BULLETIN OF THE SEISMOGRAPHIC STATIONS

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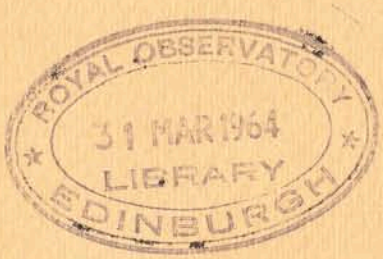
Berkeley--Mount Hamilton--Palo Alto
San Francisco--Ferndale--Fresno
Mineral--Arcata--Reno--Corvallis--Shasta
Manzanita Lake--Vineyard
Ruth--Concord--Santa Cruz

Earthquakes and the Registration of Earthquakes

From April 1, 1961 to June 30, 1961

By

Mansour Niazi
and
Ali Nowroozi



University of California
Berkeley
1963

SEISMOGRAPHIC STATIONS OF THE UNIVERSITY OF CALIFORNIA

Perry Byerly, Director (retired March, 1963)
Bruce A. Bolt, Director (March, 1963 --)

EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

and

REGISTRATION OF EARTHQUAKES AT: BERKELEY, MOUNT HAMILTON, PALO ALTO, SAN FRANCISCO, FERNDALE, FRESNO, MINERAL, ARCATA, RENO, CORVALLIS, SHASTA, MANZANITA LAKE, VINEYARD, RUTH, CONCORD, AND SANTA CRUZ

FROM APRIL 1, 1961 TO JUNE 30, 1961

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CONTENTS

INTRODUCTION

Each number in this series includes determinations of epicenters, origin times, and magnitudes, as well as other information available at the time of writing, for earthquakes in northern California and adjoining areas (Part I), and tabulates recorded arrival times of seismic waves and other information for teleseisms and for the larger earthquakes in the local area (Part II).

Information regarding the seismographic stations which comprise the Berkeley network, instruments operated regularly at each station, and any changes in instrumentation during the period covered by this issue will be found on the following three pages.

STATIONS IN OPERATION - APRIL-JUNE 1961

Station	North Latitude	West Longitude	Elev. Meters	Symbol	Present Auspices and Date Established
Berkeley (Haviland)	37° 52.4'	122° 15.6'	81	BRK, BRX	Univ. of California, 1887
Mt. Hamilton	37° 20.5'	121° 38.5'	1282	MHC	Lick Observatory, 1887
Palo Alto	37° 25.0'	122° 10.9'	83	PAC	Stanford Univ., 1927
San Francisco	37° 46.6'	122° 27.1'	100	SFB	Univ. of San Francisco, 1931
Ferndale	40° 34.6'	124° 15.7'	15	FER	City of Ferndale, 1933
Fresno	36° 46.0'	119° 47.8'	88	FRE	Fresno City College, 1935
Mineral	40° 20.7'	121° 36.3'	1495	MIN	Natl. Park Service, 1938
Arcata	40° 52.6'	124° 04.5'	59	ARC	Humboldt State College, 1948
Reno	39° 32.3'	119° 48.8'	1386	REN	Univ. of Nevada, 1948
Shasta	40° 41.7'	122° 23.3'	312	SHS	Bureau of Reclamation, 1942*
Corvallis	44° 35.1'	123° 18.2'	123	COR	Oregon State Univ., 1950
Manzanita Lake	40° 32.2'	121° 33.7'	1800	MLC	Natl. Park Service, 1956
Vineyard (local)	36° 45.0'	121° 23.1'	330	VIN	W. A. Taylor and Co., 1959
(telemeter)	36° 45.0'	121° 23.3'	380	VIT	
Ruth	39° 14'	114° 59'	2270	RUT	Kennecott Copper Corp., 1959
Concord	37° 58.1'	122° 04.3'	36	CNC	Diablo Valley College, 1960
Santa Cruz	37° 00.4'	121° 59.8'	128	SCC	City of Santa Cruz, 1961

*Operation of the Shasta station was assumed by the University of California on July 1, 1952. Requests for copies of Shasta seismograms for the period 1942-52 should be addressed to: The Director, U.S. Coast and Geodetic Survey, Washington 25, D.C.

STATION INSTRUMENTATION

April-June 1961

Station	Type of Instrument	T_o sec	T_g sec	Component
BRK	Benioff 100 kg VRT	1.0	0.4	Z
	Benioff 100 kg VRT	1.0	8.0	Z
	Wood-Anderson torsion	0.8	-	S,W
	100X torsion	0.8	-	N,W
BRX	Galitzin-Wilip moving coil	12	12	N,E,Z
	Press-Ewing moving coil	30	90	N,E,Z
MHC	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
PAC	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	N,E
SFB	Lehner-Griffith moving coil	1.2	0.3	Z
	Wood-Anderson torsion	0.8	-	S,W
FER	Bosch-Omori 25 kg	12	-	S,W
FRE	Sprengnether moving coil	2.0	2.0	N,E,Z
MIN	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
ARC	Marion-Slichter moving coil	1.1	0.2	Z
	Wood-Anderson torsion	0.8	-	N,E
REN	Sprengnether moving coil	2.0	2.0	N,E,Z
SHS	Benioff 50 kg moving coil	1.5	0.45	N,E,Z
COR	Slichter	1.0	-	N,E,Z
	Wilson-Lamison	1.0	$1\frac{1}{2}$	Z
MLC	Loucks-Omori	$3\frac{1}{2}$	-	S,E
VIN	Benioff 100 kg VRT	1.0	0.2	Z
	Wood-Anderson torsion	0.8	-	S,W
VIT*	Benioff 14 kg VRT	1.0	0.2	Z
RUT*	Press-Ewing moving coil	30	90	N,E,Z
CNC	Benioff 100 kg VRT	1.0	0.2	Z
SCC*	Benioff 14 kg VRT	1.0	0.2	Z

*Changes in instrumentation or method of operation during the quarter covered by this issue:

May 31, 1961 - VIT 14 kg Benioff Z installed in barrel buried in a hill west of the existing station VIN. Signal from VIT transmitted via leased telephone line to recorder at Berkeley.

June 1, 1961 - SCC 14 kg Benioff Z installed in a cave in DeLaveaga (city) Park. Signal transmitted via leased telephone line to recorder at Berkeley.

June 1, 1961 - RUT. Operation at the station of Ruth, Nevada was assumed in toto by the Seismological Laboratory, California Institute of Technology, Pasadena, California, to whom requests should be addressed for readings and copies of seismograms after this date.

Direction of Motion: In the "Component" column, each horizontal component seismograph is designated by the direction of ground motion corresponding to upward trace motion on the seismogram when it is oriented so that time increases from left to right. On all vertical component (Z) instruments, upward trace motion corresponds to upward ground motion.

PART I. LOCAL EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

This section includes information on earthquakes in northern California (including adjacent offshore areas) and in adjoining sections of Nevada and Oregon which were well enough recorded to permit a determination of the epicenter. Latitude and longitude of each epicenter and the corresponding date and origin time are tabulated in the following list; epicenters are also plotted on one or both of the two maps immediately following the list.

For the entire northern California region, every effort is made to list all earthquakes of Richter magnitude 3.0 and above, but it is likely that some such shocks have been overlooked because the available seismographic data were inadequate for a good epicenter determination. Within the limited region covered by the map of the central Coast Ranges of California, locatable shocks of magnitude 2.0 and over are included in the tabulation and plotted on the map. Shocks of magnitude 3.0 and over occurring in the limited region are plotted on both maps. Shocks of magnitude less than 3.0 in northern California (and less than 2.0 in the central Coast Ranges) are tabulated only if reported felt or if of special interest for some other reason. Identified artificial earthquakes (explosions) ordinarily are not tabulated.

Explanation of the table:

Map No. for each epicenter corresponds to the number plotted beside that epicenter on the maps. Epicenters without numbers lie outside the area of the map. The underlining of a map number in the table (and on the maps) indicates that one point on a map has been used to represent more than one earthquake in the table.

Date and Origin Time are given in Greenwich Civil Time (GCT). Subtract eight (8) hours to convert to Pacific Standard Time (PST) or seven (7) hours to convert to Pacific Daylight Time (PDT). This will change the date for some of the earthquakes. Pacific Daylight Time was in effect throughout California from April 23 to September 24, 1961.

M is the Richter magnitude of the earthquake as determined from the maximum trace amplitudes recorded for the shock by standard Wood-Anderson torsion seismographs.

Q is a subjective estimate of the quality of the location of the epicenter by the person making the determination; "a" indicates excellent, "b" good, "c" fair, and "d" poor.

Under Remarks will be found a short descriptive location of the epicenter, usually relative to a point named on the map. Information on small foreshocks and aftershocks is sometimes included under Remarks, but when numerous foreshocks or aftershocks accompany a large earthquake, a separate tabulation may be included following the main list of local shocks.

Information on intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly extracted from those collected by the Seismological Field Survey of the U.S. Coast and Geodetic Survey, which publishes a more complete summary in "Abstracts of Earthquake Reports for the

Pacific Coast and Western Mountain Region." This regular quarterly publication may be obtained from the District Officer, San Francisco District, Coast and Geodetic Survey, 121 Customhouse, San Francisco 26, California, or from the Director, U.S. Coast and Geodetic Survey, Washington 25, D.C. Intensities given in Roman numerals are assigned by the Coast and Geodetic Survey and based on the Modified Mercalli Intensity Scale of 1931.

MODIFIED MERCALLI INTENSITY SCALE OF 1931

(Abridged)

I. Not felt except by a very few under especially favorable circumstances.

II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing truck. Duration estimated.

IV. During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls made creaking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

V. Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned; Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.

VI. Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

VII. Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.

VIII. Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.

IX. Damage considerable in specially designed structures; well designed frame structures thrown out of plumb; great in substantial buildings with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

X. Some well-built/wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.

XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slips and land slips in soft ground. Rails bent greatly.

XII. Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
1	Apr. 1	02-40-31	36° 33'	121° 24'	b	3.0	South of Vineyard. Felt. Intensity IV at Harris Ranch, 7½ miles south of Hollister.
	Apr. 1	06-33-57	37° 28'	121° 47'	b	1.6	Northwest of Mt. Hamilton.
2	Apr. 1	09-17-57	37° 27'	121° 47'	c	2.5	Northwest of Mt. Hamilton
3	Apr. 1	13-45-24	37° 56'	121° 58'	a	2.0	Southeast of Concord.
4	Apr. 1	14-01-02	36° 33'	121° 19'	b	2.8	South of Hollister.
5	Apr. 1	14-22-17	36° 37'	121° 20'	b	2.6	Aftershock.
6	Apr. 4	19-02-24	37° 22'	121° 48'	c	2.0	Northwest of Mt. Hamilton.
7	Apr. 6	04-04-45	40° 11'	124° 45'	c	5.1	Off Cape Mendocino. Felt in Humboldt County.
8	Apr. 6	19-32-33	38° 05'	122° 29'	c	2.2	Northwest of Berkeley.
9	Apr. 7	12-21-19	36°.2	120°.4	d	2.9	North of Coalinga.
1	Apr. 7	22-04-42	36° 33'	121° 23'	a	3.5	South of Hollister.
1	Apr. 7	23-54-47	36° 33'	121° 23'	b	3.4	Aftershock of 22:04.
10	Apr. 8	04-55-26	36°.0	121°.2	d	2.7	South of King City.
11	Apr. 8	09-29-47	36° 06'	120° 26'	b	3.4	Near Coalinga.
11	Apr. 8	12-52-16	36° 07'	120° 26'	c	2.7	Aftershock of 09-29-47.
12	Apr. 9	07-23-16	36° 41'	121° 18'	a	5.6	Southeast of Vineyard. Felt over an area of approximately 13,500 square miles of west-central California (from San Francisco south to King City and east to Modesto). Maximum intensity VII. Designated as strongest shock in this region since 1906 by many old-time residents. Aftershocks of magnitude 3.0 or above are included in this list. A separate, more complete tabulation of aftershocks appears following this list.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
12	Apr. 9	07-25-41			d	5.5	Aftershock. Felt over much the same area as main shock.
13	Apr. 10	17-18-25	36° 42'	121° 20'	d	3.2	Aftershock of 07-23 on Apr. 9.
14	Apr. 11	09-08-11	36°.0	120°.1	d	2.7	Southeast of King City.
13	Apr. 11	16-51-44	36° 43'	121° 20'	c	3.3	Aftershock of 07-23 on Apr. 9.
15	Apr. 11	18-23-19	38° 28'	117° 50'	b	3.4	Southeast of Hawthorne, Nevada.
16	Apr. 12	04-59-08	35° 55'	120° 30'	c	2.6	Southwest of Coalinga.
12	Apr. 13	22-58-25	36° 40'	121° 17'	c	3.0	Aftershock of 07-23 on Apr. 9.
17	Apr. 14	08-01-25	38° 55'	122° 35'	c	2.3	Southeast of Ukiah.
18	Apr. 14	22-46-21	40° 17'	124° 30'	a	3.5	Southwest of Ferndale.
19	Apr. 15	03-24-09	36° 37'	121° 23'	b	3.1	South of Vineyard. (Sequence of Apr. 9, 1961.)
20	Apr. 16	11-01-17	36° 40'	121° 30'	c	3.4	Southwest of Vineyard. (Sequence of Apr. 9, 1961.)
21	Apr. 16	23-03-53	36° 35'	120° 43'	c	2.4	Southeast of Llanada.
22	Apr. 17	01-02-01	38° 44'	119° 33'	b	2.9	East of Markleeville.
	Apr. 18	05-11-21	43°.3	118°.7	d	3.5	Southeastern Oregon. (Not on map.
23	Apr. 19	18-16-35	36° 24'	121° 35'	c	3.3	Southeast of Monterey, Calif.
24	Apr. 20	10-45-12	36° 57'	121° 13'	b	2.6	Northeast of Hollister (h=20 km).
2	Apr. 22	17-12-58	37° 27'	121° 48'	b	2.2	Northwest of Mt. Hamilton.
25	Apr. 24	06-38-50	36° 41'	121° 25'	c	2.0	Southwest of Vineyard.
26	Apr. 26	10-12-17	37° 51'	122° 05'	c	2.0	Southeast of Berkeley.
27	Apr. 27	09-04-35	36° 48'	121° 29'	a	2.5	Southwest of Hollister (h=15 km).
1	Apr. 27	11-16-10	36° 33'	121° 24'	c	3.4	South of Vineyard.
28	Apr. 28	01-02-52	36° 36'	121° 22'	c	4.2	South of Vineyard. (Sequence of Apr. 9, 1961.) Felt principally in the Hollister area and in the Cienega district south of Hollister. Scattered felt reports from an area of approximately 2,000 square miles. Maxi intensity V in Chualar Canyon, Hollister and Paicines.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
29	Apr. 28	03-56-25	36° 32'	121° 21'	c	3.2	Aftershock. Felt.
30	Apr. 28	14-05-50	36° 37'	121° 25'	b	3.5	Aftershock. Felt.
31	Apr. 28	17-48-53	37° 50'	122° 15'	b	2.2	South of Berkeley. Blast?
27	Apr. 29	03-17-01	36°.7	121°.5	d	3.1	Southwest of Hollister. Felt.
	Apr. 29	09-19-30	40° 25'	127° 27'	c	5.5	Off Cape Mendocino.
	Apr. 29	16-51-30	40°.7	127°.7	d	4±	Aftershock.
	Apr. 29	20-25-29	40° 41'	127° 58'	b	4.2	Aftershock.
	Apr. 30	04-45-13	40° 36'	128° 00'	c	4.4	Aftershock.
	Apr. 30	14-13-45	40°.8	128°.3	d	4.3	Aftershock.
	Apr. 30	17-30-39	40° 38'	127° 07'	b	4.3	Aftershock.
	May 1	02-41-38	40° 50'	127° 42'	c	4.2	Aftershock.
	May 1	02-50-49	40° 41'	127° 42'	c	4.2	Aftershock.
	May 1	03-23-50	40° 56'	127° 16'	c	4.3	Aftershock.
	May 1	07-21-26	40° 53'	127° 07'	c	4.3	Aftershock.
	May 1	10-07-30	40°.5	126°.8	d	3.8	Aftershock.
	May 1	12-19-06	40° 50'	127° 23'	c	4.5	Aftershock.
	May 1	12-57-14	40° 23'	126° 17'	c	4.2	Aftershock.
	May 1	18-45-29	40° 37'	127° 00'	c	4.5	Aftershock.
	May 1	21-30-02	40°.4	126°.6	d	4.0	Aftershock.
	May 2	01-28-59	40°.9	127°.0	d	4.2	Aftershock.
	May 2	10-10-30	40° 47'	127° 16'	b	4.1	Aftershock.
	May 2	22-37-56	40° 45'	127° 02'	b	4.4	Aftershock.
	May 3	08-48-53	40° 34'	127° 34'	b	4.3	Aftershock.
	May 4	02-17-34	40° 47'	127° 03'	c	4.7	Aftershock.
	May 4	20-36-42	41°.2	127°.0	d	4.1	Aftershock.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	May 4	20-51-39	40° 51'	127° 35'	b	3.9	Aftershock.
	May 4	20-59-09	41° 04'	127° 05'	b	4.4	Aftershock.
	May 5	12-02-19	41° 45'	127° 20'	b	3.7	Aftershock.
	May 5	13-07-54	40°.7	126°.8	d	4.0	Aftershock.
32	May 6	04-37-37	38° 13'	121° 58'	b	2.4	Southeast of Fairfield.
33	May 6	04-58-34	37° 39'	121° 38'	b	2.2	East of Livermore.
34	May 6	18-30-18	37° 34'	121° 46	c	2.0	South of Livermore.
	May 7	06-03-04	40° 50'	126° 42'	b	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 7	09-01-26	40°.2	128°.3	d	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 7	09-05-32	37° 50'	121° 47'	a	1.9	East of Berkeley.
	May 7	15-26-31	40° 38'	127° 01'	c	4.4	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 7	16-19-06	40° 38'	127° 05'	b	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
35	May 7	19-38-08	40° 40'	125° 11'	c	3.7	Northwest of Ferndale.
73	May 8	02-01-39	40°.7	126°.0	d	3.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 8	12-43-43	40° 45'	126° 55'	b	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 8	13-57-44	40° 50'	127° 30'	c	3.9	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 8	23-58-56	43°.5	125°.5	d	-	Off coast of Oregon.
	May 8	23-59-27	43° 42'	124° 22'	d	-	Southwest of Corvallis.
	May 9	12-03-06	40° 36'	126° 45'	c	3.7	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	May 9	12-06-28	40° 45'	126° 50'	c	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 11	04-59-30	40° 58'	127° 01'	c	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 11	18-48-33	41° 40'	128° 06'	b	4.7	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 11	20-57-12	40° 48'	127° 32'	c	4.2	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 11	23-14-21	40° 51'	126° 32'	c	4.1	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
36	May 12	15-29-28	37° 38'	118° 58'	b	3.8	Northwest of Bishop.
	May 12	17-37-00	41° 17'	126° 58'	c	4.4	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
74	May 12	21-50-10	40° 51'	126° 07'	b	3.9	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 13	05-43-16	40° 39'	127° 36'	a	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 13	08-47-37	40° 49'	127° 29'	b	4.6	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 13	18-19-12	38° 32'	121° 56'	c	-	North of Berkeley.
	May 13	18-45-44	40° 55'	126° 49'	c	3.7	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 14	19-31-34	40° 53'	127° 06'	b	4.7	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
37	May 15	08-20-55	37° 23'	121° 50'	b	2.3	Northeast of San Jose.
	May 16	12-05-04	40° 32'	126° 22'	c	3.6	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 17	03-21-52	40° 50'	127° 20'	c	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	May 17	06-34-46	40°.5	126°.0	d	3.7	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
38	May 17	20-09-30	38° 04'	122° 33'	c	2.3	North of San Francisco.
	May 18	08-51-03	40° 45'	126° 55'	c	4.4	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 18	09-37-55	40° 16'	127° 42'	b	4.4	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
39	May 18	11-37-50	38° 32'	118° 43'	c	3.8	Vicinity of Hawthorne.
	May 18	19-10-57	41°.8	128°.0	d	3.9	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 18	23-57-28	40° 45'	126° 40'	b	4.1	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
40	May 19	08-32-02	37° 52'	122° 15'	a	2.7	Berkeley. Felt in Montclair, Kensington, Berkeley. Maximum intensity IV in Berkeley, Oakland.
	May 19	14-47-43	40° 44'	127° 02'	c	4.4	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 19	14-49-48	40° 48'	127° 20'	c	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
41	May 20	07-03-36	36° 48'	121° 37'	c	2.8	Northwest of Vineyard.
42	May 20	08-42-14	37°.9	122°.2	d	2.3	Northeast of Berkeley.
	May 21	02-33-42	40°.7	127°.8	d	3.9	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 21	03-41-16	40° 29'	126° 47'	b	4.8	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 21	07-58-35	40° 35'	126° 40'	c	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 21	15-15-15	39° 34'	127° 12'	c	3.9	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	May 21	15-18-08	40° 24'	126° 47'	a	4.2	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 21	19-45-38	40° 02'	127° 08'	c	3.8	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 24	12-59-54	40° 27'	126° 20'	b	4.0	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
	May 24	13-34-31	43° 30'	127° 08'	c	-	Off coast of Oregon.
43	May 25	01-18-42	36° 45'	121° 26'	c	2.6	Northwest of Vineyard.
75	May 25	06-21-03	40° 47'	125° 39'	c	3.6	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
44	May 25	14-19-05	36° 20'	121° 00'	c	3.4	Northeast of King City.
44	May 25	14-19-35	36° 20'	121° 00'	b	3.4	Northeast of King City.
45	May 26	04-15-24	36° 44'	121° 27'	c	2.8	South of Hollister. Felt.
46	May 26	12-58-35	36° 47'	121° 33'	c	3.5	Southwest of Hollister. Felt by several in Salinas and Hollister. Maximum intensity IV in Hollister.
	May 29	01-48-43	35° 41'	117° 43'	c	3.5	South of China Lake.
	May 29	17-24-04	38° 05'	122° 28'	c	1.5	North of San Francisco.
47	May 30	19-55-24	38°.2	122°.0	d	2.9	Southeast of Fairfield.
48	June 1	06-47-20	36° 20'	121° 19'	b	2.7	Northwest of King City.
49	June 1	14-11-30	36° 27'	121° 12'	c	2.6	North of King City.
50	June 3	00-26-16	37° 49'	122° 11'	b	2.4	Southeast of Berkeley.
51	June 3	04-00-40	37° 50'	122° 13'	b	3.3	Felt. Near Berkeley. Maximum intensity IV in Daly City, Canyon and Oakland.
52	June 3	06-15-52	37° 25'	121° 43'	c	2.7	Northwest of Mt. Hamilton.
	June 4	10-38-50	40°.5	128°.3	d	4.3	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)

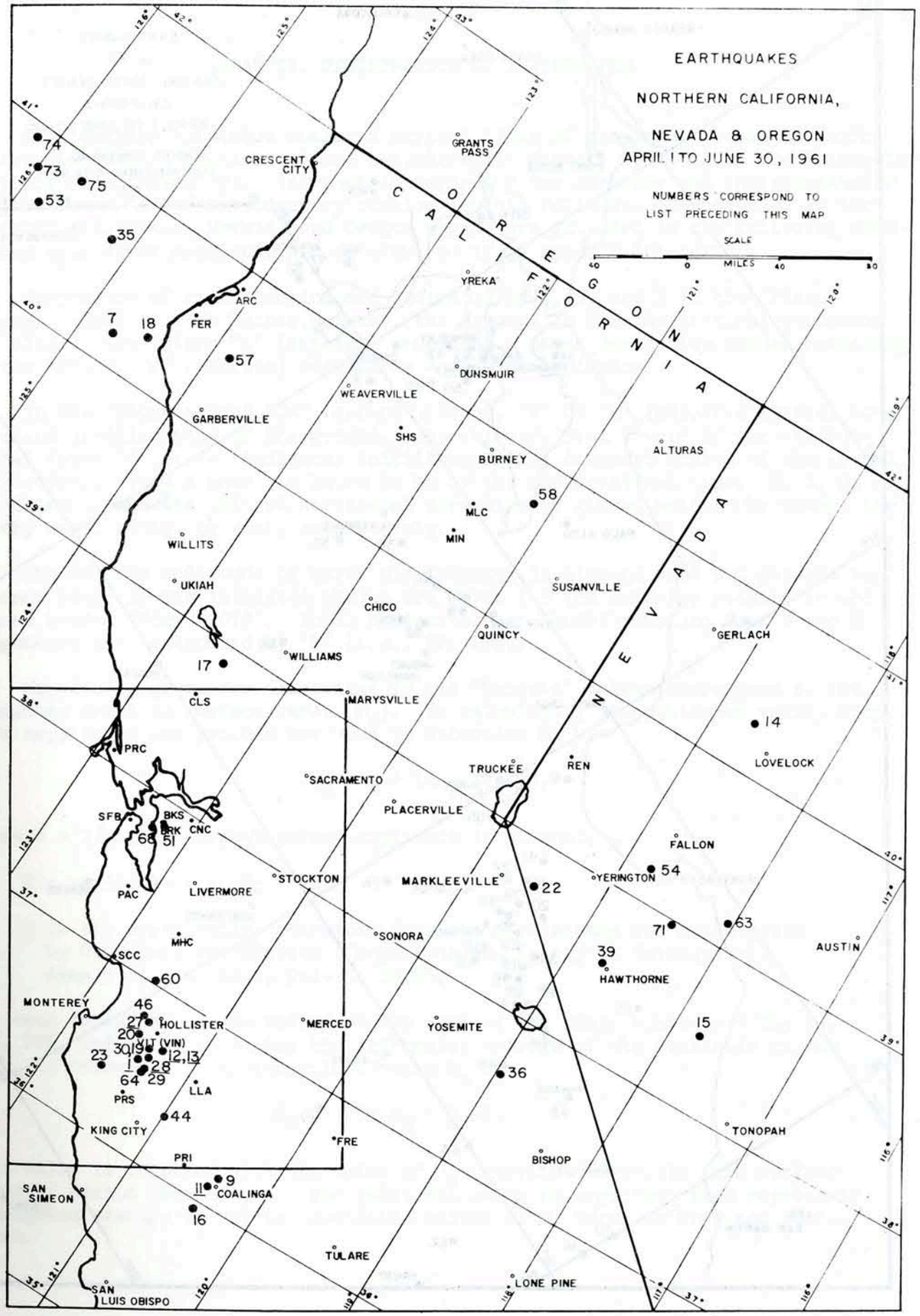
Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
53	June 5	09-47-34	40° 35'	125° 50'	c	3.5	Off Cape Mendocino. (Sequence of Apr. 29, 1961.)
54	June 5	11-20-56	39°.2	118°.8	d	3±	South of Fallon.
	June 6	03-46-09	42° 58'	128° 28'	c	4.6	Off coast of Oregon.
55	June 7	22-16-58	36° 57'	121° 34'	a	2.5	Northwest of Hollister.
56	June 9	05-28-52	37° 32'	121° 20'	a	2.5	Northeast of Mt. Hamilton.
57	June 9	17-13-06	40° 29'	123° 55'	b	3.1	North of Garberville.
	June 9	18-55-49	38° 00'	122° 29'	b	1.9	North of San Francisco. Blast?
13	June 11	20-21-03	36° 42'	121° 20'	c	2.7	Southwest of Hollister.
58	June 11	22-58-30	40° 44'	121° 09'	b	3.4	Southeast of Burney.
59	June 14	10-53-42	37° 26'	121° 39'	b	2.8	North of Mt. Hamilton.
60	June 14	21-56-06	37° 01'	121° 38'	b	3.4	West of Gilroy. Felt over an area of approximately 400 square miles of Santa Clara and Santa Cruz Counties. Maximum intensity IV.
61	June 15	16-40-59	36° 54'	121° 48'	c	2.6	Southeast of Santa Cruz.
62	June 18	12-50-59	36° 11'	120° 50'	c	2.1	East of King City.
63	June 20	08-38-06	39° 10'	118° 03'	c	3±	Southeast of Fallon.
	June 20	12-28-50	39° 19'	120° 16'	c	2.8	West of Truckee.
	June 24	16-06-28	39° 19'	120° 22'	b	2.4	West of Truckee.
64	June 25	13-15-26	36° 29'	121° 21'	c	3.6	South of Hollister. Felt in Hollister area. Intensity IV 7½ miles south of Harris Ranch.
65	June 26	04-57-58	36° 58'	121° 40'	c	2.2	Southwest of Gilroy.
28	June 26	07-03-33	36° 36'	121° 22'	c	2.5	South of Vineyard.
	June 26	11-30-22	35° 46'	122° 00'	c	2.5	Off San Simeon coast.
66	June 26	13-46-06	38° 11'	122° 05'	b	2.4	Northeast of Berkeley.
67	June 27	02-57-53	37° 51'	122° 11'	b	2.9	Southeast of Berkeley. Felt.

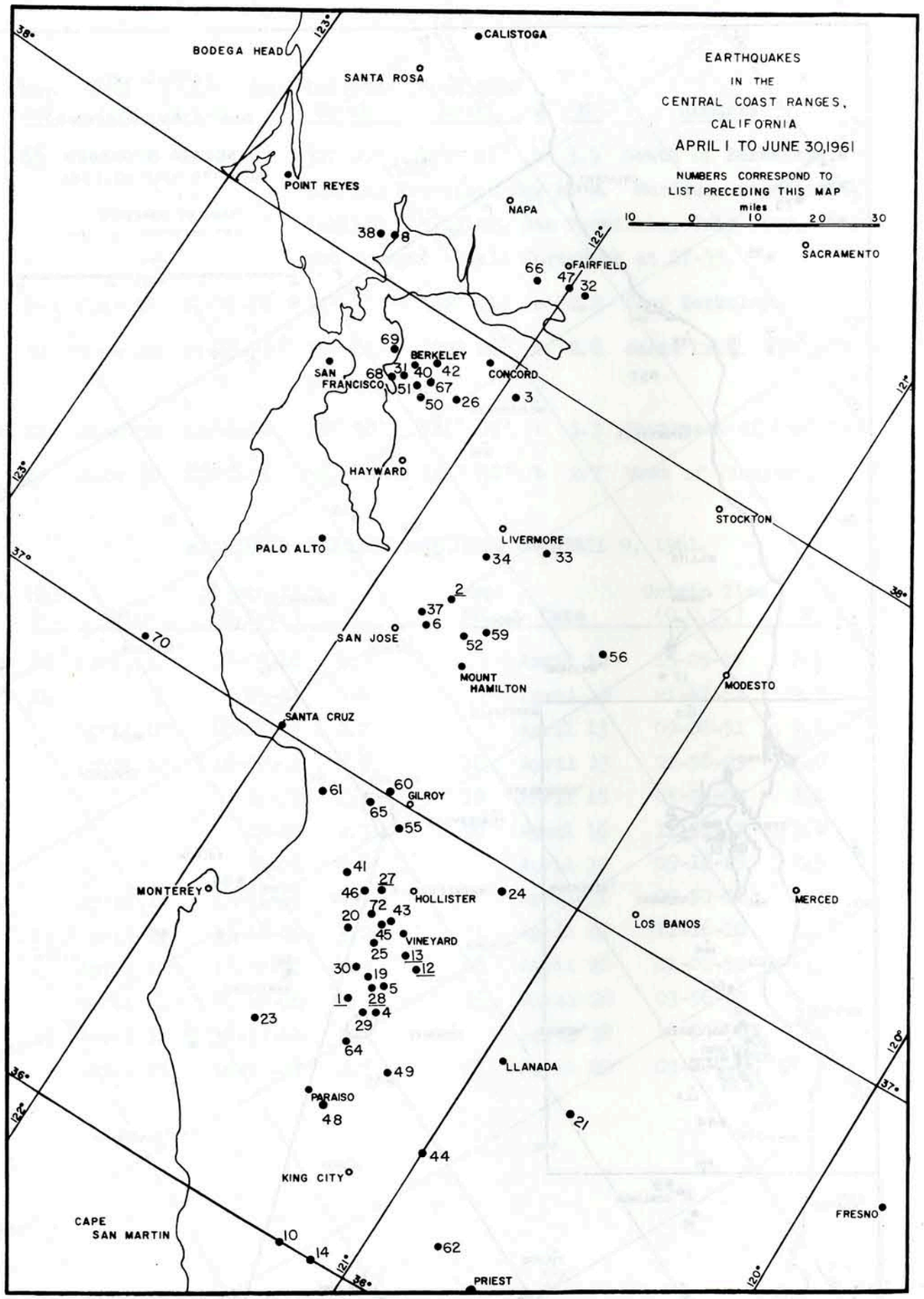
Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
68	June 27	18-27-08	37° 49'	122° 17'	b	3.5	South of Berkeley. Felt in the San Francisco Bay area. Maximum intensity IV, Oakland, Berkeley, San Francisco, Daly City, Canyon and Moraga. Small foreshock at 17-35.
69	June 27	22-23-58	37° 52'	122° 21'	a	2.1	Near Berkeley.
70	June 29	07-18-32	37° 01'	122° 28'	c	2.8	Santa Cruz. Off coast. Felt.
71	June 30	10-46-06	38° 58'	118° 25'	c	3.3	Southeast of Fallon.
72	June 30	19-00-28	36° 45'	121° 30'	b	2.7	West of Vineyard.

HOLLISTER SEQUENCE BEGINNING ON APRIL 9, 1961

Map No.	Date	Origin Time (G.C.T.)	M
12	April 9	07-23-16	5.6
12		25-41	5.5
	April 10	08-17-33	2.7
	April 10	12-09-08	2.9
		13-39	2.2
		19-14	2.7
		30-03	2.6
	April 10	13-02-05	2.7
13	April 10	17-18-25	3.2
	April 10	18-37-21	2.5
	April 11	00-19-36	2.3
13	April 11	16-51-44	3.3
	April 11	18-14-27	2.7

Map No.	Date	Origin Time (G.C.T.)	M
	April 12	13-05-17	2.5
	April 12	21-47-51	2.7
	April 13	09-08-51	2.5
12	April 13	22-58-25	3.0
19	April 15	03-24-09	3.1
20	April 16	11-01-17	3.4
	April 19	09-18-29	2.3
	April 26	09-50-01	2.7
1	April 27	11-16-10	3.4
28	April 28	01-02-52	4.2
29	April 28	03-56-25	3.2
	April 28	14-05-50	3.5
27	April 29	03-17-01	3.1





PART II. REGISTRATION OF EARTHQUAKES

This section tabulates measured arrival times of prominent phases of earthquakes recorded at stations of the seismographic network operated by the University of California (Berkeley). Information regarding the stations and instrumentation will be found in the introductory section of this Bulletin. Earthquakes in the northern California, Nevada, and Oregon region are included in the following tabulation only if of magnitude 4.0 or over, or if of special interest.

Components of ground motion are indicated by N, E, and Z in the "Phase" column. Where no such letter appears, the reading is for the vertical component (Z) alone. The letter "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates a gradual beginning.

In the column headed "GM" (ground motion), "c" or "d" indicates initial compression or dilatation of the ground, respectively, from a wave of the compressional type; "+" or "-" indicates initial upward or downward motion of the ground, respectively, from a wave not known to be of the compressional type. N, E, S, or W indicates that the initial horizontal direction of ground motion was toward the north, east, south, or west, respectively.

The maximum amplitude of earth displacement in microns (mu) and periods in seconds (sec) in the indicated phases are given for the Berkeley station in the column headed "Time (GCT)". Total horizontal amplitudes combined from N and E components are designated by "H" (e.g., PH, PPH).

Magnitudes given for teleseisms in the "Remarks" column correspond to the magnitude based on surface waves (M_S). In calculating the published value, body wave amplitudes and periods are used to determine M_B by:

$$M_B = Q + \log_{10} (A/T),$$

where A = 1/2 peak-to-peak ground amplitude in microns,

T = period in seconds

Q is the empirically determined function of distance and depth given by Gutenberg and Richter ("Magnitude and Energy of Earthquakes," Annali di Geofisica, 9:1-15, 1956).

For each shock, M_B is determined for as many of the phase components PZ, PH, PPZ, PPH, and SH as possible; the arithmetic average of the available values of M_B is converted to an equivalent value M_S by:

$$M_S = 1.59\ M_B - 3.97.$$

This value is compared with the value of M_S determined directly from surface waves of period near 20 sec.; the published value of magnitude then represents a weighted average of all the available values of M_S based on body and surface waves.

Frequently quoted sources of information regarding epicenters, origin times, or shock magnitudes are as follows:

USCGS - U.S. Coast and Geodetic Survey, Washington, D.C.

BCIS - Bureau Central Internationale Seismologique, Strasbourg

JMA - Japan Meteorological Agency, Tokyo

PAS - Seismological Laboratory, Pasadena, California

PAL - Lamont Geological Observatory, Palisades, N.Y.

Where no source is cited, the determination has been made at Berkeley.

All measurement and interpretation of seismograms (i.e., identification of phases, arrival times, directions of initial ground motion, and ground amplitudes and periods)are done at Berkeley. Requests for additional data or for copies of seismograms should be addressed to:

Director of the Seismographic Stations
Earth Sciences Building
University of California
Berkeley 4, California.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 1	BRK	iP	02 52 30.4	d	USCGS: 30.7°N, 139.7°E, 0 = 02 40 43.8.
	MHC	iP	34.6	d	South of Honshu, Japan.
	FRE	e(P)	40.9		h about 135 km.
	MIN	eP	26.4	d	
	REN	eP	36.1		
	COR	eP	10.2		
	SHS	eP	23.2		
Apr. 1	BRX	e	15 36.3		USCGS: 39.8°N, 77.7°E, 0 = 15 18 22.8.
		e	40.3		Sinkiang Province, China.
		iN	42.9	S	h about 21 km.
		iN	45.4	Sc	PAL: Magnitude 6.
		eN	50.8		
		eE	58.1		
		eREZ	16 15		
	MHC	eP	32 18.0		
		e	36 28.4		
	MIN	eP	15 32 05.6	d	
		e	35 29.1		
	REN	eP	32 09.6		
	COR	iP	31 46.9	c	
	SHS	eP	32 02		
	VIN	e(P)	33 05		
Apr. 2	MHC	iP	14 56 21.2	d	USCGS: 24.5°S, 114.9°W, 0 = 14 46 08.3.
	FRE	e	20		Easter Island region.
	MIN	e(P)	47		h about 33 km.
	REN	eP	45.3		
	COR	eP	57 14.3		
	SHS	eP	16 56 48		
	RUT	eR	15 16 39.2		
Apr. 3	BRK	eP	01 19 40.2		USCGS: 6.8°N, 72.9°W, 0 = 01 10 32.2.
	MHC	iP	36.2	d	Colombia. h about 221 km.
	MIN	iP	38.1	d	
	REN	iP	33.1	d	
	COR	eP	20 04.8		
Apr. 3	MHC	iP	08 03 10.7	c	USCGS: 17.6°N, 83.6°W, 0 = 07 55 47.1.
	MIN	iP	19.9	d	North of Swan Island, Caribbean Sea.
		i	30.5	d	h about 33 km.
	REN	iP	06.6	c	
	COR	eP	42.9		
	SHS	eP	23		
Apr. 3	MIN	eP	16 41 25.5	c	USCGS: 52.7°N, 158.9°E, 0 = 16 32 04.3.
	REN	iP	37.2	d	Near east coast of Kamchatka.
	COR	e(P)	40 58.8		h about 38 km.
Apr. 4	FRE	eP	07 59 21		USCGS: 19.7°S, 177.1°W, 0 = 07 47 48.1.
	MIN	e	27.5	c	Fiji Islands region.
	REN	eP	30.7		h about 276 km.
	SHS	eP	25		
Apr. 4	BRX	e(S)N	10 13 44		USCGS: 40.3°N, 77.8°E, 0 = 09 46 36.6.
		eNE	19.0		Sinkiang Province, China.
		e	27.3		h about 16 km.
		eR	34		PAL: Magnitude 6.
	MIN	e	10 00 20.9		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 4		e	04 09.0		
(Cont.)	REN	e(P)	10 00 25.9		
	COR	e(P)	09 59 59.9		
	SHS	eP	10 00 16		
		e	03 19		
	RUT	eR	10 34		
Apr. 6	BRK	iP	04 05 32.4	c	USCGS: 40.3°N, 125.1°W, 0 = 04 04 39.6.
		iS	06 09.1		Near coast of northern California.
	MHC	iP	05 41.2		h about 17 km.
		iSN	06 27.5		
	USF	iP	05 31.9	c	Magnitude 5.0.
		eE	06 09		
	VIN	iP	05 49.6	c	
		iSEN	06 45.0		
	MIN	iPNE	05 24.9	c	
		iE	54.6		
		iN	55.9		
	SHS	iP	14.9	c	
	PAC	iP	36.2	c	
		iSE	06 16.7		
		iN	20.6		
	FRE	eP	03		
	ARC	iP	04 56.7	c	
		i(S)N	05 07.6		
	REN	iP	43.9	c	
		i	48.1		
		iS	06 16.3		
	COR	iP	05 47.7	c	
		iS	06 36.9		
Apr. 6	MIN	eP	14 23 52.7		USCGS: 2.2°N, 97.2°E, 0 = 14 05 00.3.
	REN	e(P)	24 20.3		Near coast of Sumatra.
					h about 25 km.
Apr. 6	MHC	iP	15 46 15.6	d	USCGS: 20.4°S, 169.4°E, 0 = 15 33 38.6.
	MIN	iP	23.0	d	Loyalty Islands region.
					h about 121 km.
Apr. 7	MIN	eP	05 53 10.8	c	USCGS: 45.0°N, 112.0°W, 0 = 05 50 40.6.
	REN	eP	10.9		Hebgen Lake, Montana. h about 25 km.
Apr. 7	MIN	iP	08 45 27.8	d	USCGS: 51.3°N, 156.7°E, 0 = 08 35 54.9.
		i	42.1	c	Near south coast of Kamchatka.
	REN	e(P)	54.8		h about 33 km.
	SHS	eP	24		
	SHS	e	38.2		
Apr. 7	BRK	eP	20 04 03		USCGS: 57.3°N, 163.6°E, 0 = 19 54 56.8.
	MHC	i	09.9	c	Near east coast of Kamchatka.
	FRE	eP	12		h about 42 km.
	MIN	eP	03 44.3	c	
	REN	iP	04 05.6	c	
	SHS	eP	03 40		
	VIN	eP	04 05.4		
Apr. 8	MHC	iP	04 31 48.8	d	USCGS: 2.2°S, 79.2°W, 0 = 04 22 08.7.
	MIN	eP	32 00.2		Ecuador. Several injured and
	REN	eP	31 49.7		extensive property damage in

