

ISRC.  
Lead 257876

# BERMUDA-COLUMBIA UNIVERSITY SEISMOGRAPH STATION

SIGNAL HILL  
ST. GEORGES, BERMUDA

## SEISMOLOGICAL BULLETIN

By  
G. PIMENTEL

1 APRIL 1962 - 31 MARCH 1963

The research reported in this document was made possible through support and sponsorship by the U.S. Navy, under Office of Naval Research Contract Nonr 26665. It is published for technical information only and does not represent recommendations or conclusions of the sponsoring agency. Reproduction in whole or in part is permitted for any purpose of the United States Government.

LAMONT GEOLOGICAL OBSERVATORY  
(COLUMBIA UNIVERSITY)

Contribution No. 989

## S &amp; ABBREVIATIONS

Latitude: 32° 22' 46" N  
 Longitude: 64° 40' 52" W  
 Elevation: 41 meters  
 Bedrock: Calcareous Aeolionite

## INSTRUMENTS:

Two Milne-Shaw Horizontal Seismographs (N.E., N.W.)  
 To = 12 Sec., V = 250

One Columbia University Microbarograph  
 To = 10 Sec., Tg = 75 Sec.

World Wide Standard Seismograph System

Three Component Sprengnether Long Period Seismographs  
 To = 30 Sec., Tg = 100 Sec., Mag. 1,500

Three Component Benioff Short Period Seismographs  
 To = 1 Sec., Tg = .75 Sec., Mag. 12,500

Epicentral Data from U.S.C. & G.S. Preliminary  
 Determinations.

## ABBREVIATIONS:

i = sudden beginning of the motion: (Impetus)

e = gradual beginning of the motion: (Emersia)

Comp. = Compression

Dil. = Dilation

All times are G.C.T.

The Bermuda-Columbia University Seismograph Station, formerly known as the Bermuda Seismograph Station, was initially sponsored by the Bermuda Government, the U.S. Coast and Geodetic Survey, the International Union of Geodesy and Geophysics and the Royal Society of London. Since 1951 new instruments have been added under the joint sponsorship of the Bermuda Government and Columbia. In February 1962 the station became a part of the World Wide Standard Seismograph Network at which time the World Wide Standard Seismograph System was installed. It is requested that exchange bulletins and papers be mailed directly to Bermuda.

## Bermuda

1

1962

Date	Phase	h	m	s	Date	Phase	h	m	s
Apr 1	e (PKP)	12	30	20	Apr 7	Continued			
	e (PKS)		33	34		e T		24	42
	e (PS)		43	00		e Tmax		25	19
	e (PPS)		46	00		P & S Phases are high frequency signals.			
	e (SS)		52	04		O = 23.04.12.2			
	Interpretation poor.					O = 15.0N. 60.5W.			
	O = 12.11.09.2					h. about 77km.			
	4.2S. 143.6E.					Windward Islands.			
	h. about 80km.					Dist. 16° - 17° Bda.			
	Near North coast of New Guinea.								
	Felt.								
	Dist. approx 141° Bda.								
1	e LR	13	19	00	8	e S	22	03	10
						e (LQ)		06	00
						e LR		12	00
	O = 21.50.28.9					O = 15.6N. 99.6W.			
	h. about 48km.					Off coast of Mexico.			
	Dist. approx 36° Bda.								
3	e	16	58	10	10	i P	04	46	27
	e (SS)	17	04	34		i (PcP)		47	17
	e (LQ)		21	00		e S		54	38
	e LR		30	00		e		55	22
	Interpretation fair to poor.					e (SS)		58	44
	O = 16.24.55.6					e (SSS)	05	01	40
	10.6S. 164.9E.					e (LR)		05	00
	h. about 36km.					O = 04.36.27.5			
	Santa Cruz Island Region.					28.6S. 68.8W.			
	Mag: 5½ (Pal)					h. about 130km.			
	Dist. approx 130° Bda.					Chile-Argentina Border.			
	Dist. approx 62° - 63°								
3	i	19	14	16	10	i P	21	48	05
						i S		57	00
						e LQ	22	04	00
						e LR		08	00
	O = 14.02.32.2					O = 21.37.12.6			
	8.ON. 83.0W.					37.9N. 20.1E.			
	h. about 23km.					h. about 35km.			
	Near south coast of Panama					Ionian Sea.			
	and Costa Rica.					Mag: 5 - 5½ (Pal)			
	Dist. approx 30° Bda.					Dist. approx 67° Bda.			
6	e S	17	11	38	11	e LR	11	18	00
	e SS		16	30		O = 10.47.34.0			
	e LQ		22	20		38.2N. 20.0E.			
	e LR		26	00		h. about 43km.			
	O = 16.50.14.2					Ionian Sea.			
	26.7S. 113.2W.					Dist. approx 67° Bda.			
	h. about 33km.								
	Easter Island Region.								
	Dist. approx 76° Bda.								
7	e	06	49	40	11	e LR	23	41	00
	e		54	32		O = 23.21.26.3			
	e LR	07	21	00		O.2S. 91.5W.			
	O = 06.21.38.4					h. about 25km.			
	10.ON. 144.4E.					Galapagos Islands.			
	h. about 50km.					Dist. approx 52° Bda.			
	Mag: 6 (Pas)								
	Caroline Island Region.								
	Dist. approx 129° Bda.								
7	i P	23	08	10	12	e P	01	06	48
	i S		11	07		e PP		11	10
	e (LQ)		12	00		i S		18	40
	e LR		12	30		e LR		42	00
	e T		22	32		O = 00.52.47.0			
	e Tmax		22	56		38.2N. 142.3E.			
	h. about 68km.								

1962

Date	Phase	n	m	s	Date	Phase	h	m	s
Apr 12	Continued				Apr 19	Continued			
	Near east coast of Honshu, Japan.					h. about 25km.			
	Dist. approx 105° Bda.					Off east coast of Peru.			
						Dist. approx 44° Bda.			
15	e (S)	18	27	10	19	i P	23	27	56.5
	e (L)		35	00		e PP		30	48
	e (LR)		38	00		e (S)		37	40
	0 = 18.08.27.3					e (PPS)		38	12
	2.7S. 11.6W.					e SS		42	00
	h. about 2km.					e SSS		46	00
	Ascension Island Region.					e LR		51	00
	Dist. approx 62.5° Bda.					0 = 23.16.04.1			
15	e (P)	18	55	34		69.8N. 138.6E.			
	e (S)	19	03	56		h. about 0km.			
	e L		12	00		Siberia USSR			
	e LR		35	00		Dist. approx 77° Bda.			
	0 = 18.45.17.4				20	e P	05	51	04
	2.9S. 11.9W.					i P		51	07
	h. about 25km.					i PP		51	18
	Ascension Island Region.					i S		53	25
	Dist. approx 62.5° Bda.					e LR		55	00
15	e (LR)	23	19	00		e T	06	18	30
	Probably Sandwich Islands.					e Tmax		22	13
16	e (L)	13	37	00		0 = 05.47.55.3			
16	e (T)	21	14	04		20.6N. 72.2W.			
	e (T)	16	21			h. about 25km.			
17	e (P)	22	44	50		Near North Coast of Haiti.			
	i S		52	53		Minor damage at Port-au-Prince.			
	e (SS)		56	40		Felt, San Juan, Puerto Rico.			
	e LR	23	00	30		Mag: 6½ - 6¾ (Pas) 6¾ - 7 (Brk)			
	0 = 22.34.56.7					6 (Pal)			
	1.5S. 14.9W.					Dist. approx 13° Bda.			
	h. about 25km.				22	i P	04	51	30.5
	Mid Atlantic Ocean.					e (PP)		52	11
	Dist. approx 58° Bda.					e (PcP)		53	30
18	i P	19	22	45.5		e S		56	41
	e (pP)		22	52		e LQ		58	10
	i PP		24	28		e LR		59	00
	i S		29	14		0 = 04.45.20.3			
	i (SS)		29	52		15.5N. 93.1W.			
	i SS		32	36		h. about 69km.			
	e LQ		34	00		Mag: 5¼ - 5½ (Pal)			
	e LR		36	00		Near coast of Chiapas, Mexico.			
	0 = 19.14.37.2					Dist. approx 30° Bda.			
	10.0S. 79.0W.				23	e (S)	05	15	11
	h. about 39km.					e LR		19	00
	Mag: 6¾ (Pas)					e T		33	20
	Off coast of Peru.					e Tmax		34	01
	Felt, Casma, Peru.				23	i P	06	12	01
	Dist. approx 44° Bda.					i PP		16	02
19	e LR	02	36	00		e SKS		22	30
	Off coast of Peru.					i PS		25	00
19	e (S)	20	33	08		e LQ		40	00
	e (LR)		36	30		e LR		46	00
	0 = 20.18.20.5					0 = 05.58.04.9			
	9.4S. 79.0W.					42.9N. 143.4E.			
						h. about 25km.			
						Mag: 7 - 7½ (Pas) 7 (Pal)			
						Hokkaido, Japan.			
						Dist. approx 100° Bda.			

