

035

LAMONT GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY

PALISADES, NEW YORK



International
Seismological
Centre



SEISMOLOGICAL BULLETIN

By

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1 January 1959 - 30 April 1959

L.G.O. Contribution No. 370

OCT 8 1959

STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS



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Latitude: $41^{\circ} 00' 25''$ North
Longitude: $73^{\circ} 54' 31''$ West
Elevation: 102.59 meters
Bedrock: Palisades diabase Triassic Age

INSTRUMENTS

Three component Columbia University seismographs.
To = 12 sec., Tg = 15 sec.

Three component Benioff seismographs. Short period, To = 1 sec.,
Tg = 0.2 sec. Long Period To = 1 sec., Tg = 75 sec.

One Columbia University vertical seismograph. To = .33 sec.,
Tg = 0.2 sec.

Three component Columbia University visual recording seismographs,
To = 12 sec.

One Columbia University vertical seismograph for visual recording
To = 1 sec.

Three component Columbia University long period seismographs.
To = 15 sec., Tg = 75 sec.

Three component Columbia University long period seismographs.
To = 30 sec., Tg = 100 sec.

Two Columbia University Microbarographs. To = 10 sec., Tg = 75 sec.

ABBREVIATIONS

i = sudden beginning of the motion (impetus)

e = gradual beginning of the motion (emersio)

Lg = short period continental surface shear wave

Rg = continental Rayleigh wave

Comp. = compression

All times are G.C.T.

Dil. = dilatation

Time - I.B.M. Invar pendulum clock corrected by Naval Observatory
time signals every 6 hours.

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Jan 1	eLQ eLR(NW)	08 08	11 17	43 53	Tonga Islands
1	eLQ eLR(NW)	08 08	36 42	43 23	Fiji Islands
2	eLR	02	18	13	
2	eLR	05	45	13	Near coast of France
2	eLQ eLR LR from SW	20 20	20 23	38 12	
3	eP eS eScS eLQ eLR LR from SSE	11 11 11 11 11	27 35 37 41 45	18 00 16 32 42	Near coast of Peru USCGS 0 = 11 17. 38 14 $\frac{1}{2}$ °S 75 $\frac{1}{2}$ °W Dist. 55°
7 8	iP(comp S) iPP eS i i	01 01 01 01 01	39 40 44 45 45	36 23 26 00 13	Lesser Antilles USCGS 0 = 01 33 48 15 $\frac{1}{2}$ °N 61°W Depth = 100 km Mag. = 6 $\frac{1}{2}$ -6 3/4 Dist. = 27.50°
8	eLR	16	18	11	
11	iP ipP ePP e(S) eL	07 07 07 07 07	28 28 29 34 37	34 38 31 27 11	Guatemala USCGS 0 = 07 22 40 15°N 90°W Depth = 200 km Dist. = 29.50°
12	eLR	14	49	11	Hokkaido, Japan
13	ePP eSKKKS ePKKP ePPS eSS e e eLQ eLR LR from NW	01 01 01 01 01 01 02 02 02	35 42 44 45 50 56 02 07 13	29 51 41 21 57 11 07 11 51	Marianas Islands USCGS 0 = 01 15 25 13 $\frac{1}{2}$ °N 146°E Mag. = 6 3/4 Dist. = 114.4°



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Date	Phase	h	m	s	Remarks
1959					
Jan 13	e	07	39	27	Aleutians
	eLR(NW)	07	52	11	
13	eLQ	08	35	41	Costa Rica USCGS O = 08 34 08 9°N 83½°W Depth = 100 km Dist. = 33°
	eLR	08	43	11	
13	iP(D11)	08	40	45	
	ePP	08	41	43	
	ePPP	08	41	59	
	eS	08	46	25	
	ePcS	08	47	19	
	eLQ	08	48	19	
	eLR(SW)	08	49	39	
	eScS	08	51	35	
	Rg	08	52	47	
13	eLR(E)	10	42	11	New Britain
13	eLR	12	51	41	
14	eLR	00	55	25	
14	eLR	04	08	59	
14	eLR	05	57	11	
14	e	11	36	41	
	e	11	43	11	
	eLR(W)	11	48	41	
15	eLR	00	11	10	
15	e	09	00	10	
	eLR	09	04	10	
15	eLR	14	18	10	
15	e	19	36	33	
	e	19	39	35	
15	eLR	20	18	29	

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Date	Phase	h	m	s	Remarks
1959					
Jan 15	ePP	21	39	41	South of Fiji
	ePPP	21	42	17	USCGS 0 = 21 20 26
	eSKS	21	44	25	25 $\frac{1}{2}$ °S 180°
	eSKKS	21	45	53	Depth = 500 km
	e(PKKP)	21	48	01	Mag. = 6 $\frac{1}{2}$
	eSP	21	48	49	Dist. = 118°
	esPS	21	51	19	
	eSS	21	54	39	
	eSSS	22	00	43	
	e	22	09	29	
	e(L)	22	12	25	
16	eP	01	41	47	Fox Islands
	iP	01	41	48	USCGS 0 = 01 31 22
	i(PcP)	01	42	27	52 $\frac{1}{2}$ °N 171°W
	eS	01	50	13	Dist. = 62.3°
	ePPS	01	50	19	
	eScS	01	51	29	
	eSS	01	55	19	
	eLQ	01	57	09	
	eLR	02	01	49	
	LR from NW				
16	eSS	17	07	21	Queen Charlotte Islands
	eLQ	17	08	09	USCGS 0 = 16 50 40
	eLR	17	10	39	52°N 131 $\frac{1}{2}$ °W
	Lg	17	11	39	Dist. = 40.1°
	Rg	17	14	09	
	LR from NW.				
17	eLR	12	32	09	Solomon Islands
18	eLR	07	51	49	Atlantic Ocean
18	e	15	35	09	Fox Islands Aleutians
	eLR(NW)	15	40	53	
18	eLR(W)	17	37	09	
18	eLR(NW)	20	27	09	New Britain
18	ePS	22	51	09	Fiji
	eSS	22	54	35	USCGS 0 = 22 23 15
	e	23	05	09	Depth = 450 km
					Mag. = 6 1/4
					Dist. = 112.7°
					19°S 178°W
19	eLR	11	42	39	New Hebrides



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Date	Phase	h	m	s	Remarks
1959					
Jan 20	eLR	00	35	09	
20	eLR	02	41	09	
20	e	17	06	35	Timor Islands
	e	17	18	19	USCGS 0 = 16 46 11
	e	17	23	39	9°S 126°E
	e	17	29	43	Dist. = 143.6°
	e	17	34	13	
	e	17	37	45	
	e	17	42	09	
20	eLQ	17	45	29	
	eLR	17	54	09	
	LR from NNW				
21	eLR	12	10	09	Philippines
21	eLR	14	50	29	
22	eP	05	23	53	Near East coast of Honshu, Japan
	epP	05	24	04	USCGS 0 = 05 10 25
	ePP	05	27	39	34°N 142°E
	e(PKS)	05	31	33	Depth = normal
	eSKS	05	34	21	Mag. = 7
	iSKKS	05	35	01	Dist. = 98.4°
	eS	05	35	11	
	ePS	05	36	13	
	e	05	36	25	
	e(PKKP)	05	39	17	
	eSS	05	41	35	
	e(PKKS)	05	44	13	
	eLQ	05	50	39	
	eLR	05	56	29	
	LR from NNW				
22	eLQ	10	39	49	Japan
	eLR	10	45	09	
22	eLR(NW)	18	51	28	
23	eLR	02	04	30	
23	eLR	03	29	08	
23	eLR	03	44	38	

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Date	Phase	h	m	s	Remarks
1959					
Jan 23	e	08	11	36	
	eLQ	08	22	48	
	eLR(SE)	08	25	24	
23	eLQ	10	35	20	
	eLR(SE)	10	36	28	
23	eLR	17	16	52	
24	e	01	20	04	
	eLR(W)	01	23	38	
24	eSKS	05	32	22	Honshu, Japan
	eS	05	33	08	USCGS 0 = 05 08 35
	ePS	05	34	16	37 $\frac{1}{2}$ °N 141°E
	eSS	05	40	44	Depth = 100 km
	ePKKS	05	42	16	Dist. = 95.5°
	ePKPPKP	05	46	42	
	e(SSS)	05	48	16	
	eLR	05	54	08	
	LR from NW				
24	eLR	16	38	08	Tonga Islands
24	iP	19	48	38	Mexico-Guatemala border
	ipP	19	48	54	USCGS 0 = 19 42 20
	e	19	49	54	15°N 92 $\frac{1}{2}$ °W
	eS	19	53	43	Mag. = 6 $\frac{1}{4}$
	e	19	54	22	Dist. = 30.5°
	eLR	19	57	38	
	LR from SW				
24	eP	20	02	35	Azores
	iP	20	02	37	USCGS 0 = 19 55 14
	eS	20	08	32	37 $\frac{1}{2}$ °N 24 $\frac{1}{2}$ °W
	ePcS	20	09	00	Mag. = 6 $\frac{1}{4}$
	eSS	20	11	22	Dist. = 38°
	e	20	11	44	
	eScS	20	12	08	
	eLR	20	12	38	
	LR from NE				
25	eLR	02	17	52	
25	eLR	06	17	44	
25	eLR	23	32	08	
26	eLR	03	24	08	Chile



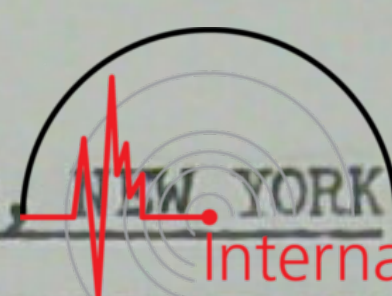
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Date	Phase	h	m	s	Remarks
1959					
Jan 27	1P	00	25	25	Eastern Dominican Republic
	1pP	00	25	35	USCGS 0 = 00 20 22
	ePP	00	25	55	18°N 68½°W
	1S	00	29	35	Depth = 100 km
	e	00	30	12	Dist. = 23.4°
	eLR	00	31	34	
	LR from SSE				
	T	00	47	40	
27	eLR	03	19	08	
27	eLR(NE)	03	57	38	Jan Magen Islands
27	eLR(NE)	06	54	04	
27	eLR	07	18	38	
28	1P	10	15	33	Juan Fernandez Islands
	ePPP	10	20	04	USCGS 0 = 10 04 10
	eS	10	24	52	30½°S 79°W
	ePPS	10	25	48	Mag. 6¼
	eSS	10	29	40	Dist. = 71.1°
	eSSS	10	33	20	
	eLR	10	38	08	
	LR from S				
28	eLR	12	27	26	
29	e	06	53	35	Mid-Atlantic
	e	06	58	47	Dist. = 32.5°
	eLR	07	02	07	
	LR from ENE				
29	1P	20	32	06	Aleutians
	e	20	33	33	USCGS 0 = 20 21 27
	ePP	20	34	43	52°N 174°W
	eS	20	40	41	Mag. 5 3/4 - 6
	ePPS	20	41	09	Dist. 64.4°
	eScS	20	41	57	
	eSS	20	45	27	
	eSSS	20	48	01	
	eLQ	20	50	07	
	eLR	20	52	47	
	LR from NW				
29	1P	21	04	12	
	e(S)	21	12	19	

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Date	Phase	h	m	s	Remarks
1959					
Jan 29	iP	21	08	57	Aleutians
	e(S)	21	18	27	USCGS 0 = 20 58 18
	eSS	21	23	07	52°N 174°W
	eLQ	21	25	27	Dist. = 64.4°
	eLR	21	30	07	
	LR from NW				
29	eP	22	46	07	S. Bolivia
	ePPP	22	49	23	USCGS 0 = 22 35 54
	eS	22	54	15	Depth = 150 km
	eScS	22	55	51	Dist. = 60°
	eSS	22	57	19	
	eSSS	23	00	31	
	eLQ	23	01	57	
	eLR	23	04	07	
	LR from SSE				
29	iP	23	33	20	Spitzbergen
	P(Z) 8 sec 1.5 mic comp from NE				USCGS 0 = 23 24 30
	ipP	23	33	26	71°N 8°E
	ePP	23	35	11	Dist. = 49.3°
	eS	23	40	27	
	ePS	23	40	47	
	eSS	23	43	46	
	eLQ	23	45	27	
	eLR	23	47	23	
30	ePKP	00	39	58	Solomon Islands
	ePPP	00	44	13	USCGS 0 = 00 19 25
	e(PKKP)	00	50	21	10°S 161°E
	e	00	54	55	Mag. = 6 3/4
	eSS	00	57	19	Dist. = 122.8°
	eSSS	01	01	27	
	eLQ	01	10	07	
	eLR	01	16	07	
	LR from NW				
30	eP	05	22	13	Hudson Bay
	e	05	25	44	USCGS 0 = 05 17 32
	eS	05	25	57	61°N 78½°W
	iLg	05	27	58	Dist. = 20.6°
	Rg	05	29	11	
	LR from N				



Date	Phase	h	m	s	Remarks
1959					
Jan 30	eP	16	26	48	Near coast of Chile
	eS	16	35	46	26 $\frac{1}{2}$ °S 71°W
	ePPS	16	36	16	Depth = 100 km
	eSS	16	40	30	Dist. = 67.2°
	eLQ	16	43	30	
	eLR	16	48	36	
	LR from SSE				
30	ePKP	18	27	52	Kermadec Islands
	ePP	18	29	16	USCGS 0 = 18 09 02
	ePKS	18	30	40	31°S 179°W
	ePPP	18	32	02	Dist. = 120.3°
	ePPS	18	41	06	
	ePKKS	18	42	16	
	eSS	18	45	50	
	eSSS	18	54	46	
	e	19	00	20	
	e	19	04	36	
	eLR(W)	19	08	06	
30	iP	20	51	57	Japan
	eSKS	21	02	22	USCGS 0 = 20 38 58
	eS	21	02	46	44°N 144°E
	ePS	21	03	46	Mag. = 5 $\frac{3}{4}$ - 6
	ePPS	21	04	56	Dist. = 88.8°
	eSS	21	09	06	
	e(PKKS)	21	12	30	
	eLQ	21	17	06	
	eLR	21	21	46	
	LR from NW				
30	iP	22	29	46	Japan
	eSKS	22	40	16	USCGS 0 = 22 16 47
	eS	22	40	38	44°N 144°E
	ePS	22	41	38	Mag. = 6 $\frac{1}{4}$
	ePPS	22	42	14	Dist. = 88.8°
	eSS	22	47	00	
	eLQ	22	53	50	
	eLR	22	59	36	
	LR from NW				
31	e	08	19	36	
	e	08	36	06	
	eLR	08	49	54	
Feb 1	eLQ	04	46	46	Hindu Kush
	eLR	04	50	06	
2	eLR	20	28	02	Crete

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Date	Phase	h	m	s	Remarks
1959					
Feb 2	eLR	21	07	30	
2	eLR	23	15	46	
3	eLR	08	40	06	
3	eLR	12	05	06	
3	eLR	12	24	06	
4	iP	00	17	22	Aleutians
	e	00	17	30	USCGS 0 = 00 06 25
	e	00	33	50	
	eLR(NW)	00	42	36	
4	eLR(SE)	00	21	06	
5	e	01	21	54	Alaskan Peninsula
	e	01	26	36	
	eLR	01	29	36	
5	eLR	03	40	06	
5	eLR	10	55	54	Japan
6	e	07	54	11	Japan
	eLR	08	06	13	
6	eLR	08	23	05	Mexico
6	iP	14	43	46	Aleutians
	eS	14	52	25	USCGS 0 = 14 32 58
	eScS	14	53	35	$51\frac{1}{2}^{\circ}\text{N}$ $175\frac{1}{2}^{\circ}\text{W}$
	eSS	14	57	21	Dist. = 65.8°
	e	15	00	01	
	eIQ	15	02	17	
	eLR	15	04	57	
	LR from NW				
6	eIQ	20	53	21	
	eLR(SW)	20	56	27	
7	eLR	04	32	05	



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Date	Phase	h	m	s	Remarks
1959					
Feb 7	iP	09	45	10	Near coast of Northern Peru
	P(Z) 10 sec 19 mic comp from SW				USCGS 0 = 09 36 51
	ePP	09	46	57	4°S 81 $\frac{1}{2}$ °W
	ePcS	09	50	18	Mag. = 7 $\frac{1}{4}$ -7 $\frac{1}{2}$
	iS	09	51	53	Dist. = 45.3°
	eSS	09	55	25	
	eLQ	09	56	23	
	eLR	09	57	23	
	LR from SW				
7	eLR	20	38	05	Greece
8	eLR(E)	00	23	05	
8	eP	01	08	59	North Atlantic
	ePP	01	10	05	USCGS 0 = 01 02 26
	eS	01	14	05	49°N 28 $\frac{1}{2}$ °W
	eSS	01	16	01	Dist. = 32.7°
	eLR	01	17	05	
	LR from E				
9	eP	04	53	30	Aleutians
	eS	05	02	29	USCGS 0 = 04 42 33
	eSS	05	07	25	50 $\frac{1}{2}$ °N 177 $\frac{1}{2}$ °W
	eSSS	05	10	05	Dist. = 67.0
	eLQ	05	11	45	
	eLR	05	15	05	
	LR from NW				
9	eLR(NW)	22	13	05	Solomon Islands
11	eLR(SW)	01	58	25	Oaxaca, Mexico
11	eLR(N)	04	48	51	Philippines
11	e	12	33	17	
11	eLR	13	48	21	Santa Cruz Islands
11	iP	13	58	46	Oaxaca, Mexico
	i	13	58	53	USCGS 0 = 13 52 13
	ePcP	14	01	13	16°N 97°W
	eS	14	03	53	Mag. = 6
	eLQ	14	06	05	Dist. = 31.9°
	eLR	14	07	15	
	LR from SW				
11	eLR	22	27	05	Samoa
12	eLR	20	01	05	

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Date	Phase	h	m	s	Remarks
1959					
Feb 13	eLR	20	45	34	
14	ePKP	04	55	48	Flores Sea
	e	04	57	08	USCGS 0 = 04 36 10
	ePP	04	59	20	$7\frac{1}{2}^{\circ}\text{S}$ 122°E
	ePPS	05	12	19	Dist. = 143.8°
	eSS	05	18	18	
	e	05	22	52	
	eLQ	05	36	20	
	eLR	05	43	44	
	LR from NW				
14	eLQ	13	36	34	
	eLR	13	40	58	
14	eLR	23	23	34	Pakistan
15	eP	04	13	44	S. Sandwich Islands
	ePP	04	18	14	USCGS 0 = 03 59 25
	eSKS	04	24	24	$59\frac{1}{2}^{\circ}\text{S}$ 25°W
	eS	04	25	52	Mag. = $6\frac{1}{2}-6\frac{3}{4}$
	ePS	04	27	32	Dist. = 108.8°
	ePPS	04	28	18	
	eSS	04	33	48	
	eLQ	04	43	56	
	eLR	04	49	52	
	LR from SSE				
15	eSS	05	16	56	Aftershock
	eLQ	05	27	04	S. Sandwich Islands
	eLR	05	33	04	USCGS 0 = 04 42 35
	LR from SSE				Mag. = $6\frac{3}{4}$
15	eLR	21	07	34	
16	eP	00	47	32	Near coast of Ecuador
	ePP	00	49	10	USCGS 0 = 00 39 32
	eS	00	53	52	1°S $81\frac{1}{2}^{\circ}\text{W}$
	ePS	00	54	14	Dist. = 42.4°
	eSS	00	56	48	
	eLQ	00	57	08	
	eLR	01	00	04	
	LR from S				
16	eLQ	18	07	20	Honduras-Nicaragua border
	eLR	18	12	34	
	LR from SSW				



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Date	Phase	h	m	s	Remarks
1959 Feb 17	iP	12	13	36	Fox Islands
	epP	12	13	39	USCGS 0 = 12 03 05
	ePcP	12	14	14	51 $\frac{1}{2}$ °N 171°W
	eS	12	22	10	Mag. = 6-6 $\frac{1}{4}$
	eScS	12	23	16	Dist. = 63.4°
	eSS	12	26	44	
	eSSS	12	29	44	
	e(PKKP)	12	33	52	
	eLR	12	34	24	
	LR from NW				
17	eLQ	20	31	26	
	eLR	20	31	46	
	LR from NW				
18	eLR(NW)	23	57	03	
20	eP	04	24	09	Central Chile
	ePPP	04	27	55	USCGS 0 = 04 12 54
	eS	04	33	55	30 $\frac{1}{2}$ °S 71°W
	e(SSS)	04	41	31	Depth = 100 km
	eLR	04	49	03	Mag. = 6 $\frac{1}{4}$ -6 $\frac{1}{2}$
					Dist. = 71.2°
20	eLR	11	47	33	
20	iP	18	22	11	Guatemala
	eS	18	27	28	USCGS 0 = 18 16 22
	ePcS	18	28	24	15 $\frac{1}{2}$ °N 91°W
	eLQ	18	30	34	Depth = 150 km
	eScS	18	33	28	Mag. = 6 $\frac{1}{2}$
	LR from SW				Dist. = 29.4°
20	eLR	23	32	04	
21	eLQ	09	25	24	Luzon, Philippines
	eLR	09	30	18	
23	ePKP	02	19	41	New Britain
	ePS	02	31	19	USCGS 0 = 01 58 38
	ePPS	02	32	45	5 $\frac{1}{2}$ °S 150°E
	eSS	02	37	15	Dist. = 127.3°
	eSSS	02	42	11	
	eLQ	02	51	53	
	eLR ₁	02	58	05	
	LR ₁ from NW				
	eLR ₂	03	50	25	
	LR ₂ from SE				
23	eLR(SE)	08	05	05	Atlantic Ocean

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Date	Phase	h	m	s	Remarks
1959					
Feb 23	eS	10	52	25	Kamchatka
	eSS	10	57	21	USCGS 0 = 10 31 07
	eSSS	11	02	45	53 $\frac{1}{2}$ °N 158 $\frac{1}{2}$ °E
	eLQ	11	03	21	Dist. = 76.0°
	eLR	11	07	49	
23	eP	16	16	52	Kurile Islands
	eS	16	26	51	USCGS 0 = 16 04 48
	ePPS	16	28	05	50°N 157°E
	eSS	16	32	21	Dist. = 78.9°
	ePKKP	16	35	35	
	eSSS	16	36	31	
	eLQ	16	37	49	
	eLR	16	43	35	
	LR from NW				
23	eLQ	21	36	05	
	eLR(NE)	21	37	05	
23	eLQ	23	15	35	Kermadec Islands
	eLR(W)	23	18	05	
24	e	08	02	05	
	e	08	12	35	
	eLR	08	17	05	
24	eLR	13	53	05	
25	eLR	13	49	05	
25	eLR	21	16	33	
26	eLR	00	48	05	
26	eLR(NE)	07	21	05	East coast of Greenland
26	eLR	21	56	05	
27	eLR	06	34	05	
27	eLQ	16	10	05	
	eLR(SW)	16	14	35	
27	eLR	19	37	05	Banda Sea



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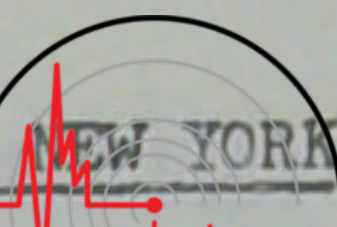
PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Feb 27	eP	21	11	11	Ryukyu Islands
	ePP	21	15	29	USCGS 0 = 20 56 30
	eSKS	21	21	05	27 $\frac{1}{2}$ °N 129°E
	ePS	21	24	51	Dist. = 108.6°
	eSS	21	30	51	
	eSSS	21	35	45	
	eLR	21	49	45	
	LR from NW				
27	eLR(W)	22	37	13	SW Utah
					USCGS 0 = 22 19 52
					38°N 112 $\frac{1}{2}$ °W
28	eP	01	42	39	Fox Islands
	eS	01	50	53	USCGS 0 = 01 32 22
	eSS	01	55	19	53°N 168 $\frac{1}{2}$ °W
	eLR	02	00	41	Dist. = 60.5°
	LR from NW				
28	eLR	05	06	05	
28	e	05	46	51	
	eLR	05	58	05	
28	eLR(W)	06	51	05	South of Fiji
28	eLR	07	45	25	
28	eLR	09	27	05	
28	eSS	12	27	47	500 miles west of Macquarie Isls.
	e	12	32	45	USCGS 0 = 11 44 05
	e	12	40	05	
	e	12	52	05	
	eLR	12	56	21	
28	eLR	22	35	35	
Mar 1	eP	00	40	14	Spitzbergen- near Arctic Ocean
	ePP	00	42	02	USCGS 0 = 00 31 20
	ePPP	00	42	34	74 $\frac{1}{2}$ °N 9°E
	eS	00	47	14	Dist. = 49.1°
	eSS	00	51	12	
	eLQ	00	52	50	
	eLR	00	54	22	
	LR from NNE				

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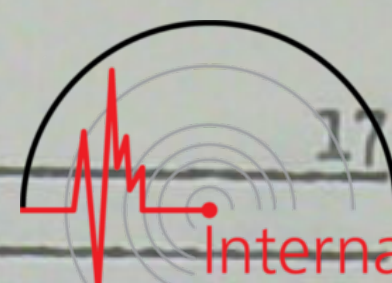
Date	Phase	h	m	s	Remarks
1959					
Mar 1	eP	17	05	30	Near North coast of New Guinea
	ePKP	17	08	27	USCGS 0 = 16 49 13
	ePP	17	10	50	$10^{\circ}\text{S } 134\frac{1}{2}^{\circ}\text{E}$
	ePKS	17	11	57	Depth = 100 km
	eSKS	17	14	50	Mag. = 7
	e(PPS)	17	23	54	Dist. = 132.3°
	eSS	17	29	12	
	e	17	33	18	
	e	17	43	54	
	eLQ	17	45	18	
	eLR ₁	17	50	26	
	LR ₁ from NNW				
	eLQ ₂	18	24	36	
	eLR ₂	18	36	06	
	LR ₂ from SSE				
	G ₃	19	13	36	
2	iPKP	01	57	23	Sunda Strait
	iPKP	01	57	34	USCGS 0 = 01 37 59
	eLQ	02	44	36	$7^{\circ}\text{S } 104^{\circ}\text{E}$
	eLR	02	50	10	Depth = 100 km
	LR from N				Dist. = 146.1°
2	ePKP	09	33	16	Timor Islands
	ePKS	09	36	42	USCGS 0 = 09 13 42
	e	09	58	42	$8^{\circ}\text{S } 128^{\circ}\text{E}$
	eLR	10	21	06	Dist. = 141.8°
	LR from NW				
2	eLR	16	31	16	Hindu Kush
2	eLR	23	47	14	California
					$37^{\circ}\text{N } 122^{\circ}\text{W}$
					Mag. = 4.9
4	eLR	01	44	05	Kamchatka
4	eLR	07	42	35	Marianas Islands
5	eLR	00	56	46	Kamchatka
5	eLR	06	30	06	Kermadec
5	eLR	08	30	06	Marianas Islands
5	eLR	14	00	06	
5	eLR	14	53	06	Kuriles



