

LAMONT GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY

PALISADES, NEW YORK



●
SEISMOLOGICAL BULLETIN

By

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and

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LAMONT GEOLOGICAL OBSERVATORY

Contribution No. 240

PALISADES, NEW YORK

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STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS

Latitude: 41° 00' 25" North

Longitude: 73° 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.

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

ABBREVIATIONS

i = sudden beginning of the motion (impetus)

e = gradual beginning of the motion (emersion)

Lg = short period continental surface shear wave

Rg = continental Rayleigh wave C = compression

All times are G. C. T. D = dilatation

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

Date	Phase	h	m	s	Remarks
1956					
Jan.					
1	iPKP	23	27	41	Timor Island Region
	isPKP	23	28	26	USCGS O = 23 08 28
	i	23	28	57	7°S, 129° E, Mag 6 (Pasadena). Depth about 150 km.
	iSKP	23	31	06	(Phases interpreted depth
	ePKS	23	31	22	100 km). Dist. 140° 46'
	eSPP	23	43	01	
	esSS	23	49	52	
	eSSS	23	53	50	
	eLR	00	10	45	
2					
3	eL	00	43	50	
3	iS	16	03	15	Kurile Islands
	eSS	16	08	18	USCGS O = 15 40 55
	eLR	16	18	00	48 1/2°N 155°E. Dist. 80° 15'
3	eL	23	55	10	
5	e	01	07	38	Argentina-Chile border
	ePPP	01	11	44	BCIS O = 00 54 18
	iS	01	16	50	41°S 71 1/2°W
	eSS	01	21	53	Dist. 81°
	eSSS	01	24	28	
	eLQ	01	31	10	
	eLR	01	34	30	
6	eLQ	07	31	07	Andreanov, Aleutians
	eLR	07	38	07	USCGS O = 06 59 17 51 1/2°N 179 1/2°W
6	e	12	06	00	Greece-Turkey border; felt:
	i	12	08	00	Dardanelles. USCGS O =
	eLQ	12	44	20	12 15 40. 40 1/2°N 26°E Dist. 71° 15'
6	i	23	44	45	Guerrero, Mexico
	e	23	52	30	USCGS O = 23 32 46
	eLR	23	54	25	16°04'N 99°33'W

Date	Phase	h	m	s	Remarks
1956					
Jan.					
7	e	10	41	16	Andreanov Islands, Aleutians
	eLQ	10	44	50	USCGS O = 10 32 15
	eLR	10	50	20	51 1/2°N 179 1/2°W
7	eLQ	17	00	35	Yukon, Canada
	eLg	17	02	11	USCGS O = 16 41 04
	eLR	17	05	02	65 1/2°N 133 1/2°W
7	i	20	16	20	Celebes
					USCGS O = 19 29 00
					1 1/2°N 122 1/2°E
8	iP	07	18	01	Guerrero, Mexico
	ePP	07	19	10	USCGS O = 07 11 26
	eS	07	23	39	17°N 99 1/2°W
	eLR	07	25	45	Mag. 6 1/2 (Pasadena) Dist. 32° 46'
8	i	07	26	25	
8	iP	21	04	21	Northern Chile
	iS	21	12	25	USCGS O = 20 54 13
	iScS	21	14	04	19°S 70°W
	eSS	21	16	21	Mag 7 1/4 (Pasadena)
	eSSS	21	17	27	Dist. 60° 10'
	eLR	21	21	15	
9	e	03	25	51	
	eL	03	47	40	
9	eS	12	29	25	Fiji Islands
	eSP	12	30	54	USCGS O = 12 05 53
	eSPP	12	31	52	23°S 179°E
	esS	12	33	50	Mag. 6 1/2 (Pasadena)
	iSS	12	35	57	Depth about 700 km.
	eSSS	12	40	23	Dist. 103°
	ePKPPKP	12	43	37	
	eL	12	47	15	
9	eL	13	27	05	Guatemala
					USCGS O = 13 11 38. 100 km

Date	Phase	h	m	s	Remarks
1956					
Jan.					
10	e(PP)	09	13	17	Tonga Islands
	ePKS	09	15	23	USCGS O = 08 52 36
	eSKS	09	18	00	25°S 176°W
	iSKKS	09	19	43	Mag 7 1/2 (Pasadena)
	ePS	09	21	57	Dist. 115°
	ePPS	09	23	41	
	eSS	09	28	05	
	eSSS	09	31	42	
	e	09	37	03	
	eLQ	09	39	25	
	eLR	09	45	15	
10	eL	12	53	35	Off coast of Oregon.
					USCGS O = 12 32 15 47 1/2°N 127°W
10	eLR	15	48	40	
11	ePS	06	41	27	Nicobar Islands
	eSS	06	49	01	USCGS O = 06 10 03
	eSSS	06	54	20	7 1/2°N 94°E
	eSSSS	06	58	33	Mag. 6.6 (Pasadena)
	eLQ	07	03	25	Dist. 129°
	eLR	07	12	10	
11	eL	11	37	40	Kermadec Islands
12	eL	00	56	55	Tacubaya, Mexico
12	eL	05	12	20	N. Chile
12	eL	06	15	55	Region of Budapest, Hungary
13	iP	03	39	00	Kamchatka
	ePP	03	41	27	USCGS O = 03 27 43
	ePPP	03	43	23	57 1/2°N 163°E
	e(S)	03	49	01	Mag. 6.1 (Uppsala)
	eSS	03	52	52	Dist. 70°16'
	eSSS	03	55	55	
	eLR	04	01	45	

Date	Phase	h	m	s	Remarks
1956					
Jan.					
14	iP	14	19	21	Fox Islands, Aleutians
	epP	14	19	38	USCGS O = 14 08 41
	iS	14	27	55	51 1/2°N 173 1/4°W
	ePS	14	28	45	Mag. 6 (Pasadena)
	eScS	14	29	10	Dist. 63° 25'
	e	14	29	57	
	eSS	14	32	01	
	eSSS	14	34	41	
	eLQ	14	39	15	
	eLR	14	43	40	
16	iP	23	45	31	Near coast of Ecuador
	C from SSW				USCGS O = 23 37 37
	ePP	23	47	12	1/2°S 80 1/2°W
	ePPP	23	48	16	Mag. 7 1/2 (Pasadena)
	iS	23	51	51	P(Z) = 10 sec 38 microns
	eSS	23	55	16	Dist. 43°22'
	e	23	57	03	
	eLR	23	58	00	
17	iS	08	17	49	1600 km SW Galapagos
	iScS	08	20	32	Islands. USCGS O =
	eSS	08	21	33	08 00 45
	e	08	22	47	5 1/2°S 104 3/4°W
	eLQ	08	22	50	Dist. 54° 24'
	eLR	08	26	10	
18	eP	08	18	02	Northern Chile
	iS	08	26	47	USCGS O = 08 07 17
	eScS	08	28	02	24°S 70°W
	eLQ	08	34	20	Dist. 66° 09'
	eLR	08	39	30	
	R from SSE				
19	eLR	19	06	15	Honshu, Japan
20	eL	05	35	20	Aleutian Islands
21	eLR	08	20	45	Guatemala
21	eLR	11	18	10	

Date	Phase	h	m	s	Remarks
1956					
Jan.					
21	eS	19	01	56	Near coast of Ecuador
	eSS	19	05	31	Aftershock of 16 Jan. shock
	eLQ	19	08	30	Dist. 43° 22'
	eLR	19	11	05	
23	iP	03	58	49	Kamchatka
	ePPP	04	03	37	USCGS O = 03 47 27
	iS	04	08	07	55 1/2°N 162 1/2°E
	ePS	04	08	31	Mag. 6 3/4 (Pasadena)
	eScS	04	08	49	Depth about 60 km.
	eSS	04	12	47	Dist. 72° 07'
	eSSS	04	16	09	
	eLQ	04	18	15	
	eLR	04	21	50	
	R from NNW				
25	e	06	44	04	Near coast of Ecuador
	eLR	06	50	00	1/2°N 85°W
25	eLR	11	42	35	Tonga region
25	eLQ	23	02	00	Off coast of Mexico
	eLR	23	04	55	20° 42'N 108° 23'W
27	ePP	13	58	51	Tonga Islands
	ePPP	14	00	42	USCGS O = 13 38 45
	eSKS	14	04	22	26°S 176°W
	e(S)	14	06	27	Mag. 7 (Tacubaya)
	ePS	14	08	23	Dist. 116°
	ePPS	14	09	31	
	eSS	14	14	15	
	eSSS	14	18	20	
	e	14	19	48	
	eLQ	14	28	50	
	eLR	14	36	15	

Date	Phase	h	m	s	Remarks
1956 Jan.					
28	eP	05	02	24	Mid-Atlantic Ridge
	iS	05	10	30	USCGS O = 04 52 29
	eLQ	05	16	19	1°N 27°W
	eLR	05	18	35	Dist. 58° 51'
28	eLQ	08	33	10	New Britain
	eLR	08	40	35	4 1/2°S 151 1/2°E
29	e	04	50	26	Tennessee-Arkansas
	e	04	51	24	border, USA 36°N 90°W
29	eLR	19	49	40	NE of New Guinea
29	eLQ	23	12	55	Formosa
	eLR	23	21	30	21°N 121°E
30	ePKP	09	02	05	North Island, New Zealand
	ePP	09	03	59	USCGS O = 08 43 01
	eSKS	09	08	42	38 1/2°S 177 1/2°E
	ePPS	09	15	51	Mag. 6 1/4 (Pasadena)
	e	09	16	06	Dist. 126° 38'
	e	09	18	06	
	eSS	09	20	56	
	iSS	09	21	10	
	i(SKKKS)	09	22	56	
	eSSSS	09	29	16	
	eLQ	09	35	25	
	eLR	09	41	55	
31	i	09	35	28	New Ireland
	e	09	36	56	USCGS O = 09 17 11
	eLR	10	20	45	Depth = 450 km 4°S 152°E Dist. 124° 48'

Date	Phase	h	m	s	Remarks
1956 Feb.					
1	eLR	02	30	45	Loyalty Islands 20°S 169°E
1	eP	13	55	38	Marianas Islands
	isP	13	57	07	USCGS O = 13 41 44
	iPP	14	00	19	19°N 145 1/2°E
	ipPP	14	00	56	Mag. 7 (Pasadena)
	esPP	14	01	25	Depth = 350 km
	ePPP	14	02	15	Dist. 109° 15'
	iSKS	14	05	45	
	eSKKS	14	06	43	
	iS	14	07	20	
	epS	14	08	21	
	ePS	14	08	55	
	esPS	14	09	58	
	ePPS	14	10	15	
	e	14	11	28	
	e	14	12	35	
	eSS	14	14	48	
	i(sSS)	14	15	23	
	e	14	17	26	
	eSSS	14	19	55	
	e	14	23	10	
	eLQ	14	25	35	
	eLR	14	33	10	
2	eLR	01	34	35	
2	eP	03	28	46	Mid-Atlantic Ridge
	e	03	32	32	USCGS O = 03 21 45
	iS	03	33	48	17 1/2°N 46 1/2°W
	eLQ	03	35	15	Dist. 33° 15'
	eLR	03	36	30	
2	eP	15	00	57	Guerrero, Mexico
	eS	15	06	23	USCGS O = 14 54 18
	eL	15	14	30	16°N 98 1/2°W Dist. 32° 48'

Date	Phase	h	m	s	Remarks
1956 Feb.					
2	iP	17	01	11	Guerrero, Mexico
	ePP	17	02	21	USCGS O = 16 54 32
	eS	17	06	32	16°N 98 1/2°W
	ePcS	17	07	01	P(Z) 6 sec 1.3 microns
	eLR	17	12	50	Dist. 32°48'
2	e	19	39	50	South coast of Mexico
	eLR	19	43	20	Tacubaya O = 18 50 43 16° 07' N 98° 19' W
5	eLR	22	41	50	
6	eLR	17	27	05	
9	iP	14	39	32	Lower California
	iPP	14	40	51	USCGS O = 14 32 40
	iS	14	45	08	31° 5' N 116° W
	eSS	14	47	01	Mag. 6 3/4 - 7 (Pasadena)
	eLR	14	48	40	P(Z) 12 sec 7 microns
	eLg	14	50	55	Dist. 35° 04'
9	eP	15	31	20	Lower California aftershock
	ePP	15	32	36	
	eLg	15	42	45	
9	eL	16	46	05	Lower California aftershock
9	eL	17	15	35	Lower California aftershock
9	eL	19	05	15	Lower California aftershock
10	e	00	23	55	Off coast of Japan
	eL	00	52	20	USCGS O = 00 02 40 37°N 142°E h = 60 km
10	iPKP	04	11	57	Off coast of Sumatra
	e	04	36	55	

