:36:19.7R	Southeast Alaska 60.5N, 140.8W	
		e S E	39:40		
		e S N	39:48		
		e E	41:45		
		e N	41:57		
		e N	42:34		
		e Z	42:43		
		e E	42:48		
		SEA	i P Z		36:10
			e E		41:13
			i Z		18:41:19
June 17	LON	e P ZNE	20:20:55.5	Tonga Is. 20.4S, 174.2W	
June 17	LON	i P'Z	23:20:57.3R	Near south coast of Sumatra 4.1S, 102.2E	
June 18	LON	e Z	01:29:45		
June 18	LON	i P Z	04:29:42.5C		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
June 19	LON	i P Z eSKSE eSKSN	09:22:41.5C 33:22 33.5	Talud Is. region 4.7N, 126.5E Mag. 6.2(CGS) h about 83 km
	SEA	i E	09:33:28.7	
June 19	LON	i P Z	11:32:16.6	Off coast of Oregon 44.7N, 129.6W Mag. 4.6(CGS) haabout 33 km
	TUM	i P Z	11:32:06.4C	
June 20	SEA	e P Z	22:59:17	
June 23	LON	e P Z	04:02:35.5	Kermadec Is. region 29.7S, 177.9W Mag. 5.1(CGS) h about 52km
June 23	LON	e P Z	13:13:21.5	Queen Charlotte Is. 51.9N, 131.5W region Mag. 4.5(CGS) h about 33 km
June 23	LON	i P Z i E	14:28:33.0 14:28:34.5	
June 24	LON	e P NE e S E e S N	04:31:29 35:35 35:39	Cook Inlet 59.5N, 151.7W Mag. 5.7(CGS) h about 52 km
	SEA	i P Z e S E e S N	31:22.3C 35:27 35:31	
	TUM	i P Z e S E e S N	31:20.3R 35:27 04:35:31	
June 24	LON	e E e N	16:28:54 30.5	
	SEA	e NE e N	28:48 16:29:14	
June 25	LON	i P Z e L E	08:27:47.2C 29:25	Off coast of Oregon 44.3N, 129.1W Mag. 5.0(CGS) h about 32 km
	SEA	e E e N	29:27 08:30:09	
June 25	LON	e P Z i ZE e S E	09:40:53.1C 40:54.1 09:42:29	Off coast of Oregon 44.3N, 129.0W Mag. 4.8(CGS) h about 43 km
June 25	LON	e P Z	15:54.0	Yellowstone Natl Park, Wyoming 44.0N, 110.0W Mag. 3.9(CGS) h about 33 km
June 25	SEA	e E e N e E	09:42:33 43:09 09:44:47	
June 25	SEA	e NE	15:56:42	
June 25	LON	e NE	16:47:52	
June 25	LON	i P Z i S E	23:08:52.3R 09:02.7	Local
	SEA	e P Z i S NE	09:34 09:35	
	TUM	i P Z	23:08:57.3	
June 25	LON	i P Z i S E i S N	23:28:56.3R 29:06.7 29:06.9	Local
	SEA	e N i E	29:38 23:29:39	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
June 26	LON	e P Z	17:51:50	Near south coast of Panama 7.0N, 82.3W
		i Z	17:51:51.3	
	SEA	i P Z	17:51:59.5	
		e E	18:11:14	
		e N	18:11.6	
June 27	LON	i P Z	17:51:57.0	Southeastern Alaska 60.5N, 140.8W
		e P Z	07:12:07	
	SEA	i Z	12:07.6	
		e S E	15:15	
		e P Z	12:02	
		e E	16:54	
		e Z	17.2	
		e N	17.24	
		e NE	07:17:32	
June 28	LON	e P Z	22:05:13.1	Kurile Is. region 46.7N, 153.3E
		e S E	12:57	
		e S N	12:58	
		e G N	19.2	
		e G E	19.3	
	SEA	e P Z	05:12	
		e N	12:47	
		e E	12:55	
	TUM	e N	05:08	
		e E	22:05:09	
June 29	LON	i P Z	08:11:14.5R	Off coast of northern Calif. 40.3N, 126.4W
				Mag. 4.7 h about 33 km
June 29	LON	i P ZN	10:44:20.2	Local
		i S ZNE	44:30.5	
	TUM	i P Z	44:16.8	
		i S ZE	10:44:25.3	
July 1	LON	e N	19:23:15.3	Kurile Is. region 46.3N, 152.7E
		i Z	23:18.0	
		e E	23:19.0	
		i N	19:23:19.6	
July 1	LON	i P Z	21:23:28.0	Tsinghai Prov., China 37.0N, 96.1E
				Mag. 5.3(CGS) h about 33 km
July 4	LON	i P ZNE	05:51:58.4C	Off coast of Ore. 43.7N, 126.4W
				Mag. 4.4(CGS) h about 33 km
July 4	LON	i P ZNE	11:09:17.8	Tonga Is. region 26.3S, 177.7W
		i S N	09:20.0	
		i S E	11:09:20.1	
July 4	LON	i P Z	11:10:49.7R	Tonga Is. region 26.3S, 177.7W
		e ScSNE	21:00	
		i S N	21:27	
	SEA	i P Z	10:54.8	
		e NE	21:12	
		i N	21:31	
	TUM	i P Z	11:10:48.2R	
July 4	LON	i P Z	23:35:21.4R	Tonga Is. region 26.3S, 177.7W
		i N	35:31.6	
		i E	23:35:32.1	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
July 5	LON	e P Z	05:59:23.8	Peru 11.6S, 77.5W Mag. 5.8(CGS) h about 55 km
July 7	LON	e Z	12:13:36	
		i E	12:13:41.3	
July 7	LON	i P Z	19:23:10.5R	Central Utah 39.6N, 111.9W Mag. 4.9 (CGS) h about 33 km
		e S E	25:16	
		e E	25:40	
		i Z NE	26:01.5	
		e E	26:07	
		e Z	27:00	
	SEA	e Z	23:34	
		e E	26:18	
	TUM	i P Z	23:21.3C	
			19:26:28	
July 8	LON	e P Z	00:18:09	Southern Alaska 57.0N, 134.5W Mag. 3.7 (CGS) h about 28 km
July 8	LON	e Z	01:15:23	
July 8	LON	e P Z	04:20:43.3	Off coast of N. Calif. 40.8N, 125.8W Mag. 4.7(CGS) h about 33 km
		e E	04:22:11	
July 8	LON	e P Z	17:55:01.0	Central Alaska 65.8N, 153.9W Mag. 4.8 (CGS) h about 33 km
		i Z	55:02.9	
		i N	55:06.8	
		e S E	59:09	
		e N	59:31	
	SEA	e S NE	17:59.5	
		e E	18:02:46	
		e N	18:02:56	
July 9	LON	e P Z	09:33:31	Coasta Rica-Panama Border 8.5N, 83.0W Mag. 5.1 (CGS) h about 31 km
July 9	LON	e P Z	09:40:49	
		e P Z	18:14:58	
		e ZE	18:15:19	
July 10	LON	e P Z	05:32:32	Kurile Isl. region 46.3N, 152.9E Mag. 5.6(CGS) h about 33 km
		e S N	40:27	
		e S E	40:28	
		e G N	46:28	
	SEA	e P Z	32.5	
		i Z	32:43.5	
		e E	40:14	
		e N	40:19	
	TUM	e P Z	05:32:36	
July 10	SEA	i P Z	20:24:02.2	Fox Is., Aleutian Is. 53.0N, 171.4W Mag. 4.4 h about 33km
July 11	LON	e N	06 41 29	
		e E	41 32.5	
		e Z	06 41 32	
July 11	LON	i P Z	20 04 01.9R	
July 12	LON	e P Z	03 45 46.2	
July 12	LON	e P Z	07 02 55.5	
July 12	LON	i P Z	10 57 43.2C	
July 12	SEA	e L N E	12 27	Vancouver Is. region 50.2N, 129.7W Mag. 4.5 h about 33 km

Date	Sta.	Phase	Time		Remarks	
			G.C.T.			