Date	Phase	h	m	s	Remarks
1959					
Mar 5	eLR	17	29	36	Kermadec
5	eLQ	23	57	06	Sumatra
6	eLR	00	04	36	
	LR from WE				
6	eLR	05	42	36	
6	eLR(NW)	21	29	06	Solomon Islands
7	eLR(NW)	10	29	06	Sumatra
7	eLR	15	45	05	
8	eLR(W)	18	06	21	
8	eLR	19	04	05	
8	e	23	23	35	Central Peru
	eLR	23	27	35	
9	eLR(SE)	08	22	25	
9	eLQ	11	11	05	Philippines
	eLR(NW)	11	18	19	
9	e	19	25	19	Honshu, Japan
	eLQ	19	26	05	
	eLR	19	29	05	
	LR from NW				
9	iP	22	08	55	Guatemala
	ePP	22	09	11	USCGS O = 22 02 58
	eS	22	13	39	15 $\frac{1}{2}$ °N 91°W
	eSS	22	15	05	Depth = 150 km
	eLR	22	16	45	Dist. = 29.4°
	LR from SW				
9	eLR(SW)	23	49	31	
10	e	00	20	45	
	eLR(SW)	00	25	53	
10	eLR	18	43	53	

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Date	Phase	h	m	s	Remarks
1959					
Mar 10	eP	22	56	21	Near coast of Guatemala
	ePP	22	57	05	USCGS 0 = 22 49 39
	eS	23	01	15	14°N 92½°W
	eSS	23	01	35	Dist. = 31.4°
	eLR	23	04	29	
	LR from SW				
11	eLR(W)	01	21	25	
11	eLR(SE)	07	47	37	Banda Sea
11	e	14	43	25	Guatemala
	eLR(SW)	14	46	05	
11	eLR(SW)	17	40	47	
11	eLR(NE)	18	55	35	
11	eLR	19	29	41	
12	ePPP	01	49	37	Caroline Islands
	eSKKS	01	55	05	USCGS 0 = 01 29 07
	ePPS	01	59	13	17°N 145°E
	e	01	59	25	Mag. = 6
	eSKKS	02	05	45	Dist. = 111.9°
	eIQ	02	15	05	
	eLR	02	19	35	
	LR from NW				
12	eLR(NW)	10	00	05	
14	eLR	03	45	05	Kurile Islands
14	eLR	08	03	05	
14	eLR	22	01	25	
15	eLR	11	00	39	Nicaragua ?
16	eLR	08	52	05	Kurile Islands
17	eLR	00	04	53	



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Date	Phase	h	m	s	Remarks
1959					
Mar 17	ePP	08	44	17	Formosa
	eSKS	08	50	51	USCGS 0 = 08 25 22
	eSKKS	08	51	49	27 $\frac{1}{2}$ °N 130°E
	ePS	08	53	55	Mag. = 5 3/4
	eSS	08	59	29	Dist. = 108.3°
	e	09	02	15	
	eLQ	09	12	05	
	eLR	09	19	05	
	LR from N				
17	eLR	11	35	05	
17	ePS	13	26	45	Sandwich Islands
	eSS	13	33	05	USCGS 0 = 12 58 57
	e	13	43	21	57°S 25°W
	eLR	13	45	25	Dist. = 106°
	LR from SE				
17	e	15	37	51	
	eLR(SE)	15	53	21	
17	eLR(W)	18	05	05	
17	eLR	20	12	35	
17	eLQ	22	20	05	Jan Magen Islands
	eLR(NE)	22	21	45	USCGS 0 = 22 00 06
17	eLR	23	57	05	
18	ePP	01	00	25	Formosa aftershock
	eSKKKS	01	08	09	USCGS 0 = 00 41 17
	ePS	01	09	45	27°N 129°E
	ePPS	01	10	35	Dist. = 109.1°
	eSS	01	15	25	
	e	01	17	05	
	e	01	21	01	
	eLQ	01	29	05	
	eLR	01	33	05	
	LR from N				
18	eLQ	08	13	05	Honshu, Japan
	eLR(N)	08	15	05	
18	eLQ	13	00	25	Oaxaca, Mexico
	eLR(W)	13	02	35	



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Date	Phase	h	m	s	Remarks
1959					
Mar 19	iP	08	31	47	North Atlantic Ocean
	ePP	08	32	39	USCGS 0 = 08 25 32
	iS	08	36	41	35°N 36°W
	eSS	08	38	11	Mag. = $6\frac{1}{4}$ - $6\frac{1}{2}$
	eLR	08	38	41	Dist. = 30.3°
	LR from E				
19	iP	08	32	28	North Atlantic Ocean
	eS	08	37	25	Aftershock
19	eLR	11	04	05	
19	eLR(SW)	12	42	45	
19	eLR(SW)	12	59	31	
19	eLR(NW)	15	18	05	Japan
19	eLR(NW)	19	48	23	
20	eLR(SE)	00	09	25	
20	eLQ	01	38	33	Kamchatka
	eLR(N)	01	43	45	
20	eLQ	02	59	05	Tonga Islands
	eLR(NW)	03	02	21	
20	eLR	07	55	53	
20	e	11	15	15	
	e	11	20	53	
	eLQ	11	27	25	
	eLR	11	30	29	
	LR from SSE				
20	eLR(NW)	13	05	05	
20	eLR	15	28	35	
20	e	15	55	11	
	eLQ	15	58	41	
	eLR(NW)	16	01	25	
20	eLR	16	34	15	
21	eLR(W)	00	08	05	
21	i	00	13	12	



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Date	Phase	h	m	s	Remarks
1959					
Mar 21	eLR(NE)	01	05	05	
21	eLR(W)	04	54	19	Fiji Islands
21	eLR(NW)	09	35	05	
21	eLR	11	13	05	
21	e	19	55	25	Unimak Islands
	eLQ	19	57	05	USCGS 0 = 19 37 08
	eLR(N)	20	03	05	53 $\frac{1}{2}$ °N 165°W Dist. = 58.9°
21	eLR	21	49	45	
23	eP	07	17	07	Northwestern Nevada
	eS	07	22	25	USCGS 0 = 07 10 22
	eSS	07	24	37	40°N 118°W
	eLQ	07	25	17	Mag. = 6 $\frac{1}{4}$ -6 $\frac{1}{2}$
	eLR	07	26	17	Dist. = 33.3°
	Lg	07	28	17	
	Rg	07	30	25	
	LR from W				
23	eLR(W)	14	14	05	Samoa
23	eLR(SW)	20	37	05	Southern Calif?
24	e	18	07	16	Honshu, Japan
	eLQ	18	11	06	USCGS 0 = 17 18 24
	eLR(NW)	18	15	06	34°N 142°W Dist. = 98.4°
25	eLQ	00	39	06	
	eLR	00	40	50	
25	eLR(SW)	05	39	06	
25	eLR	08	18	06	
25	eL	12	27	06	
25	eL	16	04	46	

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Date	Phase	h	m	s	Remarks
1959					
Mar 26	ePKP	02	43	08	Solomon Islands
	ePP	02	45	18	USCGS 0 = 02 24 12
	eSKKS	02	51	40	7°S 155 ¹ / ₂ °E
	ePPS	02	56	34	Depth = 60 km
	eSS	03	02	16	Dist. = 124.6°
	eSSS	03	06	38	
	eLQ	03	22	06	
	LR from WNW				
	eLQ ₂	04	15	30	
	eLR ₂	04	21	06	
	LR ₂ from ESE				
26	eLR	05	28	36	
27	iP	07	07	25	Leeward Islands
	iPP	07	08	05	USCGS 0 = 07 01 47
	eS	07	11	42	17°N 61°W
	eLR	07	13	22	Depth = 60 km
	LR from SSE				Dist. = 26.4°
27	eS	23	11	30	Pacific Ocean
	eSn	23	14	46	USCGS 0 = 22 57 36
	eLQ	23	15	30	1°N 85°W
	eLR	23	17	16	Dist. = 41.2°
	LR from S				
29	eP	05	45	39	Virgin Islands
	eS	05	49	34	USCGS 0 = 05 39 58
	e	05	49	44	19°N 64 ¹ / ₂ °W
	T	06	06	58	Dist. = 23.4°
	T max	06	08	17	
30	eLQ	07	32	26	Panama
	eLR(SE)	07	34	10	
30	eLQ	13	35	25	China
	eLR(NW)	13	39	06	
30	eLQ	19	04	24	Tonga
	eLR(N)	19	09	30	
30	e	21	15	06	
	eLR(E)	21	19	10	
30	eLR(NW)	22	09	14	
31	e	01	28	06	Aleutians
	eLQ	01	33	54	
	eLR(NW)	01	35	50	



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Date	Phase	h	m	s	Remarks
1959					
Mar 31	eLR(SW)	05	12	50	
31	e(P)	07	35	14	Samoa
	ePP	07	39	30	USCGS 0 = 07 20 45
	eSKS	07	45	46	15°S 173°W
	eS	07	47	06	Mag. = 6
	ePS	07	48	46	Dist. = 106.5°
	ePPS	07	49	50	
	eSS	07	54	46	
	e(SKKS)	07	57	20	
	eSSS	08	01	02	
	eLQ	08	05	06	
	eLR	08	10	22	
	LR from WNW				
	eLR ₂	09	29	36	
	LR ₂ from ESE				
Apr 1	iP	00	42	39	Canary Islands
	P(Z) 12 sec 2 mic dil from E				USCGS 0 = 00 34 18
	ePP	00	44	26	27½°N 21°W
	eS	00	49	18	Mag. = 6¼
	eSS	00	52	34	Dist. = 45.1°
	eLQ	00	53	30	
	eLR	00	55	30	
	LR from E				
1	eLR	15	38	06	
1	eS	18	30	58	California
	eLQ	18	35	54	USCGS 0 = 18 18 28
	eLR	18	39	06	40°N 120°W
	LR from NW				Mag. = 6
					Dist. = 34.8°
2	eLR(NW)	00	32	22	Solomon Islands
2	eLR	05	13	06	N.W. Turkey
2	eLQ	20	13	20	Batan Islands
	eLR	20	23	26	
2	eLR(W)	22	47	06	Tonga Islands
2	eLQ	01	58	06	
	eLR	02	00	36	
4	eL	19	42	06	Kamchatka

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Date	Phase	h	m	s	Remarks
1959					
Apr 5	eLR(NW)	06	09	47	Aleutians
5	eS	11	05	37	SE France
	eSS	11	09	33	USCGS 0 = 10 47 52
	eLQ	11	12	05	44°N 7°E
	eLR(NE)	11	14	49	Dist. = 57.4°
5	eLR	12	44	25	
5	ePP	23	50	45	Near N coast of New Guinea
	ePKS	23	51	53	USCGS 0 = 23 29 25
	ePKS	23	52	14	5½°S 146°E
	ePPP	23	54	39	Dist. = 129.8°
	ePPS	00	02	35	
	eSS	00	09	29	
	e	00	12	13	
	e	00	17	25	
	e	00	20	55	
	e	00	22	55	
	eLQ	00	23	45	
	eLR	00	30	05	
	LR from NW				
	eLR ₂ (SE)	01	22	23	
6	e	05	35	06	Aleutians
	eLQ	05	57	05	
	eLR	06	00	05	
6	iPKP	14	32	22	Sumba
	iPKP	14	32	32	USCGS 0 = 14 12 36
	ePP	14	35	47	10°S 120½°E
	ePS	14	46	01	Mag. = 6¼
	eSS	14	54	51	Dist. = 146.6°
	e	15	00	45	
	e	15	04	53	
	e(LR)	15	16	25	
	LR from NW				
7	eLR	00	59	25	Marianas
7	eLQ	23	59	05	
8	eLR	00	03	05	
8	e	00	45	57	
	e	00	53	45	
	e	00	55	53	
	e	00	57	11	
	eLR	00	59	05	



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PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Apr 8	iPKP	01	41	38	Kermadec
	ePP	01	43	29	USCGS 0 = 01 23 26
	eSKS	01	47	53	$32\frac{1}{2}^{\circ}\text{S}$ $179\frac{1}{2}^{\circ}\text{E}$
	eSKKS	01	49	25	Depth = 400km
	ePPS	01	54	21	Mag. = $6-6\frac{1}{4}$
	eSS	01	59	49	Dist. = 122.5°
	eLR(SE)	02	13	05	
8	eLR	08	53	05	Tonga
8	eP	11	57	34	S. Chile - Argentina border
	ePP	12	01	09	USCGS 0 = 11 44 25
	eSKS	12	08	05	$50\frac{1}{2}^{\circ}\text{S}$ 73°W
	eSKKS	12	08	43	Dist. = 91.1°
	eS	12	09	20	
	eSS	12	14	43	
	eSSS	12	19	09	
	e	12	23	35	
	eLQ	12	26	05	
	eLR	12	29	45	
	LR from SW				
8	eLR	14	05	05	
8	eLR(W)	16	32	45	
9	eLR(NW)	03	40	21	
9	e(PS)	05	14	15	New Hebrides Islands
	e	05	21	05	USCGS 0 = 04 43 58
	eLQ	05	35	05	$14\frac{1}{2}^{\circ}\text{S}$ $167\frac{1}{2}^{\circ}\text{E}$
	eLR(W)	05	40	53	Depth = 100 km
					Dist. = 120.9°
9	ePKP	06	38	29	Indian Ocean
	ePP	06	42	33	1000 mi N Kerguelen Islands
	ePPP	06	46	15	USCGS 0 = 06 18 30
	e	06	53	05	36°S 76°E
	ePPS	06	56	19	Dist. = 156°
	eSS	07	02	41	
	e	07	04	45	
	e	07	08	23	
	e	07	20	01	
	eLQ	07	24	13	
	eLR	07	32	53	
	LR from SSE				



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Date	Phase	h	m	s	Remarks
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1959

Apr 9

e	13	05	45
e	13	10	09
eLR(SW)	13	10	47

9

eP	17	43	11
ePPP	17	45	12
ePcP	17	45	36
eS	17	48	32
ePcS	17	49	22
eSS	17	51	08
eLR	17	52	58
LR from S			

South of Panama

USCGS 0 = 17 36 10

Mag. = $6\frac{1}{4}$ - $6\frac{1}{2}$ Dist. = 34.6° $7^{\circ}\text{N } 82^{\circ}\text{W}$

10

ePP	06	06	52
ePPP	06	10	08
epPPP	06	11	17
eSKS	06	12	48
ePS	06	15	48
e(PKKS)	06	19	44
e(SSS)	06	29	20

South of Fiji

USCGS 0 = 05 47 34

 $25^{\circ}\text{S } 178\frac{1}{2}^{\circ}\text{E}$

Depth = 600 km

Dist. = 118.8°

10

eLR	11	04	04
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11

eLR	00	45	34
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11

e	03	36	56
eLQ	03	41	04
eLR	03	44	04

11

eLR	06	10	04
-----	----	----	----

11

eP	09	31	44
eS	09	36	56
eLR(SW)	09	40	24

Costa Rica - Panama Border

USCGS 0 = 09 25 08

 $9\frac{1}{2}^{\circ}\text{N } 83^{\circ}\text{W}$ Dist. = 32.4°

11

eSS	12	08	48
eSSS	12	13	56
eLQ	12	26	04
eLR(N)	12	30	04

Spice Islands

USCGS 0 = 11 28 50

 $1^{\circ}\text{S } 128^{\circ}\text{E}$ Dist. = 135.5°

11

eSKS	18	21	00
ePS	18	24	12
eSS	18	29	04
eLQ	18	39	40
eLR	18	46	04

Samoa Islands

USCGS 0 = 17 55 53

 $15^{\circ}\text{S } 173\frac{1}{2}^{\circ}\text{W}$ Dist. = 106.9°

12

eLR	03	15	34
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Date	Phase	h	m	s	Remarks
1959					
Apr 12	eLQ	03	26	04	
	eLR	03	27	04	
12	eLR	06	21	34	
12	eLR	06	54	44	Samoa
12	iP	10	00	52	Mexico
	epP	10	01	17	USCGS 0 = 09 54 51
	ePP	10	01	47	17 $\frac{1}{2}$ °N 95°W
	iS	10	05	44	Depth = 100 km
	eLQ	10	06	20	Mag. = 6-6 $\frac{1}{4}$
	eLR	10	08	00	Dist. = 29.7°
	LR from SW				
12	ePKP	15	41	42	Near coast of New Guinea
	ePP	15	44	30	USCGS 0 = 15 22 33
	ePKS	15	45	22	4 $\frac{1}{2}$ °S 134°E
	ePPP	15	46	40	Dist. = 135.9°
	eSKKS	15	50	40	
	eSKKKS	15	51	24	
	ePS	15	54	48	
	eScSPKP	15	57	04	
	eSS	16	03	04	
	eSSS	16	11	52	
	eLQ	16	21	04	
	eLR(NW)	16	26	14	
12	eP	21	08	28	Samoa
	ePP	21	12	44	USCGS 0 = 20 54 00
	ePPP	21	15	18	15 $\frac{1}{2}$ °S 173°W
	eSKS	21	19	04	Mag. = 6-6 $\frac{1}{2}$
	eSKKS	21	20	28	Dist. = 106.8°
	ePS	21	22	04	
	ePPS	21	23	12	
	eSS	21	27	54	
	eSSS	21	32	20	
	eLQ	21	38	16	
	eLR	21	44	14	
	LR from NW				
	eLQ ₂	22	39	52	
	eLR ₂	22	42	14	
13	e	00	30	38	
	eLQ	00	32	04	
	eLR	00	34	04	
	LR from SE				
13	eLR(N)	19	38	04	India - Burma border

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Date	Phase	h	m	s	Remarks
1959					
Apr 13	eLR(NW)	23	05	34	Aleutians
14	eLR(S)	01	05	34	
14	eP	03	00	00	Gulf of California
	ePP	03	01	04	USCGS 0 = 02 53 04
	eS	03	05	04	24°N 109½°W
	eSS	03	07	16	Mag. = 5½-5½
	eLQ	03	08	14	Dist. = 33.8°
	eLR	03	09	20	
	Rg	03	13	56	
	LR from SW				
14	eLQ	07	00	04	Gulf of California
	eLR	07	02	04	Aftershock
	LR from SW				
14	eP	07	29	35	Alaska Peninsula
	epP	07	29	53	USCGS 0 = 07 20 28
	eS	07	36	50	57½°N 155°W
	eSS	07	40	30	Depth = 60 km
	eLQ	07	42	44	Dist. = 52.2°
	eLR	07	44	34	
	LR from NW				
14	eLR	16	07	34	
14	eLR	17	57	04	
15	eP	00	29	34	Near S coast of Hokkaido, Japan
	eSKS	00	39	00	USCGS 0 = 00 15 21
	eS	00	39	20	41½°N 143°E
	e	00	45	34	Dist. = 91.3°
	e	00	52	18	
	eLQ	00	54	04	
	eLR	00	59	04	
15	eLR	05	51	10	Pacific Ocean
15	eLR	17	38	04	Aleutians
15	e	21	18	14	
16	eLR	07	55	04	Fiji
					Depth = 550 km
16	eLR	10	05	14	
16	eLR	17	03	18	Marianas



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Date	Phase	h	m	s	Remarks
1959					
Apr 18	eLQ	07	10	33	New Ireland Island region
	eLR(NW)	07	16	03	
19	eP	07	38	45	Pacific Ocean
	ePP	07	42	15	USCGS 0 = 07 26 15
	eS	07	49	17	45°S 82°W
	ePPS	07	51	03	Mag. = 6
	eSS	07	55	09	Dist. = 85.9°
	eSSS	07	58	29	
	eLQ	08	01	33	
	eLR	08	05	33	
	LR from S				
19	eP	15	12	24	Kodiak Island, Alaska
	e(PcP)	15	13	41	USCGS 0 = 15 03 26
	eS	15	19	29	58°N 152½°W
	eSS	15	23	33	Dist. = 50.7°
	eLQ	15	26	19	
	eLR	15	27	43	
	LR from NW				
19	e(SKS)	20	08	11	Dist. = 108°?
	e(PPS)	20	12	03	
	e(SS)	20	17	11	
	e	20	20	03	
	eLQ	20	26	33	
	eLR(NW)	20	33	03	
19	eL	23	20	33	
20	e(S)	03	31	37	Dist. = 50° (SSE)
	e(SS)	03	34	13	
	eLQ	03	35	49	
20	ePKP	03	46	55	New Britain
	ePP	03	49	09	USCGS 0 = 03 27 52
	ePKS	03	50	10	6°S 149½°E
	ePKS	03	50	18	Depth = 100 km
	eSKKKS	03	56	03	Dist. = 127.8°
	eScSPKP	04	02	03	
	eSS	04	06	03	
	eSSS	04	11	33	
	e	04	14	31	
	eLQ	04	20	19	
	eLR	04	27	33	
	LR from NW				
20	eP	04	27	55	Costa Rica
	eLR	04	37	13	USCGS 0 = 04 21 10
					8½°N 83°W
					Dist. = 33.4°



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Date	Phase	h	m	s	Remarks
1959					
Apr 20	e(L)	05	06	23	
21	eLQ	05	23	03	
	eLR	05	25	23	
21	eLR	10	38	03	Kurile Islands
21	eLQ	13	54	33	Bristol Bay
	eLR	13	55	33	56°N 162 $\frac{1}{2}$ °W
21	eLR	16	33	23	
21	eLR	17	11	03	
22	eLR	04	24	51	Hindu Kush
22	eLR	08	00	03	
22	eLR	09	45	33	
22	eP	11	05	12	Fox Islands
	ePP	11	07	33	USCGS 0 = 10 55 05
	eS	11	13	15	54°N 167°W
	ePS	11	13	29	Dist. = 59.8°
	ePPS	11	13	43	
	eSS	11	18	03	
	eLQ	11	21	53	
	eLR	11	24	03	
	LR from NW				
22	eLR	16	33	53	
22	eLR	17	38	23	Venezuela - Colombia border
22	eLR	18	25	03	
22	eP	19	08	04	Nicaragua
	P(Z) 5 sec 1.5 mic comp				USCGS 0 = 19 01 41
	ePP	19	09	13	11 $\frac{1}{2}$ °N 86 $\frac{1}{2}$ °W
	ePcP	19	10	21	Dist. = 31.3°
	eS	19	13	39	
	ePcS	19	14	37	
	eSS	19	16	07	
	e	19	16	35	
	eLR	19	17	33	
	LR from SW				



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Date	Phase	h	m	s	Remarks
1959					
Apr 22	eP	20	39	03	Pacific Ocean
	e	20	40	03	USCGS 0 = 20 26 46
	e	20	48	59	36 $\frac{1}{2}$ °S 97 $\frac{1}{2}$ °W
	ePPS	20	49	49	Mag. = 5 $\frac{3}{4}$ -6
	e	20	51	17	Dist. = 80.2°
	eSS	20	53	53	
	eSSS	20	57	13	
	eIQ	21	00	23	
	eLR	21	05	19	
	LR from SW				
	eLR ₂	21	49	03	
22	e	21	30	55	
23	eLR	04	46	15	
23	eIQ	12	24	33	
	eLR(SE)	12	26	03	
23	eIQ	13	01	49	
	eLR(SW)	13	02	33	
23	eLR	20	07	03	
23	eLR	20	34	03	
23	eP	21	00	15	Virginia - W. Virginia border
	e	21	00	31	USCGS 0 = 20 58 41
	e	21	01	08	37 $\frac{1}{2}$ °N 80 $\frac{1}{2}$ °W
	e(S)	21	01	37	Dist. = 6.2°
	e(Lg)	21	01	55	
	eRg	21	02	19	
	LR from SW				
24	eLR	01	15	03	
24	eLR	03	20	03	
24	eP	09	37	57	Near coast of Nicaragua
	e	09	39	05	USCGS 0 = 09 31 33
	eS	09	43	23	11 $\frac{1}{2}$ °N 86 $\frac{1}{2}$ °W
	eSS	09	45	21	Mag. = 6 $\frac{1}{4}$ -6 $\frac{1}{2}$
	eIQ	09	46	03	Dist. = 31.3°
	eLR	09	47	23	
	LR from SW				

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Date	Phase	h	m	s	Remarks
1959					
Apr 24	eP	18	13	15	Kermadec Islands
	ePKP	18	16	53	USCGS 0 = 17 57 58
	ePKP	18	16	59	Mag. = $6\frac{1}{2}$ -6 $\frac{3}{4}$
	ePP	18	18	19	Dist. = 119.6°
	ePKS	18	20	09	31°S 178°W
	eSKS	18	23	43	
	eSKKS	18	25	13	
	ePS	18	28	13	
	ePPS	18	29	33	
	eSS	18	34	45	
	e	18	39	20	
	eLQ	18	48	33	
	eLR	18	54	33	
	LR from WSW				
25	eP	00	38	19	Turkey
	eS	00	48	03	USCGS = 00 26 40
	eSS	00	53	09	37°N $28\frac{1}{2}^{\circ}\text{E}$
	e(PKKP)	00	56	23	Dist. = 74.8°
	eLQ	01	00	03	
	eLR	01	03	03	
	LR from ENE				
	eLQ ₂	01	39	33	
25	eP	06	11	05	Puerto Rico?
	eS	06	15	15	USCGS 0 = 06 06 04
	eLR	06	16	47	$19\frac{1}{2}^{\circ}\text{N}$ 66°W
	LR from SSE				Dist. = 22.5°
25	eLR	08	48	03	
25	eLR	10	08	03	
25	eLR	11	47	03	
25	eLR	16	25	03	
25	eLR	17	54	03	
25	eLR	19	18	03	
25	eLR	21	03	03	
25	cLR	22	09	33	
25	eLQ	23	36	03	
	eLR	23	38	03	
26	eLR	02	35	03	



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Date	Phase	h	m	s	Remarks
1959					
Apr 26	eLR	04	43	03	
26	e	05	45	33	Samoa
	e	05	50	33	USCGS 0 = 05 17 47
	eLQ	06	01	19	16°S 171½°W
	eLR(SW)	06	07	47	Dist. = 105.9°
26	eLQ	06	47	33	
	eLR(NW)	06	50	33	
26	eLR	09	46	03	Solomon Islands
26	eLR	13	32	03	China - Burma border
26	eLR	14	18	03	
26	eP	20	55	12	Formosa
	epP	20	55	41	USCGS 0 = 20 40 38
	ePKP	20	58	59	25°N 122½°E
	epPKP	20	59	31	Depth = 100 km
	ePP	20	59	49	Mag. = 7½
	epPP	21	00	25	Dist. = 112.7°
	ePPP	21	01	53	
	eSKS	21	05	39	
	ePS	21	09	07	
	ePPS	21	10	13	
	eSS	21	16	03	
	eLQ ₁	21	26	23	
	eLR ₁	21	33	03	
	eLQ ₂	22	34	03	
	eLR ₂	22	36	43	
	LR ₁ from NNW				
27	ePKP	10	07	32	Banda Sea
	ePP	10	10	58	USCGS 0 = 09 48 09
	ePKS	10	11	15	7°S 129°E
	ePKS	10	11	55	Dist. = 140.5°
	eSKKS	10	17	15	
	ePPS	10	22	41	
	eSKKS	10	25	07	
	eSS	10	29	25	
	eLR	10	45	23	
	LR from NW				
27	eLQ	13	53	03	China
	eLR(NW)	14	00	03	

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Date	Phase	h	m	s	Remarks
1959					
Apr 28	iP(comp from SW)	11	15	46	Mexico Guatemala border
	epP	11	16	07	USCGS 0 = 11 09 30
	ePP	11	16	49	15°N 93°W
	ePcP	11	18	03	Depth = 100 km
	eS	11	20	51	Mag. = 6½
	eLQ	11	23	11	Dist. = 30.8°
	eLR	11	27	09	
28	eLR	17	39	04	Alcutians
30	eP	13	40	22	Sandwich Islands
	ePKP	13	43	54	USCGS 0 = 13 25 35
	ePP	13	44	28	55½°S 26°W
	ePPP	13	46	50	Dist. = 104.4°
	ePS	13	53	26	
	LR from SE				
30	eLR(N)	23	02	34	Arctic Ocean W of Spitzbergen



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LAMONT GEOLOGICAL OBSERVATORY COLUMBIA UNIVERSITY

PALISADES, NEW YORK



SEISMOLOGICAL BULLETIN

By

RUTH B. SIMON

1 May 1959 - 31 August 1959

L.G.O. Contribution No. 384

June

STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS



Latitude: $41^{\circ} 00' 25''$ North
Longitude: $73^{\circ} 54' 31''$ West
Elevation: 102.59 meters
Bedrock: Palisades diabase Triassic Age

INSTRUMENTS

Three component Columbia University seismographs.
To = 12 sec., Tg = 15 sec.