Date	Phase	h	m	s	Remarks
1956 Feb.					
10	iS	13	59	54	Off coast of Peru
	eScS	14	02	17	USCGS O = 13 43 20
	eSS	14	04	06	11 1/2°S 79°W
	eLQ	14	06	03	Dist. 52° 38'
	eLR	14	09	10	
10	eL	15	27	35	Lower California aftershock
10	eL	18	29	15	Lower California aftershock
	eLg	18	31	21	
11	eL	03	15	25	Lower California aftershock
11	eL	05	36	50	Lower California aftershock
11	eL	06	29	30	Lower California aftershock
11	eL	06	40	25	Lower California aftershock
12	e	12	06	08	NW off coast of Luzon, Philip-
	ePP	12	09	33	pines. USCGS O = 11 49 20
	ePKS	12	11	48	19°N 119 1/2°E
	eSKS	12	15	14	Mag. 6 1/4 - 6 1/2 (Pasadena)
	ePS	12	19	25	Dist. 118° 15'
	eSS	12	25	58	
	iPKPPKP	12	27	06	
	eSSS	12	29	54	
	e(SSSS)	12	34	15	
	eLQ	12	37	20	
	eLR	12	45	30	
13	eL	04	46	05	
13	eLR	15	20	30	
13	eP	15	38	17	Puerto Rico
	iP	15	38	36	USCGS O = 15 33 14
	iS	15	42	24	19°N 66 1/2°W
	eLR	15	43	45	Dist. 22° 54'
	eT	16	00	47	
	T max	16	01	46	

Date	Phase	h	m	s	Remarks
1956					
Feb.					
14	iP	18	40	30	Lower California aftershock
	ePP	18	41	47	USCGS O = 18 33 32
	iS	18	46	03	31 1/2°N 115 1/2°W
	eLQ	18	47	55	P(Z) 7 sec 2 microns
	eLR	18	50	10	Dist. 34° 30'
	eLg	18	51	48	
15	iP	01	27	33	Lower California aftershock
	ePP	01	28	36	USCGS O = 01 20 36
	iS	01	33	06	31 1/2°N 115 1/2°W
	eLQ	01	36	05	P(Z) 8 sec 2 microns
	eLR	01	37	00	Dist. 34° 30'
	iLg	01	38	55	
17	eP	10	07	55	South Atlantic Ocean
	iPP	10	12	07	USCGS O = 09 53 55
	eSKS	10	18	32	47°S 15°W
	iS	10	19	38	Dist. 103° 26'
	iPS	10	21	16	
	ePPS	10	22	00	
	iSS	10	26	49	
	eSSS	10	29	56	
	e	10	35	37	
	eLQ	10	37	45	
	eLR	10	41	10	
18	iP	07	47	39	South of Honshu, Japan
	ipP	07	49	23	USCGS O = 07 34 16
	iPP	07	51	57	30°N 137 1/2°E
	ipPP	07	53	27	Depth = 450 km
	isPP	07	54	12	Mag. 7 1/4 - 7 1/2 (Pasadena)
	iSKS	07	57	25	Dist. 103° 43'
	eSKKS	07	58	02	
	eS	07	58	33	
	iSP	08	00	13	
	iSS	08	06	02	
	esSS	08	08	51	
	eSSS	08	09	58	
	ePKPPKP	08	11	37	
	eLQ	08	20	33	
	eLR	08	26	13	

Date	Phase	h	m	s	Remarks
Feb.					
19	eP	02	25	41	Queen Charlotte Islands
	ePP	02	27	02	USCGS O = 02 18 00
	eS	02	31	44	52°N 131 1/2°W
	e	02	33	51	Mag. 6 3/4 (Pasadena)
	eSS	02	34	24	P(Z) 6 sec 5 microns
	eLQ	02	35	20	Dist. 40°
	eLR	02	36	15	
	eLg	02	37	50	
19	i	04	22	20	Alaska Peninsula
	i	04	23	35	USCGS O = 04 13 16
					58 1/2°N 154°W
19	eL	04	40	20	
20	eLQ	08	51	35	Ryukyu Islands
	eLR	08	53	55	USCGS O = 07 57 38
					24°N 124°E
20	eLR	13	20	50	Oaxaca, Mexico
20	iP	20	43	17	Turkey
	iS	20	52	55	USCGS O = 20 31 35
	eSS	20	57	30	39 1/2°N 30 1/2°E
	eSSS	21	01	25	P(Z) 4 sec 2.5 microns
	eLQ	21	03	10	Dist. 74° 12'
	eLR	21	07	20	
21	eLR	23	24	25	Arctic Ocean 73 1/2°N 8°E
22	eLR	00	30	35	Arctic Ocean 73 1/2°N 8°E
22	eLR	11	04	35	Chagos Islands 5°S 67°E
23	iP	01	26	50	Mid-North Atlantic Ocean
	epP	01	26	54	USCGS O = 01 21 03
	ePP	01	27	39	31°N 42°W
	e	01	30	31	P(Z) 6 sec 3 microns
	eS	01	31	34	Dist. 28° 15'
	iSn	01	32	19	
	eLR	01	33	30	

Date	Phase	h	m	s	Remarks
1956					
Feb.					
24	e	09	57	00	Kermadec Islands
	e	10	06	07	USCGS O = 09 19 01
	e	10	10	51	32°S 179 1/2°E
	eLR	10	16	40	Dist. 122° 26'
24	eL	14	22	30	Lower California
24	eLQ	17	17	15	
	eLR	17	20	20	
24	eLQ	20	40	10	
25	eLR	06	46	55	Western Turkey
25	eLQ	09	26	55	
25	eLR	20	53	25	
27	eLQ	05	56	25	Gulf of California
	eLR	06	00	25	
27	eL	07	57	20	
27	eLR	09	13	30	Aleutian Islands
28	eLR	11	45	30	Northern Chile
29	eLR	21	51	40	Burma-India frontier
March					
1	eL	13	31	30	Southern Iran
1	eLR	14	50	00	Kamchatka
2	eP	12	04	50	Alaska
	ePcP	12	06	28	USCGS O = 11 56 20
	eS	12	12	09	63 1/2°N 149 1/2°W
	eSS	12	15	28	P(Z) 4 sec 1 micron
	eLQ	12	20	15	Dist. 47° 51'
	eLg	12	20	45	
	eRg	12	24	24	

Date	Phase	h	m	s	Remarks
1956					
March					
3	eP	00	19	53	Samoa Islands region
	ePP	00	24	13	USCGS O = 00 05 25
	eSKS	00	30	27	15°S 173 1/2°W
	e	00	31	50	Mag. 6 3/4 (Pasadena)
	ePS	00	33	31	Dist. 107° 33'
	ePPS	00	34	41	
	eSS	00	39	17	
	eSKKKS	00	45	45	
	eLQ	00	49	41	
	eLR	00	55	36	
3	eLR	11	22	54	Burma-India frontier
3	eLR	18	36	30	Lower California aftershock
3	eLR	22	32	06	
4	eLR	07	11	42	
5	eL	04	20	36	Kamchatka
5	eLQ	07	53	54	Southern Sinkiang Province, China
	eLR	07	59	18	USCGS O = 07 12 13 37° N 77° E
5	iP	23	42	37	Hokkaido, Japan
	eSKS	23	53	06	USCGS O = 23 29 41
6	eSSS	00	03	03	44 1/2°N 144°E
	eLQ	00	10	10	P(Z) 4 sec 2.5 microns
	eLR	00	11	30	Dist. 87° 40'
6	eL	09	37	35	Southern Iran
7	eLR	10	08	05	
10	eLR	04	39	25	Tonga Islands
10	eLQ	06	13	55	Northern California
10	eL	14	29	25	Lower California

Date	Phase	h	m	s	Remarks
1956					
March					
10	ePKP	19	52	12	Tonga Islands
	eS	20	00	35	USCGS O = 19 33 40
	eSS	20	08	45	22 1/2°S 176°W
	e	20	15	12	Depth = 200 km
	eLQ	20	22	50	Dist. 113° 37'
eLR	20	27	20		
10	iPKP	21	56	32	Molucca Passage
	ePP	21	59	18	USCGS O = 21 37 01
	e	22	19	21	1°N 125 1/2°E
	e	22	21	49	Dist. 134° 05'
	eLR	22	39	05	
12	eLQ	20	38	14	Samoa Islands
	eLR	20	40	49	USCGS O = 19 50 37 15°S 175°W
13	eL	01	49	20	Dominican Republic
13	iP	13	20	06	Off south coast of Panama
	ePP	13	21	20	USCGS O = 13 13 10
	iS	13	25	31	7°N 82°W
	eSS	13	27	27	Mag. 7 (Pasadena)
	eLQ	13	28	00	P(Z) 7 sec 4 microns
	eLR	13	29	35	Dist. 34° 35'
13	eL	19	58	35	Komandorski Islands
14	eLR	00	32	45	
14	eL	05	48	45	Lower California
14	e	16	09	10	North Island, New Zealand
	eL	16	40	40	
18	eL	08	22	55	Nicobar Islands
19	eLQ	18	28	55	New Britain
	eLR	18	34	40	USCGS O = 17 35 57 6°S 150°E

Date	Phase	h	m	s	Remarks
1956					
March					
20	eL	05	13	05	Mid-Atlantic Ocean
20	eL	05	38	55	Mid-Atlantic Ocean
20	eLR	10	42	05	New Britain
21	eLQ	05	35	10	Azerbaijan, USSR
	eLR	05	38	45	
21	eP	07	49	02	Puerto Rico
	iP	07	49	12	USCGS O = 07 43 50
	eS	07	53	07	20°N 64 1/2°W
	eL	07	53	10	Dist. 22° 29'
21	eLR	18	51	30	
22	iP	06	42	01	Ecuador
	ipP	06	42	27	USCGS O = 06 33 55
	isP	06	42	38	3 1/2°S 79°W
	ipPP	06	44	20	Mag. 6 3/4 - 7 (Pasadena)
	ePcS	06	47	48	Depth = 100 km
	iS	06	48	33	P(Z) 6 sec 7 microns
22	eSS	06	52	10	Dist. 45° 20'
	eLR	06	56	45	
	e	16	19	14	
22	eLQ	16	30	15	
	eLR	16	37	20	
23	eP	04	08	14	Puerto Rico
	epP	04	08	20	USCGS O = 04 03 08
	iPP	04	08	30	20°N 64 1/2°W
	eS	04	12	23	Dist. 22° 29'
	iS	04	12	31	
23	eL	04	13	00	
	eLQ	06	04	20	S. E. Tibet
eLR	06	09	25	USCGS O = 05 50 08	

Date	Phase	h	m	s	Remarks
1956					
March					
23	eLR	20	55	36	Solomon Islands
25	e	06	01	48	Guatemala
25	eP	23	39	24	Kamchatka
	eL	24	05	51	USCGS O = 23 27 31 52°N 159° E
26	iP	04	04	11	Puerto Rico
	ipP	04	04	22	USCGS O = 03 59 02
	eS	04	08	11	20° N 64 1/2° W
	eLR	04	10	23	Dist. 22° 29'
26	iP	04	11	17	Kamchatka
	ePP	04	13	59	USCGS O = 03 59 25
	e	04	17	59	52°N 159° E
	ePPS	04	21	00	Dist. 75° 55'
	eLQ	04	30	11	
eLR	04	33	07		
26	iP	05	31	49	Chile
27	eP	11	02	39	
	ipP	11	02	48	
	eS	11	06	40	
28	eLR	09	11	48	Tonga Islands
30	eLR	06	19	06	Off coast of Guatemala
30	eLR	06	49	54	Kamchatka
30	e	07	30	40	Yellowstone National Park
	e	07	37	54	Wyoming, U. S. A.
	eLR	07	52	54	
31	eP	01	39	14	Puerto Rico
	ipP	01	39	26	USCGS O = 01 34 00
	eS	01	43	13	20°N 64°W
	eLQ	01	43	30	

