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BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO
MINERAL—ARCATA—RENO—CORVALLIS—SHASTA
MANZANITA LAKE—VINEYARD

Earthquakes and the Registration of Earthquakes

From January 1, 1959, to March 31, 1959

BY
DON TOCHER

UNIVERSITY OF CALIFORNIA PRESS
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1961



SEISMOGRAPHIC STATIONS OF THE UNIVERSITY OF CALIFORNIA

Perry Byerly, Director

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, AND VINEYARD

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The list following this page gives the latitude and longitude of the epicenters for earthquakes which were well enough recorded to permit such a determination.

Map No. for each epicenter corresponds to a number plotted on the map which follows the list of epicenters.

Date and Origin Time are given in Greenwich Civil Time. Subtract eight (8) hours to convert to Pacific Standard Time (P.S.T.). This will change the date for some of the earthquakes.

M is the Richter Magnitude of the earthquakes as determined from the maximum trace amplitudes recorded for the shock by the standard Wood-Anderson Torsion Seismographs. In routine practice, the nomogram given by Nordquist in the "Bulletin of the Seismological Society of America", 52:164, is used for magnitude determinations.

Q indicates the excellence with which the epicenter has been located; "a" indicates excellent, "b" good, "c" fair, and "d" poor. Under Remarks will be found a short descriptive location of each epicenter, usually with reference to a point named on the map. Information on small foreshocks and aftershocks is sometimes included in the Remarks. When numerous foreshocks or aftershocks accompany a large earthquake, a separate table is generally included following the main list of local shocks, giving origin times, Richter Magnitudes, and, where significant differences in location can be determined, the geographic coordinates. The larger earthquakes of after-shock series are also included in the main list of local shocks.

Information on the intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly those collected by the Seismological Field Survey of the United States Coast and Geodetic Survey, which publishes a more complete summary of such reports in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region". This is a quarterly publication, and 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 are given by Roman numerals when sufficient information on the effects of the shock is available. These intensity numbers assigned by the Coast and Geodetic Survey are based on the Modified Mercalli Intensity Scale of 1931 (Harry O. Wood and Frank Neumann, "Bulletin of the Seismological Society of America", 21:277-283, 1931), the criteria of which follow in an abridged form.

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. Disturbed 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 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
1	Jan. 2	08-30-24	40.7°	124.6°	d	3.3	Northwest of Ferndale.
2	Jan. 4	17-09-29	39° 51'	121° 57'	c	2.4	Northwest of Chico.
3	Jan. 5	05-15-05	40° 47'	125° 24'	c	4.0	West of Arcata.
4	Jan. 7	19-47-32	36° 40'	121° 09'	c	3.2	West of Llanada.
5	Jan. 11	04-16-45	37.0°	121.8°	d	2.5	East of Santa Cruz.
6	Jan. 11	05-18-26	36.2°	120.8°	d	2.5	West of Coalinga.
7	Jan. 14	05-48-13	37° 41'	122° 34'	b	1.7	Southwest of San Francisco. Aftershock of Mar. 22, 1957.
	Jan. 15	08-42-09	44°	130°			About 300 miles off coast of Oregon. Epicenter and origin time by USCGS.
8	Jan. 16	09-30-15	37° 26'	121° 45'	c	2.2	Northwest of Mt. Hamilton.
8	Jan. 17	07-23-55	37° 24'	121° 45'	b	2.5	Northwest of Mt. Hamilton.
	Jan. 18	17-15-03	44°	127½°			About 150 miles off coast of Oregon. Epicenter and origin time by USCGS.
9	Jan. 19	11-32-32	41.3°	120.4°	d	3.7	Southeast of Alturas.
10	Jan. 20	04-18-47	37° 19'	121° 41'	b	1.9	Near Mt. Hamilton.
11	Jan. 21	10-04-27	40° 53'	123° 57'	c	3.2	East of Arcata. Awakened numerous residents of Humboldt County. II at Eureka.
12	Jan. 22	18-38-39	37° 29'	121° 46'	b	1.8	Northwest of Mt. Hamilton.
13	Jan. 24	15-20-11	40.8°	121.3°	d	2.6	East of Burney.
14	Jan. 28	12-50-17	37° 31'	121° 47'	a	3.0	Northwest of Mt. Hamilton.
15	Jan. 28	13-54-39	37° 20'	121° 40'	a	2.7	Near Mt. Hamilton. Aftershock, magnitude 1.9, at 14-28-17.
16	Jan. 28	19-36-22	37° 08'	122° 21'	c	2.5	Northwest of Santa Cruz.
17	Jan. 29	16-41-23	37° 08'	121° 34'	a	4.3	Northwest of Hollister. IV at Morgan Hill. Felt by a few persons in San Francisco.
18	Jan. 30	12-51-48	36° 31'	121° 13'	b	2.7	Southwest of Llanada.
19	Feb. 1	20-40-59	37° 28'	121° 49'	c	1.8	Northwest of Mt. Hamilton.
17	Feb. 2	10-14-25	37° 08'	121° 34'	b	2.8	South of Mt. Hamilton.
20	Feb. 2	11-59-33	37° 45'	122° 07'	b	2.2	Southeast of Berkeley. Felt in San Leandro.
21	Feb. 2	14-26-58	36° 32'	121° 06'	b	3.6	Southwest of Llanada.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
22	Feb. 3	19-37-36	37.2°	122.4°	d	1.9	Northwest of Santa Cruz.
	Feb. 3	23-50-52	43.8°	122.5°	d	3 ⁺	Explosion near Oakridge, Oregon.
23	Feb. 4	22-15-38	38° 05'	122° 29'	b	2.2	Northwest of Berkeley. Blast?
24	Feb. 7	05-51-02	36.1°	120.8°	d	3.0	Southeast of King City.
25	Feb. 8	02-37-12	41.0°	125.4°	d	3.1	West of Arcata.
26	Feb. 9	23-58-51	36.7°	121.3°	d	2.5	Southeast of Vineyard.
27	Feb. 10	18-03-43	39° 31'	118° 06'	c	4.3	East of Fallon, Nevada.
27	Feb. 10	18-25-36	39.5°	118.1°	d	3.5	Aftershock.
27	Feb. 11	02-46-41	39° 31'	118° 06'	c	3.5	Aftershock.
	Feb. 13	00-39-17	44.2°	129.0°	d		Off coast of Oregon.
23	Feb. 13	22-23-50	38° 06'	122° 30'	c	2.0	North of San Francisco. Blast?
28	Feb. 14	04-43-39	37° 19'	121° 37'	a	2.2	Near Mt. Hamilton.
29	Feb. 16	03-55-32	41.3°	121.6°	d	3.2	North of Burney.
30	Feb. 17	13-30-56	40° 04'	123° 00'	c	3.2	West of Red Bluff.
31	Feb. 18	08-04-45	40.4°	124.6°	d	2.9	Off Cape Mendocino.
32	Feb. 18	22-53-29	40° 20'	124° 22'	c	3.3	South of Ferndale.
33	Feb. 19	19-55-19	37° 44'	121° 45'	b	2.0	Northeast of Livermore.
34	Feb. 20	00-53-55	42.7°	125.8°	d	3.4	Off coast of Oregon.
35	Feb. 20	01-21-46	37° 07'	121° 34'	c	2.0	South of Mt. Hamilton.
36	Feb. 22	19-28-30	36.9°	123.1°	d	2.1	West of Santa Cruz.
37	Feb. 25	04-13-03	36° 44'	121° 23'	c	3.7	Near Vineyard. IV at Hollister and 7½ miles south of Hollister. III at Big Sur.
	Feb. 27	06-13-54	43.7°	127.7°	d		Off coast of Oregon.
38	Feb. 27	13-07-46	37° 05'	121° 54'	c	2.2	Northeast of Santa Cruz.
39	Feb. 27	21-35-01	36° 27'	120° 45'	c	3.1	Southeast of Llanada.
40	Mar. 2	23-27-17	36° 59'	121° 36'	b	5.3	East of Santa Cruz (near Gilroy). Felt over a land area of approximately 8,000 square miles. Maximum intensity VI. Slight damage was reported from several localities, consisting principally of cracked plaster, broken windows, and loss from fallen objects and merchandise. Minor earth

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
							slide occurred on Chittenden Pass Road east of Watsonville, and boulders fell on Hecker Pass Highway between Gilroy and Watsonville. VI at Aromas, Ben Lomond, Boulder Creek, Felton, Freedom, Gilroy, Hollister, Holy City, Madrone, Morgan Hill, New Almaden, San Francisco, San Jose, San Juan Bautista, San Martin, Santa Cruz, and Watsonville. V throughout most of the remainder of the southern part of the San Francisco Bay Area.
							Aftershocks of magnitude 3.0 or above are included in this list. A separate, more complete tabulation of aftershocks appears following this list.
40	Mar. 3	07-23-46	37° 00'	121° 36'	b	4.4	Aftershock. V at Madrone, Morgan Hill, Soquel, and Watsonville.
40	Mar. 3	08-20-06	37° 00'	121° 36'	c	3.1	Aftershock. Felt at Gilroy.
40	Mar. 3	18-32-13	36° 59'	121° 36'	b	4.0	Aftershock. IV at Aptos, Gilroy, and 7½ miles south of Hollister.
40	Mar. 4	06-25-14	37° 00'	121° 36'	c	3.2	Aftershock. III at Aptos.
40	Mar. 4	08-01-43	37° 00'	121° 37'	c	3.8	Aftershock. IV at Aptos.
40	Mar. 4	08-57-28	37° 00'	121° 37'	c	3.0	Aftershock.
41	Mar. 4	14-13-49	37° 54'	121° 51'	b	2.0	North of Livermore.
40	Mar. 4	20-55-06	37° 00'	121° 37'	b	3.5	Aftershock of Mar. 2. IV at Aptos.
40	Mar. 4	21-06-21	37° 00'	121° 36'	b	3.6	Aftershock of Mar. 2. Felt at Aptos.
42	Mar. 5	06-41-38	38° 21'	118° 34'	c	4.2	South of Hawthorne, Nevada.
43	Mar. 6	22-09-22	37° 31'	121° 37'	c	2.3	North of Mt. Hamilton.
44	Mar. 7	13-19-50	36.7°	121.5°	d	2.6	South of Hollister.
45	Mar. 8	19-34-03	37° 43'	122° 34'	c	1.7	Aftershock of Mar. 22, 1957? Coast Guard reports a plate glass window was cracked on this date "around noon" (i.e., around 20h GCT) at the Point Bonita Lighthouse.
46	Mar. 9	13-13-50	39° 37'	122° 05'	c	2.4	West of Sacramento.
40	Mar. 10	00-18-40	36° 59'	121° 35'	c	3.5	Aftershock of Mar. 2? Focus significantly shallower than Mar. 2.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
47	Mar. 11	02-49-49	39°46'	122°06'	c	3.5	Northwest of Chico.
48	Mar. 11	14-57-51	41.0°	120.2°	d	3.7	Southeast of Alturas.
49	Mar. 11	23-26-47	37° 07'	121° 34'	c	2.5	South of Mt. Hamilton.
50	Mar. 12	08-01-05	36° 35'	121° 12'	c	2.5	West of Llanada.
40	Mar. 12	09-51-08	37° 00'	121° 36'	b	3.3	Aftershock of Mar. 2. IV at Aptos.
51	Mar. 13	02-44-27	35.8°	120.3°	d	2.5	South of Coalinga.
52	Mar. 14	02-43-41	35.7°	121.3°	d	3.6	West of San Simeon.
53	Mar. 15	06-53-28	40.1°	119.2°	d	3.2	South of Gerlach, Nevada.
54	Mar. 16	04-30-15	37° 56'	121° 59'	c	2.3	Northeast of Berkeley.
55	Mar. 16	05-03-49	36° 48'	121° 36'	b	2.8	West of Hollister.
56	Mar. 16	17-36-27	38.8°	116.1°	d	4.1	Northeast of Tonopah, Nevada.
57	Mar. 16	19-38-20	40° 43'	124° 50'	c	3.1	Northwest of Ferndale.
	Mar. 17	16-19-19	43°	127½°	d		Off coast of Oregon.
58	Mar. 18	14-20-36	38° 39'	118° 30'	b	4.3	Northeast of Hawthorne, Nevada. Felt in Churchill, Lander, and Washoe Counties, Nevada. Aftershock (M = 3.2) at 16-07-53.
59	Mar. 20	05-12-09	36° 29'	121° 10'	b	2.9	Southwest of Llanada.
	Mar. 20	15-41-47	43.8°	126.2°	d		Off coast of Oregon.
60	Mar. 21	16-02-59	41° 00'	121° 28'	c	3.8	Northeast of Burney. IV at Pit River Powerhouse No. 1 (PG&E).
61	Mar. 22	02-57-31	37° 36'	122° 14'	a	1.9	Northwest of Palo Alto.
62	Mar. 22	10-47-28	39.3°	117.9°	d	3.9	Southeast of Fallon, Nevada.
63	Mar. 22	16-10-18	38° 15'	121° 47'	c	2.5	Southwest of Sacramento.
64	Mar. 23	07-10-20	39° 36'	118° 01'	c	6.3	Dixie Valley, Nevada (east-northeast of Fallon). Felt over an area of approximately 50,000 square miles of Nevada and northeastern California. VI (slight plaster cracking) at Frenchman's Station and Carson City, Nevada. V at Austin, Eureka, Fallon, Fernley, Flanigan, Genoa, Gerlach, Golconda, Hawthorne, Hazen, Imlay, Lovelock, Luning, Minden, Palisade, Schurz, Silver Springs, Smith, Steamboat, Stewart, Tungsten,

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
							Virginia City, Wabuska, Wellington, and Yerington, Nevada, and at Coleville, California.
							Aftershocks of magnitude 4.0 or above are included in this list. A separate, more complete tabulation of aftershocks appears following this list.
64	Mar. 23	07-13-55				4.4	Aftershock.
27	Mar. 23	11-49-23	39° 32'	118° 07'	c	4.2	Aftershock.
65	Mar. 24	02-21-13	37° 16'	121° 43'	c	4.1	Southwest of Mt. Hamilton. IV at Moss Landing and San Mateo. III at Aptos. Also felt at San Francisco.
66	Mar. 26	05-55-41	39.7°	118.1°	d	3.7	Aftershock of March 23 at 0710.
67	Mar. 27	11-30-33	39.6°	118.1°	d	3.9	Aftershock of March 23 at 0710.
67	Mar. 27	11-59-48	39° 38'	118° 06'	c	4.2	Aftershock of March 23 at 0710.
64	Mar. 27	13-55-21	39° 37'	118° 01'	c	4.0	Aftershock of March 23 at 0710.
68	Mar. 28	16-03-12	38.0°	122.0°	d	2.0	Northeast of Berkeley.
12	Mar. 30	01-08-08	37° 29'	121° 46'	c	1.7	Foreshock.
69	Mar. 30	06-29-08	37° 30'	121° 49'	b	1.9	Northwest of Mt. Hamilton.

THE GILROY EARTHQUAKE OF MARCH 2, 1959

The following list of aftershocks of the earthquake near Gilroy at 23^h27^m17^s G.C.T., March 2, 1959 (Map No. 40) includes 25 of magnitude at least 2.0 through March 31, 1959. The tabulation is probably complete for shocks of magnitude above 2.4 with the exception of the first several minutes after the main shock, when seismograms from all nearby stations were hopelessly tangled, and with the possible exception of small shocks which might have occurred immediately after several of the larger aftershocks.

The preceding regional tabulation includes shocks of this series (through March 31, 1959) only if the magnitude was 3.0 or above. For these larger shocks, more detailed information on intensities may be found in the regional list.

Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	M	Remarks
Mar. 2	23-27-17	36° 59'	121° 36'	5.3	Main shock. Focal depth about 30 km.
Mar. 3	04-03-49	37.0°	121.6°	2.6	Felt.
	07-23-46	37° 00'	121° 36'	4.4	Felt.
	08-20-06	37° 00'	121° 36'	3.1	Felt.
	08-22-58	37.0°	121.6°	2.7	Felt.
	18-32-13	36° 59'	121° 36'	4.0	Felt.
	19-59-50	37° 01'	121° 37'	2.8	
Mar. 4	05-29-39	37° 00'	121° 36'	2.7	
	06-03-15	36° 58'	121° 35'	2.7	
	06-25-14	37° 00'	121° 36'	3.2	Felt.
	08-01-43	37° 00'	121° 37'	3.8	Felt.
	08-18-45	37.0°	121.6°	2.7	
	08-57-28	37° 00'	121° 37'	3.0	
	15-28-21	37.0°	121.6°	2.4	
	16-14-42	37° 00'	121° 36'	2.5	
	20-55-06	37° 00'	121° 37'	3.5	Felt.
	21-06-21	37° 00'	121° 36'	3.6	Felt.
Mar. 5	02-05-28	37° 01'	121° 37'	2.4	
	04-21-08	37° 01'	121° 37'	2.3	Felt.
	06-20-25	37.0°	121.6°	2.1	
	12-30-57	37.0°	121.6°	1.9	
	13-38-16	37.0°	121.6°	2.5	
	23-20-06	37.0°	121.6°	2.4	

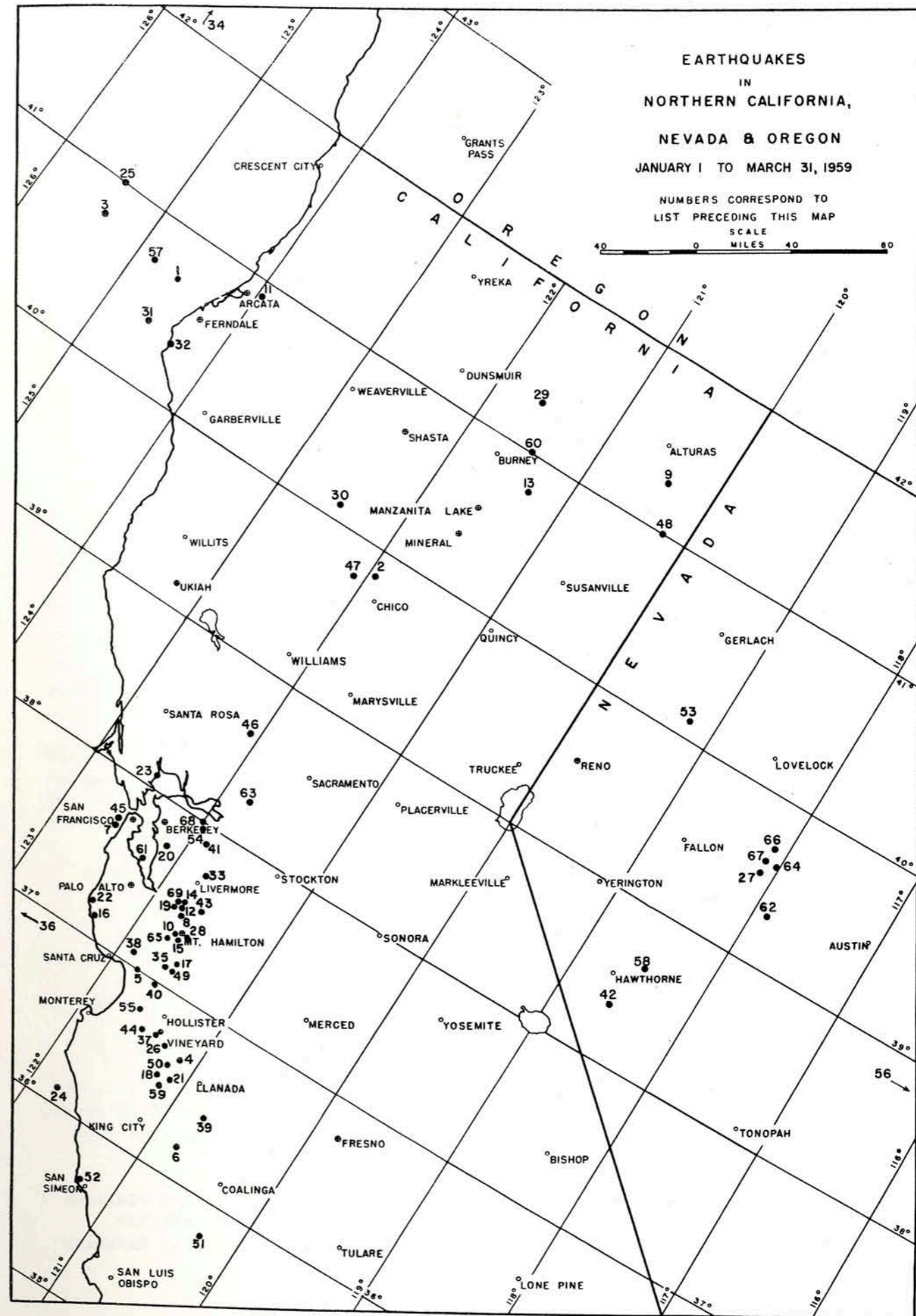
Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	M	Remarks
Mar. 10	00-18-40	36° 59'	121° 35'	3.5	
Mar. 12	09-51-08	37° 00'	121° 36'	3.3	Felt.
Mar. 12	12-22-09	37° 00'	121° 36'	2.5	
Mar. 17	10-51-07	37.0°	121.6°	2.7	

THE CENTRAL NEVADA EARTHQUAKES OF MARCH 23, 1959

The following list of aftershocks of the earthquake in Dixie Valley, Nevada at 07^h10^m20^s G.C.T., March 23, 1959 (Map. No. 64) includes 23 of magnitude at least 3.0 through March 31, 1959. The tabulation is probably complete for shocks of magnitude above 3/4 with the exception of the first several minutes after the main shock.

The preceding regional tabulation includes shocks of this series (through March 31, 1959) only if the magnitude was 4.0 or above.

Date 1959	Origin Time (G.C.T.)	Magnitude	Date 1959	Origin Time (G.C.T.)	Magnitude
Mar. 23	07-10-20 (Main shock)	6.3	Mar. 24	03-11-04	3.2
	07-13-55	4.4		03-35-32	3.2
	08-21-36	3.2		06-03-02	3.3
	08-25-46	3.0		19-10-00	3.2
	08-46-02	3.3	Mar. 25	04-10-18	2.9
	08-58-11	3.4		10-37-22	3.3
	11-00-00	3.1	Mar. 26	05-55-41	3.7
	11-40-26	3.4	Mar. 27	11-26-11	3.4
	11-49-23	4.2		11-30-33	3.9
	13-42-25	3.2		11-59-48	4.2
	16-57-32	3.3		13-55-21	4.0
	20-53-47	3.3	Mar. 28	14-20-44	3.2
			Mar. 30	01-56-15	3.0



THE REGISTRATION OF EARTHQUAKES

Station	North Latitude	West Longitude	Altitude Meters	Station Symbol	Present Auspices and Date
Berkeley	37° 52.3'	122° 15.6'	81	B, BG*	University of California - 1887
Mt. Hamilton	37° 20.4'	121° 38.6'	1282	MH	Lick Observatory - 1887
Palo Alto	37° 25.1'	122° 10.8'	83	PA	Stanford University - 1927
San Francisco	37° 46.4'	122° 27.2'	100	SF	University of San Francisco - 1931
Ferndale	40° 34.6'	124° 15.7'	15	Fe	City of Ferndale - 1933
Fresno	36° 46.1'	119° 47.8'	88	F	Fresno State College - 1935
Mineral	40° 20.8'	121° 36.1'	1495	M	National Park Service, Lassen Volcanic National Park - 1938
Arcata	40° 52.6'	124° 04.5'	59	A	Humboldt State College - 1948
Reno	39° 32.3'	119° 48.8'	1386	R	University of Nevada - 1948
Corvallis	44° 35.1'	123° 18.2'	123	C	Oregon State College - 1950
Shasta	40° 41.7'	122° 23.3'	312	SH	Bureau of Reclamation - 1942
Manzanita Lake	40° 32.2'	121° 33.7'	1800	ML	National Park Service, Lassen Volcanic National Park - 1956
Vineyard	36° 45.0'	121° 23.0'	328	V	W.A. Taylor and Co. - 1959

*B denotes readings of short period instruments, BG of long period instruments (12 sec. Galitzin-Wilip).

Routine recording commenced February 3, 1959 at the new station at Vineyard (about seven miles south of Hollister). The station is founded on recent alluvium in the San Andreas fault zone; the alluvium here probably overlies the sheared and crushed rock of the fault zone. Space for the station has been provided through the cooperation of W. A. Taylor and Company, owner, and Almaden Vineyards, lessee of the site.

Earthquakes in the Northern California, Nevada, and Oregon region are included in the following list only if of magnitude 4.5 or greater, or if of special interest. Times are usually not reported for PA, SF, Fe, or ML unless of special interest or in case of defective records at other stations.

Measurement and interpretation of seismograms from all the above listed stations is done at Berkeley; requests for special data or for copies of seismograms should be addressed to Seismographic Station, University of California, Berkeley 4, California.

STATION EQUIPMENT

Type and Component

Short-period Benioff Z
 Short-period Benioff N, E
 Short-period Wood-Anderson N, E
 Short-period Sprengnether N, E, Z
 Short-period Marion moving-coil Z
 Short-period Slichter N, E, Z
 Short-period Wilson-Lamison Z
 Short-period Sprengnether Z
 Long-period Galitzin-Wilip N, E, Z
 100 kg Bosch-Omori N, E
 25 kg Bosch-Omori N, E
 80 kg Wiechert Z
 Loucks-Omori N, E
 Short-period 100X Torsion N, E

Station

B, MH, PA, M, SH
 SH
 B, MH, PA, SF, M, A, V
 F, R
 V
 C
 C
 SF
 B
 B
 Fe
 B
 ML
 B

The three components are indicated by N, E, Z in the "phase" column of the following tabulation of readings. When no letter appears, the phase is read from the vertical component (Z) only. "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates gradual beginning.

In the column headed "Ground Motion", "c" or "d" indicates initial compression or dilatation of the ground as read from the vertical component instrument. N, S, E, or W indicates that the initial ground motion was north, south, east, or west, respectively.

Maximum amplitude of earth displacement in microns (mu) and periods in seconds (sec) of the indicated phases are given for the Berkeley station in the column headed "Time (GCT)". Combined horizontal amplitude of N and E components are designated by H.

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 1	B BG	e(P) eRNZ	02 16 24 40		USCGS: 83½°N, 8°W, 0 = 02 06 42. Off northeast coast of Greenland.
	MH F M	e(P) eP eP	02 16 29 27 01		R from N
	R SH	e e(P) e(P)	07 06 05		
Jan. 1	B BG	eP eRNEZ	07 37 58 08 01.5		USCGS: 18½°S, 175½°W, 0 = 07 26 07. Tonga Islands region.
	MH M R	iP eP eP	07 37 59 38 10 11		R from SW
	SH	eP	09		
Jan. 1	B BG	e(P) eRNEZ	08 01 27 24.2		USCGS: 18½°S, 177°W, 0 = 07 49 35. Fiji Islands region.
	MH F M R	eP eP eP iP	08 01 24 31 36 39		R from SW
	SH	iP	34		
Jan. 2	MH M	iP iP	05 31 49 30		USCGS: 48°N, 4°W, 0 = 05 19 36. Near coast of Brittany, France. Slight damage in Channel Islands.
Jan. 2	MH M R	iP eP iP	20 11 28 44 35		USCGS: 3°N, 92½°W, 0 = 20 03 19. Galapagos Islands region.
	SH	eP	49		
Jan. 3	MH M	iP e	08 47 09 23		
Jan. 3	B MH F M R	eP iP eP eP iP	11 28 44 40 31 46 42		USCGS: 14½°S, 75½°W, 0 = 11 17 38. Near coast of Peru.
	SH	i(P)	55		
Jan. 4	MH M	iP" iP"	03 35 42 41		USCGS: 10°S, 111½°E, 0 = 03 16 36. South of Java.
Jan. 4	MH F M R	iP eP eP eP	03 44 04 13 20 27		USCGS: 21°S, 174½°W, 0 = 03 32 15. Tonga Islands.
	SH	e	42		
Jan. 4	MH F M SH	iP iP eP eP	07 19 47 55 24 21		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 4	M SH	i(P) e(P) i	08 06 33 29 07 05		USCGS: 46½°N, 151°E, h = 100 km., 0 = 07 56 27. Kurile Islands.
Jan. 5	SH	iP	02 50 04		USCGS: 11½°N, 141°E, h = 200 km., 0 = 02 37 28. Mariana Islands region.
Jan. 5	B MH F M R C SH	iP iP iP iP iP iP iP	09 59 29.6 30.5 34.1 37 41.0 43.7 36.1	c c	USCGS: 22°S, 171½°E, 0 = 09 46 42. Loyalty Islands. PAS: Magnitude 6½ - 6 3/4.
Jan. 5	B MH	iP e(S)NE iP	12 37 02.1 47.3 36 52.7		PAS: 36° 09'N, 118° 03'W, 0 = 12 36 03. Near Haiwee. Felt. Magnitude 4.7.
		iE	37 02.2	c	
	F	iSN iPEZ iNE iSN	32.9 36 29.5 30.6 51.8	W	
	M	iP i iN	37 25 33 38 20	c	
	R	iP i(S) iE	37 10.4 38 02.9 04.6	c	
	SH	i iEZ	37 39.3 38 54.2	c	
Jan. 6	MH M R	iP iP eP	12 12 40 23 35		USCGS: 52°N, 168°W, 0 = 12 05 40. Fox Islands, Aleutian Islands.
	SH	iP	19		
Jan. 6	SH	eP"	15 06 58		USCGS: 7½°S, 105½°E, 0 = 14 48 03. South of Java.
Jan. 7	MH M SH	iP iP iP	02 37 34 41 42		
Jan. 7	MH M SH	e(P) eP eP	06 35 58 26 21		
Jan. 8	B BG MH	iP eLN iP	01 43 37 02 02 01 43 32.7	d d	USCGS: 15½°N, 61°W, h = 100 km., 0 = 01 33 48. Windward Islands. Felt: Trinidad.
	F	i	44 11.3	d	PAS: Magnitude 6½ - 6 3/4.
	M	iP	43 21.7	d	
		i	44 12		
	A	iPE	43 49.5		
	R	iP	25.3	d	
	C	iP	48.4	d	
	SH	iP	37.8	d	

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 8	M	iP	16 02 27		USCGS: Pacific Ocean, about 650 miles northwest of Galapagos Islands. O = 15 54 41.
	F	eP	12		
	R	iP	33		
Jan. 10	SH	i(P)	02 24 54		
Jan. 10	MH	i(P)	06 30 27		
	M	i(P)	35		
Jan. 10	MH	i	21 35 32		
	M	i(P)	03		
	SH	i(P)	03		
Jan. 11	B	eP	07 29 32		USCGS: 15°N, 90°W, h = 200 km., O = 07 22 40. Guatemala.
		epP	30 12		
		e	46		
	MH	iP	29 26.0		
		ipP	30 07.1		
	F	eP	29 12		
		epP	52		
	M	eP	36		
		ipP	30 18		
	R	eP	29 26		
		ipP	30 08		
	SH	eP	29 42		
		epP	30 24		
Jan. 11	B	i(P)	07 35 18		
	MH	i(P)	15		
	F	e(P)	06		
	M	i(P)	18		
	SH	i(P)	22		
Jan. 11	MH	eP	08 48 51		USCGS: Hokkaido, Japan. O = 08 37 39.
	M	iP	40		
	SH	eP	36		
Jan. 11	MH	i(P)	13 37 58		USCGS: 21°S, 174½°W, O = 13 26 00. Tonga Islands.
	M	e(P)	38 06		
	SH	e(P)	09		
Jan. 12	MH	iP	14 27 16		USCGS: 44°N, 146°E, h = 100 km., O = 14 16 28. Near north coast of Hokkaido, Japan.
	F	iP	26		
		i(pP)	55		
	M	iP	09		
	R	eP	14		
	SH	iP	00		
		i(pP)	29		
Jan. 12	M	iP	17 53 50		USCGS: 14½°N, 145°E, h = 150 km., O = 17 41 29. Mariana Islands.
	SH	iP	47		
Jan. 13	B	eP	01 27 58		USCGS: 13½°N, 146°E, O = 01 15 25. Mariana Islands.
	BG	eN	38 16		
		eLN	50.6		
	MH	iP	28 01		
	M	iP	27 57		
	R	eP	28 06		
	SH	iP	27 54		
Jan. 13	MH	iP	07 27 56		USCGS: 53°N, 167½°W, O = 07 20 58. Fox Islands, Aleutian Islands.
	M	eP	38		
	R	eP	54		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 13	SH	eP	08 35		USCGS: 9°N, 83½°W, h = 100 km., O = 08 34 08. Costa Rica. Felt at El Volcan, Panama.
Jan. 13	MH	iP	08 42 09		
		i	21		
	F	eP	06		
	M	eP	26		
	R	e	25		
Jan. 13	F	eP	09 17 32		USCGS: 19°S, 176½°E, O = 09 05 02.
	R	eP	38		
Jan. 13	MH	i(P')	09 57 15		USCGS: 9°S, 67½°E, O = 09 37 18. Chagos Archipelago region.
	M	i(P')	17		
	R	e(P')	26		
	SH	eP'	04		
Jan. 13	MH	iP	16 41 54		USCGS: 7½°N, 74½°W, O = 16 32 37. Colombia.
Jan. 13	B	eP	20 48 30		USCGS: 34½°S, 71°W, h = 100 km., O = 20 35 54. Central Chile. Slight damage at Santiago.
	MH	iP	27	d	
		i(pP)	54		
	F	eP	19		
	M	iP	37	d	
	R	eP	31	d	
	SH	iP	39	d	
		i(pP)	49 05		
Jan. 15	MH	iP	08 44 25.4		USCGS: 44°N, 130°W, O = 08 42 09. About 300 miles off coast of Oregon.
	F	iP	45.4		
	M	iP	43 58.2		
	R	e(P)	44 22.1		
	C	iPE	43 19.6		
	SH	eP	49		
Jan. 15	SH	iP	15 51 59		USCGS: 27°N, 128°E, O = 15 39 12. Ryukyu Islands.
Jan. 15	F	eP	19 19 55		USCGS: 49½°N, 128°W, O = 19 16 23. Vancouver Island region.
	M	iP	18 57		
	R	eP	19 17		
	SH	iP	18 49		
Jan. 15	M	iP	20 18 49		
	SH	eP	45		
Jan. 15	B	eP	21 32 05.1	c	USCGS: 25½°S, 180°, h = 500 km., O = 21 20 26. South of Fiji Islands.
	MH	iP	06.4	c	
	F	iP	10	c	
	M	iP	14.2	c	PAS: Magnitude 6½.
		i	33 32.9		
	R	eP	32 17.8	c	
	SH	iP	14.1	c	
		e	34 01		
Jan. 15	R	e(P)	21 41 54		
Jan. 16	B	iP	00 11 04.8	d	PAS: 36° 07'N, 118° 03'W, O = 00 10 06. Near Haiwee, California. Felt.
		e(S)E	52.4		
	MH	iP	10 55.2	d	
		iNE	11 05.7		
		i(S)NE	37.5		
	PA	iP	01.4	d	
		e(S)E	45.6		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 16 (cont.)	SF	iP	06.8	d	
		e(S)NE	57.8		
	F	iP	10 33.0	c	
		iSNE	53.6		
	M	iP	11 27.4	c	
		i	36.3		
		i	12 09.6		
	R	iP	11 13.1	c	
		eE	12 02.7		
		eE	19.7		
	SH	iP	11 13.7	d	
		eN	12 02		
Jan. 16	B	iP	01 38 31.5	d	USCGS: 52°N, 171°W, h = 60 km., O = 01 31 25. Fox Islands, Aleutian Islands.
	BG	eSE	44 14		
		eQN	47.0		
		eREZ	48.6		
			R from WNW		
	MH	iP	01 38 37.6	d	
		i	40 55.5		
	F	iP	38 50.4		
	M	iP	22.1		
	R	eP	34.7		
	C	eP	37 52.6		
	SH	iP	38 16.2	d	
Jan. 16	B	e(P)	01 44 36		
	MH	i(P)	39		
	F	e(P)	44		
	M	i(P)	31		
	R	e(P)	25		
	SH	i(P)	29		
Jan. 16	MH	iP	11 04 45		USCGS: 22°S, 170°E, O = 10 51 52. Loyalty Islands.
	F	eP	49		
	SH	eP	51		
Jan. 16	MH	iP	15 28 48		
	F	eP	54		
Jan. 16	B	eP	16 54 21	c	USCGS: 52°N, 131½°W, O = 16 50 40. Queen Charlotte Islands.
	BG	eS	57 25		
	MH	iP	54 31.5	c	
	F	iP	46.1		
	A	e(P)N	53 48		
		eLN	57.3		
	R	eP	54 14.6	c	
	C	iP	52 56.0	c	
	SH	eP	53 49		
Jan. 17	SH	eP	09 38 20		USCGS: 10½°N, 126°E, O = 09 24 35. Near north coast of Mindanao, P.I. Felt.
Jan. 17	B	iP	11 43 29.2		USCGS: 10°S, 162½°E, O = 11 30 46. Solomon Islands.
		i	41.1		
	MH	iP	30.6		
		i	42.4		
	F	eP	37		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 17 (cont.)	R	eP	41		
	SH	eP	32		
Jan. 18	MH	eP	14 54 08		USCGS: 5°S, 152½°E, O = 14 41 06. New Britain region. Felt: Rabaul.
	M	iP	09		
	SH	eP	07		
Jan. 18	MH	i	15 55 08		USCGS: 52°N, 166½°W, O = 15 48 18. Fox Islands, Aleutian Islands.
	F	e(P)	03		
	M	iP	54 53		
	R	eP	55 02		
	SH	iP	54 47		
Jan. 18	MH	iP	17 16 54.6	c	USCGS: 44°N, 127½°W, O = 17 15 03. About 150 miles off coast of Oregon.
	F	iP	17 14.7	c	
	M	eP	16 28.0	c	
	R	eP	47.1		
	C	iP	15 49.1	c	
		e	16 28.9		
	SH	iP	17.0	c	
Jan. 18	B	iP	22 34 26.5	c	USCGS: 19°S, 178°W, h = 450 km., O = 22 23 15. Fiji Islands. PAS: Magnitude 6 1/4.
		e	35.5		
		ipP	36 09.0	c	
	MH	iP	34 27.2	c	
		i	35.3		
		ipP	36 08.6		
	F	iP	34 31.5	c	
		ipP	36 14.5		
	M	eP	34 35.6	c	
		ipP	36 18.6		
	R	iP	34 40.4	c	
		epP	36 24	c	
	SH	iP	34 35.1	c	
		ipP	17.8	c	
Jan. 18	F	e(P)	22 43 49		
	R	e(P)	44 06		
Jan. 19	M	iP	08 25 10		USCGS: 30°N, 132°E, O = 08 12 46. South of Kyushu, Japan.
	SH	iP	08		
Jan. 19	MH	iP	10 56 22		USCGS: 16°S, 168½°E, O = 10 43 42. New Hebrides Islands.
	F	iP	24		
	M	iP	24		
	R	e(P)	31		
	SH	iP	24		
Jan. 19	R	e(P)	12 16 35		
Jan. 19	B	eP	21 46 59.8		PAS: 36° 09'N, 118° 03'W, O = 21 46 00. Near Haiwee. Magnitude 4.1.
		eE	47 49.2		
		iP	46 50.9	c	
		iN	47 00.5		
		e(S)E	31.5		
	PA	eP	46 53.2		
	F	iP	27.0	c	
		iSNE	47.3		
	R	eP	47 06.5		
		iE	48 03.5		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 19	SH	e	47 43		USCGS: 19°N, 120°E, O = 11 08 10. Near north coast of Luzon, P.I. USCGS: 34°N, 142°E, O = 05 10 25. Near east coast of Honshu, Japan. Felt in northern Honshu. Small seismic sea wave at Miyako. PAS: Magnitude 6 3/4 - 7.
(cont.)		eNEZ	52		
Jan. 21	M	iP	11 21 50		
	SH	iP	47		
Jan. 22	B	eP	05 21 50		
	BG	eSNEZ	31 12		
		eLN	40.4		
			mu sec		
		PZ	5.2 8		
		PH	3.7 8		
		SH	42 14		
		MaxH	135 22		
	MH	iP	05 21 55.7		
	F	eP	22 04		
		eSNE	31 39		
	M	eP	21 46.5		
	R	eP	55.3		
	C	iP	27.2		
	SH	iP	42.3		
Jan. 22	SH	eP	05 49 50		USCGS: 4°N, 132½°E, O = 05 36 06. About 300 miles northeast of Halmahera.
Jan. 22	B	eP	07 44 15		USCGS: 43½°N, 144½°E, O = 07 33 14. Hokkaido, Japan.
	MH	iP	20		
	F	eP	29		
	M	eP	06		
	R	iP	19		
	SH	eP	03		
Jan. 22	B	eP	09 58 04		USCGS: 38½°N, 142°E, O = 09 46 40. Near coast of Honshu, Japan.
	MH	eP	09		
	F	eP	19		
	M	eP	57 54		
	R	eP	58 05		
	SH	eP	57 50		
Jan. 23	M	i(P)	07 11 04		
Jan. 23	MH	eP	07 26 45		
	M	eP	36		
	SH	eP	27		
Jan. 23	M	i(P)	09 02 23		USCGS: 16½°N, 47°W, O = 10 20 57. Atlantic Ocean.
Jan. 23	B	eP	10 32 06		
	MH	iP	05		
		i	35 03		
	F	eP	31 54		
	M	iP	32 02		
		i	35 00		
	R	eP	31 54		
	SH	iP	32 05		
Jan. 23	MH	iP	10 48 27		
	M	iP	19		
	SH	eP	21		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 24	B	eP	05 20 00		USCGS: 37½°N, 141°E, h = 100 km., O = 05 08 35. Near coast of Honshu, Japan. Felt.
		epP	22		
	MH	iP	05		
	F	eP	13		
		epP	36		
	M	iP	19 54		
		ipP	20 16		
	R	eP	03		
		ipP	26		
	SH	eP	19 51		
		epP	20 13		
Jan. 24	B	eP	16 03 19		USCGS: 17½°S, 175°W, h = 100 km., O = 15 51 47. Tonga Islands region.
	MH	iP	20		
	F	iP	24		
	M	iP	30		
	R	iP	33		
	SH	iP	28		
Jan. 24	BG	eLNE	20 01		USCGS: 15°N, 92½°W, O = 19 42 20. Mexico-Guatemala border. PAS: Magnitude 6¼.
	MH	iP	19 49 12		
	F	eP	48 57		
	M	iP	49 26		
		i	44		
	R	iP	14		
	SH	e	48		
Jan. 24	BG	e(SS)NE	20 21 16		USCGS: 37½°N, 24½°W, O = 19 55 14. Azores Islands. PAS: Magnitude 6¼ - 6½.
		eLNE	30.2		
	MH	i	06 55		
	F	iP	43		
	M	iP	39		
		i	07 04		
	R	iP	06 35		
	SH	iP	41		
Jan. 26	M	iP	05 59 41		USCGS: 16½°S, 174½°W, h = 300 km., O = 05 48 27. Samoa Islands region.
	SH	iP	40		
		epP	06 00 40		
Jan. 26	B	eT	21 42 36		
	MH	iT	43.3		
	PA	iT	33.6		
	SF	iT	32.7		
Jan. 26	M	iP	21 55 59		USCGS: 27°N, 128½°E, O = 21 43 12. Ryukyu Islands.
	SH	eP	56		
Jan. 27	B	e(pP)	00 29 38		USCGS: 18°N, 68½°W, h = 100 km., O = 00 20 22. Eastern Dominican Republic. Felt: San Juan Puerto Rico.
	MH	iP	11		
		i(pP)	37		
	F	eP	00		
	M	iP	12		
		i(pP)	37		
Jan. 27	MH	eP	03 46 02		USCGS: 71½°N, 2°W, O = 03 35 29. Jan Mayen Islands region.
	F	eP	05		
	M	eP	45 43		
	R	eP	48		
	SH	e(P)	47		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Jan. 27	B	iP	06 52 47.2	c	USCGS: 30½°S, 79°W, 0 = 10 04 10. Juan Fernandez Islands region. PAS: Magnitude 6¼. USCGS: 28½°N, 138°E, h = 550 km., 0 = 13 59 53. South of Honshu, Japan. 37° 08'N, 121° 34'W, 0 = 16 41 23. Near Gilroy. Magnitude 4.3. Felt. Station "P" at Panoche Fire Station, Operated by University of Michigan. Willmore vertical, To = 0.8 sec. Station coordinates: 36° 38.4' N, 121° 01.9' W. USCGS: 52°N, 174°W, 0 = 20 21 27. Andreanof Islands, Aleutian Islands. PAS: Magnitude 5 3/4 - 6. USCGS: 52°N, 174°W, 0 = 20 58 18. Andreanof Islands, Aleutian Islands. USCGS: Southern Bolivia. h = 150 km., 0 = 22 35 54.
	MH	iP	53.4	c	
	M	iP	39.1	c	
	R	eP	52		
	C	iP	11.6	c	
Jan. 28	SH	iP	33.4	c	
	B	iP	10 16 19.4	d	
	MH	iP	15.5	d	
	F	iP	05.8	d	
	M	iP	26.1	d	
Jan. 28	R	iP	19.7	d	
	C	iP	49.9	d	
	SH	iP	30.0	d	
	B	iP	14 11 12		
	MH	iP	15		
Jan. 29	M	eP	08		
	SH	iP	04		
	B	iPNEZ	16 41 40.6	NWc	
		iSNE	53.1		
	MH	iPNEZ	27.7		
		iSNE	31.1		
	PA	iPNEZ	34.1	NWc	
		eSNE	42.3		
	SF	iP	41.0	c	
		iSNEZ	53.8		
Jan. 29	F	iP	48.5		
		iSNEZ	42 08.2		
	M	iP	15.0		
		i	54.0		
	R	iP	12.2		
		iE	59.9		
	SH	i	21.4		
	P	iP	41 36.0		
	B	eP	20 28 50		
	BG	eSE	34 48		
Jan. 29		eREZ	39.4		
			R from W		
			mu sec		
		MaxH	7 20		
	MH	iP	20 28 56.7		
	F	eP	29 10		
	R	iP	28 55		
	SH	iP	37		
	B	iP	21 05 41.5	c	
	MH	iP	47.8	c	
Jan. 29		i(PcP)	07 57.1		
	F	iP	06 00.5	c	
	R	iP	05 46	c	
	SH	iP	26.4	c	
	B	iP	22 47 46		
Jan. 29	MH	iP	43		
		i	48 37		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks	
1959			h. m. s.			
Jan. 29	R	eP	47 44		USCGS: 71°N, 8°E, 0 = 23 24 30. Off coast of Norway. USCGS: 11½°S, 74½°W, h = 60 km., 0 = 00 13 48. Central Peru. USCGS: 10°S, 161°E, 0 = 00 19 25. Solomon Islands. USCGS: 61°N, 78½°W, 0 = 05 17 32. Hudson Bay. USCGS: 26½°S, 71°W, h = 100 km., 0 = 16 15 58. Near coast of Chile. USCGS: 31°S, 179°W, 0 = 18 09 02. Kermadec Islands. USCGS: 44°N, 144°E, 0 = 20 38 58. Hokkaido, Japan. PAS: Magnitude 5 3/4 - 6. USCGS: 44°N, 144°E, 0 = 22 16 47. Hokkaido, Japan. Minor damage at Deshikutsu. PAS: Magnitude 6¼. USCGS: 60°N, 151°W, 0 = 05 45 16. Kenai Peninsula, Alaska.	
	(cont.)	SH	iP	54		
	Jan. 29	B	eP	23 35 18		
		MH	iP	22		
		F	eP	23		
R		eP	05			
C		iP	34 39			
Jan. 30	SH	iP	01			
	MH	iP	00 24 31			
Jan. 30	B	iP	00 32 08.3	c		
	MH	iP	10.2	c		
		iPP	35 29.4			
	F	iP	32 15.9	c		
	R	iP	19.2	c		
Jan. 30	SH	iP	10.6	c		
	MH	iP	05 24 33			
	B	eP	16 28 01.7	d		
	MH	iP	27 58.0	d		
	F	eP	50			
Jan. 30	R	iP	28 01.7	d		
	C	ePN	30			
	B	iP	18 21 53.5	d		
		e	23 44			
	MH	iP	21 53.8	d		
		i	23 43			
	F	iP	21 56.6	d		
		e	23 51			
	M	iP	22 03.1			
		e	23 56			
Jan. 30	R	iP	22 05.0	d		
	C	ePN	22 15			
	B	eP	20 49 58			
	BG	eSN	59 03			
		eLN	21 07.5			
	MH	eP	20 50 02	d		
	F	eP	12	d		
	M	iP	49 49			
		i	50 09			
	R	iP	01	d		
Jan. 30	B	iP	22 27 47.1	c		
	MH	iP	51.9	c		
	F	iP	28 00.8	c		
	M	iP	27 40.2	c		
	R	iP	50.0	c		
Jan. 31	MH	i(P)	11 13 53			
	M	i(P)	48			
Feb. 3	M	iP	05 50 57			
	SH	eP	50			