1963						
July 12	LON	i P Z	14:05	11.1C		
	SEA	e P Z	05:02.5			
		e NE	07.1			
	TUM	i P Z	05	00.2		
July 13	LON	i P Z	14:19:17.2R			
July 13	LON	e P Z	23:19:03.2			
July 14	LON	e P Z	00:15:28.3		Kermadec Is. Region Mag. 5.3 30.5S, 177.2W h about 33 km	
		e E	25.7			
		e S N	00:26:26			
July 14	LON	i P Z	05:51:59.6		Off coast of Northern Venezuela Mag. 5.5(CGS) h about 24 km	
		e P P P E	05:55:49			
		e S NE	06:00:22			
	SEA	e P Z	05:52.4			
		e N	06:11.4			
July 16	LON	i P Z	18:40:12.3C		Georgia S.S.R. Mag. 5.8(CGS) 43.1N, 41.5E h about 33 km	
		i P P N	43:48.5			
		i S N	50:49			
		e S E	50:52			
July 17	SEA	i P Z	40:11.8C			
		e E	50:46			
		e N	50:51			
July 17	TUM	i P Z	18:40:13.2R			
		LON	i P ZNE	22:50:07.4		Local
			i S N	50:27.1		
		i S E	22:50:27.3			
July 18	LON	i P Z	00:05:24.6		Vancouver Is. region Mag. 4.8(CGS) 49.1N, 128.9W h about 33k	
		i S Z	06:23.4			
		e E	06:36			
		i N	12:39			
July 18	SEA	i Z	07:12.41			
		e P Z	05:22.0			
		e N	07.0			
July 18	TUM	e P Z	05:13			
		e S E	00:07:35			
		LON	e Z	05:17:22		
			e Z	19:47		
e Z	20:03					
July 18	SEA	e E	20:04			
		e Z	20:58			
		e E	05:37:50			
		e Z	06:02:35			
		e E	03:00			
		e N	06:04:12			
July 18	LON	e P Z	23:01:45.4			
		i S Z	02:14.0			
		i S E	23:02:14.2			
July 19	LON	e P Z	02:15:21.0		Local	
		i S E	15:37.9			
		i S Z	02:15:38.3			
July 19	SEA	e P Z	05:57:36			
		e NE	06:08.3			
July 19	TUM	e P Z	05:57:37		Ligurian Sea Mag. 5.6 43.3N, 8.1E h about 33 k	
		i Z	05:58:15.0			

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
July 20	LON	e P Z	00:16:02.7	Yukon	Mag. 4.6(CGS)
		i Z	16:05.8	65.2N, 133.7W	h about 33 km
		e S NE	19:41		
		e S Z	19:43		
		e Z	23:08		
		e N	23:23		
	SEA	e Z	21.3		
		e N	21.3		
		e E	00:21.4		
July 20	LON	e P Z	06:55:15		
		e NE	07:14:29		
		e E	28:45		
		e N	07:28:49		
July 21	LON	i P Z	08:12:48.1	Local	
		i Z	12:50.9		
		i N	12:54.7		
		i E	08:12:57.6		
July 21	LON	e P ZE	10:26:38.6		
July 22	LON	eSSSN	01:03.3	New Britain	Mag. 5.1(CGS)
		eSKPP'Z	11.3	6.1S, 148.9E	h about 59 km
		e E	01:11.8		
July 24	LON	e P Z	11:45:07	Near east coast	Mag. 5.3(CGS)
		e Z	45:12.9	of Formosa	h about 33 km
		i Z	45:16.4	24.6N, 122.0E	
		e N	55:11		
		e E	55:38		
	SEA	e P Z	11:45:08		
July 24	LON	i P ZE	12:13:55.2	Local	
		i SZNE	12:14:00.5		
July 25	LON	i P Z	07:13:57.8C	Northern Colombia	Mag. 5.2(CGS)
				6.8N, 73.0W	h about 152km
July 26	LON	e P Z	04:29:53.5	Southern Yugoslavia	Mag. 5.5(CGS)
		i Z	29:58.4	42.1N, 21.4E	h about 33km
		e S E	40:21		
		e S ZN	40:23		
		e G N	52.8		
		e Z	57.6		
	SEA	e P Z	29:53		
		i Z	30:04.4		
		e S E	04:40:30		
		e NE	05:00.9		
July 26	TUM	i P Z	04:29:55.1R		
July 26	LON	e P ZE	08:45:34.5	Local	
		i Z	45:35.3		
		i S Z	46:01.9		
		i S E	46:02.1		
		i S N	08:46:02.4		
July 26	TUM	e Z	22:59:40		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
July 27	TUM	i P Z	05:28:14.9	
July 27	LON	i P Z	06:28:22.4R	Off coast-Oregon
		e N	29:24	43.9N, 128.3W
		e E	30:00	
		e E	31:58	
	SEA	e ZNE	06:29.4	
July 27	LON	e P Z	10:26:38	
		i S Z	10:26:41.2	
July 28	LON	e P Z	07:25:20	Kermadec Is. region
		e L Z	54.4	28.8S, 177.6W
		e E	55.6	
		e N	07:57.8	
July 28	LON	e E	08:32.3	
July 28	LON	e L ZN	13:50.4	Jan Mayen Is. region
		e L E	13:50.6	72.ON, 0.0
July 28	LON	e Z	17:13.1	
		e E	17:13.6	
July 29	SEA	i P Z	20:27:18.4C	Kermadec Is.
		e S NE	37:54	30.2S, 177.3W
	TUM	i P Z	20:27:04.5	
July 29	TUM	i Z	20:29:35.0	Kermadec Is.
				29.7S, 177.0W
July 30	LON	i P Z	05:58:55.6R	Kermadec Is.
		e N	06:08:41	29.6S, 177.3W
		e E	08:57	
		i N	06:09:00	
	SEA	e P Z	05:59:00.5	
		e E	06:09:43	
	TUM	e P Z	05:58:49.0	
July 30	LON	i P Z	14:11:02.8C	
July 30	LON	e Z	18:13:02	
July 31	LON	e N	02:07:53	
		e E	02:08:23	
Aug. 1	LON	e P Z	14:51:26	Kodiak Is. region
				58.3N, 151.9W
Aug. 2	LON	e Z	22:19:04	Off coast of northern Calif.
				40.5N, 125.1W
Aug. 3	LON	i P Z	10:33:52.9R	Mid-Atlantic Ocean
		e E	35:02	7.7N, 35.8W
		e N	36:45	
		i PPZ	37:00	
		i S ZNE	44:06	
	SEA	e P Z	33:56.5	
		e S E	44:19	
	TUM	i P Z	33:51.1R	
		e E	44:14	
		e N	10:44:20	
Aug. 3	LON	e P Z	20:39:12.2	Kermadec Is.
				30.7S, 178.3W
Aug. 3	LON	e P Z	22:26:23	
Aug. 4	LON	e P Z	01:48:45	Local
		i Z	48:49.2	
		i Z	01:48.52.7	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Aug. 4	LON	i P Z	12:17:44.6C	Near N. coast of Peru 4.1S, 80.9W Mag. 4.7 h about 34 km
Aug. 5	LON	e P Z	05:55:21.4	
		i S ZNE	55:39.9	
	TUM	i P Z	55:19.1	
		e S Z	05:55:36	
Aug. 5	LON	e NE	16:17.3	
		e N	31.14	
		e E	16:31:25	
Aug. 6	LON	e P Z	03:41:36.4	Local
		i E	41:37.8	
		i Z	03:41:39.6	
Aug. 6	LON	e L Z	13:59.8	N. Atlantic Ocean 57.0N, 33.6W Mag. 5.1(CGS) h about 33km
		e L E	14:00.2	
		e L N	14:00.6	
	TUM	i P Z	13:45:17.0C	
Aug. 7	LON	i P Z	18:44:34.4C	Near south coast of Guatemala 13.6N, 90.9W Mag. 4.7(CGS) h about 67km
		e L E	56.2	
	TUM	i P Z	18:44:33.8R	
Aug. 8	LON	i P Z	02:22:56.4R	Fox Is., Aleutian Is. 54.2N, 168.1E Mag. 5.5 h about 33km
		i NE	29:14	
	SEA	e P Z	22:52	
		e N	29:18	
		e E	29:30	
	TUM	i P Z	02:22:44.8R	
Aug. 8	LON	e P Z	11:10:49	Easter Island region 35.9S, 103.6W Mag. 4.7(CGS) h about 33 km
		e Z	29:3	
		e G E	33.1	
		e N	40.3	
		e N	54.4	
		e E	58.1	
		e Z	59.2	
	SEA	e E	11:59.5	
Aug. 9	LON	e P Z	14:48:44.3	Fiji Is. region 15.3S, 175.7W Mag. 5.5(CGS) h about 33km
		i P Z	48:48.4	
		i S Z	58:45.9	
		i S N	58:46.9	
		i S E	14:58:47.9	
		e L NE	15:08.9	
		e E	11:20	