Date	Phase	h	m	s	Remarks
1956					
April					
1	eLR	11	46	54	Off coast SW of Chile
2	ePKP	11	09	13	Off coast of Sumatra
	iPP	11	12	00	USCGS O = 10 49 56
	iPKS	11	12	52	2°N 97°E
	ePS	11	22	22	Dist. 136° 37'
	eSS	11	30	03	
	e	11	30	11	
	e	11	34	52	
2	eLQ	11	51	10	
	eLR	11	58	22	
3	eP	11	20	37	
	eS	11	24	35	
4	e	08	53	18	
	e	08	57	56	
	eLR	09	01	15	
6	iP	07	24	43	Hindu Kush
	epP	07	25	39	USCGS O = 07 11 34
	iPP	07	28	39	36 1/2° N 71° E
	epPP	07	29	46	Depth = 200 km
	eSKS	07	34	55	P(Z) 8 sec 2 microns
	epS	07	36	36	Dist. 96° 55'
	ePS	07	37	17	
ePPS	07	38	39		
7	eP	00	05	56	Revilla Gigedo
	eS	00	11	39	USCGS O = 23 58 40
	eSS	00	14	26	19 1/2° N 109 1/2° W
	eL	00	17	12	Dist. 37° 06'
10	ePKP	13	35	17	Sumatra
	e	13	35	25	USCGS O = 13 16 04
	ePKS	13	38	47	3°S 102°E
	eSPP	13	50	07	Depth = 150 km
	eSS	13	56	51	Dist. 142° 06'
	eLQ	14	15	12	
eLR	14	23	54		
12	eLR	05	39	54	Northern Chile

Date	Phase	h	m	s	Remarks
1956					
April					
18	eP	11	10	42	Andreanov Islands, Aleutians
	eS	11	19	56	USCGS O = 11 00 13
	eSS	11	24	44	52°N 178°W
	eLR	11	31	24	Mag. 6 3/4 (Pasadena) P(Z) 6 sec 1.5 microns Dist. 66° 10'
18	eLR	18	33	44	Aleutians
19	eLR	22	16	05	Trinidad, B. W. I.
20	eL	05	30	15	Bonin Islands
20	iPKP	15	35	08	Banda Sea
	e(pPKP)	15	35	18	USCGS O = 15 15 56
	ePKS	15	38	38	7 1/2°S 129° E
	ePPS	15	50	26	Depth = 150 km
	eLR	16	29	15	Dist. 140° 41'
21	eLR	01	05	05	Solomon Islands
21	e	14	05	14	El Salvador
	eLR	14	09	05	12°N 87° 20'W
22	ePP	05	01	52	New Britain
	eSKS	05	07	35	USCGS O = 04 49 53
	eLR	05	41	20	6°S 151 1/2°E Mag. 6 (Uppsala) Dist. 127° 16'
22	iP	17	31	40	Alaska
	ipP	17	31	52	USCGS O = 17 21 53
	ePP	17	34	14	54°N 162°W
	iS	17	39	34	Mag. 6 (Pasadena)
	e	17	45	45	Dist. 56° 56'
	eL	17	53	55	

Date	Phase	h	m	s	Remarks
1956					
April					
23	iP	03	44	37	Japan
	epP	03	44	44	USCGS O = 03 31 40
	eSKS	03	55	04	42 1/2°N 144 1/2°E
	eS	03	55	25	Dist. 89° 36'
	isS	03	55	41	
	i	03	55	48	
	iPS	03	56	28	
	iPPS	03	56	45	
	eSS	04	01	32	
	eLQ	04	08	35	
	eLR	04	15	25	
23	eLR	09	17	25	South Atlantic
24	eLR	13	02	05	
25	e	08	59	47	Greece
	e	09	06	29	39°2'N 22°2'E
	eLR	09	24	54	
25	eS	17	15	19	Guerrero, Mexico
	eSS	17	17	48	USCGS O = 17 02 15
	eLQ	17	18	32	13°N 103° 10'W
	eLR	17	22	00	Dist. 37° 53'
26	eL	02	47	54	Pacific Ocean SW of Mexico
26	ePS	08	11	40	Fiji Islands
	eSS	08	18	05	USCGS O = 07 41 52
	eLR	08	37	06	16 1/2°S 174°E Mag. 6 (Pasadena) Dist. 116° 28'
26	eL	12	26	30	Japan
26	eL	15	29	24	Sakhalin, USSR
27	eL	03	30		
27	e	11	53	12	
	eL	11	58	12	

Date	Phase	h	m	s	Remarks
1956					
April					
28	eSKS	07	00	52	Marianas Islands
	ePS	07	04	50	USCGS O = 06 35 34
	eSS	07	10	34	13 1/2°N 150°E
	eLR	07	28	30	Depth = 60 km Dist. 111° 30'
28	e	15	40	44	Kermadec
	eLR	15	52	36	USCGS O = 14 54 30 32° 7'S 178° 3'W Dist. 120° 16'

LAMONT GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY
PALISADES, NEW YORK

●

SEISMOLOGICAL BULLETIN

By
RUTH B. SIMON



1 May 1956 - 31 August 1956

LAMONT GEOLOGICAL OBSERVATORY
Contribution No. 253

STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS

Latitude: 41° 00' 25" North
 Longitude: 73° 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 seismograph:
 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.

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

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. E. M. Invar pendulum clock corrected by Naval Observatory
 time signals every 6 hours.

PALISADES, NEW YORK

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Date	Phase	h	m	s	Remarks
1956					
May					
1	iPKP e	03	01	37 42	South of Sumatra USCGS O = 02 42 03 4°S 103°E. 40 km deep
1	eLR	12	21	36	
1	eLR	13	52	45	Tonga Islands
2	iP	20	20	50	
4	eL	07	01	25	
4	eL	14	08	30	Off coast of Guerrero, Mexico
5	i	02	57	55	
5	eLR	04	43	05	Samoan Islands
5	iP	12	50	13	Argentina-Chile border
	iS	12	59	12	USCGS O = 12 39 15
	iScS	13	00	01	28 1/2°S 69°W
	ePPS	13	00	44	150 km deep
	eL	13	12	25	Dist. 69.7°
6	eP	21	07	09	Unimak, Alaska
	iS	21	15	01	USCGS O = 20 57 16
	iPS	21	15	28	54 1/2°N 162 1/2°W
	eSS	21	18	59	Mag 5 3/4 (Pasadena)
	eLQ	21	23	25	Dist. 56.9°
	eLR	21	25	55	
7	iP	08	23	00	Guatemala
	iS	08	28	00	USCGS O = 08 17 03
	eSS	08	29	30	14 1/2°N 90 1/2°W
	eLR	08	30	35	200 km deep Dist 30.2°

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1956					
May					
7	ePKP	11	18	24	South Indian Ocean
	e(PP)	11	24	12	USCGS O = 10 58 12
	eSKKS	11	30	32	46 1/2°S 96°E
	e(PPS)	11	36	37	Mag 6 1/4 (Pasadena)
	eSS	11	44	55	Dist. 171.5°
	i(SKSSKS)	11	46	04	
	eSSSS	11	55	22	
	eLQ	12	08	55	
	eLR	12	17	45	
10	eLR	18	39	55	Off W coast Spitzbergen
11	eLR	16	29	15	Sandwich Islands, S. Atlantic
13	eLR	08	38	25	Central Pakistan
15	eL	23	33	00	Southern Greece
17	eP	06	09	55	Near coast southern Peru
	iS	06	17	35	USCGS O = 05 59 57
	eLR	06	30	40	16 1/2°S 72°W Dist 57.5° Depth 60 km
18	eLR	05	11	23	Guatemala
18	eS	10	10	31	Southern Alaska
	iSS	10	14	16	USCGS O = 09 55 09
	eLQ	10	15	25	62°N 145 1/2°W
	e	10	19	21	Dist 46.3°
18	e	12	36	15	
	eL	12	37	35	
19	ePKP	20	21	51	Indian Ocean
	ePP	20	23	57	USCGS O = 20 02 15
	ePKS	20	25	01	15 1/2°S 173°W
	ePPP	20	26	29	Mag 6.3 (Uppsala)
	eSS	20	41	45	Dist 133.5°
	e	20	42	43	
	eSSS	20	46	25	
	eL	20	56	37	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1956					
May					
20	eLR	18	40	35	Marshall Islands
22	ePP	03	19	51	Samoa
	eSKS	03	26	05	USCGS O = 03 01 03
	ePS	03	29	07	15 1/2°S 173°W
	ePPS	03	30	09	Mag 6 1/2 (Pasadena)
	eSS	03	35	05	Dist 106.1°
	eLR	03	50	49	
23	iP	21	02	20	Fiji Islands
	P(Z)	10 sec	6 microns		USCGS O = 20 48 30
	epP	21	03	54	15 1/2°S 179°W
	isP	21	04	42	450 km deep
	iPKP	21	06	17	Mag 7 1/4 (Pasadena)
	ePP	21	06	56	Dist 104.3°
	iSKS	21	12	19	
	iS	21	14	05	
	ePS	21	16	28	
	iPPS	21	16	58	
	i	21	18	41	
	i	21	19	47	
	iSS	21	22	02	
	iSSS	21	26	02	
	i	21	28	34	
	eLQ	21	30	40	
	eLR	21	35	10	
24	e	02	41	32	Gulf of California
	eLQ	02	43	35	USCGS O = 02 27 29
	eLR	02	44	50	26°N 110°W
	e(Lg)	02	45	10	Dist 33.3°
25	eL	02	11	15	

Date	Phase	h	m	s	Remarks
1956					
May					
26	ePKS	08	53	09	Boeroe Isl., Banda Sea
	ePPP	08	55	31	USCGS O = 08 30 18
	eSKKKS	09	00	22	4°S 125 1/2°E
	ePPS	09	05	06	Dist 139.4°
	e	09	06	52	
	e(SS)	09	11	47	
	eSSS	09	16	18	
	e(Sn)	09	26	33	
	eLQ	09	28	00	
	eLR	09	40	45	
26	ePKP	20	37	38	Fiji Islands
	epPKP	20	38	44	USCGS O = 20 21 14
	iPP	20	39	56	19°S 178 1/2°W
	iSKS	20	44	45	Mag 6 1/2 (Pasadena)
	iSKKS	20	45	52	550 km deep
	ipS	20	46	48	Dist 104.9°
	iPS	20	48	52	
	esS	20	49	40	
	e(PPS)	20	50	44	
	eSS	20	53	18	
	esSS	20	54	53	
	e(PKPPKP)	20	58	32	
	e	21	01	05	
	e(Sn)	21	09	08	
	eL	21	10	45	
27	eLR	18	44	45	Marshall Islands
28	eLR	01	55	45	North Atlantic Ocean
30	eL	01	58	35	Galapagos Islands
30	eL	05	44	50	NE of New Guinea
31	eL	08	32	10	Salta Province, Argentina