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Feb. 4	B MH F M R	e e(P) e e(P) e	00 14 22 15 44 11 39		USCGS: 51°N, 177½°W, 0 = 00 06 25. Andreanof Islands, Aleutian Islands.
Feb. 4	MH M	iP iP	20 25 04 24 36		USCGS: 59½°N, 138°W, 0 = 20 19 40. Southeastern Alaska-Canada border.
Feb. 5	B MH F M R C SH	e(pP) e i(pP) e(pP) iP i(pP) e(pP) i(pP) iP e(pP)	01 11 15 07 21 34 10 40 11 02 15 10 26 34 56 10 17 14 36 07 22 04		USCGS: 57°N, 157°W, h = 100 km., 0 = 01 04 50. Alaska Peninsula.
Feb. 5	MH F M R SH	i(P) i(P) iP e(P) eP	10 17 14 36 07 22 04		USCGS: 37°N, 141½°E, 0 = 10 05 42. Near east coast of Honshu, Japan.
Feb. 6	M	i(P)	01 11 39		
Feb. 6	MH M SH	i(P) i(P) i(P)	04 55 03 03 54 53		
Feb. 6	M SH	eP eP	07 30 20 17		USCGS: 43½°N, 144½°E, 0 = 07 19 27. Near northeast coast of Hokkaido, Japan.
Feb. 6	MH F M R	iP e(P) e(P) e	08 14 45 34 15 00 00		USCGS: Off coast of Oaxaca, Mexico. 0 = 08 08 00.
Feb. 6	B BG MH F M R SH	eP eSE eQN eREZ SH MaxH iP i(pP) eP iP i(pP) eP i(pP) eP	14 40 35.4 46 38 49.8 51.7 3.2 12 12 20 14 40 41.8 54.9 58 26.4 41.2 40 54 22	c c c	USCGS: 51°N, 175°W, h = 60 km., 0 = 14 33 02. Andreanof Islands. Aleutian Islands. PAS: Magnitude 6.

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Feb. 7	B BG	iP ePNEZ eSE eSS e e(P'P')	09 46 32.6 33 54 25 58 45 10 01 02 16 35	c NWc	USCGS: 4°S, 81½°W, 0 = 09 36 51. Near coast of Northern Peru. Felt strongly at Guayaquil. PAS: Magnitude 7¼ - 7½.
			mu sec		
		PZ PH SH MaxH	15 9 16 9 130 14 380 20		
	MH	iP i! i iP'P'	09 46 27.6 29.3 45.9 10 16 22	c d	
	F	eP eP'P'	09 46 16 10 16 18		
	M	eP i eP'P'	09 46 40.0 58.8 10 16 22	c	
	A R	ePE iP i(P'P')	09 46 55 29.7 10 16 47	c	
	SH	iP eP'P'	09 46 44.5 10 16 19	c	
		i iP	39 09 46 25.9		
Feb. 7	V B MH	iP iP i	10 24 02.2 05.3 13.1	c d d	USCGS: 16°N, 146°E, 0 = 10 11 39. Mariana Islands.
	F M	iP iP i	12.5 01.1 06.6	d d	
	R SH V	iP iP iP	09.1 23 57.6 24 08.0	d d	
Feb. 7	MH	eP i eP	11 04 26 41 18		USCGS: 13°N, 45°W, 0 = 10 52 59. Atlantic Ocean.
	F M R	eP iP iP	22 16 26		
Feb. 7	MH F M	eP iP eP	21 38 59 55 39 14		
	SH	iP	16		
Feb. 8	B BG MH F	eP eLNE eP eP	01 13 07 34.8 13 07.5 02.0	d d	USCGS: 49°N, 28½°W, 0 = 01 02 26. North Atlantic Ocean. PAS: Magnitude 6¼ - 6½.

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Feb. 8 (cont.)	M	eP	12 51.7	d	USCGS: 23°S, 180°, h = 600 km., O = 05 46 15. South of Fiji Islands.
	R	eP	50.8		
	SH	iP	53.3	c	
	V	eP	13 10		
Feb. 8	B	eP	05 57 36		
	MH	eP	37		
	M	e(P)	46		
	SH	iP	45		
Feb. 8	M	e(P)	12 35 19		
Feb. 8	SH	i(P)	13 25 44		
Feb. 8	B	iP	16 06 41.1	d	USCGS: 32°S, 176½°W, h = 100 km., O = 15 54 06. Kermadec Islands.
	MH	iP	41.1	d	
	F	eP	43.7	d	
	M	eP	50.9	c	
	R	iP	52.6	d	
	SH	iP	49.8	d	
Feb. 8	SH	iP	17 04 52		
	MH	iP	36		
	M	iP	33		
Feb. 9	SH	eP	04 18 00		
	MH	i(P)	30		
	F	e	17 28		
	M	i(P)	23		
Feb. 9	SH	e(P)	04 50 17.3	d	USCGS: 50½°N, 177½°W, O = 04 42 33. Andreanof Islands, Aleutian Islands.
	B	iP	56 39		
	BG	eSNE	59.8		
	MH	eQNE	50 23.4	d	
		iP	32.7		
		i	35.0	d	
	F	iP	08.7	d	
	M	eP	01.2	d	
	SH	iP	28		
Feb. 9	V	eP	05 04 44		
Feb. 9	SH	e(P)	21 26 42		USCGS: 5°S, 154°E, h = 100 km., O = 21 13 18. Solomon Islands region. 39° 31'N, 118° 06'W, O = 18 03 43. East of Fallon, Nevada. Magnitude 4.3.
	MH	e	46		
	F	e	09		
Feb. 10	SH	e(P)	18 04 54.2		
	B	i(P)	05 38.2		
	MH	iP	04 41.1	c	
		iSN	05 32.9		
	PA	i(P)	04 58.3		
	F	i(P)	43.6	d	
		i(S)NEZ	05 21.8		
	M	iP	04 31.5	c	
		eSN	05 09.5		
	R	iP	04 07.7	c	
		iS	26.9		
	SH	iP	39.4	d	
Feb. 11	SH	iP	14 04.2		USCGS: 16°N, 97°W, O = 13 52 13. Near coast of Oaxaca, Mexico. PAS: Magnitude 6.
	BG	e(S)NE	07.6		
	MH	iP	13 58 29.0		

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks	
1959						
Feb. 11 (cont.)	F	iP	14.7		USCGS: 4°S, 82½°W, O = 19 57 05. Off coast of Peru. USCGS: 15°S, 173½°W, O = 21 36 46. Samoa Islands region.	
	M	iP	46.4			
	R	iP	32.5			
	SH	eP	50			
Feb. 11	MH	iP	20 06 40			
		i	50			
Feb. 11	MH	iP	21 48 11			
	F	iP	15			
	M	iP	21			
	R	iP	25			
	SH	iP	19			
Feb. 12	B	eP	09 23 39		USCGS: 50½°N, 177°W, O = 09 15 58. Andreanof Islands, Aleutian Islands.	
	MH	iP	44			
	M	eP	31			
		e	25 35			
	SH	iP	25			
Feb. 12	B	eP	17 15 59			USCGS: 22°S, 173°E, O = 17 03 10. Loyalty Islands region.
	MH	iP	57			
	F	eP	16 03			
	M	iP	06			
	R	iP	10			
	SH	iP	04			
Feb. 13	MH	eP	00 41 25.1		44.2°N, 129.0°W, O = 00 39 17. Off coast of Oregon.	
	F	iP	43.7			
	M	iP	40 57.0			
	C	iP	19.3	d		
		eSN	41 04			
	SH	eP	40 47			
Feb. 13	B	iP	01 57 12.8	c		USCGS: Tonga-Kermadec Islands region. O = 01 44 47.
	MH	iP	13.3	c		
	F	iP	17.0	c		
	M	iP	22.0			
	SH	iP	21.0	c		
	V	eP	13			
Feb. 13	M	i(P)	02 08 27			
Feb. 13	B	eP	15 20 26		USCGS: 20°S, 177½°W, h = 400 km., O = 15 09 05. Fiji Islands region.	
	MH	eP	26			
	M	iP	36			
	SH	iP	35			
Feb. 13	B	eP	15 46 52.0	c		
	MH	iP	57.0	c		
	M	iP	43.4	c		
	SH	iP	37.7	c		
Feb. 14	F	e(PP)	04 56 09			
	SH	e(PP)	55 53			
Feb. 15	B	iP"	04 18 29.2	d	USCGS: 7½°S, 122°E, O = 04 36 10. Flores Sea. USCGS: 59½°S, 25°W, O = 03 59 25. Sandwich Islands. PAS: Magnitude 6½ - 6 3/4.	
	BG	eLN	05 01.8			
	MH	iP"	04 18 26.5	d		
	F	eP"	23			
	M	iP"	31.4	d		
	R	iP"	30.2	d		
	SH	iP"	32.3	d		

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Feb. 15	B BG MH F R SH V	ip" eLN ip" ep" ep" ep" ep"	05 01 37.6 42.5 01 36.2 33 38 41 37	d d	USCGS: 59½°S, 26°W, 0 = 04 42 35. Sandwich Islands. PAS: Magnitude 6 3/4.
Feb. 15	SH	ip	05 19 31		USCGS: 1°S, 81½°W, 0 = 00 39 32. Near coast of Ecuador.
Feb. 16	F R	ep ep	00 48 55 49 11		
Feb. 16	SH	i(P)	04 44 20		USCGS: 25°S, 180°, h = 500 km., 0 = 07 54 28. South of Fiji Islands.
Feb. 16	M SH	ip ip	08 06 14 13		
Feb. 16	SH	i(P)	21 37 55		USCGS: 51½°N, 171°W, 0 = 12 03 05. Fox Islands, Aleutian Islands.
Feb. 17	B BG MH F M R SH V B MH F M R SH SH	ip eLNE ip ip ip ip ip ip ip ip ip ip ip ip ip ip ip	12 10 14.8 19.0 10 21.2 34.3 06.2 18.3 00.8 26.5 13 01 06.2 10.0 18.8 01.5 09.8 00 58.1 12 16 22	d d d d d d d d d d d d d d d d	USCGS: 51½°N, 171°W, 0 = 12 03 05. Fox Islands, Aleutian Islands. PAS: Magnitude 6 - 6¼.
Feb. 17	B MH F M R SH SH	ip ip ip ip ip ip ip	13 01 06.2 10.0 18.8 01.5 09.8 00 58.1 12 16 22	d d d d d d d	USCGS: 32½°N, 140½°E, 0 = 12 49 20. South of Honshu, Japan.
Feb. 18	SH	ip	12 16 22		USCGS: 42°N, 142½°E, 0 = 12 05 22. Near south coast of Hokkaido, Japan.
Feb. 18	MH F M R C SH	ep ip ep ip e(P)N e(P)	23 40 38 47 39 55 40 15 38 56 39 45		USCGS: 49½°N, 129½°W, 0 = 23 37 21. Off coast of Vancouver, British Columbia.
Feb. 19	F R M	i e(P) e(P) i(P)	00 55 12 33 43		Interference from shock off coast of Oregon obscures this shock at other stations.
Feb. 20	B MH F M R C SH V	ep e ip ip ep ip i(P)N ip ep	04 25 16.4 52 13.4 04.6 23.5 15.8 48 26.5 11	c c c c c c c	USCGS: 30½°S, 71°W, h = 100 km., 0 = 04 12 54. Central Chile. PAS: Magnitude 6¼ - 6½.

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Feb. 20	M	e(P)	11 20 34		
Feb. 20	B BG	ip eQNE	18 23 13.5 35.9	c	USCGS: 15½°N, 91°W, h = 150 km., 0 = 18 16 22. Guatemala. Felt. PAS: Magnitude 6½.
			mu sec		
		MaxH	9 18		
	MH	ip	18 23 07.9	c	
	F	ip	22 53.2	c	
	M	ep	23 24.9	c	
		i	24 54.2		
	R	ip	23 07.2	c	
		i	24 32		
	C	i(P)N	23 55		
	SH	ep	25		
		e	25 02		
Feb. 22	MH M	e ip	03 47 02 46 50		USCGS: 42½°N, 142½°E, 0 = 03 35 43. Near south coast of Hokkaido, Japan.
Feb. 22	B MH PA	e(T) i(T) i(T)	21 28 53.9 59.9 52.9		
	SF	e(T)E	51		
Feb. 23	MH M	ep i(P)	08 00 37 33		USCGS: 16°N, 46°W, 0 = 07 49 21. Atlantic Ocean.
Feb. 23	B	ep	10 40 37		USCGS: 52½°N, 159°E, h = 100 km., 0 = 10 31 14. Kamchatka.
		e	41 06		
	MH	ip	40 43.8	c	
		i	41 10		
	F	ep	40 54		
	M	ip	28.2	c	
	R	ep	41		
	SH	ip	24.3	c	
		i	53		
Feb. 23	B MH F M R SH	ep ip ep ip ep ep	16 14 43 47.0 59 27 46 21		USCGS: 50°N, 157°E, Depth slightly greater than normal. 0 = 16 04 48. Kurile Islands.
		e	30		
Feb. 23	B MH F M SH	ep ip ip ip ep	22 33 34 34 38 44 44		USCGS: 28½°S, 177°W, 0 = 22 20 58. Kermadec Islands region.
		i	34 01		
Feb. 24	M	ip	11 21 05		USCGS: 44°N, 149°E, 0 = 11 10 36. Kurile Islands.
Feb. 24	M	e(P)	11 50 08		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Feb. 25	B	iP	10 13 51.0		USCGS: 19°S, 177°W, h = 500 km., O = 10 02 43. Fiji Islands region.
	MH	iP	51.4	d	
	F	eP	56		
	M	eP	14 00.4	d	USCGS: 28½°N, 139°E, h = 550 km., O = 11 19 07. South of Honshu, Japan.
	R	iP	03.9	d	
	SH	iP	13 59.3	d	
Feb. 25	B	iP	11 30 21.5	c	PAS: Northern Baja California. O = 03 - 03. Magnitude 4.5.
	MH	iP	25.4	c	
	M	iP	17.0	c	
	R	eP	26.1		USCGS: 72°N, 29½°W, O = 07 00 13. Near east coast of Greenland.
	SH	iP	14.3	c	
Feb. 25	MH	i(P)	13 19 36		
	M	i(P)	22		43.7°N, 127.7°W, O = 06 13 54. Off coast of Oregon.
Feb. 26	MH	i(P)	03 05 31		
	F	e(P)	24		
	M	e	06 42		USCGS: 22½°S, 175°W, O = 15 20 27. Tonga Islands region.
	R	i	08 23		
Feb. 26	MH	i(P)	07 09 39		
	M	i(P)	31		USCGS: 27½°N, 129°E, O = 20 56 30. Ryukyu Islands.
Feb. 26	MH	i	07 30 15		
	M	i	31 08		
Feb. 27	MH	iP	06 15 48.2		USCGS: 38°N, 112½°W, O = 22 19 52. Southwestern Utah. Felt.
	M	iP	19.5		
	C	iPEZ	14 46.1		
		iSE	15 23.3		
	SH	e(P)	14		
Feb. 27	MH	iP	15 32 31		
	F	eP	34		
	M	eP	41		
	SH	iP	40		
Feb. 27	B	iP	21 09 20.4	c	
		e	34	c	
	MH	iP	24.2		
		i	33.1		
	F	eP	32	c	
	M	iP	15.9		
		i	29.7		
	R	iP	23.7	c	
	C	iP	08 59.6	c	
	SH	iP	09 14.0	c	
Feb. 27	MH	iP	22 21 42.5		
		i	22 07.5		
		i	23 42.4		
	F	eP	21 24		
		e	58		
	M	iP	44.1		
		i	22 16.0		
		i	23 42.4		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Feb. 27 (cont.)	R	eP	21 20.7		USCGS: 53°N, 168½°W, O = 01 32 22. Fox Islands, Aleutian Islands.
		i	44.9		
		i	23 02.4		
Feb. 28	SH	eP	21 54		USCGS: 24½°S, 179½°E, O = 05 59 58. South of Fiji Islands.
	MH	iP	01 39 16		
	F	e(P)	38		
	M	e(P)	09		USCGS: 16½°S, 177°W, O = 06 50 40. Fiji Islands region.
		i	21		
	R	e(P)	23		
Feb. 28	SH	iP	06 12 32		USCGS: About 350 miles south of Fiji Islands. O = 13 25 18.
	SH	eP	06 12 36		
		i	36		
Feb. 28	F	eP	07 02 30		USCGS: 74½°N, 9°E, O = 00 31 20. Arctic Ocean.
	M	eP	33		
	SH	eP	32		
Feb. 28	MH	iP	13 37 53		USCGS: ½°S, 134½°E, h = 100 km., O = 16 49 13. Near north coast of New Guinea. PAS: Magnitude 7.
	M	eP	02		
	SH	iP	01		
Mar. 1	B	eP	00 41 49		
	MH	iP	50		
	F	iP	56		
	M	iP	34		
	R	iP	37		
	SH	eP	33		
Mar. 1	B	eP	17 03 04		
		ePP	07 05		
	BG	e(SKSE)	13 13		
		e(PS)E	16.3		
		e(SS)NE	21.8		
		eREZ	31		
			R from W		
			mu sec		
		MaxH	100 19		
	MH	iP	17 03 07.1		
		i	07 20		
	F	eP	03 14		
	M	eP	04		
		e	06 27		
	R	iP	03 11		
		i	07 25		
	SH	iP	03 04		
		ePP	07 09		
Mar. 2	MH	i(P")	01 56 56		USCGS: 5½°S, 104°E, h = 100 km., O = 01 37 53. Off south coast of Sumatra.
	M	e(P")	53		
Mar. 2	M	i(P)	13 32 38		USCGS: 36½°N, 70½°E, h = 250 km., O = 15 51 41. Hindu Kush.
Mar. 2	MH	i(PP)	16 09 49		
	F	e(PP)	54		
	R	i(PP)	34		
	SH	e(PP)	36		

Date	Sta.	Phase	Time (GCT)		Ground motion	Remarks
			h.	m. s.		
1959						
Mar. 2	B	iP	23	27 36.0	d	36° 59'N, 121° 36'W, 0 = 23 27 17. Gilroy, California. Magnitude 5.3. Minor damage at Gilroy, Santa Cruz, and Hollister.
		i!NZ		36.5	Sd	
		iSN		51.0		
	MH	iPNEZ		25.8	SWd	
	PA	iP		29.7	d	
		iNE		30.4	NW	
	SF	iPNEZ		36.4	SEd	
	F	iPEZ		43.1	Ec	
		eN	28	03.6		
	M	eP		11.1	d	
		iN		27.6		
		iN		54.6		
	R	eP		06.4	c	
		iNE		15.4		
	A	e(P)NE		28		
		iN	30	02		
	C	i(P)	29	14.9	c	
	V	iPNE	27	25.0	NW	
Mar. 3	B	iP	07	24 04.6	d	37° 00'N, 121° 36'W, 0 = 07 23 46. Gilroy aftershock. Magnitude 4.4. Felt.
		iSNE		19.9		
	MH	iPNEZ	23	54.2	d	
		iSNE		59.9		
	PA	iP		58.1	d	
		iSE	24	07.2		
	SF	iP		05.3	d	
		iSNE		19.7		
	F	iP		12.3	d	
		iSNEZ		32.2		
	M	e(P)		40.0	c	
		i	25	18.0		
		iE		22.9		
	R	e(P)	24	35.9		
		i		42.1		
		i		48.1		
		i	25	22.7		
	V	iPE	23	53.3		
Mar. 3	B	iP	18	32 31.6	c	36° 59'N, 121° 36'W, 0 = 18 32 13. Gilroy aftershock. Magnitude 4.0. Felt.
		eNEZ		32.4	SEd	
		iSNE		46.4	SE	
	MH	iPNE		21.3	SE	
		iSE		26.9	E	
	PA	iP		25.0	d	
		iN		25.6	N	
		iSN		34.5		
	SF	iP		32.3	d	
		iSNEZ		46.3		
	F	iP		39.1	c	
		iSNE	33	00.4		
	V	iPE	32	20.1	w	
		iN		20.8	s	

Date	Sta.	Phase	Time (GCT)			Ground motion	Remarks
			h.	m.	s.		
1959							
Mar. 4	M	e	01	02	26		USCGS: 51½°N, 159½°E, 0 = 00 52 49. Off southeast coast of Kamchatka.
	SH	eP			13		
Mar. 4	MH	iP	19	06	42		
	M	iP		07	01		USCGS: 20½°S, 175½°W, h = 100 km., 0 = 18 55 03. Tonga Islands.
	R	i			26		
	SH	eP		06	58		
Mar. 5	MH	iP	00	24	36		USCGS: 54°N, 160°E, 0 = 00 15 08. Near east coast of Kamchatka.
	F	eP			47		
	M	iP			20		
	R	eP			35		
	SH	iP			16		
Mar. 5	M	e(P)	05	14	38		USCGS: 44½°N, 149°E, 0 = 05 04 10. Kurile Islands.
Mar. 5	B	i(P)	06	42	31.7	c	
		e(S)NZ		43	07.4		
	MH	iP		42	22.4	d	38° 21'N, 118° 34'W, 0 = 06 41 38. Nevada. Magnitude 4.2.
		i(S)N			59.7		
	PA	i(P)			31.2	d	
	SF	i(P)			35.5	d	
	F	iP			12.2	c	
		iSE			37.2		
	M	iP			29.8	d	
	R	iP			07.3	c	
		i			32.3		
	SH	i(P)			42.4	d	
Mar. 5	MH	i(P)	07	39	33		USCGS: 14°N, 145½°E, 0 = 07 26 50. Mariana Islands.
	M	e			23		
	SH	e(P)			12		
Mar. 5	MH	iP	14	20	29		USCGS: 44½°N, 147°E, h = 100 km., 0 = 14 09 47. Kurile Islands.
		i			54		
	F	eP			36		
	M	e			29		
		i			47		
	SH	eP			12		
Mar. 6	MH	iP	20	54	36		USCGS: 10½°S, 162°E, 0 = 20 41 53. Solomon Islands.
	F	eP			42		
	M	eP			37		
Mar. 7	MH	eP	15	48	38		USCGS: 52½°N, 161½°W, 0 = 15 42 17. South of Alaska peninsula.
	F	iP			55		
	M	iP			25		
	R	iP			39		
	C	iP			47 53		
	SH	iP			48 20		
Mar. 8	MH	i	17	20	50		USCGS: 21°S, 170°E, 0 = 17 07 55. Loyalty Islands.
	M	eP			57		
	SH	eP			50		
Mar. 9	MH	i(P)	11	36	12		USCGS: Near north coast of Honshu, Japan. h = 60 km., 0 = 18 44 21.
	M	i(P)			22		
Mar. 9	M	iP	18	55	28		
	SH	eP			26		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
			h. m. s.		
1959					
Mar. 9	MH	iP	22 09 42		USCGS: 15½°N, 91°W, h = 150 km., O = 22 02 58. Guatemala.
		e(pP)	10 23		
	F	e(pP)	09		
	M	e(P)	09 56		
	R	eP	37		
Mar. 10	B	e(P)	07 11 11		
	M	e(P)	05		
	SH	i(P)	02		
Mar. 10	MH	iP	18 07 53		
	F	eP	08 04		
	M	eP	01		
		i	06		
	SH	i(P)	01		
Mar. 10	BG	eQN	23 09.5		USCGS: 14°N, 92½°W, O = 22 49 39. Near coast of Guatemala.
	MH	eP	22 56 35		
	M	eP	50		
	R	eP	38		
Mar. 11	MH	e(P)	14 38 24		USCGS: 14½°N, 92°W, O = 14 31 33. Near coast of Guatemala.
	M	e(P)	46		
	R	e(P)	27		
Mar. 12	B	iP	01 42 02.2		USCGS: 7°N, 145°E, O = 01 29 07. Caroline Islands.
		i	45 59		PAS: Magnitude 6.
	MH	iP	42 04.9		
		i	15.7		
	F	eP	12		
	M	eP	02		
	R	eP	07		
	C	eP	00		
	SH	eP	00		
Mar. 12	MH	e(P)	09 13 46		USCGS: 5°S, 154½°E, h = 60 km., O = 09 00 30. Solomon Islands.
	M	eP	31		Felt at Rabaul.
	SH	eP	25		
Mar. 13	MH	iP	13 31 03		
	M	eP	07		
	SH	iP	11		
Mar. 13	MH	iP	15 42 12		USCGS: 18½°N, 72°W, O = 15 33 34. Haiti. Felt at Port-au-Prince.
	F	eP	41 59		
	M	iP	42 14		
	SH	eP	19		
Mar. 13	MH	iP	16 51 57		USCGS: 21°S, 176½°W, h = 200 km., O = 16 40 15. Tonga Islands.
	M	iP	52 07		
	SH	iP	06		
Mar. 14	M	eP	03 05 47		USCGS: 45°N, 151½°E, O = 02 55 24. Kurile Islands.
	SH	eP	44		
Mar. 16	MH	e(P)	01 43 48		USCGS: 53½°N, 164½°W, O = 01 36 45. South of Unimak Island.
	M	iP	10		
	SH	iP	05		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
			h. m. s.		
1959					
Mar. 16	B	e	17 37 58.4		38.8°N, 116.1°W, O = 17 36 27. Nevada. Magnitude 4.1.
		i	38 06.9		
		eNZ	59.6		
	MH	iP	37 38.5		
		i	52.8		
		i	38 42.5		
	F	iP	37 36.1		
		iE	38 21.4		
	M	iP	37 37.9		
		i	50.8		
		i	38 49.0		
	R	iP	37 20.7		
	SH	eP	48		
Mar. 16	B	eP	22 20 43	c	USCGS: Kermadec Islands region. h = 100 km., O = 22 08 23.
	MH	iP	43.9	c	
		i(pP)	21 19.3		
	F	iP	20 46.5	c	
	M	eP	53.7	c	
		i(pP)	21 29.8		
	SH	iP	20 52.3	c	
Mar. 16	B	eP	23 41 38		USCGS: 53°N, 168½°W, h = 60 km., O = 23 34 48. Fox Islands, Aleutian Islands.
	MH	eP	57		
		i(pP)	42 04		
	F	eP	00		
	M	eP	41 29		
	R	e(P)	42 06		
	C	e(P)	40 59		
Mar. 17	MH	i(P)	07 54 24		
	M	i(P)	12		
	SH	e(P)	08		
Mar. 17	B	eP	08 38 06	d	USCGS: 27½°N, 130°E, O = 08 25 22. Ryukyu Islands. PAS: Magnitude 5 3/4 - 6.
		e	41		
	BG	eSN	49 02		
		eN	09 01		
		SH	mu sec		
			3.4 9		
	MH	iP	08 38 10.7	d	
		i	45.0		
	F	eP	17		
	M	iP	02.3	d	
		i	16.3		
	R	iP	10.3	d	
	C	iP	37 46.7	d	
	SH	iP	59.0	d	
Mar. 17	MH	e	10 46 05		
	M	e	22		
Mar. 17	B	eP''	13 17 57	c	USCGS: 57°S, 25°W, O = 12 58 57 Sandwich Islands.
	MH	iP''	56.6	c	
	F	e(P'')	18 07		
	M	iP''	01.5	c	

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Mar. 17 (cont.)	R	i	13.2		
	SH	eP"	17 58		
	MH	eP"	18 01		
Mar. 17	MH	i(P)	15 23 11		Off coast of Oregon. O = 16 19 19.
	M	e(P)	16		
Mar. 17	MH	i	16 21 15		
	C	iP	20 11.2		
		eE	40.4		
		e(S)N	48.7		
Mar. 18	B	eP	00 54 07		USCGS: 27°N, 129°E, O = 00 41 17. Ryukyu Islands.
	MH	iP	11		
	F	eP	19		
	M	e	15		
	R	eP	12		
	C	eP	53 47		
	SH	eP	54 00		
Mar. 18	B	iP	07 38 10.2	d	USCGS: 37°N, 141°E, h = 100 km., O = 07 26 47. Near east coast of Honshu, Japan. Felt at Tokyo.
	MH	iP	14.7	d	
	F	eP	23	d	
	M	eP	04.7	d	
	R	iP	14.0	d	
	C	iP	37 45	d	
	SH	iP	38 01.2	d	
Mar. 18	MH	iP	12 45 02		USCGS: 16°N, 96½°W, O = 12 38 46. Near coast of Oaxaca, Mexico.
	M	eP	18		
	R	eP	04		
Mar. 18	M	e(P)	13 51 02		38° 39'N, 118° 30'W, O = 14 20 36. Nevada. Magnitude 4.3. Felt in Churchill, Lander, and Washoe Counties, Nevada.
Mar. 18	B	eP	14 21 26.2		
		i	57.2		
		eSNE	22 04.4		
		eNE	11.3		
	MH	iP	21 23.1	d	
		iSNE	57.9		
		i	22 05.0		
	F	iP	21 14.0	d	
	M	iP	24.8	c	
		i	29.4		
		i	22 08.2		
	R	iPNEZ	21 02.6	NWc	
		iE	19.7		
		iP	35.7		
Mar. 18	SH	e(P)	15 32 08		
	M	e(P)	01		
Mar. 18	B	i(P)	16 15 26.4	d	
	MH	i(P)	25.7	d	
Mar. 19	B	e(P)	08 36 29		USCGS: 35°N, 36°W, O = 08 25 32. North Atlantic Ocean. PAS: Magnitude 6¼.
		e	34		
	BG	eNZ	38 27		
		eSN	45 32		
		eScSNE	46 35		
		eNE	52.9		

Date	Sta.	Phase	Time (GCT) h. m. s.	Ground motion	Remarks
1959					
Mar. 19 (cont.)		eQN	09 00		
			mu sec		
		PZ	1 5½		
		SH	4.3 12		
		MaxH	28 17		
	MH	eP	08 36 19.4		
		i	27.2		
		i	31.9		
		i(PP)	38 51.8		
	F	e(P)	36 22		
		e	29		
	M	iP	08.5		
		i	16.1		
	R	e(P)	10		
		i	21		
	C	e(P)	12		
	SH	e(P)	11		
Mar. 19	B	eP	09 43 42		USCGS: 61½°N, 148°W, h = 100 km., O = 09 37 53. Southern Alaska.
	MH	iP	49		
	M	eP	25		
		i(pP)	45		
	R	eP	38		
	C	e	19		
	SH	iP	21		
Mar. 19	M	e(P)	10 25 59		
Mar. 19	MH	i	10 56 43		
Mar. 19	MH	e(P)	14 26 22		USCGS: 35°N, 142°E, O = 14 14 53. Off east coast of Honshu, Japan. Felt at Tokyo.
Mar. 20	MH	i(P)	01 12 37		USCGS: 52°N, 159°E, O = 01 02 42. Near east coast of Kamchatka.
	M	eP	07		
	R	e	31		
	SH	eP	00		
Mar. 20	MH	iP	02 22 24		USCGS: 20½°S, 174½°W, O = 02 10 33. Tonga Islands.
	F	iP	29		
	M	eP	34		
	R	iP	38		
	SH	iP	35		
Mar. 20	MH	i(P)	15 29 52		
Mar. 20	MH	iP	15 43 34.4		43.8°N, 126.2°W, O = 15 41 47. Off coast of Oregon.
	F	e(P)	49		
	M	iP	00.9		
		i	13.9		
	C	iP	42 24.0		
		iSE	51.0		
		e	52.5		
	SH	eP	51		
Mar. 20	MH	i(P)	18 54 02		
	M	i(P)	12		
	SH	i(P)	11		
Mar. 20	MH	iP"	24 12 21		USCGS: 10°S, 117°E, O = 23 53 24. Sumbawa Island region.
	M	iP"	19		

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks
1959			h. m. s.		
Mar. 21	B MH	eP	04 38 19.2	d	USCGS: 19°S, 178°W, h = 550 km., O = 04 27 21. Fiji Islands.
		iP	20.1	d	
	i	36.1			
	ipP	40 19.8			
	F	iP	38 24.3	d	
		epP	40 25		
	M	eP	38 28.0	d	
		i	46.8		
	R	epP	40 28.0		
		iP	38 32.6	d	
C	iP	37.6			
	iP	28.2	d		
Mar. 21	SH MH	eP	19 43 52		USCGS: 53½°N, 165°W, O = 19 37 08. Unimak Island region.
		i	44 04		
	F	eP	06		
	M	e(P)	43 40		
Mar. 21	R	e(P)	59		USCGS: 20°S, 177½°W, O = 19 46 00. Fiji Islands.
		eP	30		
	SH	eP	19 58 07		
		iP	07		
Mar. 23	B	iP	12		39° 36'N, 118° 01'W, O = 07 10 20. Dixie Valley, Nevada. Magnitude 6.3. Felt widely in Nevada and Northeastern California Minor damage at Frenchman's Station and Carson City, Nevada.
		iP	16		
	SH	iP	15		
	iPEZ	07 11 20.2	Ed		
Mar. 23	MH	eNE	30		Nevada aftershock. O = 07 13 55. Magnitude 4.4.
		eN	58		
	ine	12 18.0			
	ipNEZ	11 19.3	NEd		
	ine	30.8			
	PA	iN	12 12.2		
		iP	11 22.5	d	
	SF	iN	35.4		
		iSNE	12 01.6		
	F	iP	11 22.1	d	
iE		33.1			
M	iP	13.6	d		
	ipNEZ	08.7	NWc		
R	ine	15.6			
	iE	43.4			
A	iN	51.0			
	ipNEZ	10 47.8	SWc		
C	ePE	11 36.9			
	eE	50			
Fe	eNE	52			
	i(P)	12 00.0			
Mar. 23	C	i	19.0		
		i	13 48.2		
SH	iP	11 18.5	c		
	eNE	07 14 48			
M	i(S)N	15 29			
	epNE	14 54			

Date	Sta.	Phase	Time (GCT)	Ground motion	Remarks	
1959			h. m. s.			
Mar. 23	B	e	11 50 33		39° 32'N, 118° 07'W, O = 11 49 23. Nevada aftershock. Magnitude 4.2.	
		eN	51 19.6			
	MH	iP	50 21.0			
		i	34.0			
	PA	i	51 12.7			
		i	50 35.3			
	F	i	51 17.0			
		iE	28.6			
	M	i	50 21.3			
		i	51 02.0			
R	iP	50 10.9				
	i	18.3				
Mar. 24	SH	i	52.3		USCGS: La Roiya Province, Argentina. O = 05 05 37. USCGS: 34°N, 142°E, O = 17 18 24. Off coast of Honshu, Japan.	
		iP	49 49.1	c		
	i!	50.5	c			
	iSNE	50 08.1				
	MH	eP	22			
		eN	51 15			
	Mar. 24	MH	iP	05 18 04		
			iP	17 30 10		
	Mar. 25	M	eP	02		
			eP	29 58		
Mar. 25	MH	iP	00 11 09.4	c		
		iP	16.9			
Mar. 25	M	eP	04 34 48			
		eP	42			
Mar. 26	MH	i(pP)	58			
		iP	02 37 02			
Mar. 26	M	e(P)	11			
		iP	11			
Mar. 26	SH	eP	04			
		i(P)	11 56 37.1	d		
Mar. 27	B	e(P)	46			
		eP	07 11 29			
Mar. 27	MH	iP	26			
		i	12 25			
Mar. 27	F	iP	11 14			
		iP	27			
Mar. 27	M	i	12 27			
		iP	11 17			
Mar. 27	C	iP	39			
		iP	31			
Mar. 27	SH	iP	31			
		e	12 00 56.9			
Mar. 27	B	iP	46.4			
		i	57.9			
Mar. 27	MH	eE	01 41.1			
		i	00 59.6			
Mar. 27	PA	i	01 34.1			
		e	00 46			
Mar. 27	F	i	01 28			
		i				

Date	Sta.	Phase	Time (GCT)			Ground motion	Remarks
			h.	m.	s.		
1959							
Mar. 27 (cont.)	M	iP	00	35	0	c	USCGS: 1°N, 85°W, 0 = 22 57 36. Pacific Ocean.
		iE	01	19	1		
	R	iP	00	14	1		
		iSNE		33	2		
Mar. 27	SH	iP		46	4	USCGS: 48°N, 153°E, 0 = 07 45 14. Kurile Islands.	
	MH	iP	23	06	32		
	F	eP		19			
	M	eP		45			
	R	eP		32			
Mar. 28	SH	eP		46		USCGS: 20°S, 178½°W, h = 600 km., 0 = 19 47 07. Fiji Islands. PAS: Magnitude 5 3/4 - 6.	
	F	eP	07	55	37		
	M	iP		14			
	SH	eP		11			
Mar. 28	B	iP	19	58	10.9	d	
	MH	iP		11	6	d	
		i		29	8		
		ipP	20	00	16.5	c	
	F	iP	19	58	15.5	d	
		iP		20	2	d	
		i		38	4		
		e(pP)	20	00	37		
	R	iP	19	58	24.5	d	
		i		39	9		
Mar. 29	SH	iP		19	4	d	
	MH	iP	05	49	15		
	M	iP		17			
	SH	iP		20			
Mar. 29	B	eP	19	20	18.5	c	
	MH	iP		23	4	c	
	F	eP		32			
	M	iP		11	1	c	
	R	iP		20	9		
Mar. 30	SH	iP		07	5	c	
	B	iP	07	26	57.4	c	
	MH	iP		52	1	c	
	F	eP		41			
	M	eP		27	03		
Mar. 31	R	eP		26	52		
	M	eP	01	12	08		
				07	32	09	
	B	eP		42	04		
Mar. 31	BG	e(S)NE		54			
		eRNEZ					
			R from SW				
	MH	eP	07	32	05		
	F	eP			13		
	M	eP			23		
	R	eP			28		
	SH	iP			19		

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BERKELEY—MOUNT HAMILTON—PALO ALTO
SAN FRANCISCO—FERNDALE—FRESNO
MINERAL—ARCATA—RENO—CORVALLIS—SHASTA
MANZANITA LAKE—VINEYARD

Earthquakes and the Registration of Earthquakes

From April 1, 1959, to June 30, 1959

BY
DON TOCHER
and
ALAN RYALL

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY AND LOS ANGELES
1962

SEISMOGRAPHIC STATIONS OF THE UNIVERSITY OF CALIFORNIA

Perry Byerly, Director

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, AND VINEYARD

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EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

The list following this page gives the latitude and longitude of the epicenters for earthquakes which were well enough recorded to permit such a determination.

Map No. for each epicenter corresponds to a number plotted on the map which follows the list of epicenters.