Three component Benioff seismographs. Short period, To = 1 sec.,
Tg = 0.2 sec. Long Period, To = 1 sec. Tg = 75 sec.

One Columbia University vertical seismograph. To = .33 sec.,
Tg = 0.2 sec.

Three component Columbia University visual recording seismographs,
To = 12 sec.

One Columbia University vertical seismograph for visual recording
To = 1 sec.

Three component Columbia University long period seismographs.
To = 15 sec., Tg = 75 sec.

Three component Columbia University long period seismographs.
To = 30 sec., Tg = 100 sec.

Two Columbia University Microbarographs. To = 10 sec., Tg = 75 sec.

ABBREVIATIONS

i = sudden beginning of the motion (impetus)

e = gradual beginning of the motion (emersio)

Lg = short period continental surface shear wave

Rg = Continental Rayleigh wave

Comp. = compression

All times are G.C.T.

Dil. = dilatation

Time - I.B.M. Invar pendulum clock corrected by Naval Observatory
time signals every six hours.

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Date	Phase	h	m	s	Remarks
1959					
May 1	eLR	06	49	34	Outer Mongolia
1	eLQ	08	15	26	
	eLR(NW)	08	22	04	
1	eLR	09	02	24	
1	eLR(NW)	15	56	24	Solomon Islands
2	eLR(W)	06	15	20	
2	eLR	23	03	34	
3	eLR	00	19	04	
3	eLR	03	21	52	Solomon Islands
3	eP	04	47	37	Near coast of Nicaragua
	ePcP	04	50	24	USCGS 0 = 04 41 24
	eS	04	52	42	12 $\frac{1}{2}$ °N 87 $\frac{1}{2}$ °W
	eSS	04	53	16	Depth 100 km
	eLQ	04	54	52	Dist. 30.3°
	eLR	04	56	44	
	LR from SW				
4	eLR	02	11	04	
4	iP	07	27	23	Kamchatka
	Dil from NW				USCGS 0 = 07 15 42
	ePP	07	30	34	52 $\frac{1}{2}$ °N 159 $\frac{1}{2}$ °E
	ePPP	07	32	22	Depth 60 km
	eSKS	07	36	46	Mag. 8
	eS	07	37	24	Dist. 76.4°
	ePPS	07	38	14	
	eSS	07	41	48	
	eSSS	07	45	30	
	eLQ	07	47	20	
	eLR	07	51	34	
4	eLR	18	21	24	Tibet
5	eLR	03	08	04	
5	eLR	05	59	34	Peru



Date	Phase	h	m	s	Remarks
1959					
May 5	eP	19	15	02	Kamchatka aftershock
	eS	19	25	36	USCGS 0 = 19 04 16
	eSS	19	30	28	53°N 159°E
	eLQ	19	36	10	Mag. 6
	eLR	19	40	04	Dist. = 75.8°
	LR from NW				
6	eLR	04	41	04	
6	eLR	08	02	52	Aleutians
6	eLR	08	16	04	Aleutians
6	eLR	12	22	24	
6	eLR	15	19	44	
6	ePS	17	56	44	Fiji Islands
	ePPS	17	57	44	USCGS 0 = 17 29 26
	eSS	18	01	04	18°S 179°W
					Depth 600 km
					Dist. 112.8°
6	ePP	19	14	36	Ceram Islands
	ePPS	19	27	18	USCGS 0 = 18 52 22
	eSS	19	32	48	3°S 128°E
	eSSS	19	38	24	Dist. 137.3°
7	ePP	00	24	18	Bismark Sea
	ePKS	00	26	04	USCGS 0 = 00 03 24
	ePKKS	00	36	28	3°S 148½°E
	eSS	00	41	30	Mag. 6-6¼
	eLQ ₁	00	55	28	Dist. 126.3°
	eLR ₁	01	03	56	
	eLQ ₂	01	41	04	
	eLR ₂	01	53	40	
	LR ₁ from NW				
	LR ₂ from SE				
7	e	04	03	30	
	e	04	06	56	
7	e	04	11	52	
	eLQ	04	12	46	
	eLR	04	14	24	
	LR from SE				
7	e	05	35	56	
	eLQ	05	41	20	
	eLR(NW)	05	48	34	

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Date	Phase	h	m	s	Remarks
1959					
May 7	eLQ	06	16	20	
	eLR(N)	06	24	04	
7	eLQ	09	55	36	Bismark Sea
	eLR(NW)	10	03	04	
7	eLQ	12	09	04	Bismark Sea
	eLR(NW)	12	15	56	
7	eP	16	23	22	Trinidad ?
	ePcP	16	26	20	Dist. 30°
	eS	16	28	16	
	ePcS	16	29	24	
	eLR	16	33	28	
	LR from SE				
7	eLQ	16	33	56	
	eLR(SE)	16	35	26	
7	eP	18	17	26	aftershock
	ePP	18	18	14	Dist. 33°
	ePPP	18	19	04	
	eS	18	22	44	
	eSS	18	24	04	
	eLR(SE)	18	25	26	
7	eLR(SE)	18	30	24	
7	eLR(N)	21	27	04	
8	eLR(S)	00	50	24	
8	eLR(NW)	07	08	34	Kamchatka
8	eLR(S)	09	31	24	
8	eLR(SE)	10	06	34	
8	eLR(SE)	10	20	04	
8	eP	11	46	26	Kamchatka
	eS	11	55	54	USCGS 0 = 11 34 50
	ePS	11	56	18	53 $\frac{1}{2}$ °N 160 $\frac{1}{2}$ °E
	e(SS)	12	01	34	Depth 60 km
	eLQ	12	04	24	Mag. 6
	eLR	12	07	34	Dist 74.8°
	LR from NW				



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Date	Phase	h	m	s	Remarks
1959					
May 8	eLR	16	10	18	Kurile Islands
8	eLR	21	28	04	
9	eLR	02	56	04	
9	e	16	56	40	
	e	16	57	52	
	e	16	59	14	
	eLR	17	00	56	
	LR from SW				
10	eP	00	09	44	Kurile Islands
	epP	00	10	01	USCGS 0 = 23 57 03
	ePP	00	13	16	45°N 149°E
	eSKS	00	20	12	Depth 60 km
	eS	00	21	12	Mag. 9
	eSS	00	26	48	Dist. 86.1°
	eSSS	00	30	50	
	eLQ	00	35	26	
	eLR	00	40	52	
	LR from NW				
10	eLQ	02	16	04	
	eLR(SW)	02	17	52	
10	e(PP)	03	19	28	
	e(PPS)	03	30	04	
	e(SS)	03	34	28	
	e(SSS)	03	39	04	
	eLQ	03	46	12	
	eLR	03	51	04	
	LR from SW				
10	eLR(N)	05	35	44	
10	eLR	06	28	04	
10	eLR(N)	08	53	04	
10	eLR(SW)	19	51	34	
11	eLR(W)	08	48	04	
11	e	14	03	24	
	eLR(SW)	14	06	32	
11	iP	16	40	31	Kamchatka
	eLQ	17	01	04	
	eLR	17	03	04	

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Date	Phase	h	m	s	Remarks
1959					
May 11	eL	18	29	18	
12	eLR	03	58	34	Panama - Colombia border
12	eP	05	08	53	Komandorski Islands
	ePcP	05	09	22	USCGS 0 = 04 57 35
	eS	05	18	04	54 $\frac{1}{2}$ °N 168°E
	ePS	05	18	12	Mag. 6 $\frac{1}{2}$
	eScS	05	18	52	Dist. 71.1°
	eSS	05	22	24	
	eSSS	05	26	04	
	eIQ	05	27	24	
	eLR	05	31	48	
	LR from n(W)				
12	iP	09	57	30	Salta Prov. Argentina
	P(Z) 8 sec 3 mic comp				USCGS 0 = 09 46 51
	ePcP	09	58	04	23 $\frac{1}{2}$ °S 64 $\frac{1}{2}$ °W
	ePP	09	59	44	Dist. 64.8°
	ePcS	10	02	06	
	eS	10	06	07	
	eScS	10	07	20	
	eSS	10	10	04	
	eSSS	10	13	30	
	eIQ	10	14	24	
	eLR	10	17	24	
	LR from SSE				
12	eP	10	24	25	Bolivia
12	eLR(SW)	15	10	04	
12	eP	21	51	13	Aleutians
	ePcP	21	51	25	USCGS 0 = 21 40 22
	ePP	21	54	14	51 $\frac{1}{2}$ °N 177°W
	eS	22	00	03	Dist. 66.2°
	ePS	22	00	18	
	eScS	22	01	08	
	eSS	22	05	12	
	eSSS	22	08	18	
	eIQ	22	09	58	
	eLR	22	16	46	
	LR from NW				
12	eP	22	10	48	Aleutians
	eIQ	22	28	24	USCGS 0 = 21 59 56
	eLR	22	35	24	51 $\frac{1}{2}$ °N 177°W
	LR from NW				Dist. 66.2°
13	eLR	00	38	34	



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Date	Phase	h	m	s	Remarks
1959					
May 13	eLR	01	36	18	Fiji Islands
13	eLR	01	56	16	
13	eLR	10	42	34	Samoa
13	eS	16	50	04	Argentina aftershock
	eSS	16	55	04	
	eLR(SE)	17	00	46	
14	eLQ	01	50	04	
	eLR(NW)	01	58	04	
14	eP	06	48	28	Crete
	eS	06	58	00	USCGS O = 06 36 57
	ePS	06	58	40	35 $\frac{1}{2}$ °N 24 $\frac{1}{2}$ °E
	eSS	07	02	34	Mag. 6 $\frac{1}{2}$
	eSSS	07	06	04	Dist. 73.3°
	eLQ	07	08	12	
	eLR	07	11	56	
	LR from NE				
14	eLR(SW)	08	57	04	
14	eLR(NW)	10	30	44	New Hebrides
14	eLR(SE)	11	25	50	
14	eLR(NW)	12	46	22	New Hebrides
14	eLR(SE)	13	42	04	
14	eLR(NW)	14	20	04	
14	eLQ	19	55	04	
	eLR(NE)	19	59	34	
15	eLQ	02	06	04	
	eLR(SW)	02	08	28	
15	eLR(SW)	03	35	44	
15	eP	07	55	34	Near coast of Mexico
	ePP	07	56	52	USCGS O = 07 49 30
	eS	08	01	00	14°N 93°W
	e	08	01	20	Depth 100 km
	eLQ	08	02	22	Dist. 31.6°
	eLR	08	05	04	
	LR from SW				

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Date	Phase	h	m	s	Remarks
1959					
May 15	e	13	49	16	
	eLR	13	54	25	
15	eLR	18	48	55	
15	eLR	22	24	15	
16	e(S)	05	18	31	Alaska
	eLR	05	21	20	USCGS 0 = 04 58 25
					65 $\frac{1}{2}$ °N 156°W
					Dist. 50.4°
16	eP	06	31	53	New Britain
	ePKP	06	35	19	USCGS 0 = 06 16 23
	ePP	06	37	04	4 $\frac{1}{2}$ °S 153 $\frac{1}{2}$ °E
	ePKS	06	38	39	Depth 60 km
	eSKS	06	42	22	Mag. 6 $\frac{3}{4}$
	eSKKS	06	44	04	Dist. 124.5°
	ePPS	06	48	18	
	eSS	06	54	16	
	eSSS	06	58	18	
	eLQ	07	07	00	
	eLR	07	11	05	
	LR from NW				
16	eL	15	35	55	
17	eLR	02	22	35	
17	eLR	03	08	15	
18	eLR	06	40	15	New Britain
18	eLR	08	02	40	Aleutians
18	eLR	14	31	35	
19	eLR	03	50	40	New Britain
19	eLQ	04	09	40	
19	eLR	06	09	10	
19	eLR	06	19	05	
19	eLR	08	50	50	Philippines
19	eLR	10	37	25	



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Date	Phase	h	m	s	Remarks
1959					
May 19	eSKS	15	41	50	Eastern Afghanistan
	eSS	15	49	13	USCGS 0 = 15 17 44
	eLQ	15	56	45	33°N 68½°E
	eLR	16	04	25	Dist. 98.6°
19	eP	19	15	27	Dist. 36°
	eS	19	21	03	
	eLR	19	25	45	
19	eLR	19	48	30	Volcano Islands
20	iP	01	01	38	South Pacific Ocean
	ePPP	01	06	11	USCGS 0 = 00 50 03
	eS	01	11	06	23°S 114°W
	iS	01	11	12	Dist. 73.7°
	eSS	01	16	03	
	eLQ	01	21	25	
	eLR	01	26	05	
	LR from (W?SW)				
20	eLR	17	15	03	Dodecanese Islands
20	eLR(S)	19	03	03	
20	eP	19	47	29	Kurile Islands
	e	19	47	47	USCGS 0 = 19 35 03
	eSKS	19	58	09	44½°N 149°E
	eS	19	58	23	Dist. = 86.6°
	ePS	19	59	21	
	eSS	20	04	45	
	eSSS	20	11	19	
	eLQ	20	15	03	
	eLR	20	20	03	
	LR from NW				
20	eLR(N)	22	49	33	
21	eLR	02	49	03	Philippines
21	eLR(NW)	04	08	03	
21	eLR	05	02	03	
21	eP	07	01	59	Aleutians
	eS	07	10	27	USCGS 0 = 06 51 40
	eSS	07	15	33	52½°N 170½°W
	eLQ	07	19	33	Dist. 61.9°
	eLR	07	22	33	
	LR from NW				

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Date	Phase	h	m	s	Remarks
1959					
May 21	eLQ	08	56	33	
	eLR	08	58	47	
21	eP	09	40	22	Dist. 6.3°
	eS	09	41	17	
	i	09	41	43	
	Lg	09	41	47	
21	eP	11	45	26	Chile-Argentina border
	iP	11	45	31	USCGS 0 = 11 34 23
	eS	11	54	27	Depth 60 km.
	eSS	11	59	47	Mag. 6
	e	12	03	19	Dist. 69°
	eLQ	12	05	23	
	eLR	12	08	03	
	LR from SSE				
21	eLR	18	06	17	Western Nevada
					USCGS 0 = 17 51 41
					39½°N 118°W
					Mag. 4 3/4
22	eLR	01	44	43	
22	eLR	05	23	23	Kamchatka
22	eLR	07	13	33	
22	eLR	07	58	03	New Zealand
22	eLR	08	45	03	
22	eLR	09	32	33	Northern Burma
23	eLR	04	12	33	
23	eLR	10	11	33	
23	eLR	13	23	33	
24	eP	00	14	38	Puerto Rico
	i(PP)	00	14	58	USCGS 0 = 00 09 29
	eS	00	18	49	19½°N 64½°W
	i(SS)	00	19	01	Dist. 22.9°
	eLR	00	20	15	
	T	00	36	36	
	T(max)	00	38	08	
	LR from SSE				

Date	Phase	h	m	s	Remarks
1959					
May 24	iP	19	23	49	SE Mexico
	P(Z) 4 sec 8 mic	comp from SW			USCGS 0 = 19 17 40
	epP	19	24	14	17 $\frac{1}{2}$ °N 97°W
	ePP	19	25	00	Depth 100 km
	iS	19	28	44	Mag. 6 3/4-7
	eSS	19	30	14	Dist. 30.7°
	eLR	19	32	18	
	LR from SW				
	G ₂	20	51	28	
	G ₃	21	37	24	
25	eLR	03	03	44	
25	eLR	08	06	10	
25	eLR	08	45	28	
25	eLR	11	37	34	
25	eLR(NW)	16	17	04	
25	eLR	20	21	34	Eastern India
26	eLR	01	17	34	
26	eLR	03	40	34	
26	eP	04	27	20	Ryuku Islands
	ePP	04	31	48	USCGS 0 = 04 13 01
	ePPP	04	34	10	27 $\frac{1}{2}$ °N 126 $\frac{1}{2}$ °E
	eSKS	04	37	48	Depth 100 km
	eSKKS	04	39	24	Mag. 6 $\frac{1}{2}$
	ePS	04	41	18	Dist. 109.3°
	eSS	04	47	32	
	eSSS	04	51	44	
	e	04	58	24	
	eLQ	05	00	24	
	eLR	05	05	44	
	LR from NW				
26	eP	05	33	31	Leeward Islands
	e	05	33	46	USCGS 0 = 05 27 36
	eS	05	38	09	17°N 61°W
	e	05	38	17	Dist. 26.4°
	eLQ	05	38	44	
	eLR	05	39	20	
	(T)	05	57	12	
	LR from SSE				

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Date	Phase	h	m	s	Remarks
1959					
May 26	eLR	06	10	04	
26	eLR	07	11	24	Northern Afghanistan-Tadzhik border
26	eLQ	07	16	14	
	eLR(NE)	07	20	34	
26	eLR	10	05	24	
26	eLR(NW)	10	49	04	
26	eLQ	16	15	55	
	eLR(NW)	16	17	35	
26	eLR	18	40	35	
26	eLQ	22	10	21	
	eLR	22	13	35	
27	eP	04	17	37	Dist. 21°
	eS	04	21	25	
	eLQ	04	22	35	
	eLR	04	23	05	
	LR from SE				
27	eLQ	05	42	05	
	eLR(NW)	05	46	05	
27	eLQ	05	58	21	
	eLR(ESE)	06	00	25	
27	eLR	11	46	35	
27	eLR	12	34	45	
27	eLQ	21	05	56	Hungary-Rumania border
	eLR(NE)	21	08	50	
27	eLR(NW)	22	52	06	Philippines
28	eLR(SW)	01	13	06	
28	eLR(SE)	02	36	06	
28	eLR	03	33	06	
28	eLR	04	58	06	Colombia
28	eLR	08	30	06	Marianas Islands



Date	Phase	h	m	s	Remarks
1959					
May 28	eLR(NW)	13	26	06	
28	eLQ	16	08	36	Philippines
	eLR	16	14	46	
28	eLR	23	28	06	New Guinea
29	eLR	01	44	20	
29	eLR	05	14	42	
29	eLR	06	52	06	
29	eLR	07	13	36	
29	ePKP	11	01	37	New Hebrides Islands USCGS O = 10 42 48 19°S 169½°E Depth 100 km Mag. 6½ Dist. 122.2°
	ePP	11	03	14	
	ePKS	11	04	42	
	eSKS	11	09	16	
	eSKKS	11	10	38	
	eSKKKS	11	11	12	
	ePKKP	11	12	56	
	ePS	11	13	52	
	ePPS	11	15	06	
	eSS	11	19	50	
	e	11	22	50	
	e	11	25	06	
	e	11	32	06	
	eLQ	11	34	36	
	eLR	11	40	32	
	LR from NW				
	eLR ₂	12	34	36	
29	eLR	18	44	06	
29	e	19	46	29	
30	e	12	52	06	Kamchatka
	eLQ	12	54	06	
	eLR	12	56	26	
	LR from SW				
30	eLR	19	18	06	
30	eLR	21	05	26	
31	e	02	57	51	

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Date	Phase	h	m	s	Remarks
1959					
May 31	●P	05	41	29	Caymen Islands
	●PP	05	41	54	USCGS O = 05 36 25
	eS	05	45	38	20°N 80°W
	eSS	05	45	50	Dist. 21.6°
	eLR	05	47	18	
	LR from SW				
31	e(PKP)	09	47	09	
	e(PP)	09	48	48	
	e(PKS)	09	49	34	
	e(SKKS)	09	55	58	
	e(PS)	09	58	46	
	e(SS)	10	06	06	
	e	10	10	16	
	eIQ	10	21	06	
	eLR	10	25	26	
	LR from NW (interpretation doubtful)				
	eLR ₂	11	20	06	
31	eLR	13	42	36	Rumania or Iran?
31	eIQ	15	19	36	
	eLR	15	21	00	
	LR from NW				
31	eIQ	16	55	06	
	eLR	16	57	22	
	LR from NW				
June 1	eLR(W)	13	03	48	Solomon Islands
1	ePP	17	27	54	Solomon Islands
	eSKKS	17	35	02	USCGS O = 17 07 23
	ePS	17	37	27	6½°S 155½°E
	ePPS	17	39	24	Depth 100 km
	eSS	17	45	06	Dist. 124.3°
	eSSS	17	49	20	
	e	17	55	46	
	e	18	01	06	
	eLR(NW)	18	04	26	
	eLR ₂ (SE)	18	57	06	
1	eLR	21	06	36	
2	e	01	13	06	Kyusku, Japan
	e	01	20	36	
	eLR(N)	01	33	16	



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Date	Phase	h	m	s	Remarks
1959					
June 2	e	03	07	16	Batan Islands
	e	03	14	36	
	eLR(NW)	03	31	14	
2	eLR(SW)	04	20	06	
2	eLQ	05	47	06	Batan Islands
	eLR(NW)	05	55	06	
2	eP	05	54	42	Chile-Argentina border Depth 150 km
2	eLR	13	37	06	
2	eLR	18	35	16	South Island, New Zealand
2	eLQ	20	06	06	Formosa
	eLR(N)	20	13	50	
3	eP	03	50	58	Near West coast of Colombia
	ePP	03	52	18	USCGS 0 = 03 43 42
	eS	03	56	36	4°N 77°W
	eLQ	03	58	36	Dist. 36.9°
	eLR	03	59	06	
	LR from ESE				
3	eP	05	53	54	Fox Islands
	eS	06	02	10	USCGS 0 = 05 43 28
	eScS	06	03	36	52½°N 170°W
	eLQ	06	11	06	Dist. 62.1°
	eLR	06	13	36	
	LR from NW				
3	eLQ	09	12	46	Kamchatka
	eLR(NW)	09	17	36	
4	e	02	09	57	Costa Rica
	eLQ	02	12	45	
	eLR	02	14	21	
	LR from SW				
4	eLR	05	51	05	
4	eLR	11	18	25	
4	i	12	34	56	Local shock, felt Palisades and Bergen County

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Date	Phase	h	m	s	Remarks
1959					
June 4	eP	12	40	45	Cook Inlet
	epP	12	41	07	USCGS 0 = 12 31 56
	eS	12	47	46	59 $\frac{1}{2}$ °N 152 $\frac{1}{2}$ °W
	eScS	12	50	29	Depth 100 km
	eSS	12	51	31	Mag. 5 $\frac{1}{2}$
	eLQ	12	53	15	Dist. 50.6°
	eLR(NW)	12	55	15	
4	eLQ	13	29	29	
	eLR(SW)	13	31	47	
4	eLR	18	38	05	
4	eLR(W)	21	08	35	
4	e	22	20	31	Tonga Islands region
	e	22	26	25	USCGS 0 = 21 34 21
	e	22	31	13	
	eLQ	22	38	25	
	eLR(W)	22	43	05	
5	eLR	00	02	23	
5	eLR	04	02	05	
5	eLR	04	32	15	
5	eLR(NW)	06	52	01	Solomons
5	eLR	07	56	05	
5	eLR	10	17	45	
5	eP	20	43	31	Near coast of Nicaragua
	epP	20	43	53	USCGS 0 = 20 37 15
	eS	20	49	11	12°N 86 $\frac{1}{2}$ °W
	eLQ	20	51	19	Depth 100 km
	eLR	20	52	11	Dist. 31.0°
	LR from SW				
5	eLR	21	28	05	
6	eLR	02	41	25	
6	eLR	02	57	05	
6	e	03	05	51	
6	eLR	06	00	05	

Date	Phase	h	m	s	Remarks
1959					
June 6	eLR	08	07	05	
6	e	08	20	24	
6	e	10	39	45	
	eLR	11	05	09	
6	eLR(SW)	11	40	05	Chiapas, Mexico
6	eLR(SW)	16	12	25	
6	eLR	19	54	05	
6	eLR	21	51	05	Solomon Islands
6	eLR	23	03	37	
7	eLR	01	06	35	
7	eLR	02	03	53	
7	eLR(NW)	03	37	35	
7	eLR	04	48	05	Philippines
7	eLR	06	04	41	
7	eLR(NW)	09	32	05	Philippines
7	eP	13	50	22	Atlantic Ocean
	eS	13	59	15	USCGS 0 = 13 39 38
	eScS	14	00	05	$\frac{1}{2}$ °N 18°W
	eSS	14	03	17	Dist. 64.5°
	eLQ	14	06	21	
	eLR	14	09	05	
	LR from SE				
7	e	18	19	10	Tonga Islands
	eLR	18	24	35	
8	eLR	02	15	05	
8	eLR	10	58	05	East of Java
8	eLR	12	09	55	
8	eLR	14	40	05	Near coast of Peru
8	eLR	19	57	05	

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Date	Phase	h	m	s	Remarks
1959					
June 8	eLR	23	51	57	
9	eLR	00	34	05	
9	eLR	05	42	05	
9	eLR	07	20	05	Near coast of New Guinea
9	eLR	11	53	05	
9	ePP	23	29	58	Bouvet Islands
	ePPP	23	32	24	USCGS 0 = 23 10 46
	eSKS	23	35	56	59°S 7½°W
	ePS	23	39	36	Dist. 113.7°
	ePPS	23	40	04	
	eSS	23	45	34	
	eSSS	23	49	44	
	eIQ	23	56	34	
10	eLR	00	02	26	
	LR from SE				
	eLR ₂	01	08	24	
10	eLR	02	56	04	
10	iP	04	27	32	Crete
	eSKS	04	36	52	USCGS 0 = 04 16 03
	eS	04	36	58	36°N 23°E
	ePPS	04	37	12	Dist. 72°
	eSS	04	41	34	
	eSSS	04	45	30	
	eIQ	04	46	54	
	eLR	04	51	04	
	LR from NE				
10	eLR	06	10	24	
10	eLR	10	51	24	Philippines
10	eLR	12	38	24	
10	eLR	16	30	04	
10	eLR	22	23	34	
11	eLR	00	24	04	
11	eIQ	01	57	04	Tonga Islands
	eLR	02	03	04	
11	eLR	18	07	52	