Date	Phase	h	m	s	Remarks
1956					
June					
3	iP	05	27	20	Arctic Ocean
	ePP	05	28	55	USCGS O = 05 19 23
	eS	05	33	42	79 1/2°N 118 1/2°W
	eL	05	35	35	Dist 37.9°
	eLg	05	40	58	
	eRg	05	45	10	
3	eLR	17	51	30	
4	iP	07	19	47	Fox Islands, Aleutians
	iS	07	28	15	USCGS O = 07 09 18
	eSS	07	32	20	52°N 170 1/2°W
	eSn	07	35	21	Dist 62.4°
	eLQ	07	36	10	
	eLR	07	42	40	
4	eSKS	12	31	39	Kermadec Islands
	eSS	12	42	31	USCGS O = 12 05 55
	eLR	13	04	00	31°S 178°W
					Dist 120.8°
5	eLR	05	48	40	
5	iPKP	05	49	30	Java. 8°S 112°E
5	eP	06	13	29	Pacific Ocean
	ePP	06	17	15	USCGS O = 05 59 41
	ePPP	06	19	15	51°S 112 1/2°W
	eSKS	06	23	56	Mag 6 1/4 - 6 1/2 (Pasadena)
	eS	06	24	50	Dist 98.2°
	ePS	06	26	05	
	eSS	06	31	31	
	eLQ	06	41	05	
	eLR	06	46	25	
5	eL	20	50	25	Fox Islands, Aleutians
5	eLR	23	54	20	

Date	Phase	h	m	s	Remarks
1956					
June					
6	eL	10	40	15	
8	eLQ	04	50	15	Afghanistan foreshock
	eLR	04	58	20	35°N 67 1/2°E
8	iP	12	48	48	Solomon Islands
	eLR	13	28	00	USCGS O = 12 29 47 6°S 154 1/2°E
8	iP	14	04	15	Argentina-Chile border
	iS	14	13	29	USCGS O = 13 53 09
	ePS	14	14	00	30°S 70°W
	eLR	14	22	00	Depth 150 km Dist 72.2°
9	eSS	02	46	07	Central Alaska
	e	02	49	26	USCGS O = 02 26 57
	eLQ	02	51	30	64°N 148°W
	eLR	02	54	35	Dist 47.2°
9	eLR	06	36	20	New Britain
9	iP	10	19	44	Central Chile
	P(z) 10 sec 10 microns				USCGS O = 10 08 32
	ePPP	10	24	08	30 1/2°S 70 1/2°W
	iS	10	29	02	Depth 150 km
	eSS	10	33	37	Dist 71.5°
	e(Sn)	10	37	46	
	eLR	10	43	45	
9	iP	23	27	22	Afghanistan
	P(z) 9 sec 9 microns				USCGS O = 23 13 51
	iPP	23	31	16	35 1/2°N 67 1/2°E
	ePPP	23	33	10	Mag 7 1/4 - 7 1/2 (Pas)
	iSKS	23	38	04	Dist 95.3°
	iPS	23	40	12	
	eSS	23	45	19	
	eSSS	23	48	37	
	e	23	50	06	
	eLQ	23	54	05	
	eLR	23	59	00	

Date	Phase	h	m	s	Remarks
1956					
June					
11	eL	01	04	40	Off coast S of Island of Crete
11	eL	03	44	55	Afghanistan aftershock
11	e	08	33	27	North Atlantic Ocean
	eLR	08	35	35	
11	iP	10	07	17	Chile-Argentina border
	eS	10	16	21	USCGS O = 09 56 10
	eLR	10	30	10	27 1/2°S 69°W Dist 68.8°
12	eLR	05	53	35	
12	iP	09	04	09	Pacific Ocean
	ePP	09	06	16	USCGS O = 08 54 02
	ePcS	09	08	45	9°S 110°E
	iS	09	12	23	Mag 6 1/2 (Pasadena)
	ePS	09	12	44	Dist 58.7°
	eSS	09	16	09	
	iSn	09	19	10	
	eLQ	09	19	20	
	eLR	09	23	00	
12	iP	21	24	34	Sumba Island region
	eL	22	28	05	
13	eL	06	01	30	
13	iPKP	12	26	50	Near Celebes
	ePP	12	29	31	USCGS O = 12 07 41
	iPKS	12	30	13	1/2°S 124 1/2°E
	esPP	12	30	33	Depth 200 km
	esPKS	12	31	20	Mag 5.9 (Uppsala)
	eSKS	12	33	55	Dist 136.8
	e	12	34	45	
	eSKKS	12	36	13	
	ePS	12	39	46	
	ePPS	12	41	33	
	esSS	12	49	03	
	eLR	13	10	50	

Date	Phase	h	m	s	Remarks
1956					
June					
14	iP	12	24	59	Kurile Islands
15	eP	00	55	29	Local shock
	iS	00	56	50	
15	eSS	16	11	44	Tonga Islands
	e	16	27	24	USCGS O = 15 35 47
	eLR	16	29	35	25°S 178°W Depth 200 km Dist 116.2°
16	eSKS	06	44	26	Ryukyu Islands
	eLR	07	20	15	USCGS O = 06 19 22 28 1/2°N 131 1/2°E Dist 106.3°
16	eS	17	08	09	Chiapas, Mexico
	eL	17	09	22	USCGS O = 16 57 37 15°15'N 92°50'W Depth 200 km Dist 30°
16	e	20	27	54	Tonga Islands
	eLR	20	29	45	USCGS O = 19 36 01 26°S 176°45'W
17	eLR	08	21	30	
18	eL	03	55	20	Off coast Guatemala
19	iPKP	00	38	33	South of Sumatra
	i	00	38	49	USCGS O = 00 19 08
	eLR	01	36	50	5°S 103°E Dist 144.1°
20	eLR	08	10	55	Chiapas, Mexico

Date	Phase	h	m	s	Remarks
1956					
June					
20	eLR	17	22	45	Tonga Islands
20	eLR	22	48	40	North Atlantic Ocean
21	eLR	01	39	45	Tonga Islands
21	eLR	04	34	15	
21	eLR	12	14	45	W. of New Guinea
21	iPKP	20	51	41	Sumbawa
23	iP	02	29	25	Kamchatka
	iPPP	02	33	57	USCGS O = 02 18 02
	iS	02	38	40	56 1/2°N 163 1/2°E
	ePS	02	39	29	Mag 6 1/2 (Pasadena)
	eSS	02	43	09	Dist 71.2°
	eSSS	02	46	55	
	eLQ	02	49	31	
	eLR	02	52	15	
23	eL	18	14	15	S. of Panama
24	eL	00	13	39	
24	ePKP	21	17	42	Solomon Islands
	ePP	21	19	27	USCGS O = 20 58 36
	ePKS	21	20	55	7°S 155°E
	eSKS	21	24	49	Mag 6 1/4 (Pasadena)
	eSKKS	21	26	32	Dist 124.1°
	eSS	21	36	47	
	eLR	21	56	43	
27	eLR	03	37	25	Mexico
27	eLR	20	02	35	S. of Formosa
27	eLR	21	46	55	New Britain

Date	Phase	h	m	s	Remarks
1956					
June					
28	eLQ	04	40	05	Fiji Islands
	eLR	04	48	55	
28	iP	23	06	21	Vancouver, B. C.
	P(Σ) 8 sec	3	microns		USCGS O = 22 58 50
	e	23	06	55	48 3/4°N 129 1/4°W
	ePP	23	07	39	Mag 6 1/4 - 6 1/2 (Pas.)
	iS	23	12	15	Dist 39.1°
	iSS	23	15	01	
	eLQ	23	16	05	
	eLR	23	17	15	
29	eL	03	12	45	Formosa
30	eS	13	31	52	Easter Islands
	eSS	13	36	44	USCGS O = 13 09 47
	eSSS	13	40	53	33 1/2°S 103°W
	e(Sn)	13	43	30	Dist 79.2°
	eLQ	13	43	30	
	eLR	13	47	40	
July					
3	eL	00	31	10	South Atlantic Ocean
3	eLQ	00	40	50	Venezuela-Colombia border
	eLR	00	45	40	
3	eLR	13	45	25	
3	iP	15	53	00	Near coast of Guatemala
	ePP	15	53	52	USCGS O = 15 46 41
	eS	15	58	06	13 1/2°N 91°W
	eLR	16	01	25	Dist 34.5°
4	eLR	01	12	50	Fiji Islands
4	eLR	04	01	40	Solomon Islands
4	eLR	04	41	05	Aftershock, Solomon Islands
4	eLR	08	17	30	Aftershock, Solomon Islands

Date	Phase	h	m	s	Remarks
1956					
July					
4	eLR	17	43	45	Fiji Islands
5	eLR	00	39	20	Loyalty Islands
5	eLQ	13	26	05	Alaska
	eLR	13	29	50	
6	eP	02	29	32	Off coast of Oregon
	eS	02	35	26	USCGS O = 02 22 00
	eSS	02	38	18	42 1/2°N 126°W
	eLQ	02	39	10	Mag 5 (Berkeley)
	eLR	02	44	15	Dist 38.3°
9	eP	03	23	14	Aegean Sea
	P(Σ) 10 sec	33	microns		USCGS O = 03 11 39
	iP	03	23	16	37°N 26°E
	ePP	03	26	01	Mag 7 1/2 (Pasadena)
	ePPP	03	27	36	Dist 73.2°
	iS	03	32	45	
	i	03	34	08	
	eSS	03	37	21	
	eSSS	03	41	09	
	eLR	03	45	50	
9	eP	03	35	36	Kodiak, Alaska
9	iP	10	00	54	Haiti
	P(Σ) 8 sec	28	microns		USCGS O = 09 56 13
	iS	10	04	49	20°N 73°W
	eLR	10	05	35	Depth 100 km
	Tmax	10	19	54	Mag 6 1/2 - 6 3/4 (Pasadena)
					Dist 21°
10	eL	03	35	55	Aegean Sea aftershock
10	eLR	16	05	20	Tonga Islands

Date	Phase	h	m	s	Remarks
1956 July					
11	eLR	11	49	25	
12	iPKP	00	34	59	Indian Ocean, Christmas Island
12	eL	16	04	00	Central Burma
12	eL	17	49	20	South Pacific
13	eLR	10	52	00	
13	iP P(Σ) 5 sec 2 microns dil. from S	13	46	57	Northern Chile USCGS O = 13 36 03 27°S 70°W Depth 100 km Dist 69.1°
	ipP	13	47	28	
	i	13	48	02	
	ePP	13	49	32	
	iS	13	55	51	
	iPS	13	56	28	
	esPS	13	57	28	
	eSS	14	00	01	
	eLQ	14	03	35	
	eLR	14	09	20	
14	eLQ eLR	03 04	57 01	35 10	Guerrero, Mexico
14	eLR	17	25	30	North Atlantic
15	eLQ eLR	02 02	16 18	30 50	Off coast of Oregon
16	eL	00	58	45	

Date	Phase	h	m	s	Remarks
1956 July					
16	ePP ePKS epPKS ePPP eSKS iPS ePPS iSS e(SSS) eLQ eLR	15 15 15 15 15 15 15 15 15 15 16	26 28 29 29 32 36 38 43 49 55 03	58 34 00 34 51 52 02 08 01 40 15	Burma USCGS O = 15 07 10 22°N 95 1/2°E Depth 100 km Mag 7 (Pasadena) Dist 116.8°
17	ePKP iPKP ipPKP iPP i(PKS) ipPKS iPKKS iPS iPPS epPPS i(PKPPKP) eSS i epSS i(sSS) eSSS eSSSS eLQ eLR	07 07 07 07 07 07 08 08 08 08 08 08 08 08 08 08 08 08 08 08	52 52 54 55 57 58 05 07 08 09 10 13 14 15 17 19 21 21 30 40	44 47 28 44 33 12 20 42 36 53 47 41 36 36 09 16 52 15 15	Banda Sea USCGS O = 07 34 07 7°S 126 1/2°E Depth 450 km Mag 6 3/4 (Pasadena) Dist 142.5°
17	eL	22	53	30	Guerrero, Mexico
18	eLQ eLR	01 01	19 26	25 15	New Britain
18	eLR	06	18	45	Loyalty Islands