Date and Origin Time are given in Greenwich Civil Time. Subtract eight (8) hours to convert to Pacific Standard Time (P.S.T.), or seven (7) hours to convert to Pacific Daylight Time (P.D.T.: April 26, 1959 to September 27, 1959.) This will change the date for some of the earthquakes.

M is the Richter Magnitude of the earthquakes as determined from the maximum trace amplitudes recorded for the shock by the standard Wood-Anderson Torsion Seismographs. In routine practice, the nomogram given by Nordquist in the "Bulletin of the Seismological Society of America," 32:164, is used for magnitude determinations.

Q indicates the excellence with which the epicenter has been located; "a" indicates excellent, "b" good, "c" fair, and "d" poor. Under Remarks will be found a short descriptive location of each epicenter, usually with reference to a point named on the map. Information on small foreshocks and aftershocks is sometimes included in the Remarks. When numerous foreshocks or aftershocks accompany a large earthquake, a separate table is generally included following the main list of local shocks, giving origin times, Richter Magnitudes, and, where significant differences in location can be determined, the geographic coordinates. The larger earthquakes of aftershock series are also included in the main list of local shocks.

Information on the intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly those collected by the Seismological Field Survey of the United States Coast and Geodetic Survey, which publishes a more complete summary of such reports in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region." This is a quarterly publication, and 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 are given by Roman numerals when sufficient information on the effects of the shock is available. These intensity numbers assigned by the Coast and Geodetic Survey are based on the Modified Mercalli Intensity Scale of 1931 (Harry O. Wood and Frank Neumann, "Bulletin of the Seismological Society of America," 21:277-283, 1931), the criteria of which follow in an abridged form.

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MADE IN THE UNITED STATES OF AMERICA

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. Disturbed 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 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
1	Apr. 1	18-18-30	39° 43'	120° 12'	b	5.6	Felt over an area of approximately 25,000 square miles of northeastern California and western Nevada. Maximum intensity VII at Loyalton, where several chimneys fell; walls, plaster and windows cracked; considerable glassware and merchandise fell and broke in homes and stores. VI at Baxter, Beckwourth, Blue Canyon, Chilcoot, Crescent Mills, Doyle, Hallelujah Junction, Kings Beach, Portola and Vinton. Foreshocks at 17-05-49 and 18-02-12. Magnitudes 2.0 and 2.2, respectively.
	Apr. 1	18-27-37				3.1	Aftershock.
1	Apr. 1	20-57-27	39.7°	120.1°	d	3.0	Aftershock.
1	Apr. 1	21-28-16	39.7°	120.2°	d	3.5	Aftershock.
2	Apr. 2	02-22-05	37° 06'	121° 33'	c	2.6	South of Mt. Hamilton.
3	Apr. 2	02-51-11	39° 47'	120° 10'	c	3.3	Aftershock of Apr. 1 at 1818.
4	Apr. 2	04-33-44	36° 59'	121° 35'	b	3.1	Aftershock of March 2 at 2327. Felt at Aptos.
5	Apr. 2	23-47-33	40° 30'	124° 53'	c	3.9	West of Ferndale.
6	Apr. 3	04-32-22	39.6°	118.1°	d	3.1	East of Fallon. Aftershock of March 23 at 0710.
3	Apr. 3	17-12-00	39.8°	120.2°	d	3.7	Aftershock of April 1 at 1818. Felt in Sierraville, Reno, Chilcoot and Loyalton.
7	Apr. 4	03-21-17	37° 50'	122° 10'	b	2.0	Southeast of Berkeley.
8	Apr. 4	06-11-22	39.5°	118.1°	d	3.7	Aftershock of March 23 at 0710.
3	Apr. 4	09-00-13	39.7°	120.2°	d	2.7	Aftershock of April 1 at 1818. Felt at Sattley and 4 miles north of Sattley.
	Apr. 4	21-04-56				3.1	Aftershock of March 23 at 0710.
9	Apr. 4	22-27-49	37° 00'	121° 36'	c	2.5	Aftershock of March 2 at 2327.

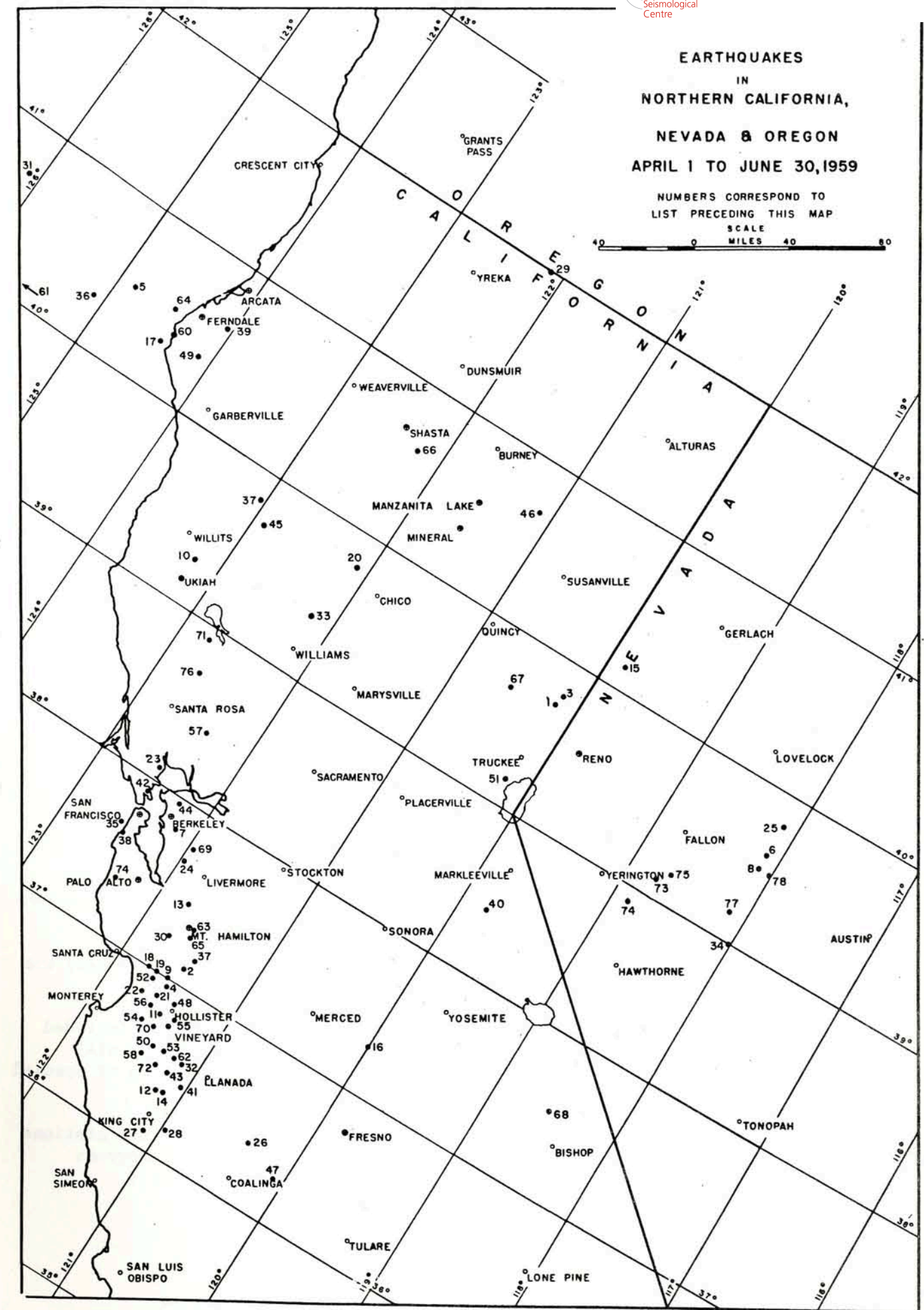
Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
10	Apr. 6	06-08 22	39.3°	123.2°	d	3.6	Felt over an area of approximately 1,200 square miles of Mendocino and Lake counties in northwestern California, principally in the Redwood Valley - Ukiah areas. Maximum intensity VI at Redwood Valley where chimneys cracked and dishes broke. V at Calpella, Lakeport, Potter Valley and Witter Springs.
11	Apr. 6	23-43-37	36° 48'	121° 30'	c	2.2	Southwest of Hollister.
78	Apr. 7	08-23-01	39.5°	118.0°	d	3.3	Aftershock of March 23 at 0710.
12	Apr. 8	07-41-57	36° 22'	121° 12'	b	3.4	North of King City.
13	Apr. 9	09-08-47	37° 28'	121° 48'	b	1.9	Northwest of Mt. Hamilton.
14	Apr. 9	14-03-11	36° 23'	121° 09'	c	2.5	North of King City.
15	Apr. 9	17-16-58	40.1°	119.9°	d	3.1	North of Reno, Nevada.
16	Apr. 11	10-43-34	37.3°	120.0°	d	2.8	East of Merced.
17	Apr. 11	14-04-30	40° 18'	124° 27'	c	3.5	Off Cape Mendocino.
18	Apr. 13	01-30-50	37° 00'	121° 46'	b	2.2	East of Santa Cruz.
19	Apr. 13	08-46-32	37.0°	121.7°	d	2.0	Aftershock.
20	Apr. 13	18-35-21	39.8°	122.1°	d	3.2	Northwest of Chico. Felt near Orland.
9	Apr. 14	19-51-43	37.0°	121.6°	d	2.4	Aftershock of March 2 at 2327.
21	Apr. 15	03-17-53	36.9°	121.6°	d	1.9	Aftershock of March 2 at 2327.
22	Apr. 18	01-46-45	36° 50'	121° 45'	c	2.7	Southeast of Santa Cruz.
23	Apr. 18	18-07-47	38° 04'	122° 31'	c	1.9	Northwest of Berkeley. Quarry blast?
24	Apr. 19	21-10-52	37° 40'	121° 59'	b	2.5	West of Livermore.
25	Apr. 20	12-33-36	39.8°	118.1°	d	4.1	Northeast of Fallon, Nevada.
8	Apr. 21	07-11-04	39° 30'	118° 05'	c	3.4	Aftershock.
26	Apr. 21	09-36-23	36.4°	120.4°	d	3.0	North of Coalinga.
27	Apr. 21	12-31-10	36.1°	121.1°	d	2.2	Near King City.
28	Apr. 22	19-04-25	36.2°	120.9°	d	2.6	Near King City.
29	Apr. 25	12-32-54	42.0°	122.1°	d	2.5	North of Mt. Shasta.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
30	Apr. 25	22-44-20	37° 16'	121° 46'	b	2.2	Near Mt. Hamilton.
31	Apr. 26	04-01-28	40.7°	126.1°	d	3.5	Off Cape Mendocino.
32	Apr. 27	03-18-25	36° 36'	121° 08'	c	3.4	West of Llanada.
21	May 1	07-04-43	36° 51'	121° 39'	b	2.4	West of Hollister.
33	May 2	00-38-14	39.4°	122.2°	d	3.2	North of Williams.
34	May 3	17-38-09	39° 00'	118° 01'	c	3.5	Southeast of Fallon, Nevada.
35	May 4	07-47-15	37.7°	122.6°	d	1.7	Southwest of San Francisco.
35	May 4	07-47-41	37° 42'	122° 32'	b	1.9	Southwest of San Francisco.
36	May 4	20-11-32	40° 18'	125° 05'	b	4.0	Off Cape Mendocino.
37	May 6	03-53-26	37.2°	121.5°	d	2.2	Southeast of Mt. Hamilton.
35	May 6	12-37-45	37° 39'	122° 32'	c	1.8	Southwest of San Francisco.
36	May 7	20-32-08	40.3°	125.2°	d	3.8	Off Cape Mendocino.
37	May 9	12-46-04	39° 50'	123° 01'	c	2.7	Northeast of Garberville.
38	May 9	17-26-03	37° 37'	122° 30'	b	3.5	South of San Francisco. IV at San Bruno, also felt in San Francisco.
39	May 11	03-26-40	40.6°	124.1°	d	2.5	East of Ferndale.
21	May 11	14-15-53	36° 55'	121° 38'	b	2.6	Northwest of Hollister.
40	May 12	18-10-33	38.4°	119.8°	d	3.0	South of Markleeville.
41	May 13	14-28-10	36° 29'	121° 02'	c	2.6	Southwest of Llanada.
42	May 14	01-21-15	37° 55'	122° 33'	c	2.2	North of San Francisco.
43	May 14	01-34-09	36.5°	121.2°	d	2.4	Southwest of Llanada.
44	May 14	03-31-08	37° 58'	122° 15'	c	1.9	North of Berkeley.
18	May 14	08-36-22	37° 00'	121° 46'	b	1.7	North of Watsonville.
45	May 18	04-04-13	39° 42'	122° 56'	c	2.9	Northeast of Ukiah.
46	May 19	02-21-06	40.7°	121.1°	d	2.9	Northeast of Mineral.
7	May 20	02-09-13	37° 52'	122° 15'	a	2.4	Near Berkeley.
47	May 20	10-15-55	36.3°	120.4°	d	2.6	Northwest of Coalinga.
8	May 21	17-51-40	39° 28'	118° 07'	c	4.8	East of Fallon, Nevada.
48	May 23	03-49-11	36° 53'	121° 28'	c	2.6	Near Hollister.
6	May 23	12-48-59	39.6°	118.1°	d	3.7	East of Fallon, Nevada.
49	May 23	20-45-44	40° 21'	124° 06'	c	2.7	South of Ferndale.
50	May 24	06-59-08	36° 35'	121° 25'	b	3.2	South of Vineyard.
50	May 24	12-12-19	36° 35'	121° 25'	b	3.2	Aftershock.
50	May 24	12-14-53	36° 36'	121° 26'	b	3.1	Aftershock.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
50	May 24	12-16-10	36° 36'	121° 26'	c	3.1	Aftershock.
51	May 24	15-53-08	39.2°	120.2°	d	3.1	Southwest of Reno.
50	May 24	16-01-21	36° 35'	121° 25'	b	3.2	Aftershock of 0659.
50	May 24	16-33-33	36° 36'	121° 26'	c	2.8	Aftershock of 0659.
50	May 24	20-03-32	36° 36'	121° 26'	c	2.0	Aftershock of 0659.
52	May 25	10-32-12	36° 58'	121° 43'	b	1.7	East of Santa Cruz.
11	May 25	10-51-41	36° 47'	121° 32'	b	3.0	Foreshock.
11	May 25	10-54-15	36° 49'	121° 31'	b	3.0	Foreshock.
11	May 25	13-35-48	36° 47'	121° 32'	b	3.1	Southwest of Hollister. IV at Hollister and Salinas.
53	May 26	01-19-16	36° 37'	121° 19'	c	2.4	South of Vineyard.
50	May 26	14-39-48	36° 38'	121° 28'	c	2.0	Southwest of Vineyard.
54	May 26	15-58-01	36° 43'	121° 37'	c	4.6	West of Hollister. Felt over an area approximately 4,500 square miles of the coastal area of west-central California, max. int. VI at Camp McCallum, Hollister, and Salinas.
54	May 26	22-03-32	36° 40'	121° 37'	c	2.4	Aftershock.
54	May 27	19-08-53	36° 42'	121° 38'	c	2.4	Aftershock.
55	May 27	21-41-21	36.8°	121.4°	d	2.1	Near Vineyard.
56	May 28	04-15-55	36.8°	121.6°	d	2.1	West of Hollister.
23	May 28	19-11-23	38° 03'	122° 31'	b	2.0	Northwest of Berkeley. Felt in San Francisco.
53	May 30	12-42-07	36.6°	121.3°	d	2.6	Southeast of Vineyard.
55	May 31	05-02-06	36.8°	121.4°	d	2.1	Near Vineyard.
43	June 1	03-47-24	36° 30'	121° 14'	c	2.4	Southwest of Llanada.
57	June 1	08-11-34	38° 25'	122° 23'	c	2.1	East of Santa Rosa.
58	June 2	01-42-29	36° 31'	121° 27'	b	3.2	South of Vineyard.
59	June 2	18-49-00	43.7°	119.7°	d	4.7	Central Oregon.
20	June 3	04-26-11	39° 51'	122° 05'	c	3.0	Northwest of Chico.
60	June 4	22-02-18	40.4°	124.4°	d	2.7	Southwest of Ferndale.
11	June 6	04-25-35	36° 47'	121° 27'	c	2.3	Southwest of Hollister.
61	June 6	07-46-35	40.1°	126.9°	d	4.3	Off Cape Mendocino.
62	June 8	10-23-38	36° 37'	121° 14'	c	3.6	Southeast of Vineyard.
7	June 10	07-53-38	37° 53'	122° 11'	b	2.0	East of Berkeley.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
63	June 11	01-28-58	37° 20'	121° 39'	a	3.7	Near Mt. Hamilton.
64	June 11	06-38-32	40.5°	124.5°	d	3.3	Southwest of Ferndale.
65	June 12	14-00-32	37.3°	121.6°	d	1.9	Near Mt. Hamilton.
66	June 13	14-19-59	40.6°	122.2°	d	2.8	Southeast of Shasta.
67	June 14	01-26-32	39° 40'	120° 33'	b	4.5	Southeast of Quincy. Felt over an area approximately 4,500 square miles of northeastern California, and at Pyramid and Verdi, Nevada. Max. int. V at Beckwourth, Chilcoot, Downieville, Emigrant Gap, Nevada City, Portola, Sattley, Sierra City, and Sloat.
68	June 18	00-29-40	37° 33'	118° 34'	c	4.7	Northwest of Bishop. Felt over an area approximately 3,000 square miles of east-central California, principally in the region southwest of Yosemite National Park. Max. int. VI at Mammoth Lakes, where plaster cracked and small objects overturned. V at Bass Lake, Big Creek, and Long Valley Dam.
11	June 18	10-45-34	36.8°	121.5°	d	3.0	Southwest of Hollister.
52	June 18	14-25-07	36° 55'	121° 39'	c	2.7	Northwest of Hollister.
69	June 19	04-51-58	37° 47'	121° 59'	c	1.9	Northwest of Livermore.
69	June 19	14-54-36	37° 47'	121° 58'	c	1.9	Northwest of Livermore.
70	June 19	22-00-32	36.7°	121.5°	d	2.5	Southwest of Vineyard.
71	June 20	03-37-25	38.9°	122.8°	d	3.0	North of Santa Rosa.
72	June 20	15-01-17	36.5°	121.3°	d	2.9	South of Vineyard.
73	June 23	14-32-35	39° 07'	118° 47'	c	4.4	Foreshock. Felt.
73	June 23	14-35-00	39° 05'	118° 49'	b	6.1	Northeast of Yerington, Nevada. Main shock, felt over an area of approximately 35,000 square miles of California and eastern Nevada. Max. int. VI. Minor damage at Schurz, Nevada. Minor rockslides in the mountains near Schurz. VI at Genoa, Mason, Schurz, and Wabuska, Nevada. V at a number of communities in west central Nevada and east central California.
73	June 23	14-52-36	39° 05'	118° 49'	c	3.8	Aftershock.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
73	June 23	15-03-44	39.1°	118.8°	d	3.9	Aftershock. Felt.
73	June 23	15-04-34	39.1°	118.8°	d	5.5	Aftershock. Felt.
73	June 23	15-22-45	39.1°	118.8°	d	4.2	Aftershock.
43	June 24	09-04-59	36° 32'	121° 11'	c	2.9	West of Llanada.
74	June 24	12-07-31	38.9°	118.9°	d	3.4	Aftershock of June 23 at 1435.
24	June 25	11-03-52	37° 41'	121° 59'	a	2.8	West of Livermore. Felt at Hayward.
73	June 25	12-53-06	39.1°	118.9°	d	3.8	Aftershock of June 23 at 1435.
74	June 26	17-03-32	37° 21'	122° 21'	c	2.1	Southwest of Palo Alto.
75	June 27	21-14-29	39.2°	118.7°	d	3.3	Aftershock of June 23 at 1435.
76	June 28	07-58-01	38.7°	122.7°	d	3.4	North of Santa Rosa. Felt over an area approximately 600 square miles of Lake, Napa, and Sonoma counties. IV at Calistoga, Forestville, Healdsburg, Middletown, and St. Helena.
77	June 28	14-56-47	39.2°	118.1°	d	3.2	Aftershock of June 23 at 1435.
75	June 29	05-20-22	39.2°	118.8°	d	4.1	Aftershock of June 23 at 1435.



THE REGISTRATION OF EARTHQUAKES

Station	North Latitude	West Longitude	Altitude Meters	Station Symbol	Present Auspices and Date
Berkeley	37° 52.3'	122° 15.6'	81	B, BG, BP*	University of California - 1887
Mt. Hamilton	37° 20.4'	121° 38.6'	1282	MH	Lick Observatory - 1887
Palo Alto	37° 25.1'	122° 10.8'	83	PA	Stanford University - 1927
San Francisco	37° 46.4'	122° 27.2'	100	SF	University of San Francisco - 1931
Ferndale	40° 34.6'	124° 15.7'	15	Fe	City of Ferndale - 1933
Fresno	36° 46.1'	119° 47.8'	88	F	Fresno State College - 1935
Mineral	40° 20.8'	121° 36.1'	1495	M	National Park Service, Lassen Volcanic National Park - 1938
Arcata	40° 52.6'	124° 04.5'	59	A	Humboldt State College - 1948
Reno	39° 32.3'	119° 48.8'	1386	R	University of Nevada - 1948
Corvallis	44° 35.1'	123° 18.2'	123	C	Oregon State College - 1950
Shasta	40° 41.7'	122° 23.3'	312	SH	Bureau of Reclamation - 1942
Manzanita Lake	40° 32.2'	121° 33.7'	1800	ML	National Park Service, Lassen Volcanic National Park - 1956
Vineyard	36° 45.0'	121° 23.0'	328	V	W.A. Taylor and Co. - 1959

*B denotes readings of short-period instruments; readings of long-period instruments are denoted by BG (Galitzin-Wilip) and BP (Press-Ewing).

On May 1, 1959, Press-Ewing N, E, Z instruments ($T_o = 30$ sec, $T_g = 90$ sec) were added to the equipment of the Berkeley station.

On June 3, 1959, a Sprengnether vertical instrument ($T_o = 2$ sec, $T_g = 2$ sec) was added to the equipment of the Arcata station.

Earthquakes in the Northern California, Nevada, and Oregon region are included in the following list only if of magnitude 4.5 or greater, or if of special interest. Times are usually not reported for PA, SF, Fe, or ML unless of special interest or in case of defective records at other stations.

Measurement and interpretation of seismograms from all the above listed stations is done at Berkeley; requests for special data or for copies of seismograms should be addressed to Seismographic Station, University of California, Berkeley 4, California.

STATION EQUIPMENT

Type and Component	Station
Short-period Benioff Z	B, MH, PA, M, SH
Short-period Benioff N, E	SH
Short-period Wood-Anderson N, E	B, MH, PA, SF, M, A, V
Short-period Sprengnether N, E, Z	F, R
Short-period Marion moving-coil Z	V
Short-period Slichter, N, E, Z	C
Short-period Wilson-Lamison Z	C
Short-period Sprengnether Z	SF, A
Long-period Galitzin-Wilip N, E, Z	B
Long-period Press-Ewing N, E, Z	B
100 kg Bosch-Omori N, E	B
25 kg Bosch-Omori N, E	Fe
80 kg Wiechert Z	B
Loucks-Omori N, E	ML
Short-period 100X Torsion N, E	B

The three components are indicated by N, E, Z in the "phase" column of the following tabulation of readings. When no letter appears, the phase is read from the vertical component (Z) only. "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates gradual beginning.

In the column headed "Ground Motion," "c" or "d" indicates initial compression or dilatation of the ground as read from the vertical component instrument. N, S, E, or W indicates that the initial ground motion was north, south, east, or west, respectively.