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Date	Phase	h	m	s	Remarks
1959					
June 11	eLR	23	00	04	
11	eLR	23	56	48	Northern Chile
12	eLR	01	17	04	Aleutians
12	eLR	11	30	04	
13	eLR	12	42	33	Turkey
13	eLR	20	14	33	
13	eLR	22	26	33	Austro-Italy border
14	eP	00	22	10	SW Bolivia
	P(Z)8 sec 4 mic dil from S				USCGS 0 = 00 11 57
	epP	00	22	42	20 $\frac{1}{2}$ °S 68°W
	ePPP	00	25	19	Depth 100 km
	ePcS	00	26	27	Mag. 7 $\frac{1}{4}$ -7 $\frac{1}{2}$
	eS	00	30	19	Dist. 61.4°
	ePPS	00	30	57	
	eScS	00	32	27	
	eSS	00	35	03	
	eLQ	00	37	39	
	eLR	00	40	15	
14	eLQ	06	31	23	
	eLR(W)	06	34	23	
14	eLR	09	21	03	Ceram Sea
14	eLR	15	50	03	Tonga Islands
14	eLQ	21	12	32	Alaska
	eLR(NW)	21	14	46	
15	eLR	22	07	02	
15	eLR	00	09	02	
15	eLR	03	32	02	Formosa
15	eLR	06	19	02	
15	eLR	08	07	02	
15	eLR	09	22	02	
15	eLR	13	15	02	

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Date	Phase	h	m	s	Remarks
1959					
June 15	eLR	20	00	32	
16	eP	08	08	24	Off coast of Chiapas, Mexico
	eS	08	13	18	USCGS 0 = 08 02 05
	ePcS	08	15	02	15°N 93 $\frac{1}{2}$ °W
	eSS	08	15	18	Depth 60 km
	eLQ	08	16	36	Dist. 31.0°
	eLR	08	17	18	
	LR from SW				
16	eLR	13	01	32	Oaxaca, Mexico
16	eLR	15	18	19	Aleutians
17	eLQ	05	37	01	
	eLR	05	44	21	
17	e	10	36	38	S.W. Oklahoma
	e	10	37	46	USCGS 0 = 10 27 07
	e	10	38	01	34 $\frac{1}{2}$ °N 98 $\frac{1}{2}$ °W
	eLR(NW)	10	38	11	Dist. 20.5°
17	eLR	11	51	01	Western New Guinea
18	eLR	00	47	01	Nevada
18	eLR	03	13	01	
18	ePP	07	09	33	Pacific Ocean
	ePKS	07	12	43	USCGS 0 = 06 50 45
	ePS	07	18	47	55°S 129°W
	ePPS	07	20	01	Dist. 106.5°
	eSS	07	24	31	
	eSKKS	07	28	11	
	eLQ	07	35	47	
	eLR	07	42	41	
	LR from SW				
	G ₂	08	34	31	
18	eLR	10	56	41	

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Date	Phase	h	m	s	Remarks
1959					
June 18	iP	15	43	05	Near Easr coast of Kamchatka
	epP	15	43	10	USCGS 0 = 15 31 25
	eS	15	52	40	54°N 160°E
	ePS	15	53	46	Mag. $6\frac{1}{4}$ - $6\frac{1}{2}$
	ePPS	15	54	06	Dist. 74.6°
	eSS	15	57	48	
	eSSS	16	01	22	
	eLQ	16	04	10	
	eLR	16	06	34	
	LR from NNW				
18	eP	16	10	17	East coast of Kamchatka
					USCGS 0 = 15 58 38
					Mag. $6\frac{1}{2}$ -6 $\frac{3}{4}$
19	eP	01	44	52	South of Panama
	ePP	01	46	10	USCGS 0 = 01 37 51
	eS	01	50	34	6°N 82 $\frac{1}{2}$ °W
	eSS	01	54	00	Dist. 35.7°
	eLQ	01	54	00	
	eLR(SW)	01	55	00	
19	eLR	06	50	00	
19	eLR	12	50	20	
19	eS	20	46	46	Gulf of California
	eLQ	20	50	46	USCGS 0 = 20 34 40
	eLR(WSW)	20	53	32	27 $\frac{1}{2}$ °N 111°W
					Dist. 33.2°
20	eLR	00	08	00	
20	eLR	01	13	40	
20	eLR	04	30	34	
20	eLR	07	30	00	
20	eLR	08	43	00	
20	eLR	11	36	00	
20	eLR	13	32	00	
20	eP	16	48	20	Atlantic Ocean
	e	16	52	16	USCGS 0 = 16 42 25
	eS	16	53	20	32°N 40°W
	eLR(SSE)	16	55	24	Dist. 28.6°

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Date	Phase	h	m	s	Remarks
1959					
June 21	eLR	02	17	00	
21	eLR(NW)	04	30	00	Bismark Sea
21	eLR	05	19	30	
21	eLR	06	51	08	New Britian
21	eLR	08	55	40	
21	eLR	11	54	14	
21	eLR	15	24	30	Celebes
21	e	17	00	12	
	e	17	09	26	
	e	17	21	20	
	e	17	27	30	
	eLR	17	45	26	
21	eP	22	27	00	Santa Cruz Islands
	ePP	22	32	24	USCGS O = 22 11 51
	ePS	22	42	00	11 $\frac{1}{2}$ °S 167°E
	eSS	22	49	08	Dist. 119.4°
	eLR	23	07	38	
22	eLR	00	11	00	Kermadec Islands
22	eLR	03	19	00	
22	eLR	10	17	00	
22	eLR	13	42	00	Kamchatka
23	eLR	01	25	14	
23	eLQ	03	38	28	
	eLR	03	39	38	
23	eLR	06	43	58	
23	eLR	09	10	34	
23	eLR	11	29	40	
23	eLR	13	01	28	



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Date	Phase	h	m	s	Remarks
1959					
June 23	eP	14	42	11	Western Nevada
	eS	14	47	25	USCGS 0 = 14 35 02
	eLQ	14	50	19	39°N 119°W
	eLR	14	52	29	Mag. $6\frac{1}{4}$
	Rg	14	55	23	Dist. 34.3°
	LR from WNW				
23	eLQ	15	20	47	aftershock Western Nevada
	eLR	15	22	37	Mag. $5\frac{1}{2}$
	Rg	15	24	59	
	LR from WNW				
23	eLR	21	22	11	
23	eLR	22	49	11	
24	e	04	38	29	
	e	04	41	11	
	e	04	48	29	
	e	04	53	39	
	e	04	58	09	
	eLQ	04	59	59	
	eLR	05	04	39	
24	eLQ	08	03	29	
	eLR	08	05	59	
24	eLR	13	44	59	
24	eLQ	16	44	57	
	eLR	16	51	57	
25	e	00	59	15	
	eLQ	01	00	31	
	eLR(SW)	01	02	57	
25	eLQ	03	41	57	
	eLR	03	46	27	
25	eLR	06	20	57	
25	eP	06	53	47	South of Iceland
	ePP	06	54	55	USCGS 0 = 06 46 55
	ePPP	06	55	07	62°N 27 $\frac{1}{2}$ °W
	eS	06	59	09	Dist. 34.6°
	eSS	07	00	49	
	eLQ	07	01	41	
	eLR	07	02	27	
	LR from NE				

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Date	Phase	h	m	s	Remarks
1959					
June 25	e	10	09	37	
	eLQ	10	20	27	
	eLR	10	23	05	
25	eLR(NW)	14	39	57	
25	eLR(SE)	15	34	57	
25	eLR	17	15	27	
25	eLR	21	15	27	
26	e	04	04	33	1000 miles SW Galapagos Islands USCGS 0 = 03 52 32 60S 107°W
	e	04	12	57	
	e	04	14	17	
	eLR(SW)	04	14	37	
26	e	04	19	21	
	eLR	04	22	13	
26	eLR	06	18	27	
26	eLR	11	59	27	
26	eLR	14	03	57	
27	eLR	04	23	57	
27	eLR	12	50	57	
27	eP	19	20	27	South of Kermadec USCGS 0 = 19 04 27 33oS 179oW Depth 100 km Mag. 6 3/4 Dist. 121.3°
	iPKP	19	23	17	
	epPKP	19	23	57	
	ePP	19	24	57	
	epPP	19	25	29	
	ePKS	19	26	36	
	eSKS	19	30	01	
	eSKS	19	31	09	
	eSKKS	19	31	34	
	eSKKKS	19	32	31	
	ePKKP	19	33	45	
	ePS	19	34	49	
	eSS	19	41	33	
	esSS	19	42	33	
	e	19	44	29	
	e	19	45	33	
	eLQ	19	55	41	
	eLR	20	00	41	
28	eLR(SE)	01	54	39	

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PALISADES NEW YORK

Date	Phase	h	m	s	Remarks
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1959

June 28	eLR(NE)	04	42	57	Iceland
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28	eP	08	13	51	
	eS	08	18	14	
	eLQ	08	18	57	
	eLR(NW)	08	19	57	

28	eLR	13	27	39	
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28	e(S)	18	37	57	
	eLQ	18	41	57	
	eLR(SW)	18	42	57	

28	iPKP	20	03	05	Sawoe Sea
	iPKP	20	03	23	USCGS 0 = 19 43 22
	ePKS	20	06	39	$9\frac{1}{2}^{\circ}\text{S}$ $122\frac{1}{2}^{\circ}\text{E}$
	eSKKS	20	13	01	Dist. 144.9°
	e	20	16	27	
	ePPS	20	19	13	
	eSS	20	24	47	
	e	20	25	29	
	e	20	30	57	
	e	20	43	57	
	eLR ₁	20	52	57	
	LR ₁ from NW				
	eLQ ₂	21	13	57	
	eLR ₂	21	23	57	
	LR ₂ from SE				

29	eLR	06	53	21	
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29	eLR	07	13	57	
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29	ePKP	07	35	11	Solomon Islands
	ePP	07	36	57	USCGS 0 = 07 16 07
	eSKS	07	42	19	7°S $155\frac{1}{2}^{\circ}\text{E}$
	eSKKS	07	44	07	Mag. $6-6\frac{1}{4}$
	eePS	07	47	09	Dist. 124.6°
	ePPS	07	48	43	
	eSS	07	54	21	
	e	07	58	41	
	eLR ₁	08	14	49	
	LR ₁ from NW				
	eLR ₂	09	05	57	
	LR ₂ from SE				

29	e	13	38	48	Philippines?
	e	13	42	03	Depth 150 km

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
June 29	eLR	15	26	40	
30	eLR	02	56	56	
30	eSS	11	00	48	South of Kermadec
	e	11	13	44	USCGS 0 = 10 23 17
	eLR(SW)	11	19	56	34°S 179°W Dist. 121.8°
30	e(PcP)	22	50	40	Northern Venezuela
	eS	22	53	08	USCGS 0 = 22 42 02
	eLR(SE)	22	57	26	8½°N 71½°W Depth 60 km Dist. 32.5°
July 1	eP	01	18	31	North Coast of Puerto Rico
	eS	01	22	17	USCGS 0 = 01 13 06
	e	01	22	31	
	eLR	01	23	36	
	T	01	38	54	
1	ePP	02	45	48	Bonin Islands
	ePPP	02	47	04	USCGS 0 = 02 27 46
	eSKS	02	50	46	28°N 139½°E
	ePS	02	53	42	Depth 550 km
	eSS	02	59	44	Mag. 6
	eLR(NW)	03	04	16	Dist. 104.7°
1	eLR	06	54	56	
1	eLR	07	29	56	
1	eLR	10	41	26	
1	eLR	10	58	26	Peru-Bolivia border
1	eLR	12	42	56	
2	eL	00	11	07	California
2	eLR	04	38	57	
2	eLR	17	59	57	
2	e(S)	19	57	45	
	eLR(NW)	20	03	57	
2	eLR(NW)	20	19	47	
3	eLR(N)	00	52	41	



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Date	Phase	h	m	s	Remarks
1959					
July 3	eLR	04	08	27	
3	eP	05	30	11	Kodiak Island
	ePP	05	32	23	USCGS 0 = 05 21 13
	eS	05	37	25	58 $\frac{1}{2}$ °N 152°W
	eSS	05	41	25	Dist. 50.9°
	eLR(NW)	05	45	31	
3	eLR	10	05	57	
3	eLR	11	34	57	
3	e	16	09	01	
3	e	16	58	11	
	e	16	58	33	
	e	16	58	35	
3	eP	18	11	05	New Hebrides Islands
	ePKP	18	15	15	USCGS 0 = 17 55 29
	ePP	18	15	57	16°S 172 $\frac{1}{2}$ °E
	e(SKKKS)	18	23	55	Depth 200 km
	ePKKP	18	25	11	Mag. 6 $\frac{1}{4}$ -6 $\frac{1}{2}$
	ePS	18	25	45	Dist. 118.1°
	eSS	18	31	41	
	e	18	36	21	
	eLQ	18	45	43	
	eLR	18	51	11	
	LR from NW				
	G ₂	19	35	17	
	G ₃	20	16	57	
4	e	03	15	57	Near coast of Nicaragua
	eLR(SW)	03	19	57	
4	e	05	09	23	
	e	05	23	29	
	eLR(SW)	05	48	37	
4	e	07	56	05	
	eLQ	08	00	57	
	eLR(NE)	08	02	57	
4	eLR	14	47	58	
4	eLQ	15	55	58	
	eLR	15	57	28	
4	eLR	19	05	28	

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Date	Phase	h	m	s	Remarks
1959					
July 5	eLR	03	09	28	
5	e(S)	06	11	06	Kamchatka
	e(SS)	06	15	24	USCGS 0 = 05 33 07
	eLR	06	19	58	52 $\frac{1}{2}$ °N 159°E Dist. 76.2°
5	eLR	15	09	49	
6	eLR	07	21	19	New Hebrides Islands
6	eLR	08	31	35	
6	e	08	58	47	Guatemala-Honduras border
	e	09	03	15	
	eLR	09	06	11	
6	iP	09	20	26	Chaco Province, Argentina
	P(Z) 6 sec 4 mic comp from S				USCGS 0 = 09 10 17
	ipP	09	22	32	26 $\frac{1}{2}$ °S 61 $\frac{1}{2}$ °W
	esP	09	23	08	Depth 600 km
	ePPP	09	23	39	Mag. 6 3/4
	iS	09	28	38	Dist. 68.2°
	e	09	29	13	
	eSS	09	32	11	
6	iP	09	33	35	same epicenter as above
	iS	09	41	47	USCGS 0 = 09 23 27
	eSS	09	45	29	Depth 600 km
	e	09	49	43	Mag. 6 3/4-7
6	eIQ	15	37	30	
	eLR	15	40	00	
	Rg	15	42	00	
	LR from NW				
7	eLR	03	20	30	
7	e	06	01	20	Eastern New Guinea
	e	06	05	44	USCGS 0 = 05 49 46
	eLR	06	13	14	4 $\frac{1}{2}$ °S 145°E Dist. 129.6°
7	eLR	08	07	00	
7	eLR	11	45	00	
7	eLR	17	34	01	

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Date	Phase	h	m	s	Remarks
1959					
July 8	eLR	02	24	01	East coast of Greenland
8	eLR	04	45	01	Kurile Islands
8	eLR	10	51	31	
8	eLR	21	05	01	
8	eLR	22	13	01	
9	e	02	51	01	Off coast of Peru
	e	02	57	01	USCGS 0 = 02 32 40
	eLQ	02	59	01	20°S 72°W
	eLR	03	02	45	Dist. 60.7°
9	e	09	41	01	Samoa
	eLR	09	57	49	
9	eLR	11	23	01	D'Entrecasteaux Islands
9	eLR	11	57	01	
9	eLR	12	59	01	
9	iP	16	15	29	Chile Bolivia border
	epP	16	15	57	USCGS 0 = 16 05 18
	ePcP	16	16	22	20 $\frac{1}{2}$ °S 68°W
	iS	16	23	37	Depth 100 km
	ePS	16	24	18	Mag. 6 $\frac{3}{4}$
	ePPS	16	24	30	Dist. 61.5°
	eSS	16	26	02	
	eSSS	16	28	26	
	eLQ	16	30	42	
	eLR	16	33	36	
	LR from S				
10	eLR	03	14	02	Kermadec Islands
10	e	04	21	50	
	e	04	24	20	
	e	04	29	56	
	eLR	04	41	18	
	LR from SE				
10	eLR	11	39	02	
11	eLR	03	57	22	Fiji Islands
11	eLR	05	39	32	New Hebrides

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Date	Phase	h	m	s	Remarks
1959					
July 11	ePKP	12	21	42	Indian Ocean
	ePKP ₂	12	22	20	USCGS 0 = 12 01 36
	ePP	12	25	56	36°S 78°E
	ePPP	12	29	24	Mag. $6\frac{1}{4}$ - $6\frac{1}{2}$
	ePS	12	36	12	Dist. 157.5°
	ePPS	12	39	12	
	e	12	45	17	
	eSS	12	46	46	
	eSSS	12	52	22	
	eSSSS?	12	54	32	
	e	01	01	52	
	e	01	06	08	
	eLR	01	16	10	
11	eLR	19	07	36	Kurile Islands
12	e	00	52	32	Fiji Islands region
	e	00	55	17	USCGS 0 = 00 24 22
	eL	01	19	38	19½°S 177½°W
					Depth 400 km
					Mag. $6\frac{1}{4}$
					Dist. 112.6°
12	eLR	16	44	12	
12	eL	20	15	14	
12	eLR	23	29	38	
13	eLR	02	00	20	Jan Magen Islands
13	eL	03	32	54	
13	e	04	07	18	
13	iP	12	39	19	Aleutians
	ePcP	12	39	46	USCGS 0 = 12 28 45
	ePP	12	41	28	52°N 172½°W
	iS	12	47	49	Mag. $6\frac{1}{2}$
	eSS	12	52	35	Dist. 63.7°
	eLQ	12	55	11	
	eLR	12	58	09	
14	eLR	00	29	21	Fox Islands
14	eLR	03	51	31	

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PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
July 14	eP	08	51	21	Aleutians, Fox Islands
	e	08	52	23	USCGS 0 = 08 40 48
	ePP	08	53	29	51 $\frac{1}{2}$ °N 172°W
	eS	08	59	55	Dist. 63.6°
	e	09	02	19	
	eSS	09	04	19	
	eLR	09	10	57	
14	iS	11	50	40	Alaska Peninsula
	e	11	54	11	USCGS 0 = 11 33 42
	eSS	11	54	47	56°N 159°W
	eSSS	11	56	25	Dist. 54.8°
	eLQ	11	57	50	
	eLR	11	59	30	
14	eLR	13	54	53	New Hebrides
14	e(LR)	18	22	23	
14	eLR	20	19	23	
14	eLR	22	23	47	
14	ePKP	22	50	43	North of Celebes
	ePP	22	53	31	USCGS 0 = 22 31 22
	ePKS	22	54	20	1°N 120°E
	ePPS	23	05	49	Dist. 136.8°
	eSS	23	11	41	
	eLQ	23	32	03	
	eLR	23	38	33	
15	e	18	35	21	
15	eLR	21	25	51	
15	eLR	22	43	01	
16	eLR	02	50	34	
16	eLR	05	32	12	
16	eLR	06	05	56	
16	eLR	07	31	28	South of Alaska
16	eLR	09	44	04	
16	eLR	10	56	28	
16	eLR	12	34	04	

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Date	Phase	h	m	s	Remarks
1959					
July 14	eP	08	51	21	Aleutians, Fox Islands
	e	08	52	23	USCGS 0 = 08 40 48
	ePP	08	53	29	51 $\frac{1}{2}$ ° N 172° W
	eS	08	59	55	Dist. 63.6°
	e	09	02	19	
	eSS	09	04	19	
	eLR	09	10	57	
14	iS	11	50	40	Alaska Peninsula
	e	11	54	11	USCGS 0 = 11 33 42
	eSS	11	54	47	56°N 159°W
	eSSS	11	56	25	Dist. 54.8°
	eLQ	11	57	50	
	eLR	11	59	31	
14	eLR	13	54	54	New Hebrides
14	e(LR)	18	22	24	
14	eLR	20	19	24	LR from SW
14	eLR	22	23	48	LR from SW
14	ePKP	22	50	44	N of Celebes
	ePP	22	53	32	USCGS 0 = 22 31 22
	ePKS	22	54	21	1 $\frac{1}{2}$ °N 120°E
	ePPS	23	05	50	Dist. 136.8°
	eSS	23	11	42	
	eLQ	23	32	04	
	eLR	23	38	34	
15	e	18	35	21	
15	eLR	21	25	51	
15	eLR	22	43	01	
16	eLR	02	50	34	LR from E
16	eLR	05	32	12	LR from SW
16	eLR	06	05	56	LR from NW
16	eLR	07	31	28	S of Alaska
					LR from W
16	eLR	09	44	04	LR from E
16	eLR	10	56	28	LR from NE



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Date	Phase	h	m	s	Remarks
1959					
July 16	eLR	12	34	04	LR from W
16	eP	15	28	22	Aleutians
	eS	15	37	19	USCGS 0 = 15 17 27
	eSS	15	42	08	50 $\frac{1}{2}$ °N 177°W
	eLQ	15	45	08	Dist. 66.8°
	eLR	15	49	20	
16	eLR	20	12	20	Loyalty Islands
16	eLR	21	12	01	
17	eLR	18	26	06	
17	eLR	20	23	00	
17	eLR	23	08	56	Colombia-Venezuela Border
18	eLR	04	45	51	
18	eS	12	32	14	Vancouver B.C., off coast
	eSS	12	34	33	USCGS 0 = 12 18 35
	eLQ	12	35	46	50 $\frac{1}{2}$ °N 130°W
	eLR	12	38	24	Dist. 39.4°
	eRg	12	42	14	
18	iP	20	10	11	Luzon, Philippines
	ePKP	20	13	47	USCGS 0 = 19 54 45
	iPP	20	15	13	15 $\frac{1}{2}$ °N 120 $\frac{1}{2}$ °E
	ePKS	20	16	07	Depth 200-300 km
	iSKS	20	20	29	Mag. 6 $\frac{1}{2}$ -6 $\frac{3}{4}$
	iSKKS	20	21	55	Dist. 122.3°
	ePKKP	20	22	55	
	iPS	20	24	51	
	eSS	20	30	46	
	eSSS	20	36	09	
	e(SSSS)	20	41	35	
	eLQ	20	43	14	
	eLR	20	53	07	
19	iPKP	04	01	45	Sunda Strait
	ePKP	04	02	01	USCGS 0 = 03 42 02
	iPP	04	05	04	6 $\frac{1}{2}$ °S 105°E
	iPPS	04	18	07	Dist. 145.6°
	eLQ	04	44	07	
	eLR	04	55	57	
19	eLR	11	47	07	

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Date	Phase	h	m	s	Remarks
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1959



July 19	iP	15	15	29	Peru
	P(Z) 9 sec 15 mic Comp. from S				USCGS 0 = 15 06 10
	epP	15	16	17	15°S 70 ¹ / ₂ °W
	ePP	15	17	22	Depth 200 km
	iPcS	15	20	13	Dist. 55.8°
	iS	15	23	00	Mag. 7
	esS	15	24	23	
	eSS	15	26	35	
	eSn	15	28	35	
	eLQ	15	29	07	
	eLR	15	32	27	

July 20	iPKP	02	59	48	Java Sea
	iPKP	03	00	10	USCGS 0 = 02 40 13
	i	03	01	42	6°S 110°E
	ePP	03	02	35	Dist. 144.9°
	e	03	04	51	
	ePPP	03	05	27	
	e	03	06	12	
	ePKKP	03	08	56	
	ePKKS	03	12	23	
	ePPS	03	15	00	
	e	03	18	10	
	eSS	03	20	00	
	eLR	03	39	00	
	LR from NNE				

20	eSP	17	21	50	Fiji Islands Region
	ePPS	17	25	10	USCGS 0 = 16 53 38
	eSS	17	28	18	23 ¹ / ₂ °S 179°E
	eSSS	17	31	34	Depth 600 km
	eLQ	17	36	00	Dist. 117.6°
	eLR	17	39	26	

20	eLR	19	40	21	
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20	eLR	19	53	24	
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20	eLR	21	46	32	
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20	eLR	23	54	38	
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21	eLQ	01	36	32	New Guinea
	eLR	01	44	10	



Date	Phase	h	m	s	Remarks
1959					
July 21	ePPP	08	03	29	New Hebrides Islands
	ePPS	08	10	32	USCGS 0 = 07 43 13
	e	08	13	18	$14\frac{1}{2}^{\circ}\text{N}$ $167\frac{1}{2}^{\circ}\text{E}$
	eSS	08	15	00	Mag. $6\frac{1}{4}$
	eSSS	08	20	28	Dist. 100.7°
	e(SSSS)	08	28	35	
	eLQ	08	32	42	
	eLR	08	39	42	
21	eP	09	22	58	N. Coast Dominican Republic
	eP	09	23	02	USCGS 0 = 09 17 51
	eS	09	26	44	19°N $68\frac{1}{2}^{\circ}\text{W}$
	eS	09	26	50	Dist. 22.4°
	eL	09	27	30	
21	eP	12	35	40	Near coast Oaxaca, Mexico
	ePP	12	36	56	USCGS 0 = 12 29 09
	eS	12	40	40	16°N 98°W
	eLQ	12	43	03	Mag. 6
	eLR	12	44	36	Dist. 32.5°
21	e	15	34	27	
	eLR	15	38	20	
21	eP	17	45	37	Utah-Arizona border
	eS	17	50	54	USCGS 0 = 17 39 29
	eLQ	17	52	58	37°N $112\frac{1}{2}^{\circ}\text{W}$
	eLg	17	55	08	Mag. $5\frac{1}{2}$ -5 $3/4$
	eRg	17	57	24	Dist. 33.4°
22	eP	04	58	08	Near coast Oaxaca, Mexico
	ePP	04	59	18	USCGS 0 = 04 51 30
	eS	05	03	24	$15\frac{1}{2}^{\circ}\text{N}$ $97\frac{1}{2}^{\circ}\text{W}$
	eLR	05	07	26	Dist. 32.6°
22	e	11	38	16	Molucca Passage
	eL	11	56	34	
22	eP	16	00	28	Oaxaca, Mexico
	eS	16	05	50	USCGS 0 = 15 53 53
	eLR	16	10	00	$15\frac{1}{2}^{\circ}\text{N}$ $97\frac{1}{2}^{\circ}\text{W}$
					Dist. 32.6°

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Date	Phase	h	m	s	Remarks
1959					
July 22	iP	19	35	13	Sea of Okhotsk
	i $\bar{p}$ P	19	37	22	USCGS 0 = 19 24 17
	ePP	19	38	14	53°N 153°E
	epPP	19	41	42	Depth 650 km
	eSKS	19	44	12	Dist. 86.7°
	esSKS	19	44	57	
	ePPS	19	47	50	
	e	19	50	12	
	eSS	19	53	48	
	e(LQ)	20	10	32	
	e(LR)	20	15	28	
22	iPKP	23	21	26	New Britain
	ePP	23	23	14	USCGS 0 = 23 02 27
	ePKS	23	24	41	5°S 152½°E
	eSKS	23	28	48	Depth 60 km
	eSKKS	23	30	27	Dist, 125.2°
	ePPS	23	34	29	
	eSS	23	40	24	
	eSSS	23	45	16	
	eLQ	23	53	28	
	eLR	00	01	08	
23	eLR	05	41	36	Colombia
23	eLR	07	47	08	
23	eLR	08	32	08	Near coast Oregon
23	eLR	11	40	03	
23	eLR	15	50	10	Tonga Islands
23	eLR	17	41	08	
23	eLR	18	38	28	
23	eLR	23	20	20	
24	iP	01	30	33	off coast N. California
	ePP	01	32	01	USCGS 0 = 01 23 09
	ePcP	01	32	38	41°N 125½°W
	iS	01	36	29	Mag. 5 3/4
	eSS	01	39	01	Dist. 38.3°
	eLQ	01	40	08	
	eLR	01	41	36	
24	eLR	04	42	20	