Date	Phase	h	m	s	Remarks
1956 July					
18	ePKP	06	38	34	Banda Sea
	iPKP	06	38	46	USCGS O = 06 19 15
	ePP	06	41	30	5°S 130°E
	iPKS	06	42	04	Depth about 200 km
	iPKS ₂	06	42	16	Mag 7 1/4 - 7 1/2 (Pas.)
	eSKKS	06	48	08	Dist 138.5°
	iSKKKS	06	48	41	
	iPPS	06	54	56	
	eSS	06	59	49	
	eSSS	07	04	46	
	eLQ	07	15	45	
	eLR	07	24	05	
	eLR ₂	08	02	55	
18	eLR	22	23	05	
19	i	21	01	31	near coast of Luzon,
	eLR	21	46	15	Philippines
19	iP	23	33	02	Costa Rica
	iPP	23	34	20	USCGS O = 23 26 25
	e	23	38	09	9 1/2°N 84 1/2°W
	eS	23	38	30	Mag 6 (Berkeley)
	eSS	23	40	05	Dist 32.9°
	eLQ	23	40	30	
	eLR	23	42	45	
19	eP	23	44	39	Costa Rica aftershock
	eLR	23	54	15	
20	e	17	55	34	Halmahera Island
	eLQ	18	09	55	USCGS O = 17 32 52
	eLR	18	12	42	2°N 129 1/2°E
					Dist 133°
20	eS	23	18	32	Guatemala
	e(LQ)	23	22	40	USCGS O = 23 06 14
	eLR	23	25	00	13°N 92°10'W

Date	Phase	h	m	s	Remarks
1956 July					
21	iS	00	26	42	Mid-Atlantic Ocean
	eLQ	00	33	00	USCGS O = 00 08 31
	eLR	00	34	30	1°N 26°W
					Dist 59.5°
21	iPP	15	51	16	Western India
	iSKS	15	57	39	USCGS O = 15 32 25
	iSKKS	15	58	20	23°N 70°E
	iPS	16	00	39	Mag 6 1/2 (Pasadena)
	iPPS	16	01	48	Dist 107.2°
	eSS	16	06	46	
	eLQ	16	14	00	
	eLR	16	22	36	
22	iP	09	35	09	Northern Chile
	iS	09	43	11	USCGS O = 09 25 08
	iPPS	09	43	49	19°S 69°W
	iSKS	09	44	48	Depth 100 km
	i	09	45	34	Mag 6 - 6 1/4 (Pasadena)
	eLQ	09	49	56	Dist 61.2°
	eLR	09	53	16	
23	eL	08	23	40	California
23	eLR	15	25	51	Solomon Islands
23	iP	19	37	33	Easter Island
	ePP	19	40	20	USCGS O = 19 25 58
	iS	19	47	09	24°S 112°W
	iSS	19	52	06	Mag 6 3/4 (Pasadena)
	eLQ	19	57	14	Dist 74.8°
	eLR	20	01	16	
24	iPKS	19	19	26	Molucca Passage
	i(PKS ₂)	19	19	46	USCGS O = 18 56 32
	ePPP	19	21	52	1°N 126 1/2°E
	eLR	19	59	44	Mag 5.8 (Uppsala)
					Dist 134.2°

Date	Phase	h	m	s	Remarks	
1956						
July						
26	eLQ	10	10	58	Fallon, Nevada	
	eLR	10	13	42		
27	eL	01	02	42		
27	eLR	17	11	56	South Pacific	
28	e	00	05	12	Mexico	
	eLR	00	08	59		
28	e	01	27	56	Mexico, aftershock	
	eLR	01	32	53		
28	eLR	02	59	28	New Britain	
29	eLR	13	39	56	Guatemala	
30	eLR	06	16	41	Island of Crete	
30	eP	09	26	47	Aegean Sea	
	e	09	27	52	USCGS O = 09 15 00	
	ePP	09	29	32	37°N 26°E	
	iS	09	36	08	Mag 6.1 (Uppsala)	
	iPPS	09	37	00	Dist 73.2°	
	eSS	09	41	04		
	e(SSS)	09	44	34		
	eLQ	09	46	48		
	eLR	09	48	06		
	31	eLR	01	29	56	
	31	eLR	07	19	59	

Date	Phase	h	m	s	Remarks
1956					
Aug					
1	eL	07	37	45	Central Chile
1	eLR	18	20	36	Samoan Islands
1	iP	20	33	26	Dominican Republic
	iPP	20	33	41	USCGS O = 20 28 26
	ePPP	20	34	26	18 1/2°N 71°W
	eS	20	37	30	Dist 22.8°
	eLQ	20	38	39	
1	eLR	20	40	00	
	eLQ	21	14	15	
1	eLR	21	15	20	
	eLR	21	15	20	
2	ePP	07	19	39	Central Colombia
	eS	07	23	34	USCGS O = 07 11 20
	eL	07	28	54	5°N 75 1/2°W Depth 200 km Dist 36.1°
2	ePP	20	21	55	Tonga Island region
	ePS	20	31	26	BCIS O = 20 02 06
	ePPS	20	31	55	No coordinates obtained
	eLR	20	54	35	Dist approx 114°
3	eL	04	46	25	
3	eLR	17	26	58	
4	ePKP	10	07	45	New Britain
	ePP	10	09	32	USCGS O = 09 48 45
	ePKS	10	11	09	5°S 153°E
	eSKS	10	15	04	Depth 60 km
	eSKKS	10	16	50	Mag 6 1/4 - 6 1/2 (Pas.)
	ePPS	10	21	14	Dist 124.8°
	e	10	22	18	
	eSS	10	26	51	
	eSSS	10	31	39	
	eSSSS	10	35	10	
	eLQ	10	40	40	
eLR	10	47	00		

Date	Phase	h	m	s	Remarks
1956					
Aug					
4	eLQ	17	13	58	
	eLR	17	17	14	
5	eLR	10	00	02	Hokkaido, Japan
8	eLR	07	55	52	Lower California
8	eLR	23	58	20	S. of Afghanistan
9	iP	17	07	20	Nicaragua
	ePP	17	08	29	USCGS O = 17 00 57
	e	17	11	28	12°N 86°W
	eS	17	12	24	Dist 30.5°
	eLQ	17	12	59	
	eLR	17	15	46	
9	eSS	22	22	06	Kermadec Islands
	eSKKKS	22	25	38	USCGS O = 21 45 42
	eSSS	22	27	07	31 1/2°S 178°W
	e	22	29	58	Dist 119.9°
	e	22	32	24	
	eLQ	22	34	50	
	eLR	22	40	52	
9	e(P)	23	15	46	Samoa Islands
	ePP	23	19	00	USCGS O = 23 00 42
	iSKS	23	24	53	15°S 176°W
	iSKKS	23	25	50	Depth 250 km
	iS	23	26	28	Mag 6 3/4 (Pasadena)
	epS	23	27	08	Dist 109.5°
	i(SP)	23	28	11	
	i	23	45	10	
	eL	23	48	29	
10	eLQ	02	31	14	Costa Rica
	eLR	02	32	59	

Date	Phase	h	m	s	Remarks
1956					
Aug					
10	eLR	09	51	06	
10	eLR	16	19	59	Fiji Islands
10	eLQ	19	47	59	
	eLR	19	49	10	
11	iP	23	59	56	Yucatan, Mexico
12	eS	00	04	33	ECIS O = 23 54 08
	e	00	05	18	No coordinates obtained
	e	00	05	27	Dist approx 26°
	e	00	05	55	
	eLQ	00	06	43	
	eLR	00	10	13	
12	eLQ	00	26	33	Rat Islands, Aleutians
	eLR	00	31	17	
12	eP	17	13	21	Hondo, Japan
	ePP	17	17	25	USCGS O = 16 59 33
	e(PPP)	17	20	25	34°N 138°E
	eSKS	17	23	39	Depth 60 km
	eS	17	24	53	Mag 6 1/2 - 6 3/4 (Pasadena)
	ePS	17	26	33	Dist 99.1°
	e(SS)	17	32	29	
	eLQ	17	40	41	
	eLR	17	50	53	
13	eL	07	26	23	SW of Mexico
	eRg	07	30	13	
13	eL	09	59	53	Kermadec Islands

Date	Phase	h	m	s	Remarks
1956					
Aug					
14	ePP	03	11	23	South Indian Ocean
	ePS	03	21	30	Prince Edward Island
	ePPS	03	22	39	USCGS O = 02 50 30
	e	03	24	18	Mag 6.5 (Uppsala)
	eSS	03	28	21	Dist 125.2°
	e	03	30	27	
	e	03	32	33	
	eSSSS	03	36	25	
	eLQ	03	42	28	
	eLR	03	46	28	
15	ePKP	05	39	19	Sumatra
	ePP	05	42	19	USCGS O = 05 20 37
	ePKS	05	44	08	0° Lat. 101°45'E
	ePPP	05	46	21	Depth 300 km
	eSKKS	05	48	50	Dist 138.7°
	e(PKKP)	05	50	25	
	e(PS)	05	51	29	
	e(PPS)	05	54	03	
	e	05	56	06	
	eSS	05	59	41	
	e	06	00	31	
	e(SSS)	06	03	59	
	e(SSSS)	06	08	53	
	eLQ	06	12	43	
	eLR	06	18	13	
15	ePKP	11	10	28	North of Celebes
	ePP	11	13	08	USCGS O = 10 51 19
	iPKS	11	13	55	1/2°S 124°E
	e	11	14	50	Depth 150 km
	iSKS	11	17	36	Mag 6.3 (Uppsala)
	iSKKS	11	19	57	Dist 136.1°
	ePS	11	23	06	
	iPPS	11	25	17	
	e	11	26	28	
	iSS	11	31	10	
	eSSS	11	36	22	
	eSSSS	11	40	35	
	eLQ	11	47	38	
	eLR	11	56	43	
	eLR ₂	12	35	15	

Date	Phase	h	m	s	Remarks
1956					
Aug					
15	eP	13	24	48	Kurile Islands
	iS	13	35	10	USCGS O = 13 12 10
	ePS	13	36	05	45°N 151°E
	eSS	13	40	43	Mag 6 1/4 (Pasadena)
	e	13	45	03	Dist 84.7°
	e	13	46	57	
	eLQ	13	49	23	
	eLR	13	52	33	
16	eLQ	01	14	58	South of Greece
	eLR	01	17	13	
16	eLQ	08	46	23	Aleutian Islands
	eLR	08	49	23	
17	ePP	01	30	01	North Atlantic
	eS	01	33	41	USCGS O = 01 23 10
	eLQ	01	35	43	54°N 35°W
	eLR	01	36	41	Dist 29.5°
17	eLR	02	12	25	North Atlantic aftershock
17	e	09	29	03	Off coast of Oregon, USA
	eLR	09	39	09	
17	e	09	56	38	
17	eLR	15	08	00	New Britain
19	e	05	53	15	Fiji Islands
	e	05	59	26	USCGS O = 05 17 43
	eL	06	06	10	21 1/2°S 179°W
	eLR	06	14	25	Depth 150 km
					Dist 108.5°

Date	Phase	h	m	s	Remarks
1956					
Aug					
20	iP	05	40	36	South of Panama
	ePP	05	41	34	USCGS O = 05 33 47
	iS	05	46	04	7 1/2° N 80° W
	eLQ	05	48	00	Mag 6.3 (Uppsala)
	eLR	05	48	35	Dist 33.8°
20	eLR	07	20	00	Panama aftershock
20	eLR	10	00	10	Guatemala
20	eLR	12	42	50	
21	e	23	17	21	SW of coast of Mexico
	e	23	24	44	USCGS O = 23 08 03
	eLR	23	29	30	No coordinates obtained
22	eLQ	18	56	23	
	eLR	18	57	18	
23	eLQ	05	01	19	
	eLR	05	03	11	
23	eLQ	13	34	23	Unimak Island, Alaska
	eLR	13	35	19	
23	iP	13	58	11	Bolivia
	P(Δ) 6 sec 4 microns dil. from S				USCGS O = 13 48 30
	ePP	14	00	14	15°S 68°W
	ePPP	14	01	39	Depth 100 km
	iS	14	05	51	Mag 6 1/4 (Pasadena)
	i(ScS)	14	07	50	Dist 57.3°
	eSS	14	08	59	
	eLQ	14	11	46	
	eLR	14	14	11	
24	iP	00	19	12	