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 8	COR	eP	32 26.0		southern Chimborazo Province.
(Cont.)	SHS	e(P)	04		h about 25 km.
Apr. 8	MHC	iP	13 27.8	d	USCGS: 2.1°S, 79.1°W, 0 = 09 03 48.9.
	MIN	eP	38.9	c	Ecuador. h about 25 km.
	REN	eP	30.7		
	COR	e(P)	14 06.1		
	SHS	eP	13 43.1		
	VIN	eP	25		
Apr. 8	BRK	iP	16 12 27.2	d	USCGS: 18.4°S, 168.3°E, 0 = 15 59 46.9.
	MHC	iP	28.3	d	New Hebrides Islands region. Felt:
		i	17 03.0		Port Vila. h about 38 km.
	MIN	iP	12 34.6	d	
	REN	eP	39.1		
	SHS	eP	30		
Apr. 8	BRK	eP	18 12 37	c	USCGS: 38.4°S, 72.7°W, 0 = 17 59 46.7.
		e	45		Chile. h about 60 km.
	BRX	iSKSNE	23 05	SE	PAS: Magnitude $6\frac{1}{2}$.
		eSNEZ	25		
		eSSNE	29.1		
		eSSSNEZ	32.9		
		eRNEZ	41.4		
	MHC	eP	18 12 33.3	c	
		i	41.9	d	
	FRE	eP	25.5		
		e	33.5		
	MIN	eP	43.7	d	
		e	51.1	d	
	REN	iP	37.6	c	
		i	47.3		
	SHS	eP	46		
		e	54		
	VIN	eP	26		
	CNC	eP	36		
		e	45		
Apr. 8	BRK	iP	19 30 09.4		USCGS: 38.1°N, 140.3°E, 0 = 19 18 54.9.
	MHC	i	13.3	d	Honshu, Japan. h about 153 km.
	FRE	e	21.5		
	MIN	eP	03.1	d	
	ARC	e(P)	41.6		
	REN	eP	13.4		
	COR	iP	29 46.1	c	
	SHS	iP	59.6	d	
Apr. 8	BRK	iP	21 48 59.1	d	USCGS: 14.9°N, 145.1°E, 0 = 21 36 41.6.
	BRX	e(S)N	59 12		Mariana Islands region.
	MHC	iP	48 57.3	d	h about 105 km.
		i	49 02.7	c	PAS: Magnitude $6\frac{1}{2}$.
	FRE	eP	09.5		
	MIN	eP	48 58.6	d	
		e	59 08.0		
	REN	iP	49 06.9	d	
	COR	iP	48 50.8	c	
	SHS	iP	55.7	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 8	VIN	iP	49 04		
(Cont.)	CNC	eP	00		
Apr. 9	COR	eP	00 42 01.6		USCGS: 14.7°N, 145.3°E, 0 = 00 29 51.7.
	SHS	eP	06		Mariana Islands region.
					h about 118 km.
Apr. 9	BRK	iPNEZ	07 23 41.3	SEd	USCGS: 36.7°N, 121.4°W, 0 = 07 23 16.0.
		iSE	24 03.2		San Benito County, California.
		iSNE	03.3		Moderate property damage at and
	VIN	iPNEZ	23 18.4	N	near Hollister. h about 33 km.
	FRE	iP	37.9	c	PAS: Magnitude 5.5.
		ePNE	38.1	E	
		iN	43.3		
	MHC	iP	30.0	SEd	
		iSNE	40.0		
		iE	51.8		
	MIN	ePN	24 13.6	Sd	
		i	17.8		
		e(S)NE	25 06.1		
	SHS	ePZN	24 20		
	PAC	iP	23 34.8	c	
		iNE	35.5		
	USF	ePZE	40.5	c	
		eE	44		
		eE	24 02		
	REN	eP	05.4	d	
		i	09.2		
		i(S)E	52.0		
	COR	eP	25 22.5		
		i	27.7		
		i	34.1		
		i	26 04.9		
Apr. 9	BRK	i(P)NE	07 25 07.1		USCGS: 37.2°N, 120.7°W, 0 = 07 25 41.6.
		iSE	26.2		San Benito County, California.
	MHC	e(P)NE	25 54.5		h about 19 km.
		i(S)N	26 04.7		PAS: Magnitude 5.3.
		iE	05.6		
	MIN	e(P)E	41.4		
		e(S)N	27 29.9		
	VIN	e(P)N	25 42		
	PAC	i(P)NE	26 01.0		
	USF	e(P)E	07.5		
		eN	20		
	REN	i	18.8		
	COR	i	26.0		
Apr. 9	MHC	iP	09 33 02.9		USCGS: 26.0°S, 178.4°E, 0 = 09 21 30.9.
	FRE	eP	05		South of Fiji Islands.
	MIN	iP	10.5	d	h about 633 km.
		e	35 25.1		
	REN	eP	33 23.8		
	SHS	eP	09.2		
Apr. 9	BRX	iP	15 48 27	c	USCGS: 24.2°N, 122.3°E, 0 = 15 35 10.4.
		ePP	52 09		Near east coast of Formosa.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 9		eSE	59 00		h about 33 km.
(Cont.)		eGNE	16 12.5		PAS: Magnitude 6.
		eR	18.6		
	MHC	iP	15 48 28.7	c	
	FRE	eP	35.6	c	
	MIN	iP	21.2	c	
	REN	iP	28.5	c	
	COR	iP	10.9	c	
	SHS	iP	18	d	
		e	59 21		
Apr. 10	SHS	eP	07 10 30		USCGS: 24.3°N, 122.3°E, 0 = 06 57 13.6.
					Near east coast of Formosa.
					h about 22 km.
Apr. 11	MHC	eP	20 37 31		USCGS: 50.2°N, 128.6°W, 0 = 20 33 48.9.
	SHS	e(P)	36 31		Vancouver Island region.
	RUT	eR	41.9		h about 25 km.
Apr. 12	BRK	iP	11 46 07.1	c	USCGS: 6.9°N, 73.5°W, 0 = 11 36 44.1.
	MHC	eP	02.2	d	Central Colombia. h about 35 km.
	REN	iP	45 59.6	c	
Apr. 12	MHC	eP	17 37 48.7	d	USCGS: 0.3°N, 123.8°E, 0 = 17 17 55.3.
	FRE	eP	58		Northern Celebes. h about 122 km.
	MIN	eP	40.5		
	REN	iP	48	d	
	SHS	eP	32.4		
	VIN	eP	52.3		
	RUT	eR	57.1		
Apr. 12	MHC	e	18 04 21		USCGS: 23.3°N, 142.4°E, 0 = 17 52 02.0.
	SHS	eP	02		Mariana Islands region.
		e	16		h about 64 km.
Apr. 12	BRK	eP	22 27 49	d	USCGS: 13.2°N, 88.9°W, 0 = 22 20 33.6.
		i	28 02	c	El Salvador. Minor damage.
		e(S)	33 44.2		h about 122 km.
	MHC	eP	27 49	d	PAS: Magnitude 5¾ - 6.
		e(S)	33 43.1	d	
	FRE	eP	27 30		
		e	28 18		
		e(S)	33 35		
	MIN	iP	27 56.4	d	
		i	28 01.3		
		ei(S)	33 47.0		
	REN	iP	27 44.7	c	
		i	28 03.7		
		i(S)	33 43.0	c	
	SHS	eP	27 56.7		
		e	29 05.7		
		i(S)	34 50.4	d	
	RUT	e	27 21.2		
	CNC	eP	50		
		i	28 02.2	c	
		e(S)	33 43.9		
Apr. 13	BRX	e	17 01 59		USCGS: 40.3°N, 77.8°E, 0 = 16 34 39.1.
		e	15.3		Sinkiang Province, China.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 13 (Cont.)		eGE	19.1		h about 19 km.
		eR	22		PAL: Magnitude 6½.
	MIN	e	16 51 22.6		
	REN	e(P)	49.6		
	RUT	eP	52 39		
		eSN	18 01 41		
		e	17 51		
Apr. 16	BRX	eN	05 07 16		USCGS: 39.3°N, 111.5°W, 0 = 05 02 39.3.
		e	59		Central Utah. Felt: Sanpete
	MHC	eP	04 40.8		County, Utah. Minor damage at
		e	06 58		Mt. Pleasant. h about 35 km.
	FRE	e	04 20		
	MIN	eP	34.3	c	
		e	06 40.7		
	REN	eP	04 14.6		
			06 12.6		
	SHS	e(P)	04 46		
		e	07 03		
	RUT	eP	03 22		
		eSZEN	04 04		
Apr. 16	BRK	iP	11 50 10.8	c	USCGS: 53.4°N, 158.5°E, 0 = 11 40 56.2.
		epP	42		Kamchatka. h about 160 km.
		e	51 10		
	MHC	iP	50 16.0	c	
	FRE	iP	53 26	c	
	MIN	iP	50 01.4	c	
		e	54 49.0		
	ARC	iP	49 48.9	c	
	REN	iP	50 13.2	c	
	SHS	iP	49 56.8	c	
		e	54 46.9		
	VIN	iP	50 20	d	
	RUT	e	33	c	
	CNC	iP	11.5	c	
		e	43		
	SFB	iP	10.5	c	
Apr. 16	BRK	e(P)	12 26 19		USCGS: 51.7°N, 130.7°W, 0 = 12 22 47.1.
	BRX	eEZ	29 13		Vancouver Island region.
		eN	32		h about 33 km.
		eREZ	46.6		
	MHC	iP	26 31.0	d	
		i	42.0	c	
	FRE	e(P)	42		
	MIN	iP	25 51.9	d	
		i	26 09.6	c	
	ARC	iP	25 40.1	c	
	REN	iP	26 10.5	d	
	SHS	iP	25 44.7	d	
		eP	26 37.1		
	RUT	eP	39	d	
		eSE	29 49		
		eR	32.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 17	SHS	eP	02 45 03		USCGS: 32.0°S, 69.8°W, 0 = 02 32 28.2.
					Central Chile-Argentina border.
					h about 147 km.
Apr. 17	MHC	iP	04 48 28.7	d	USCGS: 20.4°S, 177.8°W, 0 = 04 37 19.6.
	MIN	iP	37.6	d	Fiji Islands. h about 489 km.
	SHS	iP	36.8	c	
Apr. 17	MIN	eP	07 56 39.5	c	USCGS: 16.2°S, 175.1°W, 0 = 07 45 27.6.
	SHS	iP	38.6	d	Tonga Islands region.
					h about 288 km.
Apr. 17	MIN	e	13 19 47		USCGS: 30.8°N, 142.2°E, 0 = 13 08 18.2.
	SHS	eP	44.1		South of Honshu, Japan.
					h about 123 km.
Apr. 17	MIN	eP	16 33 59.5	c	USCGS: 3.9°N, 31.5°W, 0 = 16 21 10.2.
					Mid-Atlantic Ocean.
					h about 25 km.
Apr. 17	MHC	iP	20 46 50.7	d	USCGS: 20.9°S, 68.4°W, 0 = 20 35 10.4.
		i	42 18.8	c	Chile-Bolivia border.
	FRE	eP	46 41		h about 119 km.
	MIN	eP	46 59.3	d	
		i	47 42.7	c	
	SHS	iP	03.4	d	
	RUT	eP	46 37.9	d	
		e	56 03.9		
Apr. 17	MIN	iP	59 35.4	c	USCGS: 21.4°S, 178.6°W, 0 = 20 48 12.5.
	SHS	iP	34.7	d	Fiji Islands. h about 549 km.
Apr. 18	SHS	eP	08 37 14		USCGS: 44.8°N, 150.1°E, 0 = 08 26 54.8.
		e	27		Kurile Islands. h about 25 km.
Apr. 19	MIN	e	08 51 46.9	d	
Apr. 19	BRK	iP	16 23 05.7	d	
	MHC	eP	08.4	c	USCGS: 44.4°N, 148.0°E, 0 = 16 12 28.7.
	FRE	eP	19.8		Kurile Islands. h about 51 km.
	MIN	eP	57.5	c	PAL: Magnitude 5¼.
		e	12.9		
	REN	iP	09.9	d	
	COR	iP	22 35.9	d	
	SHS	eP	54		
		e	23 09		
	RUT	eP	34	d	
	CNC	eP	06.6	(d)	
Apr. 19	BRK	iP	18 22 59.3	c	USCGS: 55.3°N, 163.6°E, 0 = 18 13 56.4.
	MHC	eP	23 04.8	d	Kamchatka. h about 38 km.
	FRE	e(P)	14.8		
	REN	iP	01.1	c	
	COR	iP	22 19.7	c	
	SHS	iP	43.8	d	
Apr. 19	MIN	eP	22 18 26.5	d	USCGS: 45.1°N, 149.5°E, 0 = 22 07 51.2.
	ARC	i(P)	17 16.4	c	Kurile Islands. h about 34 km.
	REN	eP	18 34.9		
	COR	eP	17 56.7		
	SHS	eP	18 17.9		
Apr. 20	SHS	eP	19 32 22.1		USCGS: 33.1°S, 178.8°W, 0 = 19 19 29.7.
					Kermadec Islands region.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 20 (Cont.)					h about 58 km.
Apr. 20	BRK	eP	21 50 29.7	c	USCGS: 15.2°S, 173.5°W, 0 = 21 39 10.3.
		i	41.3	c	South of Samoa Islands. Felt:
		e	52		Apia. h about 33 km.
	BRX	eRNEZ	22 11.3		PAS: Magnitude 6 - 6¼.
	MHC	iP	21 50 30.7	c	
		i	42.1	c	
	FRE	eP	35		
	MIN	eP	39.9	c	
	REN	iP	45.1	c	
	COR	eP	51 00		
	SHS	eP	50 39.8		
	RUT	e(P)	03	d	
		eS	22 00 51		
		eR	13 46		
Apr. 20	SHS	i	22 47 04.5	d	
Apr. 21	BRK	eP	20 20 39		USCGS: 47.9°N, 154.6°E, 0 = 20 10 38.3.
	MHC	eP	43.4	d	Kurile Islands. h about 27 km.
		i	57.6	d	
	FRE	e(P)	21 03		
	MIN	iP	20 30.1	d	
	REN	iP	42.0	d	
	COR	eP	07.4		
	SHS	iP	27.0	d	
Apr. 21	BRK	iP	21 34 04.2	d	USCGS: 51.9°N, 173.9°W, 0 = 21 26 42.1.
	MHC	eP	09.1	c	Andreanof Islands, Aleutian Islands.
		i	37.1	d	h about 36 km.
	FRE	eP	37.2		PAL: Magnitude 5½ - 5¾.
	MIN	eP	33 54.6	c	
	REN	e(P)	34 10.8		
		e	21.9		
	COR	eP	33 33.9		
	SHS	e(P)	46		
Apr. 23	BRK	iP	05 27 09.5	d	USCGS: 25.9°N, 129.9°E, 0 = 05 14 21.2.
	BRX	eRNEZ	54.6		Ryukyu Islands. h about 33 km.
	MHC	iP	27 06.4	c	
		i	12.9	d	
	FRE		20		
	MIN	iP	04.8	d	
	REN		13.4	d	
	COR	iP	26 50.2	d	
	SHS	eP	27 02		
	VIN	eP	26 16		
	RUT	iP	27 29	d	
	CNC	eP	10.3	d	
Apr. 23	BRK	eP	09 12 08.8		USCGS: 44.8°N, 150.2°E, 0 = 09 01 41.8.
		e	22		Kurile Islands. h about 44 km.
	BRX	e(S)EZ	20 28		PAS: Magnitude 6¼.
		iEZ	39		
		eSSNEZ	24.6		
		iGNE	28.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 23 (Cont.)		eR	30 R from WNW		
			mu sec		
		PZ	2.9 6		
		SH	10 12		
	MHC	iP	09 12 13.8	c	
	FRE	eP	23		
	MIN	iP	01.4	c	
		i(P)	03.8	d	
	REN	iP	12.7	c	
	COR	iP	11 39.0	c	
	SHS	eP	57		
	VIN	e(P)	12 31		
	RUT	iP	33	c	
	SFB	eP	07		
Apr. 23	MIN	e	12 28 16.0	d	USCGS: 44.9°N, 150.1°E, 0 = 12 17 56.7.
	COR	eP	06.9		Kurile Islands. h about 33 km.
	SHS	eP	17		
Apr. 23	REN	eP	17 01 36.5		USCGS: 44.8°N, 150.0°E, 0 = 16 51 02.5.
	COR	e(P)	03.5		Kurile Islands. h about 33 km.
	SHS	eP	17		
Apr. 24	MHC	iP	05 00 45.4	d	USCGS: 52.4°N, 173.1°W, 0 = 04 52 29.3.
	MIN	eP	34.4	d	Fox Islands, Aleutian Islands.
	REN	eP	04 59 51.3		h about 57 km.
	COR	eP	23.7		
	SHS	eP	31		
Apr. 24	MHC	eP	12 38 13.6		USCGS: 44.8°N, 150.3°E, 0 = 12 27 37.9.
	FRE	e(P)	34		Kurile Islands. h about 33 km.
	MIN	eP	37 54.4	d	
		e	38 14.9	d	
	REN	eP	20.6		
	COR	eP	37 49.7		
	SHS	eP	37 52		
Apr. 25	BRX	eP	01 28 09		USCGS: 44.7°N, 150.2°E, 0 = 01 17 39.0.
		eSN	36 36		Kurile Islands. h about 33 km.
		eR	47.5		
	MHC	eP	28 21.5		
	FRE	e(P)	22		
		e	32		
	MIN	e	27 57		
		i	28 13.9	c	
	REN	eP	17.4		
		eP	27 46.0		
		eP	51.6		
		e	28 10		
Apr. 25	BRK	eP	11 29 30		USCGS: 32.9°S, 178.5°W, 0 = 11 16 41.4.
	BRX	eSNE	40 04		Kermadec Islands region.
		eQNE	53.1		h about 45 km.
		eRNEZ	57.6		PAL: Magnitude 5½ - 5¾.
			R from SW		
			mu sec		
		SH	1.7 11		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 25 (Cont.)	MHC	iP	29 30.7	d	
	FRE	eP	37		
	MIN	eP	40.5	d	
	COR	eP	50.8		
	SHS	eP	39.1		
	RUT	e(P)	54.9		
		e(S)	40 35.9		
Apr. 25	SHS	iP	23 53 52.7	c	USCGS: 28.1°N, 129.3°E, 0 = 23 40 34.3. Ryukyu Islands. h about 25 km.
Apr. 26	REN	e(P)	06 33 50.3		USCGS: 5.7°S, 151.1°E, 0 = 06 20 23.5. New Britain. h about 34 km.
	SHS	eP	32.7		
Apr. 26	BRK	eP	07 49 24		USCGS: 44.8°N, 149.9°E, 0 = 07 38 54.1. Kurile Islands. h about 20 km.
	BRX	eSNE	57 56		
		eNEZ	02.0		Magnitude 6.
			mu sec		
		PZ	0.7 8		
		SH	2.5 18		
		GH	3.5 31		
	MHC	eP	07 49 30.1	c	
	FRE	eP	39.9	d	
	MIN	eP	16.9	d	
	ARC	i(P)	23.3		
	REN	eP	27.9		
	COR	eP	48 55.9		
		i	49 10.1		
	SHS	eP	14		
	VIN	eP	32.4		
	RUT	eP	51.4	d	
Apr. 26	REN	e(P)	19 43 04.6		USCGS: 44.9°N, 150.2°E, 0 = 19 32 33.6. Kurile Islands. h about 26 km.
	COR	iP	42 30.9	c	
	SHS	iP	49.1	d	
Apr. 27	MIN	eP	00 37 36.7	d	USCGS: 25.5°S, 180.0° , 0 = 00 25 48.7. Fiji Islands region. h about 504 km.
Apr. 27	MHC	eP	11 14 36.5	c	
	MIN	e	22		
	SHS	eP	17		
Apr. 27	BRK	iP	18 03 03.4	c	USCGS: 13.2°S, 75.1°W, 0 = 17 52 14.2. Peru. Felt: Lima. h about 83 km.
	MHC	iP	02 58.3	d	
		i	03 11.9	d	
	FRE	eP	02 48		
	MIN	e	03 08		
	ARC	iP	21.5	c	
	REN	eP	01.3		
	COR	iP	32.7	d	
	SHS	iP	10.1	d	
Apr. 28	BRK	eP	01 03 17.3	d	USCGS: 36.5°N, 121.6°W, 0 = 01 02 52.2. Monterey County, California. Felt: Hollister area. h about 41 km.
		eNEZ	18.1	NWc	
		eNEZ	19.9	NWc	
		i(S)E	40.2		PAS: Magnitude 4.6.
	MHC	iPNEZ	07.4	d	
		iE	19.1		
		iN	19.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 28 (Cont.)	MIN	eP	51.0	c	
		i	04 48.9		
		e	52.0		
	SHS	iP	03 12.1		
		e	04 07		
	PAC	iP	03 12.1		
		eNE	12.6		
		iSE	27.6		
		iN	28.0		
	REN	eP	45.5		
		i	49.0		
		iSE	04 36.1		
	RUT	e	05 52		
	USF	ePZN	03 18.1		
		eSNE	04 39.7		
	FRE	iP	03 15.1	c	
		eZE	34.5		
		e	44		
	VIN	iPNEZ	02 55.6	NE	
	ARC	iP	04 24.3	c	
Apr. 28	MHC	eP	06 31 57.4		Pasadena: 33° 08'N, 116° 00'W, 0 = 06 30 20. West of Kane Springs.
		i	33 26.1		
	MIN	e	32 44.0		
		e	34 21.5		Magnitude 4.2.
	SHS	e(P)	33 08		
		eS	35 03		
	PAC	e	32 06		
	REN	eP	35.5		
		i	34 13.7		
	RUT	e	09		
	FRE	eP	32 45		
		eSEN	49		
	VIN	eP	31 54.4		
Apr. 28	BRK	eP	08 54 47		USCGS: 22.0°S, 62.9°W, 0 = 08 40 26.5. Bolivia-Argentina border. h about 82 km.
	MHC	eP	44.2	d	
	MIN	e(P)	53.9	c	
		e	55 23.5	c	
	ARC	iP	03.8	c	
	REN	eP	54 46.4		
	COR	iP	55 14.4	c	
	SHS	iP	54 56.7	d	
Apr. 28	BRK	eP	22 24 53		USCGS: 18.9°N, 144.9°E, 0 = 22 13 02.8. Mariana Islands. h about 219 km.
	REN	eP	25 01.3		
	COR	eP	24 40.7		
	SHS	iP	49.1	d	
Apr. 29	BRK	eP	09 20 41.4	c	USCGS: 40.6°N, 127.5°W, 0 = 09 19 28.3. Off coast of northern California. h about 26 km.
	BRX	iPNEZ	42	SEc	PAS: Magnitude 5.5.
		e(S)NEZ	21 43		
	BRK	eT	24 44		
	MHC	iP	20 52.3	c	
		iNE	53.3		
	MIN	iP	40.0	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 29 (Cont.)	SHS	iP	27.5	c	
	PAC	iP	46.7	c	
		eNE	47.2		
	REN	iP	57.3	c	
		i	21 13.3		
		iE	34.9		
	RUT	iP	51		
		i	22 25		
	USF	iP	20 41		
		eSE	48.5		
	FRE	eP	21 14		
		e	29		
	VIN	iP	20 58.4	c	
		eN	11		
	COR	iP	42.5	c	
		i	21 38.6		
	ARC	iP	20 08.4	c	
	FER	iP	06.0		
Apr. 29	FRE	e	11 14 40.6		USCGS: 30.1°N, 114.4°W, 0 = 11 10 19.7. Gulf of California. h about 16 km.
	REN	eP	15 54.2		PAS: Magnitude 4.4.
Apr. 29	SHS	eP	16 52 33		
		e	41		
	COR	eP	47		
	ARC	iP	13.7	c	
	MIN	eP	41.2		
		e(S)NE	53 32.2		
Apr. 29	SHS	iP	20 26 34.5	d	
		i	27 20		
	COR	iP	26 47.6	c	
	ARC	eP	15.1		
	MHC	iP	58.4	c	
		i	28 02.2		
Apr. 30	BRK	iP	04 46 32.1	d	
	MHC	iP	42.5	d	
		i	47 46.1		
	MIN	eP	46 25.5	c	
			47 18.3		
	SHS	eP	46 18		
	PAC	iP	37.2		
		i	47 38.9		
	REN	eP	46 52.0		
	USF	iP	29.9	d	
	VIN	iP	49.5	d	
		e	57.4		
	COR	eP	32.7		
	ARC	iP	45 58.0	c	
		eE	46 28.4		
Apr. 30	ARC	iP	05 43 43.9	d	
	SHS	eP	05 43 40		
Apr. 30	BRX	e	07 52 54		USCGS: 52.1°N, 31.9°W, 0 = 07 33 53.5. About 1000 km. south of Greenland.
		eR	08 03 04.4		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 30 (Cont.)	MHC	iP	07 44 10.8	d	h about 38 km.
		i	24.9	c	PAL: Magnitude 5½ - 5¾.
	FRE	iP	07.8	d	
	MIN	iP	43 55.4	d	
	REN	iP	53.7	c	
	COR	eP	42.3		
	SHS	eP	56		
		e	51 32.3		
Apr. 30	SHS	eP	11 10 52		USCGS: 45.3°N, 150.1°E, 0 = 11 00 39.3. Kurile Islands. h about 33 km.
Apr. 30	BRK	eP	11 26 01		USCGS: 44.8°N, 149.7°E, 0 = 11 15 19.8. Kurile Islands. h about 70 km.
		epP	10		PAL: Magnitude 5½ - 5¾.
	MHC	eP	25 49		
		ipP	26 07.0	d	
	MIN	eP	25 38.1	c	
		e	51.6	d	
	REN	eP	50.4		
	COR	eP	20.1		
	SHS	eP	34		
		epP	48		
	VIN	e(P)	55		
	RUT	e	26 13		
Apr. 30	BRK	eP	14 15 07.8		
	BRX	eP	14 52		
		iN	16 14	S	
	MIN	iP	15 01.4	d	
		i	55.4		
	SHS	e	14 55		
	PAC	iP	15 11.9	d	
	REN	i(P)	40.9	d	
	RUT	e	16 18		
	SFB	e(P)	15 06		
	FRE	e	44		
	VIN	e(P)	33		
	COR	eP	08.6		
		i	16 05.4		
	FER	ePNE	14 52.0		
Apr. 30	BRK	eP	14 59 41.4		USCGS: 15.4°S, 174.4°W, 0 = 14 48 11.5. Samoa Islands region. h about 25 km.
	BRX	iSNE	15 09.0		PAL: Magnitude 5¾ - 6.
		eGNE	17.8		
		eREZ	20.0		
			R from SW mu sec		
		SH	3.5 32		
	MHC	eP	14 59 40	c	
	FRE	eP	45.8		
	MIN	iP	50.9	c	
	REN	iP	54.8	c	
	SHS	eP	48.6		
	VIN	eP	44.1		
Apr. 30	BRK	iP	17 31 50.1		USCGS: 40.9°N, 127.2°W, 0 = 17 30 38.6. Off coast of northern California.
	BRX	iPNEZ	49		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Apr. 30 (Cont.)	BRK	i(S)N	32 54		h about 44 km.
	MIN	eP	31 43.9	d	
		iS	32 36.1		
	SHS	eP	31 35.2		
	PAC	iP	54.7	d	
		iS	33 00.9		
	REN	eP	32 10.1		
		i	33 18.3		
	RUT	eZE	32 58		
		e(S)E	35 38		
	SFB	eP	31 47.8		
		e	32 45.8		
	FRE	e(P)	25		
	COR	eP	31 48.8		
	FER	eP	24.0		
May 1	BRK	iP	02 42 57.6		USCGS: 40.8°N, 127.6°W, 0 = 02 41 39.4. Off coast of northern California. h about 32 km.
	BRX	iSN	44 00		
	MHC	iP	43 06.0	d	
		i(S)	44 08.3		
	MIN	eP	42 49.4	d	
		iS	43 41.4		
	PAC	iP	00.5	d	
	SHS	eP	42 41		
		eSN	43 26		
	SFB	eP	42 55.5		
		e	43 50		
	REN	eP	12.0		
		iE	44 37.3		
	FRE	e(P)	43 20		
	COR	iP	42 54.9	c	
	ARC	iP	21.6	c	
		iN	49.7		
May 1	BRK	eP	02 52 00		USCGS: 40.7°N, 127.5°W, 0 = 02 50 48.7. Off coast of northern California. h about 33 km.
	BRX	iSN	53 08		
	MHC	iP	52 11.2	c	
	MIN	iP	51 55.6	c	
	PAC	iP	52 06.2	c	
	SHS	eP	51 48		
	SFB	e(P)	51 58.5		
	REN	e(P)	52 34		
	COR	iP	52 01.9	c	
	ARC	iP	51 27.9	d	
May 1	MIN	eP	03 24 57.2		
	MHC	iP	25 15.1		
		e	26 14.6		
May 1	BRK	iP	07 22 38.2	c	USCGS: 40.9°N, 127.5°W, 0 = 07 21 25.8. Off coast of northern California. h about 33 km.
	BRX	i(S)N	23 45		
	MHC	iP	22 47.2	d	
	MIN	iP	31.4	c	
	PAC	iP	41.9	d	
	SHS	eP	23		
	SFB	eP	37		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 1 (Cont.)	REN	eP	58		
	FRE	eP	12		
	COR	iP	36.3	c	
	ARC	iP	03.9	c	
May 1	BRK	iP	12 20 20.6	c	USCGS: 40.8°N, 127.5°W, 0 = 12 19 05.6. Off coast of northern California. h about 29 km.
	BRX	iSN	21 28		
	MHC	iP	20 30.1	c	
		iS	21 40.4		
	MIN	eP	20 22.8	c	
	PAC	iP	25.0	c	
	SHS	eP	05		
	SFB	iP	18.8	c	
		eS	38		
	REN	eP	39.1		
		i	21 53.8		
	FRE	eP	20 53		
	COR	eP	19.3		
		i	21 14		
	ARC	iP	19 45.9	c	
May 1	MIN	eP	12 58 09.8		USCGS: 41.0°N, 126.5°W, 0 = 12 57 14.1. Off coast of northern California. h about 33 km.
	SFB	eP	13.7		
	MHC	eP	26.1		
May 1	BRX	ePNEZ	18 46 38	SEc	USCGS: 40.8°N, 127.3°W, 0 = 18 45 27.2. Off coast of northern California. h about 33 km.
		e(S)NE	47 34		
		iNEZ	49		
	MHC	iP	18 46 48.7	d	
		iS	47 51.4		
	MIN	eP	46 31.4	c	
		i	35.5		
		i	47 14.6		
	PAC	eP	46 42.9	c	
	SHS	eP	23.9		
		eSN	47 09		
	SFB	eP	46 39		
	REN	eP	57.5		
		iE	48 20.3		
	FRE	e(P)	47 11		
		e	23		
	COR	iP	46 37.3	c	
		i	47 34.8		
	VIN	eP	46 56.5		
	ARC	iP	04.8	d	
		iE	12.6		
May 1	MIN	eP	21 31 02.7	c	
		iS	54.7		
	MHC	eP	17.8		
		e(S)	32 22.8		
	PAC	eP	31 11		
May 2	MIN	e(P)	01 29 55.7		
		e(S)	30 50.3		
	MHC	iP	21.7	d	
		i	31 24.2		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 2 (Cont.)	ARC	eP	29 38.4	(d)	
	COR	e	30 07.3		
		e	25.3		
May 2	MHC	iP	01 41 37.4	d	
	FRE	eP	41		
	MIN	eP	47.4	c	
May 2	MHC	eP	03 22 16.4	c	USCGS: 71.3°N, 6.9°W, 0 = 03 11 45.7.
	MIN	eP	21 52.0	c	Jan Mayen Island region.
	REN	eP	22 07.3		h about 22 km.
May 2	MIN	eP	10 11 35.8		USCGS: 40.9°N, 127.2°W, 0 = 10 10 32.3.
		iS	12 29.4		Off coast of northern California.
	MHC	iP	11 53.7	d	h about 36 km.
		i	12 21.8		
		i(S)	54.4		
	PAC	iP	11 47.8	c	
		i	12 46.6		
	SHS	eP	11 28.3		
		eZN	12 12		
	REN	e(P)	18.0		
	FRE	e(P)	24		
	COR	eP	11 43.0		
	VIN	eP	20.5		
	ARC	eP	09.7		
May 2	FRE	iP	19 02 20	d	USCGS: 15.3°S, 173.1°W, 0 = 18 50 57.5.
	MIN	iP	26.3	c	Samoa Islands region.
	REN	iP	29.9	d	h about 71 km.
	COR	iP	35.5	d	
	SHS	eP	24		
May 2	MIN	eP	19 42 34.6	c	
	BRX	eR	20 17		
May 2	BRK	eP	22 39 07.6	d	USCGS: 41.0°N, 127.0°W, 0 = 22 37 55.5.
	BRX	e(S)ZN	40 20		Off coast of northern California.
	MIN	eP	38 59.3	d	h about 22 km.
		i	39 52.5		
	MHC	iP	39 10.4	d	
		i	40 17.7		
	PAC	iP	39 11.4	d	
		i	40 01.2		
	SHS	eP	38 42		
		eZN	39 35		
	FRE	e(P)	39 43		
	REN	eP	39 36.4		
		iN	40 42.7		
	COR	eP	39 07.1		
		i	40 03.9		
	ARC	eP	22 38 33.4		
		iN	39 01.0		
May 2	BRK	eP	22 57 14	d	USCGS: 28.0°S, 176.5°W, 0 = 22 44 44.3.
	BRX	eSN	23 07 34		Kermadec Islands region.
		eR	22 54		h about 47 km.
	MHC	iP	22 57 11.2	d	PAS: Magnitude 6¾.
		i	24.4		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 2 (Cont.)	REN	eP	57 23.8		
	MIN	iP	22.9	d	
	SHS	eP	20		
	CNC	eP	15	d	
			R from SW		
			mu sec		
		SH	19 24		
May 2	REN	e(P)	23 36 55.5		USCGS: 27.8°S, 176.4°W, 0 = 23 23 59.8.
	SHS	eP	34		Kermadec Islands region.
					h about 33 km.
May 3	BRX	eP	08 50 08		USCGS: 40.8°N, 127.6°W, 0 = 08 48 52.9.
		eSEN	51 14		Off coast of northern California.
	MIN	iP	50 02.3	c	h about 25 km.
		i	53.1		
	MHC	iP	50 18.5	d	
		i	51 23.9		
	PAC	iP	50 13.0	d	
	SFB	eP	06		
	SHS	eP	49 53		
		e	59		
		eN	50 39		
	REN	e(P)	30.8		
	COR	eP	09.6		
	VIN	iP	26	c	
		eZE	33		
May 3	COR	eP	09 27 20.3		USCGS: 40.7°N, 128.1°W, 0 = 09 26 01.6.
	SHS	eP	06		Off coast of northern California.
					h about 33 km.
May 3	MIN	e(P)	13 09 53.5	d	
May 3	MIN	e	17 06 46.3	c	USCGS: 28.0°S, 176.1°W, 0 = 16 54 11.4.
	REN	i	07 19.5	c	Kermadec Islands region.
	SHS	eP	06 46		h about 49 km.
May 4	BRK	eP	02 18 46	c	USCGS: 40.8°N, 127.1°W, 0 = 02 17 34.0.
	BRX	eSZEN	20 01		Off coast of northern California.
	MIN	iP	18 38.8	d	h about 25 km.
		iS	19 27.6		
	MHC	iP	18 54.3	c	
		i	56.0	d	
	PAC	iP	18 49.0	c	
		i	51.1		
	SFB	eP	45		
		eE	54		
	FRE	eP	19 18		
	SHS	eP	18 30		
	REN	eP	19 05.2		
		iE	30.1		
	VIN	ePE	08		
	COR	iP	18 44.3	c	
		i	53.5		
	FER	e(P)	16		
May 4	MHC	iP	03 43 59.8	d	USCGS: 18.0°S, 178.5°W, 0 = 03 33 03.5.
	MIN	eP	44 08.5	c	Fiji Islands. h about 601 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 4	REN	eP	13.5		
(Cont.)	COR	eP	18.1		
May 4	MIN	eP	06 58 30.1	c	USCGS: 18.3°N, 46.6°W, 0 = 06 46 37.6. North Atlantic Ocean. h about 33 km.
May 4	MHC	i	07 11 44.3	c	USCGS: 17.7°N, 46.4°W, 0 = 07 00 32.9.
	MIN	eP	31.8	c	North Atlantic Ocean. h about 19 km.
May 4	BRK	e	20 37 48.5		USCGS: 41.3°N, 127.0°W, 0 = 20 36 42.4.
		e	55.5		Off coast of northern California.
	BRX	eR	38 58		h about 33 km.
	MIN	iP	37 42	c	
		i	38 23		
	MHC	iP	37 57.1	d	
		i	39 01.5		
	PAC	iP	37 51.4	c	
	SHS	eP	32.3		
		eN	38 19		
	REN	e	14.8		
	ARC	iP	37 14.3	c	
		iN	41.5		
	COR	eP	46.5		
May 4	BRK	eP	21 00 22.5		USCGS: 40.7°N, 127.5°W, 0 = 20 59 07.8.
	BRX	eSE	01 21		Off coast of northern California.
	CNC	e	00 28.1		h about 33 km.
		e	33.1		
	MIN	iP	13.8	d	
		i	01 01.1		
	MHC	iP	00 28.8	c	
		i	01 32		
	PAC	iP	00 23.4	c	
		i	01 27.7		
	SFB	e(P)E	00 26		
	SHS	eP	05		
		eSN	50		
	REN	eP	43.3		
		iE	01 12.8		
	ARC	iP	20 59 45.5	d	
		iE	21 00 17.1		
	COR	iP	18.6	c	
May 5	BRK	eP	13 09 04.9		USCGS: 40.7°N, 127.1°W, 0 = 13 07 53.3.
	BRX	eS	10 15		Off coast of northern California.
	CNC	e	09 17.6		h about 36 km.
	MIN	eP	08 55.4	c	
		i	09 47.1		
	MHC	eP	09 12.3	c	
		i	10 17.7		
	PAC	iP	09 07.4	d	
		i	10 07.2		
	FRE	eP	09 36		
	SHS	eP	08 47.8		
		eN	09 35		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 5	REN	eP	33.5		
(Cont.)		iE	10 08.5		
	VIN	eP	09 22		
	ARC	iP	08 27.7	c	
		i	40.9		
		i	56.5		
	COR	eP	09 01.9		
May 5	BRK	eP	13 55 44.9		USCGS: 27.8°S, 176.2°W, 0 = 13 43 21.7.
	BRX	iSEN	14 06 05		Kermadec Islands region.
		eRZ	22 47		h about 64 km.
			R from SW		Magnitude 5.5.
			mu sec		PAS: Magnitude 6¼.
		SH	2.3 14		
	MHC	eP	13 55 34.9	c	
	FRE	eP	46		
	MIN	eP	52.5	c	
	REN	e(P)	56 01.2		
	SHS	eP	55 53.2		
May 6	MHC	eP	04 06 44.8	d	USCGS: 20.0°S, 68.5°W, 0 = 03 55 23.3.
	MIN	eP	54.2	c	Chile-Bolivia border.
	COR	eP	07 14.7		h about 247 km.
	SHS	eP	06 57		
May 6	MIN	eP	16 17 40.3	c	USCGS: 37.6°N, 11.2°E, 0 = 16 04 33.1.
	REN	eP	40.2		Off coast of Tunisia.
					h about 30 km.
May 6	BRX	e(P)	23 26 00		USCGS: 17.4°S, 167.9°E, 0 = 23 13 25.2.
	MHC	iP	03.7	d	New Hebrides Islands.
	FRE	eP	08		h about 33 km.
	MIN	eP	08.3	c	
	REN	iP	14.2	c	
	SHS	eP	08		
May 7	BRK	eP	00 38 25.0		USCGS: 6.0°S, 154.5°E, 0 = 00 25 38.1.
	BRX	eZEN	50 14		Solomon Islands region.
		eR	01 05 54		h about 71 km.
	MHC	iP	00 38 27.5	c	PAS: Magnitude 6½ - 6¾.
		e	42 03.3		
	FRE	eP	38 33		
	MIN	eP	27.9		
	REN	iP	35.3	c	
	SHS	eP	26.5		
	VIN	eP	28		
May 7	BRK	eP	04 48 17.3		USCGS: 20.3°S, 175.1°W, 0 = 04 36 31.3.
	BRX	eR	05 11		Tonga Islands. h about 50 km.
	MHC	iP	04 48 17.9	d	
	FRE	eP	22		
	MIN	eP	27.9	d	
	REN	iP	32.0	d	
	SHS	eP	26.5		
	VIN	eP	18		
May 7	BRK	eP	04 51 05.5		USCGS: 8.6°S, 111.4°E, 0 = 04 32 14.5.
	MHC	iP	08.5	c	Near coast of Java.
		e	52 55.3		h about 113 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 7	FRE	eP	51 11		
(Cont.)	MIN	eP	04.3	c	
	REN	iP	09.4	d	
	COR	eP	01.0		
	SHS	eP	04		
	VIN	eP	08		
May 7	BRK	eP	06 04 14.7		USCGS: 40.8°N, 127.0°W, 0 = 06 03 03.3. Off coast of northern California. h about 32 km.
	BRX	eSZEN	05 28		
	CNC	e	04 21.4		
	MIN	eP	03.6	c	
		iS	05 50.5		
	PAC	iPZ	04 16.7	d	
		i	05 21.6		
	SFB	eP	04 13		
	SHS	eP	03 59.0		
		eN	04 43		
	REN	eP	44.4		
	VIN	e	31		
	COR	eP	12.6		
May 7	MIN	eP	09 02 45.5		USCGS: 40.8°N, 127.8°W, 0 = 09 01 26.4. Off coast of northern California. h about 25 km.
		e	03 36.5		
	MHC	iP	02 53.5		
		e	03 55.5		
	PAC	eP	02 48.5		
May 7	MHC	eP	10 36 38.7	c	USCGS: 5.8°N, 126.8°E, 0 = 10 22 43.7. Off coast of Mindanao, Philippine Islands. h about 89 km.
		e	40 31.1		
	FRE	e	24		
	REN	e	41 29.8		
	COR	eP	36 28.1		
	SHS	eP	32		
May 7	BRK	eP	12 26 24		USCGS: 35.0°N, 134.4°E, 0 = 12 14 17.1. Honshu, Japan. Felt. h about 34 km.
	MHC	eP	39.4		
	FRE	e(P)	44		
	REN	eP	28.5		
	COR	eP	25 57.4		
	SHS	eP	26 12		
	MIN		18	c	
May 7	MHC	eP	13 33 09.6		USCGS: 16.1°N, 46.9°W, 0 = 13 22 04.8. North Atlantic Ocean. h about 39 km.
	MIN	eP	06.1		
May 7	BRK	eP	15 27 40		USCGS: 40.9°N, 127.2°W, 0 = 15 26 30.8. Off coast of northern California. h about 33 km.
	BRX	e	28 52		
	MIN	iP	27 35.2	d	
		i	28 21.2		
	MHC	eP	27 49.8	c	
		iS	28 54		
	SFB	eP	27 39		
	PAC	iP	44.6	d	
		i	28 46.3		
	SHS	eP	27 25.1		
		eN	28 10		
	REN	e(P)	00.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 7		iN	29 16.3		
(Cont.)	VIN	iP	27 57.6	d	
	COR	iP	41.0	c	
	FRE	e(P)	28 15		
May 7	BRK	eP	16 20 17.2		USCGS: 40.6°N, 127.2°W, 0 = 16 19 05.9. Off coast of northern California. h about 31 km.
	BRX	eSZEN	21 31		
	CNC	e	20 26.3		
	MIN	eP	10.3	c	
		iS	21 01.3		
	MHC	eP	20 26.9	c	
		iS	21 29.5		
	PAC	eP	20 21.8	c	
	SFB	iP	16.8	d	
	VIN	eP	35		
	REN	eP	36.4		
	COR	eP	19.2		
	FRE		52		
May 8	BRK	eP	12 44 53.7		USCGS: 41.2°N, 127.3°W, 0 = 12 43 43.4. Off coast of northern California. h about 35 km.
	BRX	e(S)	46 06		
	MIN	eP	44 45.7	c	
	MHC	e(P)	45 01.4	d	
	PAC	iP	44 56.5	d	
	SFB	eP	51		
	SHS	eP	38		
		eSN	45 24		
	REN	e(P)	18.2		
	VIN	eP	10.6		
	COR	iP	44 52.6	c	
May 8	BRK	eP	19 35 39.1		USCGS: 24.5°S, 69.7°W, 0 = 19 23 35.4. Northern Chile. Felt: Antofagasta. h about 48 km.
	BRX	eSZN	45 39		
		eRZN	20 01 37		
	MHC	iP	19 35 35.9	c	PAL: Magnitude $5\frac{1}{4}$.
	FRE	eP	27		
	MIN	eP	46.7	d	
	REN	eP	39.8		
	COR	iP	36 07.6	d	
	SHS	eP	35 49		
May 9	BRK	e	00 00 49.5		USCGS: 43.9°N, 127.9°W, 0 = 23 58 56.2 (May 8). Off coast of Oregon. h about 33 km.
	BRX	e(P)	42		
		eN	02 12		
		e(R)	04 10		
	MHC	e(P)	01 00.5	d	
	MIN	e	00 21		
	PAC	e	28		
	SHS	eP	19		
	REN	eP	51.2		
	COR	eP	23 59 48.2		(May 8)
May 9	BRK	eP	02 24 43		USCGS: 19.5°N, 109.0°W, 0 = 02 19 53. RevillaGegido Island region. h about 33 km.
	MHC	eP	34	d	
	REN	eP	48.1		
May 9	BRK	eP	12 07 36.3		
		e	45.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 9 (Cont.)	MHC	iP	46.3		
	PAC	iP	41.3	d	
		i	08 44.3		
	SFB	iP	07 35.6	d	
		e	42.5		
	SHS	eP	22.8		
		eSN	08 05		
	VIN	e(P)	07 55		
	REN	e(P)	08 02.2		
		i	09 09.6		
	COR	eP	07 36.7		
		iE	08 33.0		
	FRE	eP	10		
		e	15		
May 10	BRK	eP	10 16 31.1	d	USCGS: 15.9°S, 172.3°W, 0 = 10 05 13.7. Samoa Islands region. h about 52 km.
	MHC	eP	31.6	c	
	FRE	eP	37		
	MIN	eP	43.1	d	
	REN	iP	46.9	d	
	SHS	eP	42		
	VIN	eP	32		
	SFB	eP	35		
May 11	BRK	e(P)	05 00 43		USCGS: 40.8°N, 127.2°W, 0 = 04 59 29.8. Off coast of northern California. h about 33 km.
	BRX	eSNZ	01 52		
	MHC	iP	00 46.8	c	
		iS	01 55.6		
	MIN	iP	00 34.7	c	
		i	01 17.1		
	PAC	iP	00 44.1	d	
		i	01 45.7		
	REN	e(P)	01 10.4		
	COR	eP	00 39.4		
	FRE	e(P)	01 13		
May 11	BRK	eP	08 51 23.1		USCGS: 37.4°S, 73.6°W, 0 = 08 38 27.1. Near coast of Chile. h about 47 km. PAS: Magnitude $6\frac{1}{4}$ - $6\frac{1}{2}$.
	BRX	eR	09 19		
	MHC	e(P)	08 51 01.7	d	
	FRE	eP	05		
	MIN	e	21		
	REN	eP	17.1		
	SHS	e(P)	23		
May 11	BRK	eP	18 50 00.9		USCGS: 40.9°N, 127.3°W, 0 = 18 48 50.7. Off coast of northern California. h about 43 km.
	BRX	eSEN	51 04		
	MHC	iP	50 11.0	d	
		i	51 11.1		
	MIN	eP	49 53.6	c	Magnitude $4\frac{1}{2}$ - 4 3/4.
		i	50 42.9		
	PAC	iP	04.9	c	
		i	51 07.9		
	SFB	iP	49 59.2	c	
		e	50 06		
	SHS	iP	49 40.5	c	
		eSN	50 30		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 11 (Cont.)	REN	eP	50 21.8		
		iE	51 33.2		
	COR	eP	50 01.4		
		i	59.6		
	FRE	eP	32		
May 11	BRK	eP	20 58 31.0		
	BRX	eS	59 38		
	MHC	i(P)	58 46.4	d	
		i	59 50.5		
	MIN	eP	58 18.3		
		i	59 05.6		
	PAC	i(P)	58 29.9	c	
	SFB	e(P)	58 27		
	SHS	eP	12		
		eN	58		
	REN	eP	59 15.6		
	COR	eP	58 26.3		
May 11	BRK	eP	23 15 28.9		
	BRX	eS	16 36		
	MHC	iP	15 36.5	d	
		i	16 41.2		
	MIN	iP	15 19.4	d	
	PAC	iP	30.4	c	
	SFB	e	26		
	SHS	eP	12		
		e(S)N	57		
	REN	e	16 28.3		
	COR	eP	15 27.0		
May 12	MHC	eP	04 56 48.7		USCGS: 27.9°S, 176.2°W, 0 = 04 44 28.6. Kermadec Islands region. h about 60 km.
	MIN	eP	53.8	c	
	REN	eP	57 40.6		
	SHS	e(P)	10		
May 12	BRK	eP	17 38 14		USCGS: 40.8°N, 127.4°W, 0 = 17 36 59.9. Off coast of northern California. h about 27 km.
	BRX	e(S)	39 30		
	CNC	e	38 19.9		
	MHC	iP	41.8	d	
		i	39 23.2		Magnitude $4\frac{1}{2}$.
	PAC	iP	38 17.3	d	
	MIN	eP	04.3	c	
		i	06.0		
		i	57.5		
	SFB	eP	11		
		e	18		
	SHS	eP	37 58		
		e	38 49		
	VIN	ePE	31		
	REN	e(P)	42.8		
		iE	39 47.1		
	COR	eP	38 13.6		
	FRE	e(P)	47		
May 13	BRK	eP	05 44 32		USCGS: 41.1°N, 127.6°W, 0 = 05 43 16.1. Off coast of northern California.
	BRX	e	45 44		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 13 (Cont.)	MHC	iP	44 25.1	d	h about 25 km.
		i	45 29.2		
	MIN	eP	44 25.1	c	
		i	45 13.6		
	PAC	i	44 38.4		
	SFB	e(P)	30		
		e	37		
	SHS	eP	17		
		eN	45 03		
	VIN	eP	44 49		
		e	45 02		
	REN	eP	01.7		
		iN	46 04.4		
	COR	eP	44 32.8		
May 13	BRK	eP	08 48 50.7		USCGS: 40.8°N, 127.6°W, 0 = 08 47 36.7. Off coast of northern California. h about 43 km.
	BRX	eSEN	49 54		
	MHC	iP	48 59.5	d	
		i	49 03.7		
	MIN	iP	48 43.5	c	Magnitude 4½.
		i	49 30.9		
	PAC	iP	48 54.1	c	
		i	49 06.6		
	SFB	eP	48 48		
		e	55		
	SHS	eP	35		
		e	49 37		
	VIN	e	07		
	REN	eP	48 36.3		
		iN	49 45.1		
	COR	eP	48 48.4		
		i	54.7		
		i	49 47.5		
	FRE	eP	23		
May 13	MHC	iP	13 54 13.5	d	USCGS: 28.0°S, 176.2°W, 0 = 13 41 48.1. Kermadec Islands region. h about 32 km.
	FRE	e(P)	16		
	MIN	eP	21.5	c	
May 13	BRK	eP	14 31 08		USCGS: 28.0°S, 176.3°W, 0 = 14 18 47.0. Kermadec Islands region. h about 50 km.
	MHC	iP	08.7	c	
	FRE	eP	13		
	MIN	eP	17.4	c	
	REN	iP	24.1	c	
	SHS	e(P)	20		
May 13	BRK	iP	15 03 54.2	c	USCGS: 17.6°S, 178.8°W, 0 = 14 52 55.3. Fiji Islands. h about 556 km.
	MHC	iP	55.0	c	
		i	05 48.3		
	FRE	eP	04 00		
	MIN	eP	02.7	c	
	REN	iP	07.7	c	
	COR	iP	12.0	c	
	SHS	iP	02.6	c	
	VIN	iP	03 54.3	c	
	CNC	eP	55.5	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 13	MIN	eP	16 00 04.2	c	USCGS: 43.5°N, 147.9°E, 0 = 15 49 33.3. Off coast of Hokkaido, Japan. h about 41 km.
	REN	eP	15.7	c	
	COR	iP	15 59 43.7	d	
	SHS		16 00 01.3	d	
May 14	MHC	eP	02 55 58.1	c	USCGS: 28.1°S, 176.3°W, 0 = 02 43 22.7. Kermadec Islands region. h about 47 km.
	FRE	e	50		
	MIN	eP	55.9	c	
	REN	eP	59.8		
	SHS	eP	56		
May 14	SHS	eP	07 17 56		
May 14	BRK	eP	19 32 46.5		USCGS: 41.0°N, 127.4°W, 0 = 19 31 34.4. Off coast of northern California. h about 45 km.
	BRX	e(S)NE	33 52		
	CNC	e	32 47		
	MHC	iP	54.3	c	
		i	34 02.6		Magnitude 4½ - 4 3/4.
	MIN	e(P)	32 37.0	d	
		i	43.0		
		i	33 29.6		
	PAC	iP	32 43.5		
		i	52		
	SHS	eP	30		
		eN	33 18		
	SFB	eP	32 43.5		
		e	52		
	REN	eP	33 08.4		
		i	19.5		
		iE	47.8		
	COR	eP	32 44.3		
		i	33 44.2		
	FRE	eP	22		
	VIN	eP	02		
		eN	18		
May 14	REN	e(P)	22 51 14.6		
	COR	eP	49 43.1		
	SHS	eP	50 08		
		e	50		
May 15	MHC	eP	19 24 43.7	c	USCGS: 15.4°S, 166.6°E, 0 = 19 12 10.8. New Hebrides Islands. Felt: Santo. h about 58 km.
	MIN	eP	59	c	
	REN	eP	25 07.3		
	COR	eP	05.6		
May 15	MHC	iP	21 04 57.3	d	USCGS: 20.2°S, 177.1°W, 0 = 20 53 15.2. Tonga Islands region. h about 168 km.
	FRE	eP	05 01		
	MIN	eP	05	d	
	REN	eP	10.9		
	COR	eP	15.3	c	
May 16	BRK	e(P)	17 39 58		USCGS: 28.1°S, 176.4°W, 0 = 17 27 34.1. Kermadec Islands region. h about 53 km.
	BRX	e	40 00		
		eR	18 07		
	MHC	e(P)	17 39 54		
	FRE	eP	59		
	MIN	eP	40 06.5	d	
	REN	eP	12.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 16 (Cont.)	SHS	eP	08		
May 16	BRK	eP	21 57 51	d	USCGS: 30.2°N, 132.0°E, 0 = 21 45 24.0.
	MHC	eP	54.5	c	Ryukyu Islands. h about 25 km.
		e	58 16		PAL: Magnitude $5\frac{1}{4}$ - $5\frac{1}{2}$.
	FRE	e(P)	59 02		
	MIN	eP	57 46	c	
	REN	iP	56	c	
	COR	iP	29.2	d	
	SHS	iP	41.9	d	
	VIN	eP	57		
May 17	BRX	eSN	03 24 15		USCGS: 40.7°N, 127.4°W, 0 = 03 21 52.4.
	SFB	e(P)	22 47		Off coast of northern California.
	MHC	iP	23 15.2	c	h about 48 km.
		iS	24 15.4		
	MIN	eP	22 58.2	c	
		i	23 46.9		
	SHS	eP	22 51		
		eN	23 33		
	PAC	iP	23 09.7	c	
	REN	e(P)	23 38.0		
	VIN	eP	22		
May 17	MIN	eP	08 43 47	c	USCGS: 49.2°N, 155.6°E, 0 = 08 34 03.2.
	REN	eP	44 00.2		Kurile Islands. h about 36 km.
	COR	eP	43 23.5		
	SHS	eP	44		
May 17	BRK	eP	19 37 44.7		USCGS: 52.2°N, 173.9°E, 0 = 19 29 19.3.
	BRX	eP	46		Near Islands, Aleutian Islands.
		eSN	44 35		Felt: Shemya. h about 21 km.
		eScSN	47 33		PAS: Magnitude 6.
		eGN	48 33		
		eR	51 02		
			R from NW		
			mu sec		
		PZ	1.8 10		
		SH	6.7 15		
	MHC	eP	19 37 49.6	d	
		i	38 08.7		
	FRE	eP	02		
	MIN	eP	37 34.7	d	
	REN	eP	46.9		
	SHS	eP	30		
May 18	MHC	eP	04 42 38.1	c	USCGS: 15.9°N, 87.2°W, 0 = 04 35 26.7.
	MIN	eP	49.6	d	Honduras. h about 33 km.
May 18	BRK	eP	08 52 14.1		USCGS: 41.0°N, 127.2°W, 0 = 08 51 02.7.
	MHC	eP	22.1	c	Off coast of northern California.
		i	53 26.3		h about 33 km.
	MIN	eP	52 05.6	c	
		i	56.4		
	PAC	iP	17.2	c	
		i	53 21.1		
	SHS	eP	51 57.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 18 (Cont.)		eN	52 44		
	SFB	eP	11		
	REN	eP	49.7		
		i	53 59.1		
	VIN	eP	52 30		
		e	43		
May 18	BRK	eP	09 39 08		USCGS: 40.7°N, 127.5°W, 0 = 09 37 54.8.
	BRX	eSN	40 14		Off coast of northern California.
	CNC	eP	39 09.6	c	h about 36 km.
	MHC	iP	17.6	d	
		i	40 16.7		
	MIN	eP	39 00.9	c	
		i	42.5		
	PAC	iP	12.4	d	
		i	40 15.4		
	SHS	eP	38 53		
		eN	39 38		
	COR	eP	09.8		
		iE	40 06.1		
	REN	eP	39 33		
		iN	40 44		
	FRE	eP	39 46		
	VIN	eP	25		
May 18	MHC	e	23 23 05.3	d	USCGS: 38.2°S, 73.3°W, 0 = 23 10 18.6.
	FRE	e(P)	22 58		Near coast of Chile. Felt: Angol.
	SHS	e(P)	23 26		h about 40 km.
May 18	BRK	e	23 58 35		USCGS: 41.4°N, 127.2°W, 0 = 23 57 27.9.
	MHC	iP	44.4	d	Off coast of northern California.
		i	59 49.6		h about 33 km.
	MIN	eP	58 27.1	d	
		i	59 16.4		
	PAC	iP	58 39.1	d	
		i	59 24.6		
	SHS	eP	58 20		
		e	59 06		
	SFB	eP	58 38		
	COR	eP	37		
	REN	e	59 55		
May 19	MHC	iP	02 32 58.7	d	USCGS: 22.7°S, 179.2°E, 0 = 02 21 31.8.
	FRE	eP	33 02		Fiji Islands region.
	MIN	eP	06		h about 600 km.
	SHS	eP	06		
May 19	MHC	eP	03 53 58.6	d	USCGS: 15.9°S, 172.8°W, 0 = 03 42 31.1.
	MIN	eP	54 06.5		Samoa Islands region.
	VIN	e	53 39		h about 25 km.
May 19	MHC	eP	09 33 00.4	c	USCGS: 12.8°N, 88.2°W, 0 = 09 25 41.3.
		i	35 07.7		Near coast of El Salvador. Felt.
	FRE	e	32 48		h about 68 km.
	MIN	eP	33 12.9	c	PAL: Magnitude $4\frac{1}{2}$ - $4\frac{3}{4}$.
	COR	e	35 28.8		
	SHS	e	18		
May 19	BRK	eP	14 48 52.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 19 (Cont.)	MHC	eP	49 02.7	c	
		i(S)	50 02.6		
	MIN	iP	48 49.7	d	
		i	49 42.0		
	PAC	eP	48 57.9	c	
	SHS	eP	39		
		eZN	49 28		
	SFB	eP	48 52		
		e	49 05		
	COR	eP	48 54.3		
	FRE	eP	49 28		
May 19	BRK	e	14 51 06.4		
	MHC	iP	10.6	d	
		i	52 11.5		
	MIN	iP	50 56.0		
		i	51 49.3		
	PAC	iP	05.9	d	
	SFB	e(P)	06		
	COR	eP	01.2		
May 19	COR	eP	16 50 18.5		USCGS: 23.8°N, 123.5°E, 0 = 16 37 26.7. Ryukyu Islands. h about 50 km.
	SHS	eP	30		
May 21	BRK	eP	03 42 22.9		
	BRX	e(S)N	43 28		
	MHC	eP	42 32.2	c	
		i	43 28		
	MIN	e(P)	42 16.5		
		i	59.4		
	PAC	eP	27.1	c	
		i	43 31.3		
	SHS	eP	42 09		
		e	54		
	SFB	e(P)	21.6		
	REN	eP	47.4		
		iE	43 53.4		
	FRE	e(P)	42 58		
May 21	BRK	eP	07 59 44.1	(d)	
		e	48.7		
	BRX	eSN	08 00 51		
	MHC	iP	07 59 52.8	d	
		i	08 00 54.0		
	MIN	eP	07 59 36.8	c	
		i	08 00 50.4		
	SHS	eP	07 58 29		
		eN	59 13		
	SFB	eP	59 43.5		
		e	08 00 36		
	REN	e(P)	07 58 33.0		
	VIN	e(P)	08 00 01		
May 21	BRK	eP	15 19 13.9		
	BRX	eSN	20 21		
	MHC	iP	19 23.8	c	
		i	20 29.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 21 (Cont.)	MIN	iP	19 09.8	d	
		i	44.7		
	PAC	iP	18.4	c	
	SHS	eP	01		
		e	46		
	SFB	eP	13		
		e	30		
	REN	e(P)	28.2		
	FRE	e(P)	20 00		
May 21	MHC	e	17 51 04		USCGS: 3.1°S, 80.9°W, 0 = 17 41 28.2. Near coast of Ecuador. h about 27 km.
	FRE	e	18		
	MIN	eP	20		
	REN	eP	09.7		
	SHS	eP	21		
May 21	BRK	iP	19 27 23.8	c	USCGS: 27.5°N, 139.9°E, 0 = 19 16 06.7. Bonin Islands region. h about 470 km.
	SHS	eP	17		
May 22	MHC	eP	01 30 47.1	c	USCGS: 25.2°S, 67.4°W, 0 = 01 18 50.7. Salta Province, Argentina. h about 115 km.
	MIN	e	31 00		
	REN		30 48.8		
May 22	BRK	eP	13 56 20.4	(c)	USCGS: 21.4°S, 174.4°W, 0 = 13 44 35.8. Tonga Islands. h about 97 km.
	BRX	eSEN	14 06 11	NW	
		eScS	07 03		
			mu sec		PAS: Magnitude 6.
		SH	2.8 12		Magnitude 5 3/4.
		PZ	0.8 12		
	MHC	iP	13 56 21.5	d	
		i	33.5		
	FRE	eP	26		
	MIN	eP	31.5	d	
	REN	iP	35.3	d	
	COR	eP	42.7		
	SHS	eP	31		
	VIN	eP	20		
	CNC	eP	23.6	c	
	SFB	eP	19		
May 22	BRK	eP	17 44 24.7	c	USCGS: 22.9°S, 176.1°W, 0 = 17 32 21.6. Tonga Islands region. h about 35 km.
		eSN	54 22		
	BRX	eGN	18 04 47		
		eR	08 09		
			mu sec		PAS: Magnitude 6½ - 6¾.
		PZ	2.3 14		Magnitude 6.
			R from SW		
	MHC	iP	17 44 25.5	c	
		i	28.6		
	FRE	iP	28.6	c	
	MIN	eP	34.6	c	
	REN	iP	38.4	c	
	COR	iP	46.2	d	
	SHS	iP	34.3	c	
	VIN	eP	23		
	CNC	eP	25.8	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 22	PAC	iP	23.0	c	
(Cont.)	SFB	eP	23		
May 23	BRK	eP	02 59 05.6		USCGS: 36.6°N, 28.3°E, 0 = 02 45 16.0.
	BRX	ePP	03 03 13		Dodecanese Islands. Moderate
	MHC	eP	02 59 05.4	c	property damage in Rhodes area and
		e	03 03 06.9		at Marmaris, Turkey. h about 49 km.
	FRE	eP	02 59 06		
	MIN	eP	58 52.3	c	PAS: Magnitude $6\frac{1}{4}$.
		e	03 02 53.3		
	REN	iP	02 58 55.8	c	
	COR	iP	39.4	c	
	SHS	eP	50		
May 23	BRK	eP	03 15 18		
	MHC	eP	15.4	c	
	FRE	eP	16		
	MIN	e	23		
	REN	iP	24.2	c	
	SHS	e(P)	23		
May 23	BRK	eP	03 48 27.6	(d)	USCGS: 9.8°N, 84.0°W, 0 = 03 40 24.5.
	MHC	eP	21.8	c	Costa Rica. h about 93 km.
		i	49 49.9		PAL: Magnitude $5\frac{1}{4}$ - $5\frac{1}{2}$.
	FRE	eP	48 08		
	MIN	e	51.2	d	
	REN	e(P)	55.7		
	SHS	e(P)	49 04		
	VIN	e	48 30.9		
May 23	MHC	eP	03 51 04.9	c	USCGS: 9.8°N, 84.0°W, 0 = 03 43 08.4.
		e	52 32.4		Costa Rica. h about 97 km.
	MIN	e	51 44.4		
	VIN	eP	02		
May 23	BRK	eP	16 52 25.7	c	USCGS: 12.7°N, 87.3°W, 0 = 16 44 59.4.
		e(PcP)	54 29		Near coast of Nicaragua. Felt.
		iS	58 11.2		h about 138 km.
	BRX	eR	17 01 36		PAS: Magnitude $6\frac{1}{2}$.
			mu sec		
		PZ	1.3 8		
	MHC	iP	16 52 20.4	c	
		i	54 27.6	c	
	FRE	e	52 16		
	MIN	iP	31.6	c	
	REN	iP	20.3	c	
		i	40.4		
	COR	iP	59.2	c	
	SHS	eP	35		
		e	50		
	VIN	eP	15.5		
	CNC	iP	26.1		
	PAC	iP	23.6		
	SFB	eP	27		
May 23	MHC	iP	16 58 09.0	c	
	MIN	eP	13.6	c	
	REN	eP	08.4		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 23	SHS	eP	16		
May 24	BRK	eP	13 00 58.0		USCGS: 41.2°N, 126.7°W, 0 = 12 59 54.4.
	CNC	eP	59		Off coast of northern California.
	MHC	i(P)	01 06.8	c	h about 46 km.
		i	13.4		
		iS	02 07.0		
	MIN	eP	00 50.8	c	
		i	01 38.7		
	PAC	iP	01.7	c	
	SHS	eP	00 42		
		eN	01 58		
	REN	e(P)	33.9		
	FRE	e	34		
	VIN	eP	15		
May 25	SHS	eP	09 30 19		USCGS: 31.5°N, 139.9°E, 0 = 09 18 48.4.
					South of Honshu, Japan.
					h about 171 km.
May 25	BRK	iP	21 18 25.0	c	USCGS: 14.9°S, 177.5°W, 0 = 21 07 28.5.
	MHC	iP	26.3	c	Fiji Islands region.
	FRE	iP	30.9	c	h about 374 km.
	REN	iP	39.3	c	
	SHS	eP	33		
May 26	MHC	eP	03 33 27.8	d	USCGS: 33.1°S, 108.9°W, 0 = 03 22 09.8.
	FRE	eP	23		North of Easter Island.
	MIN	e	46		h about 33 km.
	REN	eP	40.7		
	COR	eP	34 10.5		
	SHS	eP	33 47		
May 26	BRK	eP	04 47 30.5	d	USCGS: 32.9°S, 109.1°W, 0 = 04 36 08.5.
	MHC	eP	27.2	d	North of Easter Island.
	FRE	eP	21		h about 43 km.
	MIN	eP	42.4	d	
	REN	iP	38.5	d	
	COR	iP	48 08.7	d	
	SHS	iP	47 45.8	d	
	CNC	eP	30.9		
May 26	MHC	eP	05 13 49.3	d	USCGS: 15.4°N, 91.8°W, 0 = 05 06 31.9.
		e	15 38.9		Near Mexico-Guatemala border.
	MIN	e	14 11.1		h about 150 km.
	REN	e(P)	13 45.1		
	COR	eP	50.2		
May 26	MIN	eP	05 52 16.9	d	
May 26	MHC	eP	06 19 25.3	c	USCGS: 18.9°S, 168.9°E, 0 = 06 06 53.8.
	MIN	eP	31.3	d	New Hebrides Islands.
	SHS	eP	30		h about 100 km.
May 26	MHC	eP	08 52 09.9	d	USCGS: 10.2°S, 70.8°W, 0 = 08 42 16.1.
		e	54 14.1		Peru-Brazil border.
	MIN	eP	52 19.1	c	h about 650 km.
	COR	iP	40.2	c	
May 27	BRK	iP	07 29 29.3	(c)	USCGS: 41.3°N, 142.2°E, 0 = 07 18 06.0.
	BRX	eRNEZ	50		Near coast of Honshu, Japan.
			R from NW		h about 70 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 27 (Cont.)	MHC	eP	07 29 33.2	c	
	FRE	e	42		
	MIN	eP	05.0	c	
		i	22.3		
	REN	iP	15.7	d	
		i	33.0		
	COR	i	01.5		
	SHS	eP	01		
		e	18		
May 28	SHS	eP	19 40 40		
May 28	MHC	iP	22 41 53.0	d	USCGS: 20.1°N, 108.8°W, 0 = 22 37 15.7. Revillagigedo Islands region. h about 43 km.
	REN	e(P)	42 07.3		
May 29	MHC	iP	00 05 27.3	d	USCGS: 14.5°N, 144.6°E, 0 = 23 52 47.0 (May 28). Mariana Islands region. h about 121 km.
	REN	eP	11.0		
	COR	iP	04 53.5	d	
	SHS	eP	05 01		
May 29	BRX	eR	00 38.4		USCGS: 52.3°N, 166.6°W, 0 = 00 22 55.6. Fox Islands, Aleutian Islands. h about 67 km.
	MHC	eP	29 44.7	c	
	FRE	eP	56		
	MIN	eP	27.0	c	
	REN	eP	41.1		
	COR	eP	28 58.6		
	SHS	eP	29 21		
	VIN	eP	40		
May 29	BRK	iP	07 26 12.9	c	USCGS: 19.3°N, 108.7°W, 0 = 07 20 58.1. Revillagigedo Islands region. h about 33 km.
	MHC	e	25 42.5		
	FRE	eP	29		
	SHS	eP	26 14		
	VIN	e(P)	25 41		
May 29	BRK	eP	07 41 17.0	(c)	USCGS: 39.1°S, 73.5°W, 0 = 07 28 17.3. Near coast of southern Chile. Felt: Temuco and Valdivia. h about 40 km.
	BRX	eR	08 10.4		
			R from SSE		
	MHC	eP	07 41 14.0	c	
	FRE	eP	07		
	MIN	eP	24		
	REN	eP	18.2		
	SHS	eP	17.7		
		e	26		
	VIN	e(P)	19		
	CNC	eP	18	c	
May 29	MHC	e	10 41 30.9	c	
	MIN	eP	23.8		
	REN	eP	33.5		
	SHS	eP	20		
May 30	MHC	eP	12 40 04.2	d	USCGS: 33.2°S, 109.3°W, 0 = 12 28 42.8. North of Easter Island. h about 25 km.
	MIN	e	22		
	REN	eP	16.3	c	
	SHS	eP	23		
May 31	BRK	e(P)	14 20 11.3		USCGS: 30.2°N, 113.9°W, 0 = 14 17 43.3. Gulf of California. h about 33 km.
		e	15.5		
	BRX	i(S)NE	22 15		PAS: Magnitude 5½.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
May 31 (Cont.)		eR	24.1		
	MHC	iP	20 08.0	c	
		i	22 05.9		
		eN	55		
		eE	23 05		
	FRE	e(P)	19 58.5		
		eZE	22 04		
	MIN	eP	20 31.6	c	
		e	24 19		
	REN	iP	20 20.2	c	
	COR	eP	21 37.6		
	SHS	eP	20 47		
	VIN	eP	01		
		e	22 46		
May 31	BRK	eP	19 28 56		USCGS: 5.3°S, 151.6°E, 0 = 19 15 57.0. New Britain region. Felt. h about 56 km.
	MHC	iP	57.7	c	
	FRE	eP	29 03		
	MIN	eP	28 58.6	c	PAL: Magnitude 5¾ - 6.
	REN	eP	29 04.0		
	COR	eP	28 55		
	SHS	eP	55		
May 31	SHS	eP	21 14 32		USCGS: 13.0°N, 143.7°E, 0 = 21 02 11.8. Mariana Islands region. h about 130 km.
June 1	BRK	eP	10 11 32.3	c	USCGS: 19.3°N, 69.3°W, 0 = 10 02 42.0. Near coast of Dominican Republic. h about 21 km.
	BRX	eQN	27		PAL: Magnitude 4¼ - 4½.
		eREZ	31		
			R from E		
	MHC	eP	10 11 28.4	c	
		i	51.5	c	
	FRE	eP	16		
	MIN	eP	30	c	
	REN	e(P)	13.0		
	COR	iP	45.6	c	
	SHS	iP	34.3	c	
	VIN	iP	26.8	c	
June 1	BRK	eP	23 48 39		USCGS: 10.4°N, 39.9°E, 0 = 23 29 21.2. Ethiopia. Felt: Addis Ababa. h about 51 km.
	BRX	e	50 42		
		eE	55 30		
	MHC	iP	23 48 21.2	c	PAS: Magnitude 6½ - 6¾.
		i	40.5	c	
	FRE	eP	31		
	REN	i	33.9		
	SHS	e(P)	35		
June 2	BRX	e(P)	05 10 29		USCGS: 10.3°N, 39.8°E, 0 = 04 51 14.8. Ethiopia. Felt: Addis Ababa. h about 41 km.
		e	12 29		
	MHC	eP	10 24		
	ARC	i(P)	11 28.2	c	PAS: Magnitude 6¼ - 6½.
	REN	iP	10 19.5	c	
	SHS	eP	19		
	CNC	e(P)	23		
June 2	MHC	eP	05 15 07.2	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 2 (Cont.)	SHS	eP	17		
June 2	MHC	eP	18 21 29.5	d	USCGS: 21.4°N, 145.9°E, 0 = 18 09 27.2.
	FRE	eP	38		Mariana Islands region.
	REN	eP	35.3		h about 42 km.
	SHS	eP	22		
June 2	MHC	e	18 35 55		USCGS: 3.0°S, 80.4°W, 0 = 18 26 12.6.
	REN	eP	49.3		Near coast of Ecuador.
					h about 37 km.
June 3	BRK	eP	01 22 25	(c)	USCGS: 56.3°N, 164.8°E, 0 = 01 13 25.4.
	BRX	eP	25		Off coast of Kamchatka.
		eSE	29 50		h about 29 km.
		eSSZEN	33 23		PAL: Magnitude $5\frac{1}{4}$ - $5\frac{1}{2}$.
		eRZ	37 30		
			mu sec		
		SH	1.7 21		
June 4	BRK	eP	07 51 34		USCGS: 34.1°N, 82.0°E, 0 = 07 33 06.0.
	BRX	eP	33		Tibet. h about 32 km.
		eN	08 00 47		PAS: Magnitude $6\frac{1}{2}$.
	MHC	eP	07 51 30.9	d	
	REN	eP	09.8		
	COR	eP	50 42.7		
	SHS	eP	51 08		
June 4	MHC	eP	16 27 18.8	c	
	REN	eP	19.0		
	COR	eP	55.9		
June 5	SHS	eP	04 48 22		
June 6	MHC	eP	07 06 25.2	c	
	REN	eP	36.5		
June 6	BRK	eP	08 23 10		USCGS: 15.6°S, 173.6°W, 0 = 08 11 54.7.
	MHC	eP	10.1	c	Tonga Islands. h about 117 km.
	REN	e	47.4		
	SHS	eP	20		
June 7	BRK	iP	15 50 17.2	c	USCGS: 10.8°S, 166.3°E, 0 = 15 38 13.1.
	FRE	eP	24		Santa Cruz Islands. h about 209 km.
	REN	iP	30.1	d	
	SHS	eP	21	(c)	
June 9	SHS	eP	08 12 47		
June 10	REN	eP	02 21 52.2		
June 10	MHC	eP	08 58 41.9		USCGS: 8.5°N, 103.3°W, 0 = 08 52 05.4.
	REN	e(P)	52.2		South of Mexico. h about 33 km.
	SHS	e	57		PAL: Magnitude $4\frac{3}{4}$ - 5.
June 10	BRX	eP	20 42 15		USCGS: 24.2°S, 112.1°W, 0 = 20 31 50.9.
		iSE	50 46		Easter Island region.
		eGE	57 54		h about 47 km.
		eRZ	21 01 05		PAS: Magnitude 6.
			R from SSW		
			mu sec		
		SH	3 11		
	MHC	iP	20 42 10.9	c	
	FRE	eP	04		
	REN	iP	24.2	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 10 (Cont.)	COR	eP	58.4		
	SHS	eP	32		
June 11	BRX	ePP	05 30 11		USCGS: 27.9°N, 54.6°E, 0 = 05 10 26.3.
		eSKSN	39 50		Southern Iran (Lar).
		eSS	46.0		h about 37 km.
		e	51.0		PAS: Magnitude $6\frac{1}{2}$ - $6\frac{3}{4}$.
		e	57 14		
		eRNEZ	06 04		
			mu sec		
			0.4 25		
	MHC	i	05 29 09.1	c	
		i	30 07.3		
		i	39 56.6		
	FRE	e	29 58		
	REN	i(P)	28 56.6	d	
		i	29 46.5		
	COR	eP	28 05.0		
	SHS	eP	17		
	VIN	eP'	05 29 10		
June 11	COR	e(P)	06 01 58.8		USCGS: 51.6°N, 159.3°E, 0 = 05 52 51.7.
	SHS	eP	21		Near south coast of Kamchatka.
					h about 18 km.
June 11	SHS	eP	12 50 14		USCGS: 28.2°N, 54.6°E, 0 = 12 31 26.8.
					Southern Iran. h about 36 km.
June 11	MHC	iP	22 12 39	c	USCGS: 22.2°N, 141.8°E, 0 = 22 00 28.1.
	REN	eP	42.7		Volcano Island region.
	COR	iP	20.4	c	h about 100 km.
	SHS	eP	30		
June 12	BRX	eP	00 19.5		USCGS: 18.9°N, 107.4°W, 0 = 00 14 28.7.
		eSN	23 50		Pacific Ocean. Off Jalisco, Mexico.
	MHC	iP	19 35.3	d	h about 33 km.
June 13	COR	eP	02 31 23.5		USCGS: 52.1°N, 176.5°W, 0 = 02 24 25.9.
	SHS	eP	45		Aleutian Islands. h about 56 km.
June 13	BRK	iP	21 49 42.2	d	USCGS: 21.5°S, 176.4°W, 0 = 21 37 55.
		epP	50 19		Tonga Islands region.
	BRX	eSZN	59 27		h about 146 km.
	MHC	iP	49 42.8	d	
		i	50 18.0	d	
	FRE	iP	49 46.7	d	
	REN	iP	56.5	c	
		i	50 35.5		
	COR	iP	02.4	d	
	VIN	eP	49 42	c	
		epP	50 20.5		
	SCC	eP	49 40.0	c	
		epP	50 19.5		
	CNC	e(P)	49 45.6	c	
		ipP	50 22.5		
	SFB	eP	49 41		
		e	50 19		
June 14	SHS	e(P)	23 57 42.2		USCGS: 51.8°N, 175.0°W, 0 = 23 50 26.6.
					Fox Islands, Aleutian Islands.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 14 (Cont.)					h about 100 km.
June 15	MHC	iP	35 06.6	d	USCGS: 45.9°N, 151.2°E, 0 = 23 24 43.8.
		i	15.6	c	Kurile Islands. h about 38 km.
	FRE	eP	16.5		
	REN	eP	05.6		
	COR	iP	34 31.4	d	
	SHS	iP	49.5	c	
June 16	MHC	eP	06 39 15.7	c	USCGS: 51.3°N, 176.8°W, 0 = 06 31 29.8.
	MIN		03		Andreanof Islands. h about 33 km.
	SHS	eP	38 57.8		
June 16	BRK	iP	10 41 02.6	d	USCGS: 8.9°N, 73.4°W, 0 = 10 31 56.2.
		epP	44.4	d	Northern Colombia.
		iSPZ	42 11.5	d	h about 120 km.
	BRX	iPZ	41 03	d	PAS: Magnitude 6.
		epPZEN	42		
		eSN	48 18		
		iSSEN	49 10	ES	
		iSSEN	52 22	ES	
		eSSSEN	54 24		
		eGZ	57		
			mu sec		
		PP	1.4 9		
		SH	2.2 10		
	MHC	iP	10 40 58.4	d	
		i	41 07.6	c	
		i	42 09.3	d	
		iP	40 44.6	d	
	MIN	iP	41 20.6		
	REN	iP	40 54.6	d	
		i	41 22.7		
	COR	iP	26.2	d	
		i	27.7		
		i	42 09.1		
	SHS	iP	41 08.7	d	
	SCC	iP	40 58.8	d	
	CNC	iP	41 02.8	c	
	PAC	iP	01.2	d	
	SFB	iP	02.9	d	
June 16	BRK	e	15 58 25		USCGS: 21.9°S, 68.4°W, 0 = 15 46 03.0.
	MHC	iP	57 51.1	d	Chile-Bolivia border.
		i	58 21.9	c	h about 89 km.
	FRE	e(P)	12		
	MIN	eP	32.1	c	
	REN	iP	24.6	c	
	SHS	eP	34.0		
June 17	MHC	i	09 46 22.5	d	USCGS: 28.7°S, 178.9°W, 0 = 09 34 18.7.
	MIN	e	31.9	d	Kermadec Islands. h about 292 km.
June 17	BRK	iP	15 14 26.6	c	USCGS: 14.2°N, 92.0°W, 0 = 15 07 33.7.
		ePcP	16 54		Mexico-Guatemala border.
	BRX	ePNEZ	14 26		h about 85 km.
		i(PP)	15 56		PAS: Magnitude 6.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 17 (Cont.)		eSNZ	19 57		
		eQNE	23.5		
		eRZ	25.6		
			mu sec		
		PZ	3.2 12		
		PH	3.7 12		
		SH	6.3 17		
		PPZ	2.5 12		
	MHC	iP	15 14 20.7	c	
		i	36.3	c	
		iPP	16 56.9	c	
	FRE	iP	14 06	c	
	MIN	iP	35.0	c	
		e	16 12		
	REN	iP	14 22.9	c	
		i	34.8		
	COR	eP	15 05.4		
	SHS	iP	14 39	c	
	VIN	iP	16.1	c	
	SCC	eP	21.2	c	
	CNC	eP	26.5	c	
	PAC	iP	25	d	
June 17	BRK	eP	18 46 42		USCGS: 14.6°N, 92.1°W, 0 = 18 39 51.4.
	BRX	eRZ	59.0		Near coast of Guatemala.
	MHC	iP	46 37.4	c	h about 105 km.
		i	55.3	d	
	FRE	eP	46 22		
	MIN	eP	46 51.2	d	
		i	55.7	c	
	REN	iP	46 39.1	c	
	COR	iP	47 21.3	d	
	SHS	eP	46 55.5		
	VIN	iP	46 32.3	c	
June 17	MHC	eP	22 00 32.2	d	USCGS: 20.9°S, 178.9°W, 0 = 21 49 25.8.
	FRE	eP	37		Fiji Islands region.
	REN	iP	44.9	c	h about 627 km.
	COR	eP	49.5	c	
	SHS	iP	39.5	d	
	VIN	eP	31		
June 18	BRK	iP'	03 30 22.7	d	USCGS: 5.9°S, 113.0°E, 0 = 03 12 35.7.
	MHC	iP'	24.4	d	Java Sea. h about 641 km.
		e	31 38	c	
		e	32 02.6		
	MIN	iP'	30 22.4	c	
		i	33 01.7		
	REN	iP	30 26.3	c	
	COR	e(P)	26.6		
	SHS	iP	20.4	d	
	VIN	iP'	25.6		
		e	41		
	SCC	eP'	24.1		
	CNC	eP'	23		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 18	BRX	eQNE	08 17.3		USCGS: 32.4°N, 112.5°W, 0 = 08 12 07.1.
	MHC	e	14 22		Southern Arizona. h about 25 km.
		e	15 40		
	FRE	e	14 38		
	MIN	e	18 27		
	REN	eP	14 20.5		
June 18	BRK	iP	14 07 22.5	d	USCGS: 31.5°S, 179.8°E, 0 = 13 55 16.6.
		i	36.3	c	Kermadec Islands region.
	BRX	eSN	17 09		h about 434 km.
		eNE	34		
		eN	23.4		
		eN	30.4		
	MHC	iP	07 26.7	d	
		i	36.6	d	
		i	09 05.6		
		e	10 54.7		
	FRE	iP	07 25.9	d	
	MIN	eP	31.7	d	
		i	41.5		
	REN	iP	41.2	d	
	SHS	iP	30.7	d	
	VIN	eP	21.8	d	
	SCC	iP	19.6	d	
		e	33.7	c	
	CNC	iP	23.6	d	
June 18	MHC	eP	16 58 25.0	c	USCGS: 21.3°S, 176.1°W, 0 = 16 47 03.9.
					Tonga Islands. h about 360 km.
June 18	BRX	e(S)N	22 39 35		
		eRNZ	57		
			R from S		
June 19	MIN	e	02 57 08.5		USCGS: 39.3°N, 143.1°E, 0 = 02 45 59.6.
	REN	iP	19.1	c	Off coast of Honshu, Japan.
	SHS	eP	01.5		h about 42 km.
June 19	BRX	e(P)	07 49 45		USCGS: 39.3°N, 143.0°E, 0 = 07 38 25.0.
		eSNE	58 53		Off coast of Honshu, Japan.
		eGN	08 08.2		h about 29 km.
		eREZ	11.9		
			R from W		
	MHC	eP	07 49 46		
	MIN	eP	33		
	REN	eP	46.0		
	SHS	eP	28.5		
June 19	SHS	eP	22 26 20		USCGS: 53.8°N, 161.1°E, 0 = 22 17 19.7.
		e	37		Kamchatka. h about 25 km.
June 20	MHC	eP	09 56 26.4	c	USCGS: 15.6°N, 87.2°W, 0 = 09 49 02.5.
		eP	13.2		Honduras. h about 35 km.
		e	57 19		
June 20	MHC	iP	14 39 50.9	c	USCGS: 21.9°S, 169.8°E, 0 = 14 27 02.6.
		i	58.9	d	Loyalty Islands. h about 64 km.
	FRE	e(P)	55		
	MIN	eP	55.9	c	
June 20	MHC	e(P)	21 28 58.8		USCGS: 15.4°N, 87.2°W, 0 = 21 21 47.1.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 20	MIN	eP	29 10.4	c	Near north coast of Honduras.
(Cont.)	REN	eP	28 57.4		h about 67 km.
	COR	e	29 35		
June 21	BRX	e(P)	04 04 56		USCGS: 15.5°N, 87.2°W, 0 = 03 57 41.1.
		eR	19.6		Northwestern Honduras.
	MHC	iP	04 51.5	c	h about 58 km.
		i	05 16.9		
	MIN	eP	02.3	c	
	REN	iP	04 50.4	c	
	COR	i	05 29.2	c	
	SHS	eP	06		
	VIN	eP	04 46		
	SCC	eP	51		
	CNC	eP	56		
June 21	BRX	eREZ	08 17.2		USCGS: 7.8°S, 146.7°E, 0 = 07 33 34.4.
			R from W		Eastern New Guinea. h about 25 km.
	MIN	eP	07 47 05.5		
	SHS	e(P)	00		
June 21	BRK	eP	20 43 47		USCGS: 7.6°S, 110.0°E, 0 = 20 25 00.9.
	MHC	iP	49.2	d	Near north coast of Java.
	MIN	eP	46.3	d	h about 163 km.
	REN	eP	50.7	d	
	COR	iP	41.4	d	
	SHS	iP	45.2	d	
June 22	BRK	iP	07 55 23.4	c	USCGS: 19.1°S, 70.8°W, 0 = 07 43 51.6.
	MHC	eP	20.5	d	Near coast of northern Chile.
	MIN	eP	30.9	c	h about 76 km.
	REN	eP	22.6		
	SHS	eP	33.6		
June 22	REN	iP	20 07 23.0	c	USCGS: 12.9°N, 90.0°W, 0 = 20 00 13.8.
	COR	iP	57.2	c	Off coast of El Salvador.
					h about 64 km.
June 23	BRK	iPNEZ	08 57 49		USCGS: 44.1°N, 128.9°W, 0 = 08 55 55.2.
		eSNE	59 15		Off coast of Oregon. h about 56 km.
			mu sec		Magnitude $5\frac{1}{4}$ - $5\frac{1}{2}$.
		PZ	8 8		
		PH	9.2 8		
		MaxH	115 20		
	MHC	eP	08 57 59.6	d	
		i	58 33.3	c	
	FRE	iP	20.2	d	
	MIN	eP	57 32.8	d	
		i	33.8	c	
		i	58 32.9		
	REN	iP	57 56.5	c	
		i	58 05.0		
		i	26.5		
	COR	eP	56 54		
	SHS	eP	57 22.5		
	VIN	eP	58 07.0	d	
	SCC	eP	00.1		
	CNC	eP	57 49		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 23 (Cont.)	PAC	iP	57 54.0	c	
	SFB	eP	56 49.7		
	FER	eP	57 14.0		
June 23	BRK	eP	09 24 49		USCGS: 44.1°N, 128.8°W, 0 = 09 22 49.8. Off coast of Oregon. h about 53 km.
	MHC	eP	53.0	d	
		i	25 43.9	d	
	MIN	eP	25.8	c	
	REN		47.9		
	COR	iP	23 47.6		
		i(S)	24 36.0		
	SHS	eP	16		
June 23	MHC	e(P)	09 37 33.0		
	MIN	eP	05.5	c	
	REN	e	54.3		
	COR	iP	36 27.6	c	
	SHS	e(P)	55		
June 23	BRK	eP	10 17 24		USCGS: 18.6°N, 145.2°E, 0 = 10 05 35.4. Mariana Islands. h about 256 km.
	MHC	iP	28	c	
		e	18 26.9		
	FRE	e(P)	17 23.7	d	
	REN	iP	32.3	d	
	COR	eP	12		
	SHS	eP	07 20.5	c	
June 23	MHC	e	10 50 14		
		e	33		
		eP	49 47		
		eP	50 12.3		
June 24	BRK	eP	05 15 05		USCGS: 13.4°N, 89.9°W, 0 = 05 07 55.6. Near coast of El Salvador. h about 81 km.
	BRX	e(S)N	20 58		PAL: Magnitude 4¾ - 5.
		eQNE	24.7		
		eRZ	28.5		
	MHC	iP	15 00.4	c	
	FRE	eP	14 44		
	MIN	eP	15 12.9	d	
	REN	eP	0.1		
	COR	eP	4.1		
	SHS	eP	18		
June 24	MIN	e	09 54 50		USCGS: 4.0°N, 97.5°E, 0 = 09 36 05.6. Sumatra. h about 135 km.
June 25	BRK	iP	09 21 14.5	d	USCGS: 19.5°S, 177.9°W, 0 = 09 10 04.2. Fiji Islands. h about 489 km.
	MHC	iP	15.3	d	
	FRE	eP	19		
	MIN	eP	24.4	d	
	REN	eP	28.1		
	SHS	iP	23.2	d	
June 25	BRK	eP	16 58 48		USCGS: 21.8°N, 143.5°E, 0 = 16 46 38.6. North of Mariana Islands. h about 33 km. Magnitude 5¾.
	BRX	eSE	17 08 46		
		eSSNEZ	14.1		
		eGN	19.3		
		eREZ	22.7		
			R from WNW		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 25 (Cont.)			mu sec		
		PZ	1.0 8		
		SH	2.0 10		
		MaxH	4.0 21		
	MHC	iP	16 58 51.5	c	
		i	59 29.8	d	
	FRE	eP	00		
	MIN	eP	58 44.4	c	
		i	51.0		
	REN	eP	33		
	SHS	eP	42		
	VIN	e(P)	59		
	SCC	eP	52	(c)	
		e(P)	48		
	SFB	e(P)	49		
June 26	BRK	eP	07 15 44		USCGS: 21.5°S, 170.1°E, 0 = 07 02 52.9. Loyalty Islands. h about 33 km.
		eSNE	26 20		
		ePSNE	27 12		
		eSSNE	32.0		
		eSSSNZ	35.4		
		eGNE	38.5		
		eRNEZ	42.5		
			R from SW		
	MHC	eP	07 15 36.2	d	
			17 17.0		
	FRE	eP	15 47		
	MIN	eP	15 41.1	c	
		e	17 30.4		
	REN	eP	15 48.0		
	SHS	eP	41		
	VIN	eP	44		
	SCC	eP	42		
June 26	MHC	e(P)	14 00 49.0	d	USCGS: 20.7°S, 174.6°W, 0 = 13 49 00.6. Tonga Islands. h about 33 km.
	MIN	eP	50.2	c	
June 27	BRX	eP	07 17 42		USCGS: 28.0°N, 99.4°E, 0 = 07 03 42.2. Yunnan Province, China. h about 33 km.
		ePPZ	21 58	c	PAS: Magnitude 6.
		iSKSNE	28 30	W	
		ePSNEZ	31 18		
		iSSN	37.0	S	
		eGN	47.5		
		eRZ	54.3		
			R from W		
			mu sec		
		PZ	0.7 8		
		PPZ	1.3 12		
		PPH	1.0 14		
		SKSH	2.2 18		
	MIN	eP	07 17 54.5		
June 27	BRK	iP	08 01 55.7	c	USCGS: 54.6°N, 158.6°E, 0 = 07 52 53.5. Kamchatka. h about 273 km.
		ipP	02 13.6	c	
	MHC	iP	01.3	c	
		i	58.0	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 27 (Cont.)	FRE	iP	01 45.5	c	
		e	02 39.7	d	
	REN	iP	01 57.7	c	
	COR	iP	18.4	c	
	SHS	eP	41.2		
		e	02 25.9		
	SCC	iP	00.6	c	
		epP	16		
June 27	MIN	e	08 06 21.4	c	
	REN	eP	30.0		
	SHS	eP	18.7		
June 28	MIN	e	13 34 25		USCGS: 4.5°S, 102.8°E, 0 = 13 15 28.5. Near south coast of Sumatra. h about 90 km.
June 29	BRK	eP	09 35 29		USCGS: 13.9°S, 166.0°E, 0 = 09 22 55.8. New Hebrides Islands. h about 37 km.
	BRX	eSE	45 48		
		ePSEZ	46 50		
		eSSNEZ	51		
		eSSS	54.7		Magnitude 6 1/4 - 6 1/2.
		eGN	57.3		
		eREZ	10 00.9		
			R from W		
			mu sec		
		PZ	4.9 8		
		PH	1.5 11		
		SH	2.7 14		
		MaxH	12 30		
	MHC	iP	09 35 31.1	d	
	FRE	e(P)Z	37		
	MIN	ePZ	35.0	c	
	REN	iP	40.7	c	
	COR	e	39		
		iP	34	c	
	SCC	eP	29	(c)	
June 29	MIN	ePZ	11 45 02.6	c	USCGS: 45.5°N, 151.3°E, 0 = 11 34 55.7. Kurile Islands. h about 68 km.
	SHS	eP	44 59.5		
		e	45 14		
June 29	BRK	eP	14 09 57		
		i	10 15.0	d	
	MHC	iP	03.9	d	
	FRE	e	34.3		
	MIN	eP	09 47.9	d	
		e	10 05.5	d	
	REN	eP	03.1		
		i	19.6		
	COR	iP	09 37.3	d	
	SHS	eP	43		
		e	10 01.0		
	VIN	e	25.2		
	SCC	e	20.6		
June 29	MIN	eP	22 10 47		USCGS: 85.0°N, 97.8°E, 0 = 22 01 24.1. Severnaya Zemlya region.
		i	53.0	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
June 29 (Cont.)	REN	eP	52.3		h about 33 km.
	SHS	eP	31		
		e	42		
June 30	SHS	eP	23 08 58		