		i Z	15:12:17	
	SEA	e P Z	14:48:46	
		e S NE	58:56	
	TUM	e P Z	14:48:40	
Aug. 10	LON	i P Z	05:29:43.2	
		i Z	05:29:47.9	
Aug. 11	LON	e N	02:12:38	
		e E	12:40	
		e E	02:26:47	
Aug. 12	LON	e S N	13:23.5	Galapagos Is. 2.1N, 90.4W Mag. 4.6(CGS) h about 33km
		e SSE	13:27.3	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Aug. 12	LON	e P Z	14:59:47	
Aug. 13	LON	e P Z	03:31:51.0	Kodiak Island region Mag. 5.0
		e S NE	36:06	55.0N, 156.4W h about 33km
	TUM	i P Z	03:31:42.8C	
Aug. 13	LON	i P Z	15:04:25.2R	Local
		i S NE	04:34.8	
Aug. 13	SEA	i P Z	04:20.5	
		i S N	04:28.0	
Aug. 13	TUM	i P Z	04:26.9R	
		i Z	15:04:37.5	
Aug. 13	LON	e P Z	15:31:32.6	Local
		i SZNE	15:31:51.5	
Aug. 13	LON	e P Z	18:17:01.4	Local
		i SZNE	18:17:19.9	
Aug. 13	LON	e P Z	22:04:49	Tonga Islands Mag. 5.1(CGS)
		e S N	14:58	19.3S, 173.7W h about 33km
		e S E	22:14:59	
Aug. 14	LON	e Z	02:58:08.8	Fiji Islands region Mag. 4.7
				21.4S, 175.2W h about 33km
Aug. 14	TUM	i P Z	02:59:08.8R	
Aug. 14	LON	e P Z	03:10.4	Fiji Island region Mag. 4.7(CGS)
		e E	03:25.6	21.4S, 175.2W h about 33km
Aug. 14	LON	e Z	03:45:31	New Britain Mag. 5.8(CGS)
				4.9S, 152.3E h about 62km
	TUM	e P Z	03:45:29	
Aug. 15	SEA	e P Z	00:10:17	
Aug. 15	LON	i P Z	06:22:21.6	Near east coast Mag. 5.7
		i S E	31:21.1	of Honshu, Japan h about 59km
		e S N	31:22	37.9N, 141.6E h about 33 km
		eSSSN	38:56	
		eGZ E	39:06	
Aug. 15	SEA	i P Z	22:24.7	
		i Z	22:36.2	
		i S E	31:16.5	
		e S E	31:18	
Aug. 15	TUM	i P Z	22:21.9C	
		i Z	06:22:33.8	
Aug. 15	LON	i P Z	17:36:01.0R	Peru-Bolivia border Mag. 6 (Pas)
		i S N	45:04.7	13.8S, 69.3W h about 543k
		i S Z	45:13.9	
		i S E	45:19.9	
Aug. 15	SEA	i P ZNE	36:09.5	
		e Z NE	45:18	
Aug. 15	TUM	i P Z	36:06.7	
		i E	36:22.7	
		i N	36:23.2	
		i N	45:12.7	
		i Z	45:15.2	
		i N	45:23.2	
		i E	17:45:23.5	
Aug. 15	LON	i P Z	23:48:37.8C	Local
		i S E	23:48:41.4	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Aug. 17	SEA	i Z	00:44:51.2	
Aug. 17	LON	i P Z	11:24:43.4C	Ryukyu Is. region
		i S E	34:40	30.6N, 130.9E
		i S N	34:43	
Aug. 17	SEA	i P Z	24:41.1	
		i S E	34:37.0	
Aug. 17	TUM	i P Z	11:24:35.6C	
Aug. 17	LON	i P Z	11:41:17.7	Veracruz, Mexico
				17.7N, 94.3W
Aug. 18	LON	i P Z	00:24:55.4C	Local
		i S E	25:12.9	
Aug. 18	SEA	i P Z	24:44.3	
		i S NE	24:53.5	
Aug. 18	TUM	i P Z	24:47.0C	
		e S NE	00:25:01	
Aug. 18	LON	i P Z	18:50:11.6C	Andreanof Islands
		e S E	55:59	Aleutian Islands
		e N	58:43	50.3N, 176.9W
		e L Z	18:59.7	
		eSESE	19:00:14	
Aug. 18	SEA	e P Z	18:50:14	
Aug. 18	TUM	i P Z	18:50:08.5R	
Aug. 18	LON	i P Z	19:57:32.1	
Aug. 20	LON	e P Z	15:58:48	Off east coast of Honshu, Japan
				4.2N, 142.7E
Aug. 22	LON	e P Z	04:18:33.7R	
Aug. 22	LON	i P Z	09:28:32.8R	Off coast of Oregon
		e S Z	29:35.5	42.0N, 126.2W
		i S NE	29:35.9	
		e S NE	29.6	
	SEA	e P Z	28:41	
		i Z	28:45.2	
		i S NE	29:54.0	
		e E	31:45	
Aug. 22	TUM	i P Z	28:29.2R	
		i S N	29:30.7	
		i S E	09:29:31.2	
Aug. 22	LON	i P Z	12:49:51.0C	
		e N	50:56.7	
		e E	12:50:58.3	
Aug. 22	LON	e P Z	20:05:24	Solomon Islands
		e E	15:56	9.4S, 158.0E
		e S Z	16:17	
		e S N	16:20	
		e G N	29:49	
		e E	32:34	
		e Z	32:40	
Aug. 22	SEA	e S E	16:13	
		e S N	16:19	
		e N	34:49	
Aug. 22	TUM	e P Z	05:10	
		i Z	20:05:11.1	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Aug. 23	LON	e S E e L ZE	13:25:15 13:33.0	Off east coast of Kamchatka 52.4N, 159.6E Mag. 4.5(CGS) h about 33 km
Aug. 24	LON	i P Z	02:31:36.4R	
Aug. 24	TUM	e P Z	02:31:37.4	
Aug. 25	LON	i P Z i P Z i P Z ipPZNE ipPZNE i S E i S Z iES N	12:29:34.8C 29:35.0 29:35.0 31:36.0 31:38.0 39:00.6 39:01.0 39:01.7	Fiji Island region 17.5S, 178.8W Mag. 6.1(CGS) h about 565 km
Aug. 25	SEA	i P Z i Z i NE	29:39.6C 31:42.4 39:09.4	
Aug. 25	TUM	i P Z i Z i N e E i E e N	29:32.7C 31:34.9 31:35.8 31:36.2 38:59.3 12:38:59.8	
Aug. 26	LON	esSSZNE	02:58.5	Fiji Island region 26.3S, 178.8E Mag. 4.4(CGS) h about 546 km
Aug. 26	TUM	i P Z i S Z	06:11:26.7 06:11:28.9	Local
Aug. 26	LON	i P Z i SZNE	09:21:07.4C 21:25.3	Local
Aug. 26	SEA	i P Z i N e N e E	20:57.7C 21:09.5 21:17 21:18	
Aug. 26	TUM	i P Z	09:20:58.9C	
Aug. 27	LON	e NE	03:56:04	Near coast of southern Chile 45.9S, 75.3W Mag. 5.3(CGS) h about 33 km
Aug. 27	LON	i P Z e L NE	05:53:03.8R 54.5	Off coast of Oregon 44.1N, 129.5W Mag. 4.2(CGS) h about 33 km
	SEA	i P Z e NE	53:09.0 54	
Aug. 27	TUM	i P Z	05:52:55.7R	
Aug. 28	LON	e E	13:45.6	
Aug. 28	LON	e NE	16:16:00	
Aug. 29	LON	i P Z e N eSKSE e P SZ e SSZ ePSPSN eSSSE e E e N	09:06:59.8C 16:57 17:35 19:17 24:10 24.9 29.0 40.3 40.5	Sinkiang Province, China 39.6N, 74.2E Mag. 5.5(CGS) h about 31 km
	SEA	e P Z i Z	06:44 09:06:56.0	

Date	Sta.	Phase	Time G.C.T.	Remarks					
Aug. 29	LON	i P Z	15:41:08.4R	Off coast of Peru 7.1S, 81.6W	Mag. 6.1 (CGS) h about 23 km				
		e S N	49:51						
		e S E	49:53						
		e L N	15:59:57						
		eLZNE	16:09:51						
		e Z	17:21:30						
Aug. 29	SEA	i P Z	15:41:16.4R						
		e N	16:03.0						
		e E	03.3						
		e NE	16:08.5						
Aug. 29	LON	e P Z	21:09:24	Tonga Islands 15.5S, 172.9W	Mag. 4.9(CGS) h about 33 km				
		e E	18:14						
		e N	21:18:16						
Aug. 31	LON	e PPZ	21:41:50	Fiji Islands 21.5S, 179.2W	Mag. 4.8(CGS) h about 543 km				
Sept. 2	SEA	e P Z	13:29:02	Vancouver Is. 50.5N, 129.4W	Mag. 4.6 h about 33 km				
		e NE	50:46						
		e E	54:00						
		e N	54:24						
Sept. 4	LON	e P Z	13:29:00	Near coast of Algeria 36.1N, 5.3E	Mag. 5.2(CGS) h about 38 km				