Date	Phase	h	m	s	Remarks
1956					
Aug					
24	iP	04	38	48	Aleutian Islands
	P(Δ) 14 sec 4.5 microns comp.				USCGS O = 04 27 33
	epP	04	39	13	53°N 172 1/2°E
	ePP	04	41	43	Depth 60 km
	ePPP	04	43	19	Mag 6 1/2 (Pasadena)
	iS	04	47	58	Dist 69.9°
	isS	04	48	48	
	eSS	04	52	39	
	eSSS	04	55	58	
	eLQ	04	57	25	
	eLR	05	00	15	
24	eLQ	09	20	35	Kamchatka
	eLR	09	26	10	
25	eLg	16	16	11	Lower California
27	eLR	18	29	20	Central Alaska
29	eLR	03	46	30	Kamchatka
30	eP	04	34	16	Aleutian Islands
	P(Δ) 8 sec 1.5 microns comp.				USCGS O = 04 24 24
	epP	04	34	26	54°N 164°W
	ePP	04	36	28	Mag 6 (Pasadena)
	iS	04	42	20	Dist 57.9°
	e(ScS)	04	44	00	
	eSS	04	46	17	
	e(Sn)	04	48	44	
	eLQ	04	49	26	
	eLR	04	54	14	
30	eP	05	32	25	Off coast of N. California
	P(Δ) 4 sec 1.5 microns comp.				USCGS O = 05 24 52
	epP	05	32	50	41°N 126 1/2°W
	eS	05	38	14	Mag 5.4 (Berkeley)
	eLQ	05	41	56	Dist 39.1°
	eLR	05	43	22	

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PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1956					
Aug					
30	eLR	17	52	03	
30	eLR	18	24	39	
31	eLR	01	12	39	Solomon Islands

LAMONT GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY
PALISADES, NEW YORK



SEISMOLOGICAL BULLETIN

By
RUTH B. SIMON

1 September 1956 - 31 December 1956

LAMONT GEOLOGICAL OBSERVATORY
Contribution No. 263

STATION CONSTANTS, INSTRUMENTS AND ABBREVIATIONS

Latitude: 41° 00' 45" North
 Longitude: 73° 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.

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

ABBREVIATIONS

i = sudden beginning of the motion (impetus).
 e = gradual beginning of the motion (emersion).
 Lg = short period continental surface shear wave.
 Rg = continental Rayleigh wave.
 Comp. = compression.
 Dil. = dilatation.
 All times are G. C. T.

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

Amplitudes of ground motion are measured from peak to trough.

PALISADES, NEW YORK

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Date	Phase	h	m	s	Remarks
1956					
Sept.					
1	eLR	00	04	10	Marianas Islands
1	eLR	01	23	15	Marianas Islands
1	eLR	18	33	30	Unimak, Alaska
1	eLR	19	57	55	Oregon, U. S. A.
2	eLR	01	27	30	
2	eLR	07	52	35	
2	eLR	11	33	50	
3	eL	03	39	45	Chiapas, Mexico
5	eL	02	04	49	
5	eLR	16	16	37	
6	eLQ	01	05	26	South Pacific, S. of Fiji Islands
	eLR	01	07	29	
6	eLQ	01	51	17	NW of Colombia
	eLR	01	52	44	
6	eLR	11	22	29	
6	eS	12	07	54	Dodecanese Islands
	eLR	12	23	19	Distance 73.3°
6	eL	17	55	44	
7	eLg	13	40	48	Tennessee, U. S. A.
7	eLg	13	53	59	

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1956 Sept.					
8	e	08	13	17	
	e	08	16	51	
	eLQ	08	18	49	
	eLR	08	19	45	
8	eLR	18	33	37	
9	eLR	18	00	57	Halmahera
10	eLR	02	59	49	
10	e	07	22	15	SW of coast of Mexico
	e	07	25	55	
	eLQ	07	27	57	
	eLR	07	31	05	
10	eP	14	12	15	Pacific Ocean S of Mexico
	ePP	14	13	47	USCGS O = 14 04 45
	iPcP	14	14	07	11°30'N 103°30'W
	eS	14	18	32	Distance 39.3°
	eSS	14	21	11	
	eLR	14	23	41	
11	eS	00	11	39	Costa Rica (Sept. 10)
	eLQ	00	16	04	USCGS O = 23 59 26
	eLR	00	18	22	8°30'N 83°W Distance 33°29'
11	eLQ	00	43	03	
	eLR	00	45	09	
11	eSS	03	07	57	Fiji Islands
	e	03	14	02	USCGS O = 02 32 28
	e	03	18	39	16°30'S 178°E
	eLQ	03	20	45	Mag 6 (Pasadena)
	eLR	03	25	49	Distance 114.3°

PALISADES, NEW YORK

Date	Phase	h	m	s	Remarks
1956 Sept.					
11	eP	10	00	49	
	P(Z) 8 sec 2 microns				Guatemala
	esP	10	01	29	USCGS O = 09 54 40
	eS	10	06	01	14°N 91°W
	esS	10	06	31	Depth 100 km
	ePcS	10	07	01	Mag 6 - 6 1/4 (Pasadena)
	eLR	10	09	17	Distance 79.8°
11	e	16	21	03	New Hebrides
	e	16	21	29	USCGS O = 15 44 04
	e	16	29	11	17°S 169°E
	e	16	33	27	Mag 6 (Pasadena)
	eLQ	16	34	57	Distance 136.8°
	eLR	16	40	56	
11	iP	21	16	09	Northern Kurile Islands
	P(Z) 8 sec 2.5 microns				USCGS O = 21 03 56
	ePP	21	18	41	49°30'N 155°E
	iS	21	26	07	Depth 100 km
	eSS	21	30	53	Mag 6 1/4 (Pasadena)
	eSSS	21	34	50	Distance 79.9°
	eLQ	21	36	49	
	eLR	21	43	57	
12	eLR	20	10	29	Kurile Islands aftershock
13	eLR	19	40	49	
14	eLR	06	31	43	Chiapas, Mexico
14	eLR	09	45	49	Off coast Northern Calif.
15	iP	07	49	14	Northern Chile
	P(Z) 6 sec 1.5 microns dil.				USCGS O = 07 39 04
	epP	07	49	37	20°S 69°W
	isP	07	50	00	Depth 100 km
	iS	07	57	24	Mag 6 3/4 (Pasadena)
	isS	07	58	06	Distance 61.2°
	iScS	07	58	55	
	isScS	07	59	40	
	eLQ	08	04	41	
	eLR	08	08	20	

Date	Phase	h	m	s	Remarks
1956					
Sept.					
16	eP	08	51	02	Afghanistan
	iPP	08	55	01	USCGS O = 08 37 22
	e	08	55	57	34°N 69°30' E
	ePPP	08	56	57	Mag 6 1/4 - 6 1/2 (Pas.)
	iSKS	09	01	40	Distance 97.8°
	eS	09	02	33	
	ePS	09	03	54	
	eSS	09	08	59	
	eSSS	09	13	43	
	eLR	09	23	00	
17	eLR	04	49	25	Chiapas, Mexico
20	eLR	03	34	48	North of coast of Chile
20	eL	20	58	41	Kamchatka foreshock
20	iP	22	03	54	Kamchatka
	eS	22	13	38	USCGS O = 21 52 01
	eSS	22	18	29	51°30'N 159°30'E
	eSSS	22	22	13	Distance 76.5°
	eLQ	22	25	39	
	eLR	22	27	39	
20	i	23	14	45	Mid-Atlantic Ridge
	e	23	21	14	BCIS O = 23 03 05
	e	23	23	36	1°S 24°W
	e	23	28	21	Distance 61.8°
	eLR	23	31	16	
21	eS	09	28	07	Central Mexico
	eLQ	09	30	38	USCGS O = 09 16 20
	eLR	09	33	08	20°N 100°30'W
					Distance 30.9°
21	iP	19	22	07	Argentina
	iS	19	30	27	USCGS O = 19 11 59
	eSS	19	33	52	26°30'S 63°W
	e	19	34	55	Depth 600 km
	eLQ	19	38	28	Distance 68°15'

Date	Phase	h	m	s	Remarks
1956					
Sept.					
22	eL	16	47	45	Tadzhik, USSR
22	eL	19	09	02	Kurile Islands
23	eL	09	09	21	Lower California
24	eSKS	06	29	39	Samoa
	eSKKS	06	30	56	USCGS O = 06 04 37
	ePS	06	32	43	15°30'S 173°30'W
	ePPS	06	33	39	Mag 6 (Pasadena)
	eSS	06	38	10	Distance 107.3°
	eSSS	06	42	25	
	e	06	44	01	
	eLQ	06	53	07	
	eLR	06	55	07	
24	e	07	38	45	
	eL	07	52	15	
24	i	10	44	57	
	eLQ	11	13	07	
	eLR	11	16	22	
25	eLR	18	43	07	Costa Rica-Panama border
25	e	21	43	35	Aftershock
	eL	21	48	07	Costa Rica-Panama border
26	eLR	06	04	52	S. of Honshu, Japan
26	eL	14	19	07	Aleutians
28	eLR	15	27	35	W. of Spitzbergen
28	eLQ	20	53	31	Off coast El Salvador
	eLR	20	56	21	

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Date	Phase	h	m	s	Remarks
1956					
Sept.					
29	eSKKS	09	31	48	Nicobar Islands
	e	09	39	07	USCGS O = 09 03 37
	eSS	09	42	43	7°30'N 94°30'E
	eSSS	09	47	54	Mag 6.3 (Uppsala)
	eLQ	09	57	18	Distance 130.4°
	eLR	10	04	07	
29	eLR	16	39	57	
29	eSKS	21	44	51	Honshu, Japan
	eS	21	45	31	USCGS O = 21 20 52
	eLQ	22	03	07	37°30'N 141°E
	eLR	22	07	15	Mag 6.2 (Uppsala) Distance 95.3°
29	eLR	23	30	47	Halmahera
29	eSKS	23	44	45	Honshu, Japan
	eS	23	45	27	USCGS O = 23 20 52
30	eLR	00	06	07	35.5°N 140°E Depth 60 km Mag 7 (Uppsala) Distance 97.5°
30	eLQ	03	03	07	SW of Mexico
	eLR	03	05	27	
Oct.					
1	eLR	18	15	39	Jamaica
2	eLQ	08	10	41	Mexico
2	iP	15	08	07	Kamchatka
	P(Z) 6 sec 2 microns				USCGS O = 14 56 26
	ipP	15	08	20	53°N 159°E
	eS	15	17	35	Depth 60 km
	ePS	15	18	07	Mag 6 1/4 - 6 1/2 (Pas.)
	ePPS	15	18	42	Distance 75.5°
	eSS	15	22	24	
	eSSS	15	26	00	
	eLQ	15	30	20	
	eLR	15	31	50	

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Date	Phase	h	m	s	Remarks
1956					
Oct.					
2	eLQ	16	08	45	Gulf of California
	eLR	16	12	45	
3	iP	08	28	51	Northern Chile
	ipP	08	29	17	USCGS O = 08 18 49
	iS	08	37	03	20°S 69 1/2°W
	isS	08	37	41	Depth 150 km
	eScS	08	38	09	Mag 6 1/2 (Pasadena)
	i	08	38	32	Distance 61.2°
	i	08	39	19	
	eSS	08	42	11	
	eSSS	08	44	21	
	eLR	08	47	35	
7	eLR	22	25	00	New Hebrides
8	eLR	01	26	15	New Guinea
8	eLQ	02	09	45	Off coast of Vancouver
	eLR	02	13	00	
8	eSKKS	15	22	40	Tonga Islands
	e	15	30	25	USCGS O = 14 55 49
	e	15	34	09	20°S 174°W
	e	15	36	30	Mag 5 1/2 (Moscow)
	e	15	45	06	Distance 119.5°
	eLQ	15	49	45	
	eLR	15	52	50	
9	eLQ	07	06	55	Tonga Islands
	eLR	07	16	25	
9	eLR	11	06	35	Mid-Atlantic Ridge
9	eLR	14	59	00	Aftershock, Mid-Atlantic Ridge
9	eLR	17	43	40	Marianas Islands