Bermuda

3

1962

Date	Phase	h	m	s	Date	Phase	h	m	s
Apr 24	i P	16	13	09	Apr 30	Continued			
	e S		18	31		0 = 02.26.30.0			
	e (PcS)		19	34		38.8N. 140.9E.			
	e L		21	30		h. about 104km.			
	0 = 16.06.23.7					Honshu, Japan.			
	2.2S. 76.1W.					Dist. approx 104° - 105° Bda.			
	h. about 175km.				May 1	e LR	00	14	00
	Ecuador - Peru border.					0 = 23.50.33.5			
	Dist. approx 37° Bda.					72.ON. 7.2E.			
25	e T	13	12	34		h. about 25km.			
	e Tmax		12	40		Svalbard Region,			
						Dist. approx 54° Bda.			
25	e (SKS)	16	13	24	3	e (P)	03	48	10
	e (SS)		20	40		e (PP)		52	12
	e (SSS)		25	00		e (PPP)		54	48
	e		30	30		e (PS)	04	00	50
	e (LR)		36	30		e (SS)		06	00
	0 = 15.47.29.4					e		11	30
	38.4N. 142.5E.					e (IQ)		16	00
	h. about 56km.					e LR		18	00
	Honshu, Japan.					0 = 03.34.49.0			
	Dist. approx 104° Bda.					60.OS. 32.9W.			
25	e (LR)	20	51	30		h. about 20km.			
	Honshu, Japan.					Sandwich Islands Region.			
26	e LR	23	09	30		Mag: 5½ - 6 (Pal)			
						Dist. 95° Bda.			
27	i P	06	59	18	4	e (P)	23	15	00
	e PP	07	02	12		e (PP)		16	12
	i S		09	15		e (S)		20	48
	e L		24	00		e L		25	00
	0 = 06.47.27.0					0 = 23.08.05.3			
	44.4S. 74.8W.					0.9S. 80.8W.			
	h. about 31km.					h. about 74km.			
	Southern Chile					Near coast of Ecuador.			
	Dist. approx 77° Bda.					Dist. approx 37° Bda.			
28	e T	06	48	12	5	e (LR)	12	04	00
						Near south coast of			
						Honshu, Japan.			
28	i P	11	30	24	6	e	04	01	32
	e S		40	00		e		03	38
	e SS		44	35		e LR		23	00
	e (SSS)		48	00		0 = 03.33.47.0			
	e LR		52	00		54.2S. 136.5W.			
	0 = 11.18.57.4					h. about 25km.			
	36.4N. 26.6E.					South Pacific Ocean, about 2,300			
	h. about 40km.					miles southeast of New Zealand.			
	Dodecanese Islands.					Dist. approx 105° Bda.			
	Dist. approx 73° Bda.								
28	e (P)	12	55	08					
	e (L)	13	29	00	6	i P	19	13	35
	0 = 12.43.49.1					e		15	35
	36.3N. 26.7E.					i PP		17	33
	h. about 48km.					e SKS		24	00
	Dodecanese Islands.					e S		24	50
	Dist. approx 73° Bda.					e (SS)		30	00
						e (SSS)		36	00
30	e (P)	02	40	32		e		39	00
	e (PP)		44	48		e LR		40	30
	e (PS)		54	00		0 = 19.00.10.2			
	e (SS)	03	00	00		60.OS. 32.8W.			
	e (LR)		15	00					



					1962			
Date	Phase	n	m	s	Phase	h	m	s
Jun 2	Continued O = 12.26.09.6 49.9N. 129.8W. h. about 25km. Vancouver Island Region. Mag: 5 $\frac{1}{2}$ (Pal) Dist. approx 49° Bda.				Jun 7 e (LR) Gulf of California.	00	43	00
2	e LR Kyushu, Japan.	18	13	00	7 e LR e T e Tmax Atlantic Ocean.	15	06	00
3	e (S) e LR e T e Tmax e T Atlantic Ocean.	10	23	40	8 i e T e Tmax Atlantic Ocean.	20	37	36
3	i P Comp. from the S.E. e S e (S) e (IQ) e LR e T e T e Tmax O = 15.02.25 22.4N. 45.2W. h. about 25km. North Atlantic Ocean. Dist. approx 19° Bda.	15	07	00	9 i P e S e LR O = 19.57.35.5 13.6N. 91.2W. h. about 104km. Off coast of Guatemala. Dist. approx 31° Bda.	20	03	40
3	e T e T e Tmax Atlantic Ocean.	15	41	53	11 e L 11 e (T) e (T) 11 e S e (IQ) e LR O = 07.15.37.6 43.5N. 18.3E. h. about 21km. Yugoslavia. 10 injured, extensive damage at Sarajevo, felt along Adriatic Coast to Trieste. Mag: 5 - 5 $\frac{1}{2}$ (Pal) Dist. approx 63° Bda.	01	20	00
3	i e IQ e T e Tmax Atlantic Ocean.	17	37	48	14 i P e S e SS e IQ e LR O = 07.51.51.0 54.3N. 169.1E. h. about 34km. Near Islands, Aleutian Islands. Mag: 6 - 6 $\frac{1}{2}$ (Pas) 5 $\frac{1}{2}$ (Brk) Dist. approx 83° Bda.	08	04	15
4	e T e Tmax Atlantic Ocean.	00	23	25	14 i P e (SS) O = 07.55.48.9 54.2N. 169.3E. h. about 56km. Near Islands, Aleutian Islands. Mag: 6 (Pas) Dist. approx 83° Bda.	08	08	14
5	e T e Tmax Atlantic Ocean.	12	30	26	14 i P i S e T e Tmax O = 08.30.53.2 19.4N. 65.0W.	08	33	49
5	e LR	13	20	00		35	55	
6	e T e Tmax Atlantic Ocean.	05	41	25		47	00	
6	e (IQ) e T e Tmax Atlantic Ocean.	07	30	00		48	22	
6	e e LR California.	18	09	10				

					1962				
					7				
Date	Phase	h	m	s	Date	Phase	h	m	s
Bermuda Jun 14	Continued h. about 64km. Puerto Rico Region. Dist. approx 13° Bda.				Jun 23	Continued e PS e PPS e SS e SSS e IQ e LR O = 09.44.37.7 25.7N. 128.5E. h. about 36km. Mag: 5 $\frac{1}{2}$ (Brk) Ryukyu Islands. Dist. approx 121° Bda.			
14	e L e LR	23	10	00	24 e LR		02	20	00
15	i P e PP e S e ScS e (LR) O = 06.30.37.0 20.4S. 70.9W. h. about 60km. Mag: 5 (Pal) Near coast of northern Chile. Dist. approx 54° Bda.	06	39	50	25 e		03	22	00
17	e LR	05	25	00	25 e P e PP e S e LR O = 06.26.49.6 37.3S. 73.5W. h. about 40km. Near coast of Chile. Dist. approx 70° Bda.	06	37	59	
17	e e LR	11	05	10		07	00	00	
17	e LR	14	23	00					
19	i PKP i PKS e e (IQ) e LR O = 23.42.31.3 4.8S. 151.8E. h. about 47km. Mag: 6 $\frac{1}{2}$ (Pas) New Britain Region. Dist. approx 136° Bda.	00	01	48	25 e PKP e PP e PKS e PPP e SKS e SKKS e ScSP e PS e PPS e SS e SSS e LR O = 11.10.23.3 24.3N. 122.6E. h. about 33km. Off coast of Formosa. Mag: 5 $\frac{1}{2}$ (Pas) 5 $\frac{1}{2}$ (Brk) Dist. approx 123° Bda.	11	29	20	
19	e LR	04	41	00		12	12	00	
20	e S e LR O = 19.26.01.8 45.6N. 128.9W. h. about 25km. Off coast of northern California. Dist. approx 49° Bda.	19	42	25	25 i P e S e (IQ) e LR O = 18.58.35.6 14.5N. 82.4W. h. about 25km. Mag: 4 $\frac{1}{2}$ - 4 $\frac{3}{4}$ (Pal) Off east coast of Nicaragua. Dist. approx 24° Bda.	19	03	50	
20	e LR	23	12	00		08	05		
21	i P e S e IQ e LR O = 04.43.43.3 5.7N. 82.6W. h. about 23km. Mag: 6 $\frac{1}{2}$ (Pas) 6 $\frac{1}{2}$ (Brk) South of Panama. Dist. approx 31° Bda.	04	50	08	27 e LR		04	38	00
23	e PP e SKS e SKKS	10	04	54	27 e e L e (LR)	14	53	30	
		10	30			15	01	00	
		12	00			16	01	00	
					28 e P	04	39	28	