Maximum amplitude of earth displacement in microns (μ) and periods in seconds (sec) of the indicated phases are given for the Berkeley station in the column headed "Time (GCT)." Combined horizontal amplitude of N and E components are designated by H.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 1	B	eP	00 46 42		USCGS: 27½°N, 21°W, 0 = 00 34 18. Canary Islands. Felt on Palma. PAS: Magnitude 6¼.
	MH	iP	41		
		i	55		
	F	eP	35		
	M	iP	32		
Apr. 1	R	i	46		USCGS: 48°S, 98½°E, 0 = 14 11 30. Indian Ocean.
	SH	eP	28		
	B	eP'	14 31 20		
	MH	eP'	19		
	F	eP'	26		
Apr. 1	M	eP'	24		USCGS: 18½°S, 169°E, h about 200 km., 0 = 14 48 34. New Hebrides Islands.
	R	eP'	29		
	SH	eP'	26		
	B	iP	15 00 56.8	d	
	MH	iP	58.1	d	
Apr. 1	F	iP	01 03.1		39°43'N, 120°12'W, 0 = 18 18 30. Northwest of Reno, Nevada. Magnitude 5.6. Minor damage at Loyalton, California.
	M	iP	06.6	d	
	R	iP	09.2	d	
	SH	iP	03.4	d	
	B	iP	18 19 10.9	d	
		iSE	41.7		
	MH	iP	13.8	d	
		iSE	47.0		
	PA	iP	15.7	d	
	SF	iP	50.3		
Apr. 1	F	iP	12.9		USCGS: 17°S, 173°W, 0 = 19 15 38. Tonga Islands Region. USCGS: 6°S, 154°E, h = 100 km., 0 = 23 33 45. Solomon Islands.
		iS	45.6		
	F	iP	18.7	d	
	M	iPNEZ	18 53.8	NWc	
	R	iPNEZ	37.5	SEc	
	A	e(P)E	19 23.6		
	SH	iP	04.3	c	
	V	eNE	24		
	MH	eP	19 27 10		
	M	eP	17		
Apr. 1	B	iP	23 46 32.6		USCGS: 5½°S, 146°E, 0 = 23 29 25. Near north coast of New Guinea.
	MH	eP	35		
	M	eP	36.4		
Apr. 2	SH	eP	35		USCGS: 50½°N, 177°W, 0 = 05 24 11. Andreanof Islands, Aleutian Islands.
	MH	iP	04 45 34.1	d	
Apr. 2	SH	iP	55.0	d	BCIS: 21½°S, 175°W, 0 = 21 48 21. Tonga Islands region.
	MH	iP	22 00 19.3	d	
	F	eP	23		
	M	iP	29.7	c	
		i	39.0		
	R	e	33		
Apr. 2	SH	iP	28.6	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 3	B	eP	01 35 06		USCGS: 51½°N, 179°E, 0 = 01 27 06. Rat Islands, Aleutian Islands.
	MH	iP	12.2	c	
	F	eP	25		
	M	eP	34 57.7	c	
	R	iP	35 11.4	d	
Apr. 3	SH	iP	34 53.2	d	USCGS: 24°N, 122°E, h about 200 km., 0 = 05 48 45. Near east coast of Formosa.
	M	eP	06 01 40.9	d	
Apr. 3	MH	iP	10 43 30.4	c	USCGS: 4°S, 81°W, 0 = 19 33 50. Near coast of Northern Peru.
	M	i	27.3	d	
Apr. 3	B	e	19 43 40.6		USCGS: 54°N, 161°E, 0 = 19 04 59. Near east coast of Kamchatka.
	MH	iP	29.9	c	
Apr. 4	MH	i	15 27 02.1	c	USCGS: 52½°N, 169½°W, 0 = 05 37 18. Fox Islands, Aleutian Islands.
	M	iP	01.6	d	
Apr. 4	MH	eP	19 14 32	c	USCGS: 44°N, 7°E, 0 = 10 47 52. Southeastern France. Two injured, moderate property damage. Also felt in Italy.
	M	eP	13		
Apr. 5	MH	eP	05 44 40		USCGS: 46°N, 151°E, 0 = 19 59 58. Kurile Islands.
		e	47 43		
	M	eP	44 16		
		e	47 34		
	MH	iP	11 00 40.0	d	
Apr. 5	F	eP	35		USCGS: 15½°S, 167½°E, h about 150 km., 0 = 21 05 54. New Hebrides Islands.
	M	iP	26.0	c	
	R	eP	25.6		
	B	iP	20 10 24.9	c	
	MH	iP	29.9		
Apr. 5	F	iP	39.1		USCGS: 5½°S, 146°E, 0 = 23 29 25. Near north coast of New Guinea.
	M	iP	17.4		
	R	iP	28.3		
	B	iP	21 18 19.0	d	
		iP	52.1		
	MH	iP	19.0		
		iP	53.9		
	F	eP	24		
		epP	59		
	M	iP	19.4		
Apr. 5	R	e(pP)	19 05		USCGS: 50½°N, 177°W, 0 = 05 24 11. Andreanof Islands, Aleutian Islands.
	B	eP	23 42 49		
	MH	iP	50.8		
		ePP	46 40		
	F	e(P)	43 01		
Apr. 5	M	iP	42 52.4	c	USCGS: 50½°N, 177°W, 0 = 05 24 11. Andreanof Islands, Aleutian Islands.
		e	47 02.5		
	R	iP	42 58.7	c	
	B	iP	05 31 53.1	d	
	MH	iP	58.7		
	F	eP	32 11		
Apr. 6	M	iP	31 44.6	d	USCGS: 50½°N, 177°W, 0 = 05 24 11. Andreanof Islands, Aleutian Islands.
	R	iP	57.6	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 6	M R	ep" ep"	14 31 36.4 31.9	c	USCGS: 10°S, 120½°E, 0 = 14 12 36. Sumba Island. PAS: Magnitude 6¼.
Apr. 6	MH	iP	24 11 35.1	c	USCGS: 13°N, 146½°W, 0 = 23 58 52. Mariana Islands region.
Apr. 8	B MH	ep epP iP	01 35 40 37 13 35 41.1	d d	USCGS: 32½°S, 179½°E, h about 400 km., 0 = 01 23 26. Kermadec Islands region. PAS: Magnitude 6 - 6¼.
	F	ipP iP	37 12.8 35 44.0		
	M	ipP iP	37 17.6 35 50.9	d	
	R	ipP iP	37 23.6 35 52.8	c	
Apr. 8	B	iP	08 13 00.4	c	USCGS: 17°S, 174½°W, h about 100 km., 0 = 08 01 36. Tonga Islands region. Felt: Apia.
	MH	ipP iP	32.9 00.9	c	
	F	ipP ep	31.9 05.7		
	M	iP	13.0		
	R	ipP iP	44.1 15.9		
Apr. 9	MH	ep	03 18 43.6	c	
	F	ep	19 04		
	M	ep	18 15.8	c	
Apr. 9	MH	iP	04 56 27.5	c	USCGS: 14½°S, 167½°E, h about 100 km., 0 = 04 43 58. New Hebrides Islands.
	M	ipP iP	53.6 32.3		
	B	epP ep ₁ e(P ₂) ePP e(SSS)E	59.6 06 38 35 39 32 43 32 07 10.6		USCGS: 36°S, 77°E, 0 = 06 18 30. Indian Ocean about 1000 miles north of Kerguelen Islands.
	MH	eRNEZ ep ₁ e(P ₂) e	43 06 38 44 39 41 43 30		
	F	ep ₁	38 45		
	M	ep ₁	42		
	R	ep ₂	39 40		
Apr. 9	MH	ep ₁	38 44.7	c	USCGS: 44½°N, 149°E, h about 60 km., 0 = 12 24 20. Kurile Islands.
	F	ep	12 34 55.0	c	
	M	ep	35 21	d	
	R	ep	34 44.0		
Apr. 9	MH	ep	35 08.5		
	MH	ep	12 53 34		USCGS: 50½°N, 180°, 0 = 12 45 32. Andreanof Islands, Aleutian Islands.
Apr. 9	MH	ep	13 02 40		
		i	44.0		
		i	53.8		
	M	e	03 07		
	R	e	03.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 9	B	iP eSNE eRNZ	17 44 53.1 51 50 18 01	d	USCGS: 7°N, 82°W, 0 = 17 36 10. South of Panama. PAS: Magnitude 6¼ - 6½.
			mu sec		
		SH	5.9 13		
		Max H	11 20		
	MH	iP	17 44 42.3	c	
		i	47.9		
	F	ep	35		
	M		45 00.1	d	
	R		44 48.4		
Apr. 9	MH	iP	20 18 44.9	c	
Apr. 9	M	e	23 09 04		
Apr. 10	B	iP epP esP ePP eSNE e E	05 59 10.4 06 01 20 02 20 42 08 34 11 19	d	USCGS: 25°S, 178½°E, h about 600 km., 0 = 05 47 34. South of Fiji Islands.
			mu sec		
		SH	4.0 10		
	MH	iP	05 59 10.9	d	
		ipP	06 01 21.1		
		iPP	02 37.1		
	F	iP	05 59 15.1		
		ipP	06 01 25.5		
	M	iP	05 59 20.8	d	
		ipP	06 01 30.2		
	R	iP	05 59 23.4	c	
		i E	06 00 04.8		
	SH	iP	05 59 19.4	d	
		ipP	06 01 30.2		
Apr. 11	M	ep	09 33 38.3	d	USCGS: 9½°N, 83°W, 0 = 09 25 08. Costa Rica-Panama border. Felt in Volcan, Panama.
Apr. 11	M	iP	14 29 27.2	d	
Apr. 11	MH	iP	14 55 44.7	c	USCGS: 7°N, 71½°W, 0 = 14 46 16. Colombia-Venezuela border.
	M	ep	54.1	c	
	R	iP	43.4	(c)	
Apr. 11	F	ep	18 07 23		USCGS: 15°S, 173½°W, 0 = 17 55 53. Samoa Islands region. Felt at Apia.
	M	ep	30.5	d	
	R	ep	33.8		
	SH	ep	29		
Apr. 12	M	ep	03 10 10.4	c	
		i	22.3		
		e	28.2		
Apr. 12	MH	e	06 15 49		USCGS: Samoa Islands region.
	M	iP	48.4	c	
Apr. 12	MH	iP	08 22 44.4	d	USCGS: Chile-Bolivia border. Felt at Baquedano, Calama, Coya Sur and Quillagua, Chile.
	M	iP	54.8	c	
	R	iP	47.2	c	
	SH	iP	57.1	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 12	B	eP ipP e iPcP eSNE eQNE eREZ	10 01 09.4 43.5 03 26 59.1 06 15 10.9 14.8	d c c NE	USCGS: 17½°N, 95°W, h about 100 km., 0 = 09 54 51. Mexico. Damage at Cordoba. PAS: Magnitude 6¼.
			R from SE mu sec		
		PZ SH Max H	0.6 4 6.5 8 8 18		
	MH	iP i epP iPcP	10 01 02.8 14.4 37 03 57.4	d c	
	F	iP	00 48.3	d	
	M	ipP iP	01 23.5 18.0	d d	
	R	i iP	36.1 05.4	c d	
	SH	ipP iP	40.2 22.7	d d	
Apr. 12	M	eP	11 12 40.8	d	USCGS: 24½°N, 122°E, 0 = 10 59 21. Near east coast of Formosa. Felt: Taipei.
	SH	eP	33		
Apr. 12	B	eRNEZ	16 17.5		USCGS: 4½°S, 134°E, h about 100 km., 0 = 15 22 33. Near coast of New Guinea.
	MH	iP"	R from WSW 15 40 55.1	c	
	M	eP"	53		
	R	iP"	41 04.6		
Apr. 12	B	eP i eRNEZ	21 05 23 37 26		USCGS: 15½°S, 173°W, 0 = 20 54 00. Samoa Islands region. Felt: Apia. PAS: Magnitude 6 - 6¼.
			R from SW mu sec		
		PZ Max H	1.1 6 20 20		
	MH	iP i	21 05 25.8 37.3	d	
	F	iP	30.0	d	
	M	iP i	36.5 48.2	c	
	R	iP	40.1	d	
	SH	iP	34.4	d	
Apr. 13	B	eP"	18 51 04.3		USCGS: 23°N, 93½°E, 0 = 18 31 57. India-Burma border.
Apr. 13	MH	iP	22 40 37.6	d	USCGS: 50½°N, 180°, 0 = 22 32 34 Andreanof Islands, Aleutian Islands.
	F	eP	50		
	M	eP	24	d	
	SH	eP	20		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 14	B	e	00 31 26		
		e	46		
Apr. 14	B	eP	02 57 17		USCGS: 24°N, 109½°W, 0 = 02 53 04. Gulf of California. MAGNITUDE 5¼ - 5½.
	BG	eSNE eQNE eR	03 00 44 01.7 02.6		
			mu sec		
		SH Max H	4.9 11 26 20		
	MH	iP	02 57 09.0		
	F	eP	56 48		
	M	iP	57 35.0		
	R	iP	18		
	SH	iP	40.7		
Apr. 14	B	e	06 49 26		USCGS: Gulf of California after- shock. 0 = 06 45 04.
	BG	eQN	54.1		
	MH	iP	49 11		
	F	iP	48 55		
	M	eP	49 36		
	SH	eP	41		
Apr. 14	B	eP	07 26 29		USCGS: 57½°N, 155°W, h = 60 km., 0 = 07 20 28. Alaska Peninsula.
		ipP ePcP	46 29 33		
	MH	e(P)	26 40		
		ipP	52		
	F	eP	48		
		epP	27 05		
	M	iP	26 14.5		
		ipP	31.9		
		iPcP	29 28.9		
		iScP	33 03.2		
	SH	iP	26 08.6		
		ipP	26.6		
		iScP	33 00.8		
Apr. 15	B	e(P)	00 26 32		USCGS: 41½°N, 143°E, 0 = 00 15 21. Near south coast of Hokkaido, Japan.
	BG	eREZ	48.8		
	MH	iP	26 39.4		
	F	eP	46		
	SH	iP	26.7		
Apr. 15	B	e(T)	15 41 45		
	MH	i(T)	43.7		
		i	56.0		
		i	42 10.0		
Apr. 15	MH	iP	17 10 45.4		USCGS: 51°N, 177°W, 0 = 17 02 45. Andreanof Islands, Aleutian Islands.
	SH	eP	19		
Apr. 15	F	eP	19 21 26		USCGS: 54°N, 160½°E, 0 = 19 11 20. Near east coast of Kamchatka.
	SH	iP	20 28.2		
Apr. 16	B	eP	07 38 58		USCGS: 23½°S, 179°E, h = 550 km., 0 = 07 27 27. South of Fiji Islands.
	MH	iP	58.7		
	F	eP	39 04		
	M	iP	08.4		
		epP	41 08.9		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 16	B MH F	iP eP e iP epP	16 26 31.5 34.1 42 42.8	c	USCGS: 12½°N, 143°E, h = 100 km., O = 15 13 56. Mariana Islands Region. PAS: Magnitude 6½.
Apr. 17	SH B	iP eP	27 04 26 28.3 10 42 51		USCGS: 21°S, 178°W, h = 500 km., O = 10 31 35. Fiji Islands.
Apr. 17	MH M SF	iP eP iP i(S)	16 20 17.7 38.7 56.3 09.5 21 02.4	c	PAS: 33°55'N, 116°20'W, O = 16 18 57. Magnitude 4.2. North of Indio.
Apr. 19	M	iP	04 42 08.7	c	USCGS: Yukon. Canada region.
Apr. 19	MH M SH	i(P) iP e	06 48 01.4 19.2 18	d	O = 06 43 29.
Apr. 19	BG	e(S)NE eRNZ	07 50 25 08 09		USCGS: 45°S, 82°W, O = 07 26 15. Pacific Ocean. PAS: Magnitude 6.
			R from S mu sec (S)H Max H		
	MH	i(P)	07 39 30.3	c	
Apr. 19	M	e(P) iP	37 15 03 09.9	c	
Apr. 19	SH B BG	eP eP e(S)NE eRNEZ	07 15 09 19.7 14 07 16.8	c	USCGS: 58°N, 152½°W, O = 15 03 26. Near Kodiak Island, Alaska. PAS: Magnitude 6¼.
			R from NW mu sec (S)H Max H		
	MH	iP	15 09 26.0	d	
	F	iP	38.4	c	
	M	iP	04.0	d	
		i	10 04.5		
	R	iP	09 18.6	c	
	SH	iP	08 59.4	c	
Apr. 19	M	i	15 12 27.6	c	
Apr. 19	M	i	15 15 31.2	c	
Apr. 19	B	eP e	19 54 26 35		USCGS: 16°S, 172°W, O = 19 43 04. Samoa Islands region.
	MH	iP	26.4	d	
		i	35.4	c	
	F	iP	31.1	d	
	M	iP	37.1	d	
		i	46.3	d	
	SH	iP	35.8	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 20	BG	e E eREZ	03 53.5 04 10		USCGS: 6°S, 149½°E, h about 100 km., O = 03 27 52. New Britain. Felt: Walindi; Kandrian. PAS: Magnitude 6.
	MH M SH	iP i iP	03 41 22.0 07.5 03.2	c c c	
Apr. 20	B BG	e(P) eSN	04 29 38 36 32		USCGS: 8½°N, 83°W, O = 04 21 10. Costa Rica.
			mu sec		
	MH	PZ SH iP	0.6 5 1.3 7 04 29 32.2	d	
	F	iP	41.6		
	M	eP	21.6	c	
	R	iP	43.6	c	
	SH	iP	32.8	c	
Apr. 20	B	iP	48.5		
			12 34 45.7	(c)	39.8°N, 118.1°W, O = 12 33 36. Northeast of Fallon, Nevada. Magnitude 4.1.
	MH	e(S)N iP	35 31.2 34 36.9	c	
	F	e E iP	35 31.2 34 36.8		
	M	e eP	35 18 34 24.0	c	
		i E e N	57.4 35 09.4		
	R	iP	34 03.6		
	SH	i(S)E iP	23.4 34.6	d	
	PA	e NE	35 37.5		
	SF	e	34 49		
	V	e N	35 00		
Apr. 20	M	iP	19 35 03.4	c	USCGS: 54°N, 157½°E, O = 19 26 01. Near east coast of Kamchatka.
Apr. 21	SH	iP	34 58.7	c	
Apr. 21	B	iP	10 12 49.3	c	USCGS: 45°N, 152½°E, O = 10 02 30. Kurile Islands.
	MH	iP	53.9	c	
	M	iP	42.6	c	
	SH	iP	38.0	c	
Apr. 21	MH	iP	10 30 23.3	c	
	M	eP	29 35.3	c	
Apr. 21	MH	iP	11 09 14.8	c	
	M	iP	29.2	c	
	SH	eP	15		
Apr. 21	B	eP	12 49 21.1	d	USCGS: 56°N, 162½°W, O = 12 42 50. Bristol Bay.
	MH	iP	27.0	d	
	F	eP	42		
	M		09.6	d	
			46.7	c	
			55 26.9		
	SH	iP	49 03.7	d	
Apr. 21	MH	iP	13 46 04.0	d	
	M	e	27.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
Apr. 22	B	iP	11 01 54		USCGS: 54°N, 167°W, 0 = 10 55 05. Fox Islands, Aleutian Islands. PAS: Magnitude 6.		
	BG	eLN	09.9				
	MH	iP	01 59.9	d			
		i	02 09.3				
	F	iP	13.0				
	M	iP	01 43.2	d			
		i	02 02.1	c			
	R	iP	01 57.5	d			
	SH	iP	37.7	d			
		i	56.2				
Apr. 22	MH	iP	17 33 30.5	c	USCGS: 7½°N, 72°W, 0 = 17 24 05. Venezuela-Colombia border.		
	M	iP	39.7	c			
	SH	eP	41				
Apr. 22	B	iP	19 09 30.9	d	USCGS: 11½°N, 86½°W, 0 = 19 01 41. Near coast of Nicaragua.		
	BG	eLE	25.8				
	MH	iP	09 20.3	d			
		i	11 26.8	c			
	F	eP	09 12				
	M	eP	39.6	c			
		e	11 29.6	d			
	SH	eP	09 42				
	Apr. 22	B	eP	20 38 44			USCGS: 36½°S, 97½°W, 0 = 20 26 46. Pacific Ocean.
		MH	iP	39.6		c	
		i	50.3	d			
F		eP	40				
M		eP	54				
		i	58.4				
		i	39 11.8				
		eP	18.5				
SH			38 56.9	c			
Apr. 23		MH	iP	12 23 56.7	c		
	M	eP	49.4	c			
	SH	eP	37	c			
Apr. 23	MH	iP	19 22 33.8	c			
	M	eP	38.8	c			
	SH	eP	37	c			
Apr. 24	B	iP	09 39 24	d	USCGS: 11½°N, 86½°W, 0 = 09 31 33. Near coast of Nicaragua. PAS: Magnitude 6¼ - 6½.		
		ePcP	41 20				
	BG	eSN	45 41				
		eQN	51.6				
		R from SE					
	MH	iP	09 39 17.6	d			
		e(PcP)	41 20.4				
	F	eP	39 05				
	M	iP	29.2	d			
		i	39.5				
	e	57					
	e	43					
		41 24					
		mu sec					
	PZ	0.4	5				
	SH	0.7	7				
	MaxH	11	20				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
Apr. 24	B	eP	18 10 49	NEc	USCGS: 31°S, 178°W, 0 = 17 57 58. Kermadec Islands. PAS: Magnitude 6 3/4 - 7.		
	BG	eSKSE	21 05				
		iSN	29				
		e(Q)N	33.4				
		eRNEZ	37.1				
		R from SW					
	MH	iP	18 10 48.5	c			
	F	iP	51.8				
	M	iP	58.0				
		ePP	14 40.0				
Apr. 24	R	iP	11 00.1	c			
	C	iP	07.8	c			
	SH	iP	10 57.7	c			
Apr. 24			mu sec				
		PZ	1.5	6			
		PH	1.0	6.5			
		SKSH	2.5	9			
		SH	9.9	9.5			
		Max H	54	25			
	MH	iP	18 28 44.4	d			
	M	iP	38.6	c			
	Apr. 25	MH	iP	00 40 19.3		c	USCGS: 37°N, 28½°E, 0 = 00 26 40. Turkey. Extensive damage in Mulga province.
Apr. 25	MH	iP	06 15 12.9	c	USCGS: 19½°N, 66°W, 0 = 06 06 04. Puerto Rico region. Felt: San Juan.		
Apr. 26	B	iP	05 29 07.5	c	USCGS: 16°S, 171½°W, 0 = 05 17 47. Samoa Islands region. Felt: Apia.		
	MH	iP	08.2	c			
	F	iP	12.4				
	M	eP	18.2	c			
	R	iP	22.8	c			
	SH	iP	18.5	c			
Apr. 26	SH	iP	06 00 23.0	c	USCGS: 19½°S, 169½°E, 0 = 05 47 28. New Hebrides Islands. Felt: Lenakel.		
Apr. 26	B	iP	06 34 17.4	d	USCGS: 0 = 06 21 56. Off coast of Chile.		
	MH	iP	13.7	d			
	M	eP	24.4	d			
	R	eP	17				
	SH	iP	27.7	d			
	MH	iP	09 03 05.6	c			
Apr. 26	SH	eP	15		USCGS: 25°N, 122½°E, h about 150 km., 0 = 20 40 38. Near northeast coast of Formosa. 2 killed, minor damage at Taipei. PAS: Magnitude 7½ - 7 3/4.		
	B	iP	20 53 37.9	SEc			
	BG	e(pP)	54 23				
		ePP	57 21				
		iSNE	21 04 02	SE			
		i NE	41				
		mu sec					
		FZ	16	9			
		PH	10	9			
		PPZ	7.7	9			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 26 (Cont.)			mu sec		
		PPH	9.7 9		
		SH	48 10		
	MH	iP	20 53 42.0	c	
	F	iP	50.0	c	
	M	eP	33.9	c	
	A	e(pP)EN	54 27.2		
		eSE	21 03 47		
		e E	04 13		
	R	iP	20 53 41.7	c	
	C	iPE	19.9		
	SH	iP	30.8	c	
	V	ePN	45		
	Fe	ePE	32		
		eSE	21 03 30		
Apr. 27	MH	iP	05 24 51.0	c	
	SH	iP	37.8	d	
Apr. 27	B	eP''	10 06 42		USCGS: 7°S, 129°E, 0 = 09 48 09. Banda Sea.
	MH	eP	02 42.6		
		iP''	06 42.7	c	
		i(PP)	07 24.6	c	
		e(PPS)	17 45.8		
	F	e(P'')	06 49		
	M	eP	02 44		
		iP''	06 41.7	c	
		e	08 01.5		
		e(PPS)	17 49.7	c	
	R	eP''	06 46		
	SH	eP	02 43		
		eP''	06 40		
		e(PPS)	17 51		
Apr 27	BG	eLNE	17 49.5		PAS: 32°04'N, 115°14'W, 0 = 17 45 07. South of Volcano Lake. Magnitude 4.5.
	MH	iP	47 02.9	c	
		i	16.8	d	
	F	e(P)	01		USCGS: IV at Calexico, Heber, Seeley and Winterhaven, California, and Yuma, Arizona.
		e NE	48 18		
	M	i	07.8		
	R	eP	47 48.8		
		i E	50 10.7		
Apr. 28	B	iPNEZ	11 16 25.7	NWc	USCGS: 15°N, 93°W, 0 = 11 09 30. Mexico-Guatemala border.
		iPcP	18 56.9		PAS: Magnitude 6½ - 6-3/4.
	BG	ePP	17 54		
		iSNE	22 04		
		eQNE	26.5		
		eR	28.4		
			mu sec		
		PZ	3.9 7		
		PH	5.1 9		
		PPZ	5.2 10		
		SH	16 11		
		Max H	200 28		
	MH	iP	11 16 20.3	c	
		i	46.0	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Apr. 28 (cont.)	M	iP	24.8	c	
		i(PcP)	18 59.2	d	
	A	ePNE	16 49		
	R	iP	21.8	c	
	C	eP	17 05	(c)	
	SH	iP	16 39.6		
Apr. 28	B	iP	14 26 19.3	c	USCGS: 0 = 14 18 10. Rat Islands, Aleutian Islands.
		e	39		
	MH	iP	25.3	c	
		i	31 52.9	c	
	F	iP	26 37.0	c	
	M	iP	10.5	c	
		i	31 45.6		
	R	iP	26 23.4	c	
	C	iP	25 41.9	c	
	SH	iP	26 05.3	c	
Apr. 28	MH	iP	17 18 55.0	c	USCGS: 52°N, 173°W, 0 = 17 11 15. Andreanof Islands, Aleutian Islands.
	F	eP	19 08		
	M	eP	18 29.2	c	
		i	40.9	d	
	R	eP	55		
	SH	eP	22		
Apr. 28	SH	eP	22 12 32		USCGS: 36°N, 141°E, 0 = 22 01 04. Near east coast of Honshu, Japan. Felt.
Apr. 29	MH	iP	15 48 09.5	c	USCGS: 16½°N, 145°E, 0 = 15 35 45. Mariana Islands.
Apr. 30	B	iP	13 44 33.4	d	USCGS: 55½°S, 26°W, 0 = 13 25 35. Sandwich Islands.
	MH	iP	33.0	d	
	F	eP	30		
	M	iP	36.3		
	R	iP	33.5	d	
	SH	iP	37.1	c	
May 1	MH	iP	07 02 01.5		
	SH	eP	15		
May 1	SH	eP	16 10 07		
May 3	B	e(P)	03 14 24		USCGS: 10½°S, 161½°E, 0 = 03 01 38.
	M	eP	27.3	d	
	SH	eP	28		
May 3	BG	eP	04 48 56		USCGS: 12½°N, 87½°W, h about 100 km., 0 = 04 41 24. Near coast of Nicaragua. Felt: San Miguel and San Vicente, El Salvador.
	B	ePcP	51 00		
	BG	eSN	54 52		
		e NE	55 41		
		eQNE	05 00.9		
		eRNEZ	05		
		R from SE			
	MH	iP	04 48 50.6	d	
		iPcP	50 58.4	c	
	F	eP	48 36		
		ePcP	50 52		
	M	iP	49 02.2	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 3 (cont.)		iPcP	51 01.9	d	
		e(S)	54 53.9		
	R	iP	48 50.6	d	
	C	eP	49 29.9		
May 4	SH	eP	07		
		i	50 01.6		
	B	iP	07 25 06.3	Nwd	USCGS: 52½°N, 159½°E, h about 60 km., 0 = 07 15 42. Near coast of Kamchatka. 1 killed and 13 injured. PAS: Magnitude 8.
	BG	iSN	32 38		
	B	e	54 48		
		i	55 31		
			mu sec		
		PZ	29 8		
		PH	40 8		
		SH	780 20		
		Max H	2200 35		
		Max Z	430 25		
	MH	iP	07 25 11.6	d	
		e NE	31 50		
F	iP	25 21.8	d		
M	iP	24 56.6	d		
	eSN	32 13			
	i	55 12.9			
R	iP	25 09.2	d		
C	iP	24 29.4	d		
May 4	SH		51.5		
	V	iP	25 43.2		
	MH	i	13 42 53.0	d	
May 4	M	e	43 02		
	B	iP	20 12 22.5	c	40°18'N, 125°05'W, 0 = 20 11 32. Off Cape Mendocino. Magnitude 4.0.
		e(S)NE	13 04		
	MH	iP	11 32.8	c	
		i	12 18.5		
	M	iPNEZ	15.3	c	
		i NE	46.7		
	A	iPNE	11 49.7		
		iSE	12 02.3		
	R	eP	13 07		
		i	34.4		
	C	eP	12 40.4	c	
	SH	iP	07.6		
	SF	e	52		
	e E	13 06			
May 5	B	eP	19 13 46.0	(c)	USCGS: 53°N, 159°E, 0 = 19 04 16. Kamchatka aftershock. PAS: Magnitude 6.
	BG	eSNE	21 30		
	MH	iP	13 53.2	d	
		i	14 03.5	d	
	F	eP	03		
	M	eP	13 36.5	c	
		i	46.1	d	
		iP	49.1	d	
		i	59.9	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 5 (Cont.)	C	eP	09.5		
	SH	iP	32.1	(d)	
May 6	B	iP	07 52 01		USCGS: 51½°N, 176°W, 0 = 07 44 25. Andreanof Islands, Aleutian Islands.
	MH	iP	06.4	c	
	F	eP	20		
	M	eP	51 52		
	R	iP	52 05.3	c	
	SH	iP	51 45.9	c	
	B	e(P)	17 40 23		
	MH	iP	24.7	c	
	F	eP	30		
	R		38		
May 6	C		41		
	SH		31.9	c	
	BG	e(SKS)E	00 27 10		USCGS: 18°S, 179°W, h about 600 km., 0 = 17 29 26. Fiji Islands.
		e(S)NE	37		
		e(SS)NE	33.9		
		eREZ	45		
		R from W			
	MH	i	00 26 55.7		
	R	eP	16 48		
	SH	eP	35		
SH	iP	05 28 02.8	d		
May 8	B	eP	06 55 48		
	BG	eR	07 12		
May 8	MH	iP	06 55 52.6	(d)	USCGS: 26½°N, 127½°E, 0 = 05 15 17. Ryukyu Islands. USCGS: 53½°N, 159½°E, 0 = 06 46 18. Near east coast of Kamchatka.
	F	iP	56 03.8	d	
	R	eP	55 49		
	C	eP	08		
	SH	iP	31.2	d	
	MH	iP	11 26 13.3	c	
	B	eP	11 44 08	(d)	
	BG	iSNE	51 36	SE	
		eSSEZ	55.1		
		eRNEZ	12 00.3		
May 8		R from WNW			
	MH	eP	11 44 14		
		i	45 13.5		
	F	eP	44 19		
	R	iP	10.7	d	
		i	25.9	c	
	C	eP	43 30		
	SH	eP	54		
	MH	iP	17 32 33.3	c	
	SH	iP	37.6	c	
May 8	B	iP	22 21 16.4		
	MH	iP	23.4	c	
	SH	iP	04.0		
				USCGS: 51°N, 175°W, 0 = 22 13 44. Andreanof Islands. Aleutian Islands.	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 9	BG	eR	24 26		USCGS: 45°N, 149°E, 0 = 23 57 03. Kurile Islands.
	MH	iP	07 40.2	d	
	F	e(P)	50		
May 11	R		39.5	d	USCGS: 53½°N, 160°E, 0 = 16 28 49. Kamchatka. Slightly deeper than normal.
	B	eP	16 38 14.9	c	
	MH	iP	20.9	c	
		i	35.6		
	F	iP	31.1	c	
	R	iP	17.9	c	
May 12	C	iP	37 37.6	c	USCGS: 7½°N, 77°W, 0 = 03 42 47. Panama-Colombia border.
	SH	iP	38 01.1	c	
	MH	iP	03 51 46.0	d	
	R	iP	44.4	d	
May 12	SH	eP	58		USCGS: 54½°N, 168°E, 0 = 04 57 35. Komandorskie Islands. PAS: Magnitude 6½.
	B	eP	05 06 22	c	
		e	07 06		
		ePP	08 17		
	BG	iSE	13 29	W	
		iSS	16 59		
		eQN	19.0		
		eREZ	20.6		
			R from WNW		
			mu sec		
		PZ	2.1 7		
		PH	2.5 7		
		PPZ	1.5 6		
		PPH	3.0 7		
		SH	33 17		
	Max H	53 22			
May 12	MH	iP	05 06 28.9	c	USCGS: 9½°S, 159°E, h about 100 km., 0 = 08 06 01. Solomon Islands.
		i	07 01.6	c	
	F	iP	06 40.3	c	
	R	iP	26.1	c	
		iP	05 44.0	c	
May 12	MH	iP	08 18 47.0	c	USCGS: 23½°S, 64½°W, 0 = 09 46 51. Salta Province, Argentina. PAS: Magnitude 6-3/4.
	F	eP	53		
	R	eP	55		
May 12	SH	eP	46		USCGS: 22°S, 179½°E, 0 = 00 48 54, h = 550 km. South of Fiji Islands.
	B	eP	09 59 12	c	
		epP	53		
		e	10 01 20		
	BG	ePPEZ	02 22	Wc	
		iSNZ	09 25	S	
		eSSN	14.7		
			mu sec		
		PZ	3.0 7		
		PH	2.6 8		
	PPZ	1.1 6			
	PPH	1.5 7			
	SH	20 15			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 12 (Cont.)	MH	iP	09 59 03.4	c	USCGS: 20½°S, 63½°W, 0 = 10 14 00. Bolivia.
	F	iP	58 59.7	c	
	R	iP	59 10.1	c	
	C	iP	35.5	c	
	SH	iP	20.3	c	
May 12	B	eP	10 26 07		USCGS: 51½°N, 177°W, 0 = 21 40 22. Andreanof Islands. Aleutian Islands.
	MH	iP	03.5	d	
	F	eP	25 48		
	R	eP	26 05		
	C	e	30.7		
	SH	iP	18.5		
May 12	MH	iP	11 35 32.6	c	USCGS: 51½°N, 177°W, 0 = 21 59 56 Andreanof Islands, Aleutian Islands. PAS: Magnitude 6.
	F	eP	18		
May 12	R	iP	33.4		USCGS: 22°S, 179½°E, 0 = 00 48 54, h = 550 km. South of Fiji Islands.
	B	eP	21 48 10		
	BG	eSNE	54 11	SW	
		eGNE	57 18		
		eREZ	59		
	MH	eP	48 12		
	F	eP	23		
		i	32.5		
	M	e	03		
	R	eP	09		
		i	19.0	c	
	C	e	47 38		
	SH	eP	50		
	B	eP	22 07 35		
		e	44		
BG	iGNE	16 54	SW		
	eREZ	18.7			
MH	iP	07 42.0			
F	eP	56			
M	i	49.5	d		
R	iP	43.6	d		
	i	53.5	c		
SH	iP	23.5			
May 13	MH	iP	01 00 19.0	d	USCGS: 17°S, 175°E, 0 = 01 00 49. Fiji Islands region.
May 13	B	eP	10 03 14		USCGS: 22½°S, 63½°W, 0 = 16 30 48. Argentina aftershock.
	BP	eRNZ	24		
			R from S		
	MH	iP	10 03 15		
	F	eP	21		
	M	iP	26.1	c	
	R	eP	30		
	SH	iP	23.8	d	
	MH	iP	16 43 00.1		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 14	MH	iP	04 32 46.6	c	USCGS: 17°S, 173½°W, 0 = 04 21 19. Tonga Islands region.
		i	33 05.6		
	M	eP	02		
		i	09.9		
May 14	BP	eP	06 50 47		USCGS: 35½°N, 24½°E, 0 = 06 36 57. Crete. PAS: Magnitude 6½.
		ePP	54 53		
		eSN	07 01 23		
		e	04.1		
	BG	eSSE	09.4		
	BP	eREZ	24		
			R from N		
			mu sec		
		PPZ	0.4 6		
		SH	2.3 8		
		Max H	9 20		
	MH	iP	06 50 49.2	c	
		e	53 58		
		e	07 03 56		
	F	eP	06 50 48		
	M	eP	37		
		iPP	54 03.1		
		e	07 03 35		
	R	eP	06 50 39		
	C	iP	21.4	d	
	SH	eP	37		
May 14	M	iP	07 54 22		
	SH	e	35		
May 14	M	e(P)	08 00 42		
May 14	B	eP	08 31 11		USCGS: 7°S, 154½°E, h about 100 km., 0 = 08 18 23. Solomon Islands.
	MH	iP	10.2		
	F	eP	22		
	M	eP	17.1		
	R	eP	24		
May 14	B	e(P)	09 46 02		USCGS: 19°S, 170°E, 0 = 09 33 22. New Hebrides.
	MH	eP	05.2		
	F	iP	11.0		
	M	eP	10.9		
	R	iP	16.8		
	SH	eP	11		
May 14	MH	iP	09 53 53		
	M	eP	54 04		
May 14	B	eP	10 54 30		USCGS: 19°S, 170°E, h about 100 km., 0 = 10 41 56. New Hebrides Islands.
	MH	iP	32.1		
	F	iP	37.5		
	M	eP	38.5		
	R	iP	43.5		
	SH	iP	37.1		
May 14	B	eP	12 01 54		USCGS: 19°S, 170°E, h about 100 km., 0 = 11 49 20. New Hebrides Islands.
	BP	eSNE	12 29		
		ePSNE	13 26		
		eRNEZ	27.8		
			R from SW		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 14 (Cont.)	MH	eP	12 01 55.7		
	F	eP	02 03		
	M	eP	02.1		
	R	eP	07		
	SH	eP	03		
May 14	B	eP	13 32 00		USCGS: 19°S, 170°E, h about 150 km., 0 = 13 19 32. New Hebrides Islands.
	BP	eSNE	42 37		
		ePSNE	43 32		
		eRNEZ	57.9		
			R from SW		
	MH	iP	13 32 02.3		
	F	iP	06.5		
	M	iP	08.0		
	R	iP	13.4		
	SH	iP	07.3		
May 14	M	eP	16 50 02		BCIS: Aleutian Islands.
	SH	iP	49 57		
May 15	MH	iP	01 40 08.7		USCGS: 54°N, 158½°E, 0 = 01 30 35. Kamchatka.
	M	iP	39 54.1		
	R	eP	40 07		
May 15	BP	eNZ	08 01 57		USCGS: 14°N, 93°W, h about 100 km., 0 = 07 49 30. Near coast of Mexico.
		e(Q)N	06		
	M	e	07 56 29		
May 15	MH	iP	14 48 50.2		USCGS: 0 = 14 42 48. Oaxaca, Mexico.
	F	eP	36		
	M	iP	49 07.3	d	
	R	iP	48 54.8	d	
May 16	MH	iP	05 05 18.7	d	USCGS: 65½°N, 156°W, 0 = 04 58 25. Alaska.
		iP	04 54.8	d	
		eP	04 50		
May 16	BP	ePEZ	06 29 13	ec	USCGS: 4½°S, 153½°E, 0 = 06 16 23. h about 60 km. New Britain. Felt: Karoola, Taliligap, Rabaul. PAS: Magnitude 6-3/4.
		ePP	32 30		
		e EZ	38 52		
		e(S)E	39 44		
		iPS	41.0		
		iSSEZ	45.9		
		eREZ	56.3		
			R from WSW		
			mu sec		
		SH	5.1 18		
		Max H	57 24		
	MH	iP	06 29 12.4	c	
		i	32.8		
		iPP	32 21.2		
	F	eP	29 32		
		i	45.3		
	M	eP	18.9	c	
	R	iP	45.8		
		i	30 03.0		
	SH	eP	29 19		
May 16	M	iP	08 13 21.9	c	BCIS: 47½°N, 152½°E, 0 = 08 03.2 Kurile Islands.
	SH	iP	18.5	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 16	M	iP	12 05 34.9	c	BCIS: Probably Kamchatka region.
	SH	iP	31.4	c	
May 17	MH	iP	11 09 41.8		USCGS: 0 = 10 57 27. Northern Mariana Islands region.
	M	iP	36.3		BCIS: 21-3/4°N, 144-3/4°E, 0 = 10 57 29. North of Mariana Islands.
	SH	eP	34		
May 17	MH	iP	17 23 58.1		
	M	e(P)	24 06		
May 17	MH	eP	19 25 12.6		USCGS: 54°N, 159½°E, 0 = 19 15 42. Near East Coast of Kamchatka.
May 18	M	iP	03 57 31.9	c	BCIS: 66°N, 151°W, 0 = 03 51 49. Alaska.
May 18	M	iP	07 32 22.8		USCGS: 52½°N, 173½°E, 0 = 07 24 11. Near Islands, Aleutian Islands.
	SH	eP	20		
May 19	MH	eP	08 46 51		USCGS: 16°S, 174°W, 0 = 08 35 23. Tonga Islands region.
	F	eP	58		
	M	iP	47 04.2	d	
	SH	iP	02.9	d	
May 19	SH	iP	19 03 33.3	d	USCGS: 23°N, 142½°E, Volcano Islands region.
					BCIS: 0 = 18 51 27.
May 20	B	e	01 00 23		USCGS: 23°S, 114°W, 0 = 00 50 03. South Pacific Ocean.
	BP	iRNZ	18.9		
			R from S		
	MH	iP	01 00 17.3	c	
	F	eP	12		
	R	iP	31.7		
	C	eP	01 01		
	SH	eP	00 39		
May 20	M	iP	06 22 58.9	d	
	SH	iP	56.5	d	
May 20	B	iP	11 37 45.8	c	USCGS: 32½°N, 136½°E, 0 = 11 26 28. South of Honshu, Japan.
	MH	iP	49.9	c	
	F	iP	57.8	c	
	M	iP	41.0	c	
		e	39 28.6		
	R	iP	37 49.8	c	
	C	iP	23.5	c	
	SH	iP	37.8	c	
May 20	B	eP	19 45 38.2	c	USCGS: 44½°N, 149°E, 0 = 19 35 03. Kurile Islands.
	MH	eP	43.3	c	
	F	iP	53.0	c	
	R	iP	42.4	c	
	C		08.4	c	
	SH		27.4	c	
May 21	MH	eP	06 58 55		USCGS: 52½°N, 170½°W, 0 = 06 51 40. Fox Islands, Aleutian Islands.
	F	eP	59 23		
	M	eP	58 36		
	R	eP	56		
	SH	iP	32.0	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 21	F	e(P)	08 46 10		
	M	i(P)	16.6	c	
May 21	B	eP	11 46 39	d	USCGS: 28°S, 69°W, 0 = 11 34 23. h about 60 km. Chile-Argentine border.
	BP	ePP	50 12		PAS: Magnitude 6.
		iSNZ	56 54	N	
		e NEZ	12 02.3		
		eRNEZ	13.3		
			R from SE		
			mu sec		
		PZ	0.6 10		
		SH	2.4 10		
		Max H	8 29		
	MH	iP	11 46 37.6	d	
	F	iP	30.2	d	
	M	iP	47.4	d	
	R	iP	40.9	d	
	C	iP	47 09.8	d	
	SH	iP	46 50.9	d	
May 21	B	iP	17 52 36.4		39°28'N, 118°07'W, 0 = 17 51 40. East of Fallon, Nevada. Magnitude 4-3/4.
		e(S)E	53 18.1		
	MH	ePNE	52 36.8		
		i N	53 19.4		
		i E	20.0		
	F	iP	52 36.1		
		i	53 19.9		
	M	iP	52 25.3		
		i(S)N	53 09.2		
		i E	09.5		
	R	iP	52 03.8	c	
	C	iP	53 17.8		
	SH	iP	52 34.9	c	
	V	e N	56		
	PA	iP	48.8		
		eSE	53 36.1		
	SF	eP	52 48		
		i NE	53 39.3		
May 23	MH	iP	10 05 31.9	c	USCGS: 10½°N, 63°W, 0 = 09 55 29. Near coast of Venezuela.
	M	eP	34.3	c	
May 23	B	eP	21 38 17		
	MH	iP	16.4	d	
	M	eP	19.3	c	
May 24	B	e(P)	00 18 49	(c)	USCGS: 19½°N, 64½°W, 0 = 00 09 29. Virgin Islands. Felt: San Juan and St. Thomas.
	MH	iP	46.4	c	
	F	eP	34		
	M	iP	47.3	d	
	R	e	38		
	C	eP	58.5		
	SH	iP	50.7	c	
May 24	B	iP	04 50 27.9	c	USCGS: 20½°S, 179°W, 0 = 04 39 27, h about 700 km. Fiji Islands region.
	MH	iP	28.7	c	
		ipP	38.8	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
May 29 (Cont.)	M	eP	31.3	c	
		ipP	56 01.5		
		ePP	59 20.9		
	R	ip	55 36.8	c	
	C	eP	36		
	SH	ip	29.4	c	
May 29	MH	ip	12 40 08.5	d	USCGS: 21°N, 146½°E, 0 = 12 28 06. Mariana Islands.
		i	26.0	c	
	F	eP	21		
	M	ip	01.7	c	
		i	20.0	d	
	R	e	17.0		
	C	e	07.7		
	SH	ip	04.2	c	
May 29	MH	ip	18 04 50.5	c	USCGS: 21½°N, 145½°E, 0 = 17 52 42. Mariana Islands.
	F	e(P)	59		
	SH	eP	42		
May 29	MH	ip	18 39 17.2	c	USCGS: 50½°N, 157°E, 0 = 18 29 27. Near south coast of Kamchatka.
		i	29.4	c	
	F	eP	28		
	R	ip	15.0	d	
	C	i(P)	38 37.5	d	
	SH	ip	58.3	c	
May 31	MH	i	05 44 03.3	d	USCGS: 20°N, 80°W, 0 = 05 36 25. Cayman Islands.
	M	e	01.4		
	R	e	43 51.2		
May 31	BP	ip	09 41 01	c	USCGS: 6½°S, 155°E, 0 = 09 28 09. Solomon Islands. PAS: Magnitude 6½.
		ePP	44 21		
		eSE	51 36		
		ePSE	52 41		
		eSSNZ	57.7		
		e	10 01.0		
		eREZ	07.5		
			R from W Distance 88°		
	MH	ip	09 41 02.2	c	
	F	ip	10.1	d	
	M	eP	06	d	
	R	eP	10		
	SH	eP	04		
May 31	B	eP	15 04 44	d	USCGS: 51°N, 130°W, 0 = 15 01 10. Queen Charlotte Island region.
	MH	ip	48.1		
	F	eP	05 06		
	M	eP	04 11.9	c	
	R	ip	31.2	d	
	C	ip	03 12.4		
	SH		04 05		
May 31	F	ip	16 39 48.0	d	
	M	eP	38 54.2		
	SH	eP	46		
May 31	MH	ip	17 29 45.4	c	USCGS: 21½°N, 146½°E, 0 = 17 17 41. Mariana Islands.
		i	59.0	d	
	M	ip	41.1	c	
		i	54.4		
	R	eP	51		
	SH	ip	38.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 1	MH	i(P)	05 43 37.6	c	USCGS: 4°S, 154½°E, 0 = 05 31 31. Solomon Islands region.
	F	eP	49		
	M	eP	43.7	c	
	SH	eP	42		
June 1	B	eP	12 44 36		USCGS: 6½°S, 155°E, 0 = 12 32 26. Solomon Islands region. Felt at Rabaul, New Britain.
	BP	e	46 13		
		e N	54 53		
	MH	ip	44 42.5	d	
		i	46 17.9		
	F	e(P)	44 48		
	M	eP	43.9		
	R	eP	49.7		
	SH	eP	44 40		
June 1	B	eP	17 20 02		USCGS: 6½°S, 155½°E, 0 = 17 07 23, h about 100 km. Solomon Islands.
	BP	eR	46.5		
	MH	ip	20 08.4		
	F	e(P)	16		
	M	e(P)	12		
	R	e	17.4		
	SH	ip	08.6	d	
June 1	R	e	21 34 04		
	SH	ip	30.5	c	
June 2	F	eP	00 59 54		USCGS: 31½°N, 131½°E, 0 = 00 47 17. Kyushu, Japan.
	R	e(P)	50		
	C	e(P)	21		
	SH	eP	31		
June 2	MH	i	02 51 25.6	c	USCGS: 21°N, 121°E, 0 = 02 37 46. Batan Islands region.
	M	eP	13.8		
	C	e	02		
	SH		08		
June 2	B	eP	03 35 31		USCGS: 25°S, 176°W, 0 = 03 23 12. Tonga Islands region.
	MH	ip	32.5	c	
		i	45.1		
	F	ip	36.1	d	
	M	eP	42.1	c	
	R	e(P)	46		
	C	e(P)	36 00		
	SH	eP	35 40		
June 2	B	eP	03 44 13		USCGS: 25½°S, 176°W, 0 = 03 31 55. Tonga Islands region.
	MH	ip	13.8	c	
		i	44.0		
	F	ip	17.9	d	
	M	eP	23.2	c	
	R	eP	26.8		
	C	e	34	(c)	
	SH	ip	22.8	c	
June 2	B	eP	04 00 32		USCGS: 25°S, 176°W, 0 = 03 48 13. Tonga Islands region.
	MH	ip	32.5	d	
	F	eP	36		
	M	eP	42.4	c	
	R	e	46		
	SH		41.1		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 2	B	eP	04 04 25		USCGS: 25½°S, 176°W, O = 03 52 06. Tonga Islands region.
	MH	iP	25.1	c	
	F	iP	29.1	d	
	M	eP	34.5	c	
	R	e	38		
	C	e	46	(c)	
	SH	iP	34.0	c	
June 2	C	i	05 10 43.7		USCGS: 21°N, 121½°E, O = 04 57 18. Batan Islands region.
	SH	eP	41		
June 2	B	eP	05 55 24		USCGS: 43°S, 72°W, O = 05 42 26, h about 150 km. Chile-Argentina border.
	MH	iP	22.5	d	
	F	iP	14.4	c	
	M	eP	31.0		
	R	eP	26		
	SH	eP	33		
June 3	B	eP	03 53 06	d	USCGS: 4°N, 77°W, O = 03 43 42. Near west coast of Colombia. Felt from Popayan to Medellin.
	MH	iP	02.0	d	
		i	17.8	c	
	F	iP	52 48.9	c	
	M	eP	53 11.0	d	
		i	26.7	c	
	R	eP	00		
	C	e	35		
	SH	eP	14		
June 3	B	eP	05 50 35		USCGS: 52½°N, 170°W, O = 05 43 28. Fox Islands, Aleutian Islands.
	BP	eREZ	59.9		
			R from W		
			Distance 42°		
	MH	iP	05 50 42.0	d	
		i	51 02.0	d	
	F	iP	50 55.0	d	
	M	eP	21.7	d	
	R	e	44		
	SH	eP	13		
June 3	MH	iP	08 45 18.0	d	USCGS: 55½°N, 163°E, O = 08 36 04. Near east coast of Kamchatka.
	F	e	33		
	M	iP	01.9	c	
	R	e	27		
	SH	iP	44 56.4	d	
June 3	MH	iP	10 53 16.3	c	
	M	eP	25.2	d	
	SH	iP	24.2		
June 3	M	eP	11 52 04.8		
	SH	iP	01.1	c	
June 4	MH	iP	02 06 00.5	c	USCGS: 9°N, 84½°W, O = 01 57 49. Near coast of Costa Rica.
	M	e	09		
June 4	B	e	12 38 11		USCGS: 59½°N, 153°W, O = 12 31 56, h about 100 km. Cook Inlet.
	BP	eSN	42 42		
		eREZ	46.0		
			R from WNW		
			Distance 27°		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 4	MH	iP	12 37 59.4	c	(Cont.)
	F	iP	38 11.6		
	M	iP	37 36.0	c	
		ipP	38 00.0	c	
	A	e	37 27		
	R	e(P)	51		
	C	iP	36 59.6	c	
	SH	iP	37 31.8	c	
June 4	MH	e	22 03 59.3	d	USCGS: Tonga Islands region. O = 21 52 26.
	F	e	58		
	R	e NE	04 09		
June 5	MH	i	19 58 59.8	d	
	F	eP	59 13		
	R	e	58 58.5		
June 5	B	e	20 46 54		USCGS: 12°N, 86½°W, O = 20 37 15, h about 100 km. Near coast of Nicaragua.
	MH	iP	44 51.1	d	
		i	46 52.0		
	F	e	44 43		
	R	e	50		
	C	e	45 29		
June 6	MH	i(P)	10 25 55.1	c	USCGS: 15°S, 173½°W, O = 10 15 36. Samoa Islands region.
	F	e	26 07		
	M	e(P)	11.6	c	
	R	e	17		
	SH	e(P)	09		
June 6	M	eP	11 35 01.7	d	USCGS: 16½°N, 93½°W, O = 11 28 13. Near coast of Chiapas, Mexico.
	R	e	34 48		
June 7	MH	i(P)	04 35 43.1	c	
	M	iP	36 03.1	c	
June 9	SH	eP	08 32 00		
		e	35 32		
June 10	M	iP	04 29 41.0	c	USCGS: 36°N, 24°E, O = 04 06 01. Crete. Felt on Crete, Cyclades Island and southern Greece.
June 10	F	iP	11 01 46.8	c	USCGS: 20½°S, 179°W, O = 10 50 32, h about 600 km. South of Fiji Islands.
	M	iP	51.7		
	R	e	55		
	SH	iP	50.3	d	
June 10	MH	iP	00 07 12.1	c	USCGS: 24½°S, 179°W, O = 23 54 46. Tonga Islands region.
June 11	MH	iP	01 21 42.2	c	USCGS: 23½°S, 176°W, O = 01 09 31. Tonga Islands region.
June 11	MH	iP	22 40 57.3	d	
		iP	28.7	c	
June 12	F	eP	00 53 20		
	SH	e	52 46.5	d	
June 14	BG	ipNEZ	00 23 45	SEd	USCGS: 20½°S, 68°W, O = 00 11 57, h about 100 km. Southwestern Bolivia. 1 killed and minor damage in northern Chile.
	B	epP	24 15		
	BP	isNE	33 28	NE	
		e	38.5		
			Distance 79°		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 14 (Cont.)			mu sec		PAS: Magnitude 7 $\frac{1}{4}$ - 7 $\frac{1}{2}$.
	MH	PZ	12.8 9		
		PH	10.0 8		
		SH	57 12		
	MH	iP	00 23 40.9	d	
		iS	33 23.1		
	F	iP	23 30.7	d	
		i	33 01.5		
	M	iP	23 50.0	d	
		i	24 20.4	d	
	A	e(P)	01.3		
	R	iP	23 43.5	d	
		i(S)	33 25		
	C	iP	24 11.6	d	
		i	14.8		
	SH	iP	23 53.1	SEd	
		eSN	33 42		
June 14	B	iP	01 27 10.3		39°40'N, 120°33'W, 0 = 01 26 32. Magnitude 4.5. Southeast of Quincy. Felt over an area of 4,500 square miles of north-eastern California.
		eSNE	37.0	SW	
	MH	iP	13.4	d	
	M	iP	26 51.8	c	
		i(S)E	27 06.1		
	A	eP	20.0		
	R	iP	26 43.6	SEc	
		iSNE	52.2		
	C	e	27 57		
	SH	iP	03.0	Nc	
	PA	iP	15.1	c	
		iSE	46.6		
	SF	eP	24		
		i(S)NE	41.9		
June 14	B	e	06 07 23		
June 14	F	eP	06 15 22		PAS: 31°40'N, 115°18'W, 0 = 06 13 35. Baja California.
	M	eP	16 10.6		
		i	17 43.0		
		i	18 35.0		
	R	eP	15 49.5		
		i	18 09.3		
		i	53.5		
June 14	M	i	16 59 04.4	c	USCGS: 27°N, 143 $\frac{1}{2}$ °E, 0 = 16 47 04. Bonin Islands.
June 14	SH	eP	58 53		
	B	eP	20 55 08		USCGS: 64°N, 152°W, 0 = 20 48 42. Alaska.
	MH	iP	14.1	d	
	M	iP	54 50.2		
	SH	eP	45.5		
June 15	B	eP	02 52 04		USCGS: 25°N, 122 $\frac{1}{2}$ °E, 0 = 02 38 48. Near northeast coast of Formosa.
	MH	iP	07.0	d	
		iP	13.1	d	
	F	iP	51 58.7	d	
	M	iP	52 06.7	d	
	R	iP	51 43.9	d	
	C	iP	55.6		
	SH	eP			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 16	BP	e N	08 18.7		USCGS: 15°N, 93 $\frac{1}{2}$ °W, 0 = 08 02 05. Off coast of Chiapas, Mexico.
	MH	iP	08 45.1	d	
	F	iP	30.4	d	
	M	iP	59.4	d	
	R	iP	47	d	
	C	iP	09 29.6	c	
	SH	iP	04.0	(c)	
June 17	M	iP	10 31 33.7	c	USCGS: 34 $\frac{1}{2}$ °N, 98 $\frac{1}{2}$ °W, 0 = 10 27 07. Southwestern Oklahoma. Felt in Oklahoma and Texas.
	R	e	25		
	SH		48.8	c	
June 17	B	eP	20 58 11		USCGS: 12 $\frac{1}{2}$ °S, 167 $\frac{1}{2}$ °E, 0 = 20 46 03, h about 200 km. Santa Cruz Islands.
	MH	iP	12.0	d	
		i	59 06.4		
	F	iP	58 18.3	d	
	M	eP	18		
	R	eP	23		
	SH	eP	16		
June 18	B	iP	00 30 28.8	c	37°33'N, 118°34'W, 0 = 00 29 40. Magnitude 4.7. Northwest of Bishop. Felt over approximately 3,000 square miles of east-central California, principally in the region southeast of Yosemite National Park.
		e(S)N	31 04.1		
	MH	iP	30 23.2		
		iSN	54.9		
	F	iPNEZ	04.9		
		iSNE	21.3		
	M	iP	40.2	d	
		iSN	31 22.5		
	A	e	19		
	R	eP	30 19.4		
		eSE	58.9		
	C	e E	32 07		
	SH	iP	30 49.8	c	
	PA	eP	26.8	c	
		eSE	31 03.4		
	SF	iP	30 31.9	c	
		i(S)E	31 13.1		
June 18	B	iP	15 40 50.1	d	USCGS: 54°N, 160°E, 0 = 15 31 25. Near east coast of Kamchatka.
	BG	eSNE	48 28		
		e NE	54.8		
			mu sec		Magnitude 6 $\frac{1}{4}$ - 6 $\frac{1}{2}$.
		PZ	1.6 8		
		PH	1.9 8		
		SH	13 13		
	MH	eP	15 40 55		
	F	iP	41 05.2	c	
	M	eP	40 39.4	c	
	A	i(P)	28.5	c	
	R	iP	52.3	c	
	C	iP	11.5	c	
	SH	iP	35.6	c	
June 18	B	eP	16 08 04		USCGS: 54°N, 161°E, 0 = 15 58 38. Near east coast of Kamchatka.
	MH	e NE	11		
	F	iP	21.1	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 18 (Cont.)	M	iP	07 53.5		PAS: Magnitude 6½ - 6-3/4.
	R	iP	08 01.7	d	
	C	e	07 25		
June 19	SH	iP	45.1	d	USCGS: 6°N, 82½°W, 0 = 01 37 51. South of Panama.
	BP	iP	01 46 34		
		ePP	48 33		
		eSNZ	53 38		
		eRNEZ	02 01.8		
			R from SE Distance 49°		
		MH	iP	01 46 29.4	
June 19	F	eP	17		USCGS: 27½°N, 111°W, 0 = 20 34 40. Gulf of California.
	M	eP	40.2	c	
	R	e	31		
	B	eP	20 38 07		
		e	11		
	BP	e NE	40 03		
		eR	43.3		
	MH	iP	37 58.1	d	
		i	38 08.5	d	
		iP	37 31.5	c	
June 20	M	eP	38 21.9	d	USCGS: 32°N, 40°W, 0 = 16 42 25. Atlantic Ocean.
	R	iP	04	d	
	C	e	39 21		
	SH	eP	38 31		
	MH	iP	08 18 36.7	d	
	M	eP	20 53.1	c	
		ePP	20 53.1		
		eP	18 44		
		eP	15		
		eP	16 53 02		
June 20	F	eP	02.0		USCGS: 17°S, 174½°W, 0 = 11 12 55. Tonga Islands region.
	M	eP	52 56		
	R	eP	53 00		
June 21	SH	eP	04		USCGS: 21°S, 67°W, 0 = 15 01 45, h about 200 km. Southern Bolivia.
	F	eP	11 24 39		
	M	eP	45.2	c	
June 21	SH	eP	44		USCGS: 21°S, 67°W, 0 = 15 01 45, h about 200 km. Southern Bolivia.
	R	i	15 13 26.4	d	
	C	i	53.8	d	
June 22	SH	iP	36.7	d	USCGS: 21°S, 67°W, 0 = 15 01 45, h about 200 km. Southern Bolivia.
	F	eP	13 14 33		
	M	eP	07.1		
June 23		i	10.8		USCGS: 62°N, 27½°W, 0 = 06 46 55. South of Iceland.
		iP	19.2	d	
	R	e	13 42		
	C	e	14 02.3	c	
	SH	iP	14 33 25.8	d	
	B	eP	34 03.0		
		eSN	33 22.4		
	e NZ	57.3			
	e(S)E				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
June 23 (Cont.)	F	iP	23.5		39°05'N, 118°49'W, 0 = 14 35 00. Northeast of Yerington, Nevada. Felt over approximately 35,000 square miles of California and western Nevada. Magnitude 6.1.		
		i(S)E	50.3				
	M	iP	17.3	d			
		i NZ	54.3				
	R	iP	32 52.1	c			
		iSNE	33 04.3				
	C	e E	34 21				
	SH	iP	33 27.1	d			
		i NE	36.3				
	V	e N	34 08				
	PA	eP	33 28.1				
		eSNE	34 06				
	June 23	SF	eP	33 32			39.1°N, 118.8°W, 0 = 15 04 34. Aftershock of 14-35. Magnitude 5.5.
		eS	34 11				
B		iPEZ	14 35 48.6	Wc			
		iSE	36 24.5	E			
MH		iPNEZ	35 47.4				
		i(S)	36 22.1				
		i N	27.3				
F		iP	35 42.6	d			
M		iP	35 43.4	c			
		i NE	36 21.5				
A		iP	36 09.7	c			
		i N	37 26.5				
R		iP	35 19.1				
June 23	C	i(S)	36 42	c	USCGS: 62°N, 27½°W, 0 = 06 46 55. South of Iceland.		
	SH	iP	35 53.3	c			
	V	e N	56				
	PA	iP	50.4	c			
		e EN	36 02				
		e(S)	28				
	SF	iP	35 51.5				
	June 25	B	iPEZ	15 05 26		Wc	USCGS: 62°N, 27½°W, 0 = 06 46 55. South of Iceland.
			eSE	06 01			
		MH	i(P)	05 21.5			
		F	iP	14.1			
		M	i N	20.3			
		A	e(P)	40			
R		iP	04 50.7				
C		e E	05 54				
SH		iP	25.3				
V		iP	23.2				
PA		e(P)NEZ	23				
		e(S)NE	06 03				
SF		e(P)	05 21				
June 25	BP	ePNZ	06 57 03		USCGS: 62°N, 27½°W, 0 = 06 46 55. South of Iceland.		
		e NZ	07 00 34				
		eSNZ	05 22				
			R from NNE Distance 63°				
	F	eP	06 57 02				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 25 (Cont.)	M	iP	56 45.2	c	USCGS: 51½°N 179°E, 0 = 00 05 50. Rat Islands, Aleutian Islands. USCGS: 6°S, 107°W, 0 = 03 55 32. 1000 miles southwest of Galapagos Islands.
	R	eP	42.7		
	SH	e(P)	44		
June 26	M	iP	00 13 44.2	c	
	R	i(P)	56.4	c	
June 26	B	e	04 02 10		
		eSN	09 06		
		eR	17.1		
	M	eP	04 24.0	c	
	R	e(P)	09		
	SH	e(P)	16		
June 26	M	iP	05 14 25.4	c	USCGS: 30½°S, 177½°W, 0 = 05 24 12. Kermadec Islands.
	R	i	35.4		
	C	e(P)	02	c	
	SH		21.1	c	
June 26	F	e	05 36 56		
	M	e	37 02		
	SH		01		
June 26	M	e	14 04 10		
	C	e	44		
	SH	iP	12.2	d	
June 27	B	iP	19 17 18.5	d	USCGS: 33°S, 179°W, 0 = 19 04 27, h about 100 km. South of Kermadec Islands.
	BP	isP	57	d	
		eSKSNE	27 30		
		iSNE	28 00		
		e NE	29 06		
		e NE	41 45		
			Distance 90°		
			Magnitude 6¼ - 6½		
			mu sec		
		PZ	1.0 5		
		SH	5.4 8		
	MH	iP	19 17 18.8	d	
		isP	58.5	d	
	F	iP	21.4	d	
		e	28 06		
	M	iP	17 27.8	c	
		i	18 36.3	c	
	A	e	17 25		
	R	iP	29.8	d	
		i	18 12.1	d	
	C	i(P)	17 37	d	
	SH	iP	27.7	d	
		epP	53		
	V	eP	17		
June 28	BG	eLNE	18 32.6		USCGS: Gulf of California. 0 = 18 25 37.
	MH	i	29 13.8	c	
	F	eP	28 27		
	M	iP	29 25.1		
	R	iP	28 56.6		
	SH	e(P)	29 27		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
June 28	B	eP	20 02 10		USCGS: 9½°S, 122½°E, 0 = 19 43 22. Sawoe Sea.
		e(pP)	32		
	BP	e E	08 52		
		e EZ	12 42		
	MH	iP	02 10.4	c	
		i(pP)	33.8	c	
	F	eP	13		
	M	iP	09.2	c	
		i	20.5		
		e	12 36		
	R	iP	02 12.2	c	USCGS: 7°S, 155½°E, 0 = 07 16 07. Solomon Islands. PAS: Magnitude 6 - 6¼.
	C	e	11		
	SH	eP	09		
June 29	BP	eP	07 29 05	c	
		eS	39 37		
			R from WSW		
			Distance 88°		
	MH	i	07 29 20.7		
	F	eP	15		
	M	iP	07.4	d	
	R	eP	15.5		
	SH	e(P)	28 57		
June 30	B	eP	10 36 13.4	c	USCGS: 34°S, 179°W, 0 = 10 23 17. South of Kermadec Islands.
			R from SW		
	MH	iP	10 36 13.9		
		i	27.5		
	F	eP	16		
	M	eP	23.6	c	
		i	37.7	d	
	R	e	26		
	SH	e	23		
June 30	MH	eP	22 51 22.0		
	R	i	20.6	c	USCGS: 8½°N, 71½°W, 0 = 22 42 02, h about 60 km. Northern Venezuela.