		i P Z	05:19:18.8R						
		e S N	29.6						
		e S E	29.7						
		e E	34.0						
Sept. 4	LON	e N	05:39.8	Near east coast of Baffin Island 71.3N, 73.1W	Mag. 6.1 (CGS) h about 33 km				
		e P Z	13:38:48						
		i P Z	38:51.6R						
		i Z	39:34						
		ePP Z	39:47						
		iPP E	39:50						
		e S N	44:06						
		e S E	44:14						
		e S Z	44.3						
		e L E	46:40						
		e Z	47.6						
		i L NE	49:37.0						
		Sept. 4	SEA			e P Z	38.6		
						e NE	49.3		
TUM	38:49								
Sept. 4	LON	e Z	39:48	Baffin Is. 71.5N, 72.8W	Mag. 4.1 (CGS) h about 33 km				
		e NE	13:49:37						
		e L E	21:58.3						
		e L N	21:58.6						
Sept. 5	LON	e P Z	11:38:02	Vancouver Is. region 50.3N, 129.1W	Mag. 4.2(CGS) h about 33 km				
		e S E	39:00						
		e S Z	39:11						
		e S N	39:20						
		SEA	e S NE			11:39:16			
Sept. 5	LON	i P ZNE	14:23:22.5RSW	Local					
		i S NE	14:23:32.5						
Sept. 5	LON	i P ZNE	14:56:41.6RSW	Local					
		i S NE	14:56:52.2						

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
Sept. 5	SEA	e Z	21:58.4		
Sept. 6	LON	eScSZ	02:03.4	Near east coast of Baffin Is. 71.5N, 73.0W Mag. 4.4(CGS) h about 33 km	
	SEA	e Z	02:03:19		
Sept. 6	LON	i P Z	06:15:33.6R	Sea of Japan 36.4N, 130.6E Mag. 5.4(CGS) h about 33 km	
		e S E	25:09		
		e S N	25:11		
		e N	33.0		
Sept. 6	LON	e G E	06:35.0	Kermadec Is. region 24.0S, 179.9E Mag. 5.2(CGS) h about 500 km	
		i P Z	10:28:35.9C		
Sept. 6	LON	e P Z	16:48:22		
Sept. 6	LON	e P Z	19:24:56	Oregon-Idaho border 50.1N, 129.5W Mag. 4.4(CGS) h about 23 km	
		e Z	19:25:57.2		
Sept. 6	LON	e P ZE	20:33:14	Vancouver Is. region 50.1N, 129.5W Mag. 4.4(CGS) h about 31km	
		i PZN	33:16.3		
		SEA	e P Z		33:17
		e E	35:06		
Sept. 6	LON	e N	35:12	Fox Is., Aleutian Is. 53.9N, 165.6W Mag. 5.0(CGS) h about 33 km	
		e P Z	20:33:02		
		e P ZN	21:02:54		
Sept. 7	LON	e P Z	01:28:35	Off east coast of S. Korea 36.4N, 130.6E Mag. 5.3(CGS) h about 33 km	
		e S E	01:38:12		
Sept. 7	LON	ePS E	01:19:17	Ascension Is. region 11.7S, 13.6W Mag. 5.3(CGS) h about 33 km	
		e E	25:53		
		e L N	09:36:40		
Sept. 7	LON	e P Z	12:52:29	Kamchatka 54.0N, 160.3E Mag. 5.4 (CGS) h about 110 km	
		e S E	12:59:22		
		e Z	13:07:10		
Sept. 8	LON	e P Z	01:00.1	Kermadec Is. reg. 28.1S, 176.8W Mag. 5.3 (CGS) h about 57 km	
		e S E	10:54		
		e L N	23:47		
Sept. 8	LON	e G E	01:24:08		
Sept. 8	LON	e P Z	09:31:08		
Sept. 8	LON	e P Z	09:33:50		
		e E	09:41.6		
Sept. 8	LON	i P Z	15:53:56.2		
		i S E	54:10.5		
		SEA	i P Z		53:47.8C
		e Z	53:53		
Sept. 8	LON	e E	53:54		
		TUM	i P Z		53:44.0
		i NE	15:53:52.1		
Sept. 8	LON	i P Z	20:02:19.8C	Fiji Is. region 23.6S, 179.8E Mag. 5.7(CGS) h about 550 km	
		e S E	11:59		
		e S N	12:00		
		SEA	i P Z		02:25.0
Sept. 8	LON	e NE	02:28		
		TUM	i P Z		02:15.6C
Sept. 8	LON	e Z	20:04:20		

Date	Sta.	Phase	Time G.C.T.	Remarks		
1963					33.	
Sept. 9	LON	e P Z	02:58:43.5	New Britain 4.4S, 152.7E	Mag. 5.6(CGS) h about 34	
		i S E	03:09:14			
		e L N	23.2			
		e L E	27.7			
Sept. 9	SEA	e E	03:29.7	Local		
	LON	e P Z	17:18:41.5			
Sept. 10	LON	i S ZNE	17:18:52.4	Alaska Peninsula 53.8N, 159.9W	Mag. 5.0(CGS) h about 33 km	
		e S Z	17:10.8			
		e S E	10.9			
Sept. 10	LON	e S N	17:11.1	Tonga Is. region 19.0S, 175.8E	Mag. 5.3 (CGS) h about 33 km	
		e S E	19:37.6			
		e S N	37:43			
Sept. 10	LON	e L E	19:53.8	Central Idaho 44.3N, 114.7W	Mag. 4.9 (CGS) h about 15 km	
		i P Z	02:10:08.4R			
	e S NE	11.4				
	SEA	i P Z	10:12.5			
		e Z	12:39			
Sept. 12	LON	e N	16:23	Loyalty Is. region 22.5S, 170.7E	Mag. 4.9(CGS) h about 54 km	
		TUM	e P Z			10:05C
		i P Z	02:10:01R			
Sept. 12	LON	e L Z	03:54:00	Central Idaho 44.3N, 114.7W	Mag. 4.4(CGS) h about 15 km	
		e L E	03:54:09			
Sept. 13	LON	i P ZNE	06:25:13.3R	Chihuahua, Mexico 29.1N, 105.6W	Mag. 4.7 (CGS) h about 33 km	
		e S N	26:44			
		e S E	26:48			
		SEA	e P Z			25:28
Sept. 13	LON	e E	06:27:21	Local		
		e ZNE	00:27:46			
Sept. 13	LON	i P ZE	02:00:18.2	Local		
		i S NE	02:00:30.0			
Sept. 13	LON	i P Z	03:42:40.8	Nevada Test Site BILBY 37°03'38"N, 116°01'18"W	h = 536.4 meters	
		i S ZNE	03:42:56.4			
		e P Z	10:56:49			
Sept. 13	LON	e E	11:00.8	Kermadec Is. 31.4S, 179.0W	Mag. 4.9(CGS) h about 33 km	
		e S ZN	11:05.5			
		e P Z	17:02:37C			
		i P Z	02:37.5R			
		e E	04.7			
Sept. 14	LON	e ZN	04.8	Mariana Is. region 19.0N, 145.0E	Mag. 5.0 (CGS) h about 610 km	
		SEA	e P Z			02:56
		e E	06:26			
Sept. 14	LON	e N	17:06:33	Central Idaho 44.3N, 114.8W	Mag. 4.3 (CGS) h about 15 km	
		e SKSE	04:16.0			
Sept. 14	LON	e L E	04:34:58	Local		
		i P Z	05:55:39.5R			
Sept. 14	LON	e P Z	07:28:20R	Central Idaho 44.3N, 114.8W	Mag. 4.0 (CGS) h about 15 km	
		i P Z	15:59:26.0C			
		e S NE	16:00.9			
		e S Z	16:01.3			
		SEA	e P Z			16:00.2
Sept. 14	LON	e N	00.48	Central Idaho 44.4N, 114.7W	Mag. 4.0 (CGS) h about 15 km	
		e Z	01.51			
		e NE	02.24			
		e N	02.52			
		e P Z	16:41:05			
Sept. 14	LON	e S N	16:42:42			

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
Sept. 14	LON	e P Z	19:48:45R	Monterey County California 36.9N, 121.6W	
		i P Z	48:46.2C		
		e S E	50.9		
		e S N	51.3		
		e N	52:34		
Sept. 14	LON	e P Z	19:52:38		
Sept. 14	LON	e P Z	20:30:37	Monterey aftershock 36.9N, 121.6W	
Sept. 15	LON	i P Z	00:59:30.5R	Santa Cruz Is. 10.3S, 165.6E	
		i PPE	01:02:43		
		e E	08:42		
		e Z	01:08:44		
		SEA	e P Z		00:59:33.5R
Sept. 16	LON	i P Z	00:59:34.0R	Central Idaho 44.3N, 114.7W	
		i P Z	01:10:11		