		1962		
Date	Phase	h	m	s
Jun 28	Continued			
	e S		49	32
	e LQ	05	00	00
	e LR		05	00
	O = 04.27.18.4 20.ON. 155.6W. h. about 25km. Mag: 5 $\frac{1}{2}$ (Brk) 5 $\frac{1}{2}$ - 5 $\frac{1}{2}$ (Pal) Hawaii Islands. Slight damage on Hawaii. Dist. approx 80° Bda.			
28	i PKP	19	10	06
	e LR		58	00
	O = 18.50.27.5 0.2S. 124.3E. h. about 58km. Northern Celebes, Dist. approx 146° Bda.			
29	i P	16	38	28
	e S		46	28
	e L		51	00
	e LR		57	00
	O = 16.28.04.4 62.3N. 152.4W. h. about 39km. Mag: 4 $\frac{3}{4}$ - 5 (Pal) Dist. approx 60° Bda.			
29	e (L)	22	07	00
29	e	22	44	30
	e LR		52	00
30	e (PP)	19	51	29
	e (PPS)	20	03	00
	e (L)		33	00
	e LR		38	00
	O = 19.29.51.0 16.5N. 122.0E. h. about 40km. Near coast of Luzon, Philippine Islands. Dist. approx 130° Bda.			
30	e T	21	42	45
	e Tmax		42	56
30	e	23	36	00
	e LR		39	30
Jly 1	e LR	04	10	00
1	e LR	22	12	00
2	e (PP)	08	53	44
	e (PKS)		54	32
	e (PPS)	09	05	30
	e		12	10
	e LR		31	00
	Interpretation poor. O = 08.32.37.9 10.3S. 165.9E. h. about 50km.			
Jly 2	Continued			
	Mag: 6 $\frac{1}{4}$ (Brk) Santa Cruz Islands. Dist. approx 128° Bda.			
3	e		18	43
	e		48	10
	e		55	00
	e LR	19	05	00
3	e T		22	17
	e Tmax		18	05
4	e LR		08	11
	e LR		57	00
	e LR		09	06
	e LR		16	00
6	e LR		03	11
6	e P		09	27
	e S		36	08
	e LR		47	00
	O = 09.16.15.0 38.ON. 20.2E. h. about 30km. Mag: 5 (Pal) Ionian Sea. Dist. approx 67° Bda.			
6	i P		23	18
	i pP		20	10
	i PP		23	00
	i		24	10
	i SKS		29	10
	e S		30	00
	e		30	55
	e PS		31	40
	e PPS		33	00
	e SS		37	00
	e		38	00
	e		42	00
	e		44	00
	e		45	00
	e LR		52	00
	Interpretation fair O = 23.05.32.2 36.6N. 70.4E. h. about 203km. Hindu Kush. Felt. Afghanistan, Pakistan, Tadzhik U.S.S.R. Minor damage. Dist. approx 99° Bda.			
7	e P		06	24
	e S		34	50
	e SS		40	10
	e (SSS)		45	00
	e LQ		48	00
	e LR		51	00
	O = 06.12.48.9 51.3N. 178.6E. h. about 60km. Rat Islands, Aleutian Islands. Dist. approx 80° Bda.			

		9		
Date	Phase	h	m	s
Bermuda				
Jly 8	e L	04	01	00
	e LR		05	00
8	e LR		07	46
8	e T		08	23
	e Tmax		24	05
8	e LR		13	20
12	e P		23	00
	e PP		02	15
	e S		07	40
	e LR		15	00
	O = 22.50.58.8 3.9S. 104.1W. h. about 25km. South Pacific Ocean. Dist. approx 52° Bda.			
13	e (PKP)		03	51
	e		54	50
	O = 03.32.12.6 10.2N. 121.7E. h. about 157km. Panay, Philippines. Felt. Dipolog, Roxas City, Iloilo, Cuyo, Palawan. Dist. approx 138° Bda.			
13	e LR		04	41
13	e LR		16	59
14	e P		19	52
	e PP		54	20
	e S		59	24
	e SS	20	03	00
	e LR		07	00
	O = 19.43.52.6 40.3N. 124.4W. h. about 25km. Northern California. Dist. approx 47° Bda.			
16	e		02	49
	e		54	20
16	e LR		03	16
16	e P		04	57
	e (PP)		59	28
	e S	05	04	10
	e (SS)		07	30
	e LR		11	00
	O = 04.49.21.5 11.2S. 79.8W. h. about 75km. Near coast of Peru. Dist. approx 47° Bda.			
16	i P		13	04
	e PcS		09	30
	e S		13	00
	e LR		23	00
Jly 16	Continued			
	O = 12.54.40.6 62.3N. 153.1W. h. about 39km. Alaska. Dist. approx 60° Bda.			
17	e		04	20
	e LR		27	00
17	i P		05	44
	e PP		47	40
	e SKS		54	40
	e LR	06	22	00
	O = 05.32.08.8 43.OS. 74.9W. h. about 26km. Near coast of Chile. Dist. approx 76° Bda.			
17	e LR		09	56
17	e		17	38
	e		47	00
	e LR		18	08
	O = 17.20.22.9 43.1N. 144.5E. h. about 30km. Hokkaido, Japan. Dist. approx 100° Bda.			
18	i P		10	21
	i S		24	00
	e LQ		24	30
	Atlantic Ocean. Dist. approx 15° Bda.			
19	Shot		06	12
	"		07	09
	"		08	10
	"		09	11
20	Shot		06	12
	"		07	12
22	e		00	43
	e		44	30
	e LR		49	00
22	e LR		01	26
23	e P		01	18
	e S		24	00
	e LR		27	00
	O = 01.12.52.6 10.7N. 86.5W. h. about 44km. Off coast of Costa Rica. Dist. approx 31° Bda.			
23	i P		22	15
	i S		17	10
	e LR		17	30
	e T		28	37
	e Tmax		29	35
	O = 22.11.54.6			



1962

Date	Phase	h	m	s
Aug 13	Continued			
	i S	48	08	
	e (LQ)	50	10	
	e LR	52	00	
	O = 06.35.56.0			
	2.1N. 83.5W.			
	h. about 33km.			
	About 300 miles N.W. of Ecuador.			
	Mag: $6\frac{1}{4}$ - $6\frac{1}{2}$ (Pas) 5.4 (Brk)			
	$5\frac{1}{2}$ - $5\frac{3}{4}$ (Pal)			
	Dist. approx 35° Bda.			
13	e LR	10	24	00
14	e PP	01	33	20
	e (PcPPKP)	39	20	
	e SS	52	00	
	e SSS	56	00	
	e (L)	02	10	00
	e LR	16	00	
	O = 01.10.50.5			
	49.9S. 163.0E.			
	h. about 43km.			
	About 300 miles north of Macquarie Islands.			
	Dist. approx 140° Bda.			
17	e	05	24	08
	e	27	32	
	e	28	26	
	e	50	00	
	e (L)	06	01	00
	e LR	09	00	
	O = 05.04.31.5			
	10.6N. 121.6E.			
	h. about 33km.			
	Panay, Philippine Islands.			
	Mag: $5\frac{1}{4}$ - $5\frac{1}{2}$			
	Dist. approx 136° Bda.			
18	e	07	12	06
	e LR	15	30	
18	i P	16	54	04
	e S	17	02	18
	e SS	06	18	
	e SSS	09	00	
	e LR	12	00	
	O = 16.43.54.3			
	62.3N. 152.5W.			
	h. about 32km.			
	Central Alaska.			
	Mag: $5\frac{1}{4}$ - $5\frac{1}{2}$			
	Dist. approx 61° Bda.			
18	i P	17	56	25
	e S	18	04	40
	e SS	08	20	
	e SSS	11	14	
	e LR	14	00	
	O = 17.46.14.9			
	62.3N. 152.5W.			
	h. about 32km.			
	Central Alaska.			
	Mag: 6 - $6\frac{1}{4}$ (Pas) $5\frac{1}{4}$ - $5\frac{1}{2}$ (Pal)			
Aug 18	Continued			
	Dist. approx 61° Bda.			
19	e P	18	40	18
	e PP	44	16	
	e SKS	50	44	
	e PS	52	56	
	e LQ	19	07	00
	e LR	12	30	
	O = 18.26.38.6			
	44.6N. 81.7E.			
	h. about 33km.			
	N.W. Sinkiang Province.			
	Mag: $5\frac{3}{4}$ - 6			
	Dist. approx 98° Bda.			
19	i P	23	22	48
	e (PPP)	26	42	
	i S	30	50	
	e LR	37	00	
	O = 23.12.50.4			
	26.6S. 69.8W.			
	h. about 51km.			
	Near coast of Northern Chile.			
	Dist. approx 59° Bda.			
20	e (S)	02	48	06
	e LR	52	00	
	e T	03	08	30
	e Tmax	09	14	
20	e	09	34	40
	e LR	38	30	
	O = 09.02.14.5			
	74.4N. 51.2E.			
	h. about 0km.			
	Novaya Zemlya.			
	Dist. approx 65° Bda.			
20	e LR	11	03	00
21	i P	18	19	25
	O = 18.09.06.8			
	41.5N. 15.4E.			
	h. about 36km.			
	Italy.			
	Dist. approx 63° Bda.			
21	e P	18	29	54
	e LQ	45	00	
	e LR	49	00	
	O = 18.19.33.3			
	41.4N. 15.4E.			
	h. about 34km.			
	Italy. About 15 dead, 200 injured			
	Major property damage at Naples.			
	Dist. approx 63° Bda.			
21	i P	21	21	38
	i S	31	22	
	i SS	36	30	
	e SSS	39	40	
	e LQ	41	40	
	e LR	44	00	
	O = 21.09.50.3			