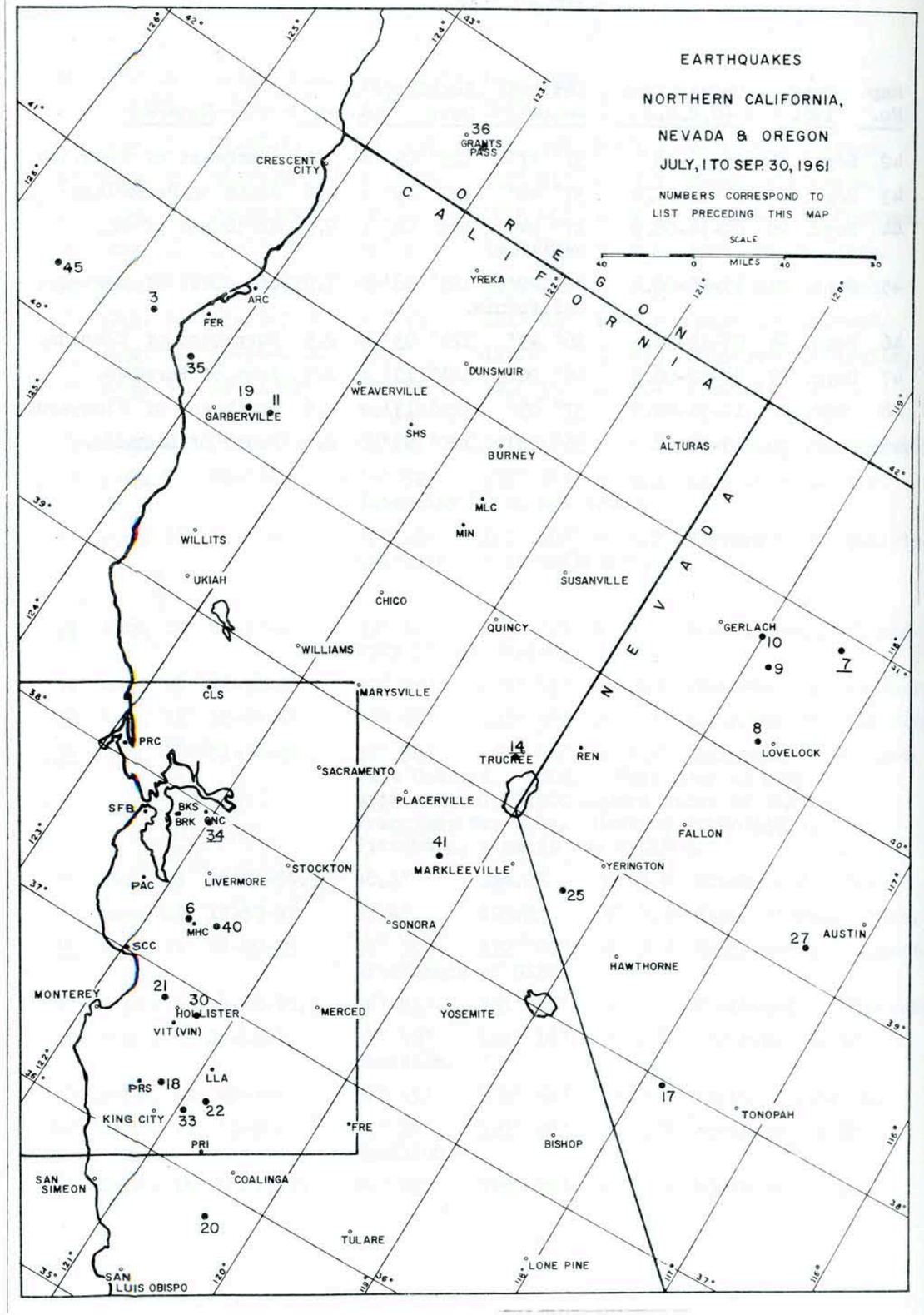
Information on intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly extracted from those collected by the Seismological Field Survey of the U.S. Coast and Geodetic Survey, which publishes a more complete summary in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region." This regular quarterly publication may be obtained from the District Officer, San Francisco District, Coast and Geodetic Survey, 121 Customhouse, San Francisco 26, California, or from the Director, U.S. Coast and Geodetic Survey, Washington 25, D.C. Intensities given in Roman numerals are assigned by the Coast and Geodetic Survey and based on the Modified Mercalli Intensity Scale of 1931.