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SAN FRANCISCO—FERNDALE—FRESNO
MINERAL—ARCATA—RENO—CORVALLIS—SHASTA
MANZANITA LAKE—VINEYARD

Earthquakes and the Registration of Earthquakes

From July 1, 1959, to September 30, 1959

BY

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The list following this page gives the latitude and longitude of the epicenters for earthquakes which were well enough recorded to permit such a determination.

Map No. for each epicenter corresponds to a number plotted on the map which follows the list of epicenters.

Date and Origin Time are given in Greenwich Civil Time. Subtract eight (8) hours to convert to Pacific Standard Time (P.S.T.), or seven (7) hours to convert to Pacific Daylight Time (P.D.T.: April 26, 1959 to September 27, 1959.) This will change the date for some of the earthquakes.

M is the Richter Magnitude of the earthquakes as determined from the maximum trace amplitudes recorded for the shock by the standard Wood-Anderson Torsion Seismographs. In routine practice, the nomogram given by Nordquist in the "Bulletin of the Seismological Society of America," 32:164, is used for magnitude determinations.

Q indicates the excellence with which the epicenter has been located; "a" indicates excellent, "b" good, "c" fair, and "d" poor. Under Remarks will be found a short descriptive location of each epicenter, usually with reference to a point named on the map. Information on small foreshocks and aftershocks is sometimes included in the Remarks. When numerous foreshocks or aftershocks accompany a large earthquake, a separate table is generally included following the main list of local shocks, giving origin times, Richter Magnitudes, and, where significant differences in location can be determined, the geographic coordinates. The larger earthquakes of after-shock series are also included in the main list of local shocks.

Information on the intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly those collected by the Seismological Field Survey of the United States Coast and Geodetic Survey, which publishes a more complete summary of such reports in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region." This is a quarterly publication, and 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 are given by Roman numerals when sufficient information on the effects of the shock is available. These intensity numbers assigned by the Coast and Geodetic Survey are based on the Modified Mercalli Intensity Scale of 1931 (Harry O. Wood and Frank Neumann, "Bulletin of the Seismological Society of America," 21:277-283, 1931), the criteria of which follow in an abridged form.

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. Disturbed 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.

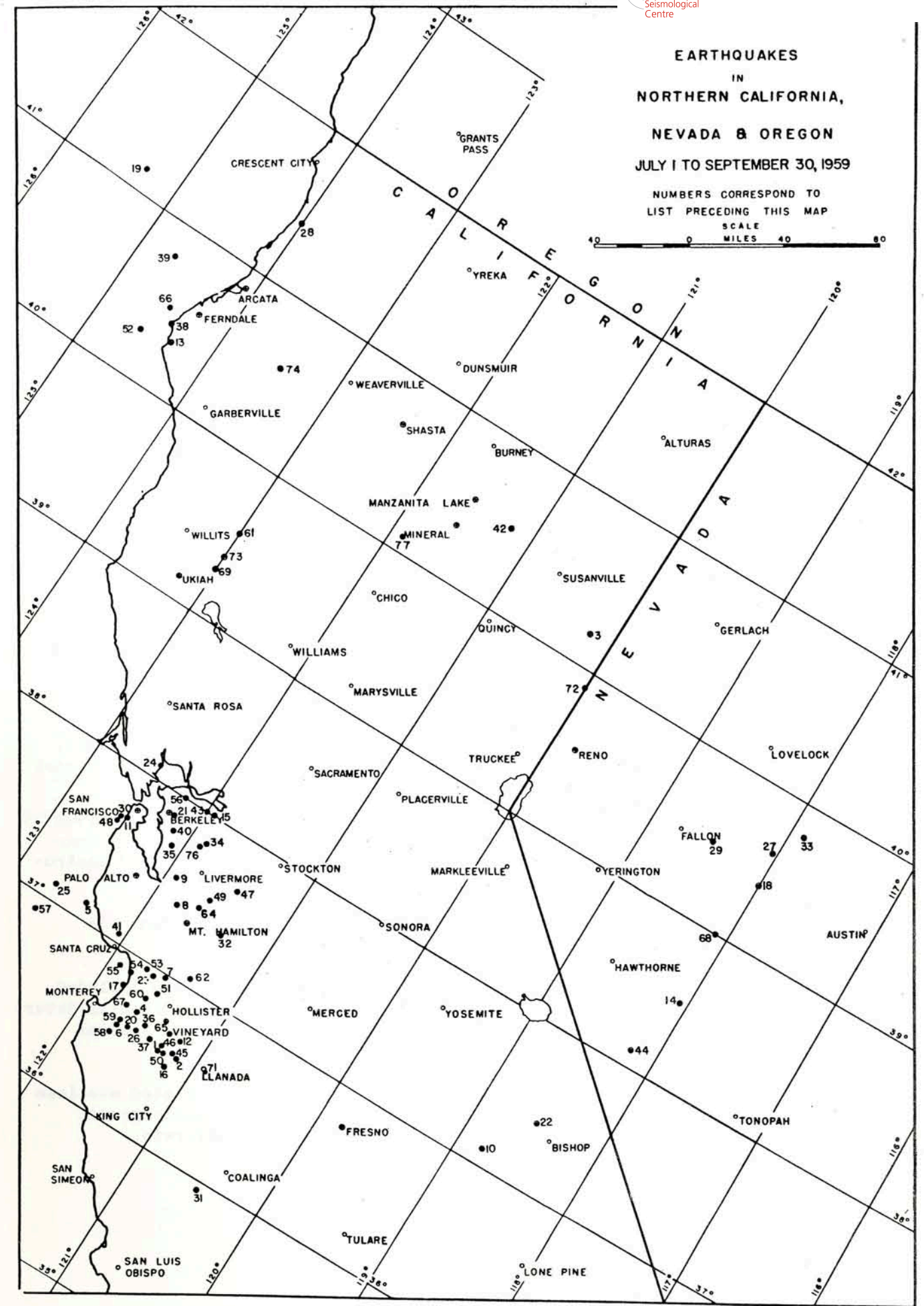
EARTHQUAKES IN NORTHERN CALIFORNIA, NEVADA, AND OREGON

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
	July 2	19-43-59	40.5°	126.9°	d	4.2	Off Cape Mendocino.
	July 2	19-59-39	40.5°	126.9°	d	4.1	Aftershock.
	July 2	20-06-41	40.5°	126.9°	d	3.8	Aftershock.
	July 3	00-32-05	40.5	126.6°	d	3.9	Aftershock.
	July 3	09-37-46	40.7°	126.2°	d	3.9	Aftershock.
1	July 4	19-24-36	36° 34'	121° 19'	c	3.2	South of Vineyard.
2	July 5	06-25-03	36° 35'	121° 09'	c	2.6	West of Llanada.
3	July 8	09-43-15	40.2°	120.2°	d	2.5	Northwest of Reno.
4	July 8	21-58-58	36.7°	121.6°	d	2.5	Southwest of Vineyard.
5	July 9	00-39-52	37.1°	122.4°	d	1.8	Northwest of Santa Cruz.
							Blast?
6	July 9	05-44-49	36° 34'	121° 41'	c	2.9	South of Vineyard.
7	July 10	02-12-34	37° 59'	121° 34'	b	2.5	Northwest of Hollister.
8	July 11	11-21-04	37° 24'	121° 48'	b	2.2	Northeast of San Jose.
							Felt at San Jose.
9	July 13	19-47-59	37° 33'	121° 55'	a	3.0	Southwest of Livermore.
9	July 14	00-21-28	37° 33'	121° 55'	c	2.0	Aftershock.
10	July 14	00-48-20	37.1°	118.8°	d	3.2	East of Fresno.
8	July 14	23-30-15	37.4°	121.8°	d	2.1	Northwest of Mt. Hamilton.
11	July 15	03-50-54	37.7°	122.5°	d	1.9	Southwest of San Francisco.
12	July 15	06-25-25	36.7°	121.2°	d	1.6	Southeast of Vineyard.
13	July 15	08-24-26	40° 20'	125° 10'	c	3.8	Off Cape Mendocino.
14	July 16	10-31-45	38.5°	118.0°	d	3.4	Foreshock.
14	July 16	14-06-11	38° 31'	118° 04'	c	3.8	East of Hawthorne, Nevada.
15	July 17	23-29-51	38° 00'	121° 56'	c	2.0	Northeast of Berkeley.
16	July 18	01-11-47	36.5°	121.3°	d	2.5	South of Vineyard.
17	July 18	13-34-35	36.8°	121.8°	d	2.3	Southeast of Santa Cruz.
18	July 19	07-12-10	39.4°	118.0°	d	3.8	East of Fallon, Nevada.
19	July 24	01-23-09	41° 08'	125° 18'	b	5.8	West-northwest of Arcata.
							Felt along the coast of Humboldt and Del Norte counties from Crescent City to Rio Dell. IV at Eureka. No damage was reported.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
19	July 24	01-51-15	41.1°	125.3°	d	3.8	Aftershock.
19	July 24	03-35-54	41° 06'	125° 19'	b	4.4	Aftershock.
20	July 24	21-59-26	36.6°	121.6°	d	2.7	Southwest of Vineyard.
21	July 25	06-37-42	37° 52'	122° 13'	a	2.8	Near Berkeley. Felt at Berkeley and Oakland.
19	July 26	17-00-22	41° 06'	125° 18'	b	3.4	Aftershock of 0123, July 24.
22	July 29	12-37-56	37° 25'	118° 32'	c	3.8	Northwest of Bishop.
23	July 29	15-21-24	36° 57'	121° 39'	b	2.8	Northwest of Hollister.
24	July 29	21-01-55	38° 05'	122° 30'	c	2.4	Northwest of Berkeley. Blast?
25	Aug. 1	00-37-21	37° 06'	122° 40'	c	2.1	Off coast west of Santa Cruz.
26	Aug. 1	04-41-03	30° 36'	121° 32'	c	2.0	Southwest of Vineyard.
27	Aug. 2	22-16-40	39° 37'	118° 02'	c	4.4	East of Fallon, Nevada.
28	Aug. 3	10-41-35	41.4°	124.0°	d	3.4	North of Arcata.
29	Aug. 4	05-13-20	39.5°	118.5°	d ca	4.0	East of Fallon, Nevada.
30	Aug. 4	18-50-54	37° 41'	122° 32'	d	2.2	Southwest of San Francisco. Felt.
31	Aug. 5	03-00-34	35° 57'	120° 29'	c	3.5	Southeast of Coalinga (near Parkfield; felt strongest at Parkfield; felt Paso Robles, IV.)
32	Aug. 7	19-01-41	37.4°	121.4°	d	2.7	East of Mt. Hamilton.
33	Aug. 10	08-52-48	39.8°	117.9°	d	3.2	East of Fallon, Nevada.
34	Aug. 10	09-14-52	37° 50'	121° 52'	c	1.5	East of Berkeley.
35	Aug. 12	10-00-29	37° 42'	122° 05'	b	2.0	Southeast of Berkeley.
36	Aug. 14	21-58-49	36° 39'	121° 39'	c	2.6	Southwest of Hollister.
37	Aug. 15	22-58-31	36.6°	121.4°	d	2.4	South of Vineyard.
38	Aug. 20	03-48-56	40° 16'	124° 25'	c	4.2	Southwest of Ferndale. Felt Eel River valley, particularly in Rio Dell.
	Aug. 21	00-28-17	44.8°	124.7°	d	4.6	Off coast of Oregon, west of Corvallis.
39	Aug. 21	10-55-11	40.4°	124.8°	d	3.2	Near Ferndale.
40	Aug. 24	15-19-36	37° 47'	122° 08'	b	2.1	Southeast of Berkeley. Felt East Oakland.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
41	Aug. 24	17-00-33	37° 03'	122° 03'	c	2.7	North of Santa Cruz.
42	Aug. 26	09-56-46	40.5°	121.2°	d	3.1	East of Manzanita Lake.
43	Aug. 27	22-14-46	38° 00'	122° 00'	b	2.1	Northeast of Berkeley.
44	Aug. 28	01-52-38	38.1°	118.2°	d	4.3	Southeast of Hawthorne, Nevada.
	Aug. 28	12-36-17	40.2°	126.7°	d	3.9	Off coast of Northern California.
45	Aug. 29	02-04-18	36.6°	121.2°	d	2.4	Southwest of Vineyard.
46	Aug. 29	03-59-19	36° 36'	121° 18'	c	3.0	Near Hollister.
47	Aug. 30	22-43-50	37° 41'	121° 28'	c	2.4	South of Tracy.
48	Aug. 31	03-44-23	37° 39'	122° 33'	c	2.7	Southwest of San Francisco.
49	Aug. 31	10-43-58	37° 32'	121° 36'	b	2.0	Northeast of Mr. Hamilton.
50	Aug. 31	23-50-36	36° 34'	121° 16'	c	2.8	South of Hollister.
51	Sept. 1	05-00-24	36° 52'	121° 33'	c	3.2	Northwest of Vineyard.
52	Sept. 1	19-38-15	40.3°	124.6°	d	3.7	Southwest of Ferndale.
53	Sept. 3	12-11-20	36° 59'	121° 42'	c	2.6	North of Watsonville. Felt.
54	Sept. 3	12-13-18	36.9°	121.8°	d	2.3	Near Watsonville.
55	Sept. 3	14-28-29	36.9°	121.9°	d	2.6	Near Watsonville.
56	Sept. 3	14-55-21	38.0°	122.2°	d	2.3	Northeast of Berkeley.
57	Sept. 5	00-45-08	36.9°	122.7°	d	2.0	West of Santa Cruz.
58	Sept. 5	05-45-34	36.5°	121.7°	d	3.8	Southwest of Vineyard.
59	Sept. 5	06-09-08	36° 36'	121° 41'	c	2.9	Southwest of Vineyard.
	Sept. 5	08-14-29	40.3°	127.5°	d	4.5	Off coast west of Arcata.
60	Sept. 5	17-20-13	36.8°	121.6°	d	2.9	West of Vineyard.
61	Sept. 6	00-24-21	39° 34'	123° 00'	c	3.0	Northeast of Willits.
62	Sept. 6	16-28-31	37° 03'	121° 24'	c	3.1	North of Vineyard.
53	Sept. 7	07-53-23	36° 58'	121° 43'	c	2.1	Northeast of Watsonville.
64	Sept. 7	18-51-34	37° 28'	121° 39'	c	2.2	North of Mt. Hamilton.
65	Sept. 11	18-05-03	36.7°	121.3°	d	4.0	Southeast of Vineyard. Felt at Hollister and Salinas.
66	Sept. 11	22-02-34	40.5°	124.5°	d	3.1	Southwest of Ferndale.
67	Sept. 12	11-23-48	36.7°	121.7°	d	2.3	West of Vineyard.
68	Sept. 15	06-35-18	39.0°	118.1°	d	3.1	Southeast of Fallon, Nevada.
69	Sept. 16	00-15-47	39.3°	123.0°	d	3.5	Northeast of Ukiah.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
53	Sept. 18	02-45-02	36° 56'	121° 44'	c	2.4	Near Watsonville.
71	Sept. 20	15-18-55	36.6°	120.9°	d	3.2	Southeast of Vineyard.
	Sept. 20	23-26-45	40° 07'	126° 07'	c	4.4	Off coast southwest of Arcata.
72	Sept. 24	04-22-25	39.9°	120.0°	d	ca 3.0	Northwest of Reno, Nevada.
73	Sept. 24	17-02-09	39.4°	123.0°	d	3.6	Northeast of Ukiah. Felt at Willits VI, but no major damage.
24	Sept. 24	22-41-40	38° 05'	122° 31'	b	2.4	Northwest of Berkeley.
	Sept. 26	08-20-48	43.7°	128.3°	d	6.1	Off Oregon coast.
74	Sept. 27	15-03-54	40° 34'	123° 29'	c	3.0	Southeast of Arcata.
	Sept. 28	01-50-32	42° 02'	126° 42'	c	4.1	Off coast of Oregon.
53	Sept. 28	12-38-42	36° 57'	121° 42'	c	2.7	Near Watsonville.
76	Sept. 29	00-29-11	37.8°	121.9°	d	2.5	Southeast of Berkeley.
77	Sept. 30	10-21-36	40.1°	121.9°	d	2.5	Southwest of Mineral.



THE REGISTRATION OF EARTHQUAKES

Station	North Latitude	West Longitude	Altitude Meters	Station Symbol	Present Auspices and Date
Berkeley	37° 52.3'	122° 15.6'	81	B, BG, BP*	University of California - 1887
Mt. Hamilton	37° 20.4'	121° 38.6'	1282	MH	Lick Observatory - 1887
Palo Alto	37° 25.1'	122° 10.8'	83	PA	Stanford University - 1927
San Francisco	37° 46.4'	122° 27.2'	100	SF	University of San Francisco - 1931
Ferndale	40° 34.6'	124° 15.7'	15	Fe	City of Ferndale - 1933
Fresno	36° 46.1'	119° 47.8'	88	F	Fresno State College - 1935
Mineral	40° 20.8'	121° 36.1'	1495	M	National Park Service, Lassen Volcanic National Park - 1938
Arcata	40° 52.6'	124° 04.5'	59	A	Humboldt State College - 1948
Reno	39° 32.3'	119° 48.8'	1386	R	University of Nevada - 1948
Corvallis	44° 35.1'	123° 18.2'	123	C	Oregon State College - 1950
Shasta	40° 41.7'	122° 23.3'	312	SH	Bureau of Reclamation - 1942
Manzanita Lake	40° 32.2'	121° 33.7'	1800	ML	National Park Service, Lassen Volcanic National Park - 1956
Vineyard	36° 45.0'	121° 23.0'	328	V	W.A. Taylor and Co. - 1959

*B denotes readings of short-period instruments; readings of long-period instruments are denoted by BG (Galitzin-Wilip) and BP (Press-Ewing).

On July 28, 1959, the Sprengnether vertical instrument was removed from the University of San Francisco station.

Earthquakes in the Northern California, Nevada, and Oregon region are included in the following list only if of magnitude 4.5 or greater, or if of special interest. Times are usually not reported for PA, SF, Fe, or ML unless of special interest or in case of defective records at other stations.

Measurement and interpretation of seismograms from all the above listed stations is done at Berkeley; requests for special data or for copies of seismograms should be addressed to Seismographic Station, University of California, Berkeley 4, California.

STATION EQUIPMENT

Type and Component	Station
Short-period Benioff Z	B, MH, PA, M, SH
Short-period Benioff N, E	SH
Short-period Wood-Anderson N, E	B, MH, PA, SF, M, A, V
Short-period Sprengnether N, E, Z	F, R
Short-period Marion moving-coil Z	V
Short-period Slichter, N, E, Z	C
Short-period Wilson-Lamison Z	C
Short-period Sprengnether Z	A
Long-period Galitzin-Wilip N, E, Z	B
Long-period Press-Ewing N, E, Z	B
100 kg Bosch-Omori N, E	B
25 kg Bosch-Omori N, E	Fe
80 kg Wiechert Z	B
Loucks-Omori N, E	ML
Short-period 100X Torsion N, E	B

The three components are indicated by N, E, Z in the "phase" column of the following tabulation of readings. When no letter appears, the phase is read from the vertical component (Z) only. "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates gradual beginning.

In the column headed "Ground Motion," "c" or "d" indicates initial compression or dilatation of the ground as read from the vertical component instrument. N, S, E, or W indicates that the initial ground motion was north, south, east, or west, respectively.

Maximum amplitude of earth displacement in microns (μ) and periods in seconds (sec) of the indicated phases are given for the Berkeley station in the column headed "Time (GCT)." Combined horizontal amplitude of N and E components are designated by H.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
July 1	B	eP	02 39 00		USCGS: 28°N, 139½°E, 0 = 02 27 46, h about 550 km. Bonin Islands region.	
		epP	40 48.7			
		i	55.4			
	BP	e(S)NE	48 15			
	MH	iP	39 03.7	c		
		ipP	41 00.1			
		i	15.6			
	F	iP	39 12.1			
		ipP	41 07.9			
	M	iP	38 56.1	c		
		ipP	40 43.6			
	R	iP	39 04.8	d	USCGS: 16½°S, 69½°W, 0 = 10 32 29, h about 200 km. Peru-Bolivia border.	
		ipP	41 01.1	d		
July 1	SH	iP	38 52.7	c		
	MH	iP	10 43 41.1	c		
	M	eP	51.5			
	R	eP	43			
	SH	eP	55			
July 1	B	eP	23 50 16.9			PAS: 35°12'N, 119°03'W, 0 = 23 49 24. South of Bannister, California. Felt Kern County. Magnitude 4.7.
		eSNE	58.6			
	MH	iP	01.1	c		
	F	iP	49 50.0	d		
		e(S)N	50 09			
	M	iP	46.7	d		
		i E	51 59.6			
	SH	e(P)	50 50			
		e	51 53			
	R	iP	50 30.2	d		
		i	51 19.0	c		
	PA	iP	50 12.4	d	USCGS: 20°S, 178½°W, 0 = 11 27 45, h about 650 km. Fiji Islands.	
		e(S)NE	51.8			
July 2	SF	e(P)	19			
	B	eP	11 38 47			
	MH	iP	48.0	d		
	F	eP	53			
	M		56.8	d		
	R	i(P)	39 00.8	d		
	SH	iP	38 56.4	d		
July 2	B	eP	11 45 22.5			USCGS: 20°S, 178½°W, 0 = 11 34 20, h about 650 km. Fiji Islands.
	MH	iP	23.2	d		
	F	iP	27.0	d		
	M	iP	32.7	d		
		i	44.9	d		
	R	iP	36.0	d		
	SH	iP	27.8	d		
July 3	MH	i	05 27 41.5	c	USCGS: 58½°N, 152°W, 0 = 05 21 13. Kodiak Island region.	
	F	iP	24.9	c		
	M	eP	26 51.0	d		
	R	iP	27 04.6	c		
	SH	iP	26 46.0	c		
July 3	M	iP	09 46 27.1	c		
	SH	eP	18			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
July 3	B	eP	18 07 30	d	USCGS: 16°S, 173°E, 0 = 17 55 10, h about 200 km. New Hebrides Islands. PAS: Magnitude 6¼ - 6½.	
	BG	epP	08 10			
		eSKSE	17 44			
		eSNEZ	18 23			
		ePS	19 27			
		eR	32.2			
			mu sec			
		PZ	1.4 6			
		PH	1.7 6			
		SH	12 11			
	MH	iP	18 07 31.2	d	USCGS: 24½°S, 177°W, 0 = 04 54 14, h about 100 km. Tonga Islands region.	
		ipP	08 13.1	c		
	F	eP	07 35	d		
		e(R)	34 54			
	R	iP	07 42.8	d		
		ipP	08 26.3			
July 4	SH	iP	07 36.7	d		USCGS: 8°S, 74°W, 0 = 15 53 37, h about 200 km. Peru-Brazil border.
	MH	iP	05 06 24.5	c		
		ipP	58.6	d		
	F	eP	28			
	M	eP	34.2	c		
	R	eP	37.2			
	SH	eP	33			
July 5	MH	iP	16 03 50.1	d	USCGS: Guatemala-Honduras border. 0 = 08 51 27. USCGS: 26½°S, 61°W, 0 = 09 10 17, h about 600 km. Chaco Province, Argentina. PAS: Magnitude 6-3/4.	
July 6	MH	iP	08 58 34.3	d		
	M	eP	48.8	d		
July 6	B	iP	09 21 56.8	c		
		e	23 31			
		epP	24 12.3			
		ePP	25 11			
		eSNE	31 22			
		e E	32 06			
			Distance 85°			
			mu sec			
		PZ	3.2 7			
		PH	2.8 7			
		SH	7.3 9			
	MH	iP	09 21 54.4	c		
		i	22 35.9	c		
		ipP	24 09.3			
	F	iP	21 45.5	c		
	M	iP	22 02.3			
		i	23 04.6			
		ipP	24 31.9			
	A	iPE	22 11.3	c		
	SH	iP	04.9	c		
		eS	31 48			
	V	iPNE	21 51.8			
		e E	23 38			
		e(S)E	31 28			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
July 12	B	iP	00 35 40.7		USCGS: 19½°S, 177½°W, 0 = 00 24 22, h about 400 km. Fiji Islands region. PAS: Magnitude 6¼.
	MH	iP	41.7	c	
		i	37 06.6		
	F	iP	35 46.1	d	
	M	iP	51.1	d	
		e	37 17		
	R	iP	35 55.0	(d)	
		i	37 20.7	c	
	SH	iP	35 49.4	d	
		e	37 16		
July 13	V	ePN	35 41		USCGS: 52°N, 172½°W, 0 = 12 28 45. Andreanof Islands, Aleutian Islands. PAS: Magnitude 6½.
	BP	iP	12 35 59.3	SEc	
		iSNE	41 46	SE	
		eQN	44.4		
		eREZ	45.7		
			Distance 38°		
			mu sec		
		PZ	1.3 9		
		PH	0.9 9		
		SH	3.8 16		
July 13	MH	iP	12 36 05.6	d	USCGS: 25½°S, 180°, 0 = 15 24 44, h about 500 km. Kermadec Islands.
		i	17.7	c	
	F	iP	18.9	c	
	M	iP	35 50.8	c	
		i	36 01.8	d	
	R	iP	05.2	c	
		i	19.4	c	
	SH	iP	35 45.2	(c)	
		i	38 14.1		
		iPN	36 11.4		
July 13	B	eP	15 36 23		USCGS: 50½°N, 170°W, 0 = 23 59 59. Fox Islands region, Aleutian Islands.
	MH	iP	23.7	c	
	F	iP	27.3	(d)	
	M	eP	29	d	
	R	eP	32		
July 13	SH	iP	31.4	c	USCGS: 51½°N, 172°W, 0 = 08 40 48. Fox Islands, Aleutian Islands.
	MH	iP	24 07 06.4	c	
	F	eP	20		
	M	eP	06 52.0	c	
	R	eP	07 04		
July 14	SH	iP	06 46.2	c	USCGS: 57°N, 158°W, 0 = 11 33 51, h about 60 km. Alaska Peninsula.
	B	e	08 48 05		
	BP	eL	56.4		
			R from WNW		
	MH	iP	08 48 08.2	c	
July 14	F	iP	22.1	c	USCGS: 16½°S, 173°E, 0 = 13 00 24, h about 100 km. New Hebrides Islands.
	M	eP	47 54	c	
	R	iP	48 08.4	c	
	SH	eP	47 49		
	F	eP	11 40 19		
	R	iP	39 59.6	c	
	SH	iP	40.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
July 14	B	eP	13 12 37		USCGS: 21°S, 179°W, 0 = 18 14 51, h about 700 km. Fiji Islands region. USCGS: 54°N, 161°W, 0 = 07 00 05. South of Alaska Peninsula.	
		e	50			
	BP	e(S)NE	22 50			
		e NE	23 40			
		eRNEZ	37.5			
			Distance 82°			
		MH	iP	13 12 38.3		d
		F	eP	44		
		M	eP	44.6		c
		R	iP	50.8		d
July 14	SH	iP	43.6	(d)	USCGS: 50½°N, 177°W, 0 = 15 17 27. Andreanof Islands region, Aleutian Islands.	
	MH	iP	18 25 57.7	c		
	M	eP	26 06.5	c		
	SH	iP	05.2	c		
July 16	MH	eP	07 06 26		USCGS: 21½°S, 169°E, 0 = 19 13 52. Loyalty Islands.	
	M	eP	13			
		e	08 06			
	SH	iP	06 07.7	c		
July 16	B	iP	15 25 08.9	d	USCGS: 7½°N, 71½°W, 0 = 22 52 08. Colombia-Venezuela border.	
	MH	iP	15.4	d		
		i	26 42.7			
	F	eP	25 27			
	R	iP	14.8	d		
July 16	SH	iP	24 55.7	d	USCGS: 60½°N, 153½°W, 0 = 23 21 28, h about 150 km. Southern Alaska.	
		i	27 04.7	c		
	B	eP	19 26 55			
	MH	eP	47.4	c		
	F	eP	56			
July 17	R	iP	27 08.4	d	USCGS: 21½°S, 179°W, 0 = 07 00 36, h about 600 km. Fiji Islands region.	
	SH	eP	26 58			
	MH	iP	07 46 48.0	d		
	F	iP	51.9	d		
	M	eP	58	d		
July 17	R	eP	47 01		USCGS: 21½°S, 179°W, 0 = 07 00 36, h about 600 km. Fiji Islands region.	
	B	e	23 01 42			
	MH	eP	37			
	M	eP	44			
	R	iP	33.8	d		
July 17	MH	e(P)	23 27 22		USCGS: 21½°S, 179°W, 0 = 07 00 36, h about 600 km. Fiji Islands region.	
	M	iP	10.7	c		
		e(pP)	38.5			
	B	iP	07 11 51.0	c		
		e	12 30			
July 18	MH	iP	11 52.4	c	USCGS: 21½°S, 179°W, 0 = 07 00 36, h about 600 km. Fiji Islands region.	
		e	12 35.2			
		ePP	14 00.6			
	F	eP	11 56			
		ePP	14 05			
	M	eP	12 00.4	c		
	R	iP	04.1	c		
	SH	iP	11 59.8	c		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
July 18	B	iP	12 21 53.6	c	USCGS: 50½°N, 130°W, 0 = 12 18 35. Off coast of Vancouver, British Columbia.
	BP	eSEZ	24 34		
		e N	59		
			Distance 14½°		
			Magnitude 5½		
			mu sec		
		PZ	0.5 4		
		SH	1.2 8		
	MH	iP	12 22 03.1	c	
	F	iP	18.0	c	
July 18	M	iP	21 28.1		USCGS: Fiji Islands region, 0 = 19 29 22.
		i	45.7		
	R	iP	46.7	c	
		i	57.0	d	
	SH	iP	20.1		
	V	e(P)E	22 12.4		
	B	iP	19 41 16.7	c	
	MH	iP	17.7	c	
	F	iP	22.2	d	
	M	iP	27.0	d	
July 18	R	iP	30.1	c	USCGS: 15½°N, 120½°E, 0 = 19 54 45, h about 150 km. Luzon, Philippine Islands. Felt. PAS: Magnitude 6-1/2 - 6-3/4.
	SH	iP	25.6	c	
	V	ePNEZ	17.3		
	B	eP	20 08 34		
	BP	epP	09 12		
	B	e	11 53		
		ePP	12 41		
		iSKSNEZ	19 00		
		iPS	21 21		
		e(PKKP)	24 49		
		i(sSS)	27 03		
			Distance 102°		
	MH	eP	20 08 38.1	c	
		eSKS	18 51		
		i(SS)	25 14.0		
	F	iP	08 45.7	c	
		e	12 06		
		eSKS	19 13		
		i(PKKP)	24 46.5		
		e(SS)	25 04		
M	eP	08 31			
	eSKS	18 54			
	i(SS)	25 18.4			
A	iSKSE	18 51.4			
R	iP	08 39.7	c		
	iSKS	19 09.5			
	i(SS)	25 12.6			
SH	iP	08 28.5	(d)		
	eSKS	18 59			
	e(PKKP)	24 56			
	i(SS)	25 22.8			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
July 18 (Cont.)	V	e(P)E	08 43			
		e(SS)E	25 12			
July 18	MH	e	20 36 19.4	c		
	R	e	35 56			
	SH	iP	36 23.5	d		
July 19	B	ep''	04 01 13		USCGS: 6½°S, 105°E, 0 = 03 42 02. Sunda Strait.	
	MH	iP''	12.9	d		
	F	ep''	16			
	M	iP''	10.0	d		
	R	iP''	13.6	d		
	SH	ep''	08			
July 19	B	e(P)	13 56 16		USCGS: 23½°S, 179°E, 0 = 13 44 52, h about 550 km. Fiji Islands region.	
	MH	ep	19			
	M	iP	28.4	c		
	R	e(P)	42			
	SH	ep	27			
July 19	B	iP	15 17 14.9	d	USCGS: 15°S, 70½°W, 0 = 15 06 10, h about 200 km. Peru. Felt in northern Chile. PAS: Magnitude 7.	
		epP	18 07			
		esP	20			
	BP	e	21 07			
		e	23 00			
		iSNEZ	26 22			
		iSSNE	31 10			
			Distance 74°			
			mu sec			
		PZ	1.5 6			
	PH	1.1 6				
July 19	MH	iP	15 17 11.4	d		
		ipP	18 03.9	d		
		iS	26 14.1			
	F	eP	17 01			
		eS	25 58			
	M	iP	17 20.7	d		
		isP	18 29.5			
		i	20 05.5			
		eS	26 38			
	A	ePNE	17 33.6			
July 19	R	i(S)E	26 53.6			
		iP	17 12.6	d		
		i E	34.2			
		iS	26 21.5			
	SH	iP	17 24.1	d		
July 19	V	eS	26 48			
		ePNE	17 08.5			
		i(pP)E	18 08.5			
		eSNE	26 07			
	B	iP	15 47 22			
	MH	iP	18.7	c		
	F	iP	46 41.7	c		
						USCGS: 15½°S, 71°W, 0 = 15 36 17, h about 200 km. Southern Peru.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
July 22	MH	iP	03 07 07.7	c	
	R	e	29		
	SH	iP	26.9	d	
July 22	MH	eP	04 57 42		USCGS: 15½°N, 97½°W, 0 = 04 51 30. Near coast of Oaxaca, Mexico.
	F	eP	35		
	M	eP	58 02		
	R	e(P)	57 51		
July 22	MH	iP	16 00 03.6	d	USCGS: 15½°N, 97½°W, 0 = 15 53 53. Near coast of Oaxaca, Mexico.
	F	eP	15 59 56		
	M	e	16 00 26		
		e	04.2		
	R	eP	00 13		
July 22	B	iP	19 33 14.2	c	USCGS: 53°N, 153°E, 0 = 19 24 17, h about 650km. Sea of Okhotsk. Magnitude 5-3/4 - 6.
		i	33		
		i	34 03.1		
	BG	epP	35 09		
		eSE	40 28		
		eSS	44.3		
		e	47.9		
			Distance 56°		
			mu sec		
		PZ	1.2 5		
		PH	1.6 5		
		SH	4.6 9		
	MH	iP	19 33 19.3	c	
		ipP	35 22.2		
	F	iP	33 28.3		
		epP	35 34		
		eS	40 58		
	M	iP	33 02.5	c	
		eS	40 53		
	R	iP	33 16.0	c	
		iS	40 35.4		
	C	iP	32 39.1		
	SH	iP	33 01.3	c	
		epP	35 02		
		eS	40 08		
July 22	V	ePNEZ	33 23.3		
	B	eP	19 43 13	d	
	MH	iP	18.6		
	F	eP	29		
	R	e	15.5		
	SH	eP	01		
July 22	BP	iP	23 15 22		USCGS: 5°S, 152½°E, 0 = 23 02 27, h about 60 km. New Britain. Felt. Magnitude 6¼ - 6½.
	BG	e NE	25 54		
	BP	eSEZ	26 07		
		ePSEZ	27 23		
		e(SSS)	36.1		
		eR	43.1		
			Distance 91°		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
July 22			mu sec		
(Cont.)		PZ	1.5 7		
		PH	0.6 7		
		SH	2.8 8		
	MH	eP	23 15 26.5	d	
		e	18 55		
	F	e(P)N	15 27		
	M	eP	27.0		
		e	19 01		
	R	iP	15 32.5	c	
	C	e(P)E	35		
	SH	eP	25		
July 23	MH	iP	03 57 35.5	c	USCGS: 3°N, 71°W, 0 = 03 48 12, h about 60 km. Colombia.
	F	eP	22		
	R	iP	34.8	c	
	SH	iP	48.5	d	
	B	iP	08 16 51.8	c	USCGS: 44½°N, 124½°W, 0 = 08 15 12. Near coast of Oregon.
	MH	iP	46.0	c	
	F	iP	17 19.5		
	M	iP	16 23.2	c	
	A	e(P)N	26.6		
	R	eP	44.5		
	C	iP	15 34.5	d	
		i N	49.9		
	SH	iP	16 15.0	c	
	V	e	17 11		
July 23	M	eP	13 56 45.4	c	USCGS: 38°N, 140°E, 0 = 13 45 20. Honshu, Japan.
	R	i(P)	55.3	c	
	C	i(P)	25.7	c	
	SH	iP	41.5		
July 24	B	iPNEZ	01 24 11.1	NWd	41°08'N, 125°18'W, 0 = 01 23 09. Off coast of Humboldt County, California. Magnitude 5.8. Felt: Humboldt County.
		e(S)NE	47		
	MH	iP	20.6	d	
	F	iP	42	d	
	M	iP	23 56.1	c	
	A	iPNE	27.8		
	R	iP	24 19.2	d	
	C	iP	06.3	d	
	SH	iP	23 46.9		
	V	ePNEZ	24 29.7		
	PA	iP	16.0	d	
	SF	iP	11.0	c	
July 23	B	eP	15 08 56		USCGS: 24½°S, 176°W, 0 = 14 56 45, h about 60 km. Tonga Islands region. Magnitude 5-3/4.
		e(pP)	09 14		
		e	34		
	BG	eSN	19 02		
		e NE	34		
	BP	eR	33		
			Distance 81°		
			mu sec		
		PZ	0.3 5		
		SH	0.9 7		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
July 23 (Cont.)	MH	iP	15 08 56.7	d			
		i	10 01.3				
	F	iP	09 00.3	c			
		eP	07.2	c			
	M	e	10 17.2	c			
		iP	09 09.0				
	R	iP	16.8				
		eP	06				
	C	ePNE	08 56.6				
		iP	03 36 54.1				
July 24	B	iP	37 04.9		41°06'N, 125°19'W, 0 = 03 35 54. West of Arcata. Magnitude 4.4.		
		iS	58.5				
	F	iP	00.1	d			
		iP	36 40.3				
	M	i N	37 16.0				
		iPE	36 11.9				
	A	iSN	24.9				
		eP	37 06.8				
	R	eP	36 51.0				
		iP	30.8	c			
C	iSN	57.6					
	ePEZ	37 18.0					
SH	eSNEZ	38 15.0					
	iP	36 59.4					
July 24	PA	e	37 25		USCGS: 21°S, 70½°W, 0 = 05 12 40. Chile.		
		iP	05 24 26.9	d			
	MH	i	55.5				
		eP	36.6	c			
	M	eP	27.7				
		iP	56.6	c			
	R	iP	39.0	d			
		eP	23 22 04.9	d			
	July 24	B	e	32			USCGS: 56½°S, 28½°W, 0 = 23 03 08. Sandwich Islands.
			iP	04.0		d	
MH		iP	08.3	d			
		i	34.9				
M		i	05.5	d			
		iP	15.4	d			
C		eP	08				
		eP	21 31 58	(d)			
July 25		SH	iP	32 03.1	d	USCGS: 37°N, 140½°E, 0 = 21 20 35, h about 100 km. Honshu, Japan.	
			eP	31 52.9	d		
	B	iP	32 03.0	(d)			
		iP	31 49.2	d			
	MH	eP	13 06 45				
		iP	46.5	d			
	M	eP	59				
		eP	55				
	R	iP	02 02 59.8	d			
		iP	56.3	d			
SH	eP	03 06.4	c				
	eP						