Bermuda				13					
Date	Phase	h	m	s	Date	Phase	h	m	s
Aug 21	Continued				Aug 26	Continued			
	29.6S. 111.9W.					O = 06.48.57.1			
	h. about 33km.					34.ON. 139.2E.			
	Easter Island Region.					h. about 38km.			
	Mag: $5\frac{3}{4}$ - 6					East coast of Honshu, Japan.			
	Dist. approx 77° Bda.					Mag: $5\frac{1}{4}$			
	Dist. approx 110° Bda.					Dist. approx 110° Bda.			
22	e LR	05	34	00	26	e (PKP)	23	50	16
22	e LR	06	39	00		e (PP)	53	28	
22	e LR	09	33	00		e (PS)	00	03	25
22	e LR	15	07	00		e LR	37	00	
23	i P	19	37	49		Interpretation fair.			
	e PP	39	38			O = 23.30.38.0			
	e S	44	38			3.7S. 140.1E.			
	e SS	48	00			h. about 50km.			
	e LR	51	00			New Guinea.			
	O = 19.29.16.0					Dist. approx 142° Bda.			
	41.8N. 124.1W.					Dist. approx 142° Bda.			
	h. about 33km.					Dist. approx 142° Bda.			
	Del Norte, California.					Dist. approx 142° Bda.			
	Mag: $5\frac{1}{2}$ - $5\frac{3}{4}$					Dist. approx 142° Bda.			
	Dist. approx 47° Bda.					Dist. approx 142° Bda.			
24	e (LQ)	02	58	30	27	e LR	09	33	00
	e T	03	21	25		O = 09.00.50.9			
	e Tmax	21	55			74.7N. 50.3E.			
	e T	35	25			h. about 0km.			
24	e (PP)	09	23	50		Novaya Zemlya.			
	e (SKS)	29	35			Dist. approx 65° Bda.			
	e	31	40			Dist. approx 65° Bda.			
	e (PS)	33	20			Dist. approx 65° Bda.			
	e (SS)	39	20			Dist. approx 65° Bda.			
	e (SSS)	43	40			Dist. approx 65° Bda.			
	e LR	56	00			Dist. approx 65° Bda.			
	Interpretation fair.					Dist. approx 65° Bda.			
	O = 09.04.22.9					Dist. approx 65° Bda.			
	15.0S. 173.3W.					Dist. approx 65° Bda.			
	h. about 33km.					Dist. approx 65° Bda.			
	Samoa Islands Region.					Dist. approx 65° Bda.			
	Felt. Apia.					Dist. approx 65° Bda.			
	Mag: $5\frac{1}{4}$ - $5\frac{1}{2}$ (Pal)					Dist. approx 65° Bda.			
	Dist. approx 113° Bda.					Dist. approx 65° Bda.			
25	e	08	51	08	28	i P	11	10	55
	e	53	08			Comp from N.E. 6.8 Sec. 5 U.			
	e	55	43			i PcP	11	32	
	e	57	10			e PP	13	48	
	e	59	40			i S	19	57	
	e	09	02	08		i ScS	20	42	
	e	07	00			e SS	24	00	
	e	10	00			e SSS	27	30	
	O = 08.31.48.7					e LQ	28	00	
	20.5S. 178.5W.					e LR	32	00	
	h. about 561km.					O = 10.59.58.5			
	Fiji Islands.					38.ON. 23.1E.			
	Dist. approx 120° Bda.					h. about 120km.			
26	e (PS)	07	17	32		Greece.			
	e (SS)	24	00			1 killed, 11 injured and moderate			
	e LR	40	00			property damage.			
	O = 08.31.48.7					Felt. Southern Italy, Sicily,			
	20.5S. 178.5W.					Crete, Malta, Southern Yugoslavia.			
	h. about 561km.					Mag: $6\frac{1}{4}$ (Pas)			
	Fiji Islands.					Dist. approx 69° Bda.			
	Dist. approx 120° Bda.					Dist. approx 69° Bda.			
26	e LR	23	28	00	29	e LR	23	28	00
	O = 10.59.58.5					O = 10.59.58.5			
	38.ON. 23.1E.					38.ON. 23.1E.			
	h. about 120km.					h. about 120km.			
	Greece.					Greece.			
	1 killed, 11 injured and moderate					1 killed, 11 injured and moderate			
	property damage.					property damage.			
	Felt. Southern Italy, Sicily,					Felt. Southern Italy, Sicily,			
	Crete, Malta, Southern Yugoslavia.					Crete, Malta, Southern Yugoslavia.			
	Mag: $6\frac{1}{4}$ (Pas)					Mag: $6\frac{1}{4}$ (Pas)			
	Dist. approx 69° Bda.					Dist. approx 69° Bda.			
29	e LR	23	28	00	30	i P	13	42	48
	O = 10.59.58.5					O = 10.59.58.5			
	38.ON. 23.1E.					38.ON. 23.1E.			
	h. about 120km.					h. about 120km.			
	Greece.					Greece.			
	1 killed, 11 injured and moderate					1 killed, 11 injured and moderate			
	property damage.					property damage.			
	Felt. Southern Italy, Sicily,					Felt. Southern Italy, Sicily,			
	Crete, Malta, Southern Yugoslavia.					Crete, Malta, Southern Yugoslavia.			
	Mag: $6\frac{1}{4}$ (Pas)					Mag: $6\frac{1}{4}$ (Pas)			
	Dist. approx 69° Bda.					Dist. approx 69° Bda.			
30	i P	13	42	48		Dist. approx 69° Bda.			
	e (PPP)	44	16			Dist. approx 69° Bda.			
	e S	48	42			Dist. approx 69° Bda.			
	e SS	51	30			Dist. approx 69° Bda.			
	e LR	53	00			Dist. approx 69° Bda.			





		1962					1962			
Date	Phase	h	m	s	Date	Phase	h	m	s	
Sep 15	i P	23	03	58	Sep 19	e LR	08	56	00	
	e PP		07	35						
	e SKS		14	25	19	e	11	28	20	
	i S		15	08		e LR		32	00	
	e SS		21	00						
	e SSS		24	40		21	e LR	23	21	00
	e LQ		27	30						
	e LR		34	00						
	O = 22.50.46.3 48.5N. 156.8E. h. about 33km. Kurile Islands. Mag: 6½ (Pas) 6 (Pal) Dist. approx 90° Bda.									
16	i P	03	12	40	23	e LQ	12	12	40	
	e (PPP)		14	10		e LR		14	00	
	e S		18	20		e T		33	38	
	e LQ		20	30		e Tmax		34	12	
	e LR		23	00						
	O = 03.05.33.0 19.3N. 103.1W. h. about 100km. Jalisco, Mexico. Mag: 4½ - 5 (Pal) Dist. approx 36° Bda.									
16	e	05	51	16	25	e (PS)	00	48	14	
	e		54	30		e (SS)		53	30	
	e LR		59	00		e (SSS)		58	10	
	O = 05.36.15.7 35.8N. 118.1W. h. about 10km. Kern County, California. Rock slides in road. Felt at Bakersfield, Fresno, and Los Angeles. Mag: 4½ - 5 (Pas) 5½ - 5¾ (Brk) Dist. approx 43° Bda.									
16	e LR	11	31	00	25	e LR	13	34	00	
	Novaya Zemlya.									
18	e P	00	35	10	27	e LR	08	34	00	
	i P		35	14		Novaya Zemlya.				
	i (PPP)		36	45	28	i P	19	02	20	
	i (sS)		39	30		e PcP		05	20	
	i S		40	10		e (S)		06	46	
	i PcS		42	00		i (S)		07	32	
	e LR		43	00		e LR		09	00	
	O = 00.29.05.2 7.5N. 82.3W. h. about 33km. South of Panama. Felt Chiriqui Province. Mag: 7 (Pas) 7 (Brk) 6½ - 6¾ (Pal) Dist. approx 30° Bda.									
18	e LR	05	26	00	29	i P	15	26	49	
						e		28	38	
						e		29	15	
						e		32	00	
						i S		34	17	
						i		35	45	
						i		37	26	
						e		39	32	
						e		41	50	
						O = 15.17.47.7				