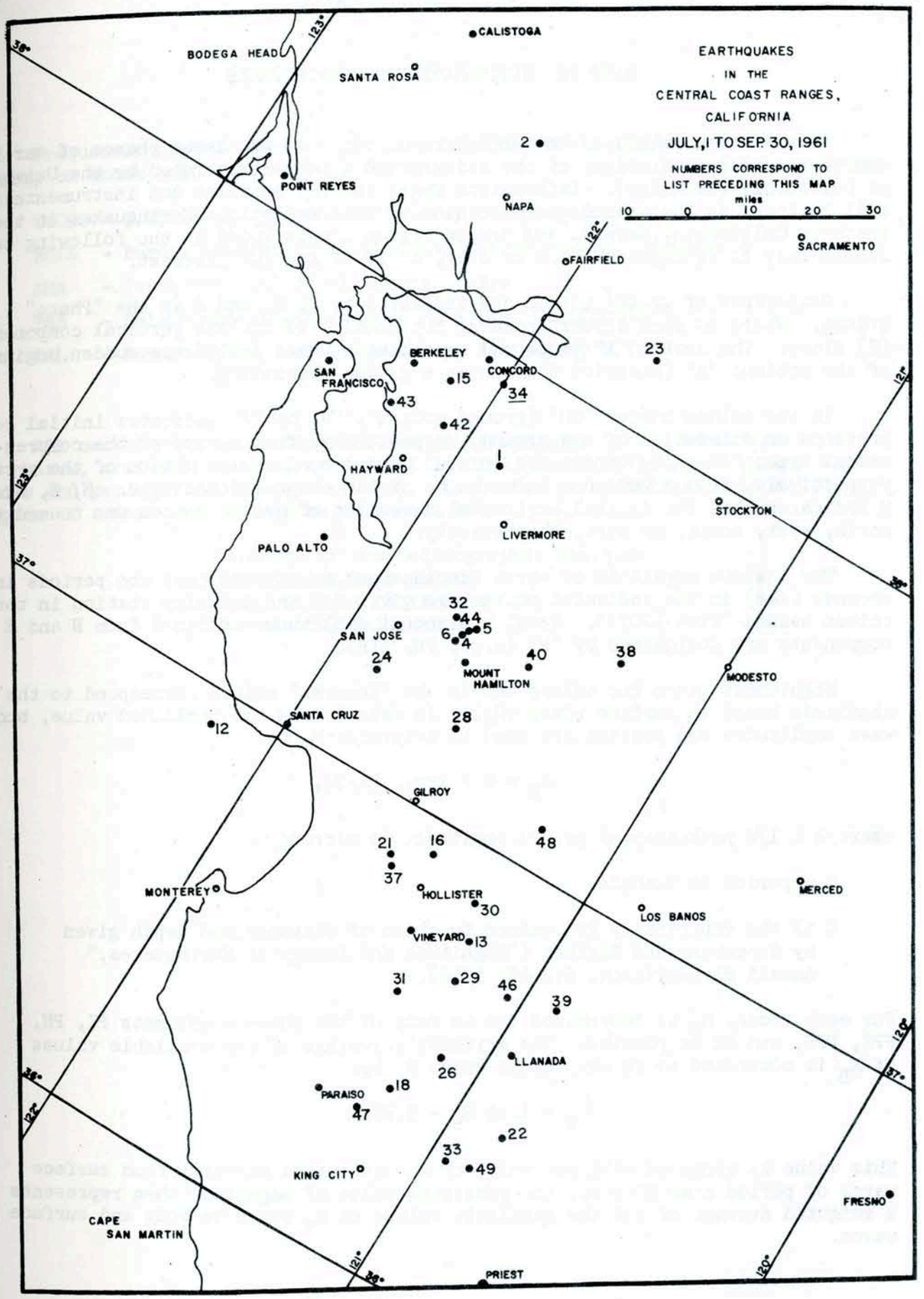
EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
1	July 1	18-07-32	37° 46'	121° 53'	c	2.5	South of Concord.
2	July 1	20-32-21	38° 27'	122° 17'	c	2.2	North of Napa.
3	July 2	08-53-19	40° 25'	124° 40'	d	3.0	West of Ferndale.
4	July 3	03-32-10.7	37° 23'	121° 43'	a	2.4	Northwest of Mt. Hamilton.
5	July 3	03-52-25.6	37° 26'	121° 41'	c	2.5	Northwest of Mt. Hamilton.
6	July 3	04-10-08.8	37° 22'	121° 43'	b	3.4	Northwest of Mt. Hamilton.
7	July 4	04-56-00	40° 54'	118° 24'	d	5.4	North of Lovelock. USCGS: Probable felt area on the order of 10,000 square miles. Reported felt from Paradise Valley in the north to Lovelock, Nevada to the southwest. Maximum reported intensity V. No damage reported.
7	July 4	05-35-05	40° 54'	118° 24'	d	4.0	Aftershock of 04-56-00.
8	July 4	11-09-11.0	40° 08'	118° 36'	b	5.0	West of Lovelock.
9	July 4	21-31-21	40° 35'	118° 50'	c	3.7	East of Gerlach.
10	July 6	03-42-32	40° 45'	119° 00'	c	3.9	East of Gerlach.
11	July 9	09-02-28.1	40° 17.5'	123° 25'	c	4.0	Northeast of Garberville.
12	July 11	06-25-11.7	36° 56'	122° 10'	c	2.2	Southwest of Santa Cruz.
13	July 13	23-00-09.5	36° 47'	121° 14'	b	2.0	Southeast of Hollister.
14	July 14	00-13-01	39° 17'	120° 13'	c	3.4	Near Truckee.
15	July 14	05-34-09.4	37° 53.5'	122° 07.5	c	2.3	East of Berkeley.
16	July 16	07-15-53	36° 55	121° 27'	c	2.4	Northwest of Hollister.
17	July 20	16-25-48.4	37° 58'	117° 52'	c	3.4	West of Tonopah, Nev.
18	July 22	18-01-55.0	36° 24'	121° 12'	c	4.0	Northeast of Paraiso. USCGS: Felt at Pinnacles National Monument (about 25 miles southeast of Hollister).
19	July 23	07-54-28	40° 14'	123° 42'	b	3.4	Northeast of Garberville.
20	July 31	00-07-08	35° 49'	120° 22'	c	4.7	Felt at San Luis Obispo. USCGS: Felt over an area of 5,000 square miles of west-central California. Intensity V at Atascadero, Cholame, Creston, Parkfield, San Luis Obispo, Templeton.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
21	Aug. 1	01-36-33	36° 52'	121° 33'	b	3.0	West of Hollister.
22	Aug. 1	06-12-54.5	36° 26'	120° 51'	c	3.1	South of Llanada.
23	Aug. 2	09-32-49.5	38° 10'	121° 40'	c	2.5	Northeast of Concord.
24	Aug. 3	13-38-38	37° 13'	121° 52'	b	2.1	South of San Jose.
25	Aug. 4	11-28-17.7	38° 43'	119° 20'	c	3.9	Southeast of Reno.
26	Aug. 4	13-22-32.7	36° 32'	121° 08'	b	2.4	South of Vineyard.
27	Aug. 4	16-56-09.1	39.2°	117.4°	d	4.5	Southwest of Austin, Nev.
28	Aug. 5	07-43-49	37° 11'	121° 35'	b	2.4	Southeast of Mt. Hamilton.
29	Aug. 6	05-14-12	36° 41'	121° 12'	b	2.4	Southeast of Vineyard.
30	Aug. 7	01-57-01	36° 52'	121° 16'	b	3.3	East of Hollister. Intensity IV at Hollister.
31	Aug. 10	16-43-41	36° 48'	121° 20'	c	2.7	Southeast of Hollister. Intensity IV at Hollister.
14	Aug. 12	04-57-20	39° 16'	120° 12'	b	4.0	Near Truckee. Intensity III at Norden.
32	Aug. 16	22-31-29	37° 25'	121° 45'	b	2.8	Northeast of San Jose.
33	Aug. 17	17-14-45	36° 20'	120° 57'	b	3.1	Northeast of King City.
34	Aug. 18	01-30-37	37° 56'	122° 00'	b	3.9	Southeast of Concord. Felt Oakland. USCGS: Felt over an area of approximately 1,500 square miles of the San Francisco Bay area. Maximum intensity V. At Pittsburg, a patio was cracked.
35	Aug. 19	06-21-54.9	40.3°	124.2°	d	3.4	South of Arcata.
36	Aug. 23	17-59-47	42.4°	123.2°	d	4.6	East of Grants Pass.
34	Aug. 25	17-20-25	37° 56'	122° 00'	c	2.7	Southeast of Concord. Aftershock of 0130.
37	Sept. 5	14-08-40.7	36° 51'	121° 32'	c	2.4	Northwest of Vineyard.
38	Sept. 5	22-46-34	37° 32'	121° 16'	c	2.8	Northeast of Mt. Hamilton.
39	Sept. 10	22-38-12	36° 45'	120° 54'	c	2.9	North of Llanada.
40	Sept. 13	11-54-44	37° 24'	121° 30'	c	3.0	Northeast of Mt. Hamilton.
41	Sept. 16	10-18-55	38° 29'	120° 20'	c	3.3	North of Sonora.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
42	Sept. 16	15-36-18	37° 47'	122° 05'	b	2.1	Southeast of Berkeley.
43	Sept. 19	04-21-01.4	37° 46'	122° 15'	a	2.4	South of Berkeley.
44	Sept. 20	09-54-08.9	37° 24'	121° 42'	c	2.3	Northwest of Mt. Hamilton.
45	Sept. 21	19-20-08.4	40° 22'	125° 28'	b	3.9	Off coast of northern California.
46	Sept. 24	08-13-31.4	36° 43'	121° 03'	b	2.5	Northwest of Llanada.
47	Sept. 27	02-02-06.3	36° 20'	121° 15'	c	2.7	East of Paraiso.
48	Sept. 27	19-51-42.9	37° 05'	121° 13'	c	2.6	Northeast of Vineyard.
49	Sept. 29	15-39-58	36° 20'	120° 53'	b	2.4	South of Llanada.





PART II. REGISTRATION OF EARTHQUAKES

This section tabulates measured arrival times of prominent phases of earthquakes recorded at stations of the seismographic network operated by the University of California (Berkeley). Information regarding the stations and instrumentation will be found in the introductory section of this Bulletin. Earthquakes in the northern California, Nevada, and Oregon region are included in the following tabulation only if of magnitude 4.0 or over, or if of special interest.

Components of ground motion are indicated by N, E, and Z in the "Phase" column. Where no such letter appears, the reading is for the vertical component (Z) alone. The letter "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates a gradual beginning.

In the column headed "GM" (ground motion), "c" or "d" indicates initial compression or dilatation of the ground, respectively, from a wave of the compressional type; "+" or "-" indicates initial upward or downward motion of the ground, respectively, from a wave not known to be of the compressional type. N, E, S, or W indicates that the initial horizontal direction of ground motion was toward the north, east, south, or west, respectively.

The maximum amplitude of earth displacement in microns (mu) and periods in seconds (sec) in the indicated phases are given for the Berkeley station in the column headed "Time (GCT)". Total horizontal amplitudes combined from N and E components are designated by "H" (e.g., PH, PPH).

Magnitudes given for teleseisms in the "Remarks" column correspond to the magnitude based on surface waves (M_S). In calculating the published value, body wave amplitudes and periods are used to determine M_B by:

$$M_B = Q + \log_{10} (A/T),$$

where A = 1/2 peak-to-peak ground amplitude in microns,

T = period in seconds

Q is the empirically determined function of distance and depth given by Gutenberg and Richter ("Magnitude and Energy of Earthquakes," Annali di Geofisica, 9:1-15, 1956).

For each shock, M_B is determined for as many of the phase components PZ, PH, PPZ, PPH, and SH as possible; the arithmetic average of the available values of M_B is converted to an equivalent value M_S by:

$$M_S = 1.59\ M_B - 3.97.$$

This value is compared with the value of M_S determined directly from surface waves of period near 20 sec.; the published value of magnitude then represents a weighted average of all the available values of M_S based on body and surface waves.

Frequently quoted sources of information regarding epicenters, origin times, or shock magnitudes are as follows:

USCGS - U.S. Coast and Geodetic Survey, Washington, D.C.

BCIS - Bureau Central Internationale Seismologique, Strasbourg

JMA - Japan Meteorological Agency, Tokyo

PAS - Seismological Laboratory, Pasadena, California

PAL - Lamont Geological Observatory, Palisades, N.Y.

All measurement and interpretation of seismograms (i.e., identification of phases, arrival times, directions of initial ground motion, and ground amplitudes and periods) are done at Berkeley. Requests for additional data or for copies of seismograms should be addressed to:

Director of the Seismographic Stations
Earth Sciences Building
University of California
Berkeley 4, California.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 1	BKS	iP	08 11 54.6	c	USCGS: 29.9°N, 140.5°E, 0 = 08 00 11.6.
	MHC	iP	58.9	c	Bonin Islands region.
	MIN	iP	49.8	c	h about 117 km.
	PAC	eP	12 00.8		
	COR	e	11 34		
	SHS		47		
July 1	BKS	eP	13 21 43	c	USCGS: 15.3°S, 74.8°W, 0 = 13 10 40.9.
		e	55		Near coast of Peru. h about 68 km.
	BKX	eSNE	30 48		
		eRNEZ	44.6		
			R from SE		
	MHC	iP	13 21 38.7	c	
		i	40.8	d	
	FRE	eP	28		
	MIN	iP	49.3	d	
		i	22 01.7	c	
	REN	iP	21 41.2	c	
	COR	eP	22 13		
	SHS	eP	21 53		
	VIN	eP	35		
		e	46		
	SCC	eP	38		
	CNC	eP	43		
		e	55		
July 1	BKS	iP	19 01 53.3	d	USCGS: 18.0°S, 178.4°W, 0 = 18 50 57.5.
	MHC	eP	56.5	c	Fiji Islands. h about 601 km.
	FRE	eP	59		
	MIN	eP	02 02.2	d	
	SHS	iP	01	c	
July 1	BKS	eP	23 52 48		USCGS: 53.9°N, 179.8°E, 0 = 23 44 05.7.
	MHC	iP	54.6	c	Near Islands region, Aleutian
	MIN	eP	38.1	d	Islands. h about 19 km.
	SHS	iP	34.3	d	
July 2	BKS	iP	10 22 31.4	c	USCGS: 20.8°N, 142.6°E, 0 = 10 10 16.3.
	MHC	iP	33.3	d	Mariana Islands region.
	MIN	eP	27.6	c	h about 64 km.
	ARC	eN	23 58.9		
	SHS		22 24.6	d	
July 3	MHC	iP	14 59 38.4	d	USCGS: 8.7°S, 79.1°W, 0 = 14 49 30.3.
	MIN	e	51		Near coast of Peru. h about 57 km.
	REN	eP	44.7		
	COR	iP	15 00 16.3		
	SHS	eP	14 59 54		
July 4	BRK	eP	04 57 09.5		40°54'N, 118°24'W, 0 = 04 56 00.
		e(S)N	58 10		West of Winnemucca (Nevada).
	VIN	eP	57 14.9		
		e(S)	58 38.6		Magnitude 5.4.
	CNC	e(S)	12.6		
	SCC	eP	57 17		
	SFB	eP	17		
	MHC	iP	09.8	c	
		iNE	25.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 4 (Cont.)		iN	58 19.4		
		iE	25.3		
	PAC	iZ	57 12.6		
	REN	iP	56 31.9	c	
		eSN	59.6		
	SHS	iP	50.4	c	
	MIN	iP	42.8	c	
	FRE	eP	57 08.6		
		e(S)	58 18		
July 4	BRK	e(P)	05 36 25	d	40°54'N, 118°24'W, 0 = 05 35 05.
	CNC	e(P)	28		Aftershock of 04 56 00.
	VIN	e(P)	23		
	REN	eP	35 43		Magnitude 4.0.
	MHC	iP	36 17.6	c	
		i	30.8	d	
		i	37 21.6		
	MIN	iP	35 48.8	c	
		i	55.2		
		iS	32.1		
	REN	eP	35 37.8		
		i	43.3		
		iS	36 06.7		
	FRE	e(P)	28		
		e	36		
July 4	BRK	iP	06 22 56.8	c	USCGS: 18.0°N, 146.4°E, 0 = 06 10 44.8
	MHC	iP	46.8	d	Mariana Islands. h about 145 km.
		i	54.5		
	FRE	eP	55		
	MIN	eP	41.3	d	
	REN	eP	51.2		
	COR	eP	32		
	SHS	eP	39		
	VIN	eP	27		
July 4	BRK	eP	11 10 21		40°08' N, 118°36'W, 0 = 11 09 11.0.
		eSEN	11 21		North of Lovelock.
	VIN	eP	10 21		
	SCC	e(P)	24		Magnitude 5.
	CNC	e	33		
	REN	eP	09 43		
	MHC	iP	10 15.1	c	
		i	31.5	d	
		iE	11 11.1		
		iN	00.7		
	MIN	iP	09 48.7	c	
		iSN	10 31.5		
	REN	iP	09 37.8	d	
		iS	10 07.2		
	SHS	iP	09 56.6	c	
	FRE	eP	10 15		
		eS	30		
		eEN	11 23		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 5	COR	eP	02 34 11		USCGS: 28.7°N, 129.7°E, 0 = 02 21 56.1.
	SHS	eP	24		Ryukyu Islands. h about 33 km.
July 5	SHS	eP	05 12 09.5		USCGS: 15.1°N, 60.4°W, 0 = 05 02 26.9. Windward Islands. h about 60 km.
July 5	SHS	eP	23 43 51		USCGS: 10.8°S, 161.5°E, 0 = 23 31 09.5. Solomon Islands.
July 6	BRK	iP	22 22 12.9	c	
	BRX	iP	13	c	USCGS: 20.6°S, 169.4°E, 0 = 22 09 29.4.
		e	24 08		Loyalty Islands Region.
		ePP	25 38		h about 27 km.
		e	31 12		
		eSENZ	32 32		Magnitude 6 1/2 - 6 3/4.
			48 47		PAS: Magnitude 6 1/2.
			R from SW		Felt: Port Vila.
			mu sec		
		PZ	7.3 11		
		PPZ	5.6 16		
		SH	11.4 20		
	MHC	iP	22 13.9	c	
	FRE	iP	19.6	c	
	MIN	iP	20.2	c	
		i	24.4	d	
	REN	eP	24.7	c	
	COR	iP	25.4	c	
	SHS	iP	19	c	
	VIN	eP	13.3	c	
	SCC	eP	11.8	c	
	CNC	eP	15.0	c	
	PAC	iP	12.3	c	
	SFB	eP	12.9		
July 7	MIN	e	07 54 10.6		USCGS: 9.1°S, 154.2°E, 0 = 07 42 06.4.
	SHS	eP	55 09		D'Entrecasteaux Islands.
					h about 33 km.
July 7	MIN	eP	08 14 58.6	c	USCGS: 47.2°N, 153.2°E, 0 = 08 05 06.7.
	SHS	iP	55.2	d	Kurile Islands. h about 90 km.
July 7	BKX	iP	13 23 54	c	
		ePP	27 45		USCGS: 5.7°S, 149.7°E, 0 = 13 10 43.8.
		eSE	34 41		New Britain. h about 57 km.
		eSSE	41 05		
		eGN	48 20		Magnitude 6 1/4.
		eRZE	52 42		
			R from W		
			mu sec		
		PZ	7.1 15		
		PPZ	7.2 24		
		SH	7.0 20		
	MHC	iP	24 00.3	c	
	MIN	eP	23 57.0	d	
	REN	e	24 24.0		
	SHS	eP	23 56		
July 7	COR	e	16 02 54		
	SHS	eP	03 15		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 7	BRK	eP	22 32 12.2	c	USCGS: 20.2°S, 169.0°E, 0 = 22 19 31.6.
	BRX	eP	12	c	Loyalty Islands Region. h about 41 k
	MHC	iP	13.1	c	PAL: Magnitude 5 - 5 1/4
		i	22.4		
	FRE	eP	17.5		
	REN	e	24.8		
	COR	e	24		
	SHS	eP	18		
		e	29		
	VIN	e(P)	13.2	c	
July 7	MHC	eP	22 59 28.7	c	BCIS: 15.5°S, 172.5°W, 0 = 22 48 10.
	MIN	eP	38		Samoa Islands region.
	REN	e	43.3		
	SHS	eP	36		
July 8	BRX	eP	02 48 03	c	USCGS: 20.2°S, 168.7°E, 0 = 02 35 20.5.
		ePP	51 26		Loyalty Islands region.
		eSNE	58 30		h about 33 km.
		eR	03 14 35		
			R from SW		Magnitude 6.
			mu sec		
		PZ	2.0 8		
		SH	4.4 24		
		MaxH	5.6 22		
	MHC	iP	02 48 04.9	c	
	FRE	eP	08		
	MIN	eP	08.6	c	
	REN	e	13.6		
	COR	e	18		
	SHS	eP	08		
July 8	BRK	eP	15 21 15		USCGS: 20.2°S, 169.0°E, 0 = 15 08 32.6.
	MHC	eP	15.5		Loyalty Islands region.
	FRE	e	21		h about 33 km.
	SHS	eP	21		
July 8	BRK	iP	15 47 21.2	c	USCGS: 20.1°S, 168.7°E, 0 = 15 34 37.4.
	BRX	iP	22		Loyalty Islands region.
		e(S)	58 12		h about 26 km.
		eSS	16 03 30		
		eR	14 00		Magnitude 6.
			R from SW		PAS: Magnitude 6 1/4.
	MHC	iP	15 47 22.0	c	
		i	58.4		
	FRE	iP	26.7	c	
	MIN	eP	27.8	c	
	REN	eP	33.0		
	COR	eP	33.0		
	SHS	iP	26.9		
	VIN		22.0		
July 8	BRK	eP	15 52 56		BCIS: 20.1°S, 169°E, 0 = 15 40.0.
	MHC	iP	59.2	d	Loyalty Island region.
		i	53 13.1		
	MIN	eP	04.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 8	BRX	eP	21 26 41	c	USCGS: 20.4°S, 169.0°E, 0 = 21 13 59.5.
		eR	53		Loyalty Islands region. h about 33.
			R from SW		PAL: Magnitude 5 1/4 - 5 1/2.
	MHC	iP	26 43.3	c	
		i	52.9		
	FRE	eP	47		
	MIN	eP	48		
	REN	e	52.6		
	SHS		48		
July 8	BRK	eP	22 01 27.2	c	USCGS: 20.4°S, 169.0°E, 0 = 21 48 42.3.
	MHC	iP	28.8	d	Loyalty Islands region.
	FRE	eP	33.0		h about 18 km.
	MIN	eP	34.3	c	
		e	02 09.7		PAL: Magnitude 5 1/4 - 5 1/2.
	REN	e	01 38.7	c	
	COR	iP	39.7	c	
	SHS	eP	33		
July 8	MHC	iP	22 24 56.9	c	USCGS: 20.2°S, 174.4°W, 0 = 22 13 10.0.
	MIN	e	25 05.9	d	Tonga Islands. h about 33 km.
July 9	MHC	iP	05 04 40.4	d	USCGS: 16.4°N, 87.8°W, 0 = 04 57 36.8.
	MIN	eP	47.8	c	Near coast of Honduras.
					h about 50 km.
July 9	MHC	iP	06 39 56.3		USCGS: 15.6°N, 87.3°W, 0 = 06 32 47.5
	FRE	e	44		Near coast of Honduras.
	MIN	eP	40 09.1	d	h about 46 km.
	REN	e	39 58.4		
	SHS	e(P)	40 15		
July 9	MIN	iP	09 02 53.5	d	40°17.5'N, 123°25'W, 0 = 09 02 28.1.
		iSNE	03 10.3		SE of Forest Glen.
	MHC	eP	27.9	c	
		i(S)	04 08.4		Magnitude 4.0.
	PAC	i	03 32.2		
	SHS	iP	02 45.2		
	REN	e	03 25.6		
	ARC	iP	02 43.8		
July 9	MHC	eP	14 00 40.6	c	USCGS: 16.1°N, 87.9°W, 0 = 13 51 09.8.
	MIN	eP	51.0	c	Near coast of Honduras.
	REN	e	40.4		
July 10	BRK	eP	04 01 36.7	c	USCGS: 19.3°S, 68.4°W, 0 = 03 49 56.4.
		epP	02 04.2		Chile - Bolivia border.
	BRX	eP	01 37	c	h about 117 km.
		e(S)NE	11 14		
	MHC	iP	01 32.2	d	
		i	02 00.9		
	FRE	eP	01 22		
	MIN	eP	40.7	d	
		e	02 09.9		
	REN	eP	01 34.7	d	
	COR	iP	02 03.4	d	
	SHS	eP	01 45.1		
		e	02 14		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 10	VIN	eP	01 30.2	c	
(Cont.)	PAC	iP	35.3	c	
		e	02 02.7		
July 10	BRK	eP	12 59 25		USCGS: 17.9°N, 104.9°W, 0 = 12 54 03.0.
	BRX	eP	27		Off coast of Michoacan, Mexico.
		eSEN	13 03 44		h about 33 km.
		eRZ	06		
			R from SE		Magnitude 4 1/2.
			mu sec		
		MaxH	2 24		
	MHC	e	12 59 17.4	d	
		i	41.1		
	MIN	eP	40.0	c	
	REN	eP	28.0		
	SHS		53		
July 10	MHC	eP	14 24 53.0	c	USCGS: 18.3°N, 89.8°W, 0 = 14 18 13.7.
		i	25 06.1		Campeche, Mexico.
	MIN	e	03.0		
July 10	BRK	eP	23 26 46.5		35°13'N, 118°33'W, 0 = 23 25 45.6
		eSN	27 32.2		South of Caliente.
	VIN	eP	26 31.1		
		i	40.7		Magnitude 4.2.
		e(S)	27 04.7		
	SCC	eP	26 37.5		
		e(S)	27 16.9		
	PRS	iP	26 25.3	c	
		i	26.7		
		eS	56.8		
	MHC	iP	36.4		
		iS	27 24.7		
	MIN	iP	15.1	d	
		i	28 16.2		
	SHS	e	29 16		
		e	54		
	PAC	iP	26 46.7	d	
		i	27 25.3		
	FRE	eP	26 17		
		eS	42		
	REN	eP	27 06.2	d	
July 11	BRX	eP	09 52 18		USCGS: 8.0°N, 93.1°E, 0 = 09 31 42.6.
		eR	10 32		Nicobar Islands. h about 17 km.
	MHC	i	09 50 50.4		PAL: Magnitude 5 1/2 - 5 1/4.
	MIN	eP	38.0	c	
July 12	MHC	e(P)	13 40 27.9	c	USCGS: 45.4°N, 151.0°E, 0 = 13 29 56.6.
	MIN	e	10.4	d	Kurile Islands. h about 40 km.
	REN	e	34.5	d	
	SHS	eP	06		
		e	20		
July 12	MHC	eP	14 49 40.7	c	USCGS: 22.9°S, 171.4°E, 0 = 14 36 58.6.
	MIN	e	47		Loyalty Islands region.
	SHS	eP	56		h about 53 km.
July 13	FRE	e	10 45 08		USCGS: 5.4°S, 151.4°E, 0 = 10 32 02.2.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 13 (Cont.)	MIN	e	02.1		New Britain. h about 55 km.
July 13	BRK	eP	13 57 21		USCGS: 21.4°S, 175.7°W, 0 = 13 45 02.4.
	MHC	iP	10.3	c	Tonga Islands. h about 29 km.
		i	30.3		
	FRE	e	04		
	MIN	eP	30.1		
July 13	SHS	eP	21 57 39.0		USCGS: 22.9°N, 122.7°E, 0 = 21 44 33.4. Near coast of Formosa. h about 33 km.
July 15	SHS	eP	05 52 44		USCGS: 48.8°N, 157.4°E, 0 = 05 43 11.0. Near coast of Kamchatka.
July 16	MIN	iP	00 52 35.0	d	USCGS: 58.6°N, 137.2°W, 0 = 00 47 52.6.
July 16	MHC	eP	05 34 04.5	c	Southeastern Alaska.
	MIN	eP	15.1	c	USCGS: 19.0°S, 175.4°W, 0 = 05 22 39.1.
	REN	e	19.3		Tonga Islands. h about 200 km.
	SHS	eP	14.3		
		e	35 08		
July 16	MHC	eP	06 58 48.8	c	USCGS: 18.9°S, 175.6°W, 0 = 06 47 26.4.
		e	59 46.0		Tonga Islands. h about 206 km.
	FRE	e	50		
	MIN	eP	00.8	c	
		e	55.1		
	REN	eP	07 00 00.1		
	SHS	eP	06 59 00		
July 16	BRK	eP	14 14 22		USCGS: 23.0°S, 171.4°E, 0 = 14 01 35.8.
	BRX	eP	22		Loyalty Islands region.
		eSEN	24 53		h about 15 km.
		eGEN	37 24		
		eRZ	41.7		Magnitude 5 1/2.
			R from SW		
			mu sec		
		MaxH	2.5 20		
	MHC	iP	14 14 22.7	d	
		i	26.8	c	
	FRE	eP	27		
	MIN	eP	29.9	d	
		i	40.7		
	REN	eP	33.4	c	
	SHS	eP	28		
		e	33.8		
	VIN	eP	22		
July 16	SHS	eP	21 18 25.6		USCGS: 49.5°N, 155.1°E, 0 = 21 08 45.6.
		e	40		Kurile Islands. h about 29 km.
July 17	BRX	eP	01 07 10		
		eSNE	12 12		
		eR	15		USCGS: 16.8°N, 97.6°W, 0 = 01 01 09.7.
	MHC	iP	01 07 10.4	c	Oaxaca, Mexico. h about 40 km.
		i	18.9		
	FRE	eP	06 56		Magnitude 4 1/4 - 4 1/2.
		e	16 14		
	MIN	eP	07 27.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 17 (Cont.)	ARC	e	54.4		
	REN	iP	15.0	c	
	COR	iP	08 00.6	c	
	SHS	eP	07 31		
	VIN	eP	06		
July 17	MHC	eP	09 13 29.3	d	USCGS: 17.3°N, 105.1°W, 0 = 09 08 07.9.
	MIN	eP	49		Off coast of Michoacan, Mexico.
	REN	eP	38.6	c	
July 17	BRK	eP	16 31 48		USCGS: 35.8°N, 141.3°E, 0 = 16 20 19.1.
	MHC	iP	53.9	d	Near coast of Honshu, Japan.
	FRE	eP	32 02		h about 51 km.
	MIN	e	31 45		
	REN	eP	53.6	c	
	COR	eP	24.9		
	SHS	eP	39		
July 18	BRK	eP	14 16 06.1	d	USCGS: 29.4°N, 131.6°E, 0 = 14 03 36.5.
	BRX	eP	06		Northern Ryukyu Islands.
		ePPZEN	19 19		Felt: Kyushu, Japan. h about 21 km
		iSZEN	26 27		
		eQEN	37 08		Magnitude 6 3/4 - 7.
		eRZEN	41 02		
			R from NW		
			mu sec		
	PZ		7.0 12		
	SH		17 19		
	MHC	iP	16 09.9	d	
		i	19 27.6		
	FRE	eP	16 18	d	
	MIN	iP	15 56.0	d	
	REN	iP	16 10.3	d	
	COR	iP	15 44.9	d	
	VIN	eP	16 12	d	
July 18	SCC	eP	14 16 09	d	
	SFB	iP	06		
	PAR	iP	12.9	d	
July 18	BRK	eP	14 46 30	d	USCGS: 29.7°N, 131.5°E, 0 = 14 34 03.1.
	MHC	iP	33.8	d	Northern Ryukyu Islands.
	FRE	eP	42		h about 33 km.
	MIN	eP	25.3	d	
	REN	eP	34.4	d	
	COR	eP	09.5	d	
	SHS	iP	22.1	d	
	SFB	e	29		
	PAR	eP	37	d	
July 18	SHS	iP	16 32 26.8	d	USCGS: 29.7°N, 131.4°E, 0 = 16 20 07.7
					Northern Ryukyu Islands.
July 18	MIN	e	17 00 59.5		USCGS: 29.7°N, 131.5°E, 0 = 16 48 38.1
	SHS	eP	56.8	d	Northern Ryukyu Islands.
July 18	MIN	e	19 42 31		USCGS: 29.3°N, 131.8°E, 0 = 19 29 07.5.
	SHS	eP	26.1		Northern Kyukyu Islands.
July 18	SHS	eP	23 54 58.2		USCGS: 29.8°N, 131.5°E, 0 = 23 42 36.5.
					Northern Ryukyu Islands.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 19	MHC	iP	04 09 40.0	d	USCGS: 59.0°N, 25.3°W, 0 = 03 50 42.0.
		i	50.8		Sandwich Islands.
	MIN	eP	43.2		h about 39 km.
	SHS	e(P)	45		
July 19	FRE	e	06 46 01		USCGS: 29.8°N,131.7°E, 0 = 06 33 18.1.
	MIN	eP	45 41.9		Northern Ryukyu Islands.
	REN	eP	51.5		
July 19	MIN	eP	10 48 09.2	c	USCGS: 29.9°N, 131.5°E, 0 = 10 35 41.4.
	REN	e	17.9		Northern Ryukyu Islands.
	SHS	eP	07		
July 19	BRK	iP	12 11 14.2	c	USCGS: 29.8°N, 131.5°E, 0 = 11 58 43.7
	MHC	eP	16.6	d	Northern Ryukyu Islands.
		e	35.2		h about 31 km.
	FRE	eP	26		
	MIN	eP	08.0	c	
	REN	eP	17.2	d	
	COR	eP	10 52.5		
	SHS	iP	11 05.8	d	
July 19	ARC	e	19 56 42.9		USCGS: 29.7°N, 131.8°E, 0 = 19 45 33.2.
	REN	e	58 16.4		Northern Ryukyu Islands.
	SHS	eP	57 51.4		
July 19	MIN	e	22 43 49.9	d	USCGS: 51.9°N, 173.4°W, 0 = 22 36 36.5.
	ARC	i	42 14.6	c	Adreanof Island, Aleutian Islands.
	SHS	eP	43 39		h about 42 km
		e	55		
July 20	MHC	iP	08 50 12.9	c	USCGS: 18.3°N, 103.4°W, 0 = 08 44 20.2.
	MIN	eP	49 04.1		Near coast of Michoacan, Mexico.
	REN	e	50.8		h about 33 km.
July 20	MIN	eP	09 15 03.4	c	USCGS: 30.4°N, 131.7°E, 0 = 09 02 44.9.
	REN	eP	11.1		Northern Ryukyu Islands.
	COR	eP	14 48.0		
	SHS	iP	15 02.7	d	
July 20	MHC	iP	13 29 27.5	c	USCGS: 20.8°S, 64.7°W, 0 = 13 18 04.2.
	MIN	eP	30 06.0		Southern Bolivia. h about 128 km.
	REN	eP	29 58.7	d	
July 20	MHC	iP	15 21 24.8	c	USCGS: 17.6°S, 178.7°W, 0 = 15 10 26.7.
	MIN	eP	32.5	c	Fiji Islands. h about 570 km.
	ARC	eP	49.3	c	
	REN	eP	37.2		
July 20	BRK	eP	20 10 45		USCGS: 32.0°S, 177.2°W, 0 = 19 58 03.0.
	BRX	eR	37		Kermadec Islands. h about 44 km.
July 20	MHC	iP	20 10 46.2	c	
	MIN	eP	54.8	c	
	REN	e	57.8		
	COR	eP	11 05.0	d	
	SHS	eP	10 55		
July 21	SHS	eP	18 46 39.5		USCGS: 29.6°N, 131.4°E, 0 = 18 34 20.0.
					Northern Ryukyu Islands.
					h about 33 km.
July 21	REN	eP	19 03 25.2		USCGS: 29.8°N, 131.7°E, 0 = 18 50 54.7.
		eP	13.0		Northern Ryukyu Islands.
					h about 33 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 21	ARC	e	22 51 58.4		USCGS: 29.8°N,131.7°E, 0 = 22 39 53.2.
	REN	eP	52 27.2		Northern Ryukyu. h about 32 km.
	SHS	eP	14		
July 22	BRK	eP	18 02 23.3		36°24'N, 121°12'W, 0 = 18 01 55.
		eSNE	43.2		East of Soledad.
	SCC	iP	11.8	c	Magnitude 4.
	VIN	iP	02.5	c	
		iSNE	04.6		
	MHC	iP	14.4	c	
		iSN	25.3		
		iSE	26.5		
	PAC	iP	18.3		
		iE	31.9		
		iN	34.9		
		iE	35.6		
	FRE	iP	17.8	c	
		iZE	32.3		
	SFB	eP	24		
		eS	44		
		eN	49		
	REN	eP	53.1		
July 23	BRK	eP	00 10 34		USCGS: 20.0°N, 105.0°W, 0 = 00 05 32.8.
	MHC	iP	27.6	c	Jalisco, Mexico. h about 75 km.
	FRE	eP	13.0		
	MIN	iP	50.2	c	
		i	11 06.4		
July 23	ARC	e	10 20.4		
	REN	iP	36.3	d	
	SHS		53.5		
July 23	BRK	eP	14 16 20		USCGS: 18.6°S, 168.2°E, 0 = 14 03 39.8.
	BRx	eP	19	c	New Hebrides Islands.
		eSEN	26 56		Felt: Port Vila, Tanna and Eromanga
		eEN	28 06		h about 44 km.
		eGEN	39 05		
		eRZEN	42 49		
			R from SW		Magnitude 5 3/4 - 6.
			mu sec		
		PZ	1.7 14		
		SH	4 25		
	MHC	iP	14 16 21.8	c	
		i	44.5	c	
	FRE	eP	25.4		
	MIN	eP	26.4	d	
		i	44.0	d	
	REN	eP	32.3		
July 23	SHS	eP	14 16 23.8		
July 23	MHC	e	14 29 15		USCGS: 18.5°S, 168.1°E, 0 = 14 16 34.3.
	MIN		21.5	d	New Hebrides Islands.
					h about 33 km.
July 23	BRK	eP	14 44 16		USCGS: 6.8°N, 123.5°W, 0 = 14 37 56.9.
	BRX	e(S)E	49 19		Pacific Ocean about 3000 km. NW of
		eQE	50 51		Galapagos Islands. h about 33 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 23 (Cont.)		eRZN	52 35		
			mu sec		
		MaxH	28 20		
	MHC	eP	14 44 09.7	d	
		i	20.1		Magnitude 5 3/4 - 6.
	FRE	eP	05		
	MIN	eP	36.7	c	
	REN	eP	30.8	d	
	COR	eP	45 12.0		
	SHS	eP	44 37.8		
July 23	BRK	eP	15 42 56		USCGS: 18.5°S, 168.2°E, 0 = 15 28 52.6.
	BRX	eSNE	53 41		New Hebrides Islands.
		e	54 47		Felt: Port Vila. h about 44 km.
		eGN	16 06 06		
		eRNEZ	09 30		
			R from SW		Magnitude 5 1/2.
			mu sec		
		SH	3 24		
	MHC	eP	15 42 57.5	d	
		i	43 07.3		
	FRE	eP	03		
	MIN	eP	03.2	d	
	REN	eP	08.4		
	SHS	eP	02		
	VIN		42 57		
July 23	BRK	eP	22 03 46	c	USCGS: 18.5°S, 168.3°E, 0 = 21 51 07.5.
	BRX	iP	47	c	New Hebrides Islands.
		e	13 17		Slight damage at Port Vila.
		e(S)NE	54		Tidal wave at Port Vila.and Forari.
			mu sec		h about 44 km.
		PZ	7.4 19		
		PH	34 20		Magnitude 7.3.
		PZ(GAL)	39 10		
		MaxH	170 19		
	MHC	iP	03 48.2	c	
		i	54.7	d	
		e	07 16		
July 23	FRE	eP	22 03 53		
	MIN	eP	53.3	c	
		i	04 01.6	d	
	ARC	eP	03 49.2	c	
	REN	eP	58.9	c	
	COR	eP	58.2		
	SHS	eP	04 03		
	VIN	e(P)	03 50		
	SCR	eP	03 48		
	PAC	iP	48.1		
	SFB	eP	49		
July 23	BRK	eP	22 14 35		USCGS: 18.5°S, 168.3°E, 0 = 22 01 55.3.
	MHC	iP	37.5	c	New Hebrides Islands.
	FRE	eP	43		h about 37 km.
	MIN	iP	43.9	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 23 (Cont.)	REN	iP	49.1	d	
	COR	eE	24.5		
	SHS	eP	42		
July 23	MHC	eP	23 59 00.7		USCGS: 18.7°S, 168.0°E, 0 = 23 22 07.8.
	MIN	e	10		New Hebrides Islands. h about 18 km
	REN	e	12.0		
	SHS	eP	05		
July 24	MHC	iP	01 42 04.9	d	USCGS: 21.2°S, 179.2°W, 0 = 01 30 56.6.
		i	09.6	d	Fiji Islands Region. h about 598 km
	FRE	eP	09		
	MIN	iP	14.4	c	
	REN	eP	18.1		
	SHS	eP	13		
July 24	MHC	iP	02 03 05.6		USCGS: 2.1°S, 79.4°W, 0 = 01 53 29.9.
	MIN	eP	17.0		Ecuador. h about 30 km.
July 25	BRK	eP	02 58 07.5		USCGS: 8.9°S, 71.4°W, 0 = 02 48 13.4.
	MHC	iP	02.3		West Brazil. h about 593 km.
	FRE	eP	57 54		
July 25	MIN	iP	02 58 13.2	c	
	REN	eP	04.7	d	
	SHS	iP	15.9	d	
July 25	MHC	iP	09 03 21.5	d	USCGS: 18.3°S, 167.6°E, 0 = 08 50 40.5.
	MIN	eP	27.9		New Hebrides Islands.
	SHS	iP	26.1	d	h about 33 km.
July 26	MHC	iP	01 45 59.5	d	USCGS: 35.9°S, 104.5°W, 0 = 01 34 18.2.
	FRE	eP	53		Southeast of Easter Island.
	MIN		46 15.5	c	h about 24 km.
	REN		09.7		
July 26	MHC	eP	09 32 03.9	c	USCGS: 37.1°S, 177.1°E, 0 = 09 18 58.8.
	MIN	eP	14.3		North Island, New Zealand.
					h about 83 km.
July 27	MHC	e	06 20 57.0	c	USCGS: 18.4°S, 70.2°W, 0 = 06 09 25.9.
					Bolivia-Chile Border.
					h about 47 km.
July 27	MHC	eP	08 38 43.6	c	USCGS: 17.8°S, 178.1°W, 0 = 08 27 46.9.
	MIN	e	52.4	d	Fiji Islands. h about 562 km.
July 27	MHC	iP	11 46 12.4	c	USCGS: 19.1°S, 169.2°E, 0 = 11 33 49.6.
	MIN	iP	19.6	d	New Hebrides. h about 173 km.
July 27	MHC	e(P)	15 46 42.4		USCGS: 34.8°S, 179.0°W, 0 = 15 33 38.1.
					Kermadec Island region.
July 28	MHC	eP	00 47 02.5	c	USCGS: 27.1°N, 126.6°E, 0 = 00 34 19.5.
	MIN	eP	46 53.5	c	Ryukyu Islands. h about 149 km.
	COR	eP	39.0		
	SHS	eP	52		
July 28	BRK	eP	01 15 08		USCGS: 2.2°S, 77.1°W, 0 = 01 05 30.0.
	BRX	eP	08		Ecuador. h about 13 km.
		epP	37		
					Magnitude 5 3/4 - 6.
July 28	BRX	eSZNE	01 22 57	SW	
		esSEN	23 57		
		ePkkP	34 33		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
			mu sec		
July 28 (Cont.)		PZ	1.8 11		
		SH	10 19		
	MHC	iP	14 58.1	d	
		ipP	15 30.0	d	
		i	19 45.2		
	FRE	eP	14 53		
	MIN	eP	15 14.5	c	
		i	47.8		
		e	19 50.6		
	REN	eP	15 06.5		
	COR	eP	37.8		
	SHS	eP	22		
		epP	52		
	VIN		14 59		
July 28	BRK	eP	06 24 21		USCGS: 18.7°S, 167.7°E, 0 = 06 11 38.7.
	BRX	eP	21	c	New Hebrides Islands. h about 41 km.
		eSEN	34 46		
		ePPSEN	36 01		Magnitude 5 3/4.
		eGEN	47 31		
		eRZEN	51 06		
			R from SW		
			mu sec		
		PZ	2.6 12		
		SH	2.9 25		
		MaxH	3.5 18		
	MHC	eP	24 21	c	
		i	53	c	
	FRE	eP	29		
	MIN	eP	27.8	c	
	REN	eP	36.0		
	SHS	eP	28		
July 28	BRK	iP	10 18 34	d	USCGS: 20.0°N, 109.3°W, 0 = 10 13 50.5.
	BRX	iP	34		About 500 km. west of Jalisco,
		iSZEN	22 38	SW	Mexico. h about 33 km.
		eRZ	24 11		
			R from SE		Magnitude 5 1/2.
	MHC	iP	18 26.2	d	
		i	53.8	c	
	FRE	eP	17 12		
July 28	MIN	eP	10 18 53.0	d	
		i	19 28.4	d	
	REN	eP	18 41.6		
	SHS	eP	58		
	VIN	eP	20		
	SFB		33		
July 28	BRK	eP	10 43 02.6		USCGS: 19.6°N, 109.2°W, 0 = 10 38 13.1.
	BRX	iSEN	47 07		About 500 km. west of Jalisco,
		eRENZ	48 48		Mexico. h about 33 km.
	MHC	iP	42 55.6	c	
		i	43 10.2	c	Magnitude 5 1/2.
	FRE	eP	42 42		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 28 (Cont.)	MIN	eP	43 22.1	d	
		i	25.2	d	
	REN	eP	10.9		
		eP	26		
		eP	48		
	SFB	eP	05		
July 28	MHC	e	14 54 43.9		BCIS: 0 = 14 52 54.
	MIN	eP	21.1	c	NE of Portland (Oregon).
	COR	eP	53 18.0		
		iS	42.5		
		iPN	18.5		
		iSN	45.0		
	SHS	e	54 13		
July 28	MHC	e	15 08 18.3		
	MIN	iP	08.8	d	
	SHS	e	06		
July 28	MHC	i	15 30 36.6	d	USCGS: 43.6°N, 146.1°E, 0 = 15 19 40.0.
	FRE	eP	41		Near east coast of Hokkaido, Japan.
	MIN	iP	21	c	h about 34 km.
			31	d	
	REN		34.6		
	SHS		16		
July 29	BRK	eP	16 39 27		USCGS: 24.1°N, 176.1°W, 0 = 16 27 19.0.
	BRX	eP	27		Tonga Islands. h about 23 km.
		eSN	49 36		
		eSSEN	54 12		
		eG	17 00		Magnitude 5 1/2.
		eR	17 03		
			R from SW		
			mu sec		
		PZ	.8 10		
		SH	3.3 20		
		MaxH	3.3 20		
	MHC	iP	16 39 37.2	c	
	FRE	eP	33		
	MIN	eP	37.9	c	
	REN	eP	47.0		
	SHS	eP	38		
July 30	BRK	eP	14 18 55		USCGS: 18.3°S, 168.5°E, 0 = 14 06 17.3.
	MHC	iP	56.4	c	New Hebrides Islands.
	MIN	eP	19 02.1	c	h about 37 km.
	SHS	eP	00		
July 30	MHC	iP	15 48 03.4	c	USCGS: 20.4°S, 174.1°W, 0 = 15 36 16.8.
		e	14.1	d	Tonga Islands. h about 33 km.
	FRE	eP	07		
	MIN	eP	13.7	c	
	REN		24.5		
July 31	VIN	iP	00 07 30.0	c	40°54'N, 118°24'W, 0 = 04 56 00.
		i	30.8		West of Winnemucca (Nevada).
	BRK	iP	48.4	d	
		eE	08 68.3		Magnitude 5.4.
		eS	20.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
July 31 (Cont.)	MIN	eP	20.0	c	
		i	09 18.7		
		iN	29.3		
	SHS	ePNZ	08 25.4		
		eN	48.7		
	PAC	iP	07 43.0	c	
		iN	08 15.7		
		iE	16.1		
	SFB		07 47		
July 31	SFB	eE	08 31		
	FRE	iP	07 27	d	
Aug. 1	MIN	eP	01 07 40.0		USCGS: 33.3°S, 179.3°W, 0 = 00 54 43.9.
	SHS	eP	40		South of Kermadec Islands region.
		e	57		h about 60 km.
Aug. 1	BRK	eP	05 52 32.5	c	USCGS: 9.9°S, 160.5°E, 0 = 05 39 53.2.
	BRX	ePNEZ	32.5	c	Solomon Islands. Felt.
		eSNE	06 03 01		h about 50 km.
		eQ	15.9		
		eRZ	18.5		Magnitude 6 1/2.
			R from SW		
			mu sec		
		PZ	5.1 9		
		PH	1.6 12		
		SH	11 23		
		MaxH	30 21		
	MHC	iP	05 52 33.8	c	
		i	36.9		
	FRE	eP	40		
	MIN	eP	37.7	c	
		i	48.5	c	
	REN	iP	54.2	c	
		eSZ	43.4		
	COR	eP	37.5	c	
	SHS	iP	35.9	c	
		e	45.9		
	VIN	eP	32	c	
	PAC	eP	32		
	SFB	eP	33		
Aug. 1	BRK	eP	07 40 13		USCGS: 57.0°S, 25.1°W, 0 = 07 21 12.3.
	MHC	iP	10.6	d	Sandwich Islands. h about 44 km.
	MIN	eP	12.5		
	REN	e	39 11.5		
	COR	e	40 22.0		
	SHS	eP	13		
Aug. 1	MHC	iP	09 43 19.7	d	USCGS: 56.8°S, 24.0°W, 0 = 09 24 22.4.
		e	31.5	c	Sandwich Islands. h about 61 km.
	MIN	eP	23.4	d	
	SHS	eP	24		
Aug. 1	BRK	eP	09 53 38		USCGS: 57.3°S, 26.1°W, 0 = 09 34 40.7.
	BRX	e(G)EN	10 13.1		Sandwich Islands. h about 31 km.
	MHC	eP	09 53 39.0	c	
		e	55 12.0		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 1 (Cont.)	MIN	eP	53 39.3	d	
	REN	eP	49.2		
	COR	eP	48.0		
	SHS	eP	40		
	VIN	e(P)	37		
Aug. 1	MIN	eP	14 36 18.0	d	USCGS: 19.3°N, 104.6°W, 0 = 14 30 41.1.
	REN	eP	05.6		Near coast of Jalisco, Mexico.
	COR	eP	43.6		h about 55 km.
	SHS	eP	12.0		
Aug. 1	MIN	eP	16 30 46.3	d	USCGS: 25.4°S, 179.9°E, 0 = 16 18 49.2.
	SHS	eP	35		South of Fiji Islands.
					h about 482 km.
Aug. 1	SHS	e(P)	19 39 34		USCGS: 10.2°S, 160.8°E, 0 = 19 26 51.1.
					Solomon Islands. h about 59 km.
Aug. 1	MHC	i	22 24 10.6	c	USCGS: 18.2°S, 168.6°E, 0 = 22 11 32.4.
	SHS	eP	16		New Hebrides Islands.
					h about 33 km.
Aug. 2	BRK	eP	02 50 26.3		USCGS: 57.0°S, 24.8°W, 0 = 02 31 28.9.
	MHC	iP	25.3		Sandwich Islands. h about 33 km.
		i	54 04.3		
	MIN	eP	50 40.6	c	
		e	54 08.7		
	ARC	e	49 56.4		
Aug. 2	MIN	eP	12 22 25.9	c	USCGS: 44.6°N, 148.8°E, 0 = 12 12 02.
					Kurile Islands. h about 38 km.
Aug. 3	BRK	eP	03 17 05.3	d	USCGS: 18.4°N, 66.3°W, 0 = 03 08 05.1.
		ipP	18 16.2		Puerto Rico. Felt.
	MHC	iP	17 01.1	d	h about 132 km.
	MHC	i	18 13.5		
	MIN	eP	17 02.3	d	
		i	18 15.2		
	ARC	eE	17 17.7		
		eN	18 16.6		
	REN	eP	16 05.9	d	
	SHS	iP	17 06.5	d	
	COR	eP	16.0	d	
	VIN	iP	16 59.5	d	
		epP	18 13.4		
	PAC	iP	17 04.3	d	
		ipP	18 15.3	c	
Aug. 3	BRX	eR	03 39.8		
	MHC	iP	03 21 58.8	d	
	MIN	iP	59.6	d	
	SHS		22 01		
Aug. 3	MIN	eP	07 09 38.5	c	USCGS: 3.5°S, 130.8°E, 0 = 06 51 44.1.
					Ceram. h about 22 km.
Aug. 3	BRK	eP	23 46 15		USCGS: 12.2°N, 143.8°E, 0 = 23 33 37.7.
	BRX	eSE	56 50		Mariana Islands region. Felt: Guam.
		eQN	24 08.8		h about 20 km.
		eRZ	12		
			R from W		
	MHC	iP	23 46 20.7	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 3	FRE	eP	45 29		
(Cont.)	MIN	e	17.8	d	
	REN	eP	41.2		
	SHS	iP	46 14.9		
		e	44		
Aug. 4	BRK	eP	10 44 09.0	d	USCGS: 51.6°N, 177.4°W, 0 = 10 36 25.7.
	MHC	iP	15.2	d	Andreanof Islands, Aleutian Islands.
		i	18.3		h about 20 km.
	MIN	eP	00.3	c	
		i	05.8	c	
	REN	eP	43 29.9		
	COR	eP	10 43 32.7		
	SHS	eP	55		
Aug. 4	BRK	iP	16 57 08		39.2°N, 117.4°W, 0 = 16 56 09.1.
	PRS	iP	57 14	c	Western Nevada. h = 12 km.
		i(S)	58 05		
	SCC	eP	57 14		Magnitude 4 1/2.
	VIN	iP	10		USCGS: 39.2°N, 117.7°W, 0 = 16 56 09.1
		iS	58 00		Western Nevada. h about 12 km.
	MHC	iP	56 57.7	c	
		i	57 03.7	d	
	SHS	iP	01.2	c	
	MIN	iP	56 51.9	d	
		i	57 24.9		
	FRE	eP	56 55.7		
	SFB	eP	57 11.1		
	PAC	iP	10.1		
		e(S)NEZ			
	REN	iP	55 45.2		
		iN	56 05.5		
Aug. 4	BRK	eP	23 03 13		USCGS: 45.2°N, 151.2°E, 0 = 22 52 54.0.
	BRX	eN	19.1		Kurile Islands. h about 45 km.
	MHC	iP	03 17.4	d	
		i	30.2		
	FRE	eP	27		
	MIN	eP	06.0	c	
	REN	eP	34.4		
	COR	eP	42.0		
	SHS	eP	02		
Aug. 5	MIN	e	01 35 46.6	d	USCGS: 60.8°N, 148.7°W, 0 = 02 26 20.3.
	COR	eP	34 41.7		Kenai Peninsula. h about 53 km.
Aug. 5	BRK	iP	02 32 12.7	c	
	MHC	iP	33 17.9	d	
		i	26.9		
	FRE	eP	32 29		
	MIN	eP	31 54.7	d	
		i	58.6		
	REN	eP	25.0		
	COR	eP	15.0		
	SHS	eP	50		
	PRS	eP	32 27.2		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 5	MIN	eP	06 19 37.4		USCGS: 52.6°N, 159.1°E, 0 = 06 10 18.8.
					Kamchatka. h about 33 km.
Aug. 5	BRK	eP	09 39 25		USCGS: 18.9°S, 68.2°W, 0 = 09 27 45.5.
	MHC	iP	20.5	d	Chile-Bolivia border. Felt:
		i	52.5		Arequipa, Peru. h about 113 km.
	FRE	eP	11		
	MIN	eP	29.9	d	
		i	31.0		
	REN	eP	38 40.4		
	COR	eP	39 50.9	d	
	SHS	eP	33		
	SCC	eP	21		
	PAC	eP	23		
	PRS	eP	16	d	
Aug. 5	MIN	eP	06 01 38.9	d	
Aug. 5	MIN	eP	06 07 38.9		
Aug. 7	BRX	eP	04 51 09		
	REN	eP	48 11.1		
Aug. 7	BRX	eP	12 34 50		USCGS: 28.4°S, 176.4°W, 0 = 12 22 24.2.
		eSNEZ	45 14		Kermadec Islands. h about 33 km.
		eRNEZ	13 01		
			R from SW		Magnitude 5 1/4.
			mu sec		
		SH	1.6 19		
		MaxH	4.0 18		
	REN	eP	12 34 23.4		
	SHS	eP	57		
	MHC	iP	12 34 48.9	d	
	FRE	eP	51.5		
	MIN	eP	59.2	c	
Aug. 7	BRK	eP	17 10 16		USCGS: 28.1°S, 177.4°W, 0 = 16 57 49.6.
	MHC	iP	15.7	c	Kermadec Islands. h about 33 km.
	MIN	iP	06.4		
	SHS	eP	49.5		
Aug. 8	BRK	iP	12 25 26.1	d	USCGS: 51.2°N, 170.7°W, 0 = 12 18 23.1.
	BRX	iP	26		Fox Islands, Aleutian Islands.
		iSNEZ	31 10		h about 33 km.
		iGEN	33 28		
		eR	34 59		Magnitude 5 3/4 - 6.
			R from NW		
			mu sec		
		PZ	6 11		
		PH	3.3 14		
		SH	7.7 18		
	MHC	iP	12 25 32.5	d	
		i	55.4		
	FRE	iP	45.5	d	
	MIN	iP	18.0		
		i	46.9		
	REN	iP	24 52.5		
	SHS	iP	25 12.2	d	
	VIN	eP	37	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 8 (Cont.)	SCC	eP	32	(d)	
	PAC	iP	28.5	d	
	SFB	eP	25.7		
	PRS	eP	39	c	
Aug. 9	BRK	iP	16 15 13.9	c	USCGS: 19.2°S, 168.8°E, 0 = 16 02 35.5. New Hebrides Islands. h about 44 km
	BRX	eSEN	25 58		
		eRENZ	41.7		
			R from SW		
			mu sec		Magnitude 5 3/4.
		PZ	1.5 10		
		MaxH	3 20		
	MHC	iP	16 16 14.4	c	
		i	47.7		
	FRE	eP	15 19	c	
	MIN	iP	22.2	d	
	REN	iP	46.9		
	COR	eP	26.1		
	SHS	iP	19.7	c	
	SCC	eP	13.0		
	PAC	eP	13		
	PRS	iP	13.5		
Aug. 10	MIN	eP	05 47 01.5	c	
Aug. 10	MIN	iP	06 47 57.1		USCGS: 21.0°S, 177.8°W, 0 = 06 37 05.0. Fiji Islands. h about 360 km.
	SHS	iP	48 39.2	d	
Aug. 10	MIN	eP	12 14 58.2	c	USCGS: 37.2°N, 137.0°E, 0 = 12 03 20.9. Near west coast of Honshu, Japan. h about 28 km.
	REN	eP	28.5		
	COR	eP	39.0		
Aug. 10	MIN	eP	12 16 10.5	c	USCGS: 43.8°N, 144.9°E, 0 = 12 05 29.8. Eastern Hokkaido, Japan. h about 55 km.
	REN	eP	15 41.2		
	SHS	eP	16 06		
Aug. 11	FRE	e	00 52 40		USCGS: 56.3°N, 164.3°E, 0 = 00 93 29.6. Komandorskie Islands. h about 27 km.
	MIN	eP	21.9	d	
	REN	e	51 54.9		
	SHS	eP	52 07		
Aug. 11	BRX	eSNE	10 48 16		USCGS: 18.6°S, 168.2°E, 0 = 10 24 58.9. New Hebrides Islands. h about 25 km.
		eRZ	11 04.1		
	MHC	eP	10 32 39.1	c	
		e	57.1		
	FRE	e(P)	37 45.4	c	
	REN	eP	12.1		
	SHS	eP	44		
Aug. 11	BRK	eP	16 02 24.9	c	USCGS: 43.0°N, 145.0°E, 0 = 15 51 34.6. Eastern Hokkaido, Japan. h about 50 km.
		ipP	38.1		
	BRX	iP	25	c	
		ePPPENZ	06 49		
		eSENZ	11 12		
		eSSENZ	15.1		
		eGEN	18 59		
		iRENZ	22 10		
			R from W		
			mu sec		
		PZ	7 12		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 11 (Cont.)		PH	7 10		
		PZ	12 14		
		SH	110 24		
	MHC	eP	16 02 28.7	c	
	FRE	eP	39		
	MIN	iP	18.6	c	
		ipP	53.1	c	
	REN	eP	51.8	c	
		ipP	02 04.0		
		eS	10 45.2		
	COR	eP	01 56		
	SHS	iP	02 14	c	
	VIN	eP	33		
	SCC	eP	28	c	
	PAC	iP	27.4		
Aug. 11	BRX	eP	23 06 12		
	SHS	e(P)	40		
Aug. 11	BRK	eP	23 44 53.9	c	USCGS: 43.1°N, 145.2°E, 0 = 23 33 52.2. Eastern Hokkaido, Japan. h about 50 km.
	MHC	eP	46.2		
		i	58.2		
	FRE	eP	45 08.5		
	MIN	iP	44 35.1	d	
	REN	eP	08.9		
	COR	eP	12.5		
	SHS	eP	44 31		
Aug. 12	BRK	eP	04 57 55		39°16'N, 120°12'W, 0 = 04 57 20. SW of Reno.
		eSZE	58 21		
	SCC	eP	03.4		
	VIN	eP	03		Magnitude 4.1.
		i	06		
		iS	30.8		
	PRS	eP	08.1		
	MHC	eP	57 55.9		
		e(S)	58 25.6		
	SHS	eP	57 57		
		e	58 28		
	FRE	eP	02		
	MIN	iP	57 45.8		
	PAC	iP	59.3		
Aug. 12	FRE	eP	07 01 08		
Aug. 12	MHC	e(P)	07 13 31.3		
	FRE	e(P)	28		
	MIN	e	14 19		
Aug. 13	MIN	eP	06 14 12.1	d	USCGS: 24.4°N, 121.7°E, 0 = 06 01 01.8. Near coast of Formosa. h about 38 km.
	REN	eP	47.8		
	COR	eP	13 56.0		
	SHS	eP	14 09		
Aug. 14	BRK	iP	19 02 58.6	d	USCGS: 24.6°S, 175.7°W, 0 = 18 50 55.3. Tonga Islands Region. h about 70 km.
	BRX	iP	59		
		eSN	13 05		
		eSSN	18 09		
		eRZ	26 34		Magnitude 5 1/2.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 14 (Cont.)			R from S		
			mu sec		
		PZ	1.2 9		
		SH	2.3 18		
		PZ	1.2 8		
	MHC	iP	19 02 59	d	
	FRE	iP	03 02.7	d	
	MIN	eP	03 09.0	d	
	REN	eP	02 36.0	d	
	COR	eP	03 22.5		
	SHS	iP	02 49.5	d	
	PAC	iP	57.6		
		eP	58		
Aug. 14	MIN	e	22 17 09.2		USCGS: 31.6°N, 131.5°E, 0 = 22 04 59.7.
	SHS	eP	15		Near east coast of Kyushu, Japan.
					h about 20 km.
Aug. 14	BRK	eP	23 41 25		USCGS: 20.4°S, 169.4°E, 0 = 23 28 46.5.
	BRX	iP	23	c	New Hebrides Islands region.
		epP	39		h about 97 km.
		ePP	45 03		
		eSZN	51 43		Magnitude 6.
		eSSN	57 37		
		eGN	00 04 33		
		eRZEN	08.4		
			mu sec		
		PZ	2.4 12		
		PPZ	1.6 16		
		PZ	3.7 12		
	MHC	eP	23 41 24	(c)	
	FRE	eP	30.5		
	MIN	eP	31.4	c	
		i	33		
	REN	eP	00		
	COR	eP	41		
	SHS	eP	29		
	SCC	eP	40 24		
	PRS	eP	23		
	CNC	eP	26		
	PAC	iP	41 24.7		
Aug. 15	MIN	eP	12 31 42.8	c	USCGS: 59.1°N, 136.9°W, 0 = 12 25 58.8
					Near south coast of Alaska.
					h about 36 km.
Aug. 15	BRK	eP	19 15 34.1		USCGS: 33.0°N, 142.4°E, 0 = 19 03 55.7
		epP	47.5		South of Honshu, Japan
	BRX	eP	34	d	h about 39 km.
		e	19 22		
		eSZEN	25 07		Magnitude 5 1/2.
		eSSZEN	30 04		
		eGEN	34.0		
		eRZEN	38.0		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 15 (Cont.)			R from W		
			mu sec		
		PZ	1.2 9		
		PZ	1.2 8		
	MHC	eP	19 15 39	(c)	
		e	44		
	FRE	eP	46.5		
	MIN	eP	29.3	c	
		i	43.2	c	
	REN	eP	03.7		
	COR	eP	14.0		
	SHS	eP	25		
	VIN	eP	41		
	SCC	eP	38		
	PRS	eP	42		
	PAC	eP	36		
Aug. 16	FRE	eP	03 46 37		USCGS: 32.0°S, 177.9°W, 0 = 03 33 52.6.
	MIN	eP	43.2	c	Kermadec Islands. h about 70 km.
	REN	e	11.5		
	SHS	e	42.5		
Aug. 17	BRK	eP	21 26 39.9		USCGS: 46.4°N, 149.3°E, 0 = 21 16 30.1.
	BRX	eP	40.0	c	Kurile Islands. h about 160 km.
		epP	27 16		
		eSZEN	34 54		Magnitude 6 1/2 - 6 3/4.
			mu sec		
		PZ	3.1 6		
		SH	12 10		
		SH	16.5 17		
	MHC	eP	21 26 44.7		
		e	27 21.2		
	FRE	eP	26 55		
	MIN	iP	32.1		
	ARC	eN	23.2		
		e(S)N	34 23.0		
	REN	iP	26 11.1		
	COR	iP	25 41.9		
		ipP	26 11.5		
	SHS	iP	10.7		
		epP	27 05		
	VIN	eP	26 48.4		
	PAC	iP	41.8		
	SFB		40		
Aug. 18	MHC	eP	11 12 47.2		USCGS: 24.2°S, 179.9°W, 0 = 11 01 26.5.
		e	14 42		South of Fiji Islands.
	FRE	eP	49.5		h about 519 km.
	MIN	eP	13 05.3	c	
		e	14 59.6		
	REN	eP	15 00.6		
	SHS	e	14 56		
Aug. 19	BRK	eP	02 54 03.7	c	USCGS: 43.3°N, 145.0°E, 0 = 02 42 58.2.
	MHC	e(P)	08.3	c	Eastern Hokkaido, Japan.
					h about 32.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 19 (Cont.)	FRE	eP	02 54 17.7		
	MIN	e	53 38		
	REN	eP	37.2		
	SHS	eP	37.0		
		e	53		
Aug. 19	MIN	eP	04 57 28.7		USCGS: 44.7°N, 122.5°W, 0 = 04 56 24.1. NW Oregon. Minor damage at Albany and Lebanon. h about 33.
		i	38.1		
	REN	eP	17.1		
	COR	iP	56 30.0	c	
	SHS	eP	57 32		Magnitude 4.5.
		e	58 11		
Aug. 19	BRK	iP	05 19 52.8	d	USCGS: 10.8°S, 71.0°W, 0 = 05 09 49.5. Peru-Brazil border. Felt: Arequipa, Peru. h about 649 km.
		ipP	21 56.1	c	
	BRX	iPZEN	19 53.0	d	
		ipPZ	21 53		
		iSNEZ	28 07		Magnitude 7 3/4 - 8.
			mu sec		
		PZ	26.1 7		
		PH	9.7 7		
		SH	120 8		
	MCH	ip	19 49	d	
		e(pP)N	21 52.8		
		e(S)EN	28 00		
	FRE	iP	19 37.6	d	
	MIN	iP	57.0	d	
	ARC	ePN	20 10.0		
	REN	iP	19 19.1	d	
	COR	iP	20 21.5	d	
	SHS	iP	20 01	d	
	VIN	eP	19 44	d	
	PAC	iP	51.1	d	
	SFB	eP	52.8		
		epP	56.3		
Aug. 19	BRK	iP	05 45 23.6	c	USCGS: 36.2°N, 136.5°E, 0 = 05 33 30.6. Near west coast of Honshu, Japan. 10 killed, 34 injured and moderate damage at Fukui, Gifu, and Ishikawa. h about 17 km.
		e	48 02		
	MHC	iP	45 27	c	
		i	48 07		
	FRE	eP	45 35.6		
	MIN	iP	18.4	d	
		i	47 59.1		Magnitude 7 1/4.
	REN	iP	44 56.8	c	
	COR	iP	45 01.4	c	
	SHS	iP	14.3	d	
		e	47 57		
		e	59 58.5		
	VIN	eP	45 30.4	c	
	PAC	iP	46 25.4	c	
	SFB	eP	45 22.8		
Aug. 19	MIN	eP	08 19 03.3	c	USCGS: 36.1°N, 136.6°E, 0 = 08 07 18.3. Near west coast of Honshu, Japan. h about 25 km.
	REN	eP	18 43.0		
	COR	iP	18 31.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 19	MIN	eP	12 55 42.7	d	USCGS: 43.9°N, 145.5°E, 0 = 12 45 05.5. Eastern Hokkaido, Japan. h about 50 km.
Aug. 19	BRK	eP	15 01 20		USCGS: 18.0°N, 68.8°W, 0 = 14 52 29.7. Felt: Puerto Rico and Dominican Republic. h about 100 km.
		e	57		
	BKX	eSN	08 30		
		eN	09 13		
			mu sec		Magnitude 5 1/2.
		SH	2.5 9		
	MHC	eP	01 15.5		
		eP	03.8		
		e	40.5		
	MIN	eP	18.8	d	
	REN	e	17.0		
	COR	iP	23.35		
	SHS	eP	21.8		
		e	58.6		
	VIN	eP	42.2	c	
	PAC	e	02 19.5	c	
Aug. 19	BRK	eP	16 11 32.9		USCGS: 11.5°S, 70.8°W, 0 = 16 01 26.3. Peru-Brazil border. h about 610 km.
	MHC	eP	28.6	d	
		e	13 25.9		
	MIN	eP	11 37.0	d	
	REN	e	00.1		
	COR	iP	48.6		
	SHS	iP	41.2	d	
Aug. 20	FRE	e	04 31 38.1		USCGS: 31.6°N, 116.5°W, 0 = 04 28 37.4. Baja California. h about 33 km.
	MIN	eP	32 00.6	d	
		e	34 32.6		
	REN	e	32 28.4		Magnitude 4.6.
Aug. 20	BRK	iP	05 15 10.5	c	USCGS: 17.9°S, 178.8°W, 0 - 05 04 14.3. Fiji Islands. h about 592 km.
		epP	17 11.3		
	BRX	eSEN	24 17		
	MHC	iP	15 10.9	c	
		ipP	17 12	c	
	FRE	eP	15 15.9		
	MIN	eP	15 30.1	c	
		ipP	17 22.0	c	
	REN	iP	14 55.9	c	
		iS	16 58.0		
	COR	iP	15 22.5	c	
	SHS	iP	19.1	c	
		epP	17 20.9		
	VIN	iP	15 10.6	c	
	PAC	iP	09.7		
		i	17 13.0		
	SFB	eP	15 09		
		e	17 10		
Aug. 21	MHC	eP	02 18 04	c	USCGS: 22.7°S, 179.3°W, 0 = 02 06 45.3. Fiji Islands region. h about 540 km.
	FRE	eP	08.9		
	MIN	eP	14.0		
	COR	eP	26.0		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 21 (Cont.)	SHS	eP	13		
Aug. 21	BRK	eP	08 03 46.8	d	USCGS: 19.1°N, 108.7°W, 0 = 07 58 52.9. Revilla Cigedo Islands. h about 33 km.
		e	54		
	BRX	e(S)N	07 55		
	MHC	eP	03 39	(d)	
	MIN	e	04 05		
	REN	eP	03 26.0		
Aug. 21	BRK	eP	16 18 27.4	d	USCGS: 17.9°S, 174.4°W, 0 = 16 06 55.4. Tonga Islands. h about 74 km.
	BRX	eP	18 27	c	
		eSN	27 56		
		eGN	37.1		
		eRZN	40.2		
			R from S		
			mu sec		
		PZ	1.4 6		
		SH	2.9 16		
	MHC	eP	16 18 27.5	c	
		e	19 41.5		
	FRE	eP	18 31.6		
	MIN	eP	36.7	c	
		i	19 03.5		
	REN	eP	18 16.2		
	COR	eP	57.2		
	SHS	eP	36.7		
	VIN	eP	26.9	d	
	SCC	eP	25.3	d	
	CNC	eP	28.7	d	
	SFB	eP	25		
Aug. 21	BRK	eP	17 11 59.5	c	USCGS: 40.9°N, 139.1°E, 0 = 17 00 38.9. Near coast of Northern Honshu, Japan. Felt. h about 40 km.
	MHC	eP	12 04		
	FRE	eP	13.3		
	MIN	eP	11 52.2	c	
	REN	eP	37.6		
	COR	eP	41.8		
	SHS	eP	49		
Aug. 22	BRX	e(P)	09 11 53		USCGS: 13.5°S, 166.7°E, 0 = 08 59 27.9. New Hebrides Islands. h about 63 km.
		e(S)EN	23 27		
		eRZEN	38		
			R from SW		
	MHC	eP	09 11 57.7	c	
	SHS	e(P)	12 00.5		
Aug. 22	SHS	eP	23 22 26		USCGS: 33.0°N, 116.2°W, 0 = 23 19 32.6. San Diego County, California. h about 25 km.
	REN	e	21 20		
	MHC	eP	08.3		
		eS	22 25.7		
	MIN	eP	21 45.6		Magnitude 4.4.
		e	23 48.5		
	FRE	eP	20 59.1		
		e	21 06		
Aug. 23	BRK	eP	01 02 35		USCGS: 33.1°N, 116.3°W, 0 = 01 00 47.1 San Diego County, California.
	BRX	e(S)N	04.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 23 (Cont.)	VIN	eP	02 17		Felt: San Diego and in Imperial Valley. h about 27 km.
	SCC	eP	22		
	REN	eP	35.2		
		iS	04 19.4		Magnitude 4.7.
		e	02 16.9		
	MHC	iP	02 20.4	d	
		i	04 08.4		
	MIN	eP	03 02.8	c	
		i	04 52.2		
	PAC	e	02 38		
	FRE	eP	03 10		
Aug. 23	BRK	eP	17 00 58.7		BRK: 42.3°N, 123.2°W, 0 = 17 59 47. Southern Oregon. Magnitude 4.8.
		eS	01 52.0		
	SCC	eP	07.8		
		eS	02 08		
	VIN	eP	01 16		
	SFB	eP	00 57.9		
		e	01 49		
	MHC	iP	07.4	c	
	MHC	iS	17 02 07.2		
	MIN	i	00 53.0	c	
		i	02 35.9		
	PAC	i	01 03.0	d	
	ARC	eN	16 59 55		
		iN	17 00 16.0		
Aug. 24	MHC	iP	05 03 14.0	d	USCGS: 43.1°N, 145.3°E, 0 = 04 52 20.5. Eastern Hokkaido, Japan. h about 44 km.
	MIN	iP	02 45.6	d	
		i	03 18.0		
	REN	eP	29.4		
	SHS		02.5		
Aug. 24	MIN	eP	10 02 04.2	c	USCGS: 43.0°N, 141.7°E, 0 = 09 51 18.3. Hokkaido, Japan. h about 125 km.
	COR	eP	21.0		
Aug. 24	BRK	eP	21 28 47.9		
	BRX	e(S)EN	33.5		
		eRZEN	36.7		
			R from SW		
Aug. 24	BRK	eP	22 51 44.2		USCGS: 43.0°W, 145.3°E, 0 = 22 40 54.6. Eastern Hokkaido, Japan. h about 45 km.
		i	56.1		
	MHC	iP	52 01.4	c	
	MIN	iP	51 11.7	c	
		i	23.4	c	
	REN	e(P)	52 00.3		
	SHS	iP	51 33.7		
		e	46.0		
	SCC	eP	52 01.1		
Aug. 25	MIN	eP	05 49 01.1	c	USCGS: 15.3°N, 87.0°W, 0 = 05 42 01.2. Honduras. h about 48 km.
	REN	eP	15.5		
Aug. 25	BRK	e(P)	07 05 48		USCGS: 53.7°N, 161.2°W, 0 = 06 59 30.2. Alaska Peninsula. h about 36 km.
	MHC	iP	54.9	c	
		i	06 03.1		
	FRE	eP	08		
	MIN	eP	07 05 11.2	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 25 (Cont.)	REN	eP	51.9		
	COR	eP	53.8		
	SHS	eP	31.7		
Aug. 26	BRK	eP	19 01 56		USCGS: 18.1°N, 146.4°E, 0 = 18 49 47.1.
	MHC	iP	59.4	c	Mariana Islands. h about 53 km.
	MIN	e	51.2		
	REN	eP	02 04.1		
	SHS	eP	01 51.8		
Aug. 27	BRX	eP	01 07 05	c	
		eSN	08 41		
	REN	e	03 17.9		
Aug. 27	BRK	eNZ	15 57 19		
	MHC	e	53 39.8		
Aug. 27	BKS	eP	16 32 15		USCGS: 47.0°N, 154.0°E, 0 = 16 22 12.8.
	BKX	eSNEZ	40 27		Kurile Islands. h about 45 km.
		eGNE	47 13		
		e(R)Z	49 38		Magnitude 5 1/4 - 5 1/2.
			mu sec		
		SH	3.6 21		
		MaxH	3 10		
	MHC	eP	16 32 19.4	d	
	FRE	eP	30		
	MIN	eP	43.0	c	
	REN	eP	18.5		
	COR	iP	00.0		
	SHS	eP	03		
	VIN	eP	24		
	SCC	e(P)	21		
	FER	eE	53 04		
Aug. 27	BRK	eP	16 59 55	(c)	USCGS: 18.1°N, 146.6°E, 0 = 16 47 49.1.
	BKX	eSNE	17 10 19		Mariana Islands. h about 58 km.
		eGNE	23 47		
	BRX	eREZ	17 23 47		
			R from W		
			mu sec		
		SH	4 29		
		MaxH	6 21		
	MHC	eP	16 59 58.8	c	
		i	17 00 25.1		
	FRE	eP	06.9		
	MIN	eP	59 29.5	c	
	REN	eP	17 00 03.5		
	COR	eP	16 59 47.5		
	SHS	eP	51		
	VIN	eP	17 00 01.1		
	SCC	eP	16 59 58.9	(c)	
	CNC	eP	58		
	PAC	eP	56.1	c	
	SFB	eP	56		
Aug. 27	MHC	e	18 10 07.9	c	
Aug. 28	REN	e(P)	03 49 12.4		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 28	BRK	eP	06 39 28		USCGS: 15.2°S, 70.2°W, 0 = 06 28 19.4.
	MIN	e	10.6		Southern Peru. h about 185 km.
	REN	iP	25.6		
	COR	eP	40 01.4		
	SHS	eP	39 37		
	CNC	eP	28.3		
Aug. 28	BRK	eP	07 52 40		USCGS: 12.7°S, 169.6°E, 0 = 07 41 26.7.
	MIN	iP	23.0	c	Santa Cruz Islands region.
	REN	e	51.9		h about 640 km.
	SHS		45.2	d	
Aug. 28	MIN	eP	09 19 07.1	d	USCGS: 53.8°N, 159.1°E, 0 = 09 10 13.0.
	REN	eP	42.1		Near coast of Kamchatka.
	SHS	eP	25.8		h about 25 km.
Aug. 28	BRK	eP	09 55 12.4	d	USCGS: 18.9°S, 177.8°W, 0 = 09 44 14.2.
	FRE	iP	18	d	Fiji Islands. h about 548 km.
	MIN	eP	54 58.9	d	
		i	55 03.9		
	REN	e	26.0		
	COR	eP	37.9		
	SHS	iP	21	d	
	SFB	iP	11.2	d	
Aug. 28	BRX	eRZN	20 54.8		USCGS: 23.0°S, 113.5°W, 0 = 20 26 01.4.
			R from S		Easter Island region.
	MHC	eP	20 36 11.0	d	h about 33 km.
	FRE	eP	06		
	MIN	e	09.1	c	
	SHS	eP	32.5		
Aug. 28	BRK	eP	21 38 12		USCGS: 14.1°S, 73.9°W, 0 = 21 27 16.9.
	MHC	iP	08.2	c	Peru. h about 100 km.
		i	35.4		
	FRE	eP	37 57.3		
	MIN	eP	56.0	d	
	REN	iP	38 10.3		
	COR	iP	49.1		
	SHS	eP	22		
	CNC	eP	13		
Aug. 29	MHC	eP	06 06 44.1	d	USCGS: 42.9°N, 145.3°E, 0 = 05 55 37.6.
	MIN	e	01.0	d	Eastern Hokkaido, Japan.
		i	11.4	c	h about 50 km.
	SHS	e(P)	17		
Aug. 29	BRK	eP	14 58 23		USCGS: 52.4°N, 170.8°W, 0 = 14 51 14.2.
	BRX	eRZ	15 07.9		Fox Islands, Aleutian Islands.
	MHC	eP	14 58 26.3	c	h about 41 km.
	FRE	e(P)	39		
	MIN	e	57 47.4	c	PAL: Magnitude 5 - 5 1/4.
	REN	iP	58 24.1		
	COR	eP	57 42.0		
	SHS	eP	14 58 06		
	VIN	e	34.0		
Aug. 29	MHC	e	15 04 26		
	REN	eP	12.6		
	SHS	eP	17.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 30	MHC	eP	02 32 34.1	d	USCGS: 53.9°N, 166.3°W, 0 = 02 25 45.4.
		i	53.6	d	Fox Islands, Aleutian Islands.
	MIN	iP	31 57.1	c	h about 67 km.
	SHS	eP	32 11		
		e	29		
Aug. 30	REN	e	04 33 21.8		
Aug. 31	MHC	iP	00 35 11.7	d	USCGS: 28.3°S, 176.7°W, 0 = 00 22 47.3.
		i	31.4		Kermadec Islands region.
	FRE	e(P)	14.3		h about 56 km.
	REN	eP	42.7		
	SHS	eP	34 20		
	FER	eE	36 10		
Aug. 31	BRK	iP	01 58 40.7	d	USCGS: 10.7°S, 70.9°W, 0 = 01 48 37.5.
		ePcP	53		Peru-Brazil border.
	BRX	iPZEN	41		h about 626 km.
		epP	02 00 41		
		ePPZEN	01 33		Magnitude 7 - 7 1/4.
		esP	40		
		e	02 25		
		eZEN	04 08		
		eE	05 41		
		iSZEN	06 56.1		
			mu sec		
		PZ	21 10		
		PZ	18 6		
		SH	49 14		
		WA	14 4		
	MHC	iP	01 58 37.7	d	
	MHC	ipP	02 00 38.1	c	
		eSNE	06 49		
	FRE	iP	01 58 26.2	d	
	ARC	iPN	58.1		
	REN	iP	38.1	d	
	COR	iP	59 08.1	d	
	SHS	iP	58 47.2	d	
	VIN	iP	34.2	d	
	SCC	iP	37.4	d	
	PRS	iP	32.2		
	CNC	iP	40.9		
	PAC	iP	40.7	d	
	SFB	iP	41.9	d	
		e	55		
	FER	eE	59 02		
Aug. 31	BRK	iP	02 07 10		USCGS: 10.5°S, 70.7°W, 0 = 01 57 08.0.
	BRX	ipP	09 11		Peru-Brazil border.
		iSZEN	15 23.1		h about 629 km.
	MHC	iP	07 05.1	d	
		iSNE	15 16.6		Magnitude 7.
	ARC	iPN	07 26.8		
		iSN	15 54.9		
	REN	iP	06 46.7		
	COR	iS	16 13.1		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Aug. 31 (Cont.)	SHS	iP	07 11.3		
	VIN	iP	03.1		
	SCC	eP	05		
	PAC	iP	08.4	d	
	SFB	eP	00		
	FER	iPE	30		
		iSE	15 54		
Aug. 31	MHC	iP	02 34 59.0		
	REN	iP	39.9		
		i	35 27.8		
	COR	eP	10.5		
Aug. 31	MHC	iP	15 09 11.8	d	USCGS: 9.6°S, 78.7°W, 0 = 14 58 59.0.
	REN	eP	16.6		Near coast of northern Peru.
	SHS	eP	08 29		h about 60 km.
Sep. 1	BRK	iP'	00 28 22		USCGS: 59.5°S, 27.3°W, 0 = 00 09 34.6.
	BRX	iP	00 25 03		Sandwich Islands. h about 131 km.
		iPP	30 13		
		iPKSNEZ	31 47		Magnitude 7.
		SKSP	32.4		
		SKS	35.4		
		PS	40.2		
		(PPS)	42.6		
		SS	48		
		G	01 01.6		
		e(R)	08.8		
			mu sec		
		PPZ(PE)	12 18		
		H(PE)	31 28		
	MHC	iP'	00 28 21.6		
	FRE	eP	18		
	ARC	iP	29 31.5	d	
		i	30 47.1	d	
		i	31 39.5	c	
	REN	eP'	28 22.5		
		ePP	30 11.1		
	COR	eP	28 32.5		
		i	30 44.0		
		i	31 40.5		
	SHS	eP'	28 25		
	VIN	eP'	20		
	SCC	eP'	21		
	CNC	eP'	23		
	PAC	iP	22.3	d	
Sep. 1	MHC	iP	04 49 31.1	d	USCGS: 16.5°N, 93.8°W, 0 = 04 43 13.4.
		i	56.9	d	Chiapas, Mexico
		i	50 09.4	c	h about 155 km.
	REN	eP	04 49 33.0		
Sep. 1	BRK	eP	16 47 47		USCGS: 16.5°S, 176.6°W, 0 = 16 36 49.9.
	MHC	eP	47.4	c	Fiji Islands region
	FRE	eP	52		h about 437 km.
	REN	eP	48 00.6		
	SHS	eP	47 55		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 1	BRK	eP	16 52 50.9	d	USCGS: 35.2°N, 118.5°W, 0 = 16 51 48.5.
	VIN	eP	35	(d)	Kern County, California.
	SCC	eP	42		h about 22 km.
	MHC	iP	41.4	d	
		eN	53 22.0		
		i	23.6		
	REN	eP	06.6		
		iS	54 11.5		
	SHS	e(P)	55.05		
	PAC	iP	52 47.8	d	
		i	53 33.2		
	FRE	eP	21.9		
		e	45.5		
		e	47		
Sep. 1	BRK	eP	18 52 27		USCGS: 18.1°S, 178.3°W, 0 = 18 41 32.4.
	MHC	iP	27.5	d	Fiji Islands. h about 619 km.
Sep. 1	BRK	iP	57 33.8	(d)	USCGS: 13.6°N, 92.5°W, 0 = 18 50 35.4.
		e	19 00 01.6		Off coast of Guatemala.
	BRX	eP	18 57 34	d	h about 37 km.
		e	50		
		e	58 12		Magnitude 6 1/2.
		ePP	59 01		
		eSZEN	19 03 25		
		e	06.2		
		e	07.5		
		eR	08.2		
	MHC	iP	18 57 29.0	d	
	FRE	iP	14.5		
	ARC	ePN	57.9		
		i	58 14.5		
	REN	iP	57 30.5		
		iSE	59 11.0		
	COR	iP	58 14.0		
	SHS	eP	57 47		
		i	19 00 06	d	
	VIN	eP	18 57 24.2	(d)	
	SCC	eP	28.6	d	
		e	50.1		
	SCC	e	59 59.8		
	CNC	e	57 34.2	(d)	
	PAC	iP	32.5	d	
	SFB	eP	35		
	FER	eE	06		
Sep. 2	BRK	eP	00 33 14.0		USCGS: 52.2°N, 170.9°W, 0 = 00 26 06.2.
	MHC	iP	20.4	d	Aleutian Islands.
		i	33.8	d	h about 33 km.
	FRE	e(P)	32.6		
	MIN	iP	32 43.4	c	
		i	33 24.1	c	
	REN	eP	18.9		
	SHS	eP	58		
Sep. 3	SHS	eP	06 22 52.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 4	BRK	iP	09 56 55.1	c	USCGS: 51.6°N, 178.2°W, 0 = 09 49 13.5.
		e	57 00.1		Andreanof Islands, Aleutian Islands.
	BRX	eSZEN	10 03 04		h about 40 km.
		eGEN	06.2		Magnitude 6 1/4.
		eRZEN	08 14		
			R from NW		
			mu sec		
		SH	2.5 19		
		H	5.3 26		
	MHC	iP	09 57 01.2	c	
		i	22.8	d	
	FRE	eP	13.7		
	REN	iP	56 59.6		
	COR	iP	19.6	c	
		i	32.5		
	SHS	iP	41.6	c	
	VIN	eP	57 05		
	CNC	eP	56 55.8	(c)	
	SFB	eP	56		
Sep. 4	MHC	i	10 02 46.1	c	
	REN	e(P)Z	03 05.6		
	SHS	e(P)Z	02 33		
Sep. 4	SHS	eP	15 14 33		
Sep. 4	MHC	eP	18 51 47.9	c	USCGS: 18.4°S, 175.8°W, 0 = 18 41 59.5.
	MIN	eP	18		Tonga Islands region.
	REN	e(P)	46.3		h about 402 km.
	SHS	eP	26		
Sep. 4	BRK	eP	19 19 27		USCGS: 53.0°N, 167.1°W, 0 = 19 12 34.4.
	MHC	eP	24.6	d	Fox Islands, Aleutian Islands.
	SHS	eP	03		h about 47 km.
Sep. 5	MHC	e(P)	00 57 57.3	c	USCGS: 16.2°S, 172.8°W, 0 = 00 46 29.8.
	FRE	e(P)	58 02.4		Tonga Islands region.
	REN	eP	12.8		h about 33 km.
	SHS	eP	02		
Sep. 5	MHC	iP	02 47 40.8	c	USCGS: 80.2°N, 2.3°W, 0 = 02 37 37.8.
	FRE	e	42.9		Svalbard region.
	REN	e(P)	27.5		h about 33 km.
	SHS	eP	23		
Sep. 5	BRK	eP	11 40 31.1	d	USCGS: 60.0°N, 150.6°W, 0 = 11 34 37.3.
	BRX	eP	31	dWN	Kenai Peninsula, Alaska.
		ipPNE	48	cES	h about 43 km.
		eSZEN	45 20	NE	
		eQZEN	46 58		Magnitude 5 3/4.
		eRZEN	47 54		
			mu sec		
		PZ	2.7 8		
		SH	5.7 16		
	MHC	iP	11 40 38.1	d	
		ipP	55.4	c	
		i	41 55.6	c	
	FRE	eP	40 49.1		
	ARC	e(P)N	14.7		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 5 (Cont.)	REN	iP	27.7		
		iSE	41 56.0		
	COR	iP	39 35.1		
	SHS	eP	40 10		
	VIN	eP	43		
	CNC	eP	31		
	SFB	e(P)	30.5		
	FER	ePE	32		
Sep. 5	SHS	eP	14 05 13		USCGS: 11.9°N, 141.9°E, 0 = 21 07 32.6. Mariana Islands region. h about 25 km.
Sep. 5	SHS	eP	21 20 17		USCGS: 63.3°N, 150.5°W, 0 = 00 05 13.8. Alaska. h about 135 km.
Sep. 8	MIN	iP	00 10 58.1	d	
		ipP	11 23.5	c	
	ARC	ePN	10 44.1		
	BRK	eP	04 55 44		USCGS: 51.7°N, 131.3°W, 0 = 04 52 08.6. Queen Charlotte Islands region. h about 23 km.
	BRX	eP	44	c	
		eSZEN	58 44	EN	
			mu sec		
		PZ	1.4 15		Magnitude 5.
		SH	7 20		
	MHC	iP	04 55 53.9	d	
	FRE	iP	56 08.0	c	
	MIN	iP	55 18.5	c	
		i	29.9	c	
	REN	iP	35.5	c	
	COR	iP	54 19.0		
	SHS	eP	55 10.6		
	VIN	eP	56 01		
	FER	eSE	57 18		
Sep. 8	BRK	iP	11 45 16.6		USCGS: 56.3°S, 27.1°W, 0 = 11 26 32.9. Sandwich Islands. h about 125 km.
		e	41		
		e	58		PAS: Magnitude 7 1/2 - 7 3/4.
	BRX	eP	41 50	cN(E)	
		ePPZEN	46 56		Magnitude 8.
		i	48 06		
		ePKS	42		
		e	49 18		
		eSKSE	52 09		
		eZEN	50		
		ePS	57		
		iPSPSZEN	12 03 44		
		iP'P'EN	04 21		
			mu sec		
		PZ	1.6 18		
		PZ	2 7		
		PPZ	12.4 7		
		PPH	7.1 7		
	MHC	iP'	11 45 16.1	c	
		iPP	46 59.3	d	
		iPKS	48 43.3	d	
	FRE	eP'	45 12.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 8 (Cont.)	MIN	iP'	19.8	c	
		i	41.7		
		e	47 21		
	REN	iP'	45 15.3	c	
	COR	iP'	46 25.7		
	SHS	eP'	19.6		
		e	33		
	VIN	iP'	45 14.4	c	
	PRS	iP'	13.8		
	CNC	eP'	17		
	PAC	iP'	16.1		
	SFB	eP'	17		
Sep. 8	MHC	iP	11 55 21.0	c	
	MIN	iP	03.7	c	
	REN	eP	07.8		
	SHS	e(P)	01		
Sep. 9	BRX	ePZ	09 22 58		USCGS: 52.7°N, 169.4°W, 0 = 09 10 25.2. Fox Islands, Aleutian Islands.
		e(S)ZE	26.8		
	MHC	eP	17 43	d	h about 61 km.
	MIN	eP	11.3	c	
	SHS	eP	06		
Sep. 9	MHC	eP	15 36 22.2	c	USCGS: 10.7°S, 164.4°E, 0 = 15 23 57.8. Santa Cruz Islands region. h about 79 km.
	MIN	e	38		
Sep. 9	BRK	eP	19 19 17.7		USCGS: 1.3°N, 90.8°W, 0 = 19 10 45.7. Galapagos Islands region. h about 33 km.
Sep. 10	MIN	iP	01 52 40.0	c	USCGS: 49.5°N, 158.6°E, 0 = 01 43 11.0. South of Kamchatka. h about 33 km.
	SHS	eP	35.6		
Sep. 10	MHC	eP	04 56 50.9	d	USCGS: 22.8°S, 63.5°W, 0 = 04 45 28.8. Salta Province, Argentina. h about 527 km.
		i	58 48.5	d	
	MIN	eP	56 58.3	c	
		ePP	58 55.6	d	
	REN	eP	48.8		
	COR	iP	57 17.6	c	
		iP	01.9	d	
		e	59 00		
Sep. 10	MIN	iP	11 44 12.0	c	
Sep. 10	BRK	eP	18 21 20.8	c	USCGS: 22.8°S, 177.8°W, 0 = 18 09 07.3. Kermadec Islands region. h about 152 km.
	MHC	iP	21.2	d	
	FRE	eP	24		
	MIN	eP	30.5	c	
	SHS	eP	29.7		
Sep. 11	BRK	eP	02 54 43	d	USCGS: 51.4°N, 180°, 0 = 02 46 50.3. Rat Islands, Aleutian Islands. h about 60 km.
	MHC	iP	46.8	d	
	FRE	eP	55 01		
	MIN	eP	54 31.7	c	
	REN	eP	46.9	d	
	COR	eP	02.5		
	SHS	eP	26		
	CLS	e(P)	35		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 11	BRX	eP	04 41 24		USCGS: 43.5°N, 127.2°W, 0 = 04 39 43.6.
		eSNEZ	42 44		Off coast of Oregon.
	MHC	iP	41 35.2	c	h about 22 km.
	FRE	eP	56.8		
	MIN	iP	05.9	d	
	ARC	ePE	21.1		
	REN	eP	30.6		
	COR	iP	29.5	c	
	SHS	eP	57.9		
	CLS	eP	14.0	c	
	FER	ePE	40		
Sep. 11	MHC	iP	06 08 45.5	d	USCGS: 28.7°S, 69.2°W, 0 = 05 56 34.6.
	MIN	eP	53.8	c	La Rioja Province, Argentina.
					h about 120 km.
Sep. 11	BRK	eP	22 24 55.7	c	USCGS: 10.9°N, 62.4°W, 0 = 22 15 02.6.
	MHC	iP	52.4	c	Near coast of Venezuela area.
	MIN	eP	54.5	c	Felt: Trinidad. h about 134 km.
	COR	eP	25 10.1		
	SHS	eP	24 57.9		
	CLS	eP	58		
Sep. 11	REN	eP	23 58 29.4		USCGS: 42.9°N, 145.3°E, 0 = 23 47 23.1.
	SHS	eP	02.6		Near coast of Hokkaido, Japan.
		e	14.4		h about 49 km.
Sep. 12	FRE	e	00 50 23.5		
Sep. 12	MHC	iP	05 44 16.2	d	USCGS: 63.4°N, 149.4°W, 0 = 05 38 01.3.
		i	21.8	d	Alaska. Felt: Summit and McKinley
	MIN	eP	43 52.1	c	Park. h about 50 km.
Sep. 12	MHC	e	08 12 49.8	c	USCGS: 15.2°S, 173.2°W, 0 = 08 01 37.3.
	MIN	eP	08 13 00.7	d	Samoa Islands region.
					h about 90 km
Sep. 12	BRK	eP	11 28 36		USCGS:11.1°S, 70.6°W, 0 = 11 18 25.3.
	MHC	iP	32.3	c	Peru-Brazil border.
	MIN	eP	41.1	c	h about 543 km.
	REN	eP	33.5	d	
	COR	iP	29 01.9	c	
	SHS	iP	28 44.6	d	
Sep. 12	BRK	eP	37 44	c	USCGS: 44.0°N, 147.9°E, 0 = 12 27 07.6.
	MHC	iP	48.3	c	Kurile Islands. h about 50 km.
	FRE	e(P)	58		
	MIN	iP	36.3	c	
	REN	eP	48.0		
	COR	eP	11.4		
	SHS	eP	32.5		
Sep. 12	BRX	eP	19 20 38		USCGS: 32.4°N, 115.2°W, 0 = 19 18 42.9.
	eSZEN		22 32		Near California-Mexico border.
	e(R)Z		23.2		Felt: Southern California, Arizona
			mu sec		and Mexico. h about 33 km.
			35 22		
			R from S		PAS: Magnitude 4.8.
	MHC	iP	19 20 30.2	c	
		i	22 43.2		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 12 (Cont.)	FRE	eP	19 20 10		
		e	32		
		e	51		
	MIN	e	21 05.3	d	
		i	23 51.6		
	ARC	e(P)N	24 40.7		
	REN	eP	20 46.6		
	COR	eP	22 02.5		
	SHS	e(P)	21 16		
Sep. 13	BRK	eP	21 32 18.1	d	USCGS: 41.7°S, 75.2°W, 0 = 21 19 19.9.
	BRX	eP	18	d	Off coast of southern Chile.
					h about 40 km.
		eRZN	22 01		
			R from S		Magnitude 7.
			mu sec		
		PZ	1.9 6		
		PZ	2.0 8		
	MHC	iP	21 32 15.2	c	
	FRE	eP	07.8		
	MIN	e	31 46		
		e	32 26.0		
	REN	iP	19.4		
	COR	eP	44.3	d	
	SHS	e(P)	27.9		
	VIN	iP	13.1		
	CLS	eP	21.8	c	
Sep. 14	MHC	iP	01 18 46.4	d	USCGS: 15.0°N, 91.6°W, 0 = 01 07 23.7.
		i	58.7	c	Guatemala. h about 152 km.
	MIN	eP	57.3	d	
	COR	iP	19 24.5	d	
Sep. 14	BRK	eP	18 56 12.6	(d)	USCGS: 23.4°S, 180.0°, 0 = 18 44 48.7.
	MHC	iP	13.2	d	South of Fiji Islands.
	FRE	eP	16.9		h about 550 km.
	MIN	iP	22.0	d	
	SHS	eP	21.5		
	VIN	eP	13		
	CLS	eP	13		
Sep. 15	BRX	e(PP)	02 04 29	d	USCGS: 34.9°N, 33.8°E, 0 = 01 46 09.9.
	MHC	eP	00 15.1	d	Cyprus. h about 36 km.
		e(P')	04 24.9		Slight damage on Cyprus.
	MIN	eP	00 01.9	d	Felt: Mersin, Turkey.
		e	03 41.7		
	SHS	eP	00 00.9		
	VIN	eP	18		
	CLS	e(PP)	04 26		
Sep. 15	MHC	eP	02 15 55.4	d	
		i	16 17.3	d	
	SHS	e(P)	06.9		
Sep. 16	BRK	e(P)	03 26 56		USCGS: 46.0°N, 122.0°W, 0 = 03 24 58.1.
	CLS	eP	46		Skamania County, Washington.
	PRC	eP	54.2		Felt: Southern Washington and
	MHC	eP	27 02.8	c	northern Oregon. h about 33 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 16	FRE	e	18.5		
(Cont.)	MIN	iP	26 22.9	c	
	ARC	e(P)N	15.9		
	REN	eP	41.2		
	COR	iP	25 27.7	d	
		iSN	49.3		
	SHS	iP	26 19.2	c	
	VIN	e(P)	27 14.7		
Sep. 16	COR	eP	06 47 24.3		
		SN	49.4		
Sep. 16	MIN	eP	11 47 28.2	c	
	COR	iP	46 32.6	d	
		iS	56.1		
	SHS	eP	47 21		
Sep. 16	BRK	eP	12 21 16		USCGS: 28.4°N, 138.6°E, 0 = 12 09 53.7. South of Honshu. h about 430 km.
	MHC	eP	19.9	c	
	MIN	eP	12.3	c	
	COR	iP	04.0	d	
	SHS	eP	09.8		
Sep. 16	MHC	iP	13 42 45.1	d	USCGS: 14.5°N, 46.0°W, 0 = 13 31 34.5. Mid-Atlantic ocean. h about 19 km.
	MIN	eP	47.7	c	
	SHS	eP	50.3		
	VIN	eP	49.5		
Sep. 16	ARC	(e)(P)N	16 14 13.8		
Sep. 16	BRK	e(P)	17 27 33		USCGS: 52.3°N, 158.5°E, 0 = 17 17 46.1. Near east coast of Kamchatka. h about 49 km.
	MHC	i	34.1	c	
	MIN	eP	07.1	c	
		e	23.8	c	
	REN	e	18.7		
	SHS	eP	26 03		
		e	15		
Sep. 16	MIN	eP	21 35 24.0	c	USCGS: 12.8°S, 66.5°E, 0 = 21 15 31.0. Indian Ocean, 900 km. S.W. of Chagos Islands. h about 33 km.
	SHS	eP	22.8		
Sep. 17	MIN	eP	06 21 02.9	d	USCGS: 19.1°S, 169.4°E, 0 = 06 08 42.2. New Hebrides Islands. h about 242 km.
	SHS	eP	20 59.2		
Sep. 17	BRK	eP	08 55 09		USCGS: 23.9°N, 122.1°E, 0 = 08 41 57.3. Near east coast of Formosa. h about 53 km.
	MHC	iP	14.5	c	
	MIN	eP	06.2	c	
	REN	e	14.9		
	COR	iP	54 52.0	c	
	SHS	eP	55 03.5		
Sep. 17	COR	eP	11 03 43.3	c	
Sep. 17	BRK	eP	15 57 57		USCGS: 46.0°N, 122.0°W, 0 = 15 55 58.8. Skamania County, Washington. Felt: Southwestern Washington and northwestern Oregon. h about 33 km.
		e(S)EN	59.7		
	MHC	eP	58 05.0	c	
		i	29.6	d	
	FRE	eP	18.2		
	MIN	eP	57 23.2	d	
		i	58 51.2	c	
	ARC	(e)(P)N	57 16.1		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 17	REN	eP	40.6		
(Cont.)	COR	iP	56 25.5	d	
		iS	48.0		
	SHS	iP	57 17.7	c	
	VIN	eP	58 14.1		
	CLS	eP	57 46		
	PRC	eP	54		
	SFB	eP	59.5		
	FER	e(P)E	12		
Sep. 17	COR	iP	16 34 31.1	d	
		S	34 53.8	d	
Sep. 17	BRK	e	23 48.6		USCGS: 5.9°S, 147.4°E, 0 = 23 22 06.3. Near north coast of New Guinea.
		eR	00 05		
	MHC	iP	23 35 25.5	d	h about 45 km.
	FRE	e(P)	29.2		
	MIN	eP	23.1	d	
	REN	eP	29.8		
	SHS	eP	21.2		
Sep. 18	BRK	eP	02 28 14.3		USCGS: 49.0°N, 128.9°W, 0 = 02 25 19.3.
	BRX	eP	14	d	Vancouver Island region.
		e	30 36		h about 21 km.
	MHC	iP	28 24.1	d	PAL: Magnitude 4 3/4 - 5.
	FRE	iP	39.7	d	
	MIN	iP	27 47.7	d	
		i	28 26.7		
	ARC	(e)(P)N	27 29.2		
	REN	iP	28 08.4	d	
	COR	iP	27 48.5		
	SHS	iP	40.4	d	
	VIN	iP	28 32.0	d	
	CLS	eP	04.1		
	PRC	eP	09.6		
	SFB	eP	28 15		
	FER	e	30 06		
Sep. 18	MIN	eP	11 14 34.9	d	USCGS: 41.0°N, 50.2°E, 0 = 11 01 04.5.
	COR	iP	22.6	d	Caspian Sea. h about 55 km.
	SHS	eP	38.7		
Sep. 18	REN	eP	15 00 16.2		
Sep. 18	MHC	eP	15 50 08.3	c	USCGS: 20.9°S, 173.5°E, 0 = 15 37 34.5.
	FRE	e(P)	18		Loyalty Islands region.
	MIN	eP	22.0	c	h about 33 km.
	SHS	eP	17.7		
Sep. 18	MIN	eP	21 37 40.1	c	USCGS: 49.0°N, 128.5°W, 0 = 21 35 17.4.
	SHS	eP	37 32.7		Vancouver Island region.
					h about 33 km.
Sep. 19	BRK	eP	02 37 03.6		USCGS: 20.5°S, 62.9°W, 0 = 02 25 49.2.
		e	39 06		South of Bolivia. h about 580 km.
	BRX	ep	37 04		
		epP	39 06		Magnitude 6.2.
		ePP	40 06		
		ePPP	42 24		
		eSZN	46 26		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 19 (Cont.)		eSSN	52 08		
		ePKKPN	55.1		
		eGN	59.00		
			mu sec		
		PZ	2.4 10		
		PZ	0.6 1.6		
	MHC	iP	02 37 00.4	c	
		i	16.4	c	
		ipP	39 04.3		
	FRE	eP	36 51.7		
		e	38 56.2		
	MIN	eP	37 07.8	c	
		e	39 11.8	d	
	ARC	e(P)N	37 20.4		
		e(S)N	46 46.8		
	REN	iS	25.0	c	
	COR	iP	37 25.8	c	
		ipP	39 32.9	c	
	SHS	eP	37 10.9	c	
		e	38 48		
		eS	46 31		
	VIN	P	36 58.5		
	PRS	iP	56.5		
	SCC	iP	37 01.1		
	PRC	iP	06.3		
	CLS	iP	06.7		
	PAC	iP	02.0	c	
	SFB	eP	04.9		
	FER	eSE	47 00		
Sep. 19	MHC	eP	06 22 06.5	c	USCGS: 14.9°N, 146.8°E, 0 = 06 09 56.6. Mariana Islands. h about 61 km.
	MIN	eP	14.0	d	
	REN	e(P)	22.5		
	SHS	eP	11.6		
Sep. 19	BRK	eP	09 54 56.1	c	USCGS: 6.7°N, 82.4°W, 0 = 09 46 17.7. Off south coast of Panama. Felt: Chitré. h about 33 km.
		ePP	56 53	c	
	BRX	ePZEN	54 56	cWN	
		ePPZEN	56 53	cWN	
		eSZEN	10 01 52	ES	
		eGEN	08 04		
		eRZ	10 04		
			mu sec		
		PZ	2.8 10		
		PH	1.7 12		
		PPZ	2.2 12		
		PPH	2.1 12		
		SH	10 24		
	MHC	i	09 54 50.7	c	
		i	55 07.5		
	FRE	eP	54 37		
	MIN	eP	55 01.6	c	
		i	17.2		
		iPP	56 55.1		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 19 (Cont.)	REN	iP	54 50.5	c	
	COR	eP	55 28.0	c	
	VIN	eP	54 46.6		
	SHS	eP	55 05.5		
	CLS	eP	01		
	PRC	eP	00		
	PAC	iP	54 54.5	d	
	SFB	eP	54 57		
Sep. 19	REN	e	16 29 66.6		
Sep. 19	BRK	iP	18 25 28.9		USCGS: 21.6°S, 179.3°W, 0 = 18 25 28.9. Fiji Islands region. h about 592 km.
	MHC	iP	36 39.3	c	
	FRE	eP	43.8		
	MIN	iP	47.9	d	
	REN	eP	51.3		
	COR	iP	56.5	c	
	SHS	iP	47.2	c	
Sep. 19	BRK	iP	21 53 44.2	c	USCGS: 60.1°S, 23.3°W, 0 = 21 34 42.3. Sandwich Islands region. h about 33 km.
	BRX	eR	22 34		
	MHC	eP	21 43.2	c	
	REN	e	21 53 44.8		
	SHS	eP	47.5		
	VIN	eP	42		
Sep. 20	REN	eP	15 30 17.1		
Sep. 20	BRK	eP	19 16 38		USCGS: 3.6°S, 151.0°E, 0 = 19 03 37.7. New Ireland region. h about 44 km.
	BRX	eSN	27 30		
		eSSZN	33 32		
		eGN	40 21		
		eR	44 14		Magnitude 6 1/4.
	MHC	iP	16 41.7	c	
		i	17 03.5	d	
	FRE	eP	16 47.4		
	REN	iP	47.1	d	
	SHS	eP	34		
	VIN	eP	42		
Sep. 21	MHC	e	15 31 34		
	MIN	e	30 58		
	REN	e(P)E	24.7		
Sep. 21	MHC	eP	18 31 24.1	c	USCGS: 26.3°S, 70.5°W, 0 = 18 19 19.1. Off coast northern Chile. h about 36 km.
	MIN	eP	33.0	c	
	SHS	eP	36.6		
Sep. 22	REN	e(P)E	18 00 10.9		
		iSE	00 43.0	d	
Sep. 23	BRK	eP	03 08 18		USCGS: 19.6°N, 155.2°W, 0 = 03 01 36.7. Hawaii Island, Hawaii. h about 33 km.
		eTZ	43 12		
	MHC	iP	08 21.6	d	
		eT	43 17.4		
		i	28.6		
	FRE	eP	08 31.9		
	MIN	iP	33.0	d	
		eTZ	43 36.9		
	SHS	eP	08 28.9		
	VIN	eTPZ	43.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 23 (Cont.)	CLS	eP	08 18		
		eT	43 13		
		eT	43 05		
	PAC	i	05.3		
Sep. 23	MHC	iP	03 59 29.8		USCGS: 42.0°N, 132.0°E, 0 = 03 48 26.0.
	MIN	eP	18.4	c	Sea of Japan. h about 441 km.
	ARC	e(P)N	58 40.3		
	SHS	eP	59 15		
Sep. 23	BRK	eP	08 28 50		USCGS: 28.4°S, 177.3°W, 0 = 08 16 23.
	MHC	eP	49.9	c	Kermadec Islands region.
		i	29 05.7		h about 41 km.
	MIN	eP	28 59.9		
	SHS	e(P)	28 59		
Sep. 23	ARC	ePN	23 01 02.4		
Sep. 24	BRK	eP	19 10 30.3		USCGS: 18.3°N, 98.6°W, 0 = 19 04 36.3.
	MHC	iP	21.8	d	Puebla, Mexico. h about 55 km.
		e	13 33.1	d	
	FRE	eP	10 06.7		
	MIN	eP	37.7	d	
	REN	iP	24.8	d	
	COR	iP	11 10.6	c	
	SHS	eP	10 42.2		
	VIN	eP	11.3		
	PRS	eP	14		
	PRC	eP	32		
Sep. 24	BRK	eP	21 52 34		USCGS: 33.5°N, 141.3°E, 0 = 21 40 57.3.
	MHC	eP	38.1	d	Off coast of Honshu.
		i	59.6	c	h about 50 km.
	FRE	eP	47.6		
	MIN	eP	29.3	d	
	REN	iP	39.5	d	
	COR	e(P)Z	06.7		
	SHS	eP	25.9		
	VIN	eP	40		
	PRS	eP	42.7		
	PRI	eP	31		
Sep. 25	BRK	eP	02 33 09.4		USCGS: 60.5°N, 153.0°W, 0 = 02 27 13.4.
	MHC	iP	15.6	d	Southern Alaska. h about 125 km.
	FRE	eP	26.9		
	MIN	iP	32 53.0	d	PAS: Magnitude 5 3/4 - 6.
		i	33 33.4	d	
	REN	iP	07.8	d	
	COR	eP	32 15.4		
	SHS	iP	48.2	d	
	VIN	eP	33 21.6		
	PRS	eP	20.5		
Sep. 25	BRK	eP	02 39 42		
	MIN	eP	36.1	d	
	SHS	eP	34.7		
Sep. 25	BRK	eP	05 35 41		USCGS: 19.8°N, 155.2°W, 0 = 05 28 57.8.
	BRX	eSEN	41 04		Hawaii Island, Hawaii.
		eGEN	42 44		h about 33 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 25 (Cont.)	MHC	eP	35 40.4	d	PAS: Magnitude 5 3/4 - 6.
		eT	06 10 21.4		
		iT	48.0		
	FRE	eP	05 35 51.3		
	MIN	eP	51.2	c	
	ARC	eN	44 53.8		
		eTN	06 11 03.6		
	REN	eP	05 35 52.7		
	COR	e(P)Z	36 04.6		
	SHS	eP	35 49.7		
	VIN	eP	43.2		
	PRS	eP	35 42		
	PAC	eTZ	06 10 28.6		
Sep. 25	MHC	eP	06 36 05.9	c	
	MIN	eT	07 10 54.5		
Sep. 26	MIN	eP	19 09 00.9		
Sep. 27	MHC	iP	00 57 41.0	c	USCGS: 15.6°S, 175.0°W, 0 = 00 46 39.8.
	MIN	eP	48.1	c	Fiji Islands region.
	COR	e(P)Z	20.9		h about 281 km.
	SHS	iP	49.5	d	
Sep. 27	BRK	eP	02 00 42		USCGS: 19.0°N, 105.0°W, 0 = 01 55 28.6.
	MHC	eP	36.5	c	Near coast of Jalisco, Mexico.
		i	43.1	c	h about 33 km.
	FRE	eP	59.3	d	
	REN	eP	30.6		
	SHS	e	01 08		
	VIN	e	00 37.3		
Sep. 27	BRK	iP	06 45 00	c	USCGS: 17.3°S, 178.7°W, 0 = 06 34 05.4.
		epP	46 56	d	Fiji Islands region.
	BRX	epP	54	c	h about 555 km.
		ePP	47 50		
		eSN	54 00		Magnitude 5 3/4 - 6.
		esSN	57 27		
	MHC	iP	45 01.2	c	
		ipP	46 57.3	d	
	FRE	eP	45 05.8		
		e	47 01.9		
	MIN	eP	45 09.5	c	
		ePP	47 06.8		
	REN	ePE	45 00.8	c	
		ipP	46 58.2	d	
		iPP	47 16.2	d	
		iSE	54 18.5	d	
		iP	45 17.1	c	
	SHS	eP	08.5		
		e	47 04.8		
	VIN	eP	45 00		
	PRS	iP	44 59		
	PRC	eP	57		
	PAC	i	58.9	d	
	SFB	eP	59		
Sep. 27	MIN	e	07 14 42		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 27	BRK	eP	11 27 44		USCGS: 52.5°N, 168.7°W, 0 = 11 20 46.8.
	BRX	eSZEN	33 24		Fox Islands, Aleutian Islands.
		eGN	35.8		h about 27 km.
		eR	37		
	MHC	eP	27 48	d	
	FRE	e	28 04		
	MIN	eP	27 34.5	c	
	REN	eP	46.9		
	COR	eP	06.1		
	SHS	eP	29.7		
	VIN	eP	50.7		
Sep. 27	BRK	eP	12 26 34	c	USCGS: 59.3°S, 23.3°W, 0 = 12 07 32.6.
	MHC	iP	32.5	d	Sandwich Islands. h about 33 km.
		e	28 20.6		
	FRE	eP	26 29.8		
	MIN	iP	35.8	c	
	REN	iP	20.0		
	COR	e(P)	43.6		
	SHS	iP	37.0	c	
	VIN	e(P)	32		
	PRS	eP	31		
	SFB	eP	32.8		
Sep. 27	BRK	eP	19 27 43		USCGS: 52.7°N, 168.7°W, 0 = 19 20 48.6.
	MHC	iP	49.4	c	Fox Islands, Aleutian Islands.
	FRE	eP	28 02.6		h about 42 km.
	MIN	eP	27 33.5		
	REN	iP	38.1		
	COR	eP	05.6		
	SHS	eP	28.2		
	VIN	e	57		
	PRS		38		
Sep. 27	BRK	eP	19 33 57		USCGS: 52.4°N, 168.7°W, 0 = 19 2 00.7.
	MHC	iP	34 05	c	Fox Islands, Aleutian Islands.
		i	23.6	d	h about 22 km.
	FRE	eP	17.6		PAL: Magnitude 5 1/4.
	MIN	eP	33 48.8	c	
	REN	eP	50.0		
	COR	eP	19.5	c	
	SHS	eP	42.6		
	VIN	e	34 10		
	SFB	eP	33 58.5		
Sep. 27	COR	eP	21 19 38.0		USCGS: 26.3°N, 124.7°E, 0 = 21 07 12.1.
	SHS	eP	50.1	d	East China Sea. h about 160 km.
		e	20 29.5		
Sep. 28	BRK	eP'	01 43 00		USCGS: 3.9°S, 102.0°E, 0 = 01 23 59.6.
	MHC	eP'	00.4	c	Sumatra. h about 78 km.
		i	19.4	c	PAL: Magnitude 5 1/2 - 5 3/4.
	FRE	eP'	04		
	MIN	eP'	42 56.7	c	
	REN	eP'	48.6		
	COR	eP'	51.9		
	SHS	eP'	55.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Sep. 28	VIN	eP'	43 02.1		
(Cont.)	CIS	eP'	42 57		
	PRS	eP'	43 02		
Sep. 28	BRK	eP	03 36 25		USCGS: 30.8°N, 141.6°E, 0 = 03 24 37.7.
	MHC	eP	28.4	d	South of Honshu, Japan.
		e	39 04.7		h about 41 km.
	MIN	eP	19.6	c	PAS: Magnitude 6.
		ePP	38 56.7		
	REN	eP	36 19.0		
		e	51 26.3		
	COR	eP	36 07.7		
		e	38 22.8		
	SHS	eP	36 16.6		
		e	38 41.5		
	CIS	e(P)	36 22		
	PRS	e(P)	31		
Sep. 28	SHS	e(P)	04 30 46.0		
Sep. 28	MHC	iP	06 34 52.6	c	
Sep. 29	MHC	iP	08 32 12.5	d	USCGS: 23.0°S, 66.7°W, 0 = 08 19 38.0.
	MIN	eP	31 55.8	c	Jujuy Province, Argentina.
	SHS	eP	51.5		h about 250 km.
Sep. 29	BRX	eP	19 25 22		USCGS: 0.5°N, 122.4°E, 0 = 19 06 13.4.
		eR	55.6		Northern Celebes. h about 110 km.
	MHC	eP	24 50.3	c	
	MIN	eP	52.3	c	
	SHS	e	45.8		
Sep. 29	MHC	iP	22 47 10.3	d	USCGS: 7.7°N, 79.3°W, 0 = 22 38 04.1.
					Near coast of Southern Colombia.
					h about 33 km.