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
July 31 (Cont.)	R	iP	02 57.4	d			
	SH	iP	03 08.7	d			
Aug. 1	MH	iP	10 27 27.5	d	USCGS: 15½°S, 174½°W, 0 = 10 16 04. Samoa Islands region. Felt at Apia.		
		i	49.1	c			
	F	iP	35.7	c			
		eP	40.5	d			
	M	e	28 11.5				
		iP	27 45.3	c			
	R	iP	39.8	c			
		iP	17 51 37.5	d			
	Aug. 1	SH	iP	33.0		c	USCGS: 42°S, 83°W, 0 = 20 11 07. Off coast of southern Chile.
			iP	20 23 53.5		c	
M		eP	45.2	c			
		eP	24 09.0				
F		eP	07				
		eP	22 17 49.2				
SH		e(S)NE	18 23.8				
		e N	34.8				
B		iP	17 39.2	c			
		i(S)	18 15.6				
Aug. 2	MH	iP	17 38.8	c	39°37'N, 118°02'W, 0 = 22 16 40. East of Fallon, Nevada. Magnitude 4.4.		
		iP	28.1				
	F	e	18 20				
		iP	17 37.8	d			
	M	e NZ	18 34				
		ePEZ	17 56				
	C	e E	18 45				
		e(P)	17 51.6				
	SH	e E	18 29				
		iP	23 48 27.3	c			
Aug. 2	PA	iP	43.8	c	USCGS: 49½°N, 129½°W, 0 = 23 45 19. Off coast of Vancouver, British Columbia.		
		iP	47 52.9	c			
	SF	eP	46 53.2				
		eP	47 44.3				
	MH	eP	03 12 50				
		eP	59.8				
	M	i(P)	13 20.7	d			
		eP	03				
	C	iP	07 37 45.9				
		iSN	38 24.2				
Aug. 4	SH	iP	37 39.7	NWc	PAS: 37°21'N, 118°33'W, 0 = 07 36 59. West of Bishop, California. Felt over an area of approximately 12,000 square miles of central California. Magnitude 5.2.		
		iSNE	38 11.7				
	B	iP	37 19.6	c			
		iP	58.6	c			
	MH	eP	38 30.0				
		iP	07 41 19.5				
	M	iP	13.2				
		e(P)	40 55				
	R	iP	41 12.6				
		eP	08 13 24				
SH	iP	24.4					
	iP						
Aug. 4	B	iP	08 13 24		USCGS: 20½°S, 178°W, h about 600 km., 0 = 08 02 17. Fiji Islands region.		
		iP	24.4				
	MH	iP					
		iP					
	F	e(P)	40 55				
		iP	41 12.6				
	V	iP	41 12.6				
		eP	08 13 24				
	B	eP	08 13 24				
		iP	24.4				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 4 (Cont.)	F	iP	28.6		
	M	iP	33.6		
Aug. 5	MH	iP	20 05 38.9		USCGS: 14°N, 142°E, 0 = 19 52 54. Mariana Islands.
	M	iP	34.3	d	
	SH		31.5	d	
Aug. 6	MH	eP	03 47 11		USCGS: 48°N, 120°W, 0 = 03 44 37. Washington state. Minor damage at Chelan and Wenatchee.
	F	e(P)	25		
	M	iP	46 29.1		
	A	e(P)	28		
	C	i(P)	45 37.5		
	SH	e(P)	46 29		
Aug. 6	M	iP	04 38 07.4	c	Seattle: 47°49'N, 120°00'W, 0 = 04 36 10. Washington after-shock. Felt.
	C	iP	37 14.0	c	
	SH	eP	38 06		
Aug. 7	B	eP	00 56 47		
	BP	iSE	01 04 09		
		eSS	07 50		
		eGNE	09.8		
		eRNEZ	11.8		
			R from SW		
Aug. 7	B	eP	10 49 24		USCGS: 56°N, 154°W, 0 = 10 43 32. Kodiak Island region.
	BP	eSE	54 07		
		eREZ	56.6		
			R from WNW		
			mu sec		
		PZ	0.5 20		
		PH	0.4 20		
		SH	0.8 17		
Aug. 7	B	eP	10 54 25		BCIS: 56°N, 154°W, 0 = 10 48 34. Kodiak Island region.
	MH	eP	30		
	F	eP	45		
	M	eP	12		
	C	iP	53 33.0	c	
	SH	iP	54 06.0	c	
Aug. 7	B	eP	19 23 40.6	c	USCGS: 10½°S, 162½°E, 0 = 19 10 59. Solomon Islands.
	MH	eP	43		
	F	eP	49		
	M	eP	46	c	
	SH	eP	45		
Aug. 7	B	iP	21 51 18		USCGS: 56½°N, 154°W, 0 = 21 45 26. Kodiak Island.
	BP	eSE	56 05		
		eREZ	58.7		Magnitude 5 (Berk.)
			mu sec		
		PZ	0.4 20		
		PH	0.5 20		
		SH	0.7 17		
	MH	eP	21 51 24		
	F	eP	37	d	
	M	iP	04.3	d	
	C	iP	50 27.1	d	
	SH	iP	59.0	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 8	B	eP	00 56 47		USCGS: 55°N, 162½°E, 0 = 00 47 38. Near east coast of Kamchatka.
	BG	eSE	01 04 09		PAS: Magnitude 6½.
		eSS	07 56		
		eGNE	10 00		
		eRNEZ	11.9		
	MH	eP	00 56 53		
	F	eP	57 04	d	
	M	iP	56 36.9	c	
	C	iP	08.8	d	
	SH	iP	32.5	d	
Aug. 8	B	e	00 25 30		USCGS: 6°S, 155°E, h about 100 km., 0 = 23 56 05. Solomon Islands. Felt at Karoola and Rabaul.
		eLNZ	36.1		BCIS: 0°, 66°E, 0 = 04 48 30 Iu
Aug. 9	BP	eLNZ	05 08 ca		
	MH	e(P')	08 12		
	M	eP'	07 58.3		
		e	10 59		
Aug. 9	MH	e(P)	14 29 53		
Aug. 9	B	iP	20 42 05		USCGS: 10°S, 161°E, 0 = 20 29 28, h about 100 km. Solomon Islands.
	BG	eREZ	21 08.0		
	MH	iP	20 42 07.3		
	F	iP	13.2	d	
	M	e(P)	10.2		
	SH	iP	09.0		
Aug. 10	MH	e(P)	21 48 16		BCIS: 51-3/4°N, 167-3/4°W, 0 = 21 41 20. Aleutian Islands.
	F	e(P)	34		
	M	e(P)	06.0		
	R	iP	19.9		
	SH	eP	47 58		
Aug. 11	MH	eP	00 49 36		BCIS: 25°N, 137°E, 0 = 00 37.3. Volcano Islands.
	F	eP	50		
	M	eP	33.8		
	R	eP	36		
	SH	eP	22		
Aug. 11	F	eP	15 35 23		USCGS: 44½°N, 148½°E, 0 = 15 24 30. Kurile Islands.
	R	eP	24		
	SH	eP	34 56		
Aug. 11	B	e(P)	22 02 22		USCGS: 11°S, 163°E, 0 = 21 49 42. Solomon Islands region.
	BP	e NE	09 49		
		eR	28.5		
			R from W		
	MH	eP	22 02 23		
	F	iP	30.0	c	
	R	i(P)	34.0	c	
	SH	e(P)	25		
Aug. 12	B	eP	00 41 22		USCGS: 12°N, 86°W, 0 = 00 33 38, h about 100 km. Near coast of Nicaragua.
		epP	43 16		
	BG	eR	59		
			R from SE		
	MH	eP	00 41 15.8		
		ipP	43 14.1		
	F	eP	41 02		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 12 (Cont.)	R	ipP eP ipP	43 00.1 41 17.0 43 13.0	d c	
Aug. 12	SH MH M	e(P) e(P) eP	41 42 02 10 32 48.2	d d	USCGS: 3°S, 80½°W, 0 = 02 00 52. Near coast of Ecuador.
Aug. 12	A R C SH MH F M R SH	i e(P) iP e(P) e(P) eP' eP' eP' eP'	11 04.0 11 10 35.1 11 10 10 47 04 24 57 59 54.0 54 51	d d c	USCGS: 15°S, 28°E, 0 = 04 05 20. Northern Rhodesia. Felt: Transvaal and Rhodesia.
Aug. 12	B BP BG	eP e(PP) eSNE ePPSNE eSSSNE e NE e	10 10 09 13 25 19 47 20 45 27 52 29.0 29 28		USCGS: 16½°S, 177½°W, 0 = 09 58 22. Fiji Islands region. Magnitude 6½.
			R from SW mu sec		
	MH	SH e(P) i	10.2 14 10 10 02 12 25		
	F M R C SH	eP eP eP eP	10 12 15.8 26.3 26.3 16		
Aug. 13	M C SH	eP iP eP	00 46 54.8 36.7 53.3	c c	USCGS: 40°N, 49°E, 0 = 00 33 09. Azerbaijan S.S.R.
Aug. 13	SH	iP	12 47 42.9	d	
Aug. 13	SH	iP	16 14 26.2	(c)	
Aug. 13	BP	eP e(S)NZ e NE	19 08 32 10 01 41		USCGS: 43½°N, 126½°W, 0 = 19 06 59. Off coast of Oregon.
	MH F A R C	eP iP eP iP i N	08 40 09 02.0 07 44.5 08 42.9 07 42.3	c d c	
Aug. 15	SH PA BP	eP eP iPNEZ e	09 01 08 37 09 10 29 13 34	SEc	USCGS: 23°N, 121°E, 0 = 08 57 04. Formosa. 16 killed, many injured

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 15 (Cont.)		e NE i(S)NE iPSEZ	20 12 21 44 23 04		and extensive property damage. Magnitude 6¼.
			mu sec		
		PZ PH PPZ PPH	1.9 18 0.8 20 2.1 20 1.5 20		
	MH F	eP eP e	09 10 33 38 13 45	c c	
	M	eP e	10 24.6 13 23	c	
	R C SH PA	iP iP eP i(P)	10 33.1 10.2 21 33.2	c d c	
Aug. 15	B BP	e(P) e(S)NE eRNEZ	13 26 21 36 08 51		USCGS: (BCIS) 21°S, 174°W, 0 = 13 14 26. Tonga Islands. Magnitude 5-3/4 (Matsushiro).
	MH F M R C	iP iP eP iP e	26 22.1 26.2 31.1 37.1 43	c c c	
Aug. 15	SH BP MH M	iP e(P) eP iP	18 51 14 50 09 50 56	c	USCGS: 55°N, 162½°E, 0 = 18 41 56. Near east coast of Kamchatka.
	R C SH	iP e iP	51 08.1 50 26.6 50 50.2	c c	
Aug. 15	M	iP	21 40 15.3	d	USCGS: 17½°S, 177°W, 0 = 21 29 42. Fiji Islands.
Aug. 15	M R	iP iP	23 04 07.7 03 55.6	d d	USCGS: 10°N, 85½°W, 0 = 22 56 15. Costa Rica. h about 200 km.
Aug. 16	B BP	eP iP eSNE i NE eGNE eRNEZ	01 04 30 04 30 14 58 16 24 26.9 31.7	(c) c	USCGS: 21°S, 169°E, 0 = 00 51 40. Loyalty Islands region. Magnitude 6.
			R from SW mu sec		
		PZ SH MaxH	0.8 7 1.5 10 7 20		
	MH M R SH	iP e iP iP	01 04 31.5 37.6 43.9 37.6	c d d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 16	M	eP	02 51 39	c	
	C	iP	12.4	c	
	SH	iP	33.2	d	
Aug. 16	B	iP	10 04 50.3	d	USCGS: 18°S, 178°W, 0 = 09 53 52. Fiji Islands. h about 350 km.
		ipP	06 12		
	MH	iP	04 51.1	d	
		ipP	06 13.0		
		e	07 47		
	M	iP	10 05 01.2	c	
		i	35.0		
		ipP	06 22.4		
	R	iP	05 03.9	d	
	C	iP	09.1	d	
Aug. 16	SH	ipP	06 21.5		
	MH	e(P)	18 05 17	c	USCGS: 3½°S, 144°E, 0 = 17 49 50. Near north coast of New Guinea.
	M	e	11		
	C	e	04 56		
Aug. 17	SH	iP	05 08.6	(c)	USCGS: 22½°N, 121°E, 0 = 01 02 37. Formosa. Felt.
	MH	eP	01 13 30	c	
	F	e(P)	35		
	M	e	43		
	R	e	45.4		
Aug. 17	SH	e	41		
	MH	e	01 46 37		USCGS: 41°N, 20°E, 0 = 01 33 11. Albania.
	F	eP	37		
	M	e	25.1	d	
	R	iP	28.6	c	
Aug. 17	SH	eP	27		
	B	eP	06 40 26		BCIS: ca 38°S, 115°W, 0 = 06 28.2. Some distance SW of Easter Island.
	BP	eE	57 54		
		e(Q)NE	07 14		
		eR	20		
	MH	eP	06 40 24.5		
	R	iP	37.8	d	
	SH		43.9	d	
Aug. 17	F	e	11 07 35		BCIS: Approx. 30°N, 143°E, 0 = 10 55 30. In ocean south of Hondo, Japan.
	M	e	18		
	R	e	27		
	SH	e	17		
Aug. 17	MH	e	12 34 50.5		BCIS: 0 = 12 21.3. Central Chile.
	M	e	34 59.3	d	
	R	e	52		
	SH	e	35 02		
Aug. 17	MH	e(P)	13 20 50		BCIS: 6½°N, 82½°W, 0 = 13 12 15. Off coast south of Panama.
Aug. 17	B	iP	21 17 37	d	USCGS: 7½°S, 156°E, 0 = 21 04 40. Solomon Islands.
		ePP	21 04		
	BP	iPEZ	17 35	Ec	BERK: Magnitude 6-3/4 - 7.
		iPP	21 06	d	PAS: Magnitude 7-1/4.
	BG	eSNE	28 04		
	BP	iSNE	10		
		i N	29.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 17 (Cont.)	BG	eR	44		
		Surface waves	poor		
			mu sec		
		PZ	3.7 15		
		PH	1.1 15		
		PPZ	3.0 16		
		PPH	1.1 16		
		SH	1.1 24		
		MaxH	100 18		
	MH	iP	21 17 38.4		
		e	21 11		
	F	iP	17 47.1	d	
	M	eP	43	d	
		i	21 03.4		
	R	iP	17 49.7	d	
	C	e	56		
Aug. 18	SH	eP	39		
	B	eP	00 47 08		USCGS: 22½°N, 122°E, 0 = 00 34 03. Near east coast of Formosa. h about 200 km.
		e	50 59		
		e	52 00		
	MH	iP	47 11.1	d	
		e(PP)	51 04.9		
	F	iP	47 19.5		
	M	eP	03.4	d	
		i	51.9		
		i	50 51.8		
	R	eP	47 10.9		
	C	iP	46 49.4	c	
Aug. 18	SH	iP	47 00.6	d	
	BP	eLNEZ	04 41.4		
	MH	eP	40 37		
		e	41 17		
	F	eP	40 55		
	M	e	05		
		i	59.3		
	R	e(P)	38		
	C	e(P)	04		
Aug. 18	SH	e(P)	39 57.6		
	B	eP	05 14 53		USCGS: 42°N, 127°W, 0 = 05 13 30. Off coast of Oregon.
	BP	e	48		
		e(R)NEZ	16.0		
	MH	iP	14 59.3	d	
	F	iP	15 17.4	d	
	M		13 33.2	c	
	A	eP	14 04.2		
	R	i(P)	15 03.9	c	
	C	iP	14 29.3	d	
		iE	15 12.3		
	SH	iP	14 25.1	d	
Aug. 18	BP	eR	06 18.7		USCGS: 22½°S, 172°E, 0 = 05 38 39. Loyalty Islands region.
		R from NE			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 18 (Cont.)	MH	e(P)	05 51 26		
	F	iP	57 32.5	d	
	M	eP	51 34.2	c	
	SH	eP	51 34.6		
Aug. 18	BP	iP	06 39 54.9	SWc	USCGS: 44°50'N, 111°05'W, O = 06 37 15.0. Hebgen Lake, Montana. Many killed and injured. Major property damage. Magnitude 7.1. Magnitude 7.8.
		eQ	42.2		
			mu sec		
		PZ	120 8		
		PH	115 8		
		MaxH	5100 11		
	MH	eP	06 39 54.9	c	
	F	eP	48.6	c	
	M	(e)P	28.2	(c)	
	A	eP	49.9	SWc	
	R	(e)P	18	(c)	
	C	(e)P	26	(Ed)	
	SH	eP	33.2	SWc	
	V	(e)P	40 03		
	PA	(e)P	39 58		
	SF	(e)P	40 02		
Aug. 18	MH	eP	07 57 19		USCGS: 45°N, 111°W, O = 07 54 32. Hebgen Lake aftershock.
	M	eP	56 52.1	c	
	C	eP	56 40.5		
		i	53.7		
		i	58 08.2		
	SH	eP	56 51		
	V	ePN	58 03.5		
		i N	08 02 21.3		
		e N	03 11.5		
Aug. 18	B	eP	07 59 05		USCGS: 45°N, 110½°W, O = 07 56 18. Hebgen Lake aftershock. Felt. Magnitude 6½.
	MH	eP	05	d	
	F	iP	58 58.9		
	A	e	59 04		
	R	i(P)	58 23		
	C	i(P)	32		
	SH	iP	37.6	c	
	PA	i	59 13		
	SF	e E	59 17		
		e E	08 02 10		
Aug. 18	B	eP	08 44 37		USCGS: 44.8°N, 110.7°W, O = 08 41 50 Hebgen Lake aftershock. Felt. Magnitude 6.
	MH	eP	33	d	
	F	iP	26.5		
	M	eP	02.9		
	A	e	45 06	c	
	R	iP	43 55.2	d	
	C	i(P)	58.4	c	
	SH	iP	44 07.5	c	
	V	eP	44 37.5		
		e NZ	47 55.5		
		e N	48 01.5		
		e N	33.5		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 18 (Cont.)	PA	e(P)	44 36		
	SF	e E	41		
		e N	47 36		
Aug. 18	B	eP	11 06 45		USCGS: 44.8°N, 111.1°W, O = 11 03 52. Hebgen Lake aftershock. Felt. Magnitude 5.7.
	MH	eP	38		
	F	e(P)	25		
	A	e	09 32		
	R	i	06 56.3	c	
		i	08 11.2		
	C	i(P)	06 01.7	d	
		iN	08 36.2		
	PA	e	06 47		
Aug. 18	B	eP	15 28 51		USCGS: 44°53'N, 110°44'W, O = 15 26 06.5. Hebgen Lake aftershock. Felt. Magnitude 6.7.
		eL	31.9		
	MH	iP	28 51.1	c	
	F	iP	28 44.5	c	
	M	iP	24.1	c	
	A	eP	41.2		
		iN	31 41.0		
	R	iP	28 18.6	d	
	C	iP	20.8	d	
		iN	30 43.2		
	SH	iP	28 28.5		
	V	eP	56.0		
		eN	32 06.0		
		eN	54.5		
	PA	iP	28 57.2		
	SF	iPE	56.8	E	
		iE	31 57.8		
Aug. 18	B	eP	17 06 46		
	M	iP	05 54.2	d	
	R	i	06 46.4	d	
Aug. 18	SH	e(P)	54		
	MH	iP	21 53 51.0		PAS: 33°08'N, 116°29'W, O = 21 52 22. Northeast of Julian, California. Felt. Magnitude 4.3.
	F	iP	42.6	d	
		e	54 39		
	M	e(P)	53 54	(d)	
	R	i(P)	54 07.9	c	
		i	55 53.2		
	C	iN	56 16.8		
Aug. 18	SH	i(P)	54 29.2	c	
	F	e	23 52 07		
	M	e(P)	49 16		
	R	e(P)	48 55		
	SH	eP	49 17		
Aug. 19	B	eP	04 06 42		USCGS: 44°54'N, 111°38'W, O = 04 04 03.0. Hebgen Lake aftershock. Magnitude 6.
	MH	eP	40		
	F	iP	34.6	d	
		e	07 09.3		
	M	eP	06 09.5		
	A	e(P)	43.5		
		iN	09 29.9		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 19 (Cont.)	R	iP	06 03.7	(d)	
		i	08 11.9		
	C	i(P)	06 06.4	d	
		iN	08 23.2		
	SH	eP	06 17 46		
	V	e(P)	53.4		
		eEZ	09 03.3		
		eNE	55.8		
		eE	10 11.3		
	PA	e	06 50		
Aug. 19	M	eP	08 14 36	c	BCIS: Approx. 27°N, 128°E, 0 = 08 02.5. Ryukyu Islands.
	SH	iP	34.2	d	
Aug. 19	F	e	11 06 41		
	M	eP	11 05 47		
	R	e	56		
	C	e(P)	46		
	SH	i	06 26.4	d	
Aug. 19	MH	eP	19 09 11		USCGS: 45.0°N, 114.4°W, 0 = 19 06 29. Hebgen Lake aftershock.
	F	eP	03		
	M	iP	08 40.4	d	
		i	09 11.2		
	R	iP	08 33.3	c	
		i	10 45.9		
	C	iP	08 33.6	d	
		iE	10 53.4		
Aug. 19	SH	eP	08 43		USCGS: 45°N, 110½°W, 0 = 19 43 47.5. Hebgen Lake aftershock.
	MH	iP	19 46 38		
	F	e(P)	27		
	M	iP	08.9		
	R	i(P)	19.0	c	
		i	48 15.2		
	C	eP	46 05		
	SH	eP	09		
Aug. 19	MH	eP	21 48 40		USCGS: 45°N, 111½°W, 0 = 21 45 57. Hebgen Lake aftershock.
	F	eP	39		
		eN	51 28		
	M	eP	48 14.6		
	R	e(P)	05		
		iN	50 22.9		
	C	eP	48 04.6		
		iE	50 24.6		
Aug. 20	MH	eP	02 11 51		USCGS: 10½°S, 161°E, 0 = 01 59 06. Solomon Islands.
	F	eP	58		
	M	e	56		
	SH	eP	48		
Aug. 20	MH	iP	07 28 14.4	d	USCGS: 7°S, 85°W, 0 = 07 18 34. Off coast of Peru.
	F	e(P)	04		
	M	eP	27.7	d	
	R	eP	19		
	C	i(P)	29 01.7	c	
	SH	iP	28 31.6	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 20	MH	iP	12 41 20		USCGS: 29°S, 78°E, 0 = 12 20 08. Indian Ocean.
	F	e(P)	22		
	SH	eP	15		
Aug. 20	MH	eP	19 14 07		USCGS: 45°N, 111°W, 0 = 19 11 27. Hebgen Lake aftershock. Felt. Magnitude 5.
	F	eP	01		
		eN	16 51		
	M	eP	13 37.7	c	
		i	14 06.2		
	R	iP	13 31.5	d	
		iN	14 00.8		
	C	iP	13 31.8	(d)	
		iN	16 05.4		
Aug. 21	SH	iP	13 43	d	USCGS: 50½°S, 139½°E, 0 = 08 03 15. Indian Ocean south of Australia. Magnitude 5-3/4 - 6.
	BP	SSNE	08 40 49		
		eNEZ	41 13		
		eE	43 00		
		eQN	54.1		
		eR	58.6		
	MH	eP'	22 20		
	F	eP'	22 22		
	M	eP'	19		
		ePP	24 36.6		
	SH	e(P')	22 29		
Aug. 21	B	eP	09 56 50		USCGS: 50½°S, 140°E, 0 = 09 37 49. Indian Ocean, south of Australia.
	MH	eP	49		
	F	eP	52		
	M	eP	53		
	SH	eP	54		
Aug. 21	MH	e(P)	15 35 16		
	F	e(P)	15		
	M	eP	34 50.7		
		i	35 12.8		
	SH	e	34 56		
		e	35 30		
Aug. 22	MH	i(P)	16 19 14		BCIS: Epicenter in Chile. Data inconsistent.
	R	e	16 20 24		
Aug. 22	B	iP	21 39 28.0	d	USCGS: 17½°S, 69½°W, 0 = 21 28 02. Peru-Chile border. h about 150 km.
	MH	iP	23.9		
	M	iP	33.4	c	
	R	eP	26.2		
	SH	iP	36.8	d	
Aug. 23	M	e	22 35 14		USCGS: 35½°N, 3°W, 0 = 22 21 30. Mediterranean Sea, north of Spanish Morocco. Felt at Melilla.
		e	37 32		
	R	eP	34 08		
	C	e	35 46		
	SH	eP	34 10		
Aug. 24	MH	e	12 38 51		USCGS: 53°N, 159½°E, 0 = 12 29 20. Kamchatka.
	M	eP	36.7		
	SH	eP	31		
Aug. 24	B	eP	15 54 24		USCGS: 10½°S, 161½°E, 0 = 15 41 40. Solomon Islands foreshock.
		e	35		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 24 (Cont.)	BP	e(S)	16 05 05		
		e	10 19		
		e	11 05		
		eR	20.5		
	MH	eP	15 54 25.4	c	
	F	eP	32		
	M	eP	29.0	c	
	R	iP	37.0	d	
	SH	iP	27.3	c	
Aug. 24	B	iP	21 43 29.7	c	USCGS: 10½°S, 161°E, O = 21 30 46. Solomon Islands. Magnitude 7 - 7¼.
	BP	ePP	46 55		
		eSN	54 05		
		e(PS)NZ	55 14		
		eSS	59 20		
		eGN	22 05.9		
		eR	09.0		
			mu sec		
		PZ	6.7 11		
		PH	4.65 12		
		SH	36.7 14		
	MH	i(P)	21 43 25.9	d	
		i	37.2	c	
	F	e(P)	38		
	M	iP	36.4	c	
	A	e	38		
	R	eP	42.0		
	C	e(P)	38.2		
	SH	iP	34.3	c	
Aug. 24	B	eP	23 45 07		USCGS: 10½°S, 161°E, O = 23 32 23. Solomon Islands aftershock.
	MH	iP	09.5		
	F	e(P)	16		
	M	e(P)	13.6		
	R	iP	19.8	d	
	SH	e(P)	06		
Aug. 24	B	eP	23 54 20	d	USCGS: 10½°S, 161½°E, O = 23 41 34.
	MH	e(P)	21.5		
	R	e(P)	32		
	SH	e	12		
Aug. 24	MH	iP	11 55 28	c	
	SH	eP	37		
Aug. 25	MH	eP	12 36 37.8	d	USCGS: O = 12 24 18, northern Chile
	F	eP	35		
	M	eP	43.7	d	
	R	e(P)	42		
	SH	eP	47		
Aug. 25	B	e(P)	13 52 57	d	USCGS: 6½°S, 155°E, O = 13 40 06. Solomon Islands.
	MH	i	53 03.3		
	F	eP	24		
	R	i(P)	12.1	d	
	SH	e	52 58		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 26	F	eP	02 42 35		USCGS: 5°S, 152°E, O = 02 29 37. New Britain. h about 150 km.
	M	eP	28.2		
	SH	iP	27.2		
Aug. 26	B	iP	05 34 17.9		BCIS: 34°03'N, 116°33'W. O = 05 32 51. Magnitude 4.3. Southern California (Pasadena). Felt in Morongo Valley. V.
		e	35 07		
		e	36 07		
	MH	iP	34 08.1	d	
		i	38.5		
		eE	35 09		
		eN	10.5		
		i	22.1		
	F	eP	33 58.4		
		iNZ	34 45.6		
	M	e(P)	45.2		
		i	36 02.1		
	SH	e	35 11		
		e	36 52		
	V	eP	34 04		
		iEZ	19		
	PA	eP	33 18.8		
Aug. 26	B	iP	08 31 54.7	c	USCGS: 18°N, 94½°W, O = 08 25 30. Vera Cruz, Mexico, 14 killed, many injured and extensive damage throughout Tehuantepec Isthmus. Magnitude 6-3/4.
	BP	iPcP	34 49.2		
		iPNEZ	31 55		
		eSNEZ	37 03		
		e	39.7		
	BG	eGNE	42.6		
		eRNEZ	49.0		
			R from SE		
			mu sec		
		PZ	7 4		
		PH	5.3 4		
		SH	22.5 14		
	MH	iP	08 31 48.7	c	
		i	32 02.1	d	
		e	44.9		
	F	iP	31 33.9	c	
	M	iP	32 02.9	c	
	A	iP	18.3	c	
	C	iP	33.4	c	
	SH	iP	07.3	c	
	V	eP	31 44.1		
	PA	iP	52.4		
Aug. 26	B	iP	10 31 04.1	d	USCGS: 51°N, 132°W, O = 10 27 41. Queen Charlotte Islands region. Magnitude 7.
	BP	iPNEZ	04	cSE	
		e(S)NEZ	33 45		
			mu sec		
			120 11		
	MH	eP	10 31 11.2	c	
		eNEZ	34 08		
	F	iP	31 26.5		
	M	eP	30 35.7	c	
		e	34.3		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 26 (Cont.)	A	iP	30 19.6	d	
	C	iP	29 34.9	c	
	SH	iP	30 28.2	c	
	V	eP	31 21.1	c	
Aug. 26	PA	eP	08.8	c	
	MH	i	11 36 43.1		
	F	e	48		
	M	e	35 50		
Aug. 26	C	e	13		
	SH		45		
	B	e(P)	13 04 48		USCGS: 50½°N, 130½°W, 0 = 13 01 26. Queen Charlotte Islands region.
	MH	iP	04 57.3	c	
Aug. 26	F	iP	05 02.6	d	
	M	iP	04 22.2	c	
	A	e(P)	06		
	C	iP	03 24.2	d	
Aug. 26	SH	iP	04 14.7	c	
	B	i(P)	20 15 35.7		
	BP	eR	22.5		
			R from S		
Aug. 27	MH	iP	08 05 54.5	c	USCGS: 0, 122°E, 0 = 07 50 28. Northern Celebes. h about 200 km.
	M	eP	06 03.7	c	
Aug. 27	SH	iP	01.9	d	
	F	e(P)	09 52 21	d	BCIS: 18°27'N, 94°16'W, 0 = 09 46 20.
	M	eP	48.9		
	C		53 19.2	d	
Aug. 27	SH		52 52		
	BP	eRNZ	12 50.5		BCIS: 0 = 11 59 42. Aftershock of the Lake Hebgen earthquake of August 18th.
	M	eP	12 02 09.3	c	
		i	39.9	c	
Aug. 27	C	e	17		
	SH	e	30		
	F	iP	13 36 29.6	c	
	M	iP	35 38.2	d	
Aug. 27		i	50.8		
	A	e(P)	31.9		
	C	iP	34 38.0	c	
	SH	eP	35 30		USCGS: 45°S, 80½°W, 0 = 13 36 50. Off coast of southern Chile.
Aug. 27	MH	iP	13 49 51	c	
	M	eP	50 09		
Aug. 27	SH	eP	12		
	SH	eP	15 02 36		BCIS: 40-3/4°N, 152½°E, 0 = 14 52 21. Sea of Okhotsk. h about 200 km.
Aug. 27	SH	e(P)	23 36 42		BCIS: 0 = 23 34.0. Hebgen Lake aftershock.
Aug. 28	B	iP	01 53 33.8		38.1°N, 118.2°W, 0 = 01 52 38. Southeast of Hawthorne, Nevada. Magnitude 4.3.
		e(S)	54 16	d	
	MH	iP	53 24.8		
	F	iSNEZ	54 00.1	c	
		iP	53 12.0		
		iE	36.6		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 28 (Cont.)	M	eP	35.6	d	
		i	54 23.6		
	A	e(P)	54 17.3		
	SH	e(P)	53 45		
Aug. 28	V	i	55.3		
		ePEZ	30.2		
		iSEZ	54 06.4		
	PA	iP	53 27.4		
Aug. 28	SF	i(S)E	54 14.4		
		eE	53 40		
		iE	54 22.6		
	F	eP	02 07 14		USCGS: 48°N, 155°E, 0 = 01 56 56. Kurile Islands.
Aug. 28	SH	eP	06 46		
	B	eP	02 49 47		USCGS: 9°S, 158°E, 0 = 02 37 00. Solomon Islands. h about 150 km.
	MH	eRNZ	03 17		
		iP	02 49 53.0	d	
Aug. 28		i	50 16.7		
	F	e(P)	49 49		
	M	e	49.9		
	SH	eP	49 44		
Aug. 28	B	iP	12 13 56.3	c	USCGS: 63½°N, 149°W, 0 = 12 07 44. Central Alaska. Felt at College and Fairbanks.
	BP	e(S)N	19 23		
		e	21 01		
		eRNZ	23.9		
Aug. 28	MH	iP	12 14 03.7	c	
		i	16 59.9		
	F	iP	14 12.5	c	
	M	iP	13 38.3	c	
Aug. 28		i	16 59.9		
		e	20 32		
	A	e(P)	12 13 27.5		
	C	iP	12 59.9	d	
Aug. 28	SH	iP	13 33.1	c	
	B	eP	16 04 55		USCGS: 17°S, 167°E, 0 = 15 52 10. New Hebrides Islands.
	BP	eR	16 31		
	MH	eP	04 56.0	d	
Aug. 29	F	eP	05 02		
	M	eP	02.6	d	
	B	iP	17 15 24.9	d	USCGS: 52°N, 106½°E, 0 = 17 03 10. Lake Baikal, U.S.S.R. Magnitude 6-3/4.
		e	16 46		
Aug. 29		e	19 59		
	BP	iP	15 25	dNW	
		ePP	18 30		
		eSNE	25 33		
	eN	26 32			
	eNE	27 05			
	eSSNE	31 11			
	eGNE	37.0			
	PZ	4.2	9		
	PH	2.3	8		
	SH	4.2	10		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 29 (Cont.)	MH	iP	17 15 28.8	d	
		ePP	18 35		
	F	iP	15 35.2		
	M	iP	14.0	d	
	A	iP	07.1	d	
	C	iP	14 50.7	d	
	V	iPEZ	15 33		
Aug. 29	MH	iP	21 33 12	c	USCGS: 17°S, 168°E, 0 = 21 20 27. New Hebrides Islands.
	M	e	55		
Aug. 30	SH	iP	01 42 48.1	c	BCIS: 35.2°N, 140.9°E, 0 = 01 31 20. Off the coast east of Hondo, Japan. h about 70 km. (JMA Japan)
					USCGS: 8°S, 156½°E, 0 = 02 53 08. Solomon Islands.
Aug. 30	F	e	03 10 26		
	M	eP	09 33	d	
	C	eP	08 33.5		
	SH	eP	09 24		
Aug. 30	F	e(P)	03 37 57		USCGS: 35½°N, 3°W, 0 = 03 24 54. Mediterranean Sea, north-of Spanish Morocco. Felt at Melilla.
	M	eP	34		
	C	eP	27		
	SH	eP	35		
Aug. 30	MH	iP	11 34 50.4	d	BCIS: 0 = 11 22.8. To the south of Tonga Islands.
	M	eP	35 13.7		
	C	e(P)	23.7		
	SH	iP	13.0	d	
Aug. 30	B	iP	13 50 21.9	(d)	USCGS: 63°N, 150°W, 0 = 13 44 09. Central Alaska.
	MH	iP	28.0	d	
	M	iP	05.1	c	
		e	27.7		
	C	eP	49 26.3		
	SH	eP	50 00		
Aug. 30	MH	iP	14 45 04.2	d	
	M	eP	44 58.5	c	
	C	e	44		
	SH	iP	55.2		
Aug. 30	M	iP	16 25 48.0	d	
		e	26 47.9		
	C	eP	24 48.2		
	SH	e(P)	25 25		
Aug. 30	BP	eE	22 31 29		USCGS: 36½°S, 78½°E, 0 = 21 45 07. Indian Ocean.
		eE	37 07		
		eE	38 33		
		eR	23 01		
			R from W		
	MH	i	22 07 39.9		
		e	10 44		
	F	e	05 23		
	SH	eP	06 05		
		e	07 34		
Aug. 30	A	e	23 48 38		USCGS: 53°N, 106°E, 0 = 23 36 42. Lake Baikal aftershock.
	C	i(P)	20.9	c	
	SH	iP	40.6	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Aug. 31	MH	iP	04 43 24	c	
	M	eP	42 50	c	
	C	e	25		
	SH	eP	47		
Aug. 31	B	i(P)	09 13 08.9		USCGS: 52½°N, 171°W, 0 = 09 05 56. Fox Islands, Aleutian Islands.
	MH	iP	15.1	c	
	F	iP	28.0	c	
	M	iP	12 59.6	c	
	A	eP	44.1		
	C	iP	29.0	c	
	SH	iP	51.8	c	
Aug. 31	MH	iP	13 37 37.3	d	BCIS: 21°S, 172½°E, 0 = 13 25 02. Southeast of New Hebrides.
	F	e(P)	44		
	M	e(P)	41		
	SH	e(P)	54		
Sept. 1	MH	iP	00 49 12.5	d	USCGS: 0 = 00 38 27. Peru aftershock.
	M	eP	03.9		
Sept. 1	B	e(P)	01 02 53.0		USCGS: 11°S, 74½°W, 0 = 00 52 04. Peru. Felt: Huancayo.
	MH	iP	50.4	c	
	F	e(P)	40		
	M	e	03 21.1	c	
	A	e(P)	13		
	SH	e(P)	09.6		
Sept. 1	MH	i(P)	07 38 29.1	d	BCIS: 54°N, 35½°W, 0 = 07 28 23. Mid-Atlantic ridge.
	F	eP	22		
	M	iP	09.5	c	
Sept. 1	B	e(P)	10 59 11.7		USCGS: 20°N, 64½°W, 0 = 10 49 43. North of Puerto Rico.
		e	31		
		eE	11 06 27		
		eEZ	20 04		
	MH	iP	10 58 58.4	d	
		i	59 09.2		
	F	eP	58 46		
	M	iP	59.3		
	SH	eP	59 00		
Sept. 1	B	e(P)	11 51 11		USCGS: 41½°N, 20°E, 0 = 11 37 42. Albania: 2 killed, 34 injured, and extensive property damage.
	BG	eSKSNE	12 02 17		
		e NE	08 40		
		eLNE	18 48		
			R from NE		
	MH	iP	11 51 05.1	c	
	F	eP	02		
	M	eP	50 52		
		e	51 01		
	C	e(P)	50 38.4		
	SH	e(P)	51		
		e	51 00		
Sept. 2	MH	iP	08 09 06.0	c	USCGS: 60°N, 151°W, 0 = 08 03 00. Kenai Peninsula.
	M	eP	08 42.9	d	
	C	e(P)	17		
	SH	eP	38		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 2	MH	iP	09 40 50.0	c	USCGS: 20°N, 65°W, 0 = 09 31 36. Puerto Rico aftershock.
	M	e(P)	50	c	
	SH	eP	53.7		
Sept. 2	M	iP	13 01 42.2	d	USCGS: 55°N, 164°E, 0 = 12 52 20. Near east coast of Kamchatka.
	C	e(P)	00 46.0		
	SH	eP	01 10		
Sept. 3	B	eP	02 50 13		USCGS: 20½°S, 178½°W, 0 = 02 39 04, h about 550 km. Tonga-Fiji region.
	MH	iP	14.2	c	
	M	eP	24		
	SH	eP	23		
Sept. 3	BP	ePP	06 46 49		USCGS: 41½°S, 123°E, 0 = 06 27 30. Celebes Island.
		eN	54 42		
		eEZ	56 31		
		eEZ	07 02 59		
		eGN	13.3		
	MH	i(P)	06 43 19.3	c	
		iPP	47 04.1		
		ePP	46 11		
	M	ePP	23		
	SH	ePP	07 15 54.2	c	
Sept. 4	M	iP	48		
	SH	e(P)	09 05 52.5	d	USCGS: 4½°S, 152°E, 0 = 08 52 55, h about 100 km. New Britain.
Sept. 4	MH	iP	51.2	c	Felt: Rabaul.
	M	eP	48		USCGS: 31½°S, 177°W, 0 = 12 30 00. Kermadec Islands.
	SH	eP	12 42 48		
Sept. 4	MH	eP	55		
	F	eP	57		
	M	eP	43 04		
	R	eP	42 52		
	SH	e(P)	17 59 09		USCGS: 21½°N, 142°E, 0 = 17 47 15, h about 250 km. Mariana Islands.
Sept. 4	M	eP	05		
	SH	eP	18 00 00		
		ePP	19 30 34		USCGS: 52½°N, 168½°W, 0 = 19 22 32. Fox Islands, Aleutian Islands.
Sept. 4	F	e(P)			USCGS: 1°N, 129°E, 0 = 06 07 38. Halmahera Island region.
Sept. 5	BP	e(SKS)E	06 32 32		
		e(SS)E	42 39		
		e(SSS)E	46 46		
		e(G)EZ	51.5		
		eR	55 14		
		e(PP)	26 29		
	F	e(PP)	17		
	R	e(PP)	05		
	SH	e(PP)	08 15 40.2	c	40.3°N, 127.5°W, 0 = 08 14 29. Magnitude 4.5. Off the coast west of Arcata, California.
Sept. 5	B	iPNEZ	50.3		
	MH	iP	16 13		
	F	eP	15 36.6	c	
	M	iP	16 24.7		
		iS	15 11		
	A	e(P)	16 25		
	R	e(P)	15 49.2		
	C	eP	29.5		
	SH	iP	16 09.7		
		eS			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 5 (Cont.)	PA	iP	15 44.5	(d)	
	SF	iPNE	39.3		
	V	iPNZ	57.8		
Sept. 5	F	eP	21 20 30		USCGS: 51½°N, 179½°E, 0 = 21 12 02. Rat Islands, Aleutian Islands.
	M	e(P)	19 54		
	R	e(P)	20 09		
	SH	e(P)	19 50		
Sept. 5	MH	eP	21 36 47	c	USCGS: 51°N, 179½°E, 0 = 21 28 42. Rat Islands, Aleutian Islands.
		i	37 53.6		
	F	eP	00		
	M	e	36 37		
	R	eP	44		
	C	e(P)	06		
	SH	eP	26		
Sept. 5	B	iP	23 16 00.7	c	USCGS: 18°S, 178½°W, 0 = 23 05 00, h about 550 km. Fiji Islands.
	MH	iP	02.1	c	
		epP	18 02		
	F	iP	16 05.9	c	
	M	iP	10.2	c	
	R	iP	14.2	c	
	C	iP	18.1	c	
	SH	iP	09.5		
Sept. 6	M	eP	03 58 58		
	C	eP	40		
	SH	eP	53		
Sept. 6	M	e(SKS)	04 33 55		USCGS: 10°S, 160½°E, 0 = 04 10 54. Solomon Islands.
	R	i(SKS)	34 10.8	c	
	SH	e(SKS)	27		
Sept. 6	MH	iP	18 18 05.4	d	BCIS: 22°S, 180°, 0 = 18 06.0. Fiji Islands.
	M	eP	18 14		
	SH	eP	18 12		
Sept. 6	MH	iP	19 06 46.8	c	USCGS: 0 = 18 55 09, h about 150 km. Peru-Bolivia border.
		ipP	07 07.4	c	
	F	eP	06 43		
	M	e(P)	07 02		
	R	iP	09.1	c	
	C	e(P)	23		
	SH	iP	05.1		
Sept. 7	F	eP	06 45 59		BCIS: Hebgen Lake, Montana, aftershock. 0 = 06 42.0.
	SH	eP	34		
Sept. 8	F	e(P)	07 12 56		USCGS: 45°N, 111½°W, 0 = 07 09 48. Hebgen Lake, Montana, aftershock. Felt.
	R	eP	30		
		i	14 12.6		
	C	e(P)	12 18		
	SH	e(P)	17.9		
Sept. 8	MH	iP	10 15 03.0	d	USCGS: 36½°N, 140°E, 0 = 10 03 29, h about 100 km. Honshu, Japan. Felt.
	F	e(P)	11		
	R	e(P)	16		
	C	iP	14 34	d	
	SH	iP	49.8	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 8	B	eP	13 32 03		USCGS: South Atlantic Ocean, about 700 miles east of Bouvet Island. O = 13 12 04.
	MH	i(P)	02.6	c	
	F	iP	01.2	c	
	R	iP	04.6	c	
	SH	e	04.7		
Sept. 8	F	eP	19 31 02		USCGS: 42½°N, 142½°E, O = 19 19 39, h about 100 km. Hokkaido, Japan. Felt.
	M	eP	30 32		
	R	e(P)	36		
	SH	iP	29.0	d	
Sept. 8	B	eP'	19 43 09		BCIS: 54½°S, 22°E, O = 19 23 06. South Atlantic Ocean, Bouvet Island region.
	MH	iP'	08.5	c	
	F	eP'	42 59		
	R	eP'	43 11		
Sept. 8	B	iP	20 37 40	d	USCGS: 58½°S, 24½°W, O = 20 18 37. Sandwich Islands.
	MH	iP	39.5	d	
	M	iP	42.9	d	
	R	iP	40.3	d	
	SH	iP	43.3	d	
Sept. 10	B	eP	05 47 58	c	USCGS: 6½°S, 154½°E, O = 05 35 04. Solomon Islands.
		e	48 11		
	BP	eREZ	06 14.8		
			R from W		
	MH	iP	05 48 00.7	c	
	F	iP	07.4	c	
	R	iP	08.9	c	
	SH	iP	00.7	c	
Sept. 10	B	eP	23 06 53		USCGS: 47°N, 152°E, O = 22 56 34. Kurile Islands.
	MH	iP	59.1	c	
	F	e(P)	07 09		
	M	iP	06 46.5		
	R	iP	56.8	c	
	C	iP	22.8	d	
	SH	iP	41.8	d	
Sept. 11	MH	i(P)	02 44 00.5	c	USCGS: 17°S, 178°W, O = 02 32 11. Fiji Islands.
	F	iP	05.3	d	
	M	eP	10		
	SH	iP	08.9	c	
Sept. 11	MH	iP	12 42 05.0	c	BCIS: 43°N, 23°W, O = 12 31 01. Mid-Atlantic ridge.
	M	eP	41 52		
Sept. 11	MH	eP	14 29 11.7	d	USCGS: 42½°N, 29½°W, O = 14 18 07. North of Azores Islands.
	F	eP	06		
	M	eP	00		
	R	e	10		
	SH	eP	00		
Sept. 12	B	eP	01 52 44		USCGS: 20°S, 68°W, O = 01 41 03, h about 150 km. Southern Bolivia.
		epP	53 10		
	MH	iP	52 41.2	d	
		ipP	53 09.4	c	
	F	e	52 58		
	M	eP	56		
		ipP	53 31.2	c	
	R	iP	52 43.1	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 12	C	iP	53 38.9	d	(Cont.)
	SH	iP	52 53.7	d	
		ipP	53 20.9		
Sept. 12	B	eP	02 07 13		USCGS: 3°S, 146½°E, O = 01 53 47. Bismarck Sea.
	BP	iSN	18 18		
		iPSEZ	19 37		
		eSSEZ	24 31		
		eQN	31.7		
		eREZ	35.7		
			R from W		
			mu sec		
		MaxH	16 40		
	MH	eP	02 07 11		
		e(PP)	11 17		
		i(SP)	19 52.6		
	F	eP	07 18		
	M	e(P)	16		
	R	e(P)	23		
	SH	eP	09		
		e(PP)	59		
Sept. 12	BP	eSSEZ	07 31.8		USCGS: 3°S, 146½°E, O = 07 01 45. Bismarck Sea.
		eGN	40.1		
		eREZ	43.8		
			R from W		
	MH	e(P)	07 15 08		
	F	eP	20		
	M	e(P)	06		
	R	e	17		
	SH	e(P)	03		
Sept. 12	B	eP	07 28 49		
	MH	i(P)	40.8	c	
	M	eP	29 07		
	R	eP	48		
	SH	eP	29 14		
Sept. 12	B	eP	11 37 27		USCGS: 9½°S, 156°E, O = 11 24 27. Solomon Islands region.
	BP	eSN	48 09		
		eSSEZ	54.1		
		eGN	12 01.0		
		eREZ	04.3		
			R from W		
	MH	iP	11 37 30.6		
	F	eP	37		
	M	eP	33		
	R	iP	39.3	c	
	SH	eP	30		
Sept. 12	B	eP	17 04 31		USCGS: 17½°N, 106°W, O = 16 59 05. Off coast of Jalisco, Mexico.
	MH	iP	25.1	d	
	F	eP	12		
	M	iP	47.2	c	
	R	iP	35.0	c	
	C	iP	05 24.6	c	
	SH	iP	04 50.9	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 13	MH	iP	14 02 54.5	d	BCIS: 50-1/4°N, 18-3/4°E, 0 = 03 05.6. Zabrze region, Poland. USCGS: 45°N, 111°W, 0 = 19 49 36. Hebgen Lake, Montana, aftershock.
	M	eP	03 11		
	R	e(P)	07		
Sept. 13	B	eP	19 52 24		
	BP	eNE	54 47		
	B	e	55 27		
	MH	eP	52 20	c	
		e	55 15		
	F	eP	52 16		
		e	55 05		
	M	eP	51 56		
		i	52 19.8		
		e	54 18		
	R	eP	51 57		
		iN	54 02.4		
	C	eP	51 48	d	
		iE	54 13.0		
Sept. 13	SH	iP	51 55		
	MH	eP	20 43 33		
		e	46 31		
	F	e	43 23		
	M	iP	25.0		
		i	45 34.0		
	R	eP	43 12		
	C	eP	42 51		
Sept. 13	SH	eP	43 31		
	B	e	21 29 26		
	MH	i(P)	26 25.2		
		e	29 18		
	F	eP	26 19		
	M	iP	13.4	d	
		i	28 24.3		
	R	e	25 57		
		i	27 57.8		
	C	eP	25 41		
		i	28 16.3		
	SH	eP	25 50		
Sept. 14	B	eP	08 55 13	d	
	MH	iP	16.7	d	
	M	iP	12.9	d	
	C	eP	00	d	
	SH	iP	09.3	d	
Sept. 14	B	e(P)	09 37 41		
	BP	e	39 43		
	MH	iP	37 35.8	d	
		e	40 38		
	F	eP	37 29		
		e	40 11		
	M	e(P)	37 06		
		i	39 20		
	A	e	40 31		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 14 (Cont.)	R	eN	37 17		
		i	39 17.5		
	C	iP	37 03.1	d	
		i	39 42.1		
Sept. 14	SH	eP	37 12		
	B	eP	13 28 06		USCGS: 24°S, 176½°W, 0 = 13 15 49. Tonga Islands region. Magnitude 5-3/4 - 6.
		e	31 27		
	BP	iSNE	38 15	NW	
		e(SS)E	43.3		
		eGNE	48.2	SE	
		eRNEZ	53.7		
			R from SW		
			mu sec		
		PZ	0.6 7		
		SH	1.1 24		
		MaxH	4.0 20		
	MH	iP	13 28 05.3	c	
	F	iP	09.5		
	M	eP	15	c	
	R	iP	23.0		
	C	eP	27		
	SH	iP	14.6	c	
Sept. 14	B	iP	14 22 13.6	c	USCGS: 28½°S, 177°W, 0 = 14 09 39. Kermadec Islands. Felt on Raoul. Magnitude 7-3/4 - 8.
	BG	iSNE	32 55		
		eR	47.8		
			mu sec		
		PZ	17 9		
		PH	13 11		
		SH	150 17		
	MH	iP	14 22 14.0	c	
		i	25 55.2		
	F	iP	22 17.4	c	
	M	eP	23		
	A	eP	20		
	R	i(P)N	28.6		
	C	iP	34.9	d	
	SH	iP	22.8	c	
Sept. 14	MH	iP	14 31 50.2	c	
	R	eN	07		
Sept. 14	SH	e	24		
	B	eP	14 45 27		
	MH	iP	20.6	d	
		i	47 39.9		
	F	eP	45 07		
	M	iP	42.7	c	
		e	49 31.1		
	R	i(P)	45 30.0		
	SH	iP	46.6	c	
		e	48 21		
Sept. 14	B	eP	15 11 15		USCGS: 28½°S, 176½°W, 0 = 14 58 40. Kermadec Islands.
	F	iP	19		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 14 (Cont.)	M	eP	26		
	R	eN	12 06		
	SH	iP	11 24.3		
Sept. 14	MH	i(P)	17 08 47.3	c	USCGS: 29°S, 176½°W, 0 = 16 56 13. Kermadec Islands. Felt: Raoul.
	F	eP	50		
	M	e(P)	09 02		
Sept. 14	B	iP	17 18 48.5		USCGS: 29°S, 176½°W, 0 = 17 06 15. Kermadec aftershock. Felt: Raoul.
	BG	i(S)N	29 15		
			R from SW		
	MH	iP	17 18 44.0	d	
	F	eP	51	c	
	M	eP	57		
	R	iP	19 01.5	d	
	C	eP	08		
	SH	eP	18 57		
Sept. 14	MH	iP	17 32 53.6	c	USCGS: 46°N, 151½°W, 0 = 17 22 28. Kurile Islands.
	M	iP	41.1	c	
	R	e(P)	52		
	C	iP	18.2	c	
	SH	iP	36.8	c	
Sept. 14	MH	eP	20 39 44		USCGS: 28½°S, 176½°W, 0 = 20 27 10. Kermadec Islands.
	F	eP	46		
	R	eP	40 17		
Sept. 14	BP	eP	22 36 26		USCGS: 29°S, 177°W, 0 = 22 23 53. Kermadec aftershock. Felt: Raoul. Magnitude 6½.
		eSNEZ	46 54		
		ePS	47 50		
		eSS	52 38		
		eSSS	56.0		
		eG	59 27		
		eRNEZ	23 02 15		
			R from SW		
			mu sec		
		SH	7.5 12		
		MaxH	23 20		
	MH	iP	22 36 27.2	d	
		i	37 17.2	c	
	F	eP	36 31		
	M	i(P)	47.0	c	
	R	e(P)	30		
	SH	eP	36		
Sept. 15	B	iP	01 54 11.9		BCIS: Kermadec Islands, 0 = 01 43 54.
	MH	iP	12.7		
	F	eP	18		
	M	eP	21		
	R	iP	25.9		
	SH	iP	19.8		
Sept. 15	MH	iP	05 06 23.5	c	
	M	iP	15.3		
	C	iP	00.2	c	
	SH	iP	12.3	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 15	B	iP	06 12 12.2	c	USCGS: 28½°S, 177°W, 0 = 05 59 42. Kermadec aftershock. Felt: Raoul. PAS: Magnitude 6-1/2 - 6-3/4.
	BP	iSKSNE	22 36		
	BG	iSNE	42		
	B	e	30 03		
	BP	e(G)	34.1		
		eR	41		
			R from SW		
			mu sec		
		PZ	5.7 8		
		PH	3.2 9		
		SH	75 17		
	MH	iP	06 12 12.6	d	
	F	iP	16.2	c	
	M	eP	21		
	A	iP	18.0	c	
	R	iP	25.2	c	
	C	iP	32.3	c	
	SH	iP	20.9	d	
	V	eP	10		
Sept. 15	B	eP	06 21 08		USCGS: 28½°S, 176½°W, 0 = 06 08 35. Kermadec Islands.
	MH	iP	08.3	d	
	F	eP	11		
	M	i(P)	17.9	d	
	R	e(P)	24		
	SH	eP	16		
Sept. 15	B	eP	06 30 00		USCGS: 28½°S, 176½°W, 0 = 06 17 28. Kermadec Islands.
	MH	iP	02.7	c	
	F	eP	04		
	M	eP	12		
	R	iP	14.6	c	
Sept. 15	SH	eP	09		
	MH	iP	08 13 04.9	c	
	F	eP	02		
	M	eP	08		
	R	e(P)	10		
	SH	iP	06.9	c	
Sept. 15	MH	iP	11 01 15.1	c	USCGS: 29°S, 177°W, 0 = 10 48 44. Kermadec Islands.
	M	eP	24		
	SH	iP	23.8	c	
Sept. 15	BP	iPNEZ	11 16 49	NEc	USCGS: 21½°S, 179½°W, 0 = 11 05 33, h about 600 km. Fiji Islands region. Magnitude 6¼ - 6½.
		ipP	18 53		
		isP	19 52		
		iSNE	26 09		
		esSNE	29 52		
		esSSE	34 58		
			mu sec		
		PZ	2.5 6		
		PH	1.4 6		
		SH	17 10		
	MH	iP	11 16 48.9	c	
		ipP	18 54.7		
	F	iP	16 53.6	c	
		epP	18 59		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 15 (Cont.)	M	iP	17 18.3	c	
		ipP	19 06.3		
	A	iP	16 52.4	c	
	R	iP	17 01.3	c	
		ipP	19 07.3		
Sept. 15	C	iP	17 06.5	c	
	SH	iP	16 51.0	c	
		epP	19 03		
	V	iPNZ	16 48.0	c	
	MH	i(P)	12 12 52.0	d	USCGS: 28½°S, 176½°W, 0 = 12 00 20. Kermadec Islands.
Sept. 15	M	eP	13 02		
	SH	iP	00.5	c	
	MH	iP	12 21 24.0	c	BCIS: Kermadec Islands, 0 = 12 08.9.
	M	eP	34		
	R	eP	45		
Sept. 15	SH	eP	34		
	B	i(P)	13 06 38.8		USCGS: 21½°S, 177½°W, 0 = 12 54 25. Tonga Islands region.
	MH	eP	40		
	F	eP	44		
	M	eP	48		
Sept. 15	R	iP	52.2	d	
	C	eP	57		
	SH	iP	47.6	c	
	MH	iP	13 58 52.0	d	USCGS: 29°S, 177°W, 0 = 13 46 17. Kermadec Islands.
	F	iP	55.0	d	
Sept. 15	M	eP	59 01		
	R	e(P)	05		
	SH	iP	00.1	c	
	F	e(P)	19 48 47		BCIS: Kermadec Islands, 0 = 19 36 13.
	M	eP	53		
Sept. 15	SH	eP	52		
	MH	iP	22 47 16.5		USCGS: 29°S, 176½°W, 0 = 22 34 42. Kermadec Islands.
	F	eP	24		
	M	eP	27		
	SH	iP	24.9	d	
Sept. 16	M	eP	02 48 59		USCGS: 29°S, 176½°W, 0 = 02 35 59. Kermadec Islands.
	R	e	48		
	SH	eP	44		
	B	e(P)	10 20 30		USCGS: 29°S, 176½°W, 0 = 10 07 45. Kermadec Islands.
	BP	eSNE	30 52		
Sept. 16		eNE	32 12		
		eRNEZ	45.1		
			R from SW		
	MH	iP	10 20 19.7		
	F	eP	24		
	M	eP	31		
	R	e(P)	35		
	SH	eP	30		
	B	eP	16 09 35		USCGS: 28½°S, 176°W, 0 = 15 57 03. Kermadec Islands.
	BP	iSNE	20 02	NW	
	eRNEZ	37.2			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 16 (Cont.)	MH	iP	09 36.0	c	
	F	iP	38.2	c	
	M	iP	47.4	c	
	R	eP	49		
	C	eP	58		
Sept. 17	SH	iP	44	c	
	MH	e	00 27 57		USCGS: 45°N, 112°W, 0 = 00 25 31. Hebgen Lake aftershock.
	F	eP	28 36		
	M	eP	10		
	R	e(P)	27 52		
Sept. 17	C	e	30 05		
	SH	eP	28 07		
	MH	iP	03 52 08.0		BCIS: Kermadec Islands, 0 = 03 39 35.
	F	e(P)	11		
	M	eP	18		
Sept. 17	R	eP	21		
	SH	eP	16		
	BP	eSNE	07 33 38		BCIS: Kermadec Islands, 0 = 07 10.3.
		eRNEZ	48.9		
			R from SW		
Sept. 17	MH	eP	07 23 03		
	F	eP	06		
	M	e(P)	12		
	R	e(P)	26		
	SH	eP	23		
Sept. 17	MH	iP	08 51 57.7	d	BCIS: Kermadec Islands, 0 = 08 39.2.
	F	eP	49		
	M	e(P)	55		
	SH	eP	54		
	B	eP	12 31 57		
Sept. 17		e	32 21		
	MH	iP	31 52.8	d	
	V	(e)P	51		
	MH	iP	14 20 24.9	c	USCGS: 28½°S, 176°W, 0 = 14 07 54. Kermadec Islands.
	F	iP	28.3		
Sept. 17	M	e(P)	35		
	R	e(P)	38		
	SH	iP	33.9	c	
	B	eP	14 48 41	c	USCGS: 28½°S, 176°W, 0 = 14 36 11. Kermadec Islands. Magnitude 5-3/4 - 6.
		e	49 01		
Sept. 17	BP	eSNE	59 09		
		eRNEZ	15 16		
			R from SW		
			mu sec		
		PZ	0.7 4		
Sept. 17		SH	2.2 9		
	MH	iP	14 48 41.9	c	
		i	49 09.7		
	F	eP	48 44		
	M	eP	52		
Sept. 17	R	iP	54.4	c	
	C	eP	49 02		
	SH	iP	48 51.1	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 17	MH	iP	15 04 13.9	c	USCGS: 28½°S, 176½°W, O = 14 51 40. Kermadec Islands.
	F	e(P)	15		
	M	e	33		
	R	e(P)	35		
Sept. 17	SH	eP	22		BCIS: Kermadec Islands, O = 17 13 21.
	B	eP	17 25 53		
	MH	iP	51.2	c	
	F	eP	53		
Sept. 17	M	eP	26 01		USCGS: 13½°N, 88½°W, O = 21 24 27, h about 60 km. El Salvador. Felt.
	R	e	06		
	SH	iP	25 59.1	c	
	B	eP	21 31 46		
Sept. 17	MH	iP	31 41.2	d	USCGS: 30½°N, 114°W, O = 22 14 40. Gulf of California.
	F	eP	26		
	M	iP	54.4	c	
	A	i(P)	32 23.5	d	
	R	iP	31 40.8	d	
	C	e(P)	32 28.2		
	SH	eP	31 56		
	B	iP	21 33 58.6		
		i	34 13.3		
		iP	33 56.7	d	
Sept. 17	F	eP	41		USCGS: 57½°S, 24°W, O = 12 01 11. Sandwich Islands.
	M	iP	34 00.6	d	
	C	iP	11.7	d	
	SH	iP	01.7	c	
	B	e(P)	22 16 51		
		eRNEZ	19.2		
		R from SE	16 58		
	MH	e	16 58		
	F	iP	42.5	c	
	M	eP	17 32		
Sept. 18	A	e(P)	51		USCGS: 13½°S, 111½°W, O = 06 07 59. Pacific Ocean, north of Easter Island.
	R	iP	13.7	c	
	C	eP	18 28.0		
	SH	e(P)	17 37		
Sept. 20	B	iP	12 20 13.7	d	USCGS: 83½°N, 112½°E, O = 05 43 38. North Polar region.
		e	26.8		
	MH	iP	13.0		
		i	27.0		
	F	iP	11.0	d	
	M	iP	16.9	d	
	C	e(P)	24		
	SH	iP	16.7	d	
	BP	eSE	06 24 43		
		eSSNEZ	28 30		
	eGE	30			
	eRNZ	32			
	R from S				
	mu	sec			
	SH	2.5	21		
	MaxH	4.8	22		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 20 (Cont.)	MH	iP	06 17 08.8	c	USCGS: 9½°S, 149°E, O = 02 08 28. Near coast of New Guinea. Felt: Wanigella.
	F	eP	03		
	M	eP	21		
	R	iP	23.5	d	
Sept. 21	SH	eP	33		USCGS: 62½°N, 159°W, O = 16 16 19. Southwestern Alaska.
	B	eP	02 21 55		
	BP	eQN	46.8		
		eREZ	51.3		
Sept. 21		R from W			USCGS: 83½°N, 113½°E, O = 10 38 59. North Polar region.
	MH	iP	02 21 57.1		
	F	eP	22 03		
	M	e(P)	00		
	R	iP	05.2	c	
	SH	iP	21 56.7	c	
	B	iP	16 22 59.1	(c)	
	BP	eP	32		
	MH	iP	22 56.4	c	
	F	eP	23 15		
Sept. 22	M	iP	22 42.9	c	USCGS: 35½°N, 138½°E, O = 22 23 11. Honshu, Japan. Felt: Funatsu and Kofu.
	R	eP	56.7		
	C	e(P)	41		
	SH	iP	37.7	c	
	B	iP	07 52 49.6		
	BP	eQN	08 00.4		
		eREZ	01.4		
	MH	iP	07 52 45.4	c	
	F	e(P)	53 01		
	M	iP	52 27.4		
Sept. 23	A	i	54 25.8	d	USCGS: 83½°N, 112½°E, O = 05 43 38. North Polar region.
	R	eP	52 41		
	C	eP	51 57		
	SH	iP	52 21.7	c	
	B	eP	10 48 40.2		
		eRNEZ	11 06.5		
	MH	iP	10 48 44.6	c	
	F	iP	48.5	c	
	M	eP	22.8		
	R	iP	29.8		
Sept. 23	C	eP	47 57		USCGS: 83½°N, 112½°E, O = 05 43 38. North Polar region.
	SH	eP	48 20		
	B	iP	22 34 57.2		
	MH	e	35 24		
Sept. 24	F	eP	10		USCGS: 83½°N, 112½°E, O = 05 43 38. North Polar region.
	R	iP	01.4	d	
	C	iP	34 32.0	d	
	SH	iP	47.4	d	
	B	eP	05 53 18		
	BP	eRNZ	06 10.5		
		R from N			
	MH	i(P)	05 53 22.0	c	
	F	iP	26.3	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 24 (Cont.)	M	e(P)	13		
	R	iP	07.2	c	
Sept. 25	SH	eP	52 56		
	BP	eP	02 50 16	c	USCGS: 22°N, 122°E, 0 = 02 36 48. Near east coast of Formosa.
	B	iPP	53 54		
	BP	e(S)NE	03 00 58		
		i	02 47		
		iREZ	21.3		
			R from WNW		
			mu sec		
			PZ	0.8 15	
			PPZ	0.7 15	
Sept. 26		MaxH	2.7 29		
	MH	iP	02 50 19.1	c	
	A	e(P)	05		
	R	eP	20		
	C	ePE	49 59		
	SH	eP	50 08		
	BP	iPNEZ	08 22 37	NWd	43.7°N, 128.3°W, 0 = 08 20 48. Magnitude 6.1. Off coast of Oregon.
		iSN	23 55		
		iP	22 47.3	d	
		iP	43.4	c	
Sept. 26	M	iP	21.0	c	
	A	eP	21 52.6		
	R	iP	22 43.4	c	
	C	iP	21 45.2	c	
	SH	eP	22 08		
	V	eP	57		
	PA	eP	42		
	B	iP	10 30 06.4	c	USCGS: 22°S, 68½°W, 0 = 10 18 20, h about 150 km. Chile. Felt: Antofagasta.
	MH	iP	01.9	d	
	F	iP	29 51.7	c	
Sept. 28	M	eP	30 10.9	d	
	A	eP	22		
	R	iP	03.9	d	
	C	iP	32.1	c	
	SH	iP	14.2	d	
	R	eP	04 33 32		USCGS: 26½°N, 128°E, 0 = 04 20 27. Okinawa Islands.
	C	eP	01		
	SH	iP	11.8	d	
	F	e	08 08 27		USCGS: 45°N, 111°W, 0 = 08 05 42. Hebgen Lake. Felt: Ennis, Montana.
	M	e	07 55		
Sept. 29	R	eP	08 10		
		i	10 12.3		
	C	eP	07 49		
	SH	e(P)	08 25		
	B	eP	15 44 29		USCGS: 29°S, 176½°W, 0 = 15 31 57. Kermadec Islands.
	BP	iSNE	54 59		PAS: Magnitude 6-1/2 - 6-3/4.
	eRNEZ	16 09.8			
		R from SW			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Sept. 29 (Cont.)			mu sec		
		PZ	1.2 4.5		
Sept. 29		SH	8.7 19		
		MaxH	19 19		
	MH	iP	15 44 29.2	d	
	F	iP	31.6	c	
	M	eP	38		
	R	iP	42.8	c	
	C	i(P)	51.3	d	
	SH	iP	38.2		
	B	eP	15 53 57.6		USCGS: 29°S, 176°W, 0 = 15 41 21. Kermadec Islands.
		e	54 04		
Sept. 29	MH	iP	53 54.1		
	F	eP	54 00		
	M	iP	07.2	c	
	R	eP	09		
	SH	eP	06		
	MH	iP	16 20 21.2	d	
	M	eP	19 58		
	R	e	20 58		
	SH	eP	30		
	MH	eP	01 38 22		USCGS: 45°N, 111°W, 0 = 01 36 00. Hebgen Lake, Montana, aftershock.
Sept. 30	M	eP	25		
	R	e	31		
	C	e	55		
	SH	eP	25		
	MH	e(P)	05 08 57		USCGS: 28½°S, 176½°W, 0 = 04 56 21. Kermadec Islands.
	F	eP	59		
	M	eP	09 02		
	R	e(P)	09		
	SH	e(P)	02		
	MH	i(P)	13 44 02.7		USCGS: 29°S, 176½°W, 0 = 13 31 30. Kermadec Islands.
Sept. 30	F	eP	04		
	M	eP	13		
	R	eP	18		
	SH	iP	12.4	d	
	BP	eP	20 38 41	c	USCGS: 18°S, 168°E, 0 = 20 25 58. New Hebrides Islands. Felt: Port Vila and Vate. PAS: Magnitude 6½.
		i NE	50 28		
		iREZ	21 05.1		
			R from WNW		
			mu sec		
	MH	PZ	0.6 16		
Sept. 30		iP	20 38 43.1	c	
		i	39 15.0		
	M	iP	38 50.5	d	
	R	iP	56.7	d	
	C	i(P)	55.9	d	
	SH	iP	47.7	c	