		17					1962			
Date	Phase	h	m	s	Date	Phase	h	m	s	
Sep 29	Continued				Oct 9	Continued				
	27.0S 63.6W. h. about 575km. Santiago Del Estero Province. Mag: 6½ (Pas) 6¼ (Pal) Dist. approx 61° Bda.					e (SSS)	21	03	30	
						e		09	30	
						e LR		18	00	
						O = 20.14.38.3 3.2S. 148.2E. h. about 33km. Bismarck Sea. Mag: 6 - 6¼ (Pag) Dist. approx 137° Bda.				
	30	e LR	11	52	00					
Oct 1	e LR		13	01	00					
	4	e LR	00	10	00	12	e LR	17	25	00
	4	e LR	04	55	00	13	e LR	11	09	00
	4	e LR	06	10	30	13	e	19	27	12
	4	e LR	13	36	00		e LR		48	00
	4	e LR	19	04	00	14	e LR	01	28	00
		e LR		27	00					
	4	e LR	21	43	00	16	e P	18	14	22
	4	e LR	23	23	00		e S		24	14
							e LR		43	00
	5	e LR	04	27	00		O = 18.02.32.9 51.6N. 175.8W. h. about 27km. Near Islands, Aleutian Islands. Mag: 5¼ (Pal) Dist. approx 78° Bda.			
	5	e LR	08	52	00					
	6	e LR	03	29	00	20	i PKP	00	02	04
	6	e LR	04	08	00		O = 23.42.34.9 5.7S. 130.3E. h. about 177km. Banda Sea. Dist. approx 150° Bda.			
	6	e	04	44	48	22	e LR	05	38	00
		e		56	44					
		e LR	05	02	00	22	e LR	09	36	00
	Due to very large microseisms between the hrs. of 0300e to 1200e on the 6th. Unable to determine correct times for seismic event that appears on seismogram between the hrs. of 0300e to 0500e									
	7	e LR	05	27	00	22	e (P)	15	36	22
							e (S)		47	20
							e LR	16	12	00
							O = 15.23.32.9 49.8N. 155.8E. h. about 19km. Northern Kurile Islands. Dist. approx 90° Bda.			
	8	e (PP)	22	16	55	23	i P	09	07	11
		e (PPS)		28	24		e S		11	20
		e (SS)		34	20		O = 09.02.02.2 9.5N. 70.0W. h. about 33km. North Central Venezuela. Dist. approx 23° Bda.			
		e (SSS)		38	30					
		e		42	00					
		e LR		54	00	24	i P	01	53	13
	O = 21.56.22.2 24.3N. 121.7E. h. about 29km. Near east coast of Formosa. Mag: 6 (Pas) 6¼ (Pal) Dist. approx 123° Bda. This event is obscured by large microseisms on this day.									
	9	e (PKS)	20	37	44		i S		55	24
		e (PPP)		39	18		e T	02	06	54
		e (SS)		55	00		e Tmax		08	05
	O = 01.50.06.2 19.4N. 67.0W. h. about 33km.									

			1962		
Date	Phase	n m s	Phase	h m s	
Oct 24	Continued Mona Passage. Dist. approx 13° Bda.		Oct 28 e LR	01 16 00	
24 e LR		18 11 30	e T	13 31 00 14 00 20	
25 i PKP		09 53 45	28 e LR	23 01 30	
e PKS		57 24	e LR	06 00	
e PPS		10 09 24	29 e LR	00 30 50	
e SS		16 00	e LR	33 00	
e LR		42 00	29 e LR	03 03 00	
O = 09.34.14.6			29 e LR	08 20 00	
3.ON. 126.7E.			29 e LR	11 07 00	
h. about 33km.			29 e LR	16 38 00	
Molucca Passage.			29 e LR	21 12 55	
Dist. approx 143° Bda.			e (PP)	15 46	
25 i P		15 58 22	e (S)	22 08	
e S		16 03 22	e (SS)	26 44	
e (LQ)		04 15	e LR	35 00	
e LR		06 00	Interpretation very poor.		
O = 15.52.29.2			O = 21.01.28.5		
8.4N. 82.6W.			23.3S. 111.5W.		
h. about 51km.			h. about 33km.		
Panama - Costa Rica border.			Easter Island Region.		
Felt. Balboa Heights, Panama.			Dist. approx 60° Bda.		
Dist. approx 29° Bda.			30 e (SS)	02 20 10	
25 e (PKP)		20 26 20	e (L)	27 00	
e (PP)		28 43	e (LQ)	30 00	
e (SKKS)		35 32	e LR	33 00	
e (SS)		48 10	O = 01.46.32.7		
e (SSS)		52 30	54.2S. 9.1E.		
e (LQ)		05 00	h. about 33km.		
e LR		13 00	Bouvet Island Region.		
Interpretation fair.			Dist. approx 107° Bda.		
O = 20.06.10.0			30 i P	08 37 47	
61.4S. 154.9E.			e (S)	42 40	
h. about 33km.			e LR	45 00	
Southwest of Macquarie Islands.			O = 08.31.51.8		
Dist. approx 140° Bda.			12.5N. 88.0W.		
26 e LR		08 36 30	h. about 80km.		
26 e LR		16 42 00	Dist. approx 29° Bda.		
26 i P		08 16 25	Off west coast of Nicaragua.		
i pP		16 39	30 e	16 28 22	
e LR		23 00	e LR	46 00	
O = 08.10.24.5			India.		
14.ON. 90.4W.			31 e (L)	01 51 00	
h. about 107km.			31 i P	11 38 51	
Guatemala - El Salvador border.			e PP	39 51	
Felt. Western El Salvador.			i S	44 02	
Dist. approx 30° Bda.			e (SS)	45 00	
27 e (P)		13 58 45	e LR	46 30	
e (S)		14 04 02	O = 11.32.29.0		
e (LQ)		05 00	5.6N. 82.6W.		
e LR		06 00	h. about 33km.		
O = 13.52.51.2			South of Panama.		
11.5N. 86.4W.					
h. about 80km.					
Near west coast of Nicaragua.					
Dist. approx 29° Bda.					

			19			1962		
Date	Phase	h m s	Date	Phase	h m s			
Oct 31	Continued		Nov 11	e LR	12 18 00			
	Mag: 6½ (Pas) 5½ (Pal)			e LR	15 57 00			
	Dist. approx 31° Bda.			e (SS)	16 42 00			
Nov 1	e (LR)	16 50 00		e LR <sup>1</sup>	17 08 00			
1	e (LR)	19 06 00		e LR <sup>2</sup>	57 00			
2	e (LR)	15 52 00	Interpretation fair.					
3	e LR	02 06 00	O = 16.09.57.6					
4	i P	23 05 18	12.9S. 166.5E.					
	e PP	08 18	h. about 77km.					
	i S	15 04	Santa Cruz Islands.					
	e SS	19 40	Felt. Port Villa.					
	e (LQ)	25 00	Mag: 6 - 6½ (Pag)					
	e LR	30 00	Dist. approx 129° Bda.					
	O = 22.53.34.2		11 i P	22 26 04				
	43.2S. 75.6W.		e PP	29 07				
	h. about 33km.		e S	35 50				
	Off coast of southern Chile.		e (LQ)	46 30				
	Mag: 5½ - 6 (Pas) 5½ (Pal)		e LR	50 00				
	Dist. approx 77° Bda.							
6	e LR	03 57 00						
7	e LR	13 11 00						
8	e L	00 28 00	12 e (LR)	20 12 00				
8	e S	00 50 04	14 e LR	01 47 00				
	e (LQ)	55 00	14 e LR	08 40 00				
	e LR	58 00	16 e LR	22 16 00				
	O = 00.33.13.8		This quake obscured by very large microseisms.					
	4.4S. 105.5W.							
	h. about 33km.		17 i P	11 14 04				
	1,700km. southwest of Galapagos Islands.		e LR	23 00				
	Dist. approx 53° Bda.							
8	e LR	22 02 00						
9	e LR	18 22 00						
10	e P	01 46 54						
	i PP	50 50						
	e SKS	57 29	18 i PKP	07 02 48				
	e PS	59 45						
	e SS	02 05 30						
	e LQ	15 00						
	e LR	19 00						
	O = 01.33.19.0							
	43.8N. 147.2E.							
	h. about 60km.							
	Kurile Islands.							
	Mag: 5½ (Pal)							
	Dist. approx 99° Bda.							
10	e	09 34 10	19 e (S)	10 38 53				
	e LR	40 30	e	41 54				
			e	45 00				
			e LR	58 00				
10	e T	19 18 09						
	e Tmax	18 29						
11	e LR	08 43 00						

1962

Date	Phase	h	m	s
Nov 19	Continued			
	50.0S. 114.3W. h. about 33km. South Pacific Ocean. Dist. approx 92° Bda.			
22	e LR	01	45	00
23	e P e PP e S e SS e LR	00	38 40 46 49 52	46 42 22 40 00
	O = 00.30.04.5 15.1S. 75.3W. h. about 33km. Near coast of Southern Peru. Dist. approx 50° Bda.			
24	e (LQ)	07	40	50
24	e LR	16	32	00
25	e LQ e T e Tmax	18 19	45 00 01	00 44 27
26	e LR	06	16	00
26	e (L) e LR	16 17	58 05	00 00
27	e (L)	18	02	30
30	e P e S e (L) e LR	21 22	58 03 05 07	15 50 10 30
	O = 21.51.22.9 17.4N. 99.6W. h. about 51km. Guerrero, Mexico. Mag: 5½ - 5½ (Pal) Dist. approx 34° Bda.			
Dec 1	i P e S e SS e LR	02	01 11 16 26	53 25 28 00
	O = 01.50.20.4 52.4N. 170.1W. h. about 33km. Fox Islands, Aleutian Islands. Dist. approx 74° Bda.			
2	e (LR)	06	41	00
4	e (PP) e S e LQ e LR	03	39 44 46 48	10 08 40 00
	O = 03.29.40.8 10.1N. 103.6W. h. about 33km. Off coast of Guerrero, Mexico. Dist. approx 41° Bda.			
Dec 4	e S e e O = 07.23.04.2 21.8S. 65.6W. h. about 300km. Southern Bolivia. Dist. approx 54° Bda.	07	39 41 44	08 00 40
4	e LR	11	43	00
4	e (PS) e (SS) e LR <sup>1</sup> e LR <sup>2</sup>	17	09 15 31 54	00 30 00 00
	O = 16.40.06.0 16.5S. 172.8W. h. about 33km. Samoa Islands Region. Mag: 5 - 5½ (Pal) Dist. approx 114° Bda.			
5	e (LR)	12	03	00
7	i (SKS) i e e LR O = 14.03.37.0 29.2N. 139.2E. h. about 411km. Bonin Island Region. Mag: 6½ - 7 (Brk) Dist. approx 114° Bda.	14	29 31 38 48	40 40 00 00
8	e (PS) e LR O = 18.18.29.1 15.2S. 173.7W. h. about 33km. Tonga Islands Region. Dist. approx 113° Bda.	18 19	47 11	30 00
8	i P i S i (ScS) i (SS) i i i i O = 21.27.22.2 25.8S. 63.4W. h. about 620km. Salta - Santiago Del Estero Provinces. Border of Argentina. Dist. approx 59° Bda.	21	36 43 45 46 49 50 58 02	18 34 09 56 02 00 44 50
8	i P O = 22.55.01.2 50.5N. 176.8W. h. about 33km. Andreanof Islands, Aleutian Islands. Dist. approx 78° Bda.	23	07	00