		e N	01:10:15		
		e E	12:07:38.6		
		SEA	e P Z		08.3
Sept. 16	LON	i E	12:09:46.3	Off coast of Oregon 43.2N, 126.8W	
		i P Z	17:16:48.9C		
		i P N	16:49.6		
Sept. 17	LON	e E	35.0	Central Peru 10.6S, 78.2W	
		e Z	17:45.3		
		i P Z	06:05:35.3R		
		e S N	14.6		
		e ZN	30.5		
Sept. 17	SEA	SEA	05:42.2R	Santa Cruz Is. 10.1S, 165.3E	
		TUM	06:05:51		
		i P Z	19:32:52.6		
		e S E	43:40		
		i S E	43:42.5		
Sept. 18	LON	e L E	59:48	Turkey 40.9N, 29.2E	
		TUM	i P Z		32:50
		e E	43:25		
		e Z	19:58:30		
		SEA	e P Z		17:11:12
Sept. 20	LON	e S N	21:44	Svalbard region 76.5N, 7.9E	
		e N	:36.6		
		e E	11.3		
		TUM	i P Z		17:11:11
		SEA	e P Z		03:12:47
Sept. 20	LON	e P Z	14:53:34	Chile-Bolivia border 21.5S, 68.0W	
		i Z	14:54:07		
Sept. 20	LON	i P Z	22:23:24.7C	Peru-Bolivia border 17.8S, 68.8W	
		SEA	e P Z		23:33
		TUM	i P Z		23:37
Sept. 21	LON	i Z	22:24:16	Mag. 5.1(CGS) h about 171 km	
		i P Z	07:24:35.6C		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Sept. 22	LON	i P Z	00:51:59.4C	Central Idaho 44.3N, 114.7W
		i S E	53:37.6	
Sept. 22	SEA	e P Z	52:06	Fiji Is. 19.3S, 175.9E
		e Z	00:53.8	
Sept. 22	LON	e P Z	03:09:09.5R	Central Idaho 44.3N, 114.8W
		e S E	33:02	
Sept. 22	SEA	e P Z	06:31:25.7	Off coast of northern Calif. 41.9N, 126.7W
		e S E	06:33.6	
Sept. 22	LON	i P Z	15:59:35.3R	Fiji Island region 19.2S, 175.9E
		i P Z	19:34:38.1R	
Sept. 22	LON	e P E	20:17:25	Mag. 5.5 h about 24 km
Sept. 22	LON	i P Z	21:14:55.9C	Central Idaho 44.3N, 114.6W
		e P Z	22:37:48	
Sept. 22	LON	i P Z	22:37:49.4	Off coast of n. Calif. 42.0N, 126.5W
		e P Z	14:45:09	
Sept. 23	SEA	e Z	50.2	Riverside County, Cal. 33.6N, 117.0W
		i S E	50:12.5	
Sept. 23	LON	e S E	14:50:12.7	Mag. 4.3(CGS) h about 33 km
		i P Z	17:09:47.3R	
Sept. 23	LON	e S E	15:32	Andreanof Is., Aleutian Is.
		e S N	15:34	
Sept. 23	LON	e N	17:18:30	Mag. 5.2(CGS) h about 33 km
		e P Z	06:33:44	
Sept. 24	LON	i P Z	16:41:15.8C	Yellowstone Park, Wyo. 44.8N, 111.0W
		i P Z	41:16.0	
Sept. 24	SEA	i NE	50:21	Near coast of Peru 10.6S, 78.0W
		e NE	58:18	
Sept. 24	LON	i P Z	41:24.5	Mag. 6.0(CGS) h about 80 km
		e NE	50:30	
Sept. 24	LON	i P Z	41:18R	Northern Rhodesia 16.7S, 28.7E
		i Z	16:41:20	
Sept. 25	LON	e P'Z	07:23:16	Mag. 5.8(CGS) h about 33 km
		i P'Z	23:24.8	
Sept. 25	LON	e P Z	07:23:18	Santa Cruz Is. reg. 10.4S, 164.6E
		eSSZE	01:40:13	
Sept. 26	LON	i P Z	04:25:12.0C	Kodiak Is. region 56.5N, 153.4W
		e P Z	05:35:07	
Sept. 26	LON	iPCPZ	05:37:35.0	Andreanof Is., Aleutian Is. 50.4N, 176.9W
		ipPPZ	06:15:12.4C	
Sept. 26	LON	e Z	10:40:48	New Britain region 5.6S, 148.0E
		i ZN	10:40:51.0	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Sept. 26	LON	i P Z	13:47:27.9R	Local
		e E	47:44.6	
	TUM	i P Z	47:29.2	
		i S Z	13:47:48.1	
Sept. 28	LON	i P Z	10:05:26.9C	Off coast of Oregon Mag. 3.7
	TUM	e P Z	10:05:18	44.8N, 129.9W h about 33 km
Sept. 29	LON	e P Z	22:29:34.4C	Ionian Sea Mag. 5.3(CGS)
	TUM	e P Z	29:38C	36.1N, 18.0E h about 47 km
Sept. 29	LON	i P Z	22:29:39R	
		e N	22:51:40.9C	Guatemala Mag. 5.1(CGS)
Sept. 29	TUM	i P Z	57:53	14.4N, 91.9W h about 61 km
		e E	22:51:48.6	
Sept. 29	SEA	e E	23:07:36	
Oct. 2	LON	e P ZNE	05:59.4	Tonga Islands Mag. 5.3(CGS)
		e S NE	06:09:40	20.8S, 174.1W h about 33 km
Oct. 2	LON	i P Z	21:29:04.3	
	TUM	i P Z	21:29:05.8R	
Oct. 3	LON	e P Z	10:29:52	
Oct. 3	LON	e Z	16:07:26	
		e Z	16:25:49	
Oct. 3	LON	e P Z	23:36:28	Kyushu, Japan Mag. 5.7(CGS)
		i P Z	36:29.5	32.2N, 131.6E h about 33 km
	SEA	e P Z	23:36:21	
		e NE	23:46.3	
Oct. 4	LON	e P Z	02:59:51	Tonga Island Mag. 5.3(CGS)
				20.7S, 174.0W h about 33 km
Oct. 4	LON	i P Z	07:16:36.6R	Vancouver Is. reg. Mag. 4.4(CGS)
Oct. 4	SEA	e P Z	07 16:32	49.ON, 131.9W h about 33 km
		e NE	07:22:38	
Oct. 4	LON	e Z	19:38:54	
Oct. 4	SEA	e E	21:30.4	
Oct. 5	LON	i P Z	02:07:24.8C	Tonga Island Mag. 5.5(CGS)
	TUM	i P Z	07:23.8C	16.0S, 173.2W h about 16 km
Oct. 5	LON	e P Z	04:24:09C	Off coast of Oregon Mag. 4.2(CGS)
		i P Z	24:09.5R	43.7N, 127.1W h about 16 km
		i N	25:08.4	
		i E	25:08.6	
		i N	25:09.8	
		i P Z	04:24:03.2C	
Oct. 5	TUM	e P Z	05:27:27	
Oct. 5	LON	e Z	11:57:04	Off coast of Washington, Mag. 4.3(CGS)
	SEA	e ZNE	11:56.9	47.4N, 128.6W h about 33 km
Oct. 7	LON	e P Z	12:55:11	Central Peru Mag. 5.4(CGS)
Oct. 7	LON			12.9S, 76.8W h about 69 km
		i P Z	13:26:15.7C	Fiji Island region Mag. 5.7 (CGS)
Oct. 8	LON			23.6S, 179.9E
		e P Z	00:28:51.4	Samoa Is. region Mag. 5.7 (CGS)
		i P Z	28:52.8	15.1S, 173.2W h about 33 km
		e S N	38.5	
		eSSSN	46.7	
		e N	57:36	
	SEA	e ZNE	28.8	
		e N	29:20	
	TUM	i P Z	00:28:41.2R	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Oct. 9	LON	i P Z	17:15:04.7C	
		e ZNE	17:15:55	
Oct. 9	LON	e Z	22:43:13	
Oct. 12	LON	e P Z	11:36:55	Kurile Island
		e S E	44:49	44.8N, 149.0E
		e S N	45.0	
		e S Z	45.08	
		e N	45.3	
		ePKKPE	56.2	
	SEA	i P Z	36:51.7C	
		e NE	45.0	
	TUM	e P Z	36:49	
		e Z	11:54:38	
Oct. 13	LON	e P Z	05:27:54	Kurile Islands
		e S N	36:11	44.8N, 149.5E
	SEA	e P Z	27:51	
		e NE	31.0	
		e Z	44.6	
	TUM	i P Z	05:27:48.1R	
Oct. 13	LON	e P Z	13:08:13	
Oct. 13	LON	e P Z	16:09:41	Kurile Islands
				45.6N, 150.5E
Oct. 13	LON	e P Z	17:36:26	Kurile Islands
				44.5N, 150.8E
Oct. 13	LON	e Z	19:37:20	
Oct. 13	LON	e P Z	22:04:44	Kurile Islands
				44.7N, 152.1E
Oct. 14	LON	e P Z	04:15.9	Kurile Islands
				44.9N, 150.2E
Oct. 14	LON	e P Z	13:31:32	Kurile Islands
				44.8N, 151.0E
Oct. 15	SEA	e E	10:27.0	