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SAN FRANCISCO—FERNDALE—FRESNO
MINERAL—ARCATA—RENO—CORVALLIS—SHASTA
MANZANITA LAKE—VINEYARD

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From October 1, 1959, to December 31, 1959

BY

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Perry Byerly, Director

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and

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The list following this page gives the latitude and longitude of the epicenters for earthquakes which were well enough recorded to permit such a determination.

Map No. for each epicenter corresponds to a number plotted on the map which follows the list of epicenters.

Date and Origin Time are given in Greenwich Civil Time. Subtract eight (8) hours to convert to Pacific Standard Time (P.S.T.). This will change the date for some of the earthquakes.

M is the Richter Magnitude of the earthquakes as determined from the maximum trace amplitudes recorded for the shock by the standard Wood-Anderson Torsion Seismographs. In routine practice, the nomogram given by Nordquist in the "Bulletin of the Seismological Society of America," 32:164, is used for magnitude determinations.

Q indicates the excellence with which the epicenter has been located; "a" indicates excellent, "b" good, "c" fair, and "d" poor. Under Remarks will be found a short descriptive location of each epicenter, usually with reference to a point named on the map. Information on small foreshocks and aftershocks is sometimes included in the Remarks. When numerous foreshocks or aftershocks accompany a large earthquake, a separate table is generally included following the main list of local shocks, giving origin times, Richter Magnitudes, and, where significant differences in location can be determined, the geographic coordinates. The larger earthquakes of after-shock series are also included in the main list of local shocks.

Information on the intensities of shocks reported felt is also included under Remarks. Reports on felt earthquakes are chiefly those collected by the Seismological Field Survey of the United States Coast and Geodetic Survey, which publishes a more complete summary of such reports in "Abstracts of Earthquake Reports for the Pacific Coast and Western Mountain Region." This is a quarterly publication, and 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 are given by Roman numerals when sufficient information on the effects of the shock is available. These intensity numbers assigned by the Coast and Geodetic Survey are based on the Modified Mercalli Intensity Scale of 1931 (Harry O. Wood and Frank Neumann, "Bulletin of the Seismological Society of America," 21:277-283, 1931), the criteria of which follow in an abridged form.

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. Disturbed 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 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
1	Oct. 2	20-23-46.4	37° 24'	121° 50'	c	3.2	Northwest of Mt. Hamilton.
2	Oct. 4	12-50-55.3	37° 45'	122° 00'	c	2.6	Southeast of Berkeley.
3	Oct. 4	15-34-12	38.3°	119.2°	d	3.4	California-Nevada border.
4	Oct. 5	01-12-20	39.1°	122.7°	d	2.8	East of Ukiah, USCGS: reported felt.
5	Oct. 5	23-54-44.6	37° 42'	122° 04'	c	2.5	Southeast of Berkeley.
6	Oct. 7	02-41-32	37.5°	121.8°	d	2.5	Northwest of Mt. Hamilton.
7	Oct. 9	22-55-02	42.6°	119.0°	d	4.4	Southeastern Oregon.
8	Oct. 10	12-01-45.5	37° 30'	122° 54'	c	3.3	Southwest of San Francisco.
9	Oct. 11	02-03-09	36° 27'	121° 07'	c	4.1	Southwest of Llanada. Felt.
10	Oct. 11	10-47-30.5	37° 43'	122° 08'	c	2.0	Southeast of Berkeley.
11	Oct. 12	16-36-01.1	38° 00'	121° 47'	c	2.9	Northeast of Berkeley.
11	Oct. 12	23-48-33.0	38° 00'	121° 48'	c	2.7	Northeast of Berkeley.
	Oct. 13	07-29-25	43.2°	119.2°	d	4.0	Nevada-Oregon border.
12	Oct. 14	07-57-01	36° 52'	121° 29'	c	3.4	West of Hollister. Fore- shock of 0837.
12	Oct. 14	07-59-01	36.9°	121.5°	d	2.5	West of Hollister. Fore- shock of 0837.
12	Oct. 14	08-37-51	36° 52'	121° 29'	c	3.6	West of Hollister. Felt. No damage.
12	Oct. 14	08-46-26	36.9°	121.5°	d	2.9	West of Hollister. After- shock of 0837.
13	Oct. 14	10-29-42	36.7°	121.6°	d	2.5	Southwest of Hollister.
	Oct. 14	14-34-49	42.2°	118.4°	d	3.9	Nevada-Oregon border.
14	Oct. 16	08-05-43.7	39° 07'	119° 35'	c	3.0	Southeast of Reno, Nevada.
15	Oct. 17	07-41-38	37.0°	121.7°	d	2.7	East of Santa Cruz.
16	Oct. 18	13-45-32	37.9°	122.2°	d	2.1	Northeast of Berkeley.
17	Oct. 21	00-06-45	38.0°	118.0°	d	3.8	Southeast of Hawthorne, Nevada.
18	Oct. 23	20-40-38	40.6°	126.3°	d	4.4	West of Ferndale.
19	Oct. 24	04 01-13	37.0°	121.0°	d	2.5	Northeast of Vineyard.
20	Oct. 24	05-24-36.4	36° 38'	121° 13'	c	2.8	Southeast of Vineyard.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
21	Oct. 24	05-57-27	36.7°	120.6°	d	2.9	East of Vineyard.
22	Oct. 24	23-12-54.4	36° 28'	121° 24'	c	3.2	South of Hollister.
23	Oct. 25	03-33-13	36.5°	121.2°	d	2.4	Southeast of Vineyard.
24	Oct. 25	03-34-01.9	36° 30'	121° 19'	c	3.0	South of Vineyard.
25	Oct. 25	09-59-52	37.0°	121.3°	d	3.6	Southeast of Mt. Hamilton.
26	Oct. 25	14-47-00	37.0°	121.2°	d	2.8	Southeast of Mt. Hamilton.
27	Oct. 25	20-17-42	37.9°	118.8°	d	3.6	South of Hawthorne, Nevada.
28	Oct. 26	07-20-53	37.9°	118.6°	d	3.7	South of Hawthorne, Nevada.
29	Oct. 26	09-56-01	36.4°	121.1°	d	3.0	Southeast of Vineyard.
30	Oct. 26	23-05-27	38.0°	118.5°	d	3.8	South of Hawthorne, Nevada.
31	Oct. 27	03-46-27	38.0°	118.7°	d	3.3	South of Hawthorne, Nevada.
32	Oct. 27	06-12-17	42° 23'	126° 32'	c	5.1	Off coast of Oregon.
33	Oct. 27	08-13-18	37.5°	121.7°	d	2.6	North of Mt. Hamilton.
31	Oct. 27	17-26-22	38.0°	118.7°	d	3.6	South of Hawthorne, Nevada.
31	Oct. 27	20-15-26	38.0°	118.7°	d	3.7	South of Hawthorne, Nevada.
34	Oct. 28	02-31-32	39.6°	119.9°	d	3.7	Near Reno, Nevada.
28	Oct. 28	04-07-27	37.9°	118.6°	d	3.9	South of Hawthorne, Nevada.
31	Oct. 28	12-54-36	38.0°	118.7°	d	3.9	South of Hawthorne, Nevada.
35	Oct. 28	17-57-40	37.4°	121.5°	d	2.6	East of Mt. Hamilton.
36	Oct. 29	23-29-02	38.4°	122.5°	d	2.9	Southeast of Santa Rosa.
37	Oct. 30	03-06-33	39.7°	120.1°	d	4.1	Northwest of Reno, Nevada.
38	Oct. 31	17-36-40.7	41° 13'	125° 09'	c	3.6	Northwest of Arcata.
39	Oct. 31	19-42-14	41.3°	125.5°	d	4.5	Northwest of Arcata.
40	Nov. 1	12-29-18	40.1°	122.6°	d	2.8	South of Shasta.
15	Nov. 1	23-17-18	37.0°	121.7°	d	2.4	Northwest of Hollister.
41	Nov. 1	23-27-50	36.9°	121.7°	d	1.7	Northwest of Hollister.
42	Nov. 2	22-21-10	40.0°	120.4°	d	3.4	Northwest of Reno, Nevada.
43	Nov. 3	02-20-03	37° 27'	121° 47'	b	2.1	Northeast of Mt. Hamilton.
44	Nov. 4	06-33-33	37° 30'	121° 21'	c	2.3	Northeast of Mt. Hamilton.
45	Nov. 5	16-49-10	37° 53'	121° 36'	c	2.6	East of Berkeley.
46	Nov. 6	03-11-34	37.1°	118.4°	d	3.6	South of Bishop.
47	Nov. 7	12-11-37	38.4°	118.6°	d	3.8	Near Hawthorne, Nevada.
48	Nov. 7	17-23-23	37.9°	122.0°	d	1.8	East of Berkeley.
49	Nov. 8	10-18-03	38.5°	118.5°	d	3.5	Near Hawthorne, Nevada.

Map No.	Date 1959	Origin Time (G.C.T.)	Latitude North	Longitude West	Q	M	Remarks
50	Nov. 9	01-13-27	36° 32'	121° 13'	c	3.0	Southeast of Vineyard.
51	Nov. 11	00-12-01	39.3°	123.3°	d	3.2	Near Ukiah.
52	Nov. 12	04-37-20	36.6°	121.3°	d	1.7	South of Vineyard
53	Nov. 12	17-27-39	40.4°	124.2°	d	3.1	Southeast of Ferndale.
54	Nov. 15	07-06-39	38.3°	118.5°	d	3.4	South of Hawthorne, Nevada.
55	Nov. 15	19-05-41	38.3°	118.2°	d	3.4	Southeast of Hawthorne, Nevada.
56	Nov. 16	00-22-56	37.6°	122.4°	d	1.7	South of San Francisco.
57	Nov. 16	00-23-37	37.7°	123.2°	d	2.4	Off coast of San Francisco.
58	Nov. 17	02-02-13	40° 22'	125° 10'	c	4.1	Off Cape Mendocino.
59	Nov. 19	15-58-53	37° 05'	121° 50'	c	2.5	Northeast of Santa Cruz.
60	Nov. 19	23-52-19	38.4°	122.2°	d	2.4	East of Santa Rosa.
32	Nov. 19	23-53-45	42.4°	126.9°	d	5.1	Off coast northwest of Arcata.
61	Nov. 21	08-45-48	37.1°	121.6°	d	2.0	South of Mt. Hamilton.
62	Nov. 23	04-55-26	40.4°	124.4°	d	2.8	Southwest of Arcata.
63	Nov. 23	09-54-50	36° 35'	121° 18'	c	2.8	South of Vineyard.
52	Nov. 23	23-08-36	37° 12'	121° 41'	b	2.6	South of Mt. Hamilton.
64	Nov. 25	09-28-22	35.2°	121.2°	d	3.5	South of King City.
65	Nov. 26	07-02-05	36.4°	121.4°	d	2.7	South of Vineyard.
66	Nov. 26	21-37-26	36° 48'	121° 38'	c	2.7	West of Vineyard.
67	Nov. 27	12-59-04	39.8°	122.1°	d	2.7	Northwest of Chico.
68	Nov. 29	04-39-45	40.4°	124.9°	d	3.4	Southwest of Arcata.
69	Nov. 29	10-30-33	40.3°	126.4°	d	4.1	West of Arcata.
70	Dec. 2	09-44-43	37° 28'	121° 08'	b	3.6	East of Mt. Hamilton.
71	Dec. 2	22-16-09	36.7°	121.7°	d	2.6	West of Vineyard.
72	Dec. 3	15-36-04	40.3°	125.7°	d	4.3	Off Cape Mendocino.
73	Dec. 5	08-13-42	40° 18'	125° 25'	c	5.1	Off Cape Mendocino. Felt over an area of approximately 2,000 square miles of Humboldt County. No damage reported. Max. Int. V.
74	Dec. 6	08-04-15	40° 21'	121° 00'	c	3.6	East of Mineral.
75	Dec. 6	23-48-33	37.4°	123.3°	d	2.4	West of San Francisco.
76	Dec. 10	13-55-14	39.8°	120.2°	d	2.5	Northwest of Reno, Nevada.
77	Dec. 10	19-33-51	37.3°	122.2°	d	2.0	South of Palo Alto.

THE REGISTRATION OF EARTHQUAKES

Station	North Latitude	West Longitude	Altitude Meters	Station Symbol	Present Auspices and Date
Berkeley	37° 52.3'	122° 15.6'	81	B, BG*	University of California - 1887
Mt. Hamilton	37° 20.4'	121° 38.6'	1282	MH	Lick Observatory - 1887
Palo Alto	37° 25.1'	122° 10.8'	83	PA	Stanford University - 1927
San Francisco	37° 46.4'	122° 27.2'	100	SF	University of San Francisco - 1931
Ferndale	40° 34.6'	124° 15.7'	15	Fe	City of Ferndale - 1933
Fresno	36° 46.1'	119° 47.8'	88	F	Fresno State College - 1935
Mineral	40° 20.8'	121° 36.1'	1495	M	National Park Service, Lassen Volcanic National Park - 1938
Arcata	40° 52.6'	124° 04.5'	59	A	Humboldt State College - 1948
Reno	39° 32.3'	119° 48.8'	1386	R	University of Nevada - 1948
Corvallis	44° 35.1'	123° 18.2'	123	C	Oregon State College - 1950
Shasta	40° 41.7'	122° 23.3'	312	SH	Bureau of Reclamation - 1942
Manzanita Lake	40° 32.2'	121° 33.7'	1800	ML	National Park Service, Lassen Volcanic National Park - 1956
Vineyard	36° 45.0'	121° 23.0'	328	V	W.A. Taylor and Co. - 1959
Ruth	39° 14'	114° 59'	2270	R	Kennecott Copper Co. - 1959

*B denotes readings of short period instruments, BG of long period instruments (12 sec. Galitzin-Wilip).

Routine recording commenced October 4, 1959, at the new station at Ruth, Nevada. The station is being operated in cooperation with the California Institute of Technology.

On October 9, 1959, a Marion moving-coil vertical ($t_0 = 1.2$ seconds, $t_g = 0.3$ second) was added to the equipment of the San Francisco station.

On October 27, 1959, the Bosch-Omori N,E and Wiechert Z instruments were discontinued at the Berkeley station.

Earthquakes in the Northern California, Nevada, and Oregon region are included in the following list only if of magnitude 4.5 or greater, or if of special interest. Times are usually not reported for PA, SF, Fe, or ML unless of special interest or in case of defective records at other stations.

Measurement and interpretation of seismograms from all the above listed stations is done at Berkeley; requests for special data or for copies of seismograms should be addressed to Seismographic Station, University of California, Berkeley 4, California.

STATION EQUIPMENT

Type and Component

Short-period Benioff Z
 Short-period Benioff N, E
 Short-period Wood-Anderson N, E
 Short-period Sprengnether N, E, Z
 Short-period Marion moving-coil Z
 Short-period Slichter N, E, Z
 Short-period Wilson-Lamison Z
 Short-period Sprengnether Z
 Long-period Galitzin-Wilip N, E, Z
 25 kg Bosch-Omori, N, E
 Loucks-Omori N, E
 Short-period 100X Torsion N, E
 Long-period Press-Ewing N, E, Z

Station

B, MH, PA, M, SH
 SH
 B, MH, PA, SF, M, A, V
 F, R
 V, SF
 C
 C
 A
 B
 Fe
 ML
 B
 B, R

The three components are indicated by N, E, Z in the "phase" column of the following tabulation of readings. When no letter appears, the phase is read from the vertical component (Z) only. "i" (impetus) preceding a phase designates sudden beginning of the motion; "e" (emersio) designates gradual beginning.

In the column headed "Ground Motion", "c" or "d" indicates initial compression or dilatation of the ground as read from the vertical component instrument. N, S, E, or W indicates that the initial ground motion was north, south, east, or west, respectively.

Maximum amplitude of earth displacement in microns (μ) and periods in seconds (sec) of the indicated phases are given for the Berkeley station in the column headed "Time (GCT)." Combined horizontal amplitude of N and E components are designated by H.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 1	B	eP	04 36 35.1	c	USCGS: 34°N, 121°W, O = 04 35 30. Off coast of southern California. Slight damage in Santa Barbara area. Magnitude 4.8.
		eNZ	51		
	MH	e(S)E	37 11.3		
		iP	36 21.0		
	F	i(S)N	46.5		
		iE	37 05.3		
		eP	36 11		
		eE	40		
	M	eP	37 05.2		
		eE	38 20		
	R	eN	24		
		i	58.8		
		eP	36 58.3		
		i	38 19.2		
SH	eP	37 14	(c)		
	e(P)	36 14.5			
V	e(S)N	37 06.0			
	iP	36 11			
PA	e(S)N	40.5			
	eE	47			
SF	iE	37 13.6			
	iP	09 21 18.3	c		
MH	eP	09.6		d	
	e	24 18			
SH	e(P)	21 14	c		
	e	20 13 55			
MH	i	43.4	c		
	e(P)	42			
SH	eP	28	d		
	e(P)	09 21 17			
MH	e	20 35	d		
	iP	11 05 44.0			
M	e	06 34	d		
	e(P)	05 52			
R	e	47.5	c		
	eP	56			
MH	eP	09 25 00	c		
	eP	06			
SH	eP	05	c		
	eSNE	11 38 46			
B	eRNEZ	50.7	c		
	e	35 42			
MH	e	38 46	c		
	e	35 33			
M	e	41 04	c		
	e(P)	35 47			
SH	e	57	d		
	iP	16 05 59.7			
MH	eP	06 04	d		
	eR	18 22			
B	eR	18 22	d		
	iP	18 06 09.4			
MH	iP	18 06 09.4	d		
	iP	18 06 09.4			

USCGS: 14½°N, 142°E, O = 09 08 33. Mariana Islands region.

USCGS: 42°N, 146°E, O = 20 02 40. Off east coast of Hokkaido, Japan.

USCGS: 31°S, 70°W, O = 10 53 27. San Juan Province, Argentina. h about 150 km.

USCGS: 45°N, 111½°W, O = 11 33 14. Hebgen Lake, Montana, aftershock.