Date	Phase	h	m	s	Remarks
1956					
Oct.					
11	iP	02	37	00	Kurile Islands
	P(Z) 8 sec 20 microns				USCGS O = 02 24 33
	epP	02	37	26	46°N 150.5°E
	ePP	02	40	12	Depth 100 km
	ePPP	02	42	02	Mag 7 1/4 - 7 1/2 (Pas.)
	iS	02	47	13	Distance 85.3°
	iPS	02	48	08	
	i	02	49	56	
	iSS	02	52	48	
	eSSS	02	56	24	
	eLQ	02	59	35	
	eLR	03	04	15	
11	eP	16	56	15	Off Cape Mendocino, Calif.
	iP	16	56	18	USCGS O = 16 48 46
	P(Z) 15 sec 8 microns comp. from WNW				
	iPP	16	57	43	40 1/2°N 126 1/2°W
	iPcP	16	58	32	Mag 6 (Pasadena)
	iS	17	02	17	Distance 39.2°
	eSS	17	04	54	
	eLR	17	07	10	
12	iP	02	47	24	Peru
	P(Z) 8 sec 3 microns comp. from S				
	iS	02	55	12	USCGS O = 02 37 45
	esS	02	56	12	15 1/2°S 75°W
	eScS	02	57	10	Depth 60 km
	eSS	02	59	04	Mag 6 1/2 (Pasadena)
	eLQ	03	01	35	Distance 56.5°
	eLR	03	05	00	
12	eLQ	10	02	35	
12	iP	12	35	47	SE of Hokkaido, Japan
	eSKS	12	46	14	USCGS O = 12 22 46
	iS	12	46	33	42 1/2°N 144 1/2°E
	ePS	12	47	38	Mag 6 1/4 - 6 1/2 (Pas.)
	eLQ	13	01	20	Depth 40 km
	eLR	13	05	20	Distance 90.5°

Date	Phase	h	m	s	Remarks
1956					
Oct.					
13	e	05	00	40	
	eLQ	05	17	34	
	eLR	05	20	05	
13	eP	15	24	51	Northern Kurile Islands
	eLQ	15	47	40	USCGS O = 15 12 24
	eLR	15	56	15	51°N 154 3/4°E Distance 79.5°
13	ePP	19	16	16	New Britain
	ePPS	19	28	03	USCGS O = 18 54 06
	eSS	19	32	28	5°S 149 1/2°E
	eSSS	19	38	03	Depth 150 km
	eLQ	19	47	59	Distance 132.2°
	eLR	19	54	15	
13	eLR	23	18	45	Off coast of N. Calif.
14	eLR	22	05	45	
15	eLR	08	59	05	Philippines
15	eL	11	18	45	
16	iPKP	12	29	19	Flores Islands
	i	12	30	10	
18	eLQ	07	35	50	Off coast of Oregon, USA
	eLR	07	37	55	
18	eLR	20	25	10	Galapagos Islands
19	eSKS	15	30	32	South Pacific Ocean
	ePS	15	33	22	USCGS O = 14 05 34
	eSS	15	39	02	56 1/2°S 122°W
	eSSS	15	42	57	Mag 6 1/2 (Pasadena)
	eLQ	15	49	52	Distance 105.6°
	eLR	15	56	02	

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Date	Phase	h	m	s	Remarks
1956					
Oct.					
19	iP (comp.)	20	58	36	Rat Island , Aleutians
	ePcP	20	59	07	USCGS O = 20 47 33
	e	21	00	02	52°N 177°E
	e(PP)	21	01	53	Mag 6 3/4 (Pasadena)
	iS	21	07	35	Distance 68.7°
	iScS	21	08	43	
	i	21	09	29	
	eSS	21	12	27	
	eSSS	21	15	07	
	e	21	15	37	
	eLQ	21	17	07	
	eLR	21	19	17	
20	eLQ	00	16	05	Off coast of Oregon, USA
	eLR	00	20	45	
21	eLQ	08	54	35	Gulf of California
	eLR	08	57	25	
22	eLQ	07	55	55	Rat Island, Aleutians
	eLR	07	59	20	
22	ePP	12	56	39	Off coast SE of New Guine
	ePKS	12	57	51	USCGS O = 12 35 10
	ePPP	12	58	59	9 1/2°S 150°E
	eSKS	13	01	32	Distance 130.1°
	eSKKS	13	03	35	
	ePS	13	06	37	
	ePPS	13	08	31	
	eSS	13	13	27	
	e	13	14	41	
	e	13	15	37	
	e	13	16	43	
	eSSS	13	18	47	
	e	13	23	17	
	eLQ	13	28	45	
	eLR	13	35	20	

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Date	Phase	h	m	s	Remarks
1956					
Oct.					
23	iP	08	15	33	Galapagos Islands
	P(Z) 6 sec 2 microns comp.				USCGS O = 08 07 35
	ePP	08	17	14	3°N 95°W
	iS	08	22	01	Mag 5 3/4 (Pasadena)
	eSS	08	25	07	Distance 41.9°
	eLQ	08	26	35	
	eLR	08	27	15	
23	iPKP	09	00	14	Mindoro Island, Philippines
	iPP	09	02	00	USCGS O = 08 41 22
	eLQ	09	35	10	13 1/2°N 120 1/2°E
	eLR	09	42	45	Depth 100 km
					Mag 6 3/4 (Uppsala)
					Distance 123.9°
23	eLR	18	14	35	
24	eLR	11	15	05	North Atlantic Ocean
24	iP	14	48	35	Near coast of Nicaragua
	P(Z) 8 sec 20 microns comp.				USCGS O = 14 42 10
	ePPP	14	49	58	12°N 87°W
	iS	14	54	05	Mag 7 1/4 (Pasadena)
	eLR	14	57	30	Distance 31.2°
25	iP	05	28	05	Nicaragua aftershock
	ePP	05	29	19	USCGS O = 05 21 40
	eS	05	33	32	12°N 87°W
	eLR	05	35	55	Mag 6 1/4 - 6 1/2 (Pas.)
					Distance 31.2°
26	ePP	23	10	42	New Hebrides
	ePKS	23	12	22	USCGS O = 22 50 24
	eSKKS	23	17	40	14°S 167°E
	ePS	23	20	28	Mag 6 1/2 (Pasadena)
	eSS	23	27	22	Distance 120.9°
	eSSS	23	31	26	
	e(SSSS)	23	35	33	
	eLQ	23	41	10	
	eLR ₁	23	46	50	
	eLR ₂	24	43	50	

Date	Phase	h	m	s	Remarks
1956					
Oct.					
27	eP	15	39	14	Nicaragua
	eS	15	44	48	USCGS O = 15 33 08
	eLQ	15	47	35	12°N 87°W
	eLR	15	48	55	Mag 5 3/4 - 6 (Pasadena) Depth 200 km Distance 31.2°
28	ePKP	03	47	31	Kermadec Islands
	ePP	03	49	06	USCGS O = 03 28 41
	iSKS	03	54	26	32°S 179°W
	iSKKS	03	55	55	Mag 6 3/4 - 7 (Pasadena)
	ePS	03	58	43	Distance 120.9°
	ePPS	04	00	21	
	eSS	04	05	14	
	e(SSS)	04	08	26	
	e(SSSS)	04	12	46	
	eLQ	04	19	15	
	eLR	04	25	40	
28	e	11	16	26	
	eLQ	11	38	20	
	eLR	11	44	10	
29	e	00	11	35	Chiapas, Mexico
	eLR	00	14	42	
29	eLQ	00	33	07	
	eLR	00	35	51	
29	eLQ	03	27	37	Gulf of California
	eLR	03	30	42	
29	iP	15	50	58	Central Peru
	ipP	15	51	31	USCGS O = 15 42 08
	iS	15	58	00	8 1/2°S 77°W
	eSS	16	01	25	Depth 60 km
	eLQ	16	01	55	Distance 49.6°
	eLR	16	04	40	

Date	Phase	h	m	s	Remarks
1956					
Oct.					
29	eLR	16	40	10	
30	e	00	24	57	North Island, N. Zealand
	eLR	00	29	10	
31	eP	14	17	14	Southern Iran
	ePP	14	21	19	USCGS O = 14 03 38
	ePPP	14	23	26	26 1/2°N 54 1/2°E
	ePKS	14	25	02	Mag 6 3/4 (Pasadena)
	iSKS	14	27	52	Distance 97.2°
	eS	14	28	39	
	iPS	14	29	47	
	iSS	14	35	16	
	e	14	42	04	
	eLQ	14	45	10	
	eLR	14	50	20	
31	eLR	23	22	10	
Nov.					
3	e	05	48	19	Yukon, Canada
	e	05	51	34	
3	eLR	11	02	05	Kamchatka
4	eL	06	28	05	Hondo, Japan
4	iS	07	33	11	Tonga Islands
	iPS	07	34	51	USCGS O = 07 05 43
	iSS	07	41	06	22°S 175°W
	e(PKPPKP)	07	45	00	Depth 60 km
	e(SSSS)	07	49	39	Mag 6 1/2 - 6 3/4 (Pas.)
	eLR	07	52	05	Distance 112.4°
4	iP	11	54	49	S. of Province of
	iS	11	55	58	Quebec, Canada
	e	11	56	04	USCGS O = 11 53 30
6	eLR	00	57	05	Tonga Islands

Date	Phase	h	m	s	Remarks
Nov. 6	eLR	15	19	15	Aru Islands
6	eL	23	49	40	Aleutian Islands
7	iP	09	19	19	Aleutian Islands
9	eLR	06	16	05	Mid-Atlantic Ridge
9	iP	13	12	05	Southern Mexico
	P(Z) 8 sec 8 microns				USCGS O = 13 06 10
	ipP	13	12	38	17°N 94°W
	isP	13	12	52	Depth 150 km
	iPP	13	13	14	Mag 6 1/4 - 6 1/2 (Pas.)
	e	13	14	05	Distance 29°
	iPcP	13	15	14	
	iS	13	16	44	
	isS	13	18	05	
	iScP	13	18	50	
	eLR	13	19	00	
10	eP	00	14	47	Near coast of Costa Rica
	eS	00	20	27	USCGS O = 00 08 27
	eLR	00	23	30	10 1/2°N 86°W
					Depth 100 km
					Mag 6 (Pasadena)
					Distance 32.2°
11	eLR	20	00	15	Kurile Islands
12	eLR	10	53	00	Kermadec Islands
12	eLR	11	08	15	Mid-Atlantic Ridge
12	eLR	11	29	40	Mid-Atlantic Ridge
13	iPKP	03	39	23	Java
13	eLR	08	43	20	Loyalty Islands
13	i	10	40	53	Indian Ocean
	eLR	11	17	55	South of Australia

Date	Phase	h	m	s	Remarks
1956					
Nov. 14	iSKS	01	15	13	Hindu Kush
	ePS	01	17	24	USCGS O = 00 51 27
	eSS	01	22	40	36 1/2°N 71°E
	ePKPPKP	01	29	37	Depth 150 km
	eLQ	01	31	20	Mag 5 1/2 (Moscow)
	eLR	01	36	40	Distance 96.1°
15	e(S)	14	34	01	W. of Galapagos Islands
	eLQ	14	39	25	Foreshock
	eLR	14	42	10	
15	i(S)	17	44	36	W. of Galapagos Islands
	eLQ	17	50	00	
	eLR	17	52	35	
16	eLQ	03	41	10	Near coast of California
16	eL	06	58	30	Rat Island, Aleutians
16	iP	12	00	33	NW of Venezuela
	eS	12	05	38	USCGS O = 11 53 54
	e(PcS)	12	06	20	8 1/2°N 71°W
	eSS	12	08	05	Distance 32.5°
	eLR	12	09	35	
17	eP	20	35	03	Queen Charlotte Islands
	ePP	20	36	45	USCGS O = 20 27 15
	iS	20	41	19	54 1/2°N 134°W
	i(PS)	20	41	31	Mag 6 1/2 (Pasadena)
	eSS	20	44	17	Distance 41.2°
	eLQ	20	45	15	
	iLg	20	48	15	
18	eLR	19	16	40	Kermadec Islands
19	eLQ	07	42	40	Lower California
	eLR	07	45	10	
19	eLQ	12	56	00	Marianas Islands
	eLR	13	02	40	