Oct. 15	LON	e P Z	10:57.1	Kurile Islands
		e P N	10:57.2	44.6N, 149.0E
Oct. 15	LON	e P Z	15:16:32	Central Idaho
		e L ZE	18:07	44.3N, 144.8W
		e L N	18:08	
		e E	20.0	
		e N	20.3	
		e Z	15:25.2	
Oct. 15	SEA	e P Z	15:39.6	
Oct. 16	LON	e P Z	15:37:55	Central Idaho
		e S N	15:38:34	44.3N, 114.8W
Oct. 16	LON	e Z	15:56:19	Tadzhik SSR
	TUM	e P Z	56:17	38.6N, 73.4E
		i Z	15:56:19.5	
Oct. 16	LON	e P Z	17:02:36	Nevada Test Site
	SEA	e P Z	17:02.9	CLEARWATER
	TUM	i P Z	17:02:46.8C	37° 11'53"N, 116° 13' 46"W
Oct. 17	LON	i P Z	17:18:58.5	

Oct. 27

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Oct. 17	LON	e P Z	23:34.5	Kurile Islands Mag. 5.4(CGS)
		e S N	42.5	44.6N, 149.0E h about 45 km
		e S E	42.6	
		e Z	23:49.8	
Oct. 19	LON	e P Z	02:28:10	Kurile Islands Mag. 5.2(CGS)
		e Z	28:19	46.8N, 153.7E h about 45 km
		e S N	02:35.8	
Oct. 19	LON	e P Z	03:43:50	Kurile Islands Mag. 5.4 (CGS)
		e S N	51:31	46.6N, 153.8E h about 33 km
		e L N	03:57.5	
Oct. 20	LON	e P Z	01:03:07	Kurile Islands Mag. 6 3/4-7
		e S Z	10:51	44.7N, 150.7E (Pas)
		e S E	11:03	h about 25 km
		e S N	11:10	
	SEA	e P Z	03:08	
		e Z	03:17	
		e E	10:58	
		e N	11:11	
	TUM	e P Z	20:01	
		e Z	20:36	
		e E	01:21.6	
Oct. 20	LON	e P Z	12:02:25	Kurile Islands Mag. 5.1 (CGS)
				44.7N, 150.2E h about 45 km
Oct. 22	LON	e P ZNE	16:44:51	Local
		e S ZNE	16:44:52.4	
Oct. 22	LON	i P Z	18:42:46.3	Local
		e S NE	18:42:55.4	
Oct. 23	LON	i P Z	09:57:37.3	East of Honshu, Japan, Mag. 5.4(CGS)
				41.2N, 144.2E h about 50 km
Oct. 23	LON	i P Z	15:46:12.4R	Local
		i E	46:28.5	
		i N	15:46:32.8	
Oct. 23	TUM	e P Z	15:46:26	Local
Oct. 23	TUM	e P Z	18:42:51	Kurile Is. Mag. 4.2
				45.4N, 152.35 h about 50 km
Oct. 23	LON	e Z	20:31:34	Hawaii Island Mag. 5.0 (CGS)
				19.4N, 155.5W h about 5 km
Oct. 24	LON	e Z	07:45:18	
Oct. 24	LON	e Z NE	19:02.8	
Oct. 25	LON	e Z	20:11:28	Mariana Is. Mag. 5.4
				12.3N, 144.5E h about 29 km
Oct. 26	LON	e P Z	11:31.0	Kurile Islands Mag. 5.4 (CGS)
				44.7N, 149.7E h about 55 km
Oct. 26	LON	e P Z	17:02:02	Nevada Test Site SHOAL, h 1232.3
		e Z	17:04:57	39°12'01"N, 118°22'49"W meter
Oct. 27	LON	i P Z	08:57:04.5R	Fiji Island region Mag. 5.0(CGS)
				17.9S, 178.5W h about 586 km
Oct. 27	SEA	e E	14:59.5	
		e E	15:06.2	
Oct. 27	LON	e Z	15:11:56	
		i N	15:12:05.6	
Oct. 27	LON	i Z	16:37:00.4	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Oct. 27	LON	e P Z	18:37:21	Tonga Is. region Mag. 5.3 24.3S, 176.1W h about 33 km
Oct. 28	LON	i P Z	12:11:59.5R	Off east coast of Kamchatka Mag. 5.7 (CGS)
		e S E	18.8	
		e S N	12:19.0	52.8N, 159.8E
Oct. 28	LON	e Z NE	18:08.3	
Oct. 29	LON	e N	03:21:10	
		e ZE	03:21:11	
Oct. 29	LON	e P Z	07:03:20	Near coast of Humboldt County, Calif. Mag. 4.7(CGS)
		e E	04:52	
		e N	04.9	40.4N, 124.9W h about 33 km
	TUM	e P Z	07:03:22	
Oct. 29	LON	e Z	12:27:33.4	
Oct. 29	LON	e P Z	14:05:33.4	Off coast of Oregon Mag. 3.8 44.5N, 127.7W h about 33 km
Oct. 29	LON	e P Z	22:36:14	Tonga Is. region Mag. 4.9 24.4N, 176.1W h about 33 km
Oct. 29	LON	e P Z	22:52:00	
Oct. 30	LON	e P Z	01:28:07	Northern Pwru Mag. 5.3(CGS) 4.8S, 77.9W h about 20 km
Oct. 31	LON	e Z	03:30:07	Tonga Is. region Mag. 5.2
		e N	40:29	21.8S, 175.0W h about 33 km
		e E	40:30	
		e N	45:54	
		e E	51:59	
		e N	52:29	
	TUM	i P Z	03:30:05.5	
Oct. 31	LON	e Z	23:50.1	
Nov. 1	LON	i P Z	00:26:53.4	Local
		i Z	27:14.6	
		i S E	27:15.5	
	TUM	e P Z	26:50.5	
		i S Z	00:27:11.0	
Nov. 3	LON	e P NE	03:20:40.6	Peru-Ecuador border, Mag. 6.0(CGS)
		e S E	29:13	3.5S, 77.8W h about 33 km
		e L E	48:08	
		e L N	48:12	
	SEA	e P Z	20:48	
		e E	42.4	
	TUM	e P Z	20:45.5	
		i P Z	20:46.5	
		i Z	03:48:37.2	
Nov. 3	LON	e P NE	12:14:39.9	Local
		e S NE	12:14:50.9	
Nov. 4	SEA	e P Z	01:27.2	New Hebrides Islands, Mag. 5.8(CGS)
		i Z	35:51	15.1S, 167.3E h about 154 km
		e NE	41:56	
		e N	42:14	
	TUM	e P Z	27.2	
		ePPPZ	31:31	
		e Z	35:33	
		e N	35.8	
		e E	35.9	
		i E	41:54	
		i N	42:15	
	LON	ePPPNE	31.7	
		e ScSE	35.52	
		e S N	36:10	
		e SSN	01:41:55	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Nov. 5	LON	e Z	02:37.3	
		e E	37.6	
Nov. 5	SEA	e E	02:37.6	
Nov. 7	LON	e P Z	00:44:14	Local
Nov. 7	LON	e P Z	02:22:20	
Nov. 7	LON	e P Z	08:37:08	
Nov. 9	LON	i P PNE	21:25:51.2R	Western Brazil
		e S E	34:27	9.0S, 71.5W
		e S N	34:29	
		e S Z	34:34	
	TUM	i P Z	25:56.8	
		e E	34:35	
		e N	34:38	
		e Z	21:34:42	
Nov. 10	LON	i P Z	01:11:00.1R	Western Brazil
		i S N	19:33.4	9.2S, 71.5W
		i S E	19:34.0	
		e S Z	19:36	
	TUM	i P Z	11:06.4	
		i Z	13:08.2	
		e Z	01:19:44	
Nov. 10	SEA	i P Z	21:25:59.6	
		e E	34:43	
		e N	21:34:44	
Nov. 11	LON	e P Z	05:47:13	Off coast of Oregon, Mag. 4.1 43.9N, 128.8W h about 33 km
Nov. 11	TUM	e P Z	17:27:37	
Nov. 12	LON	e P Z	22:54:57	
Nov. 13	LON	e P Z	13:41:51	
Nov. 13	LON	e P Z	20:08:20	Gulf of Calif. Mag. 4.6 (CGS)
	SEA	e E	20:17.0	25.3N, 109.3W h about 14 km
Nov. 14	LON	e SKSE	04:59.3	New Hebrides Is. Mag. 4.8 (CGS)
		e SKSN	04:59.4	17.5S, 167.7E h about 33 km
Nov. 14	LON	e L N	09:27:31	Off coast of Chiapas, Mag.4.9(CGS)
		e L E	09:27:52	Mexico, 15.1N,93.9W, h about 33 km
Nov. 15	LON	e P Z	07:23:59	
Nov. 15	LON	e P Z	21:16:33.6	Kurile Isl. Mag. 6.0 (CGS)
		e Z	16:48	44.3N, 149.0E h about 50 km
		e S N	24:30	
		e S Z	24:32	
	SEA	e P Z	16:22	
		e E	24:18	
		e E	31:12	
	TUM	e P Z	21:16:02	
Nov. 16	LON	e P Z	02:40.2	Kurile Islands Mag. 5.0 (CGS)
				44.3N, 149.0E h about 50 km
Nov. 16	LON	e Z	06:13.1	