Bermuda				21				1962			
Date	Phase	h	m	s	Date	Phase	h	m	s		
Dec 10	e LR	06	06	00	Dec 21	Continued					
	10 e (LQ) e T e Tmax	21	04 16 17	50 25 13		e LR		05	00		
	12 e PKP i PKS e SKSP e PPS e ScSPKP e SS e SSS e e LR	10	28 31 40 42 43 48 52 57 03	10 25 30 38 50 30 50 40 00		O = 06.27.49.1 52.5N. 168.7W. h. about 33km. Fox Islands, Aleutian Islands. Dist. approx 73° Bda.					
	13 e (LR)	04	53	00	21 i P i S i SS O = 08.42.48.3 52.4N. 168.5W. h. about 33km. Fox Islands, Aleutian Islands. Mag: 6½ (Brk) 6½ (Pas) 6½ (Pal) Dist. approx 73° Bda.						
	17 i PKP e e e e O = 11.00.16.0 2.1N. 122.9E. h. about 393km. Celebes Sea. Dist. approx 149° Bda.	11	19 20 22 24 37	10 44 36 38 00	21 i P O = 09.10.01.6 52.5N. 168.5W. h. about 33km. Fox Islands, Aleutian Islands. Dist. approx 73° Bda.						
	19 e (PKP) e (PS) e (PPS) e (SSS) e LR O = 12.56.19.7 4.7S. 154.0E. h. about 98km. Solomon Islands. Felt. Rabaul, Metlik. Dist. approx 134° Bda.	13	16 28 31 41 58	00 30 00 00 00	21 i P i PP e S e LR O = 21.27.51.6 0.9S. 80.9W. h. about 33km. Near coast of central Ecuador. Felt. Guayaquil and Quito. Dist. approx 37° Bda.						
	21 i PKP <sup>1</sup> e (pPKP) e (PKP <sup>2</sup> ) e (PKS) e (PPP) e e LR O = 00.44.19.7 9.0S. 112.4E. h. about 64km. Near south coast of Java. Dist. approx 158° Bda.	01	04 05 06 08 11 33 45 00	12 02 04 20 50 00 00	22 i PKP e PP e PKS e SKS e PPS e SS e SSS e LQ e LR O = 00.52.23.4 22.0S 170.1E. h. about 33km. Loyalty Islands Region. Mag: 6½ - 6½ (Pas) Dist. approx 130° Bda.						
	21 e P e S e SS e SSS e (LQ)	06	39 48 53 57 07	15 40 20 20 30	22 i (PKP) O = 01.59.50.3 9.2S. 112.4E. h. about 69km. Near south coast of Java. Dist. approx 158° Bda.						

Date	Phase	h	m	s
Dec 22	e P	15	31	54
	i P		32	02
	i SS		46	08
	e (SSS)		49	50
	e LR		57	00
	O = 15.20.31.0 52.5N. 168.8W. h. about 47km. Fox Islands, Aleutian Islands. Mag: $6\frac{1}{2}$ (Pas) Dist. approx $73^{\circ}$ Bda.			
24	e (P)	11	22	32
	e (S)		31	30
	e LR		43	00
	O = 11.11.42.0 73.6N. 57.5E. h. about 0km. Novaya Zemlya. Dist. approx $68^{\circ}$ Bda.			
25	e	12	40	30
	e LR		43	00
26	i P	06	16	51
	i S		19	45
	e (L)		20	00
	e T		31	02
	e Tmax		33	58
	O = 06.12.26.5 12.8N. 60.9W. h. about 32km. Windward Islands. Dist. approx $19^{\circ}$ Bda.			
26	e S	09	12	49
	e (LQ)		16	00
	e LR		19	30
	O = 08.58.11.1 39.3N. 10.6W. h. about 19km. Off coast of Portugal. Felt. Dist. approx $43^{\circ}$ Bda.			
26	i P	22	37	37
	i S		47	50
	i SS		53	15
	e LQ	23	01	00
	e LR		05	00
	O = 22.25.15.5 53.9N. 168.7E. h. about 33km. Komandorskie Islands. Mag: $6\frac{1}{2}$ (Pas) (Pal) Dist. approx $83^{\circ}$ Bda.			
26	i P	23	58	36
	O = 23.46.14.7 54.ON. 168.8E. h. about 33km. Komandorskie Islands. Dist. approx $83^{\circ}$ Bda.			
29	i P	10	50	14
	i PPP		53	16
	Halmahera Region.			
Dec 29	Continued			
	i S		57	36
	i ScS	11	00	08
	e (SS)		01	30
	e (SSS)		03	00
	e LR		08	00
	O = 10.41.04.1 20.OS. 69.9W. h. about 46km. Northern Chile. Felt. Arequipa, Peru. Mag: $6\frac{1}{2}$ (Pas) $6\frac{1}{2}$ (Brk) 6 (Pal) Dist. approx $53^{\circ}$ Bda.			
29	e PP	15	08	18
	e ScSP		17	40
	e PS		18	00
	e PPS		20	30
	e SS		25	00
	e LR		45	00
	O = 14.47.41.4 31.2S. 177.9W. h. about 43km. Kermadec Islands Region. Mag: 6 - $6\frac{1}{4}$ (Pag) Dist. approx $123^{\circ}$ Bda.			
30	e LR	19	17	00
Jan 1	i P	23	49	43
	e S		58	15
	e SS		02	20
	e LQ		05	30
	e LR		08	00
	O = 23.39.05.6 56.6N. 157.7W. h. about 50km. Alaska Peninsula. Mag: $6\frac{1}{2}$ (Pas) $5\frac{1}{4}$ (Pal) Dist. approx $65^{\circ}$ Bda.			
3	e LR	04	03	00
	e LR		10	42
4	e		00	39
	e L			44
4	e T	09	51	45
	e Tmax		52	37
4	e	12	39	50
6	e (LR)	06	33	00
7	e L	07	28	00
7	i PKP	12	08	00
	e (PKS)		12	16
	e (SKKKS)		19	30
	e LQ		58	00
	e LR	13	08	00
	O = 11.48.22.7 0.6N. 126.7E. h. about 42km. Halmahera Region.			

Date	Phase	h	m	s
Bermuda				
Jan 7	Continued			
	Mag: $5\frac{1}{2}$ - $5\frac{3}{4}$ (Pal) Dist. approx $145^{\circ}$ Bda.			
12	i P	03	46	35
	e (S)		51	26
	e LR		53	00
	O = 03.40.34.8 4.8N. 76.7W. h. about 102km. Northern Columbia. Dist. approx $30^{\circ}$ Bda.			
14	e SKS	11	46	08
	e LR	12	14	00
	O = 11.19.47.5 21.2S. 169.3E. h. about 33km. Loyalty Islands. Dist. approx $131^{\circ}$ Bda.			
15	e S	01	47	20
	e LR		53	00
	O = 01.32.20.0 68.9N. 17.1W. h. about 33km. Denmark Strait. Dist. approx $45^{\circ}$ Bda.			
15	e LR	03	40	00
15	e S	05	38	10
	e LR		44	00
	O = 05.23.10.4 69.ON. 16.6W. h. about 33km. Jan Mayen Island Region. Dist. approx $45^{\circ}$ Bda.			
15	e (SS)	22	45	20
	e (LQ)		51	00
	e LR		54	00
	O = 22.17.50.9 31.3S. 13.4W. h. about 33km. South Atlantic Ocean. Dist. approx $80^{\circ}$ Bda.			
16	e LR	06	27	00
17	e T	00	53	53
	e Tmax		54	28
20	e LR	11	22	00
24	e LR	23	37	00
27	i P	19	47	49
	O = 19.35.14.3 41.2N. 49.8E. h. about 33km. Caspian Sea, near S.S.R. Mag: $5\frac{1}{2}$ - $5\frac{3}{4}$ (Pal) Dist. approx $86^{\circ}$ Bda.			
23				
Jan 27	e LR	19	53	00
28	e (PP)		12	34
	e (PKS)			35
	e			37
	O = 12.12.19.8 2.6S. 149.9E. h. about 33km. New Britain. Mag: $6\frac{1}{2}$ (Pas) Dist. approx $137^{\circ}$ Bda.			
28	i P	13	11	49
	O = 13.00.50.7 54.7N. 161.6W. h. about 33km. Alaska Peninsula. Mag: 6 - $6\frac{1}{2}$ (Pas) Dist. approx $68^{\circ}$ Bda.			
30	e LR	05	19	00
30	i P	10	23	14
	e PP		27	07
	i SKS		33	56
	i S		34	20
	i SS		40	30
	i		45	50
	e LQ		47	30
	e LR		57	00
	O = 10.10.04.1 55.6S. 28.3W. h. about 33km. Sandwich Islands Region. Mag: $6\frac{1}{2}$ (Pas) Dist. approx $92^{\circ}$ Bda.			
31	e T	00	56	12
	e Tmax		56	47
31	i PP	05	26	44
	e PPP		29	22
	e SKKS		35	14
	e PS		36	50
	e PPS		38	03
	e SS		43	30
	e SSS		48	00
	e LQ		56	00
	e LR	06	02	00
	O = 05.06.46.0 27.9N. 126.3E. h. about 33km. Ryukyu Islands. Mag: 6 - $6\frac{1}{4}$ Dist. approx $118^{\circ}$ Bda.			
Feb 2	e (LQ)	04	54	50
	e (LQ)	21	40	00
4	e (LQ)	02	26	00
5	e LR	18	05	00
5	i P	20	50	36