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Date	Phase	h	m	s	Remarks
1959					
July 24	eLR	06	08	30	Chile
24	eLR	06	51	16	
24	eLR	12	05	32	
24	e	19	50	48	New Britain Isl.
	eLR	20	21	16	
24	eP	23	17	32	Sandwich Isls.
	ePP	23	21	58	USCGS O = 23 03 08
	eSKS	23	27	38	56 $\frac{1}{2}$ °S 28 $\frac{1}{2}$ °W
	eS	23	29	33	Dist. 104.4°
	ePS	23	30	38	
	eSS	23	36	18	
	e	23	39	25	
	eSSS	23	40	53	
	eLQ	23	46	03	
	eLR	23	49	38	
	LR from S				
25	ePS	01	56	08	
	eSS	02	02	08	
	ePPP	02	05	56	
	eSSS	02	07	15	
	e	02	10	33	
	eLQ	02	13	08	
	eLR	02	18	08	
	LR from N				
25	e	07	30	18	
25	e	12	17	33	
	e	12	22	35	
	e	12	30	02	
	e	12	32	08	
	e	12	35	53	
	e	12	40	01	
	eLQ	12	45	31	
	eLR	12	50	38	
	LR from N				
25	e	18	18	26	
	eLR	18	20	18	
25	e	19	46	53	Sakhalin, USSR
	eLQ	20	02	28	
	eLR	20	05	58	
25	eLR	22	07	08	Honshu, Japan

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
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1959



July 26	eLR	02	20	06	
26	eLR	03	21	53	
26	eLR	04	23	33	
26	eLR	12	22	18	
26	eLR	16	04	18	
26	eP	17	18	28	N.W. Turkey
	eS	17	28	14	USCGS 0 = 17 07 03
	eSS	17	32	43	41°N 27½°E
	eLQ	17	36	53	Dist. 71.7°
	eLR(NE)	17	40	08	
26	eLR	20	08	35	Kamchatka
27	eLR	01	15	55	
27	ePP	05	38	30	Galapagos
	eS	05	43	03	USCGS 0 = 05 27 45
	eSS	05	46	08	
	eLR(SW)	05	47	48	
27	eLR	06	29	58	
27	ePP	06	37	52	Galapagos aftershock
	eS	06	42	33	
	eSS	06	45	23	
	eLR(SW)	06	47	18	
27	eLR	09	26	08	
27	eLR	12	24	33	
28	eLQ	01	40	18	
	eLR	01	42	38	
28	e	11	33	08	
	eLQ	11	36	38	
	eLR	11	40	21	
28	eLR	16	46	18	
28	eLQ	17	43	48	
	e(LR)	17	55	23	

Date	Phase	h	m	s	Remarks
1959					
July 28	e	21	18	44	
	e	21	24	30	
	eS	21	34	43	
	e	21	41	08	
	e(LQ)	21	43	38	
	eLR	21	45	08	
29	eLQ	03	17	28	
	eLR	03	20	23	
29	eLR	06	22	13	
29	eLR	07	57	58	
29	eLR	19	55	47	Solomon Isls.
30	eLR	05	34	59	
30	eLR	12	34	00	
30	e	13	45	20	Kermadec Isls.
	eLR	13	52	27	
31	eL	02	19	12	Southern Peru
31	eSKS	05	25	32	New Britain
	eSKKS	05	27	17	USCGS 0 = 04 59 23
	e	05	33	03	5°S 152½°E
	eSS	05	37	19	Dist. 125.2°
	e	05	41	43	
	eLQ	05	52	07	
	eLR	05	59	27	
	LR from NW				
31	e	11	04	07	
	eL	11	06	37	
31	eLR	16	17	26	
31	eLR(NW)	19	36	36	Solomon Isls.
31	eLR(NE)	20	36	36	Tadzhik SSR
					USCGS 0 = 19 53 02
					38½°N 70°E
					Dist. 94.3°
Aug. 1	eLR	03	03	06	
1	e	10	21	12	
	e	10	21	42	
	e	10	29	06	
	eLR	10	35	06	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
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1959



Aug. 1	eLR(W)	11	06	06	
1	eLR	15	49	06	
1	eLR	17	20	06	
2	eLR	00	00	56	
2	eLR	09	01	36	
2	eLR(NW)	12	58	06	Solomon Isls.
2	eP	20	35	14	150 mi. N. Puerto Rico
	eS	20	38	55	USCGS 0 = 20 29 55
2	e(SS)	20	39	06	
	e(SSS)	20	45	42	
	eLR(SE)	20	51	06	
2	e(PPP)	23	55	16	off coast Vancouver B.C.
	eS	23	58	58	USCGS 0 = 23 45 19
3	eLR(NW)	00	04	06	49 $\frac{1}{2}$ °N 129 $\frac{1}{2}$ °W Dist. 39.2°
3	eP	06	10	50	S. Carolina
	eP	06	10	51	USCGS 0 = 06 08 30
	iS	06	12	32	33°N 79 $\frac{1}{2}$ °W
	e	06	12	47	Dist. 9.2°
	Lg	06	13	16	
	Rg	06	14	06	
	LR from SW				
3	eLR	12	55	06	
3	eLR(NW)	17	36	06	
4	eLR(S)	03	42	36	
4	eS	07	49	26	Central California
	eLQ	07	54	06	USCGS 0 = 07 36 59
	eLR(W)	07	56	06	37 $\frac{1}{2}$ °N 118 $\frac{1}{2}$ °W Mag. 5 $\frac{1}{2}$ Dist. 34.4°
4	eSKKS	08	27	58	Fiji
	ePPS	08	31	40	USCGS 0 = 08 02 17
	eSS	08	36	14	20 $\frac{1}{2}$ °S 178°W
	e	08	39	36	Depth 600 km
	e	08	52	06	Dist. 113.6°

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PALISADES NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 5	eLR(NW)	06	17	05	Samar-Philippines
5	eLR(W)	11	43	05	
6	eIQ eLR(NW)	04 04	01 04	35 05	Washington State USCGS 0 = 03 44 37 48°N 120°W Dist. 33.2°
6	eIQ eLR	10 10	28 31	13 05	
7	eLR(NW)	09	46	25	
7	eP ePP eS ePS eScS eSS eIQ eLR IR from NW	10 10 11 11 11 11 11 11	52 54 00 00 02 03 06 10	39 49 04 19 25 49 51 19	Kodiak Isl. USCGS 0 = 10 43 32 56°N 154°W Mag. 5 3/4 Dist 52.1°
7	eLR	16	37	46	
7	eP ePcP ePP eS ePS eScS eSS eIQ eLR IR from NW	21 21 21 22 22 22 22 22 22	54 54 56 01 02 04 05 09 12	35 44 44 38 14 20 44 34 08	Kodiak Isl. USCGS 0 = 21 45 26 56½°N 154°W Dist. 52°
8	iP ePPP eS ePS ePPS eSS eSSS eIQ eLR IR from NW	00 01 01 01 01 01 01 01 01	59 03 08 08 09 13 16 18 22	07 26 24 44 12 14 42 20 04	Kamchatka USCGS 0 = 00 47 38 55°N 162½°E Mag. 6½° Dist. 73°

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 8	eLQ	03	21	20	
	eLR	03	22	44	
8	eLR(SE)	16	36	04	
8	eLQ	20	45	04	
	eLR(S)	20	48	04	
9	e	00	33	56	
	eLR(NW)	00	53	04	
9	e	05	26	34	
	eLQ	05	41	24	
	eLR(NE)	05	48	04	
9	eLQ	21	22	04	Solomon Isls.
	eLR(NW)	21	25	04	
9	eLR	22	24	04	
9	eLR	23	24	04	
10	eLR	00	47	50	Solomon Isls.
10	eLR	01	47	34	Indian Ocean
10	eLR	04	45	04	
10	eLR	16	26	03	
10	e	20	44	57	
	eLR	20	56	33	
10	e	21	59	02	
	eLR(W)	22	12	03	
11	eLR(NW)	00	01	33	Shansi, China
11	eLR	01	32	03	
11	eP	08	14	18	N.E. Puerto Rico
	eS	08	18	21	USCGS O - 08 09 02
	eLR(SE)	08	19	17	19 $\frac{1}{2}$ °N 65°W
					Dist. 22.8°
11	eLQ	11	07	03	
	eLR(W)	11	10	03	
11	eLR	14	03	03	

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Centre

Date	Phase	h	m	s	Remarks
1959					
Aug. 11	eLR	14	42	03	
11	eLR	15	26	03	
11	eLR	16	06	33	Kurile IIs.
11	eLR	16	33	03	
11	eLR(NE)	18	35	33	
11	ePS	22	20	13	Solomon IIs. region
	eSS	22	27	07	USCGS 0 = 21 49 42
	e	22	30	03	11°S 163°E
	eLQ	22	40	03	Dist. 122°
	eLR	22	47	33	
	LR from NW				
	eLR	23	46	33	
12	eP	00	39	53	Near coast Nicaragua
	ePPP	00	41	51	USCGS 0 = 00 33 35
	ePcP	00	42	43	11½°N 86°W
	eS	00	45	43	Depth 60 km
	eSS	00	47	37	Dist 31.2°
	eLQ	00	49	33	
	eScS	00	50	07	
	eLR	00	50	33	
	LR from SW				
12	e	01	48	19	
	eLR	01	53	33	
12	e	02	16	03	Ecuador
	eLR	02	19	21	
12	e	04	44	15	Northern Rhodesia
	eLR(S)	04	56	43	
12	eP	10	13	07	Fiji IIs.
	e	10	15	31	USCGS 0 = 09 58 22
	ePP	10	18	23	16½°S 177½°W
	eSKKKS	10	25	19	Mag. 6½
	ePS	10	27	09	Dist. 110.8°
	ePPS	10	29	07	
	eSS	10	33	11	
	eLQ	10	44	03	
	eLR	10	51	03	
	LR from WNW				
12	eLR	14	17	33	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
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1959

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Aug. 12	e	18	11	46	
12	iP	18	29	53	
	iS	18	29	59	
12	eLR	19	43	23	
12	eLR	21	42	03	
13	eLR(NW)	00	18	03	
13	eLR(NE)	01	13	19	Caspian Sea
13	eLQ	04	36	03	
	eLR	04	39	03	
13	eLR	12	57	03	
13	eLQ	16	00	33	Aleutians
	eLR(NNW)	16	04	13	
13	e	19	20	23	off coast Oregon
	eLQ	19	25	03	USCGS 0 = 19 06 59
	eLR(NNW)	19	25	33	43 $\frac{1}{2}$ ⁰ N 126 $\frac{1}{2}$ ⁰ W
					Dist. 38.5 ⁰
14	ePKS	05	02	03	Molucca Pas.
	ePPS	05	13	03	USCGS 0 = 04 39 07
	eSS	05	19	19	0 ⁰ 125 $\frac{1}{2}$ ⁰ E
	eSSS	05	27	33	Dist. 135.5 ⁰
	eLQ	05	37	43	
	eLR(NW)	05	44	29	
14	eLR	10	34	03	Santa Cruz Isls.
14	eLR	18	39	04	
14	eLR	22	20	04	
15	eLR(SE)	04	23	04	
15	eLR(SE)	06	50	04	

Date	Phase	h	m	s	Remarks
1959					
Aug. 15	eP	09	12	00	Formosa
	ePKP	09	15	45	USCGS 0 = 08 57 04
	ePP	09	16	38	23°N 121°E
	ePPP	09	19	08	Mag. 6 3/4 - 7
	ePKS	09	19	30	Dist. 114.8°
	eSKS	09	22	36	
	eSKKS	09	23	44	
	ePS	09	26	34	
	ePPS	09	27	32	
	eSS	09	32	56	
	eSSS	09	38	24	
	eLQ	09	44	04	
	eLR(NW)	09	50	16	
	G ₂	10	39	20	
15	eLQ	14	03	00	
	eLR(SW)	14	06	46	
15	eLQ	19	13	26	Kamchatka
	eLR(NW)	19	20	04	
15	e	23	09	12	Costa Rica
	eLR(SE)	23	11	20	
16	eLR	00	40	04	
16	eP	01	07	28	Loyalty Isls
	ePP	01	12	22	USCGS 0 = 00 51 40
	ePKS	01	13	48	21°S 169°E
	ePPS	01	23	44	Mag. 6
	eSS	01	29	38	Dist. 123.7°
	eSSSS	01	37	52	
	eLQ	01	42	44	
	eLR	01	50	18	
	LR from NW (Interpret. Doubtful)				
16	eLQ	02	15	04	Formosa
	eLR(NW)	02	23	04	
16	eLR	04	09	34	
16	e	10	21	36	Fiji, Isls.
	eLQ	10	43	04	USCGS 0 = 09 53 52
	eLR(W)	10	46	24	18°S 178°W
					Depth 350 km
					Dist. 112.1°
16	eLQ	12	02	04	New Britain
	eLR	12	10	34	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
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1959

Aug. 16	eLR	14	21	04	
16	eLR	18	54	34	
16	eLR	20	25	04	
17	e	01	30	18	Formosa
	e	01	39	04	
17	eP	01	44	10	Albania-Yugoslavia
	ePP	01	47	24	USCGS 0 = 01 33 15
	e	01	49	34	42 $\frac{1}{2}$ °N 20 $\frac{1}{2}$ °E
	eS	01	53	04	Dist. 66.3°
	eLQ	02	00	34	
	eLR(NE)	02	02	04	
17	eLR(NE)	05	02	04	Albania
17	eLQ	07	04	34	
	eLR(SW)	07	09	04	
17	eLQ	08	53	14	
	eLR(NE)	09	00	04	
17	eLQ	09	20	34	
	eLR(NE)	09	26	04	
17	eLR	11	58	04	
17	eLR	12	57	54	
17	eLR(SW)	13	28	48	
17	eLR	14	54	37	
17	eLR	17	34	05	
17	e	18	18	05	
17	e	21	12	00	



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PALISADES, NEW YORK

Date
1959

Phase

h m s

Remarks

Aug. 17

eP
ePKP
ePP
ePKS
eSKS
eSKKS
ePKKS
e
eSS
e
eSSS
eLQ
eLR
LR from NW

21 20 29
21 23 48
21 25 31
21 27 05
21 30 51
21 32 33
21 38 01
21 40 05
21 42 37
21 47 09
21 50 23
21 56 49
22 02 19

Solomon Isls.
USCGS 0 = 21 04 40
7½°S 156°E
Mag. 7 1/4
Dist. 124.6°

18

eS
eLQ
eLR

05 27 05
05 32 05
05 33 23

off coast Oregon
USCGS 0 = 05 13 30
42°N 127°W
Dist. 39.2°

18

e(LR)

06 37 05

Loyalty Isls.

18

iP
P(E) 20 sec 30 mic
e
iS
e
LR from W

06 43 01
06 45 01
06 47 45
06 48 49

Yellowstone, Wyoming
USCGS 0 = 06 37 13
44½°N 111°W
Dist. 27.3°
Mag. 7.1

18

eP

08 01 02

Yellowstone

18

eP

08 54 16

18

iP
iS
eLQ
eLR

11 09 37
11 14 19
11 16 35
11 17 35

Yellowstone aftershock
USCGS 0 = 11 03 49
45°N 111°W
Mag. 5 3/4
Dist. 30.3°

18

eP

11 15 54

Yellowstone

18

eLR

12 26 41

18

iP
ePP
e
ePcP
iS
e

15 31 52
15 32 41
15 33 53
15 35 01
15 36 25
15 36 49

Yellowstone, Wyoming
USCGS 0 = 15 26 06
44½°N 111°W
Dist. 27.3°
Mag. 6½

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
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1959

Aug. 18
(cont.)

eLQ	15	37	55
eLR	15	39	05
Lg	15	40	30
LR from WNW			

18	eLR(W)	20	13	05
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18	eLR(W)	20	22	05
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18	eLR(W)	20	29	05
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18	eLR	21	11	05
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18	eLR(W)	21	36	35
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18	eLQ	21	47	05	Solomon Isls.
	eLR(W)	21	49	45	

18	eLQ	22	03	05
	eLR(W)	22	05	05

18	eLR(NE)	22	38	05	Albania
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18	eLR(W)	23	04	35
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18	eLR	23	38	05
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18	eLR(W)	23	42	25
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18	eLQ	23	59	05
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19	eLR(W)	00	01	05
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19	eLR(W)	00	52	05
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19	eLQ	01	10	05
	eLR(W)	01	11	25

19	eLR	03	44	35
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19	e	04	07	05
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19	1P	04	09	53	Yellowstone USCGS 0 = 04 04 03 45°N 111½°W Mag. 6 Dist. 27.6°
	1S	04	14	35	
	eLR	04	17	05	
	Lg	04	20	25	
	LR from WNW				
	eLR ₂	05	20	05	

19	eLR(W)	18	09	21
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Date	Phase	h	m	s	Remarks
1959					
Aug. 19	eLQ	19	19	05	Yellowstone aftershock
	eLR(WNW)	19	20	25	
19	eLQ	19	56	25	Yellowstone aftershock
	eLR(WNW)	19	57	05	
19	eLQ	21	58	55	Yellowstone aftershock
	eLR(WNW)	22	01	05	
20	eLQ	02	56	35	Solomon Isls.
	eLR(NW)	03	00	19	
20	eLQ	04	07	05	
	eLR(NW)	04	08	45	
20	eP	07	27	23	off coast Peru USCGS 0 = 07 18 34 7°S 85°W Dist. 48.9°
	e	07	28	49	
	eS	07	33	57	
	e	07	34	23	
	eSS	07	37	33	
	eLR(SW)	07	41	35	
20	eLQ	09	47	05	New Britain
	eLR	09	53	29	
20	eLQ	10	28	35	
	eLR(NW)	10	36	05	
20	eLQ	11	11	35	Yellowstone
	eLR(WNW)	11	14	05	
20	eSKSP	12	55	05	Indian Ocean USCGS 0 = 12 20 08 29°S 78°E Dist. 154.2°
	ePPS	12	57	35	
	eSS	13	04	35	
	eLQ	13	23	35	
	eLR	13	34	35	
	LR from SE				
20	eLR	15	34	06	
20	eLR	17	51	06	
20	e	19	22	18	Yellowstone aftershock
	eLR(WNW)	19	25	06	
20	eLR(E)	20	38	06	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 21	eSS	08	46	36	Indian Ocean
	e	08	49	26	USCGS 0 = 08 03 15
	e	08	52	54	50 $\frac{1}{2}$ °S 139 $\frac{1}{2}$ °E
	e	08	55	12	Mag. 5 3/4-6
	eLQ	09	06	18	Dist. 155°
	eLR(W)	09	16	06	
21	eLQ	10	42	30	Indian Ocean
	eLR	10	51	06	
	LR from SW				
22	eLR	02	40	06	
22	eL	07	11	06	
22	eLQ	09	11	06	
	eLR	09	13	06	
22	e	16	26	58	
	e	16	34	46	
	eLQ	16	38	06	
	eLR	16	44	36	
22	eLR	21	20	06	
22	eLR	21	58	24	Peru-Chile border
23	eLQ	04	12	06	
	eLR	04	18	06	
23	eLR	12	24	06	
23	eS	22	39	17	Mediterranean Sea
	eSS	22	43	07	USCGS 0 = 22 21 30
	eLR(NE)	22	46	07	35 $\frac{1}{2}$ °N 3°W
					Dist. 54.6°
24	eLR	02	22	07	
24	eLR(NW)	04	52	07	
24	eLQ	06	10	07	
	eLR	06	14	07	
24	eLR	10	56	07	
24	eLR(W)	11	25	07	
24	e	12	52	59	
	eLQ	12	54	47	
	eLR(SW)	12	56	07	

Date	Phase	h	m	s	Remarks
1959					
Aug. 24	eLR	14	50	07	
24	eLR	15	22	07	
24	ePP	16	01	27	Solomon Isls
	ePKS	16	03	47	USCGS 0 = 15 41 40
	ePS	16	12	19	10 $\frac{1}{2}$ °S 16 $\frac{1}{2}$ °E
	eSS	16	19	07	Dist. 122.7°
	e	16	33	07	
	eLR(NW)	16	39	07	
24	eLR	17	43	07	Solomon Isls.
24	eP	21	46	23	Solomon Isls.
	ePKP	21	49	51	USCGS 0 = 21 30 46
	ePP	21	51	23	10 $\frac{1}{2}$ °S 161°E
	ePKS	21	53	01	Mag. 7
	eSKS	21	56	45	Dist. 123.1°
	eSKKS	21	58	25	
	ePS	22	01	27	
	ePKKS	22	03	55	
	eSS	22	08	31	
	eSSS	22	12	47	
	eLQ	22	22	21	
	eLR	22	27	47	
	LR from NW				
	G ₂	23	21	37	
25	eLR(SE)	07	10	37	
25	eLR(SW)	09	38	07	
25	eLR(SE)	12	55	07	Northern Chile
					USCGS 0 = 12 24 18
25	eLQ	14	35	47	Solomon Isls.
	eLR(NW)	14	38	07	
25	eLR	15	34	07	
25	eLQ	18	29	07	Northern Chile
	eLR(SE)	18	32	53	USCGS 0 = 17 51 49
					27 $\frac{1}{2}$ °S 71°W
					Dist. 68.2°
25	eLR	21	58	27	
25	eLQ	22	42	07	
	eLR	22	46	07	
25	eLQ	23	09	53	
	eLR(SE)	23	11	57	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 26	e	00	06	53	
	e	00	11	17	
	e	00	14	35	
	e	00	18	37	
	eLQ	00	20	07	
	eLR	00	24	07	
26	eLR	00	46	07	
26	eLR(NW)	03	58	27	New Britian Depth about 150 km
26	eLR(NW)	05	26	07	New Britain
26	eLQ	05	48	07	
	eLR(NW)	05	54	07	
26	iP(comp. SW)	08	31	31	Vera Cruz, Mexico
	ipP	08	31	41	USCGS 0 = 08 25 30
	ePP	08	32	15	18°N 94½°W
	e	08	33	33	Depth about 33 km
	e	08	35	07	Mag. 6 3/4
	e	08	35	57	Dist. 29°
	eS	08	36	31	
	eLQ	08	37	15	
	eLR	08	38	51	
26	eP	10	35	19	S. Queen Charlotte Islands
	ePP	10	36	47	USCGS 0 = 10 27 41
	eS	10	41	15	51°N 132°W
	ePS	10	41	49	Dist. 40.6°
	eSS	10	43	19	
	eLQ	10	43	47	
	eLR	10	46	29	
	LR from NW				
26	eLQ	13	19	59	W. U.S.
	eLR(WNW)	13	24	01	
26	eLR(NW)	14	14	07	
26	eLQ	19	45	37	
	eLR	19	53	07	
26	e	20	16	57	
	eLQ	20	24	07	
	eLR(SW)	20	29	07	



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Date	Phase	h	m	s	Remarks
1959					
Aug. 27	eSKKS	05	32	37	New Britain
	eSS	05	42	59	USCGS 0 = 05 05 44
	eSKKKS	05	45	07	5°S 150½°E
	eLQ	05	58	47	Depth about 300 km
	eLR(NW)	06	06	27	Dist. 126.5°
27	eL	06	53	07	New Britain
27	e	07	30	07	
	eLR	07	37	07	
27	e	08	29	47	Northern Celebes
	eLQ	08	51	27	USCGS 0 = 07 50 28
	eLR(SW)	08	58	07	0° 122°E
					Depth about 200 km
					Dist. 152°
27	eLR	10	00	07	
27	eLQ	12	13	07	
	eLR(NW)	12	15	53	
27	eLR(NW)	13	08	07	
27	eLR	14	16	07	
27	eLR(SE)	14	23	07	
27	i	16	20	08	local blast
27	e	20	45	07	
	e	21	06	07	
	eLQ	21	17	07	
	eLR(SW)	21	24	07	
27	eLQ	23	47	27	
	eLR(NW)	23	49	07	
28	ePKKP	00	22	19	Northern Burma
	eSKKS	00	28	35	USCGS 0 = 23 53 10
	eLQ	00	44	57	25°N 96°E
	eLR(N)	00	52	19	Dist. 126.4°
28	eLR(NW)	02	38	07	Kurile Isls.
28	eLQ	03	28	37	Solomon Isls.
	eLR(NW)	03	36	07	
28	eLR(E)	04	31	07	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 28	eLR	05	46	07	
28	eL	07	42	27	
28	e	07	49	43	
	e	08	00	27	
	e	08	01	23	
	eLQ	08	02	07	
	eLR(SE)	08	04	07	
28	e	11	52	25	
	eLQ	11	55	37	
	eLR(SE)	11	57	49	
28	eP	12	16	19	Central Alaska
	ePP	12	18	19	USCGS O - 12 07 44
	eS	12	23	23	63 $\frac{1}{2}$ °N 149°W
	eSS	12	26	47	Dist. 47.8°
	eLQ	12	27	37	
	M ₂	12	29	07	
	LR from NW				
28	e	16	09	22	New Hebrides Isla.
	ePP	16	12	50	USCGS O - 15 52 10
	eSKKS	16	19	52	17°S 167°E
	ePPS	16	23	54	Dist. 122.8°
	ePKKS	16	25	22	
	eSS	16	30	16	
	e	16	32	40	
	eLQ	16	43	08	
	eLR	16	51	08	
	LR from NW				
	eLR ₂ (SE)	17	55	28	
29	eLQ	03	07	38	
	eLR	03	12	08	
29	eP	03	36	08	Solomon Islands
	e	03	38	00	USCGS O - 03 21 07
	ePP	03	41	16	
	ePPP	03	43	56	
	ePPS	03	51	56	
	ePKKS	03	54	14	
	eSS	03	59	18	
	eLQ	04	13	20	
	eLR(NW)	04	22	08	
29	eLR	05	16	08	

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PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 29	e	06	10	48	
	e	06	18	56	
	eLQ	06	19	48	
	eLR	06	23	38	
	LR from NW				
29	eLQ	11	19	08	Solomon Isls.
	eLR(NW)	11	23	08	
29	eLR(NW)	13	03	08	
29	eLR	15	40	08	
29	eLR	16	02	28	
29	iP(dil from N)	17	15	58	Lake Baikal, USSR
	ePP	17	19	24	USCGS O = 17 03 10
	eSKS	17	26	22	52°N 106 $\frac{1}{2}$ °E
	eS	17	26	36	Mag. 6 $\frac{3}{4}$
	ePS	17	27	46	Dist. 87.4°
	eSS	17	32	20	
	eLQ	17	38	36	
	eLR	17	43	08	
	LR from N				
29	eLQ	22	18	22	New Hebrides
	eLR(NW)	22	21	28	
30	eLR(NW)	01	07	08	
30	eLQ	03	24	52	Solomon Isls.
	eLR	03	28	20	
30	eS	03	42	08	Mediterranean Sea
	eLQ	03	47	08	USCGS O = 03 24 54
	eLR(NE)	03	50	08	35 $\frac{1}{2}$ °N 3°W
					Dist. 54.6°
30	eLQ	13	26	38	
	eLR(W)	13	29	38	
30	eLR(W)	14	10	08	
30	eLQ	16	41	08	
	eLR	16	45	08	
30	eLR(NW)	17	23	28	
30	eLR	19	53	28	Loyalty Islands

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1959					
Aug. 30	ePKP	22	05	44	Indian Ocean
	ePP	22	09	04	USCGS 0 = 21 45 07
	ePPP	22	12	02	$36\frac{1}{2}^{\circ}\text{S}$ $78\frac{1}{2}^{\circ}\text{E}$
	eSKKKS	22	16	12	Dist. 158.1°
	ePS	22	19	58	
	eSKKS	22	22	40	
	eSS	22	29	24	
	eSSS	22	35	16	
	eLQ	22	48	08	
	eLR	22	59	22	
	LR from SE				
31	eLR	02	05	08	
31	eLR	04	30	18	
31	eLR	14	26	08	
31	eLQ	21	36	08	New Hebrides
	eLR	21	38	08	

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LAMONT GEOLOGICAL OBSERVATORY COLUMBIA UNIVERSITY

PALISADES, NEW YORK



SEISMOLOGICAL BULLETIN

By

RUTH B. SIMON

1 September 1959 - 31 December 1959

L.G.O. Contribution No. 400

STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS

Latitude: $41^{\circ} 00' 25''$ North
Longitude: $73^{\circ} 54' 31''$ West
Elevation: 102.59 meters
Bedrock: Palisades diabase Triassic Age

INSTRUMENTS

Three component Columbia University seismographs.
To = 12 sec., Tg = 15 sec.