Nov. 16	LON	e P Z	06:59.5	Opposite coast of Chile Mag. 5.3
				41.3S, 87.5W h about 11 km

Date	Sta.	Phase	Time G.C.T.	Remarks	
1963					
Nov. 16	TUM	i P Z	22:55:54.1	Tonga Isl. 22.3S, 175.0W	Mag. 5.6 h about 33 km
Nov. 16	LON	e P Z	23:10:51.0		
		e N	18.1		
		e E	23:24.1		
Nov. 17	LON	e P Z	01:00:14	Tonga Isl. 22.2S, 175.0W	Mag. 5.3 h about 33 km
		e Z	10.2		
		e N	10.5		
Nov. 18	TUM	i P Z	01:00:19.9		
	LON	e P Z	14:42:41	Gulf of Calif. 29.9N, 113.6W	Mag. 5.7 (CGS) h about 14 km
		i P Z	42:43.5		
		e N	46.0		
		e S Z	46.2		
		e S N	46:15		
		e L N	47:18		
		e L N	47.8		
		e L Z	47:56		
	SEA	e P Z	42:54		
		e E	49:06		
		e E	49:26		
		e E	49:30		
		e Z	49:32		
		e N	49:34		
		e N	49:37		
	TUM	e P Z	42:49		
		i P Z	42:51.1		
		e NE	46:44		
		e Z	47:56		
		e E	49.0		
		e N	14:49.1		
Nov. 18	LON	e N	17:32:35		
		e E	32:39		
		e Z	17:32:41		
Nov. 18	LON	e Z	19:43.0		
	SEA	e E	19:44:08		
Nov. 18	LON	e P Z	22:04:59	Sonora, Mexico 31.9N, 113.3W	Mag. 4.9 (CGS) h about 14 km
		e L N	09:42		
		e L Z	10.0		
		e L E	10.2		
Nov. 19	SEA	e NE	22:11:13		
	LON	e P ZE	06:08:30		
		e E	08:52		
		e ZN	06:08:53		
Nov. 19	LON	e P Z	08:27:13	Gulf of Calif. 30.9N, 113.8W	Mag. 5.0 h about 14 km
		e E	30.6		
		e Z	30:38		
		e N	32:28		
		e E	32:43		
	SEA	e E	33.2		
		e N	33.3		
		e E	33:42		
		e N	08:33:58		

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Nov. 19	LON	e Z	11:02.0	
		e E	11:01.1	
Nov. 19	LON	e Z NE	19:39:19	
Nov. 20	LON	i P Z	12:12:27.9	
Nov. 20	LON	e Z	12:37:40	
Nov. 21	LON	e P Z	21:10:35.8	
Nov. 22	LON	i P Z	06:10:42.6	Local
		i S E	06:10:46.2	
Nov. 22	LON	e N	11:28:17	
		e E	28:22	
		e Z	11:28:24	
Nov. 22	LON	e P ZNE	14:42:14.5	Local
		e S Z E	14:42:16.8	
Nov. 22	LON	e P Z	14:55:50.6	Kurile Islands
		e S E	15:03:56	44.4N, 149.0E
		e S ZN	15:04:00	Mag. 5.6 (CGS) h about 33 km
Nov. 23	LON	e P Z	07:54:57	Gulf of Calif.
		i P Z	54:59.4	30.1N, 114.0W
		e S Z	58:14	Mag. 5.1 (CGS) h about 14 km
		e S E	07:58:26	
		e Z	08:00:00	
		e Z	08:00:50	
Dec. 2	SEA	e P Z	07:55:14	
		e NE	08:01:08	
		e E	01:29	
Dec. 3		e N	08:01:33	
Dec. 3	TUM	i P Z	07:55:06.0C	
		e E	07:59.1	
		e E	08:00:47	
		e N	01.3	
		e Z	01:33	
		e E	42.7	
		e N	08:43.2	
Nov. 24	LON	i P Z	11:17:12.3R	South of Honshu, Japan, Mag.5.2(CGS) 28.2N, 140.1E h about 260kr
Nov. 24	LON	e Z	22:59:11	
Nov. 25	LON	e E	10:32:22	
Nov. 25	LON	e P Z	19:30:02	
		i Z	19:30:18.5	
Nov. 26	LON	e Z	22:14:37	
		e ZN	22:14:52	
Nov. 26	LON	e Z	23:13:11	
		e E	13:13	
		e Z	28.2	
		e	23:28:33	
Nov. 27	LON	e Z	15:00.6	
		e Z	15:00:48	
Nov. 27	LON	e Z	23:27.8	
		e Z	27:55	
		e ZNE	23:30:45	
Nov. 28	LON	i P ZNE	11:14:43.2	Local
		i Z	15:00.6	
		i ZN	15:01.4	
		e E	11:15:01.6	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Nov.28	LON	e P Z	15:20.8	Near Aleutian Is. Mag. 5.4 (CGS) 52.2N, 174.2E h about 33 km
Nov. 29	LON	e P Z	15:01:14.6	Borin Is. region Mag. 5.2 23.7N, 143.2E h about 33 km
Nov. 30	LON	e Z	09:40:00	
Nov. 30	LON	e Z	10:34.3	
Nov. 30	LON	e Z	15:50:25	
Dec. 1	LON	i P Z	04:37:11.0C	Lake Baikal Region Mag. 5.3(CGS) 56.1N, 111.8E h about 33 km
Dec. 1	LON	e Z	05:36:34	
Dec. 1	Lon	e Z	08:55.6	
		e Z	56:12	
		i N	08:56:12.5	
Dec. 1	LON	e Z	09:37.6	
		i N	37:49.5	
		e Z	09:37:52	
Dec. 2	LON	e P Z	21:04:45	Svalbard Region Mag. 5.1 (CGS) 80.1N, 0.6W h about 33 km
		e S ZN	11:40	
		e S E	11:49	
	SEA	e E	18.9	
		e E	22:10	
		e N	21:22:18	
Dec. 2	LON	e P Z	23:59:19	Andreanof Is. Mag. 4.9 (CGS) Aleutian Is. h about 55 km
		e L E	00:06.7	
		e L N	00:06.8	51.5N, 174.0W
Dec. 3	LON	e P Z	07:57:35	
Dec. 3	TUM	i P Z	23:22:01.5	
Dec. 3	LON	i PPZN	21:31:30.4	Santa Crux. Is. Mag. 5.1 (CGS) 12.2S, 166.0E h about 32 km
		i Z	31:52.8	
		e S N	38.5	
		e L Z	21:55.9	
		e N	22:05.8	
		e L Z	22:07.6	
Dec. 3	LON	i P Z	23:16:10.0	Northern Chile Mag. 6.1 (CGS) 22.4S, 69.3W h about 18 km
		e L Z	23:38.8	
Dec. 4	LON	e P Z	16:12:10	Easter Is. Region Mag. 4.6 35.5S, 102.8W h about 33 km
		e E	22:38	
		e N	22:44	
		e E	28:18	
		e E	34:51	
	TUM	e Z	16:12.1	
Dec. 5	LON	e L ZE	11:56.0	Columbia Mag. 4.7 (CGS) 7.4N, 77.3W h about 33 km
Dec. 5	LON	e P Z	19:14:32	
Dec. 6	LON	e P Z	03:02:20	
Dec. 6	LON	e Z	03:58.3	
Dec. 6	TUM	e Z	08:37:41	Mono County, Calif. Mag. 4.3(CGS) 37.5N, 118.5W h about 15 km
	LON	e S N	38.5	
		e L E	08:39.2	
Dec. 6	LON	e P Z	09:18:00	
Dec. 6	LON	e P Z	14:10:42.5	
		i Z	14:10:46.2	

Date	Sta.	Phase	Time G.C.T.	Remarks
1963				
Dec. 6	LON	e P Z	17:31:16	
		i E	31:29.5	
		i N	31:31.3	
		i Z	31:34.6	
	TUM	e Z	31.8	
		e Z	17:32:29	
Dec. 7	LON	i P Z	04:19:36.3	Fiji Is. Region
	TUM	i P Z	04:19:34.5	22.1S, 179.4W
Dec. 7	LON	i P Z	07:06:01.2	Mag. 5.5 (CGS) h about 546 km
Dec. 7	LON	e Z	11:12.5	
		e N	14.6	
		e E	11:14:49	
Dec. 7	LON	i P Z	12:36:22.3	
Dec. 8	LON	e P ZNE	06:47:15.8	Local
		i S ZNE	06:47:17.5	
Dec. 9	LON	e Z	02:20.5	
Dec. 9	LON	i P Z	05:43:51.5C	Alaska Peninsula
				54. 9N, 159.4W
Dec. 9	LON	e P Z	11:05:25.5	Mag. 5.1 (CGS) h about 45 km
	TUM	i P Z	11:05:45.1	Fiji Is. Region
Dec. 9	LON	i P Z	21:49:19.0	Mag. 5.0 h about 435 km
		i S ZNE	21:49:26.5	Local
Dec. 10	LON	e P Z	15:01:48	Western Bolivia
				18.1S, 68.5W
Dec. 10	LON	e Z	23:35:53	Mag. 5.3 h about 79 km
Dec. 11	LON	e P Z	00:59:39	Tonga Is. region
	TUM	e P Z	59:39.2	Mag. 5.6 (CGS) h about 33 km
Dec. 11	LON	i P Z	02:42:44.9	Fiji Islands
	TUM	i P Z	42:43.7	Mag. 4.9 (CGS) h about 537 km
Dec. 11	LON	i Z	02:43:48.4	
		e P Z	17:15:23	Andreanof Is.