		24			1963		
Date	Phase		h	m	s		
Feb 5	Continued						
	e PP	53	07				
	i S	59	55				
	i SS	21	04	24			
	e SSS	07	40				
	e LQ	10	00				
	e LR	12	00				
	O = 20.39.21.6						
	38.4S. 73.2W.						
	h. about 41km.						
	Near coast of central Chile.						
	Mag: $6\frac{1}{4}$ - $6\frac{1}{2}$ (Pas) 6 - $6\frac{1}{4}$ (Brk)						
	$5\frac{1}{2}$ - 6 (Pal)						
	Dist. approx 71° Bda.						
6	e P	01	32	40			
	e PP	35	18				
	e PPP	37	22				
	e S	42	02				
	e SS	46	10				
	e SSS	50	00				
	e LQ	52	00				
	e LR	55	00				
	O = 01.21.29.0						
	38.4S. 73.6W.						
	h. about 33km.						
	Near coast of central Chile.						
	Mag: $5\frac{1}{4}$ - $5\frac{1}{2}$ (Pal)						
	Dist. approx 71° Bda.						
6	e (S)	07	13	04			
	e LR	15	00				
	O = 07.01.47.0						
	7.4N. 82.6W.						
	h. about 61km.						
	Near south coast of Panama.						
	Dist. approx 29° Bda.						
6	e LR	11	24	00			
6	e LR	19	01	00			
10	e (LQ)	09	43	00			
13	e	00	34	15			
	e LR	37	00				
13	e P	09	05	30			
	e PKP	08	56				
	e PP	10	35				
	e PKS	12	08				
	e SKS	16	00				
	e	18	38				
	e (PS)	20	10				
	i (PPS)	21	10				
	i SS	27	30				
	e SSS	32	00				
	e LR	48	00				
	O = 08.50.02.2						
	24.5N. 121.8E.						
	h. about 33km.						
	Northern Formosa.						
	3 killed and 15 injured.						
	Widespread but moderate damage.						
	Mag: $7\frac{1}{4}$ (Pas) $7\frac{1}{4}$ (Brk)						
	7 - $7\frac{1}{4}$ (Pal)						
Feb 13	Continued						
	Dist. approx 123° Bda.						
13	e PKP	18	33	06			
	e PP	35	25				
	i PKS	36	37				
	e	37	32				
	e PPP	38	20				
	e PS	45	40				
	e PPS	47	34				
	e SS	53	00				
	e SSS	58	00				
	e LR	19	15	00			
	O = 18.13.55.1						
	9.9S. 160.8E.						
	h. about 29km.						
	Solomon Islands. Felt. Honiara.						
	Mag: $6\frac{1}{2}$ (Pas) $6\frac{1}{2}$ (Brk) 6 - $6\frac{1}{4}$ (Pal)						
	5.8 (C.G.S.)						
	Dist. approx 133° Bda.						
14	i PKP1	07	24	11			
	i PKP2	24	18				
	e (PP)	28	08				
	e PPP	31	40				
	e (SKKS)	34	30				
	e (SKSP)	37	30				
	e (PPS)	40	30				
	e (SS)	47	00				
	e LR	58	00				
	O = 07.04.40.8						
	7.2S. 128.2E.						
	h. about 197km.						
	Banda Sea. Felt. Darwin, Australia.						
	Mag: $6\frac{1}{2}$ (Pas)						
	Dist. approx 152° Bda.						
14	e P	12	17	22			
	e PP	19	20				
	e LQ	27	30				
	e LR	29	30				
	e T	13	11	20			
	e Tmax	12	46				
	O = 12.09.11.4						
	0.9N. 30.0W.						
	h. about 33km.						
	Mid Atlantic Ocean.						
	Dist. approx 45° Bda.						
14	e PKP	22	27	20			
	e (PP)	30	32				
	e (PS)	40	20				
	e PPS	42	50				
	e SS	48	30				
	e (L)	23	04	00			
	e LR	12	00				
	O = 22.07.54.3						
	5.0S. 144.6E.						
	h. about 80km.						
	Eastern New Guinea.						
	Mag: $6\frac{1}{2}$ (Pas) $6\frac{1}{2}$ (Pal)						
	Dist. approx 142° Bda.						
21	e (L)	15	34	00			
21	e LR	17	47	00			

		25			1963		
Date	Phase		h	m	s		
Feb 22	e S	07	29	28			
	e LR	38	00				
	O = 07.10.28.0						
	85.ON. 98.9E.						
	h. about 33km.						
	North Polar Region.						
	Mag: 5.0 C.G.S.						
	Dist. approx 64° Bda.						
22	i P	21	17	39			
	i S	20	09				
	e LR	21	10				
	e T	31	07				
	e Tmax	32	06				
	O = 21.14.06.1						
	18.1N. 71.3W.						
	h. about 50km.						
	Near south coast of Dominican Republic.						
	Mag: 5.5 C.G.S.						
	Dist. approx 14° Bda						
24	e (S)	05	53	20			
	e (LQ)	57	30				
	O = 05.38.20.6						
	15.1S. 72.5W.						
	h. about 105km.						
	Near coast of southern Peru.						
	Mag: 5.3 C.G.S.						
	Dist. approx 48° Bda.						
24	i P	13	40	16			
	e S	45	04				
	e LQ	46	00				
	e LR	48	00				
	O = 13.34.15.7						
	14.6N. 91.4W.						
	h. about 135km.						
	Central Guatemala.						
	Felt. Western El Salvador.						
	Mag: 5.7 C.G.S.						
	Dist. approx 30° Bda.						
24	e P	22	39	16			
	e L	42	30				
	e LR	43	00				
	e T	57	20				
	e Tmax	57	53				
	O = 22.35.00.0						
	26.4N. 44.5W.						
	h. about 33km.						
	North Atlantic Ocean.						
	Dist. approx 19° Bda.						
25	e (LR)	09	13	30			
26	i PKP1	20	33	19			
	i PKP2	34	02				
	i PP	36	26				
	O = 20.14.08.7						
	7.5S. 146.2E.						
	h. about 171km.						
	Eastern New Guinea						
	Mag: $7\frac{1}{4}$ - $7\frac{1}{2}$ (Pas) 7 - $7\frac{1}{4}$ (Brk)						
	$6\frac{1}{2}$ - 7 (Pal)						
	Dist. approx 141° Bda.						
Feb 27	e PKP	04	49	20			
	e PP	52	08				
	e PKS	53	18				
	e PcSPKP	05	01	00			
	e SS	11	00				
	e LR	30	00				
	O = 04.30.00.8						
	6.OS. 149.4E.						
	h. about 52km.						
	New Britain Region.						
	Mag: $6\frac{1}{2}$ - $6\frac{3}{4}$ (Pal)						
	Dist. approx 140° Bda.						
28	e LR	02	35	00			
28	e (T)	16	35	50			
	e Tmax	36	19				
28	e (T)	17	36	20			
28	e (T)	17	38	22			
Mar 1	e T	09	05	43			
	e Tmax	05	51				
1	e S	19	29	16			
	e LR	33	30				
	e T	20	10	30			
	e Tmax	11	05				
	e T	18	17				
	e Tmax	18	35				
	O = 19.14.13.1						
	1.4N. 29.6W.						
	h. about 33km.						
	Atlantic Ocean.						