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MANZANITA LAKE--VINEYARD--CONCORD--SANTA CRUZ
LLANADA, CALISTOGA, POINT REYES, PARAISO

Earthquakes and the Registration of Earthquakes

From July 1, 1961 to September 30, 1961

By

Ali A. Nowroozi
and
Agustin Udias, S.J.

University of California
Berkeley

1964

SEISMOGRAPHIC STATIONS OF THE UNIVERSITY OF CALIFORNIA

Perry Byerly, Director (retired March, 1963)
Bruce A. Bolt, Director (March, 1963 --)

EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

and

REGISTRATION OF EARTHQUAKES AT: BERKELEY, MOUNT HAMILTON, PALO ALTO, SAN FRANCISCO, FERNDALE, FRESNO, MINERAL, ARCATA, RENO, CORVALLIS, SHASTA, MANZANITA LAKE, VINEYARD, CONCORD, SANTA CRUZ, LLANADA, CALISTOGA, POINT REYES, AND PARAISO

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CONTENTS

INTRODUCTION

Each number in this series includes determinations of epicenters, origin times, and magnitudes, as well as other information available at the time of writing, for earthquakes in northern California and adjoining areas (Part I), and tabulates recorded arrival times of seismic waves and other information for teleseisms and for the larger earthquakes in the local area (Part II).

Information regarding the seismographic stations which comprise the Berkeley network, instruments operated regularly at each station, and any changes in instrumentation during the period covered by this issue will be found on the following three pages.

STATIONS IN OPERATION - JULY - SEPTEMBER 1961

Station	North Latitude	West Longitude	Elev. Meters	Symbol	Present Auspices and Date Established
Berkeley (Haviland)	37° 52.4'	122° 15.6'	81	BRK, BRX	Univ. of California, 1887
Mt. Hamilton	37° 20.5'	121° 38.5'	1282	MHC	Lick Observatory, 1887
Palo Alto	37° 25.0'	122° 10.9'	83	PAC	Stanford Univ., 1927
San Francisco	37° 46.6'	122° 27.1'	100	SFB	Univ. of San Francisco, 1931
Ferndale	40° 34.6'	124° 15.7'	15	FER	City of Ferndale, 1933
Fresno	36° 46.0'	119° 47.8'	88	FRE	Fresno City College, 1935
Mineral	40° 20.7'	121° 36.3'	1495	MIN	Natl. Park Service, 1938
Arcata	40° 52.6'	124° 04.5'	59	ARC	Humboldt State College, 1948
Reno	39° 32.3'	119° 48.8'	1386	REN	Univ. of Nevada, 1948
Shasta	40° 41.7'	122° 23.3'	312	SHS	Bureau of Reclamation, 1942
Corvallis	44° 35.1'	123° 18.2'	123	COR	Oregon State Univ., 1950
Manzanita Lake	40° 32.2'	121° 33.7'	1800	MLC	Natl. Park Service, 1956
Vineyard (local)	36° 45.0'	121° 23.1'	330	VIN	W.A. Taylor and Co., 1959
(telemeter)	36° 45.0'	121° 23.3'	380	VIT	
Concord	37° 58.1'	122° 04.3'	36	CNC	Diablo Valley College, 1960
Santa Cruz	37° 00.4'	121° 59.8'	128	SCC	City of Santa Cruz, 1961
Paraiso	36° 19.9'	121° 22.2'	363	PRS	Paraiso Hot Springs, 1961
Llanada	36° 37.0'	120° 56.6'	475	LLA	Charles McCullough Ranch, 1961
Calistoga	38° 38.2'	122° 35.1'	457	CLS	Terrance Kirk Ranch, 1961
Point Reyes	38° 04.8'	122° 52.0'	404	PRC	Federal Aviation Agency, 1961

STATION INSTRUMENTATION

July-September 1961

Station	Type of Instrument	T_o sec	T_g sec	Component
BRK	Benioff 100 kg VRT	1.0	0.4	Z
	Benioff 100 kg VRT	1.0	8.0	Z
	Wood-Anderson torsion	0.8	-	S,W
	100X torsion	0.8	-	N,W
BRX	Galitzin-Wilip moving coil	12	12	N,E,Z
	Press-Ewing moving coil	30	90	N,E,Z
MHC	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
PAC	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	N,E
SFB	Lehner-Griffith moving coil	1.2	0.3	Z
	Wood-Anderson torsion	0.8	-	S,W
FER	Bosch-Omori 25 kg	12	-	S,W
FRE	Sprengnether moving coil	2.0	2.0	N,E,Z
MIN	Benioff 100 kg VRT	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
ARC	Marion-Slichter moving coil	1.1	0.2	Z
	Wood-Anderson torsion	0.8	-	N,E
REN	Sprengnether moving coil	2.0	2.0	N,E,Z
SHS	Benioff 50 kg moving coil	1.5	0.45	N,E,Z
COR	Slichter	1.0	-	N,E,Z
	Wilson-Lamison	1.0	$1\frac{1}{2}$	Z
MLC	Loucks-Omori	$3\frac{1}{2}$	-	S,E
VIN	Benioff 100 kg VRT	1.0	0.2	Z
	Wood-Anderson torsion	0.8	-	S,W
VIT	Benioff 14 kg VRT	1.0	0.2	Z
CNC	Benioff 100 kg VRT	1.0	0.2	Z
SCC	Benioff 14 kg VRT	1.0	0.2	Z
PRS*	Benioff 14 kg VRT	1.0	0.2	Z
LLA*	Benioff 14 kg VRT	1.0	0.2	Z
CLS*	Benioff 14 kg VRT	1.0	0.2	Z
PRC*	Benioff 14 kg VRT	1.0	0.2	Z

*Changes in instrumentation or method of operation during the quarter covered by this issue:

July 7, 1961 - PRS 14 kg Benioff Z installed in a steel barrel, buried at Paraiso Hot Springs, Soledad.

September 8, 1961 - LLA 14 kg Benioff installed in a steel barrel buried at Charles McCullough Ranch, Llanada, California.

September 9, 1961 - CLS 14 kg Benioff installed in a steel barrel buried at Terrance Kirk Ranch, Star Route, Calistoga, California.

September 15, 1961 - PRC 14 kg Benioff installed in a steel barrel buried at a property of the Federal Aviation Agency.

Signals from these four stations are transmitted via leased telephone lines to recorders at Berkeley.

Direction of Motion: In the "Component" column, each horizontal component seismograph is designated by the direction of ground motion corresponding to upward trace motion on the seismogram when it is oriented so that time increases from left to right. On all vertical component (Z) instruments, upward trace motion corresponds to upward ground motion.

PART I. LOCAL EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

This section includes information on earthquakes in northern California (including adjacent offshore areas) and in adjoining sections of Nevada and Oregon which were well enough recorded to permit a determination of the epicenter. Latitude and longitude of each epicenter and the corresponding date and origin time are tabulated in the following list; epicenters are also plotted on one or both of the two maps immediately following the list.

For the entire northern California region, every effort is made to list all earthquakes of Richter magnitude 3.0 and above, but it is likely that some such shocks have been overlooked because the available seismographic data were inadequate for a good epicenter determination. Within the limited region covered by the map of the central Coast Ranges of California, locatable shocks of magnitude 2.0 and over are included in the tabulation and plotted on the map. Shocks of magnitude 3.0 and over occuring in the limited region are plotted on both maps. Shocks of magnitude less than 3.0 in northern California (and less than 2.0 in the central Coast Ranges) are tabulated only if reported felt or if of special interest for some other reason. Identified artificial earthquakes (explosions) ordinarily are not tabulated.

Explanation of the table:

Map No. for each epicenter corresponds to the number plotted beside that epicenter on the maps. Epicenters without numbers lie outside the area of the map. The underlining of a map number in the table (and on the maps) indicates that one point on a map has been used to represent more than one earthquake in the table.

Date and Origin Time are given in Greenwich Civil Time (GCT). Subtract eight (8) hours to convert to Pacific Standard Time (PST) or seven (7) hours to convert to Pacific Daylight Time (PDT). This will change the date for some of the earthquakes. Pacific Daylight Time was in effect throughout California from April 23 to September 24, 1961.

M is the Richter magnitude of the earthquake as determined from the maximum trace amplitudes recorded for the shock by standard Wood-Anderson torsion seismographs.

Q is a subjective estimate of the quality of the location of the epicenter by the person making the determination; "a" indicates excellent, "b" good, "c" fair, and "d" poor.

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Bulletin of the Seismographic Stations

Volume 31, No. 4, pp. 177 - 220

BERKELEY--MOUNT HAMILTCN--PALO ALTO
SAN FRANCISCO--FERNDALE--FRESNO
MINERAL--ARCATA--RENO--CORVALLIS--SHASTA
MANZANITA LAKE--VINEYARD--CONCORD--SANTA CRUZ
LLANADA, CALISTOGA, POINT REYES, PARAISO
PRIEST

Earthquakes and the Registration of Earthquakes

From October 1, 1961 to December 31, 1961

By

Mansouri Niazi
and
Takeshi Mikumo

University of California
Berkeley
1964

SEISMOGRAPHIC STATIONS OF THE UNIVERSITY OF CALIFORNIA

Perry Byerly, Director (retired March, 1963)
Bruce A. Bolt, Director (March, 1963 --)

EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

and

REGISTRATION OF EARTHQUAKES AT: BERKELEY, MOUNT HAMILTON, PALO ALTO, SAN FRANCISCO, FERNDALE, FRESNO, MINERAL, ARCATA, RENO, CORVALLIS, SHASTA, MANZANITA LAKE, VINEYARD, CONCORD, SANTA CRUZ, LLANADA, CALISTOGA, POINT REYES, PARAISO, PRIEST

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CONTENTS

INTRODUCTION

Each number in this series includes determinations of epicenters, origin times, and magnitudes, as well as other information available at the time of writing, for earthquakes in northern California and adjoining areas (Part I), and tabulates recorded arrival times of seismic waves and other information for teleseisms and for the larger earthquakes in the local area (Part II).

Information regarding the seismographic stations which comprise the Berkeley network, instruments operated regularly at each station, and any changes in instrumentation during the period covered by this issue will be found on the following three pages.

STATIONS IN OPERATION - OCTOBER - DECEMBER 1961

Station	North Latitude	West Longitude	Elev. Meters	Symbol	Present Auspices and Date Established
Berkeley (Haviland)	37° 52.4'	122° 15.6'	81	BRK, BRX	Univ. of California, 1887
Mt. Hamilton	37° 20.5'	121° 38.5'	1282	MHC	Lick Observatory, 1887
Palo Alto	37° 25.0'	122° 10.9'	83	PAC	Stanford Univ., 1927
San Francisco	37° 46.6'	122° 27.1'	100	SFB	Univ. of San Francisco, 1931
Ferndale	40° 34.6'	124° 15.7'	15	FER	City of Ferndale, 1933
Fresno	36° 46.0'	119° 47.8'	88	FRE	Fresno City College, 1935
Mineral	40° 20.7'	121° 36.3'	1495	MIN	National Park Service, 1938
Arcata	40° 52.6'	124° 04.5'	59	ARC	Humboldt State College, 1948
Reno	39° 32.3'	119° 48.8'	1386	REN	Univ. of Nevada, 1948
Shasta	40° 41.7'	122° 23.3'	312	SHS	Bureau of Reclamation, 1942
Corvallis	44° 35.1'	123° 18.2'	123	COR	Oregon State Univ., 1950
Manzanita Lake	40° 32.2'	121° 33.7'	1800	MLC	National Park Service, 1956
Vineyard (local)	36° 45.0'	121° 23.1'	330	VIN	W. A. Taylor and Co., 1959
(telemeter)	36° 45.0'	121° 23.3'	380	VIT	
Concord	37° 58.1'	122° 04.3'	36	CNC	Diablo Valley College, 1960
Santa Cruz	37° 00.4'	121° 59.8'	128	SCC	City of Santa Cruz, 1961
Paraiso	36° 19.9'	121° 22.2'	363	PRS	Paraiso Hot Springs, 1961
Llanada	36° 37.0'	120° 56.6'	475	LLA	Charles McCullough Ranch, 1961
Calistoga	38° 38.2'	122° 35.1'	457	CLS	Terrance Kirk Ranch, 1961
Point Reyes	38° 04.8'	122° 52.0'	404	PRC	Federal Aviation Agency, 1961
Priest	36° 08.5'	120° 39.9'	1187	PRI	Federal Aviation Agency, 1961

STATION INSTRUMENTATION

October-December 1961

Station	Type of Instrument	T_o sec	T_g sec	Component
BRK	Benioff 100 kg (Z)	1.0	0.4	Z
	Benioff 100 kg (Z)	1.0	8.0	Z
	Wood-Anderson torsion	0.8	-	S,W
	100X torsion	0.8	-	N,W
BRX	Galitzin-Wilip moving coil	12	12	N,E,Z
	Press-Ewing moving coil	30	90	N,E,Z
MHC	Benioff 100 kg (Z)	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
PAC	Benioff 100 kg (Z)	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	N,E
SFB	Lehner-Griffith moving coil	1.2	0.3	Z
	Wood-Anderson torsion	0.8	-	S,W
FER	Bosch-Omori 25 kg	12	-	S,W
FRE	Sprengnether moving coil	2.0	2.0	N,E,Z
MIN	Benioff 100 kg (Z)	1.0	0.4	Z
	Wood-Anderson torsion	0.8	-	S,E
ARC	Marion-Slichter moving coil	1.1	0.2	Z
	Wood-Anderson torsion	0.8	-	N,E
REN	Sprengnether moving coil	2.0	2.0	N,E,Z
SHS	Benioff 50 kg moving coil	1.5	0.45	N,E,Z
COR	Slichter	1.0	-	N,E,Z
	Wilson-Lamison	1.0	$1\frac{1}{2}$	Z
MLC	Loucks-Omori	$3\frac{1}{2}$	-	S,E
VIN	Benioff 100 kg (Z)	1.0	0.2	Z
	Wood-Anderson torsion	0.8	-	S,W
VIT△	Benioff 14 kg (Z)	1.0	0.2	Z
CNC△	Benioff 100 kg (Z)	1.0	0.2	Z
SCC△	Benioff 14 kg (Z)	1.0	0.2	Z
PRS△	Benioff 14 kg (Z)	1.0	0.2	Z
LLA△	Benioff 14 kg (Z)	1.0	0.2	Z
CLS△	Benioff 14 kg (Z)	1.0	0.2	Z
PRC△	Benioff 14 kg (Z)	1.0	0.2	Z
PRI△*	Benioff 14 kg (Z)	1.0	0.2	Z

△Signals from these eight stations are transmitted via leased telephone lines to recorders at Berkeley.

* PRI - 14 kg Benioff installed in a waterproof steel barrel, buried on peak of Charlie Mountain, November 11, 1961.

Direction of Motion: In the "Component" column, each horizontal component seismograph is designated by the direction of ground motion corresponding to upward trace motion on the seismogram when it is oriented so that time increases from left to right. On all vertical component (Z) instruments, upward trace motion corresponds to upward ground motion.

PART I. LOCAL EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

This section includes information on earthquakes in northern California (including adjacent offshore areas) and in adjoining sections of Nevada and Oregon which were well enough recorded to permit a determination of the epicenter. Latitude and longitude of each epicenter and the corresponding date and origin time are tabulated in the following list; epicenters are also plotted on one or both of the two maps immediately following the list.

For the entire northern California region, every effort is made to list all earthquakes of Richter magnitude 3.0 and above, but it is likely that some such shocks have been overlooked because the available seismographic data were inadequate for a good epicenter determination. Within the limited region covered by the map of the central Coast Ranges of California, locatable shocks of magnitude 2.0 and over are included in the tabulation and plotted on the map. Shocks of magnitude 3.0 and over occuring in the limited region are plotted on both maps. Shocks of magnitude less than 3.0 in northern California (and less than 2.0 in the central Coast Ranges) are tabulated only if reported felt or if of special interest for some other reason. Identified artificial earthquakes (explosions) ordinarily are not tabulated.

Explanation of the table:

Map No. for each epicenter corresponds to the number plotted beside that epicenter on the maps. Epicenters without numbers lie outside the area of the map. The underlining of a map number in the table (and on the maps) indicates that one point on a map has been used to represent more than one earthquake in the table.

Date and Origin Time are given in Greenwich Civil Time (GCT). Subtract eight (8) hours to convert to Pacific Standard Time (PST) or seven (7) hours to convert to Pacific Daylight Time (PDT). This will change the date for some of the earthquakes. Pacific Daylight Time was in effect throughout California from April 23 to September 24, 1961.

M is the Richter magnitude of the earthquake as determined from the maximum trace amplitudes recorded for the shock by standard Wood-Anderson torsion seismographs.

Q is a subjective estimate of the quality of the location of the epicenter by the person making the determination; "a" indicates excellent, "b" good, "c" fair, and "d" poor.

Under Remarks will be found a short descriptive location of the epicenter, usually relative to a point named on the map. Information on small foreshocks and aftershocks is sometimes included under Remarks, but when numerous foreshocks or aftershocks accompany a large earthquake, a separate tabulation may be included following the main list of local shocks.

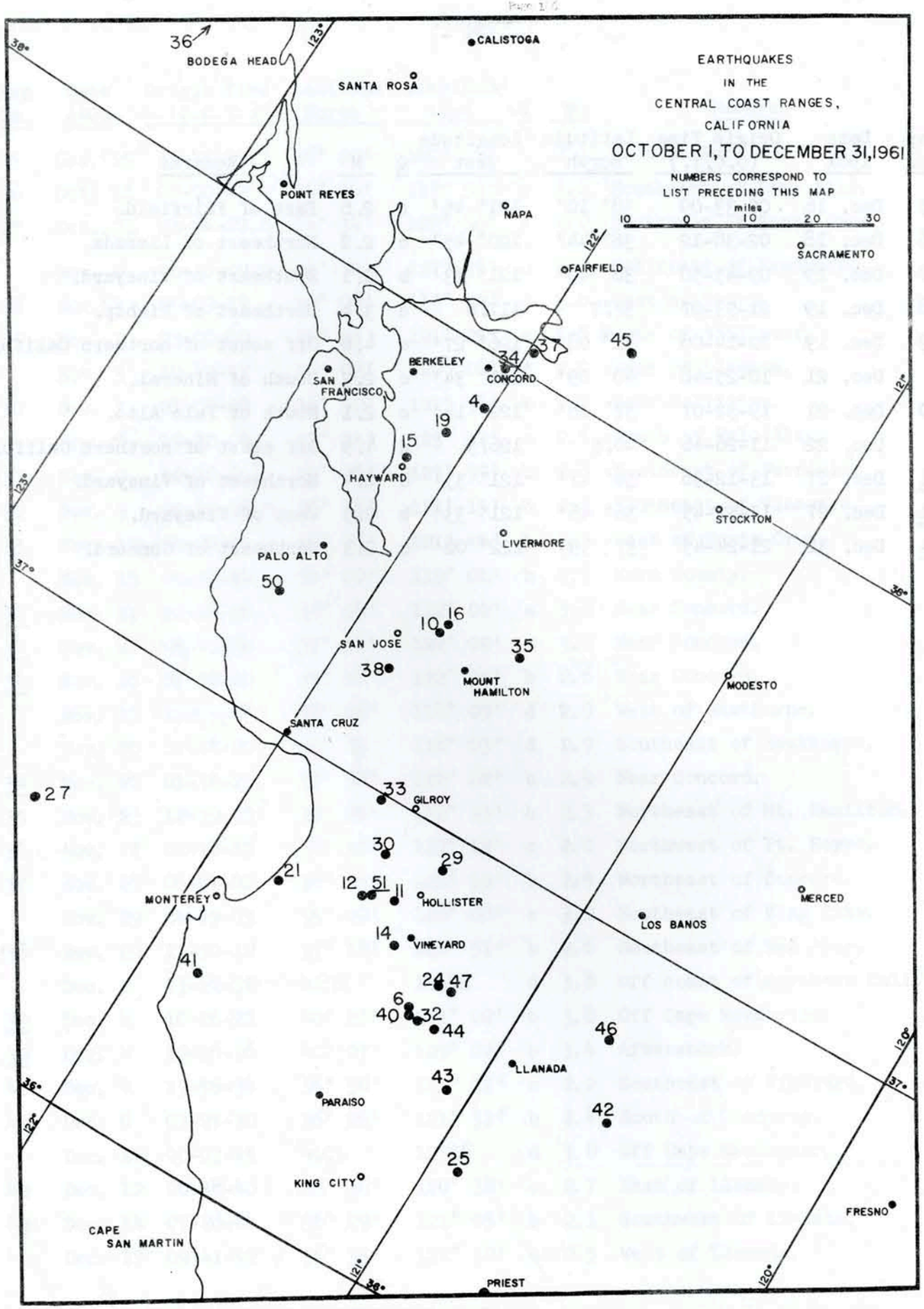
Information on intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly extracted from those collected by the Seismological Field Survey of the U.S. Coast and Geodetic Survey, which publishes a more complete summary in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region." This regular quarterly publication may be obtained from the District Officer, San Francisco District, Coast and Geodetic Survey, 121 Customhouse, San Francisco 26, California, or from the Director, U.S. Coast and Geodetic Survey, Washington 25, D.C. Intensities given in Roman numerals are assigned by the Coast and Geodetic Survey and based on the Modified Mercalli Intensity Scale of 1931.