Three component Benioff seismographs. Short period, To = 1 sec.,
Tg = 0.2 sec. Long Period, To = 1 sec. Tg = 75 sec.

One Columbia University vertical seismograph. To = .33 sec.,
Tg = 0.2 sec.

Three component Columbia University visual recording seismographs,
To = 12 sec.

One Columbia University vertical seismograph for visual recording
To = 1 sec.

Three component Columbia University long period seismographs.
To = 15 sec., Tg = 75 sec.

Three component Columbia University long period seismographs.
To = 30 sec., Tg = 100 sec.

Two Columbia University Microbarographs. To = 10 sec., Tg = 75 sec.

ABBREVIATIONS

i = sudden beginning of the motion (impetus)

e = gradual beginning of the motion (emersio)

Lg = short period continental surface shear wave

Rg = Continental Rayleigh wave

Comp. = compression

All times are G.C.T.

Dil. = dilatation

Time - I.B.M. Invar pendulum clock corrected by Naval Observatory
time signals every six hours.

Palisades, New York

Date	Phase	h m s	Remarks
1959			
Sept. 1	eS	00 55 04	Peru aftershock
	e(LQ)	01 03 18	USCGS 0 = 00 38 27
	eLR(SE)	01 05 38	11°S 74½°W Dist. 518°
Sept. 1	eLR(NE)	05 50 58	
Sept. 1	e	07 34 24	
	e	07 35 16	
	e	07 39 16	
	eLQ	07 40 08	
	eLR(NE)	07 41 08	
Sept. 1	eLR(SE)	09 21 08	
Sept. 1	iP	10 54 46	N. Puerto Rico
	ePP	10 55 22	USCGS 0 = 10 49 43
	iS	10 58 52	20°N 64½°W
	eLR(SSE)	10 59 38	Dist. 22.4°
Sept. 1	e	11 26 20	
Sept. 1	eP	11 48 37	Albania
	eS	11 57 30	USCGS 0 = 11 37 42
	eLQ	12 06 28	41½°N 20°E
	eLR(ENE)	12 09 58	Dist. 66.8
Sept. 1	eP	11 51 51	Puerto Rico aftershock
	eS	11 55 55	
Sept. 1	eP	11 58 43	Albania aftershock
	eS	12 04 54	
Sept. 1	eLR	15 06 08	
Sept. 2	eLR(W)	00 21 16	
Sept. 2	eS	08 19 24	Kenai Peninsula
	e	08 23 56	USCGS 0 = 08 03 00
	eLQ	08 25 08	60°N 151°W
	eLR(NW)	08 29 08	Dist. 49.5°
Sept. 2	eP	09 36 40	Puerto Rico
	eS	09 40 45	USCGS 0 = 09 31 36
	eLQ	09 41 20	20°N 65°W
	eLR(SE)	09 42 08	Dist. 22.3°
Sept. 2	e	12 24 16	
	eLQ	12 26 38	
	eLR(W)	12 30 12	

2.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Sept. 2	eLQ	13	25	28	
	eLR(W)	13	31	08	
Sept. 3	eLR	04	36	08	Albania
Sept. 3	ePKP	06	46	56	Celebes Island
	e	06	48	12	USCGS 0 = 06 27 30
	ePP	06	49	43	4½°S 123°E
	ePKS	06	50	44	Dist 140.6°
	eSKS	06	53	55	
	eSKKS	06	56	42	
	e	07	04	08	
	eSS	07	08	38	
	e	07	09	02	
	eLQ	07	29	08	
	eLR	07	35	08	
	LR from NNW				
Sept. 3	eLR	15	54	08	
Sept. 3	e	22	23	08	Fiji Islands
	eLQ	22	33	38	
	eLR(NW)	22	36	08	
Sept. 3	eLR	23	45	44	
Sept. 4	eLR	00	00	48	
Sept. 4	e	00	58	34	Near Coast S. Chile?
	eLQ	01	02	08	USCGS 0 = 23 22 56
	eLR	01	05	08	47°S 75°W
					Dist. 87.6°
Sept. 4	eLQ	09	34	54	New Britain
	eLR(NW)	09	43	48	
Sept. 4	eLR(SW)	13	28	08	Kermadec Islands
Sept. 4	i(P)	13	58	55	
	i(S)	13	59	40	
	Lg	13	59	43	
Sept. 4	eP	18	37	04	Atlantic Ocean
	ePoP	18	37	44	USCGS 0 = 18 26 41
	eS	18	45	30	1°S 24°W
	eScS	18	46	54	Dist. 60.2°
	eSS	18	49	28	
	eLQ	18	52	16	
	eLR	18	55	12	
Sept. 4	eLR	20	55	20	Fox. Isl., Aleutians



Date	Phase	h	m	s	Remarks
1959					
Sept. 4	ePP	23	39	16	Near Coast S. Chile
	ePPP	23	40	36	USCGS 0 = 23 22 56
	eSKS	23	46	28	47°S 75°W
	eSS	23	52	18	Dist. 97.5°
	eSSS	23	55	56	
	eLQ	23	59	00	
Sept. 5	eLR(S)	00	03	26	
Sept. 5	eLR	01	43	08	
Sept. 5	eLR	04	50	08	
Sept. 5	e	06	22	38	
Sept. 5	ePP	06	29	22	Halmahera Isl.
	ePKS	06	30	34	USCGS 0 = 06 07 38
	ePPS	06	41	32	1°N 129°E
	eSS	06	47	18	Dist. 133°
	eLQ	07	03	08	
	eLR(NW)	07	11	38	
Sept. 5	eLQ	12	16	08	
	eLR(W)	12	18	56	
Sept. 5	ePKP	15	56	34	Halmahera aftershock
	ePKS	15	59	50	USCGS 0 = 15 34 44
	eSKS	16	03	23	1°N 129°E
	eSS	16	14	56	Dist. 133°
	eSKKKS	16	19	18	
	eSSS	16	25	18	
	eLQ	16	31	36	
	eLR(NW)	16	38	34	
Sept. 5	eS	21	32	16	Rat Isl., Aleutians
	e	21	39	48	USCGS 0 = 21 12 02
	eLQ	21	44	08	51½°N 179½°E
	eLR	21	47	08	Dist. 68°
Sept. 5	eSS	21	53	28	Rat Isls., Aleutians
	eLQ	21	56	30	USCGS 0 = 21 28 42
	eLR(NW)	22	00	38	51°N 179½°E
					Dist. 68.3°
Sept. 6	eSS	01	07	08	Philippines
	eLQ	01	27	48	USCGS 0 = 00 27 59
	eLR(NW)	01	31	18	5½°N 126½°E
					Dist. 130.4°
Sept. 6	e	04	49	08	Solomon Islands
	eLR(NW)	05	08	38	
Sept. 6	eLR	06	03	48	
Sept. 6	eLR	14	19	08	Philippines

4.				Palisades, New York	
Date	Phase	h	m	s	Remarks
1959					
Sept. 6	eLR	16	10	08	
Sept. 6	eLR	19	25	38	Peru, Bolivia Border
Sept. 7	eS	04	22	28	Atlantic Ocean
	eLQ	04	29	00	USCGS 0 = 04 03 20
	eLR	04	31	48	1°S 23½°W
					Dist. 61.9°
Sept. 7	e	06	57	28	
	eLR	07	02	58	
Sept. 7	eLQ	11	53	08	
	eLR	11	54	38	
Sept. 8	eLR	01	31	08	
Sept. 8	eS	07	20	08	Yellowstone aftershock
	eLQ	07	23	08	USCGS 0 = 07 09 48
	eLR	07	25	08	45°N 111½°W
					Dist. 27.6°
Sept. 8	e	09	26	18	
	e	09	29	58	
	e	09	59	58	
	eLQ	10	02	24	
	eLR(SW)	10	04	38	
Sept. 8	eLQ	10	19	48	
	eLR(SW)	10	21	54	
Sept. 8	eLQ	10	47	08	Honshu, Japan
	eLR(NW)	10	50	08	
Sept. 8	eLQ	14	05	08	S. Atlantic Ocean
	eLR(SE)	14	07	52	
Sept. 8	eLQ	16	52	49	
	eLR	16	58	39	
Sept. 8	e	17	57	29	
	e	18	05	19	
	e	18	08	09	
	e	18	11	09	
Sept. 8	eP	19	32	57	Hokkaido, Japan
	eSKS	19	43	21	USCGS 0 = 19 19 39
	ePS	19	44	37	42½°N 142½°E
	ePPS	19	50	35	Dist 90.6
	eLQ	19	58	57	
	eLR(NW)	20	02	43	
Sept. 8	eLQ	21	03	09	Sandwich Isla.
	eLR	21	09	09	
Sept. 8	eL	22	08	09	



Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Sept. 9	eLQ	01	16	09	
	eLR	01	24	25	
Sept. 9	eLQ	02	25	09	Kamchatka
	eLR	02	30	09	
Sept. 9	e	05	28	53	
Sept. 9	eLR	06	32	39	Hindu Kush
Sept. 9	eLR	07	55	09	
Sept. 9	eLR	17	29	08	
Sept. 9	eLQ	18	32	24	
	eLR	18	34	08	
Sept. 9	eLR	21	35	08	
Sept. 10	eLR	01	31	38	
Sept. 10	eLR	03	12	08	
Sept. 10	ePP	05	55	48	Solomon Islands
	e	05	56	16	USCGS 0 - 05 35 04
	ePPS	06	07	30	6½°S 154½°E
	eSS	06	13	08	Dist. 125°
	e	06	17	08	
	e	06	25	48	
	eLQ	06	28	24	
	eLR(NW)	06	34	00	
	eLR ₂	07	25	08	
Sept. 10	eLR	11	43	08	
Sept. 10	eLR	15	21	08	
Sept. 10	e	15	57	34	Kurile Islands
	e	16	07	08	USCGS 0 - 15 43 28
	e	16	13	42	45½°N 148½°E
	e	16	14	36	Dist. 85.9°
	e	16	16	32	
	eLQ	16	24	08	
	eLR(NW)	16	28	08	
Sept. 10	eLR	17	02	38	
Sept. 10	eLR	17	21	08	New Guinea
Sept. 10	e	23	18	56	Kurile Islands
	e	23	19	18	USCGS 0 - 22 56 34
	e	23	25	02	47°N 152°E
	eLQ	23	33	48	Dist. 83.3°
	eLR	23	38	08	

6. Date	Phase	h	m	s	Palisades, New York Remarks
1959					
Sept. 11	eLQ	11	19	08	
	eLR	11	20	08	
Sept. 11	e (S)	12	43	08	
	eLR(NE)	12	45	08	
Sept. 11	eLR(NE)	14	33	09	
Sept. 11	e	20	47	13	
Sept. 11	eS	23	20	57	Nicaragua
	eLR(SW)	23	24	09	USCGS 0 = 23 08 38 12°N 87½°W Dist. 31.3°
Sept. 12	i	00	41	32	Java
					USCGS 0 = 00 22 01 6°S 106°E Dist. 145.1°
Sept. 12	eS	01	59	19	S.W. Bolivia
	eSSS	02	06	17	USCGS 0 = 01 41 03
	e	02	08	53	20°S 68°W
	eLR	02	11	09	Dist. 61°
Sept. 12	ePP	02	15	09	Bismarck Sea
	eSKKS	02	21	59	USCGS 0 = 01 53 47
	ePS	02	25	09	3°S 146½°E
	ePPS	02	26	45	Dist. 127.6°
	eScSPKP	02	27	45	
	eSS	02	32	37	
	eSSS	02	36	39	
	eLQ	02	47	39	
	eLR(NW)	02	52	39	
	eLR ₂	03	43	39	
Sept. 12	eSS	07	40	23	Bismarck Sea
	e	07	42	49	USCGS 0 = 07 01 45
	eLQ	07	57	09	3°S 147°E
	eLR(NW)	08	01	09	Dist. 127.4°
Sept. 12	eLQ	09	47	09	
	eLR(NW)	09	49	39	
Sept. 12	ePPS	11	56	57	Coral Sea
	eSS	12	02	43	USCGS 0 = 11 24 27
	eLQ	12	16	47	9½°S 156°E
	eLR(NW)	12	22	39	Dist. 126.0°
Sept. 12	eS	17	12	01	off coast Mexico
	eLR(SW)	17	16	29	USCGS 0 = 16 59 05 17½°N 106°W Dist. 36.2°

Date	Phase	h	m	s	Remarks
1959					
Sept. 12	ePS	21	46	39	Hindu Kush
	eLR	21	52	09	USCGS 0 = 21 19 57 36°N 71°E Dist. 96.9°
Sept. 13	eLR(N)	00	44	09	
Sept. 13	eLQ	04	16	21	
	eLR(W)	04	18	25	
Sept. 13	eLQ	05	31	39	Bismark Sea
	eLR(NW)	05	37	25	
Sept. 13	eLR	06	27	09	
Sept. 13	e	18	25	43	
	eLQ	18	26	29	
	eLR(SE)	18	27	55	
Sept. 13	ePcF	19	58	47	Yellowstone Aftershock
	eLQ	19	59	25	USCGS 0 = 19 49 36
	eLR(WNW)	20	02	09	45°N 111°W
	Lg	20	03	57	Dist. 27.3°
Sept. 13	eLQ	20	53	19	
	eLR	20	54	37	
Sept. 13	eS	21	34	15	Yellowstone Aftershock
	eLQ	21	35	17	USCGS 0 = 21 23 31
	eLR(WNW)	21	37	09	45°N 111°W
					Dist. 27.3°
Sept. 13	eLQ	21	52	49	
	eLR	21	55	21	
Sept. 13	e	23	00	53	Halmahera Isl.
	ePP	23	02	39	USCGS 0 = 22 40 36
	ePKS	23	03	33	1°N 129°E
	ePPS	23	15	09	Dist. 133.3°
	eSS	23	20	57	
	eLQ	23	37	09	
	eLR(NW)	23	41	37	
Sept. 14	e	02	17	37	
	e	02	19	23	
	e	02	29	37	
	eLQ	02	39	39	
	eLR(N)	02	46	21	
Sept. 14	eLR	04	45	09	
Sept. 14	e	05	11	19	
	eLR(SW)	05	14	09	



8.

Date	Phase	h	m	s	Palisades, New York Remarks
1959					
Sept. 14	e	06	32	39	
	eLQ	06	36	25	
	eLR	06	38	39	
Sept. 14	eS	09	45	19	Yellowstone aftershock
	eLQ	09	46	15	USCGS 0 = 09 34 52
	eLR (WNW)	09	47	55	45°N 111°W
	Lg	09	49	17	Dist. 27.3°
	Rg	09	51	17	
Sept. 14	eLQ	11	34	09	
	eLR	11	36	09	
Sept. 14	ePP	13	36	09	Tonga Isls.
	ePPP	13	38	49	USCGS 0 = 13 15 49
	e(SKS)	13	40	29	24°S 176½°W
	ePS	13	45	31	Dist. 114.5°
	ePPS	13	47	35	Mag. 6
	eSS	13	52	03	
	eLQ	14	02	09	
	eLR(WSW)	14	08	29	
Sept. 14	ePKP	14	28	28	Kermadec Isl.
	e(PKKP)	14	37	59	USCGS 0 = 14 09 39
	ePS	14	39	33	28½°S 177°W
	eSS	14	46	17	Dist. 117.8°
	eSSS	14	50	29	Mag. 7¼
	e(SSSS)	14	57	09	
	eLQ	15	00	39	
	eLR	15	05	09	
Sept. 14	eLR	18	02	39	Kermadec aftershock
Sept. 14	eLR	21	29	39	Kermadec
Sept. 14	ePP	22	43	59	Kermadec aftershock
	eSKS	22	49	29	USCGS 0 = 22 23 53
	eSKKS	22	50	53	29°S 177°W
	ePKKP	22	51	55	Dist. 117.7°
	ePS	22	53	39	Mag. 6½
	ePPS	22	54	49	
	eSS	23	00	29	
	eLQ	23	11	53	
	eLR(WSW)	23	19	39	
Sept. 15	eLR ₂ (ENE)	00	27	09	
Sept. 15	eP	06	14	57	Kermadec aftershock
	ePP	06	19	43	USCGS 0 = 05 59 42
	eSKS	06	25	19	28½°S 177°W
	eSKKS	06	26	33	Dist. 117.8°
	eSKKKS	06	27	33	Mag. 6½
	eScSP	06	29	23	
	eSS	06	36	13	
	e(SSS)	06	40	25	
	eLQ	06	48	39	
	eLR(WSW)	06	55	09	



Palisades, New York

9.

Date	Phase	h	m	s	Remarks
1959					
Sept. 15	ePKP	11	24	21	Fiji Isls.
	epPP	11	27	25	USCGS 0 = 11 05 33
	esPP	11	29	09	21½°S 179½°W
	eSKS	11	30	23	Dist. 114.9°
	eSKKS	11	31	19	Mag. 6½
	e	11	33	05	
	eSP	11	33	21	
	eScSP	11	34	15	
	esSKS	11	35	13	
	eSKKP	11	36	59	
	eSS	11	39	43	
	esSS	11	43	17	
	eSSSS	11	47	33	
	e	11	52	09	
	e	11	56	39	
	LR from W				
Sept. 15	eLQ	14	41	39	Kermadec
	eLR	14	44	45	
Sept. 15	eLR	15	45	21	Kurile Isls.
Sept. 15	eLR	20	34	09	
Sept. 15	eLR	23	32	09	Kermadec Isls.
Sept. 16	eLR	02	23	09	Kermadec Isls.
Sept. 16	eLR	02	48	49	Kermadec
Sept. 16	eLR	03	12	39	Kermadec
Sept. 16	eLR	03	31	57	
Sept. 16	eLR	04	27	49	
Sept. 16	eLR	06	51	09	Crete
Sept. 16	eLR	07	55	39	
Sept. 16	eLR	09	19	09	
Sept. 16	ePS	10	37	39	Kermadec aftershock
	eSS	10	44	39	USCGS 0 = 10 07 45
	eLQ	10	57	09	29°S 176½°W
	eLR	11	03	39	Dist. 117.4°
Sept. 16	ePP	16	16	52	Kermadec
	ePS	16	26	58	USCGS 0 = 15 57 03
	ePPS	16	28	00	28½°S 176°W
	eSS	16	33	38	Dist. 116.3°
	e	16	36	38	Mag. 6
	e	16	38	24	
	eLQ	16	46	02	
	eLR(SW)	16	52	28	



10.		Palisades, New York			
Date	Phase	h	m	s	Remarks
1959					
Sept. 16	eLR	19	31	08	
Sept. 16	eLR	21	07	38	
Sept. 16	eLR	22	23	08	
Sept. 17	eLR(SW)	01	21	48	
Sept. 17	eLR(SW)	04	17	32	
Sept. 17	eLR	06	25	52	
Sept. 17	eLq	08	00	08	
	eLR(SW)	08	06	08	
Sept. 17	eLR	09	22	08	
Sept. 17	eLR(SW)	15	31	09	Kermadec
Sept. 17	eLR(SW)	18	14	09	
Sept. 17	iP	21	30	40	El Salvador
	epP	21	30	55	USCGS 0 = 21 24 27
	cPP	21	31	29	13½°N 88½°W
	eS	21	35	45	Dist 30.2°
	eLR(SW)	21	38	09	
Sept. 17	eS	22	26	55	Gulf of Calif.
	ePcS	22	27	45	0 = 22 14 40
	eSS	22	28	57	30½°N 114°W
	eLq	22	29	57	Dist. 33.9°
	eLR(W)	22	31	09	Mag. 5¼
	Lg	22	32	57	
Sept. 18	eLR(NE)	02	30	09	
Sept. 18	eLR(SW)	04	06	09	
Sept. 18	e	07	06	39	
	eLR	07	21	09	
Sept. 18	eLR(SW)	10	20	09	Kermadec Isls.
Sept. 18	e	12	09	31	
	e	12	11	49	
Sept. 18	eP	12	15	31	Sandwich Isls.
	e	12	17	29	USCGS 0 = 12 01 11
	cPP	12	19	57	57½°S 24°W
	ePPP	12	22	23	Dist. 106.7°
	eSKS	12	26	05	
	ePS	12	29	17	
	eSS	12	35	03	
	eLq	12	43	23	
	eLR(SE)	12	50	39	



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Palisades, New York

11.

Date	Phase	h	m	s	Remarks
1959					
Sept. 19	eLR	21	02	08	
Sept. 19	eLR	05	01	08	
Sept. 19	eLR	06	53	08	
Sept. 19	eLR(SE)	16	06	07	
Sept. 19	e	17	56	59	
	e	17	57	19	
Sept. 19	eLR	20	28	37	
Sept. 19	eLQ	22	07	07	
	eLR	22	08	37	
Sept. 20	eP	06	18	39	Pacific Ocean N. of Easter
	eS	06	27	19	USCGS 0 = 06 07 59
	eSS	06	31	07	13½°S 111½°W
	e(SSS)	06	32	21	Dist. 64.4°
	eLQ	06	34	07	
	eLR(SW)	06	38	07	
Sept. 20	eLR	15	24	07	
Sept. 20	eLR	21	49	07	
Sept. 20	eLR	23	47	07	
Sept. 21	ePP	02	30	01	Near coast New Guinea
	ePKS	02	31	09	USCGS 0 = 02 08 28
	ePPS	02	42	07	9½°S 149°E
	eScSPKP	02	43	07	Dist. 130.9
	eSS	02	47	47	
	eSSS	02	52	41	
	eLQ	03	02	27	
	eLR(NW)	03	09	21	
	eLR ₂ (SE)	04	00	07	
Sept. 21	eLR	05	10	37	
Sept. 21	e	08	03	43	
	eLQ	08	07	37	
	eLR	08	09	47	
Sept. 21	e	11	48	43	
	eLQ	11	58	47	
	eLR(W)	12	04	07	
Sept. 21	eSS	16	37	07	S.W. Alaska
	eLQ	16	39	17	USCGS 0 = 16 16 19
	eLR(NW)	16	42	25	62½°N 159°W
					Dist. 52.5°



12.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Sept. 21	e	17	47	42	
	e	17	48	11	
Sept. 22	eLR	01	46	27	
Sept. 22	eLQ	08	11	07	Fox Isls, Aleutians
	eLR(NW)	08	15	07	USCGS 0 - 07 45 55
Sept. 23	eS	10	56	24	North Polar region
	eLR(N)	11	03	36	USCGS 0 - 10 38 59
					83½°N 113½°E
					Dist. 55.7°
Sept. 23	eLR(NE)	18	49	06	
Sept. 23	eL	21	58	06	
Sept. 23	eSKKS	22	48	14	Honshu, Japan
	e(SKKS)	22	59	26	USCGS 0 - 22 23 11
	eLQ	23	05	46	35½°N 138½°E
	eLR(NW)	23	14	06	Dist. 98.2°
Sept. 24	eLR(W)	01	30	06	
Sept. 24	eS	06	00	46	Arctic Ocean
	eSS	06	05	36	USCGS 0 - 05 43 38
	eLQ	06	07	48	83½°N 112½°E
	eLR(N)	06	09	06	Dist. 55.7°
Sept. 24	eLQ	10	59	06	
	eLR(NE)	11	01	06	
Sept. 24	eLR	17	40	06	
Sept. 24	ePPS	20	15	36	Kermadec Isls.
	eSS	20	21	06	USCGS 0 - 19 44 29
	eSSSS	20	29	50	29½°S 176½°W
	eLR(SW)	20	42	06	Dist. 117.7°
Sept. 25	eLR	00	34	06	
Sept. 25	ePKP	00	34	20	off E. Coast Java
	ePKP	00	34	38	USCGS 0 - 00 14 30
	e(PKS)	00	39	22	9°S 113½°E
	eSKSP	00	48	22	Dist. 147.5°
	eSKKKS	00	51	40	
	eSS	00	57	06	
	e	01	10	24	
	e	01	14	54	
	eLQ	01	18	46	
	eLR(SW)	01	25	06	



Date	Phase	h	m	s	Remarks
1959					
Sept. 25	e(P)	02	06	03	
	e(S)	02	15	42	
	eLQ	02	28	36	
	eLR	02	35	30	
Sept. 25	ePP	02	56	24	Near East coast of Formosa
	ePKS	02	59	06	USCGS 0 - 02 36 48
	eSKKS	03	03	18	22°N 112°E
	ePS	03	06	16	Dist. 115.5°
	eSS	03	12	36	
	eSKKS	03	13	50	
	eSSS	03	21	34	
	e	03	23	22	
	eLQ	03	24	36	
	eLR(N)	03	31	06	
Sept. 25	e	08	32	36	USSR
	e	08	35	52	USCGS 0 - 07 18 40
	e	08	42	06	44½°N 39½°E
					Dist. 76.0
Sept. 25	e	15	15	32	
	e	15	24	36	
	eLR(SW)	15	29	44	
Sept. 25	e	17	36	50	
	eLQ	17	40	30	
	eLR	17	42	24	
Sept. 25	e	22	17	34	
	eLQ	22	27	50	
	eLR(NW)	22	30	14	
Sept. 26	e	00	11	36	Kermadec Isls.
	eLQ	00	21	06	USCGS 0 - 23 34 57
	eLR(SW)	00	31	06	29°S 176½°W
					Dist. 117.7°
Sept. 26	eLR	02	26	06	
Sept. 26	eLR	03	07	06	
Sept. 26	eLR	03	56	06	
Sept. 26	eLR	04	12	06	
Sept. 26	eLQ	04	52	06	
	eLR	04	56	06	
Sept. 26	e	05	02	50	
	eLQ	05	08	06	
	eLR(NW)	05	09	06	