1963

		Phase			h m s			
Mar 7	e P	05	33	42	Mar 10	Continued		
	e S		43	24		Dist. approx 124° Bda.		
	i SKS		44	02	10	e P	11 02 05	
	e (SSS)		47	20		e PP	04 24	
	e SS		48	10		e PPP	06 04	
	e SSS		51	00		e S	10 28	
	e LQ		54	00		e ScS	12 00	
	e LR		56	00		e SS	14 05	
	O = 05.22.01.1					e LQ	17 10	
	27.0S. 113.5W.					e LR	21 00	
	h. about 33km.					O = 10.51.48.1		
	Approx 500km. west of					29.9S. 71.2W.		
	Easter Island.					h. about 70km.		
	Mag: 6½ (Pas) 6½ (Brk.)					Near coast of central Chile.		
	5.6 C.G.S.					Mag: 6 - 6½ (Pas)		
	Dist. approx 76° Bda.					Dist. approx 63° Bda.		
7	e (S)	12	38	10	13	i P	10 42 50	
	e (SS)		43	05		i S	44 47	
	e LR		52	00		e T	55 10	
	O = 12.16.28.5					e Tmax	56 56	
	44.3S. 75.3W.					Atlantic Ocean.		
	h. about 45km.					15	e (PP)	00 38 07
	Near coast of southern Chile					e (PPP)	41 04	
	Mag: 5.6 C.G.S.					e (PPS)	50 25	
	Dist. approx 77° Bda.					e LR <sup>1</sup>	01 05 00	
8	e	04	04	00		e LR <sup>2</sup>	20 00	
	e		12	30		Interpretation poor.		
	e LR		32	00		O = 00.16.01.3		
8	e S	15	21	10		8.4N. 126.4E.		
	e LR		24	30		h. about 117km.		
	e T	16	02	13		Mindanao, Philippine Islands.		
	e Tmax		02	53		Mag: 5.0 C.G.S.		
	e T		09	47		Dist. approx 137° Bda.		
	e Tmax		10	17	15	e P	05 51 08	
	O = 15.06.05.3					e S	54 42	
	1.1N. 29.9W.					e LR	55 00	
	h. about 33km.					e T	06 10 43	
	Mid Atlantic Ocean.					e Tmax	11 33	
	Dist. approx 46° Bda.					O = 05.46.32.8		
8	i Shot	20	50	56		21.7N. 45.4W.		
	i Shot		54	47		h. about 33km.		
	Both Shots in Local Waters.					North Atlantic Ocean.		
8	e (L)	22	45	30		Dist. approx 20° Bda.		
9	e	00	38	50	16	i P	08 58 06	
						i PP	09 01 54	
						i PPP	03 30	
						i SKS	08 32	
						i SS	15 40	
						e LQ	24 00	
						e LR	27 00	
						O = 08.44.48.3		
						46.5N. 154.7E.		
						h. about 26km.		
						Kurile Islands Region.		
						Mag: 7 (Pas) 7½ (Brk) 6½ (Pal)		
						6.2 C.G.S.		
						Dist. approx 94° Bda.		
10	e LR	02	00	00	17	e S	06 30 08	
						e LR	33 00	

		Phase			h m s		
Bermuda					27		
Mar 17	Continued				Mar 25	Continued	
	O = 06.18.52.4					O.7N. 96.5E.	
	7.1N. 82.2W.					h. about 30km.	
	h. about 33km.					Off southwest coast of Sumatra.	
	South of Panama,					Mag: 5.6 C.G.S.	
	Dist. approx 30° Bda.					Dist. approx 142° Bda.	
20	e LR	17	51	00	26	e P	10 03 50
24	i PKP	02	27	08		e PKP	07 12
	i PKP		27	46		e PP	09 02
	i PP		31	14		e PKS	10 17
	e PPP		35	00		e SKS	14 24
	e SKKS		38	05		e SKKS	15 55
	e		40	05		e (ScSP)	17 40
	e (SS)		51	00		e PPS	20 25
	e (SSS)		57	00		e ScSPKP	22 00
	e	03	00	00		e SS	26 00
	e (L)		05	00		e LQ	39 30
	e LR		15	00		e LR	45 00
	O = 02.07.12.8					O = 09.48.19.7	
	9.7S. 120.4E.					29.7S. 177.8W.	
	h. about 33km.					h. about 45km.	
	Sumba Island Region.					Kermadec Islands.	
	Mag: 6½ (Pas) 6 (Pal)					Felt. Raoul Islands.	
	5.4 C.G.S.					Mag: 6½ - 7 (Pag) 7 (Brk) 7 (Pal)	
	Dist. approx 143° Bda.					Dist. approx 123° Bda.	
24	e LR	10	38	00	26	e PP	13 45 44
						e PKS	47 04
24	e (PP)	13	00	20		i SKS	51 03
	e S		07	20		e SKKS	52 32
	O = 12.44.03.2					e PS	55 30
	34.4N. 47.9E.					e PPS	57 04
	h. about 33km.					i SS	14 02 46
	Western Iran.					e SSS	06 00
	20 injured and minor damage					e (LQ)	17 00
	in Kangavar area.					e LR	22 00
	Mag: 5½ - 5½ (Pal) 5.2 C.G.S.					O = 13.25.02.6	
	Dist. approx 89° Bda.					29.8S. 177.9W.	
24	i P	21	47	18		h. about 42km.	
	e S		57	30		Kermadec Islands.	
	e LR	22	12	00		Mag: 7½ (Pas) 6½ (Pal) 5.9 C.G.S.	
	O = 21.35.24.4					Dist. approx 123° Bda.	
	51.8N. 178.1W.					26	
	h. about 57km.					e P	21 49 08
	Aleutians.					e (PKP)	53 34
	Mag: 5					e (PP)	54 32
	Dist. approx 79° Bda.					e PPP	56 02
25	e PKP	20	36	48		e SKS	59 48
	e LR	21	26	00		e SKKS	01 20
	e LR		45	00		e PS	03 03
	O = 20.17.03.8					e PPS	04 14
	56.3S. 149.9E.					e SS	09 00
	h. about 39km.					e SSS	13 00
	Macquarie Island Region.					e LQ	19 00
	Dist. approx 147° Bda.					e LR	26 00
25	i PKP	23	05	43		O = 21.34.41.1	
	e PKP		06	08		36.0N. 135.7E.	
	e PP		08	56		h. about 33km.	
	e LR		55	00		Honshu, Japan.	
	O = 22.46.16.2					Mag: 6 - 6½	
						Dist. approx 108° Bda.	
28	i P	00	23	49			
	e PP		25	28			

Mar 28 Continued

i S		30	20
e LQ		33	30
e LR		35	30

O = 00.15.47.5

66.3N. 19.6W.

h. about 15km.

Iceland.

Slight damage and several injured  
in northern Iceland.

Mag: 7 - 7½ (Pas) 6½ (Brk)

6½ - 6½ (Pal)  
Dist. approx 43° Bda.

28 e		23	59	38
e		00	01	20
e			05	20
e (SS)			07	00
e LR			26	00

O = 23.29.14.6

29.6S. 177.5W.

h. about 54km.

Kermadec Islands.

Mag: 5.1 C.G.S.  
Dist. approx 123° Bda.

30 i PKP	02	12	21
e PP		14	30
i PKS		15	29
i PPP		16	44
e SKKS		21	18
e PS		24	20
e PPS		26	20
e ScSPKP		27	10
e SS		31	40
e SKSSKS		34	20
e SSS		35	40

O = 01.53.28.8

19.1S. 169.1E.

h. about 160km.

New Hebrides Islands.

Felt. Port Villa, Tanna  
and Anatom.

Mag: 6.1 C.G.S.  
Dist. approx 131° Bda.

30 e P	17	05	30
i PP		09	26
e PS		18	16
e LR		38	00

O = 16.51.56.6

44.2N. 148.0E.

h. about 33km.

Kurile Islands.

Mag: 5½ - 5½ (Pal)

6.3 C.G.S.  
Dist. approx 98° Bda.

30 e (S)	21	32	26
e LR		42	00

O = 21.13.54.1

8.7S. 109.2W.

h. about 33km.

About 2,000km southwest  
of Galapagos Islands.

Mar 30 Continued

Mag: 4.6 C.G.S.  
Dist. approx 59° Bda.

31 e T		02	27	35
e Tmax			27	46

31 i P		04	53	49
e PP			55	30
i S		05	00	03
e SS			03	18
e LR			06	00

O = 04.46.00.8

6.5S. 81.1W.

h. about 33km.

Near coast of southern Peru.

Mag: 5.2 C.G.S.  
Dist. approx 42° Bda.

31 e PP		05	51	20
e SKS			56	44
e SKKS			58	24
e PS		06	01	12
e PPS			03	00
e SS			08	35
e SSS			12	00
e LQ			22	00
e LR			27	00

O = 05.30.49.3

29.9S. 177.7W.

h. about 48km.

Kermadec Islands.

Mag: 6½ - 6½ (Pas) 6½ (Brk)

6 - 6½ (Pal) 5.7 C.G.S.

Dist. approx 124° Bda.

31 e LR		08	16	00
---------	--	----	----	----

31 e LR		13	20	00
---------	--	----	----	----

31 e PP		19	43	30
e SKKS			50	30
e PS			53	20
e PPS			55	00
e SS		20	00	20
e SSS			04	00
e LR			20	00

O = 19.22.53.3

30.0S. 178.0W.

h. about 50km.

Kermadec Islands.

Mag: 6½ - 6½ (Pas) 6½ (Brk)

5.8 C.G.S.

Dist. approx 124° Bda.