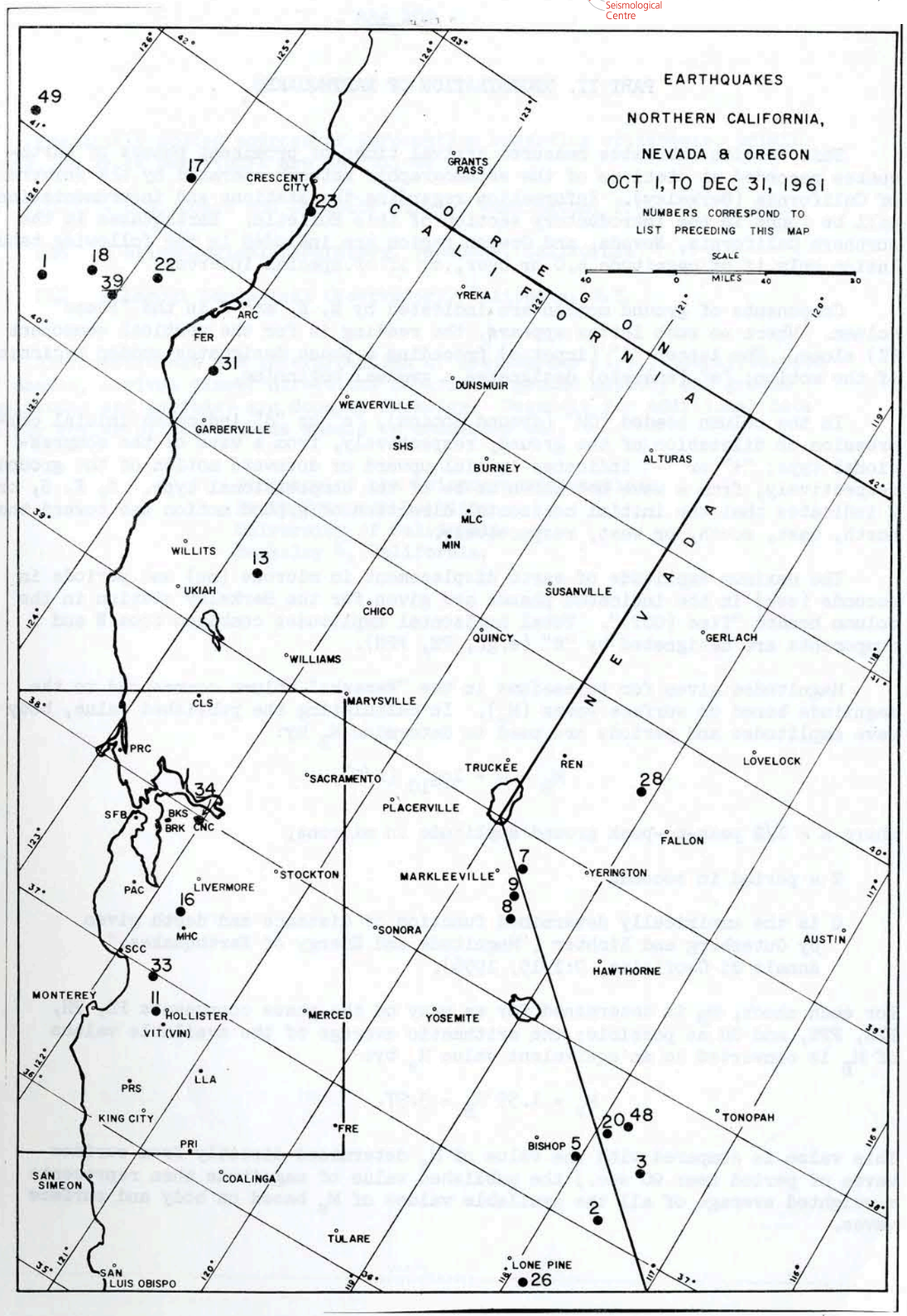
EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	Oct. 1	17-16-32	36.5	117.0	d	4.2	Southeast of Bishop.
1	Oct. 1	23-17-47	40° 18'	125° 32'	c	3.9	Off Cape Mendocino.
2	Oct. 2	12-49-37	37° 05'	117° 37'	c	3.5	Southeast of Bishop. Aftershock of Oct. 1.
3	Oct. 2	16-22-28	37° 28'	117° 32'	b	3.7	East of Bishop. Aftershock of Oct. 1.
4	Oct. 2	17-12-51	37° 53'	122° 01'	b	2.0	East of Berkeley.
5	Oct. 3	02-59-08.5	37° 22'	118° 02'	c	3.8	East of Bishop. Aftershock of Oct. 1.
6	Oct. 4	02-26-59	36° 34'	121° 17'	b	2.4	Southeast of Hollister.
7	Oct. 6	01-00-52	38° 48'	119° 36'	b	3.9	Northeast of Markleeville.
8	Oct. 7	07-22-16.5	38° 28'	119° 29'	c	3.2	Southeast of Markleeville. Aftershock.
9	Oct. 9	02-41-23	38° 38'	119° 33'	b	3.5	Aftershock.
10	Oct. 10	04-29-02	37° 23'	121° 47'	c	2.0	Northwest of Mt. Hamilton.
11	Oct. 10	19-20-04	36° 48'	121° 29'	b	3.2	Northwest of Vineyard. h about 10 km.
12	Oct. 10	19-22-06	36° 46'	121° 34'	a	2.2	Southwest of Hollister. Blast?
	Oct. 12	06-31-11.2	35.8	121.3	d	2.3	North of San Simeon.
	Oct. 14	06-46-48	39.0	122.7	d	2.7	Southeast of Ukiah. Foreshock.
13	Oct. 14	12-52-59.6	39° 30'	122° 44'	b	3.5	Northeast of Ukiah.
	Oct. 15	23-47-32	39° 26'	121° 25'	c	2.7	Southeast of Chico.
14	Oct. 16	14-19-35	36° 42'	121° 25'	b	2.3	Southwest of Vineyard. Felt.
15	Oct. 18	07-24-08	37° 42'	122° 08'	b	2.1	Southeast of Berkeley.
16	Oct. 19	08-08-47	37° 25'	121° 46'	b	3.5	Northwest of Mt. Hamilton.
17	Oct. 19	20-05-34.5	41° 21'	125° 03'	b	3.7	Northwest of Arcata. Off coast.
18	Oct. 20	10-18-48	40° 30'	125° 17'	c	3.7	Off Cape Mendocino.
19	Oct. 21	05-31-50	37° 47'	122° 04'	b	2.0	Southeast of Berkeley.
20	Oct. 24	06-31-06	37.6	117.9	d	3.2	Northeast of Bishop.
21	Oct. 25	10-17-12	36.7	121.8	d	2.1	Southeast of Santa Cruz.
	Oct. 26	17-39-06	38.7	123.6	d	2.7	Northwest of Ukiah.
22	Oct. 26	21-49-18.5	40.7	124.8	d	3.3	West of Arcata.
23	Oct. 26	23-40-31	41.6	124.1	d	3.7	Southeast of Crescent City.
24	Oct. 27	17-31-07.7	36° 40'	121° 15'	c	2.6	Southeast of Vineyard.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
25	Oct. 29	11-47-33.1	36° 20'	120° 55'	c	2.0	East of Paraiso.
26	Oct. 31	00-00-42	36° 30'	117° 52'	c	3.6	Southeast of Lone Pine.
27	Oct. 31	23-54-27.6	36° 34'	122° 30'	c	2.0	Southwest of Santa Cruz.
	Nov. 2	06-30-00.0	40° 10'	127° 35'	b	4.0	Off coast of Mendocino.
28	Nov. 3	06-09-13	39° 06'	119° 06'	d	3.0	East of Reno.
29	Nov. 3	23-00-00	36° 55'	121° 25'	c	2.5	North of Hollister.
	Nov. 5	10-43-57	36° 02'	120° 06'	d	2.0	East of Llanada.
30	Nov. 7	01-00-08	36° 52'	121° 34'	b	2.7	Near Hollister.
	Nov. 8	19-30-04	37° 14'	123° 13'	a	2.1	South of Palo Alto.
31	Nov. 9	12-10-26	40° 26'	123° 59'	b	3.8	Southeast of Ferndale.
32	Nov. 9	22-50-16.0	36° 35'	121° 15'	b	2.5	Southeast of Vineyard.
33	Nov. 12	04-20-11	36° 58'	121° 40'	b	3.7	East of Santa Cruz.
	Nov. 15	05-38-54	34° 09'	119° 01'	b	5.3	Kern County.
34	Nov. 17	02-16-56	37° 58'	122° 02'	a	3.8	Near Concord.
34	Nov. 17	03-40-54	37° 58'	122° 02'	a	3.0	Near Concord.
34	Nov. 18	07-08-10	37° 58'	122° 02'	b	2.6	Near Concord.
	Nov. 19	12-03-43	38° 04'	118° 09'	d	2.9	West of Hawthorne.
	Nov. 20	12-47-20	38° 01	118° 03'	d	2.9	Southeast of Hawthorne.
34	Nov. 22	01-32-25	37° 58'	122° 02'	b	2.4	Near Concord.
35	Nov. 23	12-39-30	37° 26'	121° 33'	b	2.3	Northeast of Mt. Hamilton.
36	Nov. 27	02-18-13	38° 18'	123° 19'	c	2.0	Northwest of Pt. Reyes.
37	Nov. 28	06-07-02	38° 03'	121° 59'	b	2.5	Northeast of Concord.
	Nov. 29	04-49-03	35° 09'	120° 08'	c	3.0	Southeast of King City.
38	Nov. 29	13-30-12	37° 18'	121° 51'	b	2.6	Southeast of San Jose.
	Dec. 2	13-22-32	41:8	126:8	d	3.8	Off coast of northern California.
39	Dec. 4	10-26-21	40° 27'	125° 02'	b	3.8	Off Cape Mendocino.
39	Dec. 4	12-26-26	40° 27'	125° 02'	b	3.4	Aftershock.
40	Dec. 4	19-56-34	36° 36'	121° 17'	c	2.0	Southeast of Vineyard.
41	Dec. 6	03-27-30	36° 26'	121° 51'	b	2.4	South of Monterey.
	Dec. 10	00-03-41	40:5	127:6	d	3.8	Off Cape Mendocino.
42	Dec. 12	20-38-40	36° 36'	120° 38'	c	2.7	East of Llanada.
43	Dec. 14	07-28-44	36° 29'	121° 05'	b	2.1	Southwest of Llanada.
44	Dec. 15	09-41-42	36° 35'	121° 12'	c	2.5	West of Llanada.

Map No.	Date 1961	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
45	Dec. 16	00-33-09	38° 10'	121° 45'	c	2.6	East of Fairfield.
46	Dec. 18	02-38-12	36° 44'	120° 45'	c	2.2	Northeast of Llanada.
47	Dec. 19	09-43-50	36° 40'	121° 13'	b	2.1	Southeast of Vineyard.
48	Dec. 19	21-53-07	37:7	117:8	d	3.4	Northeast of Bishop.
49	Dec. 19	22-14-06	41° 08'	126° 27'	c	4.0	Off coast of northern California.
	Dec. 21	10-25-48	40° 09'	121° 34'	c	2.7	South of Mineral.
50	Dec. 21	19-32-07	37° 16'	122° 14'	c	2.1	South of Palo Alto.
	Dec. 22	11-26-46	40:5	126:3	d	4.9	Off coast of northern California.
51	Dec. 27	13-12-36	36° 47'	121° 33'	b	2.4	Northwest of Vineyard.
51	Dec. 27	13-57-45	36° 46'	121° 33'	b	2.3	West of Vineyard.
34	Dec. 31	21-24-45	37° 59'	122° 02'	c	2.3	Northeast of Concord.





PART II. REGISTRATION OF EARTHQUAKES

This section tabulates measured arrival times of prominent phases of earthquakes recorded at stations of the seismographic network operated by the University of California (Berkeley). Information regarding the stations and instrumentation will be found in the introductory section of this Bulletin. Earthquakes in the northern California, Nevada, and Oregon region are included in the following tabulation only if of magnitude 4.0 or over, or if of special interest.

Components of ground motion are indicated by N, E, and Z in the "Phase" column. Where no such letter appears, the reading is for the vertical component (Z) alone. The letter "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates a gradual beginning.

In the column headed "GM" (ground motion), "c" or "d" indicates initial compression or dilatation of the ground, respectively, from a wave of the compressional type; "+" or "-" indicates initial upward or downward motion of the ground, respectively, from a wave not known to be of the compressional type. N, E, S, or W indicates that the initial horizontal direction of ground motion was toward the north, east, south, or west, respectively.

The maximum amplitude of earth displacement in microns (mu) and periods in seconds (sec) in the indicated phases are given for the Berkeley station in the column headed "Time (GCT)". Total horizontal amplitudes combined from N and E components are designated by "H" (e.g., PH, PPH).

Magnitudes given for teleseisms in the "Remarks" column correspond to the magnitude based on surface waves (M_S). In calculating the published value, body wave amplitudes and periods are used to determine M_B by:

$$M_B = Q + \log_{10} (A/T),$$

where A = 1/2 peak-to-peak ground amplitude in microns,

T = period in seconds

Q is the empirically determined function of distance and depth given by Gutenberg and Richter ("Magnitude and Energy of Earthquakes," Annali di Geofisica, 9:1-15, 1956).

For each shock, M_B is determined for as many of the phase components PZ, PH, PPZ, PPH, and SH as possible; the arithmetic average of the available values of M_B is converted to an equivalent value M_s by:

$$M_s = 1.59\ M_B - 3.97.$$

This value is compared with the value of M_s determined directly from surface waves of period near 20 sec.; the published value of magnitude then represents a weighted average of all the available values of M_s based on body and surface waves.

Frequently quoted sources of information regarding epicenters, origin times, or shock magnitudes are as follows:

USCGS - U.S. Coast and Geodetic Survey, Washington, D.C.

PAS - Seismological Laboratory, Pasadena, California

PAL - Lamont Geological Observatory, Palisades, N.Y.

All measurement and interpretation of seismograms (i.e., identification of phases, arrival times, directions of initial ground motion, and ground amplitudes and periods) are done at Berkeley. Requests for additional data or for copies of seismograms should be addressed to:

Director of the Seismographic Stations
Earth Sciences Building
University of California
Berkeley 4, California.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 1	BRK	eP	17 17 39		BRK: California-Nevada border.
	CLS	eP	43		
	MHC	iP	29.3	c	Magnitude 4.2.
		(e)SNE	18 17		
	MIN	eP	17 49.8	c	
	SHS	e	18 07		
	PAC	iP	17 38.3	d	
	SFB	eP	41		
	FRE	eP	11.8		
Oct. 2	BRK	eP	06 06 33		USCGS: 33.9°S, 179.6°E, 0 = 05 53 37.5.
	MHC	eP	34.7	d	Off coast of North Island, New
	FRE	eP	37		Zealand. h about 30 km.
	MIN	eP	43	c	
	CLS	eP	34		
	PRS	eP	30		
Oct. 2	BRK	eP	06 20 36		USCGS: 33.9°S, 179.5°E, 0 = 06 07 40.1.
	MHC	iP	32.9	c	Off coast of North Island, New
	MIN	eP	45.3	d	Zealand. h about 33 km.
	CLS	eP	36		
	PRS	iP	33		
Oct. 2	BRK	eP	06 40 34.2		USCGS: 7.4°S, 107.1°E, 0 = 06 21 36.2.
	MHC	iP	33.8	d	Near coast of Java.
	MIN	eP	30.9		h about 88 km.
	SHS	eP	29		
Oct. 2	BRK	eP	07 15 32		USCGS: 33.9°S, 179.6°E, 0 = 07 02 37.6.
	MHC	eP	32.7	d	Off coast of North Island, New
	FRE	eP	36		Zealand. h about 33 km.
	MIN	eP	32.6	d	
	COR	e(P)	16 00		
	VIN	eP	15 36.7		
	CLS	eP	34		
	PRS	eP	31		
Oct. 2	MHC	iP	08 17 06.6	d	USCGS: 51.4°N, 179.4°E, 0 = 08 09 07.1.
	MIN	eP	16 55	d	Andreanof Islands, Aleutian Islands.
	COR	eP	27.4		h about 45 km.
	SHS	eP	50		
Oct. 3	MIN	eP	02 52 37.4	c	
Oct. 3	MIN	eP	06 16 25.5	c	USCGS: 17.6°S, 167.5°E, 0 = 06 03 40.1.
					New Hebrides Islands region.
					h about 33 km.
Oct. 4	PRS	eP	02 22 30.6		USCGS: 33.8°N, 117.8°W, 0 = 02 21 30.6.
	CLS	eP	23 02		Orange County, California. Slight
	SCC	eP	22 41		damage. h about 18 km.
	MHC	e(P)	39.8	d	
	MIN	eP	23 20.7	d	Magnitude 4.1.
	PAC	eP	22 55.3	c	
	REN	eP	23 04		
	VIN	eP	22 36.1		
		eS	23 24		
	FRE	eP	22 23.6		
Oct. 4	BRX	eP	02 35 46		USCGS: 13.2°S, 166.5°E, 0 = 02 23 23.5.
		eR	03 01.3		New Hebrides Islands region.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 4			R from WSW		h about 100 km.
(Cont.)	MHC	eP	02 35 49.6	c	
	MIN	eP	54		
	SHS	eP	51.2		
	PRS	eP	47		
Oct. 4	MIN	eP	06 26 46.4	d	USCGS: 22.7°N, 143.8°E, 0 = 06 14 55.
	SHS		43.6		Northern Mariana Islands.
					h about 154 km.
Oct. 5	MIN	eP	17 29 10	d	
	SHS	eP	04.6		
	REN	e(P)E	55		
Oct. 5	BRK	iP	18 21 20.2	c	USCGS: 19.4°S, 169.0°E, 0 = 18 08 43.4.
	MHC	iP	22.1	c	Loyalty Islands region.
	FRE	eP	26.6		h about 58 km.
	MIN	eP	27.9	d	
	REN	e(P)E	36		
	COR	e(P)	32.8		
	SHS	iP	26	c	
	CLS	iP	20.9	c	
	PRS	iP	20.4	c	
	SCC	iP	19.6	c	
	PRC	eP	18.6	c	
Oct. 5	MHC	eP	19 39 52.0	d	USCGS: 18.6°N, 146.9°E, 0 = 19 27 45.5.
	MIN	eP	46.9	d	Mariana Islands region.
	SHS	eP	44.2		h about 47 km.
Oct. 5	COR	iP	22 47 56.0	d	USCGS: 24.0°N, 121.9°E, 0 = 22 34 58.9.
	SHS	eP	48 08		Near coast of Formosa.
					h about 39 km.
Oct. 6	MIN	iP	01 35 31.4	c	USCGS: 48.3°N, 152.6°E, 0 = 01 25 47.7.
	SHS	e	35 37		Kurile Islands. h about 150 km.
Oct. 7	BRX	eP	15 55.8		USCGS: 43.5°N, 128.8°W, 0 = 15 54 01.3.
		eSZNE	57 23		Off coast of Oregon.
		eR	43		h about 25 km.
	MHC	iP	56 02.1	c	
	FRE	e	23		
	COR	eP	54 21.4		
	SHS	e(P)	55 27		
	PRS	eP	56 19		
Oct. 7	MHC	iP	17 38 19.6	d	USCGS: 20.4°S, 69.0°W, 0 = 17 26 41.4.
	MIN	eP	28.9		Northern Chile. h about 100 km.
	COR	e	49.3		
	SHS	iP	32	d	
Oct. 8	REN	eP	12 53 54.7		USCGS: 30.0°S, 71.4°W, 0 = 12 41 36.
	SHS	eP	54 05		Near coast of central Chile.
					h about 65 km.
Oct. 8	REN	eP	22 03 35.5		USCGS: 53.1°N, 166.7°W, 0 = 21 56 44.
	COR	iP	01 27.4	c	Fox Islands, Aleutian Islands.
	SHS	eP	03 10		h about 48 km.
Oct. 10	FRE	eP	06 46 47.5		
Oct. 10	MHC	iP	08 38 32.9	d	USCGS: 5.4°S, 154.3°E, 0 = 08 25 54.6.
	MIN	e	39.7	d	Solomon Islands region.
					h about 154 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 10	BRX	e	18 12 27		
Oct. 10	BRK	iP	18 55 25.5	c	USCGS: 16.1°S, 176.3°W, 0 = 18 44 28.6.
	MHC	iP	27.1	c	Fiji Islands region.
	MIN	eP	36.4	c	h about 361 km.
	REN	eZE	41.5		
	SHS	iP	35.2	c	
	VIT	eP	27		
	PRS	iP	25.1	c	
	CLS	iP	27.6	(d)	
	SFB	eP	26		
Oct. 11	BRX	eR	01 08 47		USCGS: 28.7°S, 175.8°W, 0 = 00 29 35.6.
	MHC	e(P)	00 41 57.2	d	Kermadec Islands. h about 46 km.
	FRE	eP	42 01.4		
	MIN	e	08.2		
Oct. 11	MHC	iP	00 49 39.9	d	
	MIN	iP	26.3	c	
	REN	eP	22.9		
Oct. 11	BRK	eP	07 09 54.7	d	USCGS: 57.5°N, 154.1°E, 0 = 07 03 58.6.
	MHC	eP	10 00.8	c	Kodiak Island. h about 42 km.
	FRE	eP	13		
	MIN	iP	09 39.9	c	
	COR	e(P)	03		
	SHS	eP	34.6		
Oct. 11	BRK	iP	16 15 43.1	c	USCGS: 24.5°S, 179.8°E, 0 = 16 04 18.
	MHC	iP	44.0	c	South of Fiji Islands.
	MIN	e	46.8		h about 560 km.
	SHS	eP	51.5		
Oct. 12	MHC	e	06 03 00.2	c	
Oct. 12	BRX	eR	06 43 33	c	USCGS: 3.2°S, 145.1°E, 0 = 06 01 28.6.
					Near north coast of New Guinea.
					h about 33 km.
Oct. 12	FRE	e	08 37 18.3		USCGS: 5.6°S, 151.9°E, 0 = 08 24 10
	SHS	eP	11.3		New Britain. Felt: Gavit and
	BRX	eR	09 07 11		Rabaul. h about 41 km.
Oct. 12	MIN	eP	12 42 12	c	
	SHS	e	32.9		
Oct. 12	MHC	iP	14 03 44.3	c	USCGS: 19.2°N, 64.9°W, 0 = 13 53 34.4.
					North of Puerto Rico. Felt.
					h about 40 km.
Oct. 13	BRK	iP	05 17 55.1	d	USCGS: 55.9°S, 27.7°W, 0 = 04 59 02.2.
		epP	18 24.6		Sandwich Islands. h about 33 km.
		esP	39.5		
	BRX	e(R)	58		
	MHC	iP	17 54.2	d	
	MIN	iP	57.3	c	
	SHS	eP	58		
	VIT	eP	52.7		
	PRS	eP	52		
		epP	18 22		
	SCC	eP	17 54.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 13	BRK	iP	11 05 36.8	c	USCGS: 60.2°S, 33.8°W, 0 = 10 46 46.1.
	BRX	eRNEZ	45		Sandwich Islands region.
	MHC	eP	05 35.7	d	h about 33 km.
	MIN	e	39.1		
	SHS	eP	41.5		
	VIT	eP	34.6	d	
	PRS	iP	33.9		
Oct. 13	BRK	iP	17 40 08.3	d	USCGS: 22.0°S, 176.9°W, 0 = 17 28 21.5.
		epP	57		Tonga Islands region.
	MHC	iP	09.1	d	h about 155 km.
	FRE	eP	13.2		
	MIN	iP	18.9	c	
	REN	eP	21.7		
	COR	e	28		
	SHS	iP	17.5	d	
	VIT	eP	07.5		
	CLS	iP	09.6		
	PRS	iP	06.4		
		epP	55.4		
Oct. 14	BRK	eP	16 26 29		USCGS: 19.1°S, 168.4°E, 0 = 16 13 48.7.
	MHC	iP	30.5	c	New Hebrides Islands. Felt.
	SHS	eP	35.5		h about 28 km.
Oct. 14	MHC	i	18 51 44.6		
	MIN	iP	52 04.5	d	
Oct. 14	BRK	iP	22 08 42.3		USCGS: 51.2°N, 159.2°E, 0 = 21 58 59.7.
	BRX	eR	24		Kamchatka. h about 100 km.
	MHC	eP	08 51.3	c	
	MIN	eP	13.8	d	
	REN	eP	27.2		
	SHS	eP	10		
	VIT	eP	28.3	d	
	PRS	iP	34.5	d	
	CLS	iP	18.4	d	
Oct. 15	BRK	eP	21 07 43	c	USCGS: 39.2°N, 111.4°W, 0 = 21 05 02.
	VIT	eP	15	d	Central Utah. h about 33 km.
	PRS	e	09 30	c	
	MIN	e	06 58		
	MHC	iP	07 03.9		
	REN	eP	06 37.5		
	SHS	e	09 19.1		
Oct. 16	MHC	eP	01 16 49.6	c	USCGS: 50.9°N, 157.9°E, 0 = 01 07 08.2.
	MIN	iP	36.7	d	Kamchatka. h about 44 km.
	REN	eP	46.1		
	COR	e	09.8		
	SHS	iP	31.5	d	
Oct. 16	MIN	eP	02 15 12.8	d	USCGS: 53.0°N, 168.3°E, 0 = 02 08 21.
	SHS	iP	07.7	d	Fox Islands, Aleutian Islands.
					h about 60 km.
Oct. 16	SHS	eP	19 51 47		
Oct. 17	BRK	e(P)	04 47 01		USCGS: 54.8°S, 1.5°E, 0 = 04 27 31.3.
	BRX	eRNZ	05 08 35		Bouvet Island region.
	MHC	eP	04 46 56	d	h about 33 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 17 (Cont.)	MIN	e	47 00		
Oct. 17	MHC	iP	11 15 20.9	d	USCGS: 12.3°N, 143.7°E, 0 = 11 02 34.4.
	MIN	e	16.8	c	South of Guam. h about 16 km.
Oct. 18	BRX	eR	03 27 29		USCGS: 29.9°S, 177.6°W, 0 = 02 49 59.6.
	MHC	eP	02 30.9	d	Kermadec Islands. h about 65 km.
	FRE	eP	35.5		
	MIN	eP	41.5	d	
	SHS	eP	41.4		
	CLS	iP	34.3	d	
	PRS	iP	30.2	c	
Oct. 18	MHC	eP	10 50 55.1	d	USCGS: 53.7°N, 165.3°W, 0 = 10 44 12.2.
	MIN	eP	39.5	d	Fox Islands, Aleutian Islands.
	SHS	eP	33.3		h about 33 km.
	COR	eP	08.1		
Oct. 18	BRK	eP	17 04 43.3	d	USCGS: 36.7°S, 73.0°W, 0 = 16 51 57.3.
	BRX	ePP	08 11		Near coast of southern Chile.
		iSN	15.0		Minor damage. h about 33 km.
		eSSN	20.7		Magnitude 6 1/2.
		eSSSN	24.8		
		eGE	29		Magnitude 6 3/4.
		ER	32.6		
			R from S		
			mu sec		
		PZ	6.7 12		
		SH	24 28		
		MaxH	20 34		
	MHC	iP	17 04 38.2	d	
	FRE	eP	32.2		
	MIN	iP	51.4	c	
	REN	iP	45.2		
	COR	eP	05 09.9		
	SHS	eP	04 51.5		
	VIT	eP	35		
	CLS	eP	45		
	PRS	eP	33		
	SCC	eP	36		
	PRC	e	49		
	SFB	eP	45.5		
Oct. 18	MHC	eP	18 23 11.1	d	USCGS: 36.9°S, 73.5°W, 0 = 18 10 30.4.
	FRE	e(P)	02		Near coast of southern Chile.
	MIN	eP	22		h about 55 km.
	REN	eP	14.4		
	SHS	e(P)	19		
Oct. 19	PRS	iP	05 10 30.8	c	
	VIT	iP	32.6	c	USCGS: 35.8°N, 117.9°W, 0 = 05 09 44.
	SCC	eP	40		Kern County, California. Slight
	BRK	eP	47.3	c	damage. h about 22 km.
	CNC	eP	46.9	c	Magnitude 5.2.
	PRC	eP	54.3	c	
	CLS	iP	55.3		Magnitude 5 1/4.
	SFB	eP	49.7		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 19 (Cont.)	MIN	eP	11 06.8		
	MHC	iP	10 37.5	c	
	PAC	iP	43.1	c	
	FRE	iP	16	c	
Oct. 19	BRK	iP	11 31 57.7	d	USCGS: 37.1°S, 70.6°W, 0 = 11 19 20.1.
	MHC	iP	49.4	d	Neuquen Province, Argentina.
	FRE	eP	47.3		h about 149 km. Magnitude 6 1/4.
	MIN	eP	32 03.8	d	
	REN	iPZ	55.7		
	COR	e	33 08.1		
	SHS	eP	32 06.7		
	VIN	eP	31 52.5		
Oct. 19	COR	eP	20 38 35.4		USCGS: 17.6°S, 174.0°W, 0 = 20 24 41.9.
					Tonga Islands. h about 25 km.
Oct. 20	PRS	eP	19 50 48.7		USCGS: 33.6°N, 118.0°W, 0 = 19 49 50.5.
	VIT	eP	56		Orange County, California. Minor
	SCC	eP	51 01		damage. h about 17 km.
	BRK	e(P)	20.4		Magnitude 4.3.
	MHC	iP	07	d	
	PAC	eP	09.8	(c)	Magnitude 4 1/2.
	FRE	eP	50 44.2		
	REN	eP	51 29.1		
		iSE	53 05.1		
Oct. 20	VIT	eP	21 43 50	(c)	Aftershock of 19.49. Magnitude 4.0.
	CLS	iP	44 15.9	c	
	MHC	i(P)	43 53.7	c	
	PAC	eP	59.3	d	
	FRE	eP	40		
Oct. 20	VIT	eP	22 36 41.6	(c)	Aftershock. Magnitude 4.0.
	CLS	iP	37 09.6	c	
	MHC	iP	36 49.8	c	
	PAC	e	58		
	FRE	eP	34.6		
	REN	eP	37 15.5		
Oct. 21	BRK	iP	11 54 35.8	c	USCGS: 18.0°S, 178.5°W, 0 = 11 43 41.3.
	PRC	iP	33.9	c	h about 618 km.
	PRS	iP	34.7	c	Fiji Islands.
	MHC	iP	36.2	c	
	FRE	eP	41		
	MIN	iP	46.1	d	
	REN	iP	57.5	c	
	COR	iP	54.2	c	
	SHS	iP	44.1	c	
	VIT	iP	35.6	c	
	CLS	iP	36.8	c	
	SFB	eP	35.1		
Oct. 21	BRK	iP	17 46 39.9		USCGS: 10.8°S, 166.2°E, 0 = 17 34 33.6.
	CNC	eP	41		Santa Cruz Islands.
	PRS	iP	40.8		h about 161 km.
	PRC	iP	37.8		
	MHC	iP	41.4	c	
	FRE	eP	47.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 21 (Cont.)	MIN	iP	46.5	c	
	REN	iP	50.8		
	COR	e(P)	48.6		
	SHS	iP	44.3	c	
	VIT	eP	41.6	c	
	CLS	iP	39.8	c	
Oct. 22	BRK	e(P)	10 02 57		USCGS: 20.0°S, 172.7°E, 0 = 09 50 30.8.
	BRX	eP	54		New Hebrides Islands.
		eSN	13.4		h about 65 km.
		eSSN	19.3		
		eGN	25.4		Magnitude 5 1/2
		eR	29.0		
			R from SW		
	MHC	iP	10 02 57.5	d	
	FRE	eP	03 02.9		
	MIN	eP	04.5	c	
	REN	eP	08.8		
	SHS	eP	02.3		
	VIT	iP	02 50.5	c	
	CLS	iP	57.0	d	
Oct. 22	BRK	e(P)	13 15 08		USCGS: 2.2°N, 95.9°W, 0 = 13 08 11.1.
	BRX	iSNE	22 41		West of Galapagos Islands.
		eN	26.4		h about 65 km.
		eR	29.3		
			R from SE		
	MHC	iP	13 15 07.1	d	
	MIN	e	12.6		
	REN	e(P)	09.9		
Oct. 22	BRK	iP	14 51 58.9	d	USCGS: 17.7°S, 178.7°W, 0 = 14 41 03.0.
	MHC	iP	59.5	d	Fiji Islands. h about 554 km.
	FRE	eP	52 04.3		
	MIN	eP	07.5	c	
	REN	iP	12.2	d	
	SHS	eP	07.3		
	VIT	iP	51 58.2	c	
	CLS	iP	59.5	c	
Oct. 22	MHC	iP	15 21 22.1	d	USCGS: 10.5°N, 86.6°W, 0 = 15 13 32.3.
	FRE	eP	08.2		Off west coast of Costa Rica.
	MIN	eP	34.8	d	h about 51 km.
	REN	eP	22.1	d	
Oct. 23	BRK	e(P)	00 27 28		USCGS: 60.2°S, 33.6°W, 0 = 00 08 36.6.
	BRX	eP'	28.9		Sandwich Islands.
		iPPSNZ	45.8		h about 33 km.
		iP'P'	50.4		PAL: Magnitude 6 1/4 - 6 1/2.
		iQNEZ	01 06.7		
	MHC	iP	00 27 28.7	c	
	MIN	eP	32.8	c	
	REN	eP	30.3		
	VIT	iP	28.0	c	
Oct. 23	MHC	iP	01 36 09.9	d	USCGS: 28.7°S, 70.3°W, 0 = 01 24 01.9.
	SHS	e	21.5		Central Chile. h about 108 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 23	BRX	eR	09 56		USCGS: 3.2°S, 146.6°E, 0 = 09 14 47.3.
			R from W		Bismarck Sea. h about 73 km.
Oct. 23	BRX	eP	14 53.7		USCGS: 3.5°N, 126.6°E, 0 = 14 39 35.3.
		ePP	57.9		Molucca Passage. h about 20 km.
		eSKSNE	15 04.3		
		ePSNE	07.3		Magnitude 6 1/4.
		eSSN	12.3		
		iR	27.3		
			R from W		
			mu sec		
		MaxZ	7.5 28		
		MaxH	12 28		
	MHC	eP	14 53 43.0	c	
	MIN	e	42		
	SHS	eP	38		
Oct. 23	BRK	eP	17 23 22.6		USCGS: 16.5°S, 173.9°W, 0 = 17 11 57.1.
	MHC	iP	24.5	c	Tonga Islands. h about 41 km.
	FRE	eP	27.8		
	MIN	iP	33.6	c	
	REN	iP	37.3		
Oct. 24	BRK	iP	07 35 54.7	c	USCGS: 44.7°N, 146.5°E, 0 = 07 25 24.7.
	PRC	iP	51.8		Kurile Islands. h about 126 km.
	PRS	eP	36 03.8		
	MHC	iP	35 59.3	c	
	FRE	eP	36 09.5		
	MIN	iP	35 47.6	c	
	REN	iP	59.0	c	
	SHS	iP	43.2	c	
	VIT	iP	36 03.6	d	
	SCC	iP	35 59.2	c	
	SFB	eP	54.3		
Oct. 24	BRK	eP	07 48 14		USCGS: 16.5°S, 178.3°E, 0 = 07 36 17.1.
	PRS	iP	12.7	c	Fiji Islands. h about 40 km.
	MHC	iP	13.8	c	
	MIN	iP	22.8	c	
	REN	e(P)	25.2		
	SHS	eP	20.9		
	VIT	eP	14	c	
	CLS	iP	14	c	
Oct. 25	SHS	eP	06 55 09.4		
Oct. 25	BRK	iP	09 04 51.7	c	USCGS: 9.6°S, 78.4°W, 0 = 08 54 34.6.
	MHC	iP	47.8	d	Off coast of Peru.
	FRE	eP	35.8		h about 110 km.
	MIN	iP	58.8	d	
	REN	iP	49.5	c	
	COR	eP	05 22.7	c	
	SHS	eP	02.3		
	VIT	eP	04 35		
Oct. 25	SHS	eP	14 10 24.4		
Oct. 25	BRK	eP	14 32 09		USCGS: 20.5°S, 174.3°W, 0 = 14 20 32.4.
	MHC	eP	31 09.1	d	Tonga Islands.
	FRE	eP	32 12.9		h about 114 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 25 (Cont.)	MIN	eP	19.0	d	
	REN	eP	23.0	d	
	SHS	eP	16.7		
	VIN	eP	07	(c)	
Oct. 26	BRK	(e)P	00 51 35		
	BRX	iSN	01 02 34		USCGS: 3.1°S, 148.1°E, 0 = 00 38 20.7. Bismarck Sea. h about 33 km.
		eSP	03 56		
		iSS	08 26		
		iGN	16 02		Magnitude 6 1/4.
		iRE	19 32		
			R from W		
			mu sec		
		MaxH	15 23		
	MHC	eP	00 51 32.5	d	
	FRE	(e)P	39.9		
	MIN	eP	33.8	d	
	REN	(eP)	38.0		
	SHS	eP	30.1		
	CLS	eP	29		
Oct. 26	MHC	iP	08 28 57.3	d	USCGS: 38.0°S, 72.8°W, 0 = 08 16 02.4. Off coast of southern Chile. h about 43 km.
	SCC	eP	54.7	d	
	VIT	eP	56.6	d	
	PRS	eP	29 03.6	c	
Oct. 26	BRX	eP	15 48 02		USCGS: 0.3°S, 98.7°E, 0 = 15 27 05.9. Off west coast of Sumatra.
			R from W		
	MHC	iP	15 46 11.7	d	h about 34 km.
	FRE	(e)P	46 14.0		
	MIN	e	07.1	d	Magnitude 6.
	REN	eP	10.4		
	SHS		06.		
Oct. 26	FRE	eP	17 27 42.5		USCGS: 17.4°N, 100.2°W, 0 = 17 22 19.0. Guerrero, Mexico. h about 62 km.
	REN	eP	28 01.8		
	MHC	iP	27 56.7	c	
Oct. 26	BRK	iP	20 05 28.1	d	USCGS: 6.9°N, 73.0°W, 0 = 21 56 16.5. Colombia. h about 154 km.
	MHC	iP	18.7	d	
	REN	iP	20.0		
	VIT	iP	20.7	d	
	CLS	iP	31.9	d	
Oct. 28	MHC	eP	22 57 02.3	c	USCGS: 13.9°S, 166.0°E, 0 = 22 44 30.2. New Hebrides Islands.
	MIN	iP	08.0	c	h about 33 km.
	REN	e(P)	14.1		
	SHS	eP	06.8		
Oct. 29	BRK	eP	09 15 10.1	d	USCGS: 49.0°N, 128.7°W, 0 = 09 12 15.7 Vancouver Islands region.
	BRX	iS	17 30		h about 16 km.
			mu sec		
		PZ	12 10		
		PH	14 10		Magnitude 5 3/4.
		MaxH	32 25		
	MHC	iP	09 15 18.5	d	
	FRE	(i)P	34.1		
	MIN	iP	14 42.6	d	
	ARC	eP	24.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 29 (Cont.)	ARC	i(S)N	09 15 06.0		
	REN	iP	01.9	d	
	SHS	eP	14 34.3	d	
		e.	47		
	VIN	eP	15 26		
	CLS	iP	14 58.5	d	
	SCC	eP	15 21		
	PAC	iP	15.2	c	
Oct. 29	FRE	(e)P	14 03 24.7		USCGS: 49.4°N, 127.6°W, 0 = 14 00 12.0.
	MIN	e	02 32.5	d	Vancouver Islands region.
	REN	(eP)	18.6		h about 56 km.
		e	52.7		
		e	03 19.8		
		e	04 17.8		
	SHS	eP	02 23.7		
Oct. 29	BRX	eP	14 50 07	d	USCGS: 49.0°N, 128.3°W, 0 = 14 47 16.8.
		iS	52 25		Vancouver Islands region.
	MHC	iP	50 15.7	c	h about 33 km.
	FRE	eP	31.3		PAL: Magnitude 4 3/4 - 5.
	MIN	iP	49 40.2	c	
	REN	(e)P	57.5		
	COR	eP	39.6		
	SHS	e	29.9		
	VIT	eP	50 20.9	d	
	PRS		18.5		
Oct. 29	FRE	eP	19 31 56.2	c	
	REN	eP	23.9	d	
	SHS	eP	30 56.7		
Oct. 30	BRX	eP	01 46 12	c	USCGS: 42.5°N, 126.6°W, 0 = 01 44 52.1.
	MHC	iP	25.5	d	Off coast of Oregon.
	FRE	(e)P	45.5		h about 33 km.
	MIN	iP	45 55.4	d	
		e	47 07		
	ARC	(e)P	45 30.4		
		i(S)	46 08.8		
	REN	e(P)	22		
	COR	iP	45 41.4	d	
		iS	47 20		
	SHS	eP	45 45.2		
	VIT	e(P)	46 40.5		
	PRS	eP	40.4		
Oct. 30	BRX	iP	02 17 54	SEc	USCGS: 42.3°N, 126.7°W, 0 = 02 16 32.7.
		iS	19 06		Off coast of Oregon.
			mu sec		h about 36 km.
		PZ	8 12		PAL: Magnitude 5 - 5 1/4.
		PH	12 20		
		MaxH	95 24		Magnitude 5 1/2.
	MHC	iP	02 18 06.7	d	
		i	17.8		
	FRE	(e)P	28.0	d	
	MIN	eP	17 27.2	c	
		e(S)N	18 14		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Oct. 30		i	16.8		
(Cont.)	ARC	(eP)	17 09.8		
		i(S)	40.3		
		(eR)	25 11.8		
	REN	(e)P	18 03	d	
		iE	19 35		
	COR	iP	17 22.6	c	
	SHS	eP	27.6		
	VIT	eP	18 16.7		
	PRC	eP	21.2	d	
	PAC	iP	02.6	c	
	SCC	eP	06.5		
Oct. 30	SHS	eP	17 47 25.8		USCGS: 28.5°N, 178.1°W, 0 = 17 35 03.3.
		e	48 18		Kermadec Islands. h about 219 km.
Oct. 30	BRK	eP	21 27 31.7		USCGS: 28.9°N, 141.8°E, 0 = 21 15 35.2.
	BRX	eR	50		South of Honshu, Japan.
			R from S		h about 31 km.
	MHC	iP	21 27 33.5	d	
	FRE	eP	43.9	c	
	MIN	eP	26.9	d	
	REN	iP	37.1	c	
	COR	(e)P	12		
	SHS	eP	20.9		
Oct. 31	BRK	eP	01 52 07.8	(c)	USCGS: 51.9°N, 176.1°E, 0 = 01 43 53.3.
	MHC	iP	13.2	d	Rat Islands, Aleutian Islands.
		i	22.7	c	h about 35 km.
	FRE	(e)P	24.0	c	
	MIN	iP	51 58.7	d	
		e	52 06.7	d	
	REN	(eP)	11.2		
	SHS	eP	51 53.0		
	VIN	eP	52 17		
Nov. 1	BRK	iP	10 53 14.1	c	USCGS: 17.7°S, 178.6°W, 0 = 10 42 19.8.
	MHC	iP	15.2	c	Fiji Island Region.
	MIN	iP	23.8	d	h about 564 km.
	SHS	eP	22.2		
Nov. 1	BRK	eP	20 21 37	d	USCGS: 17.9°S, 178.5°W, 0 = 20 10 42.8.
	MHC	iP	35.8	c	Fiji Islands.
	MIN	eP	44.9	d	h about 593 km.
	SHS	eP	43.4		
Nov. 2	BRK	eP	05 33 42		USCGS: 17.7°S, 178.5°W, 0 = 05 22 42.0.
	MHC	iP	38.3	d	Fiji Islands. h about 566 km.
	MIN	iP	46.9	d	
	SHS	eP	45.4		
Nov. 2	PRC	iP	06 31 03.1		
		i	10.5		BRK: 40°10'N, 127°35'W, 0 = 06 30 00.0.
		eS	49.6		Off coast of Mendocino.
	BRK	eP	10.3	d	
		e	14.7		Magnitude 4.0.
		eS	32 03.4		
	SCC	iP	31 20.1	d	
		e	27.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 2		e	32 23.5		
(Cont.)	VIT	iP	31 28.0	d	
		e	35.6		
		e	32 41		
	PRS	eP	31 31.5		
	CLS	iP	04.2	d	
		i	10.4	c	
	SFB	eP	31 09.5		
			32 01		
	MHC	iP	31 20.1	d	
		i	27.7	d	
		i	32 11.4		
	MIN	eP	31 04.7	c	
		i	45.3		
	SHS	eP	31 02.8		
		eN	41.3		
	PAC	iP	15.9	c	
		iS	32 14.2		
Nov. 2	MHC	iP	23 13 29.7	c	USCGS: 17.2°N, 62.7°W, 0 = 23 03 55.6.
	SHS	eP	33		Leeward Islands. h about 29 km.
Nov. 3	MHC	iP	05 23 47.6	c	
	MIN	eP	36.1	d	
	REN	(eP)	46.5		
	SHS	eP	32.3		
Nov. 4	MHC	i(P)	03 48 42.3	d	USCGS: 50.0°N, 155.5°E, 0 = 03 38 30.1.
	MIN	eP	12.0	c	Northern Kurile Islands.
					h about 32 km.
Nov. 4	MHC	iP	14 42 11.1	c	USCGS: 52.5°N, 176.0°W, 0 = 14 34 36.9.
	MIN	iP	56.0	c	Andreanof Islands, Aleutian Islands.
	CLS	eP	41 59.1	d	h about 60 km.
	LLA	eP	42 18.3	c	
Nov. 4	MHC	iP	18 23 54.9		
	FRE	eP	24 08.0	c	
	REN	iP	23 53.5		
	COR	eP	10.0		
Nov. 5	BRK	iP	10 46 02.7	c	USCGS: 45.7°N, 147.9°E, 0 = 10 36 39.5.
	MHC	iP	47 07.5	c	Kurile Islands. h about 142 km.
		i	29.2	d	
	FRE	eP	46 16.8	c	
		e	47 52.3		
	MIN	iP	46 55.8	c	
		i	47 30.9	c	
	REN	iP	05.8		
		i	41.0		
	COR	eP	46 32.8	c	
	SHS	eP	50.7	c	
		e	47 24.2		
	VIN	iP	11.2	d	
	CLS	iP	46 58.4	c	
	PRC	e(P)	59.1	d	
	SCC	iP	47 09.3	d	
	LLA	eP	13.4	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 6	BRK	iP	05 24 20.5	d	USCGS: 13.3°S, 76.7°W, 0 = 05 13 19.9.
	MHC	eP	14.8	d	Near coast of Peru.
	MIN	eP	27.3	d	h about 80 km.
	COR	eP	52	d	
	LLA	iP	09.8	d	
	PRS	eP	10.3	d	
Nov. 6	BRX	eP	05 40 48		
		eSN	51 14		USCGS: 13.3°S, 166.5°E, 0 = 05 28 22.8.
		iPSNZ	52 20		New Hebrides Islands.
		iLN	06 02 44		h about 59 km.
		iR	06 32		
			R from SW		Magnitude 6 1/4.
			mu sec		
		PZ	1.3 14		
		SH	5.5 28		
		MaxH	11.0 20		
	MHC	eP	05 40 52.7	c	
	MIN	eP	56.6	c	
	SHS	(e)P	53.4	c	
	PRS	eP	49	c	
Nov. 6	BRK	iP	07 24 16.2	c	USCGS: 34.5°S, 70.5°W, 0 = 07 11 42.6.
	MHC	iP	13.0	c	Chile-Argentina border region.
	MIN	e	21.6	d	h about 105 km.
	REN	e	16.4		
	SHS	eP	25.2	d	
Nov. 6	BRK	eP	13 46 49		USCGS: 17.5°N, 145.2°E, 0 = 13 34 55.1.
	MHC	eP	53.1	c	Mariana Islands.
	MIN	eP	48.1	c	h about 225 km.
	REN	e(P)	57.4		
	COR	eP	37.3	c	
Nov. 7	MIN	eP	06 02 19.9	d	USCGS: 48.2°N, 153.0°E, 0 = 05 52 20.8.
					Kurile Islands. h about 25 km.
Nov. 7	BRK	eP	12 27 25		USCGS: 27.2°S, 176.4°W, 0 = 12 15 03.5.
	MHC	eP	25.2	c	Tonga Islands.
	FRE	eP	28.5		h about 33 km.
	MIN	iP	35.7	d	
	ARC	iP	39.1	c	
		i	47.2		
	REN	e(P)	27.6		
	SHS	eP	34.2		
Nov. 7	COR	iP	21 30 37.8	d	
		i	54.1		
		iN	53.5		
	SHS	(e)P	31 39.1		
Nov. 8	MHC	iP	05 01 04.3	c	USCGS: 15.6°N, 95.8°W, 0 = 04 54 43.8.
	MIN	eP	20		Near coast of Oaxaca, Mexico.
	REN	iP	07.2		h about 45 km.
Nov. 9	MHC	eP	01 22 04.7	c	USCGS: 22.0°S, 170.0°E, 0 = 01 09 15.3.
	MIN	eP	40		Loyalty Islands. h about 33 km.
Nov. 9	BRK	iP	04 31 39.4	d	USCGS: 22.9°S, 67.9°W, 0 = 04 19 42.0.
		i	32 14.0		Northern Chile-Argentina border.
		i	24.5		h about 84 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 9 (Cont.)	MHC	iP	31 35.6	d	
		i	32 20.4	d	
	FRE	eP	31 26.7		
	MIN	iP	47.2	d	
	REN	iP	38.2		
		i	32 23.5		
	COR	iP	05.1	d	
		e	50.6		
		iE	04 33 08.0		
	SHS	iP	31 47.8	d	
		e	32 21.6		
	VIN	e(P)	31 33	d	
		i(P)	18.0	c	
	LLA	i	30.5	c	
		i	32 05.5	d	
		e	10.3	c	
		e	15.5	c	
	CIS	i	31 42.7	d	
		i	32 16.7	c	
		i	20.0	c	
Nov. 9	BRK	iP	23 17 54.7	c	USCGS: 15.8°S, 174.8°W, 0 = 23 06 55.9.
	MHC	eP	54.9	d	Tonga Islands region.
	FRE	eP	18 00		h about 292 km.
	MIN	iP	17 04.6	c	
	REN	i(P)	18 09.1		
	SHS	iP	18 03.2	d	
	VIN	eP	17 54.2	c	
	PRC	eP	55.2	d	
	PRS	iP	51.6	d	
Nov. 10	BRK	eP	02 18 42	c	USCGS: 14.3°S, 71.9°W, 0 = 02 07 34.7.
	MHC	eP	19 28.0	d	Peru. h about 68 km.
		i	20 02.6	d	
	MIN	eP	18 47		
	REN	eP	39.6		
	SHS	(e)P	51.2		
	LLA	eP	31	(d)	
		i	55.9	d	
	CLS	eP	45	(d)	
		i	19 09.7	c	
Nov. 10	BRK	iP	18 11 46.1		USCGS: 17.5°S, 178.8°W, 0 = 18 00 49.6.
		ipP	13 45.6		Fiji Islands. h about 586 km.
	MHC	iP	11 46.9	c	
		e	13 45.9	d	
	FRE	iP	11 41.2	c	
		e	13 50.7		
	MIN	iP	12 05.9	d	
	REN	iP	11 59.4		
		e	13 57.9		
	SHS	iP	11 54.0	c	
	CLS	iP	46.9	c	
		(e)pP	13 46		
	LLA	iP	11 46.9	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 10		epP	13 40		
(Cont.)	SFB	eP	11 44.3	c	
Nov. 10	MHC	iP	22 48 51.9	d	USCGS: 62.6°N, 125.0°W, 0 = 22 43 24.9.
	MIN	eP	19		Mackenzie Mountains, Canada. h = 33 km
Nov. 11	VIN	eP	01 55 16	(c)	
	PRS	iP	21.5	d	
	CLS	e	15	c	
NOV. 11	BRX	e(S)	12 47 17	d	USCGS: 13.7°N, 90.9°W, 0 = 12 27 07.7.
	MHC	iP	33 54.2	c	Near coast of Guatemala.
	FRE	(e)P	50.4		h about 90 km.
	MIN	eP	34 17		
	REN	iP	06.1		
	SHS	e	30.5		
	CLS	e(P)	15	c	
	PRC	e(P)	11	d	
Nov. 12	BRX	eR	03 14 54		USCGS: 0.8°N, 29.5°E, 0 = 02 15 16.7.
	FRE	(e)P	02 34 34		Congo region. h about 39 km.
	MIN	eP	28.8	c	
	REN	iP	30.7	d	
		ePE	31.3		
		ePN	30.8		
Nov. 14	BRK	eP	04 51 02	d	USCGS: 7.3°N, 82.4°W, 0 = 04 42 26.5.
	BRX	eSNZ	58 01		Off south coast of Panama.
		eLN	05 03		h about 29 km.
		eR	05 57		
			mu sec		Magnitude 6.
		SH	9.3 24		
		MaxH	18.5 24		
	MHC	iP	04 50 57.5	c	
		i	51 06.2		
	FRE	eP	50 40.8		
	MIN	eP	51 07.5	c	
	REN	eP	50 56.2	c	
		iE	51 07.8		
	COR	iP	34.2	c	
	SHS	e	12		
	VIN	iP	50 52.7		
	LLA	e	37		
	CLS	iP	51 06.5	c	
	PRC	iP	06	d	
	SFB	e(P)	01.3		
Nov. 14	BRK	iP	10 13 55.8	c	USCGS: 36.0°N, 139.1°E, 0 = 10 02 32.3.
	MHC	iP	14 00.3	c	Near east coast of Honshu, Japan.
	MIN	eP	13 49.7	c	h about 163 km.
	REN	eP	59.5	c	
	SHS	eP	47.1		
Nov. 15	BRK	iP	05 39 54.9		USCGS: 34.9°N, 119.1°W, 0 = 05 38 54.3.
		eSE	40 41		Kern County, California.
	CNC	iP	39 56		h about 26 km.
	SCC	iP	44.3		
	LLA	iP	31.7	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 15	PRS	iP	33.5		Magnitude 5.3.
(Cont.)	VIT	iP	37.0		
	PRC	iP	40 00.8		
	CLS	(i)P	04.7		
	MIN	eP	21.3	d	
		iN	41 35.7		
		iE	38.2		
	SFB	iP	39 55.2	d	
	MHC	iP	45.3	c	
		iSN	40 23.5		
		iSE	24.3		
	FRE	iP	39 27.3	d	
		(i)S	40 34.4		
	SHS	eP	29.5		
	PAC	e	39 41.8	c	
		iP	49.7		
		i(S)NE	40 33.1		
	REN	iP	07.0	d	
		iE	41 17.5		
		i	40 15.4		
	COR	iP	55.2	c	
Nov. 15	BRK	eP	07 28 04.5	c	
	BRX	iPNZ	04		USCGS: 43.1°N, 145.1°E, 0 = 07 17 12.4.
		iSE	36 55		Near east coast of Hokkaido, Japan.
		i	41 07		h about 43 km.
		iNEZ	44 37		
		iR	47 49		Magnitude 6 1/2.
			R from WNW		
			mu sec		
		PZ	7.3 14		
		SH	16.5 20		
		MaxH	41 26		
	MHC	iP	07 28 09.7	d	
		i	20.7	c	
	FRE	eP	17.4		
	MIN	eP	27 56.5	c	
		i	28 12.3	d	
	REN	eP	07.1		
		i	18.7		
	COR	iP	26 58.3		
	SHS	eP	27 51.2		
	VIN	eP	28 11.5	c	
	CLS	eP	00	c	
	PRS	iP	12.7	c	
	PAC	iP	06.8	d	
	SFB	eP	03.8	c	
Nov. 15	MHC	e	07 56 14		
	MIN	eP	26.0	c	
	REN	eP	18.6		
	SHS	eP	28.5		
	VIN	eP	25		
	PRS	e(P)	25	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 15 (Cont.)	CLS	e(P)	26		
Nov. 16	MHC	iP	08 28 28.6	c	USCGS: 18.5°N, 68.8°W, 0 = 08 19 54.1.
		i	29 07.1	d	Dominican Republic.
	SHS	eP	28 38.6		h about 152 km.
	VIN	iP	31.2	c	
	LLA	iP	27.4		
Nov. 17	BRK	e(P)	08 24 46	d	USCGS: 17.7°S, 178.6°W, 0 = 08 13 49.8.
	MHC	iP	46.3	c	Fiji Islands. h about 598 km.
	FRE	eP	50.6		
	MIN	iP	55.1	d	
	REN	iP	21.9	c	
	VIN	i(P)	45.6	d	
	CLS	e (P)	46.5	c	
	PRC	e(P)	44	d	
	LLA	i(P)	45.3	d	
	PRS	e(P)	44	d	
Nov. 17	MHC	eP	14 56 15.0	d	USCGS: 52.4°N, 170.7°W, 0 = 14 49 03.0.
	MIN	eP	55 58.8	d	Fox Islands, Aleutian Islands.
	SHS	eP	54		h about 27 km.
Nov. 17	CNC	eP	17 20 07.1	d	
		i(S)	09.7		
	BRK	iP	08.6	c	
		iS	12.7		
	PRC	(e)P	21	c	
	CLS	iP	21.7	c	
		(i)S	34.4		
Nov. 17	SHS	eP	19 15 33.7		USCGS: 19.4°S, 175.6°W, 0 = 19 03 55.9.
		e	16 26.7		Tonga Islands.
	COR	eP	50.0	c	h about 196 km.
Nov. 17	MHC	iP	19 45 25.7	c	
		i	46 16.1	c	
	MIN	eP	45 34.9	c	
Nov. 17	BRK	iP	22 18 21.0	c	
	MHC	iP	27.0	c	
		i	40.6		
	CLS	iP	29.5	d	
	PRC	eP	20.7	c	
	CNC	(i)P	25	c	
Nov. 18	BRK	(i)P	03 19 43		
	CLS	(i)P	52	d	USCGS: 35.4°N, 117.8°W, 0 = 03 18 35.5.
	PRS	eP	23.2	c	Kern County, California.
		i	26.5		h about 23 km.
	LLA	e	25.7	c	
		iP	20.5	d	Magnitude 4 1/2.
		i	23.2		
	MIN	eP	20 05.4	c	
		i	21.3		
		i(S)	21 05.1		
		i	30.6		
	MHC	iP	19 32.3	c	
		eSN	20 28.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 18		iSEZ	32.1		
(Cont.)	VIT	eP	19 26.5	c	
		(i)S	39.0		
	VIN	eP	25.2		
		eS	35.2		
	PRC	eP	50.1		
		i(S)	20 08.2		
		i	21 10		
	SFB	eP	19 43.6		
	SHS	e	20 30		
	PAC	eP	19 38.6	d	
		i(S)	20 18.6		
	FRE	(e)P	19 10.7		
		eS	39.7		
	REN	eP	57.8	c	
		i(S)	21 00.5		
		iE	20 57.3		
		iN	57.8		
Nov. 18	MHC	eP	10 44 34.1	c	USCGS: 8.8°S, 74.7°W, 0 = 10 34 05.8.
		i	45 09.6	d	Peru. h about 50 km.
	MIN	eP	44 56		
	REN	eP	45 10.9	c	
	VIN	e	05.8		
	CLS	(e)P	44 43	c	
	LLA	(e)P	45 07	d	
Nov. 18	BRK	(e)P	11 29 13		USCGS: 27.0°S, 176.3°W, 0 = 11 16 56.8.
	MHC	iP	15.5	c	Tonga Islands region.
	FRE	eP	18.5		h about 61 km.
	MIN	iP	25.1	d	
	REN	eP	27.2	c	
	SHS	eP	24		
	VIN	(e)P	12.8		
	CLS	e(P)	17	d	
	LLA	e(P)	16	c	
Nov. 18	BRK	(e)P	22 23 09		USCGS: 23.9°N, 121.7°E, 0 = 22 09 51.9.
	MHC	eP	07.4	c	Near coast of Formosa.
	MIN	iP	04.6	d	h about 38 km.
	REN	eP	12.0	c	
	COR	iP	22 49.0	d	
	SHS	eP	23 01.4	c	
	VIN	(e)P	15	d	
	CLS	(e)P	06	c	
Nov. 19	BRK	eP	00 42 54.4	d	USCGS: 51.3°N, 178.5°W, 0 = 00 35 12.1.
	MHC	iP	43 00.3	d	Andreanof Islands, Aleutian Islands.
	FRE	(e)P	12.8		h about 60 km.
	MIN	eP	42 45.3	c	
	REN	eP	58.8		
	COR	eP	17	c	
	SHS	eP	40.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 19	VIN	(e)P	55	d	
(Cont.)	CLS	(e)P	48	c	
Nov. 19	MHC	eP	03 53 43.7	c	USCGS: 18.3°S, 167.4°E, 0 = 03 40 58.5. New Hebrides Islands. h about 24 km.
Nov. 19	MHC	eP	08 13 31.4	d	USCGS: 3.9°S, 101.9°W, 0 = 08 05 15.8. Galapagos Islands region. h about 42 km.
	REN	e(P)	50.6		Magnitude 4.
Nov. 19	BRK	(e)P	23 00 57		
	VIT	iP	39.8	d	
	VIN	eP	39.6	c	
	CLS	(i)P	01 07	c	
	MIN	eP	20.8	d	
		i	02 05.9		
		iM	41.2		
	MHC	iP	00 46.1	d	
		i	01 27.5		
		eNE	27		
	SHS	e	02 56		
	PAC	iP	00 52.5	c	
		i(S)	01 48.4		
	FRE	eP	00 22.5		
		eSEN	46.4		
	REN	(e)P	01 06.2	c	
	LLA	(e)P	00 33.7	c	
	PRS	(i)P	36.9	d	
Nov. 20	MIN	eP	04 16 25.7	c	USCGS: 50.8°N, 92.3°E, 0 = 04 03 56.7. Outer Mongolia-Siberia border. h about 33 km.
Nov. 20	MIN	iP	06 49 18.7	d	USCGS: 54.7°N, 161.8°E, 0 = 06 40 19.7. Near east coast of Kamchatka. h about 60 km.
	COR	eP	48 50		
	SHS	eP	49 14	d	
Nov. 20	MIN	eP	08 55 34.6	c	
	MHC	iP	54 51.1	d	USCGS: 33.6°N, 118.1°W, 0 = 08 53 33.7. Orange County, California. h about 33 km.
		i	55 57.2		
	VIN	(e)P	54 44		
	VIT	i	41.0	d	
	PRS	iP	33		Magnitude 4.0.
	FRE	eP	34.8		
	REN	eP	55 15.4	c	
		i(S)E	57 06.1		
	SHS	e	45.0		
Nov. 20	REN	eP	11 56 24.7	c	USCGS: 21.8°S, 169.9°E, 0 = 11 44 19.4. Loyalty Islands region. h about 33 km.
	SHS	e(P)	57 12.8		
Nov. 20	BRK	e(P)	18 09 10	c	USCGS: 31.3°N, 40.8°W, 0 = 17 58 17.5. Azores region. h about 34 km.
	BRX	eR	29		
			R from ENE		
	MHC	iP	18 08 58.7	d	
		i	09 06.9	c	
	FRE	eP	08 46		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 20	MIN	eP	50	d	
(Cont.)		i	02.8	d	
	REN	iP	43.8	d	
	COR	(e)P	50.1		
	SHS	eP	52.9		
	VIN	e (P)	09 07	c	
	CLS	i(P)	00.8	c	
	CNC	e (P)	08	(d)	
Nov. 20	BRK	iP	23 19 00.5	c	USCGS: 28.3°N, 138.9°E, 0 = 23 07 47.5. South of Honshu, Japan. h about 525 km.
	MHC	iP	23 19 04.9	c	
	MIN	iP	18 56.6	c	
	SHS	iP	53.3	c	
	COR	eP	41.4	d	
	CLS	iP	57.5	c	
	PRC		58.2	c	
	VIT	eP	06.9	(c)	
	PRS	iP	07.7	c	
Nov. 21	MIN	eP	20 26 04.2	c	USCGS: 62.2°N, 156.4°W, 0 = 20 19 58.8. Southern Alaska. h about 60 km.
Nov. 22	CLS	iP	06 30 46.0	d	
	LLA	i(P)	58	d	
Nov. 22	MHC	iP	12 36 45.7	d	USCGS: 15.4°N, 91.7°W, 0 = 12 27 03.8. Guatemala. h about 84 km.
		i	37 14.4	d	
	MIN	iP	36 59.6	c	
		e	37 41.7		
	REN	eP	36 46.6	c	
	VIT	(e)P	41		
	LLA	iP	38.0		
Nov. 22	MHC	iP	13 10 24.3	c	USCGS: 2.7°N, 84.8°W, 0 = 13 01 40.1. Off coast of Ecuador. h about 37 km.
		i	11 54.8	c	
	REN	eP	10 38.5		
Nov. 22	SHS	eP	20 51 42.7		USCGS: 26.9°S, 176.4°W, 0 = 20 39 15.8 Tonga Islands. h about 43 km.
Nov. 23	MHC	iP	06 07 38.0	c	USCGS: 32.4°S, 178.7°W, 0 = 05 54 53.6. Kermadec Islands. h about 33 km.
Nov. 25	REN	e(P)	14 24 17.9		USCGS: 6.3°S, 154.9°E, 0 = 14 11 22.9. Solomon Islands. h about 81 km.
		i	35.1		
	SHS	eP	08.0		
Nov. 25	MIN	eP	20 31 15.0	c	USCGS: 36.2°N, 141.4°E, 0 = 20 19 50.4. Near east coast of Honshu, Japan. h about 45 km.
	SHS	eP	09.9		
Nov. 25	SHS	e(P)	23 06 57		USCGS: 22.1°S, 175.7°W, 0 = 22 54 50.0. Tonga Islands. h about 33 km.
Nov. 26	MHC	e	14 28 29		USCGS: 29.2°N, 43.7°W, 0 = 14 17 45.4. Azores region. h about 33 km.
	MIN	iP	12.7	c	
	SHS	eP	13		
Nov. 27	REN	eP	00 57 46.5		USCGS: 39.0°N, 106.1°W, 0 = 00 55 45.7. Colorado. h about 33 km.
	SHS	e(P)	58 53		
Nov. 27	BRK	(e)P	06 09 32	(c)	USCGS: 31.6°N, 131.1°E, 0 = 05 57 07.6. Near south coast of Kyushu, Japan. h about 25 km.
	MHC	iP	37.1	d	
		i	55.0	d	
	FRE	e	45		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Nov. 27 (Cont.)	MIN	iP	28.8	d	
	REN	iP	38.9	d	
	COR	eP	10.6	d	
	SHS	eP	24.3		
	VIT	eP	41		
	PRI	eP	44.0	d	
	CLS	iP	29.2	c	
Nov. 27	MHC	e	17 25 01		USCGS: 0.4°S, 127.6°E, 0 = 17 10 38.1
	FRE	e	29 09		Halmahera region. h about 33 km.
	MIN	eP	25 09		
		e	29 12		
	REN	e	09.8		
	SHS	eP	24 51.2		
		e	29 09.2		
Dec. 1	MHC	iP	07 44 16.9	d	USCGS: 56.4°N, 159.0°E, 0 = 07 34 22.2.
	MIN	eP	43 30.3	d	Kamchatka. h about 35 km.
	REN	eP	42.0		
	SHS	eP	26		
Dec. 1	MIN	iP	21 25 39.6	c	USCGS: 26.5°N, 124.9°E, 0 = 21 13 04.1.
	SHS	eP	35.8		East China Sea. h about 206 km.
	REN	iP	47.3	c	
	COR	eP	22.7		
		iN	28 04.5		
Dec. 2	MHC	iP	07 24 57.5	d	USCGS: 20.1°N, 108.5°W, 0 = 07 20 17.6.
	MIN	eP	25 22.9	c	Revilla Gigedo Islands region. h about 33 km.
Dec. 2	MIN	iP	12 53 18.8	c	USCGS: 36.5°N, 8.2°E, 0 = 12 40 16.2.
	SHS	eP	18.2		Algeria-Tunisia border. Felt. h about 33 km.
Dec. 3	BRK	iP	08 53 26.9	c	USCGS: 25.0°N, 123.1°E, 0 = 08 40 29.2.
	MHC	iP	30.5	c	Off northeast coast of Formosa. Felt. h about 140 km.
	MIN	iP	23.1	d	
	REN	iP	30.1	d	
	SHS	eP	19.5		
	COR	eP	07.4	c	
Dec. 3	BRK	iP	16 26 47.9	d	USCGS: 11.6°S, 166.1°E, 0 = 16 14 31.4.
	BRX	eSE	38.0		Santa Cruz Islands. h about 122 km.
		eRNEZ	51.5		
			R from W		
	MHC	iP	16 26 49.8	c	
	FRE	e	54		
	MIN	eP	55.7	d	
	SHS	eP	52.5		
	REN	eP	27 00.7		
	PRS	i(P)	26 52.0	d	
Dec. 3	BRK	iP	20 05 55.4	d	USCGS: 43.6°N, 135.1°E, 0 = 19 55 05.5.
	MHC	iP	06 00.0	d	Sea of Japan. h about 386 km.
	FRE	eP	08.5		
	MIN	eP	05 47.7	c	
	REN	eP	57.4	c	
	COR	eP	27.2	d	
	SHS	eP	43.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 3 (Cont.)	CLS	iP	52	d	
	PRS	iP	06 04.9	d	
	SCC	eP	00	d	
	PRI	iP	08.6	d	
Dec. 4	REN	e	05 41 07.1		
		i	23.9		
Dec. 4	MHC	i	05 46 26.7	c	USCGS: 5.5°S, 151.7°E, 0 = 05 33 17.9.
	MIN	eP	20.0	c	New Britain region. Felt. h about 47 km.
	SHS	eP	15.9		
Dec. 4	MHC	i	08 29 35.2	c	USCGS: 60.2°N, 160.4°E, 0 = 08 20 17.7
	MIN	eP	13.3	c	Northern Kamchatka. h about 45 km.
	SHS	e	10.4		
Dec. 4	MIN	eP	12 52 05.9	c	USCGS: 33.2°N, 95.3°E, 0 = 12 38 11.9.
		e	55 57.2		Tsinghai Province, China. h about 45 km.
	SHS	e	51 54		
Dec. 5	BRK	ePKP	13 14 49	c	
		iPP	15 40		
	BRX	ePSNE	24.9		
		i(SS)N	31.8		
		i(SSS)N	37.4		
		eQNE	53		
		eRN	57		
			R from S		
	MHC	i	13 14 50.6		
	FRE	eP	56.5		
	MIN	iP	58.5	d	
	MIN	i	13 15 48.4		USCGS: 50.8°S, 139.7°E, 0 = 13 01 04.
	REN	eP	02.3		Southwest of Tasmania. h about 33 km.
	SHS	ePKP	14 54.5		
		ePP	15 51.5		
	VIN	eP	14 52.6		
	PRS	e(P)	51	c	
		i	15 45.4		
	CLS	e(P)	14 49	d	
	PRC	e(P)	48	d	
		e	15 38		
Dec. 6	MHC	iP	06 07 22.6	d	USCGS: 13.6°N, 93.4°E, 0 = 05 48 38.
	REN	e(P)	25		Andaman Islands. h about 35 km. PAL: Magnitude 5 1/4.
Dec. 6	BRK	eP	13 47 52	d	USCGS: 23.5°S, 176.1°W, 0 = 13 35 48
	BRX	iSN	57 55	N	Tonga Islands region. h about 45 km. Magnitude 6 1/4.
		eSSN	14 03.1		
		eGN	08.4		
		eR	11.6		
			R from SW		
			mu sec		
		PZ	4.9 8		
		SH	6.0 20		
		MaxH	15 19		
	MHC	iP	13 47 52.0	d	
	MIN	eP	48 00.3	c	
	REN	eP	04.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 6	SHS	eP	00.2		
(Cont.)	VIN	eP	47 51	d	
	CLS	eP	53	d	
Dec. 6	BRK	iP	16 49 26.5	c	USCGS: 49.3°N, 155.4°E, 0 = 16 39 37.6.
	BRX	iSEZ	57 27		Kurile Islands region. Felt.
		iSS	17 01 14		h about 60 km. Magnitude 6 - 6 1/4.
		iGNEZ	03.9		
		eR	06.0		Magnitude 6 1/4.
			R from NW		
			mu sec		
		PZ	4.8 10		
		SH	17 35		
		MaxH	26 38		
Dec. 9	BRK	iP	02 21 14.1	c	USCGS: 56.3°N, 153.9°W, 0 = 02 15 22.0.
	BRX	eSEZ	25.9		Kodiak Islands, Alaska.
		eRNEZ	27.5		h about 31 km.
			R from N		
			mu sec		Magnitude 5 1/2 - 5 3/4.
		PZ	5.3 14		
		MaxH	14 5		
	MHC	iP	02 21 22.9	d	
		i	24 39.8		
	FRE	e(P)	21 29.6		
	MIN	iP	20 57.8		
	REN	eP	21 11.1	d	
		eR	29.5		
	COR	iP	20 20.7	d	
	SHS	iP	52		
	VIN	iP	21 34.6	c	
	CLS	iP	08	c	
	LLA	iP	26		
Dec. 9	BRK	iP	04 09 59		USCGS: 14.9°S, 75.7°W, 0 = 03 58 55.4.
	MHC	iP	53.2	c	Near coast of Peru. h about 39 km.
		i	10 41.9		PAL: Magnitude 5.
	FRE	e(P)	09 42.6		
	MIN	eP	10 06		
		i	32.5		
	REN	eP	09 55.7	c	
	COR	iP	10 29.7	d	
	SHS	eP	07.2		
	VIT	iP	02	d	
	CLS	iP	02.7	d	
		i	13.7		
	PRI	iP	09 45	d	
		i	53.9		
Dec. 9	MIN	iP	08 10 40.9	c	USCGS: 43.7°S, 75.2°W, 0 = 11 18 08.9.
Dec. 9	BRK	eP	11 31 16	c	Near coast of southern Chile.
		e	38		h about 34 km. Magnitude 6 3/4.
	BRX	epP	51		
		ePP	34.9		Magnitude 6 1/2.
		eSE	42.0		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 9		eSSNE	48		
(Cont.)		i(SSS)N	51.0		
		eGE	55		
			R from S		
			mu sec		
		PZ	2.9 16		
		SH	12 24		
	MHC	eP	11 31 12		
	FRE	eP	04.6		
	MIN	eP	25		
		i	36.7		
	REN	eP	16.6	d	
	COR	eR	36		
	SHS	eP	31 23.7		
	VIN	iP	13	c	
	CLS	iP	22.1	c	
	PRI		06		
Dec. 9	BRK	iP	20 00 54.8	d	USCGS: 21.7°S, 179.9°E, 0 = 19 49 41.3.
	MHC	iP	56.3	d	Fiji Islands. h about 620 km.
	FRE	iP	01 00.2	d	
	MIN	iP	04.5	d	
		i	03 15.4		
	REN	iP	01 08.4	d	
	SHS	iP	03.5	d	
	COR	eP	14.4	d	
		i	26.0		
	SFB	iP	20 00 55.2		
	ARC	iP	01 00.4	c	
	CLS	eP	00 57.0		
	PRS	eP	53.9	d	
Dec. 9	SHS	eP	21 27 19.2		USCGS: 56.3°N, 153.5°W, 0 = 21 21 51.3.
					Kodiak Islands, Alaska.
					h about 33 km.
Dec. 10	MIN	eP	05 04 07.8	c	USCGS: 56.4°N, 153.1°W, 0 = 04 58 35.9.
	SHS	eP	02.4		Kodiak Islands, Alaska.
					h about 33 km.
Dec. 10	CLS	i(P)	19 03 59.2	c	USCGS: 32°15'49"N, 103°51'57"W,
	MHC	iP	46.4	c	0 = 19 00 00. New Mexico test site
	MIN	iP	58.5	d	GNOME.
	VIT	i(P)	42.5	(c)	Shot elevation = 369.7 meters (AEC).
	SHS	eP	04 03.6	(c)	
		e	16.1		
	PRS	e(P)	03 41.5	(c)	
Dec. 11	COR	eP	13 16 30.3		
Dec. 12	MHC	iP	11 28 26.6	d	USCGS: 11.9°N, 60.2°W, 0 = 11 18 24.0.
	SHS	eP	31		Windward Islands region.
					h about 80 km.
Dec. 12	BRK	eP	17 35 05	d	USCGS: 21.7°N, 146.0°E, 0 = 17 23 04.0.
	BRX	eR	58.6		Mariana Islands region.
	MHC	iP	35 09.8	c	h about 24 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 12 (Cont.)	SHS	eP	01	c	
	LLA	iP	14.0	d	
	CLS	iP	08.4	c	
Dec. 12	BRK	eP	22 19 40	c	USCGS: 18.9°N, 107.7°W, 0 = 22 14 38.7
	BRX	eSN	24.0		Revilla Gigedo Islands region.
		e(R)	25.8		h about 33 km.
			mu sec		
		MaxH	8.3 12		Magnitude 5 1/4.
	MHC	iP	22 19 33.3	c	
	SHS	eP	20 01.5		
	CLS	iP	19 48.2	c	
	LLA		23	d	
Dec. 12	BRK	eP	23 17 03.8	c	USCGS: 43.4°N, 146.2°E, 0 = 23 06 20.6.
	MHC	iP	08.5	c	Near east coast of Hokkaido, Japan.
	ARC	eP	16 44.8		h about 65 km.
	REN	eP	17 07.5	c	
	COR	eP	16 34.4	c	
	SHS	iP	52.5	c	
	CLS	eP	59	c	
	LLA	iP	17 14.8	c	
	SFB	eP	03.8		
Dec. 13	SHS	eP	08 53 21.9		USCGS: 26.6°N, 129.4°E, 0 = 08 40 48.3.
					Ryukyu Islands. h about 55 km.
Dec. 13	MHC	iP	17 02 35.3	c	USCGS: 18.9°S, 168.4°E, 0 = 16 49 50.4.
	FRE	eP	18		New Hebrides Islands. Felt.
	MIN	e	41.3		h about 30 km.
	SHS	eP	39.1		
Dec. 14	BRK	eP	01 45 04	d	USCGS: 21.2°N, 109.0°W, 0 = 01 40 24.3.
	MHC	eP	44 50.9	c	Revilla Gegido Islands region.
	FRE	eP	45 11.5		h about 33 km.
	MIN	eP	44 19.3	d	
	REN	eP	45 03.0		
	CLS	e(P)	12		
	PRS		44 40		
Dec. 14	BRK	eP	07 23 52		USCGS: 3.1°S, 140.9°E, 0 = 07 10 23.2.
	MHC	eP	24 02.3	c	Near north coast of New Guinea.
	MIN	eP	07 23 57.8	d	h about 44 km.
	REN	eP	24		
	SHS	eP	00.5		
	PRS	eP	07	(c)	
	LLA	e(P)	23 54	(c)	
Dec. 14	BRK	eP	07 27 54		
	BRX	e	29.3		
		e(R)	54.5		
			R from W		
			mu sec		
		SH	2.6 20		
	MHC	eP	07 27 58		
	FRE	e	28 16		
	MIN	e	27 54		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 14 (Cont.)	CLS	eP	55		
Dec. 15	BRK	eP	12 49 28		USCGS: 5.5°S, 147.2°E, 0 = 12 36 32.0.
	MHC	iP	30.7	c	New Britain region.
	MIN	eP	30.2	d	h about 197 km.
	SHS	eP	28.7	d	
	VIT	eP	33	(d)	
	PRS	eP	31	(c)	
Dec. 16	MIN	eP	09 29 26.5	c	USCGS: 26.5°S, 177.0°W, 0 = 09 16 56.1.
					South of Tonga Islands.
					h about 33 km.
Dec. 16	MIN	e	10 11 30.4		USCGS: 23.9°S, 175.9°W, 0 = 09 59 16.5.
	REN	e(P)	32.2		Tonga Islands region.
					h about 50 km.
Dec. 16	MIN	eP	13 49 39		USCGS: 51.9°N, 160.1°E, 0 = 13 40 26.3.
	REN	e	49.5		Near east coast of Kamchatka.
	SHS	eP	49 34.5		h about 62 km.
Dec. 17	BRK	iP	21 42 57.0	c	USCGS: 14.4°S, 75.5°W, 0 = 21 32 03.1.
	MHC	iP	52.7	c	Near coast of southern Peru.
	MIN	iP	43 02.5	c	h about 84 km.
	REN	i(P)	42 54.1	c	
	CLS	iP	43 00.8	c	
	LLA	eP	42 46.8	d	
	PRI	eP	43.9	c	
Dec. 18	BRK	iP	03 22 53.3	c	
	MHC	iP	50.2		
	MIN	iP	53.8	c	
Dec. 18	MHC	iP	22 36 42.3	d	USCGS: 20.9°S, 174.5°W, 0 = 22 24 52.9.
					Tonga Islands. h about 33 km.
Dec. 20	BRK	iP	13 34 42.1	d	USCGS: 4.6°N, 75.6°W, 0 = 13 25 34.4.
		ipP	35 21.8	c	West central Colombia. 23 killed.
		iPP	36 32.3	c	h about 176 km. Magnitude 6 3/4.
		iScP	39 28.0	d	
		eS	41 34		Magnitude 6 3/4.
		e(SS)	43 12		
			mu sec		
		PZ	1.8 1.7		
		PPZ	0.8 1.6		
	BRX	PZ	6.3 5		
	MHC	iP	13 34 36.9	d	
		ipP	35 19.0	d	
		iScP	39 25.6		
	FRE	eP	34 45.6	d	
	REN	iP	34.9		
	SHS	iP	49.1	d	
	COR	iP	56.6	d	
		iSE	42 47.4		
	SFB	iP	34 42.3	d	
	ARC	iP	59.6	d	
	CLS	iP	45.6	d	
		eScP	39 29.8		
	CNC	iP	34 41.6	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 20		eScP	39 28.0		
(Cont.)	SCC	iP	34 37.9	d	
	VIT	iP	34.0	d	
	LLA	iP	34 30.3	c	
		iScP	39 22.0	d	
	PRS	iP	34 31.1	d	
		iScP	39 22.7	c	
	PRI	iP	34 27.5	d	
		iScP	39 20.3	c	
Dec. 22	BRK	iP	11 27 48.8	d	USCGS: 40.5°N, 126.3°W, 0 = 11 26 46.5. Off coast of northern California.
		iSNE	28 36.1		h about 33 km. Magnitude 4.6.
	CLS	iP	27 40.6	c	
		iS	28 17.3		
	CNC	eP	27 51	c	Magnitude 4.9.
	SCC	eP	58.8	c	
	VIT	iP	28 06.1	c	
	LLA	iP	10.9	d	
	PRS	iP	10.1	c	
	PRI	iP	19.0	d	
	MHC	iP	27 58.8	d	
	SFB	iP	47.8	c	
	MIN	iP	40.8	c	
	COR	iP	37.2	c	
	SHS	iP	32.7	c	
	PAC	iP	53.6	c	
		iSE	28 46.2		
	ARC	iP	27 13.5	d	
	REN	eP	28 06.5	d	
	FER	eP	27 14		
Dec. 22	MHC	eP	15 43 58.9	c	
	MIN	eP	44 10		
Dec. 22	BRK	iP	22 59 00	c	USCGS: 18.6°N, 145.6°E, 0 = 22 46 24.6.
	MHC	iP	03.2	d	Mariana Islands. h about 155 km.
	MIN	iP	58 58.8	c	
	PRI	e(P)	59 10	c	
	PRS	eP	08	c	
	CLS	eP	58 58	c	
Dec. 23	MHC	iP	06 56 26.4	c	USCGS: 44.9°N, 111.2°W, 0 = 06 53 36.5.
	MIN	eP	55 53		Yellowstone National Park.
	REN	eP	56 10.0		h about 23 km.
	SHS	e(P)	55 23		
Dec. 23	MHC	iP	14 45 32.0	d	USCGS: 6.4°N, 73.4°W, 0 = 14 36 27.1
	MIN	iP	38.6	d	Colombia. h about 197 km.
	REN	iP	28.2		
	SHS	eP	40.8		
	VIT	eP	28.5	d	
	CLS	eP	49.4	c	
	LLA	eP	25	c	
Dec. 23	BRK	e(P)	19 23 17.6		USCGS: 34.3°N, 138.3°E, 0 = 19 11 53.3.
	REN	eP	22.0		Near east coast of Honshu, Japan.
	SHS	eP	08		Felt. h about 245 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 24	MHC	eP	02 10 54.3	c	USCGS: 65.9°N, 150.2°W, 0 = 02 04 18.8.
	MIN	eP	29.8	c	Alaska. Felt. h about 33 km.
Dec. 24	MHC	iP	53 45.0	d	USCGS: 3.4°S, 140.3°E, 0 = 02 40 07.6.
	MIN	eP	45.4	d	New Guinea. h about 29 km.
	SHS	eP	43.0		
Dec. 24	BRK	eP	07 01 38		USCGS: 43.3°N, 144.0°E, 0 = 06 50 54.0.
	FRE	eP	53		Near coast of northern Hokkaido,
	REN	iP	42.2		Japan. h about 125 km.
	SHS	eP	27.3		
Dec. 24	SHS	eP	09 30 53.4		USCGS: 20.4°S, 173.6°W, 0 = 09 19 02.7.
					Tonga Islands. h about 45 km.
Dec. 24	BRX	e(S)NE	14 43 24	NE	USCGS: 5.7°S, 80.9°W, 0 = 14 25 30.6.
	MHC	iP	35 19.5	d	Near coast of northern Peru.
	MIN	eP	36.9	d	h about 33 km.
	CLS	e(P)	27		
	SHS	e(P)	34.6		
	VIT	eP	17	c	
Dec. 25	BRK	iP	14 07 17.6	c	USCGS: 20.4°S, 173.7°W, 0 = 13 55 38.8.
	BRX	e(S)NZ	32 44	N	Tonga Islands. h about 64 km.
	MHC	iP	07 17.4	d	
	FRE	eP	21.9		
	REN	iP	31.8		
	SHS	iP	27.1	d	
	CLS	eP	18.4	d	
	PRS	eP	14	d	
	PRI	eP	16	d	
Dec. 26	BRK	iP	04 42 52.9	c	USCGS: 5.5°S, 110.7°E, 0 = 04 24 57.3.
	BRX	e(S)NZ	53 32		Java Sea. h about 550 km.
	MHC	iP	42 54.6	c	
	MIN	iP	51.1	c	
	ARC	eP	48.3		
	REN	e	55.9	c	
	CLS	eP	52	c	
	PRS	eP	56	c	
	PRI	eP	57	d	
Dec. 26	BRX	iP	06 42 38	c	USCGS: 44.2°S, 38.1°E, 0 = 06 17 30.6.
		i(S)NZ	07 03 24	N	Prince Edwards Island.
					h about 22 km.
Dec. 27	BRK	e	02 27 52		USCGS: 22.5°S, 68.8°W, 0 = 02 16 02.3.
	MHC	i	47.0		Northern Chile. h about 120 km.
	MIN	eP	56.8	c	
	SHS	eP	28 00.1		
	PRI	eP	27 41	d	
	CLS	eP	55.3	d	
	LLA	eP	43	c	
Dec. 27	REN	e	16 55 15.1		USCGS: 1.7°S, 12.9°W, 0 = 16 46 31.2.
					Atlantic Ocean. h about 37 km.
Dec. 27	REN	iP	20 44 53.6		
Dec. 27	BRX	eP	00 01 44		USCGS: 41.2°S, 175.8°E, 0 = 23 48 01.7.
		ePP	05 44		Near coast of North Island, New
		e(S)N	12 10	S	Zealand. Felt. h about 40 km.
	MHC	e	01 39		Magnitude 6 3/4.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 27	REN	e	02.8		
(Cont.)		eR	39.6		
Dec. 28	SHS	e(P)	06 23 28		
Dec. 28	SHS	eP	17 32 50.2		
Dec. 28	BRK	eP	00 08 15.5	d	USCGS: 12.4°S, 166.3°E, 0 = 23 55 55.5.
	MHC	eP	15.3	c	Santa Cruz Islands region.
	MIN	eP	21.5	d	h about 81 km.
	REN	eP	27.5		
	SHS	eP	20		
Dec. 29	BRK	eP	10 13 25	d	USCGS: 6.4°S, 154.5°E, 0 = 10 00 37.2.
	MHC	e	27.1		Solomon Islands. h about 70 km.
	MIN	eP	12 28.4	c	
	REN	eP	13 35.6		
	SHS	eP	25.4		
	CLS	iP	24.2	d	
	PRS	iP	27.9	d	
	PRI	iP	30.7	d	
Dec. 29	MHC	iP	15 00 08.2	d	USCGS: 14.3°N, 92.8°W, 0 = 14 53 19.4
	FRE	e(P)	14 59 52		Off coast of Guatemala.
	MIN	eP	15 00 21.9	c	h about 45 km.
	REN	eP	14 59 30.4		
	SHS	eP	15 00 23.7		
	VIT	eP	04	c	
	CLS	eP	23	c	
	LLA	iP	14 59 58.2	d	
	PRI	eP	55	c	
Dec. 29	MHC	iP	15 46 19.8	c	USCGS: 21.1°S, 68.7°W, 0 = 15 34 38.2.
	MIN	eP	28.9	c	Chile-Bolivia border.
	SHS	iP	31.6	d	h about 127 km.
Dec. 29	SHS	eP	19 41 09.6		
Dec. 29	MIN	eP	22 08 11.4	d	
	SHS	eP	06.3		
Dec. 30	BRK	iP	00 47 28.4	d	USCGS: 52.3°N, 177.6°E, 0 = 00 39 27.1.
	BRX	iSNEZ	53.8		Rat Islands, Aleutian Islands.
		iR	58.9		h about 56 km. Magnitude 6 3/4.
			R from WNW		
			mu sec		Magnitude 6½.
		SH	37 20		
		MaxH	89 20		
	MHC	eP	00 47 32.6		
	FRE	iP	46.2	d	
	MIN	eP	17.1		
	REN	eP	31.7		
	SHS	eP	00		
	COR	iP	46 51.1		
		eR	58.2		
	PAC	iP	47 31.5	c	
	SFB	iP	27.7	d	
	ARC	iP	05	d	
Dec. 30	MHC	iP	01 12 22.3	d	USCGS: 52.3°N, 177.9°E, 0 = 01 11 22.7.
	CLS	eP	32.0	d	Rat Islands, Aleutian Islands.
	SCC	eP	16.1	d	h about 50 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 30	VIT	eP	27.6	d	
(Cont.)	LLA	iP	33	d	
	PRS	e(P)	33	c	
	PRI	e	44	d	
Dec. 30	MHC	iP	20 47.4	d	
	MIN	eP	19 15.8		
	CLS	iP	20 57.3	c	
	SCC	eP	42.2	c	
	VIT	eP	52.9	c	
	LLA	eP	59	c	
	PRS	eP	59	c	
	PRI	iP	21 08.0	d	
Dec. 30	BRK	e(P)	09 11 33	(c)	USCGS: 22.9°S, 175.2°W, 0 = 08 59 31.7.
	MHC	iP	34.0	d	Tonga Islands. h about 41 km.
	FRE	eP	37.4		
	MIN	eP	42.2	d	
	REN	eP	45.4		
	SHS	eP	40.8		
	CLS	eP	31.1	d	
	PRS	eP	31	c	
	PRI	e(P)	29	c	
Dec. 30	MIN	e(P)	25 06.6	c	USCGS: 51.8°N, 178.0°E, 0 = 09 17 15.0.
	SHS	eP	01.3		Rat Islands, Aleutian Islands.
					h about 50 km.
Dec. 30	MHC	iP	10 22 35.2	d	USCGS: 52.1°N, 177.9°E, 0 = 10 14 39.2.
	FRE	eP	59.4		Rat Islands, Aleutian Islands.
	MIN	eP	29.3	c	h about 50 km.
	REN	eP	41.2		
	SHS	eP	24.8		
	CLS	iP	34.1	c	
	PRI	iP	58.2	c	
Dec. 30	MIN	eP	11 46 40.9	c	USCGS: 54.0°N, 166.2°W, 0 = 11 40 12.1.
	SHS	e(P)	34.8		Unalaska Island, Alaska.
					h about 59 km.
Dec. 30	MHC	iP	15 36 42.7	d	USCGS: 16.0°S, 170.0°E, 0 = 15 31 41.7.
	MIN	eP	27.5	c	New Hebrides Islands.
	SHS	eP	22.6		h about 65 km.
Dec. 30	BRK	eP	16 49 57	c	USCGS: 52.2°N, 177.7°E, 0 = 16 41 54.7.
	MHC	iP	50 01.8	d	Rat Islands, Aleutian Islands.
	FRE	eP	14.3		h about 35 km.
	MIN	eP	49 46.3	c	
	REN	eP	50 00.1		
	SHS	eP	49 41.7		
	VIT	eP	50 07.1	c	
	CLS	iP	49 51.4	d	
	PRS	eP	50 08.6	d	
	PRI	iP	16 50 13.6	d	
Dec. 30	MHC	e	23 31 18		USCGS: 16.5°N, 46.6°W, 0 = 23 20 16.9.
	MIN	eP	17.3	c	North Atlantic Ocean. h about 32 km.
Dec. 31	MHC	eP	02 27 23.8	c	USCGS: 52.1°N, 177.8°E, 0 = 02 19 16.5.
	FRE	e(P)	33.3		Rat Islands, Aleutian Islands.
	MIN	eP	07.7	d	h about 50 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1961			h. m. s.		
Dec. 31	MHC	iP	16 02 54.9	d	USCGS: 52.3°N, 177.8°E, 0 = 15 54 49.3.
	MIN	eP	40.3	d	Rat Islands, Aleutian Islands.
	SHS	eN	35.5		h about 50 km.
Dec. 31	MHC	eP	18 09 37.2	d	USCGS: 18.4°N, 106.1°W, 0 = 18 04 30.3.
	FRE	eP	23		Off coast of Jalisco, Mexico.
	MIN	eP	10 00.4	c	h about 33 km.
	REN	eP	09 45.3		