14.		Palisades New York			
Date	Phase	h	m	s	Remarks
1959					
Sept. 26	eP	08	28	23	off coast Oregon USCGS 0 - 08 20 51 43½°N 128½°W Dist. 39.9° Mag. 6½
	ePP	08	29	46	
	ePcP	08	29	57	
	eS	08	34	26	
	eSS	08	37	16	
	eLR(W)	08	38	36	
	Lg	08	42	50	
Sept. 26	eLR(NW)	11	37	06	Banda Sea
Sept. 26	eLQ	16	42	06	
	eLR(SW)	16	47	06	
Sept. 26	eLQ	20	36	48	
	eLR	20	39	06	
Sept. 26	iP	20	48	48	
	iS	20	49	08	
Sept. 27	e	07	42	44	Solomon Isls.
	eLQ	08	02	36	
	eLR(NW)	08	05	36	
Sept. 27	eLR	08	59	06	
Sept. 27	eLQ	11	16	06	
	eLR	11	26	06	
Sept. 27	eLR	11	50	36	
Sept. 27	eLR	12	17	16	
Sept. 27	e	12	46	02	
	eLQ	12	48	06	
	eLR(SW)	12	50	18	
Sept. 27	e	16	10	46	
	e	16	28	44	
	eLR(S)	16	34	06	
Sept. 27	eLR	17	42	06	
Sept. 28	eLR	01	13	56	
Sept. 28	eLQ	01	36	06	Svalvard Reg. USCGS 0 - 01 11 20 81½°N 26°E Dist. 51.2°
	eLR(NE)	01	38	06	
Sept. 28	e	02	04	06	
	eLR(NW)	02	09	06	
Sept. 28	eLQ	04	32	00	
	eLR	04	40	06	

Date	Phase	h	m	s	Remarks
1959					
Sept. 28	e	04	54	14	Okinawa Isls.
	eLQ	05	12	24	USCGS 0 - 04 20 27
	eLR(NW)	05	17	06	26½°N 128°E Dist. 109.8°
Sept. 28	eLQ	08	19	26	Hebgen Lake, Mont.
	eLR(W)	08	21	18	USCGS 0 - 08 05 42 45°N 111°W Dist. 21.3°
Sept. 28	eLQ	10	50	40	
	eLR	10	56	22	
Sept. 29	e	15	41	08	
	e	15	42	36	
Sept. 29	e(P)	15	48	06	Kermadec Isls.
	ePP	15	51	56	USCGS 0 - 15 31 57
	e	15	52	50	29°S 176½°W
	ePPP	15	55	10	Dist. 117.4°
	eSKS	15	57	38	Mag. 6½
	e(SKKS)	15	58	56	
	ePS	16	01	36	
	eSS	16	08	30	
	e	16	12	34	
	e(LQ)	16	17	36	
	eLR	16	26	06	
	LR from W				
Sept. 30	eLQ	01	48	52	Yellowstone aftershock
	eLR(NW)	01	05	06	USCGS 0 - 01 36 00 45°N 111°W Dist. 21.3°
Sept. 30	ePS	05	26	14	Kermadec Isls.
	eSS	05	32	50	USCGS 0 - 04 56 21
	eLQ	05	45	20	28½°S 176½°W
	eLR(SW)	05	54	06	Dist. 117.1°
Sept. 30	eLR(SW)	14	29	42	
Sept. 30	eLR(SW)	15	48	44	
Sept. 30	i	16	21	02	Local blast
Sept. 30	eLR(SW)	17	23	06	



16.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Sept. 30	eP	20	41	25	New Hebrides
	ePP	20	46	34	USCGS 0 - 20 25 58
	eSKS	20	52	02	18°S 168°E
	eSKKS	20	53	24	Dist. 122.7°
	ePKKP	20	55	14	Mag. 6½
	ePS	20	56	14	
	ePPS	20	58	06	
	eSS	21	03	40	
	eSSS	21	07	56	
	eSSSS	21	11	58	
	eLQ	21	17	36	
	eLR	21	24	02	
	LR from NW				
	eLR ₂ (SE)	22	25	06	
Oct. 1	eLR(W)	04	02	36	
Oct. 1	eLQ	04	54	36	off coast S. Calif.
	eLR(WNW)	04	57	06	USCGS 0 - 04 35 30
					34°N 121°W
					Dist. 37.6°
					Mag. 4½
Oct. 2	eLR	05	11	46	
Oct. 2	eLR(E)	23	04	26	
Oct. 3	eP	17	01	21	
	eS	17	01	44	
Oct. 3	eP	18	54	47	
	eS	18	55	07	
Oct. 3	eP	20	22	49	
	eS	20	23	12	
Oct. 3	eLR	20	49	06	Hokkaido, Japan
Oct. 3	e	22	07	36	
	e	22	09	06	
	e	22	14	46	
	eLQ	22	20	50	
	eLR(SE)	22	26	32	
Oct. 4	eLQ	00	22	06	
	eLR	00	26	06	
Oct. 4	eLR	15	09	06	
Oct. 4	eLQ	16	52	06	
	eLR	16	54	36	



Palisades, New York

17.

Date	Phase	h m s	Remarks
1959			
Oct. 4	eLR	22 30 06	
Oct. 5	eLR	00 25 36	
Oct. 5	e	10 05 46	
	eLR	10 12 06	
Oct. 5	e	11 47 30	
	e	11 52 56	
	e	11 57 36	
	eLR	12 03 42	
Oct. 5	eLQ	17 33 36	
	eLR	17 36 36	
Oct. 5	eS	18 13 50	Arctic Ocean
	eLQ	18 20 36	USCGS 0 = 17 56 25
	eLR(N)	18 22 06	84°N 113°E
			Dist 55.2°
Oct. 5	i	18 37 05	
Oct. 5	eP	18 37 25	Arctic Ocean
	ePP	18 39 20	USCGS 0 = 18 27 47
	ePcS	18 41 18	83½°N 112½°E
	eS	18 45 14	Dist. 55.7°
	eSS	18 48 52	Mag. 6
	eLR(N)	18 53 34	
Oct. 5	eLR(N)	20 54 06	
Oct. 5	eL	21 03 06	Albania
Oct. 5	eLR	22 32 06	
Oct. 6	eLQ	01 55 30	
	eLR(NW)	01 57 06	
Oct. 6	eLR	06 11 06	
Oct. 6	eLR	06 50 06	Celebes
Oct. 6	eLR	07 29 06	
Oct. 6	eLR	11 17 06	
Oct. 6	eS	11 47 58	Yellowstone aftershock
	eLQ	11 50 06	0 = 11 37 21
	eLR(W)	11 52 30	45°N 111½°W
			Dist. 27.6°



18.				Palisades, New York	
Date	Phase	h m s			Remarks
1959					
Oct. 6	eLR	16	11	05	
Oct. 6	eLR	18	18	05	
Oct. 6	eLR	20	08	05	
Oct. 6	eLR	20	43	05	
Oct. 7	eLR	02	11	05	
Oct. 7	eP	08	41	37	Albania USCGS 0 - 08 30 41 41°N 20°E Dist. 67.2°
	eS	08	50	33	
	eScS	08	51	45	
	eSS	08	55	25	
	eSSS	08	58	03	
	eLQ	08	59	29	
	eLR(NE)	09	04	05	
	eLR ₂	10	09	35	
Oct. 7	eLR	14	25	05	
Oct. 7	eLR(SW)	18	02	35	
Oct. 8	ePP	00	24	11	New Hebrides USCGS 0 - 00 03 28 19°S 169°E Dist. 122°
	ePKKP	00	33	09	
	ePS	00	34	17	
	ePPS	00	35	29	
	e	00	39	35	
	eSS	00	41	25	
	e	00	50	05	
	eLQ	00	55	05	
	eLR(NW)	01	01	37	
Oct. 8	eLR	01	57	27	
Oct. 8	eP	02	45	47	Fox Island, Aleutians USCGS 0 - 02 35 20 52½°N 171°W Dist. 64°
	eS	02	54	17	
	eSS	02	58	35	
	eLQ	03	03	15	
	eLR(NW)	03	06	45	
Oct. 8	eLR	06	16	05	
Oct. 8	e(S)	08	03	33	
	eLR	08	05	05	
Oct. 8	eP	11	00	09	Haiti USCGS 0 - 10 55 12 19½°N 73½°W Dist. 23.5°
	eS	11	04	17	
	eLQ	11	04	49	
	eLR(S)	11	05	55	
Oct. 8	eLR	12	39	05	



Date	Phase	h	m	s	Remarks
1959					
Oct. 8	eLQ	14	50	55	Lake Baikul, USSR
	eLR	15	00	05	
Oct. 8	i	16	10	19	Local blast
Oct. 8	e	16	44	01	Local blast
Oct. 8	eLR	17	16	35	
Oct. 9	eLR	01	21	05	
Oct. 9	eLR	04	28	05	
Oct. 9	eLR	12	16	35	Philippines
Oct. 10	iP	16	17	08	
	iS	16	17	32	
Oct. 10	iP	18	44	23	
	iS	18	44	45	
Oct. 11	eLQ	10	14	39	Honshu, Japan
	eLR	10	17	45	
Oct. 11	eLQ	10	46	05	
	eLR	10	53	05	
Oct. 11	eLR(W)	18	47	05	Kernadec Isls.
Oct. 11	e	20	40	05	Kernadec
	eLR(W)	21	00	05	
Oct. 11	e	21	47	17	
	eLR(SW)	21	55	05	
Oct. 12	e	01	21	11	
	eLQ	01	25	05	
	eLR(S)	01	27	35	
Oct. 12	ePKP	03	41	15	Near coast Sumatra USCGS 0 - 03 21 52 2°N 98½°E Dist. 138°
	ePP	03	43	55	
	ePKS	03	44	49	
	i(PKKS)	03	53	36	
	ePS	03	54	01	
	e(ScSPKP)	03	56	29	
	eSS	04	01	43	
	eSS	04	07	29	
	e	04	08	13	
	eLQ	04	21	05	
	eLR	04	29	05	
	LR from NNE				



20.

Date	Phase	h m s			Palisades, New York Remarks
1959					
Oct. 12	eLR(W)	11	12	05	Kermadec
Oct. 12	eLR	20	20	05	Solomon Isls.
Oct. 12	eLR	21	22	05	
Oct. 12	eLR	22	16	05	
Oct. 13	eLR	02	02	05	
Oct. 13	eLR	13	13	05	
Oct. 13	i	18	19	20	
	i	18	19	44	
Oct. 14	eLR	02	20	05	
Oct. 14	eLR	08	17	05	Santa Cruz Isls
Oct. 14	eLQ	08	32	35	Aleutians
	eLR	08	34	25	
Oct. 14	eL	10	44	05	
Oct. 14	eLR	11	35	25	
Oct. 14	eLR(NW)	21	25	06	Fiji Islands
Oct. 15	e(S)	04	35	06	Jalisco, Mexico
	eLQ	04	38	26	USCGS 0 - 04 22 49
	eLR(SW)	04	39	46	19°N 104°W
Oct. 15	ePKP	06	35	04	Dist. 33.7
	ePP	06	37	47	Celebes
	ePKS	06	38	28	USCGS 0 - 06 15 32
	ePPP	06	41	18	½°N 120½°E
	ePS	06	51	10	Dist. 137°
	e(SKKKS)	06	55	52	Mag. 6½
	eSS	06	56	22	
	e	06	57	46	
	e	07	01	38	
	eLQ	07	13	06	
	eLR	07	20	52	
	LR from NNW				
	eLQ ₂	07	47	06	
	eLR ₂	07	56	26	
	G ₃	08	42	06	
Oct. 15	eLR	14	46	06	
Oct. 15	i	16	05	19	
Oct. 15	eLR	16	50	06	



Date	Phase	h	m	s	Remarks
1959					
Oct. 16	eLR	01	50	06	Argentina
Oct. 16	eLR	03	03	06	
Oct. 16	eLR	04	00	06	
Oct. 16	eLR	05	56	06	
Oct. 16	e	06	50	06	
	eLQ	06	53	26	
	eLR	06	55	36	
Oct. 16	eLR	08	40	06	
Oct. 16	eLR	12	01	26	
Oct. 16	ePKS	16	38	06	Mindanao, Philippines
	e(PcPPKP)	16	42	22	USCGS 0 = 16 14 53
	eSS	16	55	39	6°N 125°E
	eLQ	17	13	06	Dist. 130°
	eLR(NW)	17	19	06	
Oct. 16	i	18	18	24	Local blast
	i	18	18	49	
Oct. 16	eLR	19	46	06	
Oct. 16	e	20	15	53	
Oct. 16	eLR	23	16	06	
Oct. 17	eLR	00	18	06	
Oct. 17	eLR(SW)	02	24	36	
Oct. 17	eL	03	05	06	
Oct. 17	eLR	06	50	36	
Oct. 17	eLR(NW)	09	33	06	
Oct. 17	eLR	10	35	06	
Oct. 17	eLR	11	45	06	
Oct. 17	eLR	13	54	06	
Oct. 17	eLR	16	25	06	
Oct. 17	eLQ	20	49	06	Yukon-B.C. border
	eLR(NW)	20	52	30	
Oct. 17	e	23	04	16	Local blast
	e	23	04	39	



22.

Date	Phase	h	m	s	Palisades, New York. Remarks
1959					
Oct. 17	eLR	23	21	06	
Oct. 18	eLR	00	04	06	
Oct. 18	eLR	05	39	36	
Oct. 18	eLR	06	45	06	Honshu, Japan
Oct. 18	eLR	13	10	06	Kermadec
Oct. 18	eLR(NE)	19	57	06	
Oct. 18	ePKP epPKP	23 44 40 23 45 00			Sunda Strait USCGS 0 = 23 25 13 6°S 105°E Dist. 141.2°
Oct. 19	eLR	00	40	06	
Oct. 19	e eLR	02 59 37 03 30 36			Kurile Isls. USCGS 0 = 02 46 49 44½°N 148°E Dist. 86.9°
Oct. 19	ePS eSS eLQ eLR(WSW)	08 57 06 09 03 46 09 16 26 09 21 06			Kermadec Isls. USCGS 0 = 08 27 21 27½°S 177°W Dist. 116.9° Mag. 6¼
Oct. 19	ePP eSKS ePS eSS ePKKS eSSS eLQ eLR LR from SSE	16 13 50 16 20 10 16 22 50 16 28 36 16 29 12 16 35 42 16 38 26 16 43 06			S. Sandwich Isls. USCGS 0 = 15 55 30 54½°S 29°W Dist. 103.5° Mag. 6½
Oct. 20	eLR	03	55	06	
Oct. 20	eLR	04	27	06	
Oct. 20	eLR	06	26	06	
Oct. 20	eLR	12	04	06	
Oct. 20	eLR	22	36	06	
Oct. 21	i	16	18	22	Local blast
Oct. 21	i	20	15	38	Local blast



Palisades, New York

23.

Date	Phase	h	m	s	Remarks
1959					
Oct. 21	eLR	21	51	31	New Ireland Reg.
Oct. 21	eLR	22	39	07	
Oct. 22	eLR	02	21	07	
Oct. 22	eLR	05	43	07	
Oct. 22	eLR	10	13	07	
Oct. 22	eLR	11	17	07	
Oct. 22	eLR	20	00	07	Fox Isls. Aleutians
Oct. 23	eLR	00	32	07	
Oct. 23	eLR	04	40	07	New Ireland Reg.
Oct. 23	eLR	05	19	07	
Oct. 23	eLR	06	45	07	Chile-Bolivia Border
Oct. 23	eLR	17	45	08	E. Iran
Oct. 23	eLR	18	44	08	
Oct. 23	eLR	21	01	08	
Oct. 24	eLR	03	38	08	
Oct. 24	eLR	05	58	08	
Oct. 24	eLR	09	09	08	
Oct. 24	eLR	09	54	08	
Oct. 24	eLR	12	56	08	
Oct. 24	eLR	14	02	08	
Oct. 24	eLR	15	36	08	
Oct. 24	eLR	15	52	08	S. Calif Dist. 4.0°
Oct. 24	eLR	17	33	08	
Oct. 24	eLR	18	32	08	
Oct. 24	eLR	18	56	08	



24.				Palisades, New York	
Date	Phase	h m s			Remarks
1959					
Oct. 25	ePS	00	05	42	Kazakh, SSR
	eSS	00	11	40	USCGS 0 = 23 40 34
	eSSS	00	15	52	41½°N 70°E
	eLR(NE)	00	22	08	Dist. 91.5°
Oct. 25	e(PP)	06	58	28	Atlantic Ocean N. of Azores
	e(S)	07	03	32	USCGS 0 = 06 51 09
	eLR(NE)	07	06	38	No coords. obt.
Oct. 25	eLR	16	25	07	E. Turkey
Oct. 25	eLR	16	36	07	
Oct. 25	eLR	18	11	07	Talau Islands.
Oct. 26	eP	07	48	39	E. coast Honshu, Japan
	ePP	07	52	03	USCGS 0 = 07 35 12
	eS	07	59	41	37½°N 142½°E
	ePS	07	01	11	Dist. 95°
	eSS	08	06	27	Mag. 6½
	eLQ	08	15	17	
	eLR	08	19	37	
	LR from N				
Oct. 26	eLR	13	11	07	
Oct. 27	eP	02	09	27	
	eS	02	10	57	
	e(LQ)	02	11	06	
	e(LR)	02	11	38	
Oct. 27	e(P)	06	18	59	off coast Oregon
	ePP	06	21	13	USCGS 0 = 06 12 17
	eS	06	25	43	42½°N 127°W
	eSS	06	28	39	Dist. 39.0°
	eLQ	06	29	07	Mag. 5
	eLR(NW)	06	30	59	
Oct. 27	iP	07	05	18	Kurile Islands
	P(Z) 6 sec 2 mic. comp.				USCGS 0 = 06 52 50
	epP	07	06	13	45½°N 151°E
	ePP	07	08	35	Dist. 85°
	iS	07	15	39	Mag. 6½
	ePS	07	16	39	
	eSS	07	21	11	
	e	07	22	21	
	eSSS	07	24	59	
	eLQ	07	29	47	
	eLR(N)	07	33	23	
	G ₂	08	47	07	
Oct. 27	eLR	14	00	07	Kurile Islands.
Oct. 28	eLR	05	22	08	



Palisades, New York

25.

Date	Phase	h m s	Remarks
1959			
Oct. 28	eLR	06 42 08	
Oct. 28	eLR	10 00 28	Fiji Isls.
Oct. 28	eLR	17 15 08	
Oct. 28	i	19 00 29	Local
Oct. 28	i	21 15 05	Local
Oct. 28	eLR	22 16 08	
Oct. 28	eLR	23 36 08	
Oct. 29	eLR	07 29 08	
Oct. 29	e(P)	14 35 16	Kermadec Isls.
	ePP	14 39 54	USCGS 0 = 14 19 51
	iPPP	14 42 44	29½°S 176½°W
	eSKKS	14 46 29	Dist. 117.6°
	ePS	14 49 48	Mag. 5¼
	ePPS	14 51 08	
	eSS	14 56 30	
	eSKKKS	14 59 38	
	eLQ	15 08 08	
	eLR(SW)	15 14 08	
Oct. 29	i	17 20 50	
Oct. 29	eLR	20 35 08	Honshu, Japan
Oct. 29	eLR	23 24 08	
Oct. 30	eSS	01 10 08	Caroline Isls.
	eLQ	01 21 52	USCGS 0 = 00 32 29
	eLR(NW)	01 30 08	8½°N 138°E
			Dist. 122.7°
Oct. 30	iP	04 11 44	Yakutsk, ASSR
	epP	04 11 49	USCGS 0 = 04 00 26
	eS	04 21 08	66°N 136½°E
	eSS	04 26 20	Dist. 70.8
	eSSS	04 29 28	
	eLR(NW)	04 34 08	
Oct. 30	eSS	05 39 28	Peru-Ecuador Border
	eLR	05 42 08	USCGS 0 = 05 20 36
			4°S 80½°W
			Dist. 45.8°



26.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Oct. 30	eLR	07	31	28	Fiji Isls.
Oct. 30	e	12	02	08	Solomon Isls.
	eLR	12	05	08	
Oct. 30	ePS	14	27	38	Tonga Isls.
	eSS	14	34	08	USCGS 0 = 13 58 25
	e	14	45	34	23½°S 175½°W
	eLR(W)	14	50	08	Dist. 113.5°
Oct. 30	e	17	25	28	Local
Oct. 30	e	19	30	48	Local
Oct. 31	ePKP	04	43	23	Fiji Isls.
	epPKP	04	45	09	USCGS 0 = 04 27 12
	epPP	04	45	57	16½°S 178°W
	epPPP	04	48	09	Dist. 111.1°
	eSP	04	52	49	Mag. 6½
	eSPP	04	54	53	
	esPS	04	56	33	
	eSS	05	00	45	
	eSSS	05	04	55	
	e	05	12	01	
	e	05	13	37	
	eLQ	05	14	49	
	eLR	05	19	39	
	LR from NW				
Oct. 31	i	06	17	42	
Oct. 31	e	18	12	53	Local
Oct. 31	eLR	20	00	39	
Oct. 31	e(P)	21	03	14	Local
	e(S)	21	03	36	
Nov. 1	eLR	05	08	09	
Nov. 1	eLR	10	58	09	
Nov. 1	eLR	16	25	09	
Nov. 1	e(LR)	23	15	09	Hebgen Lake
Nov. 2	ePPS	09	13	19	Marianas Isls.
	e(SS)	09	18	09	USCGS 0 = 08 43' 54
	e(PKPPKP)	09	22	09	22½°N 144½°E
	eLQ	09	28	47	Dist. 107.3°
	eLR(NW)	09	33	33	



Palisades, New York

27.

Date	Phase	h	m	s	Remarks
1959					
Nov. 2	eLQ	14	08	00	Pakistan-Burma border
	eLR	14	11	09	
Nov. 2	i	17	59	09	
Nov. 2	eS	19	26	57	
	eSS	19	30	43	
	eLQ	19	32	45	
	eLR	19	35	09	
Nov. 2	ePP	20	24	27	New Britain USCGS 0 = 20 03 32 5½°S 151½°E Dist. 126.5° Mag. 6¼
	ePKS	20	25	51	
	eSKKS	20	31	29	
	ePKKS	20	36	25	
	eSS	20	41	29	
	e(SSS)	20	46	33	
	eLQ	20	55	09	
	eLR(NW)	21	02	39	
	eLR ₂ (SE)	21	56	09	
Nov. 2	eLR(SW)	22	48	09	
Nov. 3	eLR	00	00	09	
Nov. 3	eLR	01	39	09	Melucca Passage
Nov. 3	eLR	02	04	09	
Nov. 3	eLR	04	12	09	
Nov. 3	eLR(SE)	06	20	09	
Nov. 3	ePKP	09	59	54	S. of Java USCGS 0 = 09 40 05 10½°S 111°E Dist. 149.2°
	iPKP ₂	09	59	58	
	ePKS	10	03	31	
	eSS	10	22	33	
	e	10	28	49	
	e	10	33	39	
	e	10	42	19	
	eLQ	10	44	09	
	eLR(NNW)	10	52	01	
Nov. 3	e(LQ)	10	04	29	
	eLR(SW)	10	06	09	
Nov. 4	eLR	18	12	10	Tonga
Nov. 4	eLR(SW)	22	50	10	
Nov. 5	eLQ	01	12	40	
	eLR(W)	01	15	10	



28.

Date	Phase	h	m	s	Palisades, New York Remarks
1959					
Nov. 5	eLR(NW)	06	46	10	New Britain
Nov. 5	ePP	12	10	30	New Hebrides
	ePPP	12	13	30	USCGS 0 = 11 50 17
	ePS	12	20	20	13°S 166½°E
	ePKKS	12	23	10	Dist. 120.6°
	eSS	12	26	58	
	ePKPPKP	12	27	50	
	e	12	31	10	
	e	12	35	30	
	eLQ	12	39	10	
	eLR(NW)	12	45	10	
	eLR ₂ (SE)	13	40	50	
Nov. 5	eSKS	18	04	22	Solomon Isls.
	eSKKS	18	06	02	USCGS 0 = 17 38 08
	ePS	18	09	04	9°S 158°E
	ePPS	18	11	18	Dist. 124.2°
	eSS	18	16	10	
	eSSS	18	23	10	
	eLQ	18	30	10	
	eLR(NW)	18	36	10	
Nov. 6	eSKS	01	33	38	Solomon Isls.
	ePS	01	38	30	USCGS 0 = 01 07 31
	ePPS	01	39	46	9°S 157½°E
	ePKKS	01	40	38	Dist. 124.5°
	eSS	01	45	40	
	eLQ	01	57	40	
	eLR(NW)	02	05	10	
Nov. 6	e	05	37	10	
	eLQ	05	41	10	
	eLR(S)	05	46	02	
Nov. 6	eLQ	08	06	10	
	eLR	08	09	30	
Nov. 6	ePS	12	12	10	Tonga
	eSS	12	18	30	USCGS 0 = 11 43 06
	e	12	22	10	24°S 174½°W
	eLQ	12	31	10	Dist. 113°
	eLR(SW)	12	34	10	
Nov. 6	eLR	17	20	10	
Nov. 6	eLR	21	39	10	
Nov. 7	eLR	00	04	10	
Nov. 7	eLR	01	46	10	



Date	Phase	h	m	s	Remarks
1959					
Nov. 7	eLR	02	55	10	
Nov. 7	eLR	04	36	10	
Nov. 7	eLR	09	13	23	Santa Cruz Isls.
Nov. 7	eLR	15	04	10	
Nov. 7	ePS	22	45	30	Tonga Isls.
	eSS	22	51	56	USCGS 0 = 22 16 15
	eLQ	23	02	10	23½°S 175½°W
	eLR(SW)	23	09	10	Dist. 113.5°
					Mag. 6¼
Nov. 8	eLR(W)	03	14	10	
Nov. 8	iP	14	07	58	Hokkaido, Japan
	ePP	14	11	40	USCGS 0 = 13 54 55
	ePPP	14	13	26	44°N 140½°E
	eSKS	14	18	50	Dist. 89.9°
	eS	14	19	18	Mag. 6½
	eSS	14	26	20	
	eLQ	14	33	50	
	eLR(NNW)	14	40	10	
Nov. 9	e	00	09	21	
Nov. 9	e(PPP)	00	14	03	Mexico
	eS	00	18	03	USCGS 0 = 00 05 36
	eLQ	00	20	11	18½°N 103°W
	eLR(SW)	00	23	11	Dist. 33.4°
Nov. 9	e	04	26	11	
	e	04	31	51	
	e	04	47	23	
	e	04	53	20	
	e	04	57	46	
	eLQ	05	04	11	
	eLR(SW)	05	11	11	
Nov. 9	eLR	20	45	11	
Nov. 10	eLR	00	57	11	
Nov. 10	eLR	01	27	11	
Nov. 10	eLR	05	29	11	
Nov. 10	eLR(NW)	17	40	11	Solomon Isls.
Nov. 10	eLR(SW)	18	25	11	
Nov. 10	eLR(NE)	21	42	11	Northern Tibet
					USCGS 0 = 20 56 12
					36°N 89°E
					Dist. 101.7°



30.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Nov. 11	eL	01	00	11	
Nov. 11	eLR	05	26	11	
Nov. 11	eLQ	08	01	11	
	eLR	08	06	11	
Nov. 11	eLR	14	18	11	
Nov. 12	eLR	06	06	11	
Nov. 12	eLR	08	20	11	
Nov. 12	eLR	10	16	11	
Nov. 12	eLR	13	47	31	
Nov. 12	eLR	17	49	12	
Nov. 12	eLQ	21	20	12	Santa Cruz Isls.
	eLR	21	25	12	
Nov. 13	eLR	01	15	12	
Nov. 13	eLR	05	14	12	
Nov. 13	eLR	09	30	12	
Nov. 13	eLR	10	10	12	
Nov. 13	e	17	13	42	
	eLR(NW)	17	26	12	
Nov. 13	e	22	48	12	
Nov. 13	e	23	17	32	Local blast?
	e	23	17	55	
Nov. 13	eLR	23	31	12	
Nov. 14	eLR	00	45	12	
Nov. 14	eLR	03	10	12	
Nov. 14	eLR	07	10	12	
Nov. 14	eLQ	11	25	12	Bismarck Sea
	eLR(NW)	11	32	42	
Nov. 14	eLR	12	15	12	
Nov. 14	eLR(NW)	18	16	12	
Nov. 14	e	20	59	19	



Palisades, New York

31.