Date	Phase	h	m	s	Remarks
1956					
Nov.					
21	iP	07	46	47	Near coast Hondo, Japan
	eSKS	07	57	22	USCGS O = 07 33 28
	iS	07	57	51	38°N 142°E
	eSS	08	04	49	Depth 60 km
	eLQ	08	12	35	Mag 6 (Moscow)
	eLR	08	16	25	Distance 94.5°
21	eL	08	42	25	Solomon Islands
22	eLR	03	25	55	
23	eLR	00	40	10	New Guinea
24	eLQ	21	34	05	Kermadec Islands
	eLR	21	41	15	
24	eP	23	09	21	Mid-Atlantic Ridge
	eS	23	13	27	
	eLR	23	15	29	
25	eLR	02	59	00	Indian Ocean
25	iP	14	24	57	Peru
25	eL	15	35	25	North Atlantic Ocean
25	e	18	45	25	New Hebrides
	e	18	54	00	
	eLR	19	04	00	
26	eLR	04	15	45	Central Italy
26	e	04	19	25	Missouri, USA
26	iP	19	00	39	Northern Chile
	P(Z) 8 sec 2 microns comp. from S USCGS O = 18 49 56				
	iS	19	09	27	26°S 70 1/2°W
	iScS	19	10	21	Depth 100 km
	eSS	19	13	33	Distance 67.1°
	e(Sn)	19	17	10	
	eLQ	19	17	45	
	eLR	19	21	25	

Date	Phase	h	m	s	Remarks
1956					
Nov.					
26	ePP	23	50	23	Loyalty Islands
	ePKS	23	51	44	USCGS O = 23 29 41
	ePPP	23	53	25	22°S 169°E
	eSKS	23	55	51	Mag 6 3/4 (Pasadena)
	eSKKS	23	57	22	Distance 124.4°
27	ePS	00	00	28	
	ePPS	00	01	50	
	eSS	00	07	40	
	eSSS	00	11	41	
	eSSSS	00	15	53	
	e	00	26	05	
	eLR	00	28	10	
27	ePP	07	20	49	Solomon Islands
	eSKS	07	25	35	USCGS O = 06 59 34
	eLQ	07	58	39	5°S 154°E
	eLR	08	03	00	Distance 124.1°
27	e	13	39	55	Loyalty Islands
	i	13	40	19	After shock
	e	13	51	17	USCGS O = 13 19 05
	e	13	57	53	
	e	14	02	09	
	e	14	05	02	
	e	14	10	02	
	eLR	14	17	20	
28	iP	19	39	24	Northern Kurile Islands
	P(Z) 8 sec 4 microns comp. from N USCGS O = 19 27 11				
	iPP	19	42	28	49 1/2°N 155°E
	iS	19	49	26	Mag 6 3/4 (Pasadena)
	iSKS	19	49	46	Distance 79.8°
	eSS	19	54	35	
	eSSS	19	57	23	
	e(SSSS)	19	59	11	
	eLQ	20	02	05	
	eLR	20	04	55	

Date	Phase	h	m	s	Remarks
1956					
Nov.					
29	ePP	09	33	53	Bonin Islands
	eSKS	09	40	14	USCGS O = 09 15 20
	eSS	09	48	56	27°N 141°E
	eSSS	09	52	48	Mag 7 (Pasadena)
	eLQ	09	58	00	Distance 104.7°
	eLR	10	05	20	
30	eLR	12	27	55	Tonga Islands
30	eLQ	17	02	05	
	eLR	17	05	43	
30	eLR	17	45	05	
30	eLQ	17	45	55	Tonga Islands
	eLR	17	49	05	
30	iP	19	42	18	San Juan Prov., Argentina
	Dil. from S				USCGS O = 19 30 34
					31 1/2°S 70°W
					Depth 150 km
30	eLR	22	55	25	Mid-Atlantic Ridge
Dec.					
1	eLR	08	49	55	Loyalty Islands
1	eLR	10	01	05	
1	e	21	42	45	Off coast of S. Peru
	eLR	21	52	00	
2	e	01	51	22	
2	e	01	55	04	

Date	Phase	h	m	s	Remarks
1956					
Dec.					
2	iP	03	10	16	Fox Islands, Aleutians
	eS	03	18	37	USCGS O = 02 59 56
	eLQ	03	28	05	52 1/2°N 169°W
	eLR	03	30	35	Mag 5 1/2 (Moscow)
					Distance 61.4°
2	eLR	16	43	35	Gulf of California
2	eLR	17	30	50	Tonga Islands
3	iP	07	30	23	Fox Islands, Aleutians
	iS	07	38	45	USCGS O = 07 20 08
	eScS	07	40	03	53°N 169°W
	eSS	07	43	19	Mag 6 1/2 - 6 3/4 (Pas.)
	e(Sn)	07	46	43	
	e	07	50	35	
	eLR	07	53	15	
3	e	07	55	13	Fox Islands, Aleutians
3	e	07	57	29	Fox Islands, Aleutians
4	iP	08	56	36	Kurile Islands
	eLR	09	26	31	USCGS O = 08 44 28
					50°N 156°E
					Distance 79.5°
4	iP	10	21	01	South Pacific Ocean
	eS	10	32	00	USCGS O = 10 07 54
	iPS	10	33	12	45 1/2°S 106°W
	eSS	10	37	46	Mag 6 3/4 (Pasadena)
	eLQ	10	44	21	Distance 91.1°
	eLR	10	49	46	
4	iP	10	52	29	Fox Islands, Aleutians
	eLR	11	18	26	

Date	Phase	h	m	s	Remarks
1956 Dec.					
4	iP	23	07	38	Guatemala
	P(Z) 6 sec	2.5	microns	comp.	USCGS O = 23 01 35
	ipP	23	07	58	15°N 92°W
	eS	23	12	36	Depth 150 km
	ipS	23	13	01	Mag 6 (Pasadena)
	isS	23	13	16	Distance 30.4°
	iPcS	23	13	52	
	iSS	23	14	42	
	eLR	23	15	35	
5	eLR	05	45	22	Off coast of Mexico
6	eLR	02	43	06	South Pacific
8	eLR	06	54	20	
8	iP	16	21	24	Andreanov Islands,
	P(Z) 8 sec	4	microns	comp. from NW	Aleutians
	ePcP	16	21	46	USCGS O = 16 10 27
	iS	16	30	18	51°N 179 1/2°W
	iScS	16	31	25	Mag 6 1/2 (Pasadena)
	iSS	16	35	21	Distance 67.5°
	e(Sn)	16	38	05	
	eL	16	39	05	
	eLR	16	42	15	
9	eL	05	49	27	Fox Islands, Aleutians
13	eLQ	13	33	11	Lower California
	eLR	13	34	27	
13	eL	15	00	30	Molucca Passage
15	eLQ	18	17	28	New Hebrides
	eLR	18	24	58	

Date	Phase	h	m	s	Remarks
1956 Dec.					
16	eP	01	48	44	Off coast W. of Colombia
	P(Z) 6 sec	3.5	microns	dil. from S	USCGS O = 01 41 52
	epP	01	48	58	6 1/2°N 78°W
	ePP	01	49	36	Mag 6 1/2 (Pasadena)
	ePPP	01	50	16	Distance 34.2°
	eS	01	54	16	
	eSS	01	56	14	
	eLR	01	57	40	
	i(ScS)	01	58	58	
16	eL	13	14	50	Fiji Islands
16	eLR	23	15	50	Kermadec Islands
18	iP	02	41	54	Argentina-Chile border
	P(Z) 10 sec	11	microns	comp. from S	USCGS O = 02 31 00
	ipP	02	42	09	25 1/2°S 68 1/2°W
	iS	02	50	42	Mag 7 - 7 1/4 (Pasadena)
	iPPS	02	51	19	Distance 66.7°
	iScS	02	52	09	
	eSS	02	55	47	
	eLQ	02	58	20	
	eLR	03	04	10	
	ePKPPKP	03	10	30	
18	eLR	20	34	19	South Indian Ocean
19	iP	01	30	18	Kamchatka
20	eLQ	11	51	54	Kermadec Islands
	eLR	11	55	58	
21	iP	09	06	28	Queen Charlotte Islands
	P(Z) 8 sec	3	microns	comp. from NW	USCGS O = 08 58 53
	iPP	09	08	02	51°N 131°W
	iS	09	12	34	Mag 6 3/4 (Pasadena)
	iSS	09	14	50	Distance 39.8°
	e(Sn)	09	15	14	
	iLg	09	19	15	

Date	Phase	h	m	s	Remarks
1956					
Dec.					
21	eSKS	20	34	30	South of Honshu, Japan
	eSS	20	42	30	USCGS O = 20 10 06
	eL	21	00	00	34°N 139°E Mag 6 1/2 (Uppsala) Distance 99.1°
22	eL	03	49	00	
22	eL	16	02	28	
22	eSKS	23	03	54	Kermadec Islands
	eSKKS	23	05	14	USCGS O = 22 38 12
	ePS	23	08	13	29 1/2°S 177°W ₀
	ePKKS	23	11	10	Distance 118.1
	eSS	23	15	07	
	eSSS	23	18	57	
	e(SSSS)	23	23	52	
	eLQ	23	25	30	
	eLR	23	33	40	
23	iSKS	09	02	14	Marianas Islands
	eSKKS	09	02	58	USCGS O = 08 37 26
	eS	09	03	42	22°N 144 1/2°E
	ePS	09	05	19	Depth 100 km
	eSS	09	11	20	Mag 6 1/2 (Pasadena)
	e	09	19	10	Distance 107.6°
	eLQ	09	21	18	
	eLR	09	27	45	
24	eLR	04	53	35	Costa Rica-Nicaragua border
25	e	02	17	48	
	eLR	03	15	15	

Date	Phase	h	m	s	Remarks
1956					
Dec.					
25	iP	09	40	14	North Atlantic Ocean
	P(Z)	5 sec 3 microns comp. from ENE			
	iPP	09	41	23	USCGS O = 09 33 37
	iS	09	45	11	48 1/2°N 28°W
	ePcS	09	46	35	Mag 6 1/2 (Pasadena)
	eLQ	09	47	37	Distance 32.9°
	eLR	09	49	10	
25	eLR	14	35	25	S. Pacific near Tonga Isl.
26	iPKP ₂	07	54	08	Near coast S. of Java
	eSKKKS	08	05	34	USCGS O = 07 34 18
	eSSS	08	21	34	9 1/2°S 112°E
	e	08	23	34	Distance 148.1°
	eLR	08	45	05	
26	eL	19	24	25	Guatemala
27	iPKP	00	32	35	Tonga Islands
	ePP	00	33	19	USCGS O = 00 14 15
	epPP	00	34	38	24°S 177°W
	iSKS	00	39	00	Depth 300 km
	iSKKS	00	40	03	Mag 7 - 7 1/4 (Pasadena)
	iPS	00	43	10	Distance 115.1°
	iPKKP	00	43	19	
	iSS	00	48	22	
	eLQ	01	00	40	
	eLR	01	08	10	
28	iPKP	14	43	34	North Island, N. Zealand
	ipPKP	14	44	12	USCGS O = 14 24 40
	iPP	14	46	04	39°S 177 1/2°E
	iSKKS	14	53	07	Depth 150 km
	eSS	15	02	20	Mag 6 1/4 (Pasadena)
	eLR	15	27	50	Distance 126.8°
28	iP	19	28	33	Off coast of Baja, Calif.
	iS	19	34	12	USCGS O = 19 21 30
	eSS	19	36	18	21°N 109°W
	eLQ	19	39	40	Distance 35.8°

Date	Phase	h	m	s	Remarks
1956					
Dec.					
29	eLR	04	44	25	New Britain
29	iSKKKS	20	49	25	Tonga Islands
	ePS	20	51	32	USCGS O = 20 22 12
	eSS	20	57	00	21°S 175 1/2°W
	eSSS	21	01	22	Mag 6 1/4 - 6 1/2 (Pas.)
	e	21	03	00	Distance 112.3°
	e	21	08	20	
	eLQ	21	11	40	
	eLR	21	18	00	
30	eL	07	00	20	
31	eL	17	55	50	