		i P Z	15:24.4	Mag. 5.3 h about 32 km
	TUM	i P Z	15:17.4	
		e Z	17:19:53	
Dec. 13	LON	i P ZNE	16:19:19.9	Local
		i S ZNE	16:19:22.1	
Dec. 14	LON	i P Z	07:56:00.0	Central Alaska
	TUM	e P Z	07:55:52	Mag. 5.1 (CGS) h about 95 km
Dec. 14	TUM	e P Z	13:47:34	Local
		i S Z	13:47:41.4	
Dec. 14	TUM	e Z	19:32:10	
Dec. 15	LON	e P Z	15:45:53	Vancouver Is. Region
		e S ZNE	49.9	Mag. 4.0 (CGS) h about 33 km
	TUM	e P Z	15:45:43.2	
		i P'Z	19:52:25.7	Java Sea
Dec. 15	LON	e SPSE	20:07:03	Mag. 6.4 (CGS) h about 650 km
		e SPSN	20:07:04	4.8S, 108.0E
	TUM	e P Z	19:52:24	
		i P Z	19:52:24.5	
	LON	e Z	20:02:41	
		i Z	20:05:25.4	
Dec. 16	LON	e P Z	02:10:23	

Date	Sta.	Phase	Time G. C. T.	Remarks	
1963					
Dec. 16	LON	i P Z	11:19:25.0	Southern Sakhalin 45.8N, 142.6E	Mag. 4.8 h about 258km
Dec. 16	LON	e P Z	14:00:58	Ionian Sea	Mag. 5.6 (CGS)
	TUM	i P Z	14:00:59.7	37.1N, 20.9E	h about 15 km
Dec. 16	SEA	e E	19:56:20		
		e E	20:07.0		
Dec. 18	LON	e P Z	00:42:42	Tonga Islands	Mag. 6.5(CGS)
		e S NE	53:02	24.8S, 176.6W	h about 46 km
	SEA	e P Z	42:47		
		e E	53.2		
		e N	53.3		
	TUM	i P Z	42:39.4		
		e E	52.58		
		e N	00:53.0		
Dec. 18	TUM	e Z	01:08:42		
		i Z	01:08:47.8		
Dec. 18	LON	e P Z	03:00:16	Kurile Isl. 45.5N, 151.3E	Mag. 5.2 h about 33 km
Dec. 18	LON	e P Z	04:49:10		
Dec. 18	LON	e P Z	06:53.0	Sinkiang Prov. China, 41.7N, 82.5E	Mag. 5.2(CGS) h about 33 km
Dec. 18	TUM	i P Z	10:07:52.6	Off Coast of Oregon	Mag. 4.2 (CGS)
	LON	i P Z	10:08:03.3	43.7N, 126.9W	h about 33 km
Dec. 18	TUM	e P Z	11:51:23	Local	
		e S Z	11:51:35.6		
Dec. 19	LON	e Z	01:35.9		
Dec. 19	LON	i P Z	17:15:02.0	Near coast of Cent. Peru, 9.7S, 79.1W	Mag. 5.1(CGS) h about 56 km
	TUM	i P Z	17:15:06.2		
Dec. 19	LON	i P Z	22:24:26.0		
Dec. 20	LON	i P Z	10:58:28.7C q	Near coast of N. Peru, 5.2S, 80.8W	Mag. 5.2(CGS) h about 55 km
Dec. 20	LON	i P Z	13:02:37.4	Hebgen Lake, Mont. 44.9N, 111.7W	Mag. 4.3 (CGS) h about 33 km
Dec. 20	LON	e P Z	16:09:22.6		
Dec. 21	LON	i P Z	12:46:40.6	Tonga Is. 21.2S, 175.8W	Mag. 5.1 h about 90 km
Dec. 22	LON	i P ZN	02:54:42.7	Okanogan Co., Wn. 10 mi. SE of Omak	Mag. 4.3 h about 25 km
		i ZN	54:45.6		
		i S ZNE	55:12.4	48.02N, 119.20W	
	SEA	e P Z	54:40		
		e S E	55:06.9		
		e S N	55:07.4		
	TUM	i P Z	02:54:48.8		
Dec. 22	LON	e Z	07:09.7		
Dec. 22	LON	i P Z	23:23:30.7	Colombia 6.9N, 73.0W	Mag. 5.2(CGS) h about 153 km
Dec. 23	LON	e P Z	00:16:24	Central Idaho 44.3N, 114.7W	Mag. 5.1 (CGS) h about 33 km
Dec. 23	LON	e Z	04:11:09		
Dec. 23	LON	i P Z	09:06:04.7R		

Date	Sta.	Phase	Time G.C.T.	Remarks	46.
1963					
Dec. 26	LON	e P Z	08:07:51.3	Svalbard Region 76.5N, 22.4E	Mag. 5.1(CGS) h about 33 km
Dec. 26	LON	e E	09:11		
		e N	12		
		e Z	09:13		
Dec. 26	LON	e P Z	13:57:42.5		
		i S ZNE	13:58:05.0		
Dec. 26	LON	e P Z	14:00:01		
		i S ZNE	14:00:18		
Dec. 27	LON	i P ZNE	02:36:58.0	Northwest Oregon 45.7N, 123.4W	Mag. 4.5(CGS) h about 33 km
		e Z	37:04		
		i NE	37:07.0		
		i S N	37:11.5		
		i S E	37:12.0		
		i Z	37:19.0		
	SEA	e P ZN	36:58		
		e N	37:01		
		e E	37:02		
		e E	37:31		
		e NE	37:32		
		e N	37:38		
		e Z	37:40		
	TUM	e P ZNE	36:42.4		
		e S NE	02:37:04		
Dec. 27	LON	e P Z	03:18:01		
		e S ZNE	03:18:22.0		
Dec. 28	LON	e N	06:21.5		
			06:25.6		
Dec. 28	LON	i P Z	09:17:10.0	Kermadec Isl. 32.7S, 178.9W	Mag. 5.8 (CGS) h about 33 km
	TUM	i P Z	09:17:08.6		
Dec. 29	LON	i P Z	09:36:22.1		
Dec. 29	TUM	e P Z	17:27:43	Northern Chile 18.5S, 69.7W	Mag. 5.5 h about 113km
		i P Z	17:27:43.7		
Dec. 29	TUM	i P Z	21:27:13.8		
Dec. 30	LON	i P Z	01:27:06.5	Mariana Isl. Region 21.6N, 144.5E	mag.5.2(CGS) h about 120km
	TUM	e P Z	01:27:02.4		
Dec. 30	LON	i P Z	15:39:13.5R		
		e NE	47:08		
		e Z	47.2		
		e N	54.2		
		e ZE	15:56.6		
Dec. 31	LON	i P Z	16:56:40.2R		
		e Z	16:58:56		
		e NE	17:00:04.5		
		e E	17:59.0		
Dec. 31	TUM	e P Z	17:56:45		
Dec. 31	LON	i P Z	19:28:53.7C	Tonga Is. 17.4S, 174.2W	Mag. 5.4(CGS) h about 80 km
	TUM	e P Z	19:28:54		