Date	Phase	h	m	s	Remarks
1959					
Nov. 14	eLR(W)	21	14	42	
Nov. 15	eLR(SW)	00	03	12	
Nov. 15	eLQ	11	03	12	Tadzhik, SSR
	eLR(NE)	11	09	42	USCGS 0 = 10 25 03 38°N 74½°E Dist. 96.1°
Nov. 15	iP	17	19	56	Greece - W. Coast
	ePcP	17	20	16	USCGS 0 = 17 08 41
	ePP	17	22	16	37½°N 20½°E
	ePPP	17	23	30	Dist. 69.5°
	eS	17	29	02	Mag. 6¼
	eScS	17	29	52	
	eSS	17	33	12	
	e	17	35	12	
	e	17	36	30	
	eLQ	17	38	12	
	eLR(ENE)	17	42	12	
Nov. 16	eP	01	11	12	Chile-Arg. Border
	eS	01	20	52	USCGS 0 = 00 59 22
	e	01	29	42	25°S 70°W
	eLR	01	35	42	Dist. 75.7°
Nov. 16	eP	10	31	18	Mid-Atlantic
	ePP	10	33	58	USCGS 0 = 10 21 17
	eS	10	39	26	1°N 26½°W
	ePS	10	39	48	Dist. 58.4°
	e	10	45	40	Mag. 6½
	eLQ	10	46	12	
	eLR(SE)	10	48	12	
Nov. 16	eLR	18	13	18	
Nov. 16	e	21	18	26	
Nov. 17	eLR	00	42	32	Taland Isls.
Nov. 17	eLR	03	37	12	Indian Ocean
Nov. 17	eLR	07	37	30	
Nov. 17	eLR	08	29	48	
Nov. 17	e(P)	11	49	44	Galapagos
	e(PP)	11	50	58	
	e(PcP)	11	55	16	
	e(ScS)	11	59	12	
	e(SS)	12	00	48	
	eLQ	12	01	12	
	eLR	12	03	12	



32.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Nov. 17	eLR	18	21	23	New Guinea
Nov. 18	eLR	00	11	20	
Nov. 18	eLR	00	57	20	China
Nov. 19	e	04	54	27	Aleutians
	eLR(NW)	05	06	22	
Nov. 19	eLR(W)	06	20	52	Tongas
Nov. 19	eLR	08	16	27	off coast Colombia
Nov. 19	eP	11	24	27	N. coast of New Guinea
	e	11	25	25	USCGS 0 = 11 08 32
	ePKP	11	27	45	5½°S 146°E
	e	11	28	33	Dist. 129.7°
	ePP	11	29	49	Mag. 7
	iPKS	11	30	55	
	i	11	31	53	
	eSKKS	11	36	36	
	ePS	11	40	30	
	iPPS	11	41	32	
	i	11	42	38	
	iScSPKP	11	43	42	
	eSS	11	47	14	
	i	11	47	36	
	e(LQ)	12	01	57	
	e	12	02	05	
	e	12	03	02	
	eLR(NW)	12	08	42	
	e	12	44	37	
Nov. 20	eP	00	01	19	Off coast of Oregon
	ePP	00	02	46	USCGS 0 = 23 53 49 (Nov. 19)
	e	00	05	04	42½°N 126½°W
	eS	00	07	20	Dist. 38.6°
	eSS	00	10	12	
	eLQ(WNW)	00	10	42	
	eLR	00	12	12	
Nov. 20	eLR	05	23	42	
Nov. 20	eLR	05	31	42	
Nov. 20	eLR	07	58	52	
Nov. 20	eLR	09	40	02	
Nov. 20	eLR	11	56	12	New Guinea
Nov. 20	eLR	16	05	36	Samoa Isls.



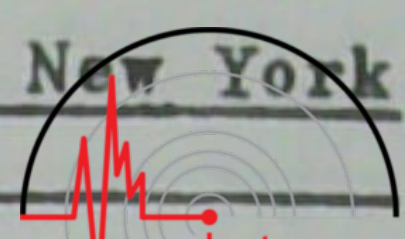
Date	Phase	h	m	s	Remarks
1959					
Nov. 20	eLR	18	47	12	
Nov. 20	eLR	19	56	12	Mid-Atlantic
Nov. 21	eLR	08	55	28	
Nov. 22	eLR	13	51	38	
Nov. 22	eLR	14	39	44	
Nov. 22	ePS	16	55	08	S. Pacific Ocean
	eSS	17	01	06	USCGS 0 = 16 26 34
	eL	17	12	40	54°S 136°W
					Dist. 108.5°
Nov. 22	eLR	17	20	30	
Nov. 22	eSKKS	20	02	38	Fiji Isls. Region
	e	20	17	48	USCGS 0 = 19 34 35
					21½°S 178½°W
					Dist. 114.8°
Nov. 22	eLR	23	38	56	Fiji
Nov. 23	eLR	17	10	52	Fiji
Nov. 23	eLR	19	03	34	
Nov. 24	eLR	03	16	14	
Nov. 24	eLR	08	21	20	
Nov. 24	eLR	16	01	01	Philippines
Nov. 25	eLR	22	59	11	
Nov. 25	eLR	23	17	33	
Nov. 26	eLR	01	44	51	Halmahera
Nov. 26	ePKP	07	25	57	near coast Sumatra
	ePKS	07	29	26	USCGS 0 = 07 06 19
	ePPP	07	32	43	5½°S 102½°E
	eSKKS	07	36	13	Dist. 144.4°
	ePPS	07	41	14	Mag. 6½
	ePKPPKP	07	43	19	
	eSS	07	48	34	
	eSSS	07	53	03	
	e	08	02	47	
	eSSS	08	07	21	
	eLq	08	09	11	
	eLR(NNW)	08	13	03	
Nov. 26	eLR	17	00	45	Tonga Isls.



34.

Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Nov. 26	ePKP	23	29	01	Near coast Sumatra
	iPKS	23	32	14	USCGS 0 = 23 09 23
	ePPP	23	35	33	5½°S 103°E
	ePKKP	23	38	01	Dist. 144.5°
	eSKSP	23	42	33	Mag. 6¼
	ePPS	23	44	49	
	ePKPPKP	23	46	20	
	eSS	23	51	07	
	e	23	51	59	
	eSSS	23	56	11	
	e(PKPSKS)	23	57	43	
Nov. 27	e	00	05	19	
	eLQ	00	09	45	
	eLR(NNW)	00	17	11	
Nov. 27	eLR	13	33	50	
Nov. 27	ePKP	19	11	04	Sumatra
					USCGS 0 = 18 51 27
					5½°S 103°E
					Dist. 144.5°
Nov. 27	e	20	08	23	
	eLR	20	14	19	
Nov. 28	e	03	15	49	
	e	03	20	50	
	e	03	26	38	
	e	03	29	10	
	e	03	31	25	
	e	03	35	42	
	e(LQ)	03	36	10	
	eLR(NW)	03	42	10	
Nov. 28	eLQ	11	24	30	
	eLR	11	26	42	
Nov. 28	eP	12	46	04	Chile
	iS	12	55	22	USCGS 0 = 12 34 53
	ePPS	12	56	02	28½°S 71°W
	e(SSSS)	13	03	10	Dist. 69.2°
	eLQ	13	04	30	Mag. 6½
	e	13	06	04	
	eLR(S)	13	07	18	
Nov. 28	ePS	23	09	10	New Hebrides
	e	23	17	01	USCGS 0 = 22 39 13
	e	23	24	41	13°S 167½°E
	e	23	30	18	Dist. 119.9°
	e	23	33	50	
	eLR	23	36	22	
Nov. 29	eLR	04	52	44	

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Date	Phase	h m s	Remarks
1959			
Nov. 29	eLR	05 46 26	
Nov. 29	eLR	06 45 52	Kermadec
Nov. 29	eLR	10 10 12	
Nov. 29	eLR	10 53 22	
Nov. 29	ePS	19 47 24	S. Pacific Ocean
	eSS	19 53 20	USCGS 0 = 19 17 40
	ePKPPKP	19 55 44	57°S 147½°W
	eSKKKS	19 57 22	Dist. 115.4°
	e	20 00 10	
	eLQ	20 05 10	
	eLR	20 11 44	
Nov. 30	e(SS)	11 44 04	Sinkiang, China
	e(SSS)	11 48 34	USCGS 0 = 11 12 43
	eLR	11 54 38	44½°N 80½°E
			Dist. 91.8°
Nov. 30	eSS	15 38 42	Kenai Pen. Alaska
	eLQ	15 41 22	USCGS 0 = 15 18 37
	eLR(NW)	15 44 10	59½°N 152°W
			Dist. 50.1
Dec. 1	eLR(NE)	13 10 30	W. Coast Greece
			USCGS 0 = 12 51 58
Dec. 1	eLR(SW)	14 31 10	
Dec. 1	ePPS	15 36 10	Balleny Isles
	eSS	15 42 10	USCGS 0 = 14 59 40
	eSSS	15 46 30	63°S 154°E
	eLQ	16 01 10	Dist. 144.4°
	eLR ₁ (SW)	16 08 50	
	eLR ₂ (NE)	16 45 10	
Dec. 2	eLR	05 03 30	
Dec. 2	eLQ	07 24 10	Off coast Peru
	eLR	07 28 10	
Dec. 2	ePKP	07 49 27	Sumatra
	ePKP	07 49 40	USCGS 0 = 07 30 05
	ePKS	07 53 02	5°S 104°E
	ePPS	08 05 40	Dist. 144.1
	eSS	08 11 54	
	e	08 18 10	
	e	08 32 10	
	eLQ	08 37 40	
	eLR(N)	08 45 10	



36.

Date	Phase	h	m	s	Palisades, New York Remarks
1959					
Dec. 2	ePKP	09	53	32	Celebes
	ePKP	09	53	40	USCGS 0 = 09 34 00
	ePP	09	56	14	1°S 123°E
	ePKS	09	57	04	Dist. 137.3°
	ePKS	09	57	18	Mag. 6¼
	ePPP	09	59	20	
	ePPS	10	08	24	
	eScSPKP	10	09	18	
	eSS	10	14	28	
	eLQ	10	30	10	
	eLR(NNW)	10	40	10	
Dec. 2	eLR	21	01	09	
Dec. 3	eLR	02	47	09	
Dec. 3	eLQ	14	03	29	Fiji Isls.
	eLR	14	08	39	
Dec. 3	eLR	15	33	09	
Dec. 3	eLR	15	58	09	
Dec. 3	eLR	20	32	09	
Dec. 4	eLR	08	04	09	
Dec. 4	eLR	10	05	09	Fiji Isls.
Dec. 5	e	08	25	35	off coast N. Calif.
	e(S)	08	27	15	USCGS 0 = 08 13 36
	e(SS)	08	30	09	40½°N 126°W
	eLQ	08	31	09	Dist. 39.0°
	eLR(W)	08	33	09	Mag. 5
Dec. 5	eLR	23	10	09	
Dec. 6	eLR	04	47	09	
Dec. 6	eLR	14	02	09	
Dec. 7	e	04	23	09	Northern Gulf Cal.
	eLQ	04	26	09	USCGS 0 = 04 10 45
	eLR(W)	04	29	17	
Dec. 8	eLR	05	40	09	Celebes
Dec. 8	eLR	08	27	09	off N. Coast Iceland
Dec. 8	eLR	10	16	09	
Dec. 8	eLR	13	40	09	Afghanistan-Tadzhik Border



Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Dec. 8	eLQ	14	06	09	Georgia SSR
	eLR	14	12	09	
Dec. 8	eLR(SW)	17	30	09	
Dec. 8	eLR	19	29	09	
Dec. 9	eLQ	04	30	09	
	eLR	04	35	39	
Dec. 9	eLR	09	40	09	
Dec. 9	eLR	17	31	08	
Dec. 9	eLR	20	26	08	
Dec. 9	eLR	22	28	08	New Britain
Dec. 10	eLR	04	03	08	
Dec. 10	eLR	08	01	08	
Dec. 10	eLR	15	28	08	
Dec. 11	eLR	01	36	08	
Dec. 11	eSKKS	02	08	28	Banda Sea .
	e	02	14	18	USCGS 0 = 00 31 40
	eLQ	02	32	08	5°S 130°E
	eLR	02	35	08	Dist. 138.2°
Dec. 11	eLR	04	36	08	Hokkaido, Japan
Dec. 11	eLR	07	51	08	
Dec. 11	eLR	10	44	08	Tonga Isls.
Dec. 11	eLR	11	04	08	
Dec. 11	eLR	12	35	08	
Dec. 12	eLR	17	53	38	
Dec. 12	eLR	18	25	08	
Dec. 12	eLR	20	26	28	
Dec. 13	eLR	02	46	08	
Dec. 13	eLR	04	06	08	



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Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Dec. 13	eLR	06	50	08	S. Coast Java
Dec. 13	eLR	08	04	08	
Dec. 13	eLR	10	02	48	
Dec. 13	eLR	11	30	08	
Dec. 13	e(SKS)	18	03	27	Tonga Isls.
	e(S)	18	04	35	USCGS 0 = 17 36 07
	e(SS)	18	10	31	18°S 173½°W
	eLQ	18	23	37	Dist. 108.6°
	eLR(W)	18	26	07	
Dec. 14	eLR	00	54	07	
Dec. 14	eLR	12	13	07	
Dec. 14	eLR	13	56	37	
Dec. 14	eLR	18	01	37	Philippines
Dec. 14	ePKP	18	17	29	Mindanao, Philippines
	iPKS	18	20	39	USCGS 0 = 17 58 31
	ePPP	18	21	41	5°N 126°E
	eSKKS	18	26	23	Dist. 130.7°
	eScSPKP	18	32	23	
	eSS	18	37	03	
	eLQ	18	52	37	
	eLR(NW)	19	00	07	
Dec. 14	eP	22	11	09	Fox Isls, Aleutians
	ePcP	22	11	35	USCGS 0 = 22 00 50
	ePP	22	13	43	52½°N 168°W
	eS	22	19	27	Dist. 60.9°
	ePPS	22	20	11	Mag. 6
	eScS	22	20	51	
	eSS	22	23	23	
	eSSS	22	26	23	
	eLQ	22	27	07	
	eLR(N)	22	30	37	
Dec. 14	ePP	23	40	48	S. Sandwich
	ePPP	23	43	19	USCGS 0 = 23 21 56
	eSKS	23	46	43	59½°S 31°W
	ePS	23	50	07	Dist. 106.2°
	ePKKP	23	51	41	Mag. 7
	eSS	23	56	23	
Dec. 15	eLQ	00	06	17	
	eLR(SSE)	00	12	07	
Dec. 15	eLR	05	59	07	Marianas



Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Dec. 15	eLR	07	55	37	
Dec. 15	eLR	09	49	17	Marianas
Dec. 15	eLR	11	35	37	Hindu Kush
Dec. 15	eLR	12	18	07	Marianas
Dec. 15	ePS	12	44	07	S. Sandwich aftershock
	eSS	12	50	17	USCGS 0 = 12 15 45
	eSSS	12	58	07	59°S 24°W
	eLQ	13	00	37	Dist. 107.8°
	eLR(SSE)	13	06	07	
Dec. 15	eLR	17	38	07	
Dec. 15	i	20	42	30	
	eLR	21	12	07	
Dec. 16	eLR	01	05	07	
Dec. 16	eLR	01	44	07	
Dec. 16	eLR	03	23	07	
Dec. 16	eLR	11	58	07	Kurile Isls.
Dec. 16	eLR	14	01	07	
Dec. 16	eLR	14	22	07	
Dec. 16	eLQ	17	42	46	W. USA
	eLR(W)	17	45	06	
Dec. 17	eSS	03	08	06	S. Coast Formosa
	e	03	22	06	USCGS 0 = 02 31 02
	eLQ	03	26	06	21½°N 121°E
	eLR(N)	03	32	06	Dist. 116.3
Dec. 17	eLQ	05	57	06	Honshu, Japan
	eLR	06	01	36	
Dec. 17	ePKP	06	13	25	Sumatra
	ePKP	06	13	36	USCGS 0 = 05 53 46
	e	06	14	00	5½°S 102½°E
	ePP	06	17	00	Dist. 144.5
	ePKKP	06	22	06	
	eSKKS	06	28	36	
	eSS	06	35	54	
	e	06	41	06	
	eLQ	06	56	06	
	eLR(NNE)	07	04	06	
Dec. 17	eLR	10	39	06	



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Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Dec. 17	eP	17	01	17	S. Pacific Ocean USCGS 0 - 16 48 55 36½°S 101½°W Dist 81.1°
	eS	17	11	19	
	eSS	17	16	17	
	ePKKP	17	20	07	
	eLQ	17	22	07	
	eLR(SSW)	17	27	07	
Dec. 17	eP	19	48	25	Local
	eS	19	48	53	
Dec. 18	eLR	04	54	07	
Dec. 18	eLR	05	27	37	
Dec. 18	eLR	08	01	07	
Dec. 18	eLR	08	34	07	
Dec. 18	e	09	25	07	
	eLR	09	31	07	
Dec. 18	eP	16	35	07	Fox Islands USCGS 0 - 16 24 50 53°N 168½°W Dist 61.0° Mag. 6½
	epP	16	35	19	
	ePcP	16	35	33	
	ePPP	16	38	51	
	eS	16	43	27	
	eScS	16	44	55	
	e	16	45	11	
	eSS	16	47	27	
	esSS	16	48	11	
	eSSS	16	50	23	
	eLQ	16	51	07	
	e	16	55	07	
	eLR(NW)	16	56	07	
Dec. 18	eP	22	20	39	Local
	eS	22	21	00	
Dec. 18	eLR	22	32	07	
Dec. 19	eLR	04	15	07	
Dec. 19	eLR	11	43	37	
Dec. 19	eLR(S)	13	54	07	
Dec. 19	e	15	19	25	Tonga?
	eLQ	15	21	27	
	eLR(W)	15	24	27	



Date	Phase	h m s	Remarks
1959			
Dec. 20	eLR	09 01 27	S. of Kermadec
Dec. 20	eLR	21 45 37	
Dec. 21	e	11 15 27	
	e	11 20 49	
	e	11 26 39	
	e	11 31 07	
Dec. 21	ePS	11 47 03	Gulf of Aden
	eSS	11 52 55	USCGS 0 = 11 19 14
	eLQ	12 01 37	14°N 52°E
	eLR(N)	12 08 27	Dist. 105.8°
			Mag. 6¼
Dec. 21	eLR	13 26 47	
Dec. 21	e	16 30 31	
Dec. 22	eLQ	00 54 07	
	eLR	01 02 07	
Dec. 22	eS	02 52 07	California
	eLR	02 57 07	USCGS 0 = 02 39 02
			40½°N 124°W
			Dist. 37.5°
			Mag. 4½
Dec. 22	eLR	05 20 07	
Dec. 22	eLR	07 24 07	
Dec. 22	eLR	18 10 07	Honshu, Japan
Dec. 23	eS	04 06 07	Alaska Peninsula
	eLR	04 14 07	USCGS 0 = 03 49 00
			56½°N 158°W
			Dist. 54.0°
Dec. 23	eLR(W)	05 30 07	Kermadec
Dec. 23	eLR	07 24 07	
Dec. 23	eLR	09 56 07	Sicily
Dec. 23	eLR	14 55 27	Kermadec
Dec. 23	e	17 22 04	
Dec. 23	e	19 22 13	
	e	19 22 39	



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Palisades, New York

Date	Phase	h	m	s	Remarks
1959					
Dec. 23	e	21	11	11	
Dec. 23	eLQ	22	12	37	
	eLR	22	15	37	
Dec. 24	e	01	43	57	
	eLQ	01	53	27	
	eLR	01	58	07	
Dec. 24	eLR	06	39	07	
Dec. 24	e	08	01	27	
	eLQ	08	18	07	
	eLR(SE)	08	25	07	
Dec. 24	eLR(SW)	10	13	07	Kermadec
Dec. 24	eLR	11	27	07	
Dec. 24	eLR	12	25	27	
Dec. 24	eS	13	07	39	S. Peru
	eSS	13	11	37	USCGS 0 = 12 50 35
	eLQ	13	14	07	13½°S 74½°W
	eLR(SE)	13	16	27	Dist. 54.2°
Dec. 24	eLR	14	20	07	Philippines
Dec. 24	eLR	19	40	07	
Dec. 24	e	20	19	23	Local
	e	20	19	44	
Dec. 25	eLR	00	09	07	
Dec. 25	eLQ	01	31	37	
	eLR	01	34	07	
Dec. 25	e	04	18	47	
	eLQ	04	38	07	
	eLR(NW)	04	43	07	
Dec. 25	eLR	06	00	07	
Dec. 25	eLR	08	08	00	
Dec. 25	eP	10	29	29	Chile-Argentine Border
	epP	10	29	55	USCGS 0 = 10 18 35
	eS	10	38	13	25½°S 67°W
	eScS	10	39	07	Dist. 66.4°
	e	10	45	51	Mag. 6½
	e	10	47	01	
	eLR(S)	10	50	57	

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Date	Phase	h	m	s	Remarks
1959					
Dec. 25	e	16	14	40	
Dec. 26	eLR	13	30	07	
Dec. 26	eLR(W)	17	13	07	
Dec. 26	iP	18	28	02	Kenai Peninsula, Alaska
	eS	18	35	11	USCGS 0 = 18 19 10
	eSS	18	39	07	59½°N 151½°W
	eLQ	18	41	07	Dist. 49.8°
	eLR(NW)	18	44	07	
	Lg	18	48	33	
Dec. 26	iP	22	14	20	Kamchatka
	epP	22	14	32	USCGS 0 = 22 02 35
	esP	22	14	42	53°N 160°E
	e(S)	22	25	07	Dist. 75.4°
	eSS	22	29	37	
	ePKKP	22	33	21	
	eLQ	22	36	07	
	eLR(NW)	22	42	37	
Dec. 27	eP	04	59	34	Kamchatka foreshock
	eS	05	09	07	USCGS 0 = 04 47 45
	eSS	05	14	27	52½°N 160½°E
	eLQ	05	21	07	Dist. 75.8°
	eLR(NW)	05	26	37	
Dec. 27	eP	07	03	22	Kamchatka foreshock
	e(S)	07	13	07	USCGS 0 = 06 51 35
	eLQ	07	25	07	52½°N 159½°E
	eLR	07	30	07	Dist. 76.2°
Dec. 27	eSS	08	16	37	S.E. Coast Kamchatka
	eLQ	08	21	07	USCGS 0 = 07 45 25
	eLR	08	25	37	52½°N 159½°E
					Dist. 76.2°
Dec. 27	eP	12	06	36	Kamchatka
	epP	12	06	46	USCGS 0 = 11 54 48
	ePPP	12	10	27	52½°N 160°E
	eS	12	16	07	Dist. 74.9°
	eSS	12	20	07	
	eLQ	12	24	07	
	eLR(NW)	12	27	07	
Dec. 27	iP	12	49	22	Argentina
	eS	12	57	47	USCGS 0 = 12 39 09
	eLR	13	09	07	28°S 63°W
					Dist. 69.4°

44.

Date	Phase	h	m	s	Palisades, New York Remarks
1959					
Dec. 27	eP	16	04	20	Kamchatka
	iP	16	04	22	USCGS 0 = 15 52 55
	P (Z) 8 secs. 3 mic. comp. from N				56°N 162½°E Dist. 72.1°
	ePP	16	06	45	
	ePPP	16	08	39	
	eS	16	13	39	
	ePS	16	14	15	
	ePPS	16	14	27	
	eSS	16	18	37	
	eSSS	16	21	53	
	eLQ	16	23	55	
	eLR(N)	16	28	07	
Dec. 28	eLR	02	21	07	Hindu Kush
Dec. 28	eP	07	32	19	E. Coast Kamchatka
	epP	07	32	33	USCGS 0 = 07 20 32
	ePPP	07	37	07	52½°N 160°E
	eS	07	41	57	Dist. 74.9°
	ePS	07	42	49	Mag. 6½
	ePPS	07	43	07	
	eSS	07	46	53	
	eSSS	07	50	11	
	eLQ	07	52	37	
	eLR(NNW)	07	59	27	
Dec. 28	eP	10	13	33	Chile-Bolivia Border
	epP	10	13	58	USCGS 0 = 10 03 08
	eS	10	22	35	22½°S 67½°W
	eLQ	10	29	31	Dist. 68.4°
	eLR	10	33	07	
Dec. 28	iP	13	16	31	Kamchatka
	eS	13	25	51	USCGS 0 = 13 04 30
	eSS	13	30	47	52½°N 160°E
	eLQ	13	37	07	Dist. 74.9°
	eLR(NW)	13	42	07	Mag. 6
Dec. 28	eLR	20	19	07	
Dec. 29	eL(W)	02	51	07	Calif-Hollister
					USCGS 0 = 02 32 53
					37°N 121½°W
					Dist. 36.8°
					Mag. 4¾
Dec. 29	eLR	03	25	07	
Dec. 29	eLR	08	26	07	Spice Islands



Date	Phase	h	m	s	Remarks
1959					
Dec. 29	eLR	11	13	07	
Dec. 29	eLQ	12	24	37	
	eLR	12	25	35	
Dec. 29	e	17	19	35	
	i	17	19	38	
Dec. 29	eSKKS	17	41	47	Tonga Isls
	eSS	17	49	39	USCGS 0 = 17 14 40
	eLQ	18	02	37	21½°S 174°W
	eLR(WSW)	18	08	07	Dist. 111.2°
Dec. 29	eP	20	08	46	Local
	eS	20	08	54	
Dec. 29	e	20	09	22	
Dec. 29	eP	20	09	41	Local
	eS	20	09	51	
Dec. 29	ePKP	20	53	59	Mariannas Isls.
	ePS	21	03	59	USCGS 0 = 20 35 08
	eLQ	21	21	07	18°N 145°E
	eLR	21	29	07	Dist. 111.0°
					Mag. 6¼
Dec. 29	ePKP	21	46	54	Flores Isls.
					USCGS 0 = 21 27 17
					8½°S 122°E
					Dist. 144.7°
Dec. 30	eLR	03	31	07	
Dec. 30	eLR	07	16	47	
Dec. 30	eLR	08	29	07	
Dec. 30	eLR	09	04	07	
Dec. 30	e	12	15	37	
	eLR	12	18	37	
Dec. 30	eLR	12	43	07	
Dec. 30	eLR	18	17	07	
Dec. 30	eLR	20	52	07	
Dec. 31	eLR	02	06	07	
Dec. 31	eLR	04	24	07	



46.

Date	Phase	h m s			Palisades, New York Remarks
1959					
Dec. 31	eLR	04	45	07	
Dec. 31	ePKS	10	52	19	Northern New Guinea USCGS 0 = 10 29 23 3°S 139½°E Dist. 131.6°
	eSKKS	11	04	57	
	eSS	11	09	37	
	ePKPSKS	11	14	07	
	eLQ	11	26	07	
	eLR(NW)	11	30	37	
Dec. 31	eLR	16	04	07	
Dec. 31	e	21	06	15	Azores Isls. USCGS 0 = 20 52 55 37½°N 25°W
	eLQ	21	07	07	
	eLR	21	10	07	
Dec. 31	eLR	22	05	27	