USCGS: 84°N, 113°E, O = 17 56 25. North Polar region.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 5 (Cont.)	F	eP	15		
	M	eP	05 47	c	
	R	eP	54.5		
	SH		44		
Oct. 5	F	eP	18 21 10		USCGS: 84°N, 113°E, 0 = 18 11 18.
	M	e(P)	20 42	c	North Polar region.
	R	e(P)	53		
Oct. 5	B	eP	18 37 29		USCGS: 83½°N, 112½°E, 0 = 18 27 47.
	BPG	iP	29		North Polar region.
	BP	iSNZ	45 21		Magnitude 5-3/4 - 6.
		eRNZ	54		
			R from NE		
			mu sec		
		PZ	0.8 6		
		SH	1.7 21		
		MaxH	3.4 30		
		MaxZ	2.5 30		
	MH	e	18 37 41.4		
	F	eP	40		
	M	eP	12		
	R		20.0	d	
Oct. 5	SH	e(P)	10		USCGS: 41°N, 20°E, 0 = 20 34 04.
	F	e(P)	20 47 29		Albania.
	M	eP	14		
	R	e	19		
Oct. 6	BP	eQNE	11 42.2		USCGS: 45°N, 111½°W, 0 = 11 37 21.
	MH	iP	40 00.5		Hebgen Lake, Montana, aftershock.
		i	30.4		
		e	42 54		
	F	eP	40 04.5		
		eEZ	42 40		
	M	eP	39 32.8		
		i	54.6		
		i	41 02.2		
	SH	e(P)	39 41		
	R	e(P)	25		
		e	43		
		i	41 24.1		
	C	eP	39 26		
		i	41 47.7		
Oct. 7	B	eP	08 44 03	(c)	USCGS: 41°N, 20°E, 0 = 08 30 39.
	BP	eSNE	55 18		Albania.
		eRN	09 13 30		
	MH	iP	08 44 04.6	c	
		i	47 52.8		
	F	eP	44 04		
	M	eP	43 52	c	
	R	iP	52.3	c	
	C	iP	37.1		
	SH	eP	52		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 8	B	iP	00 16 15.4	d	USCGS: 19°S, 169°E, 0 = 00 03 28.
	BP	eR	42.9		New Hebrides Islands. Felt at
	F	eP	16 20		Port Vila and Lonakel.
	M	iP	22.0	d	
	R	iP	26.4	c	
	SH	iP	26.0	c	
	V	i	31	c	
Oct. 8	BP	eR	02 52		USCGS: 52½°N, 171°W, 0 = 02 35 20.
	F	e	42 50		Fox Islands, Aleutian Islands.
	M	e	42 17	c	
	R	eP	36.8		
	C	i(P)	41 57.8	c	
	SH	e(P)	42 15		
Oct. 8	F	eP	11 03 23		USCGS: 19½°N, 73½°W, 0 = 10 55 12.
	M	eP	40	c	Haiti.
	SH	iP	44.6	c	
Oct. 8	M	eP	14 26 11.3	d	USCGS: 52½°N, 107°E, 0 = 14 14 10.
	SH	iP	08.8	c	Lake Baikal, USSR.
Oct. 11	M	e(P)	08 00 32	d	
	R	e(P)	13		
	SH	e(P)	31		
Oct. 11	MH	i(P)	09 45 05.2	d	USCGS: 41½°N, 142°E, 0 = 09 33 44.
	F	eP	30		Near coast of northern Honshu.
	M	eP	44 52.6	c	Japan.
		i	45 09.8		
	R	iP	21.3	c	
	C	e(P)	44 47.9		
	SH	iP	47.7	c	
Oct. 11	MH	eP	18 02 53.3	d	USCGS: 28½°S, 176½°W, 0 = 17 50 22.
		i	03 05.8	d	Kermadec Islands.
	F	iP	02 59.1	d	
	M	eP	03 05.2	c	
		i	15.5		
	R	eP	09		
	SH		04.5	c	
Oct. 11	BP	eRNEZ	20 46.3		USCGS: 5½°S, 147°E, 0 = 20 03 10.
	F	eP	16 04		Near north coast of New Guinea.
	R	eP	11		
	SH	eP	07		
Oct. 12	B	ePKP	03 41 01		USCGS: 2°N, 98½°E, 0 = 03 21 52.
	MH	iPKP	40 59.2	d	Near coast of Sumatra.
		i	42 49.4		
	F	ePKP	41 04		
	M	ePKP	40 55.3	d	
		i	41 10.7		
		e	42 44		
	R	ePKP	40 59.5		
	C	ePKP	51		
	SH	iPKP	53.3	d	
Oct. 12	B	eP	03 55 18		USCGS: 19°S, 68½°W, 0 = 03 43 44.
	MH	iP	13.3	d	Northern Chile-Bolivia border.
		i	43.8		h about 150 km.

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 12 (Cont.)	F	eP	13		
	M	eP	23		
		e	56 02		
	R	iP	55 14.4	d	
	C	iP	43.9	c	
	SH	iP	26.5	(d)	
		ipP	56.0		
Oct. 12	M	eP	10 28 07		USCGS: 29°S, 176½°W, 0 = 10 15 17. Kermadec Islands region.
	SH	eP	08		
Oct. 14	B	eP	08 08 39		USCGS: 51½°N, 176°W, 0 = 08 01 04. Andreanof Islands, Aleutian Islands.
	MH	eP	45		
	M	iP	30.3	d	
	C	iP	02.6	d	
	SH	e(P)	32		
Oct. 14	M	e(P)	20 45 46		USCGS: 15°S, 177°W, 0 = 20 33 59. Fiji Islands region.
	SH	e(P)	46		
Oct. 14	M	eP	21 37 33		Seattle: 47°51'N, 121°58'W, 0 = 21 35 39. Near Monroe on Mt. Si Fault. Felt.
	C	iP	36 33.1	c	
		iN	37 16.3		
Oct. 15	BP	eR	04 35.0		USCGS: 19°N, 104°W, 0 = 04 22 49. Jalisco, Mexico. h about 200 km.
	MH	eP	27 47		
	F	eP	27 33		
	M	eP	28 08		
	R	iP	27 54.7	c	
	SH	eP	28 13		
Oct. 15	B	ePKP	06 34 16		USCGS: ½°N, 120°E, 0 = 06 15 32. Celebes. Magnitude 6½.
		e(PP)	54		
	BP	e	38 10		
		ePSNE	44 26		
		eSSNZ	50 40		
		eNZ	52 48		
		eGN	07 01.1		
		e(R)ZE	07.0		
			R from WNW		
	MH	iPKP	06 34 16.8	d	
		i	51.2	c	
	F	ePKP	20		
	M	ePKP	13		
		e	51		
	R	ePKP	16		
	C	e(PP)	24		
	SH	e	33 33		
Oct. 15	B	iP	07 25 56.0		BCIS: Aleutian Islands.
	MH	iP	59.9		
	M	eP	51.4	d	
	C	iP	32.4	c	
	SH	iP	46.6		
Oct. 15	M	eP	07 50 55.4	c	USCGS: 44°N, 148°E, 0 = 07 40 20. Kurile Islands.
	R	eP	51 28.4		
	C	eP	50 34		
	SH	eP	53		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 15	B	iPKP	14 13 03.0	d	BCIS: ca 57½°S, 27½°W, 0 = 13 54.0. Sandwich Islands.
	MH	iPKP	01.8	d	
	M	ePKP	05.6	d	
	C	ePKP	14 12.2		
	SH	iPKP	13 06.0	d	
Oct. 15	M	eP	20 40 35		BCIS: 53-¾°N, 169-¾°W, 0 = 20 33 40. Fox Islands, Aleutian Islands.
	SH	iP	30.3	c	
Oct. 16	MH	iP	01 27 30.3	d	USCGS: 30½°S, 69°W, 0 = 01 15 08. San Juan Province, Argentina. h about 100 km.
	F	eP	22		
	M	eP	39.8	(c)	
	R	iP	33.4	d	
	C	iP	59.3	d	
	SH	iP	42.2	d	
Oct. 16	M	eP	08 19 29.4		BCIS: 55½°N, 158°W, 0 = 08 13 37. South of Alaska Peninsula.
	SH	e(P)	19 22		
Oct. 17	M	eP	02 39 58.8	c	BCIS: 52½°N, 168°W, 0 = 02 33 53. Fox Islands, Aleutian Islands.
	R	eP	40 14.3		
Oct. 17	MH	eP	20 33 00.6	c	USCGS: 60°N, 138½°W, 0 = 20 27 35. Yukon-British Columbia border.
	F	eP	11		
	M	eP	32 33.6	c	
	R	iP	48.4	c	
	C	iP	31 50.0	c	
	SH	eP	32 29		
Oct. 18	MH	eP	12 29 28.2	d	USCGS: 28°S, 175°W, 0 = 12 17 02. Kermadec Islands.
	M	eP	38.9	(c)	
	R	e	27		
	SH	eP	39		
Oct. 18	MH	eP	17 16 06.6	d	USCGS: 50½°N, 156°E, 0 = 17 06 13. Off south coast of Kamchatka.
	M	iP	15 50.8		
	R	eP	16 07.4		
	SH	iP	15 51.5	d	
Oct. 19	B	eP	02 25 15.7		USCGS: 25½°S, 177½°W, 0 = 02 12 55. South of Fiji Islands.
	MH	iP	16.1	d	
		i	30.0	d	
	F	eP	20		
	M	eP	25.6	d	
	R	iP	29.0	d	
	C	iP	34.8	d	
	SH	iP	24.7	d	
Oct. 19	B	iP	02 57 30.7	c	USCGS: 44½°N, 148°E, 0 = 02 46 49. Kurile Islands.
		e	48		
	MH	iP	35.5	c	
		i	50.8	d	
	F	iP	44.4		
	M	iP	23.7	c	
		i	42.7	c	
	R	iP	34.0	c	
	C	iP	00.7	c	
	SH	iP	19.5	c	
Oct. 19	MH	iP	04 47 06.3	c	USCGS: 0 = 04 33 24. New Britain region.
	M	eP	16.5		
	SH	eP	16		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 19	B BG	eP	08 39 51	(d)	USCGS: 27½°S, 177°W, 0 = 08 27 21. Kermadec Islands. Magnitude 6¼.
		eSNE	50 16		
	erNEZ	09 07			
		R from SW			
		mu sec			
	PZ	0.8 6			
	SH	2.8 8			
	MaxH	24 17			
	MH	iP	08 39 50.8	d	
	F	eP	54		
Oct. 19	M R	eP	40 00.0	c	USCGS: 28½°S, 176½°W, 0 = 09 15 20. Kermadec Islands region.
		eP	02.9		
	C	e(P)	18		
	SH	eP	00		
	F	eP	09 27 54	d	
	M	eP	28 00.4		
	R	eP	04.9		
	SH	eP	01		
	B	eP	14 03 55.0	c	
	MH	iP	55.6		
Oct. 19	F M	iP	59.4		USCGS: 22°S, 179½°W, 0 = 13 52 40. Fiji Islands region. h about 600 km.
		eP	04 04.7	c	
	A	eP	03 59.0		
	R	iP	04 07.6	c	
	C	iP	12.6		
	SH	iP	03.3		
	B	eP	16 14 30	c	
		e	16 04		
	MH	iP	14 25.8	d	
		e	16 02		
Oct. 19	F A	eP	14 26		USCGS: 54½°S, 29°W, 0 = 15 55 30. Sandwich Islands region.
		eP	36.6		
	R	iP	30.5	c	
	C	iP	40.3	c	
	SH	eP	35		
	M	eP	22 50 27.2	d	
		i	53.8		
	R	e(P)	51 07.6		
	SH	e(P)	50 36		
		e	51 14		
Oct. 20	F M	eP	08 12 14	d	USCGS: 44½°N, 140°E, 0 = 08 00 46. Sea of Japan.
		eP	11 53.7	c	
	R	iP	12 03.5	(d)	
	C	iP	11 31.4	d	
	SH	iP	49.4		
Oct. 21	B MH	e(P)	06 26 08.8	d	
		iP	17.1		
	M	e	11		
Oct. 22	SH B	eP	13		BCIS: South Pacific. Insufficient information.
		eP	09 29 34	c	
	MH	eP	34		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
Oct. 22 (Cont.)	F M SH	e(P)	39			
		iP	44.4	c		
		iP	42.8	d		
Oct. 22	MH M SH	eP	10 31 48.5	c	BCIS: ca 13½°N, 142½°E, 0 = 10 19.0. Mariana Islands region.	
		eP	44.6	c		
		iP	42.2	d		
Oct. 23	MH	iP	06 29 27.7	c	USCGS: 20½°S, 68½°W, 0 = 06 17 54. Chile-Bolivia border. h about 200 km.	
		i	30 05.8			
		e	24			
Oct. 24	R C MH	eP	29 58.7		USCGS: 50½°N, 130°W, 0 = 13 43 39. Vancouver Island region.	
		iP	13 47 06.1	c		
		eP	22			
Oct. 24	F M	eP	46 29.9	c	USCGS: 36°N, 118°W, 0 = 15 35 15. Southern California. Magnitude 4½.	
		i	59.5	c		
	R	eP	49.7			
	C	iP	45 30.6	c		
	SH	iP	46 22.0	c		
	B	eP	15 36 16.3			
		e(S)E	37 05.7			
	MH	eP	36 07.3	c		
		eS	48.4			
	F	iP	35 46.2	c		
Oct. 24	M	e	36 09		USCGS: 41½°N, 70°E, 0 = 23 40 34. Kazakh, S.S.R. USCGS: 0 = 06 51 09. Atlantic Ocean, north of Azores.	
		iP	41.1	c		
		iNE	38 00.3			
	R	iP	36 28.9	c		
		i	37 22.0			
	SH	e	36 57			
		e	38 16			
	V	iP	35 03.2	d		
		iSEZ	44.5			
	PA	iP	36 14.4	c		
Oct. 24	SF	e(S)E	59		USCGS: 37½°N, 142½°E, 0 = 07 35 12. Near east coast of Honshu, Japan. h about 60 km. Magnitude 6.	
		eE	37 09			
	iP	36 19.0				
	iN	37 24.7				
	C	i(P)	23 53 54.1	d		
	Oct. 25	MH F	iP	07 02 22.2		d
			eP	16		
		M	eP	09.0		d
	Oct. 26	R B	e(P)	01 59		
			eP	07 46 32		(c)
BP		iP	33			
	iSNE	55 50	SE			
	iNEZ	56 26				
	eLNE	08 04				
		mu sec				
	PZ	1.3 14				
	SH	3.7 18				
MH F	iP	07 46 36.5	c			
	eP	07 47 45				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 26 (Cont.)	M	eP	46 26.1	c	USCGS: 51½°N, 157½°E, 0 = 10 29 09. Near east coast of Kamchatka. h about 150 km.
		i	42.8	d	
	A	e	24		
	R	iP	36.2	(c)	
	C	iP	06.0	c	
Oct. 26	SH	eP	21		
	B	eP	10 38 37		
		e	39 08		
	MH	iP	38 42.7	c	
		i	39 37.1	d	
	F	eP	38 53		
	M	iP	28.1	c	
		i	57.2		
	R	iP	39.7	c	
	C	iP	01.5	c	
Oct. 27	SH	iP	24.1	c	42°23'N, 126°32'W, 0 = 06 12 17. Off Oregon coast. Magnitude 5.1.
	B	eP	06 13 41.4		
		eS	14 44.0		
	MH	iP	13 50.4	c	
		eNEZ	15 02		
	F	e	14 13	c	
	M	iP	13 22.2	c	
		iE	46.0		
		i	14 08.3		
	A	iP	12 54.9		
	i(S)	13 22.0			
	iEZ	13 24.7			
	R	iP	46.1	d	
	iN	15 01.2			
	C	iP	13 08.5	(d)	
	i	46.5			
	SH	iP	12.6	c	
	PA	e	54		
	SF	e(P)	53		
Oct. 27	M	iP	06 41 34.6	c	
		i	42 26.4		
	R	eP	00		
	C	eP	41 20.6		
	i	58.5			
Oct. 27	SH	iP	24.5	c	USCGS: 45½°N, 151°E, 0 = 06 52 50. Kurile Islands. h about 100 km. Magnitude 6¼ - 6½.
	B	iP	07 03 05.7		
	BP	iSNEZ	11 31	SE(d)	
		iSSE	15 37		
		eGNE	18 20		
			mu sec		
		PZ	3.2 16		
		PH	1.8 18		
		SH	19 25		
		GH	30 40		
	MH	iP	07 03 10.1	c	
		i	21.9	c	
	F	iP	20.3	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
Oct. 27 (Cont.)	M	iP	02 59.1	c	USCGS: 46°N, 151°E, 0 = 13 18 51. Kurile Islands.	
		i	03 08.8	c		
	A	e	02 58			
	R	iP	03 09.3	c		
	C	iP	02 34.6	c		
	SH	iP	54.0	c		
Oct. 27	F	eP	13 29 27			
	M	e(P)	07			
	R	i(P)	26.7	c		
	C	iP	28 43.3	d		
	SH	eP	29 03			
Oct. 27	M	e	21 01 02			
	C	i(P)	33.1	c		
	SH	eP	00 54			
Oct. 27	C	iP	23 56 58	c		
	SH	eP	57 03			
Oct. 29	F	eP	10 46 10		USCGS: 46°N, 151°E, 0 = 10 35 20. Kurile Islands.	
	R	e(P)	45 50			
	C	iP	45 14.3	c		
	SH	iP	32.8	d		
Oct. 29	B	eP	14 32 24.7	c	USCGS: 29½°S, 176½°W, 0 = 14 19 51. Kermadec Islands. Felt on Raoul. h about 60 km. Magnitude 5-3/4.	
	BP	eP	25	c		
		iSNE	42 53	NE		
		eNE	54.0			
		eRNEZ	57.8			
			R from SW			
			mu sec			
			PZ	0.7 13		
			SH	2.4 22		
			MaxH	4.4 24		
	MH	iP	14 32 25.4	d		
		i	37.4	c		
	F	eP	28	c		
	M	eP	33 34.4	c		
		i	49.0			
	R	iP	32 37.2	c		
	C	eP	54.6			
Oct. 29	B	iP	14 41 17.3	c	USCGS: 43°N, 131°E, 0 = 14 30 24. China-Korea border. h about 550 km. Magnitude 6¼.	
		ipP	43 14.8			
		i	44 21.7			
		iP	41 21.0	c		
		i	43 18.7			
		e	47 19.7			
		iP	41 29.3	c		
		iP	10.1	c		
		A	iP	00.7		c
		R	iP	19.0		c
	C	iP	40 48.7	c		
	i	41 00				
	SH	iP	05.8	c		
		e	43 02			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 29	M	e	17 54 33		
	R	e	55 49		
	C	i(P)	54 45.7	d	
		iE	55 22.9		
	SH	e(P)	54 51		
Oct. 30	R	e	45 55		USCGS: 8½°N, 138°E, O = 00 32 29.
	SH	iP	45 43	c	
Oct. 30	B	iP	03 07 15.0	d	39.7°N, 120.1°W, O = 03 06 33. Northwest of Reno. Magnitude 4.1.
		eSEN	47.5		
	MH	iP	17.3	c	
		i	23.9		
		iS	52.3		
	F	iP	24.4	d	
		iNE	08 03.6		
	M	ePNE	06 59.5		
		iP	59.9	c	
		iSNE	07 18.8		
	A	e(P)	07 35.1		
	R	iP	06 37.2	c	
	C	e	08 15		
	SH	eP	07 09.2		
	V	eP	29.2		
		i	08 10.0		
	PA	ePE	07 25.7		
		e(S)E	59.5		
	SF	i(P)	22.5		
		i	53.2		
Oct. 30	B	eP	04 10 39		USCGS: 66°N, 136½°E, O = 04 00 26. Yakutsk, A.S.S.R.
	MH	iP	43.5	c	
	F	iP	51.2		
	M	iP	24.4	c	
	R	iP	34.0	c	
	C	iP	09 53.7	c	
	SH	iP	10 20.5	c	
Oct. 30	B	eP	07 16 00		USCGS: 19°S, 177½°W, O = 07 04 48. Fiji Islands. h about 450 km.
	MH	iP	00.9	c	
	F	eP	04	d	
	M	iP	10.1	c	
		i	23.1		
	R	iP	13.4	d	
	C	iP	18.0	d	
	SH	iP	08.2	d	
Oct. 30	B	eP	14 10 35.2	c	USCGS: 23½°S, 175½°W, O = 13 58 25. Tonga Islands region.
	BP	eRNEZ	35.5		
			R from SW		
	MH	iP	10 35.5	d	
	F	iP	39.5	d	
	M	iP	46.1	d	
	R	eP	48.6		
	C	iP	56.4	d	
	SH	eP	45		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Oct. 31	B	eP	04 38 12	d	USCGS: 16½°S, 178°W, O = 04 27 12. Fiji Islands. Felt at Apia. h about 450 km. Magnitude 6-1/2 - 6-3/4.
	MH	iP	13.3	d	
		i	24.4	c	
		i	39 47.6		
	F	iP	38 18.6	(d)	
		i	51		
	M	iP	23.3	d	
	A	iP	17.4	d	
	R	iP	27.5	d	
	C	iP	31.2	d	
	SH	eP	21		
Oct. 31	B	eP	13 12 31		BCIS: O = 13 00.5, Fiji Islands region.
	MH	eP	30		
	SH	iP	38.5		
Oct. 31	B	eP	18 40 37		USCGS: 2°N, 77½°W, O = 18 31 18. Southern Colombia. h about 100 km.
	MH	iP	33.2	c	
		i	58.7	d	
	F	eP	22		
	R	iP	32.6	c	
	C	iP	41 08.1	d	
	SH	eP	40 47		
Oct. 31	B	iP	19 43 17.1	c	41.3°N, 125.5°W, O = 19 42 14. Northwest of Arcata. Magnitude 4.5.
		iSNE	44 03.4		
	MH	iP	43 27.8		
	M	iP	01.9	c	
		iNE	17.1		
	A	iP	42 34.0	c	
		i	45.8		
	R	e(P)	43 28.9		
		i	44 13.8		
	C	eP	43 11.2		
		iN	46.5		
	SH	iP	42 52.6	c	
	PA	iP	43 23.4	c	
		eSE	44 14.7		
	SF	iP	43 17.4		
		iNEZ	44 03.2		
Nov. 1	MH	e(P)	23 06 14		USCGS: 45°N, 111°W, O = 23 03 25. Hebgen Lake, Montana.
		e	09 10		
	F	e	06 41		
		e	09 10		
	M	e(P)	06 05		
	R	i(P)	00.3		
	SH	e(P)	05 46		
Nov. 2	B	eP	08 56 04.9		USCGS: 22½°N, 144½°E, O = 08 44 01. Mariana Islands region. h about 60 km.
	BP	eSN	09 06 02		
		eNE	24		
		eGN	15.8		
		eREZ	19		
			R from W		
	MH	iP	08 56 08.2	c	
		i	28.0	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 2 (Cont.)	F	eP	17		
	M	eP	55 57.3	c	
		i	56 21.7	d	
	R	iP	10.8	c	
	C	iP	55 49.6	c	
	SH	eP	59		
Nov. 2	MH	iP	09 14 24.8	c	USCGS: 22°N, 144½°E, 0 = 09 02 20. Volcano-Mariana Islands region. h about 100 km.
	F	eP	33		
	M	iP	18.8	c	
	R	iP	28.1	c	
	SH	iP	15.7		
Nov. 2	B	iP	13 36 39.9	c	USCGS: 22°N, 92½°E, 0 = 13 15 40.
	M	iP	23.7	d	
	R	eP	37.3		
	C	eP	35 46.7		
	SH	eP	36 19		
Nov. 2	BP	e	19 25 47		BCIS: ca 4°N, 96°W, 0 = 19 12.1. About 700 km NW of Galapagos Islands.
		e	29 23		
		eR	31.5		
	MH	i(P)	18 25.6	d	
	R	e	19 48.7		
Nov. 2	B	eP	20 16 33	(c)	USCGS: 5½°S, 151½°E, 0 = 20 03 32. New Britain. Felt at Pomio, Karlai, Rabaul and Walindi. h about 60 km.
	BP	eREZ	44.5		
			R from W		
	MH	eP	20 15 35.5	c	PAS: Magnitude 6-3/4.
	F	iP	16 42.1		
	M	eP	36	c	
	R	iP	44.1	(d)	
	C	eP	32.8		
	SH	iP	33.9	c	
Nov. 2	BP	eR	22 18		USCGS: 23½°S, 175½°W, 0 = 21 53 05. Tonga Islands region.
	MH	iP	05 13.3	c	
	F	eP	20		
	M	eP	25		
	SH	eP	24		
Nov. 3	BP	eRNEZ	09 42		USCGS: 23½°S, 175½°W, 0 = 09 04 58. Tonga Islands region.
			R from SW		
	MH	iP	09 17 08.7	c	
	F	e(P)	17		
	M	eP	19.6	c	
	R	eP	23.1		
	SH	eP	19		
Nov. 3	B	iPKP	09 59 11.0	d	USCGS: 10½°S, 111°E, 0 = 09 40 05. South of Java.
	BP	eNE	10 18.1		
		eREZ	10 38		
			R from W		
	MH	iPKP	09 59 12.6	d	
		i	22.7	c	
		ePP	10 01 03.3		
	F	ePKP	09 59 15	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 3 (Cont.)	M	iPKP	10.2	d	
		i	26.2	c	
	A	e	07.2		
	R	iPKP	14.4	d	
	C	ePKP	07.0		
	SH	iPKP	09.2	d	
		e	10 00 53		
Nov. 3	MH	e(P)	10 10 08	d	
	F	e	22		
	M	e	11 28		
	SH	e	46		
Nov. 3	MH	i(P)	11 38 05.4	c	
	M	e(P)	15	d	
	SH	i(P)	14.0	c	
Nov. 3	MH	i(P)	14 22 12.1	c	
	F	e(P)	21 59		
	R	e(P)	22 29.2		
Nov. 4	MH	i(P)	17 25 47.3	d	USCGS: 0 = 17 13 50. Tonga Islands region.
	F	e	44		
	M	iP	58.6	d	
	R	e(P)	57.2		
	SH	e(P)	57		
Nov. 4	M	i	19 01 40		
		i	34		
	C	eP	19		
		iE	57.3		
	SH	e(P)	19		
Nov. 4	F	e(P)	19 20 29		USCGS: 20°S, 169½°E, 0 = 19 07 36. Loyalty Islands.
	M	e(P)	29		
	SH	e(P)	29		
Nov. 4	MH	iP	22 05 45.3	c	BCIS: 23½°S, 175½°W, 0 = 21 52 38. Tonga Islands region.
	F	e(P)	46		
Nov. 5	B	ePKP	11 19 24.3		USCGS: 5½°S, 68°E, 0 = 10 59 40. Chagos Archipelago.
		e	21 11.6		
	MH	iPKP	19 26.4	c	
	F	ePKP	28		
	R	iPKP	21.0	c	
Nov. 5	B	iP	12 02 42.0		USCGS: 13°S, 166½°E, 0 = 11 50 17. New Hebrides region. h about 100 km.
		e	52.8		
		iPcP	03 08.1		
	BP	eSNE	13 01		
		eLN	24 39		
		eGEZ	25 07		
		eRNEZ	28 15		
		eNE	43.0		
			R from WSW		
	MH	iP	12 02 43.8	d	
	F	e(P)	03 00		
	M	iP	02 48.8	c	
	R	e(P)	46		
	C	eP	53		
	SH	eP	46		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 5	B	e(P)	17 51 43		USCGS: 8½°S, 157½°E, 0 = 17 38 08. Solomon Islands. Felt on Tefepari.
	BP	eR	18 20		
	MH	i(P)	17 51 35.2	d	
		i	52 04.0	d	
	F	iP	51 14		
Nov. 6	M	iP	06.5	d	USCGS: 8½°S, 157½°E, 0 = 01 07 31. Solomon Islands.
	R	iP	13.3	c	
	SH	eP	05		
	B	eP	01 20 27.0		
	BP	e	44 49		
Nov. 6	MH	eP	20 26.2	c	USCGS: 9°S, 157½°E, 0 = 01 11 36. Solomon Islands.
		i	21 46.2		
	F	eP	20 32		
	M	eP	29		
	R	eP	34		
Nov. 6	SH	eP	28		USCGS: 24°S, 174½°W, 0 = 11 43 06. Tonga Islands region.
	B	eP	01 24 28.8		
	MH	iP	31.4	c	
		i	53.0		
	F	iP	37.4		
Nov. 6	M	eP	33		USCGS: 10°S, 161½°E, 0 = 12 25 06. Solomon Islands.
	R	iP	27 40.4	c	
	SH	eP	24 32		
	MH	e(P)	05 19 18		
	M	e	38		
Nov. 6	R	e	35		USCGS: 36½°N, 2½°E, 0 = 02 32 07. Near coast of Algeria. Several injured. Light damage at Boumedfa.
	SH	e	37		
	B	eP	11 55 15.5	d	
		e	30.3		
	BP	eSNEZ	12 06 07		
Nov. 6		e	16 16.3		USCGS: 13°S, 167°E, 0 = 14 27 37. New Hebrides Islands. h about 100 km.
		eRNEZ	22.0		
		R from SW			
	MH	iP	11 56 16.2	d	
		i	27.4	d	
Nov. 6	F	eP	55 19	d	USCGS: 18½°N, 103°W, 0 = 00 05 36. Mexico.
	M	iP	26.1	d	
	A	eP	21.7		
	R	iP	29.8	d	
	C	e(P)	37		
Nov. 6	SH	iP	25.4	d	USCGS: 18½°N, 103°W, 0 = 00 05 36. Mexico.
	B	iP	12 37 44.8	c	
	MH	iP	48.3	d	
	M	eP	51.6	c	
	R	eP	58.2		
Nov. 7	SH	iP	49.5	d	USCGS: 18½°N, 103°W, 0 = 00 05 36. Mexico.
	F	eP	02 45 11		
	M	eP	01.0	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 7	B	ePKP	15 37 40		BCIS: 5°S, 68¼°E, 0 = 15 18 00. Indian Ocean, region of Chagos Banks.
	MH	iPKP	42.1	d	
	F	ePKP	45		
	M	e(PKP)	29		
	R	e	52		
Nov. 7	B	iP	22 28 22		USCGS: 23½°S, 176°W, 0 = 22 16 14. Tonga Islands region. PAS: Magnitude 6¼.
	MH	iP	23.8	c	
	F	eP	29		
	M	eP	34.0	c	
	R	iP	39.2	c	
Nov. 8	C	eP	47.6		BCIS: 0 = 02 17.8. Kermadec Islands region.
	SH	eP	33		
	MH	iP	02 29 44.3	d	
	F	e	30 04		
	M	eP	29 54.7	d	
Nov. 8	SH	eP	53		USCGS: 44°N, 140½°E, 0 = 13 54 55. Near west coast of Hokkaido, Japan. Felt. PAS: Magnitude 6½.
	B	iP	14 06 07.5	c	
	BP	ePNEZ	08.0	cSE	
		ePPEZ	08 40.2		
		eSNE	15 25		
		eSSNE	19 49		
		eLNE	24 48		
		eRNEZ	27 12		
		R from NW			
		mu sec			
Nov. 8		PZ	3.2 7		USCGS: 36½°N, 2½°E, 0 = 02 32 07. Near coast of Algeria. Several injured. Light damage at Boumedfa.
		PH	1.9 7		
		SH	2.3 8		
	MH	iP	14 06 13.0	c	
		i	28.9	c	
	F	eP	21		
	M	iP	00.5	c	
		e	08 35.0		
	A	iP	05 49.5	c	
	R	iP	06 10.8	c	
Nov. 8	C	iP	05 38.3	c	USCGS: 13°S, 167°E, 0 = 14 27 37. New Hebrides Islands. h about 100 km.
	SH	iP	57.2	c	
	V	e(P)	06 16.8		
	SH	e(P)	14 40 06		
Nov. 9	B	eP	00 11 13.3	c	USCGS: 18½°N, 103°W, 0 = 00 05 36. Mexico.
		e	12 15.7		
	BP	e	16.0		
		eNE	17.2		
		eRNEZ	18.3		
Nov. 9	MH	eP	10 59.8	d	USCGS: 18½°N, 103°W, 0 = 00 05 36. Mexico.
	M	eP	11 19.7	c	
	R	e(P)	06		
	SH	e(P)	32		
	F	e	02 29 48		
Nov. 9	M	i	21		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 9	F	e	02 58 06		
	M	iP	57 38.9	c	
Nov. 9	MH	(e)P	04 32 16.0	d	BCIS: 57°S, 136°W, 0 = 04 18 53. South Pacific.
Nov. 9	M	eP	20 00 25		BCIS: 29°S, 176½°W, 0 = 19 47 44. Kermadec Islands.
	SH	eP	25		
Nov. 11	M	e(P)	01 45 31		BCIS: 0 = 01 33.7. Region of Tucuman, Argentina.
	SH	e(P)	34		h about 600 km.
Nov. 12	MH	iP	20 42 40.9	d	USCGS: 11°S, 166½°E, 0 = 20 30 12. Santa Cruz Islands.
	R	eP	51.1		
	SH	eP	44		
Nov. 13	MH	iP	10 17 38.2	d	USCGS: 23°S, 179°E, 0 = 10 06 14. South of Fiji Islands.
	F	eP	44		h about 600 km.
	M	iP	50.0	d	USCGS: 3°S, 148½°E, 0 = 10 33 56. Bismarck Sea.
Nov. 14	M	e	10 47 15.0		
	SH	eP	05		
Nov. 14	B	eP	18 01 42	d	
	MH	iP	54.4	d	
	F	eP	02 09	c	
	M	eP	01 18.0	c	
	R	e(P)	42.5		
	C	eP	15		
	SH	e(P)	09		
Nov. 15	MH	eP	10 39 08		USCGS: 38½°N, 75°E, 0 = 10 25 07. Tadzhik, S.S.R. - China border.
		e	43 12		
	F	e	21		
	M	eP	38 55.8	c	
		e	42 16		
	R	e	43 04		
	SH	eP	38 55	d	
		e	42 53		
Nov. 15	B	eP	17 22 21		USCGS: 37½°N, 20½°E, 0 = 17 08 41. Near west coast of Greece. Felt in Greece and Italy. Slight damage. Several injured at Agrnion, Greece.
	BP	ePPN	26 21		PAS: Magnitude 6-1/2 - 6-3/4.
		iSKSN	32 58		
		iSN	33 45		
		eSSN	40.5		
	MH	iP	22 16.8	d	
		e	39 02		
	F	eP	22 25		
		e	38 53		
	M	eP	22 08.3	c	
		i	22.9		
	A	e	24		
	R	eP	09.9		
		i	23.5		
	C	iP	21 56.2	d	
	SH	eP	22 09		
		e	39 12		
Nov. 15	B	eP	00 00 47	c	
	MH	iP	48.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 15	M	e	53		
(Cont.)	SH	eP	52		
Nov. 16	B	eP	01 12 02		USCGS: 35°S, 70°W, 0 = 00 59 22. Chile-Argentina border.
	MH	iP	11 59.2	d	h about 100 km.
		i	12 10.1		
	F	eP	11 47		
	M	eP	12 08.2	d	
	R	iP	02.8	d	
	C	i(P)	29.0	c	
	SH	iP	11.5	d	
Nov. 16	MH	iP	10 34 38.0	c	USCGS: 1°N, 26½°W, 0 = 10 21 17. Mid-Atlantic Ocean.
	F	eP	31		PAS: Magnitude 6¼ - 6½.
	M	e	56	c	
	R	iP	30.9	c	
	SH	eP	41		
Nov. 16	B	i	00 00 46.6	c	USCGS: 4°N, 126½°E, 0 = 23 43 40. Taland Islands.
	MH	i	51.5	d	
	M	e	53.5		
Nov. 16	M	eP	00 02 46.3		USCGS: 18°N, 147°E, 0 = 23 50 35. Mariana Islands.
					USCGS: 11°S, 66½°E, 0 = 02 32 37. Indian Ocean.
Nov. 17	B	ePKP	02 52 35		
	MH	ePKP	30		
	F	ePKP	54		
	M	ePKP	31	c	
	R	iPKP	35.1	d	
	C	i(PKP)	19.0	c	
Nov. 17	MH	e	11 39 04	d	
	M	e(P)	20	c	
	R	e(P)	24		
Nov. 17	M	e(P)	12 24 35		
	R	i(P)	26 30	d	
Nov. 17	MH	iP	23 24 01.6	d	BCIS: 34°S, 178°W, 0 = 23 11 20. Off the coast of North Island, New Zealand.
	F	eP	04		
	M	e(P)	11	c	
Nov. 18	B	iP	13 44 07.7	c	USCGS: 0 = 13 32 08. Northern Mariana Islands region.
	MH	iP	11.5	c	h about 200 km.
	F	eP	19		
	M	eP	05.4	c	
	R	iP	14.6	d	
	SH	iP	02.7	c	
Nov. 19	MH	iP	04 42 38.8	c	USCGS: 51½°N, 175½°W, 0 = 04 34 57. Andreanof Islands, Aleutian Islands.
	F	eP	51		
	M	eP	23.3	d	
	R	iP	37.5	c	
	C	e(P)	41 58.7		
	SH	iP	42 18.4	(d)	
Nov. 19	MH	iP	05 38 09.5	c	USCGS: 24½°S, 177°W, 0 = 05 25 53. Tonga Islands region.
	F	eP	14		
	M	eP	19.0	c	
	R	i(P)	22.4	c	
	SH	eP	19		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 19	MH	iP	11 13 57.3	d	BCIS: 0 = 11 06.8. Aleutian Islands region.
	F	e(P)	14 04		
	M	iP	13 35.4	c	
	R	eP	48.9		
Nov. 19	SH	iP	29.9	c	USCGS: 5½°S, 146°E, 0 = 11 08 41. Near north coast of New Guinea. Slight damage: Lar and Madang. h about 100 km. PAS: Magnitude 7.
	B	iP	11 21 56.0	c	
		epP	22 30		
		iPP	25 44.4	c	
	BP	eSKSE	32 17		
		eSN	32.9		
		ePSEZ	34 17		
		eSSN	39.2		
		eGN	46.5		
		eREZ	47		
			R from W		
			mu sec		
		PZ	0.4 17		
	PPZ	1.1 10			
	SKS	1.4 28			
Nov. 19	MH	iP	11 21 59.0	c	USCGS: 12°N, 87°W, 0 = 14 08 20. Near coast of Nicaragua. h about 60 km.
		iPP	25 48.4	c	
	F	iP	22 04.5		
	M	iP	21 58.9	c	
		i	22 16.5	c	
		ePP	25 35.5		
	A	iP	21 51.5	d	
	R	iP	22 05.6	c	
		iPP	25 56.3		
		iP	21 54.0	d	
Nov. 19	SH	iP	56.4	c	USCGS: 12°N, 87°W, 0 = 14 08 20. Near coast of Nicaragua. h about 60 km.
	MH	iP	14 15 56.8	d	
		i	16 10.0	c	
	F	eP	15 45		
Nov. 19	M	eP	16 08.7	c	42.4°N, 126.9°W, 0 = 23 53 45. Off coast of Oregon. Magnitude 5.1.
	R	iP	15 57.7		
	B	iP	23 55 10.6		
	MH	iP	21.5	c	
	F	eP	41		
	M	iP	54 53.1	c	
	A	iP	26.0	c	
	R	e(P)	55 18.2		
	C	iPN	54 37.9		
		iSNE	55 02.0		
Nov. 20	SH	iP	54 43.2		USCGS: 4½°S, 153°E, 0 = 10 56 59. New Britain region. h about 100 km.
	V	eP	55 32.9		
	PA	iP	56 16.3	d	
	SF	iP	55 13.4		
	M	iP	11 09 54.2	d	
		iP	59.2	d	
	R				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Nov. 20	MH	i(P)	15 28 02.9	d&c	USCGS: 15½°S, 174°W, 0 = 15 16 45. Samoa Islands region.
	F	iP	16.1	c	
	M	iP	32.0	d	
	R	eP	25.2		
Nov. 21	SH	iP	20.6	c	USCGS: 19°S, 178°W, 0 = 17 11.8. Fiji Islands.
	MH	iP	12 20 33.6	c	
	M	iP	09.5	c	
Nov. 21	C	e(P)N	19 49.9		USCGS: 21½°S, 178½°W, 0 = 19 34 35. Fiji Islands region. h about 550 km.
	MH	iP	17 26 31.5	c	
Nov. 21	M	iP	27.3	d	USCGS: 21½°S, 178½°W, 0 = 19 34 35. Fiji Islands region. h about 550 km.
	B	eP	19 45 50		
Nov. 22	MH	iP	51.7	d	USCGS: 20°S, 174½°E, 0 = 16 14 47. Fiji Islands region.
		i	47 23.8		
	F	iP	45 55.0		
		e	46 48		
	M	iP	00.3	d	
		i	53.1		
	A	eP	45 55.3		
	R	iP	46 04.4	d	
	C	iP	09.5	d	
	SH	eP	45 59		
Nov. 22	MH	iP	23 55 20.5	c	USCGS: 24½°N, 122°E, 0 = 21 05 18. Near coast of Formosa.
	M	eP	30.5		
Nov. 23	MH	eP	16 27 17.6	c	USCGS: 25°S, 176°W, 0 = 12 41 00. Tonga Islands region.
	F	eP	29		
	M	eP	28.5		
	R	e(P)	53		
Nov. 23	SH	e	26 50		USCGS: 19°S, 178½°W, 0 = 14 04 17. Fiji Islands region. h about 500 km.
	B	eP	21 18 33		
	MH	iP	39.0	c	
	F	eP	45		
Nov. 24	M	iP	31.6	d	USCGS: 7½°N, 37°W, 0 = 20 06 35. Atlantic Ocean.
		i	19 10.3		
	R	iP	18 38.6	c	
	C	eP	18		
	SH	eP	28		
	MH	eP	12 53 12	c	
Nov. 24	M	eP	26		USCGS: 5½°S, 102½°E, 0 = 07 06 19. Near coast of Sumatra. PAS: Magnitude 6½.
	SH	eP	25		
	MH	eP	14 15 23	d	
Nov. 24	M	eP	33	d	USCGS: 5½°S, 102½°E, 0 = 07 06 19. Near coast of Sumatra. PAS: Magnitude 6½.
	MH	eP	20 19 02		
Nov. 24	M	eP	18 52.0	c	USCGS: 5½°S, 102½°E, 0 = 07 06 19. Near coast of Sumatra. PAS: Magnitude 6½.
	SH	e(P)	59		
Nov. 26	B	ePKP	07 25 31		USCGS: 5½°S, 102½°E, 0 = 07 06 19. Near coast of Sumatra. PAS: Magnitude 6½.
		ePP	27 33		
	MH	iPKP	25 30.9	d	
		iPP	27 33.8		
	F	ePKP	25 33		
	M	ePKP	26	c	
	R	ePKP	31		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks	
1959			h. m. s.			
Nov. 26 (Cont.)	C	iPKP	25.1	d	USCGS: 15½°S, 175°W, O = 07 39 49. Samoa Islands region.	
Nov. 26	SH	ePKP	29			
Nov. 26	MH	iP	07 51 24.6	c		
	F	iP	04.1	d		
	SH	e(P)	34			
Nov. 26	B	ePKP	23 28 34			USCGS: 5½°S, 103°E, O = 23 09 23. Near coast of Sumatra. PAS: Magnitude 6-3/4.
	BP	ePP	30 34			
		eNZ	31 55			
		iPPSN	42 25			
	MH	iPKP	28 35.0	c		
		i	31 45.9			
	F	ePKP	28 39	c		
		i	58.8	d		
	M	ePKP	31 45.1			
		e	28 35.2			
	R	ePKP	26.3		BCIS: O = 07 37.5. Fiji Islands region.	
	C	ePKP	31			
Nov. 27	SH	ePKP	07 49 39.3	d		
	MH	iP	49.8			
	M	iP	58			
	C	eP	48.2	d		
Nov. 27	SH	iP	10 53 53.0	d		USCGS: 22°S, 177½°W, O = 10 42 10. Tonga Islands region. h about 250 km.
	B	eP	53.3	d		
	MH	iP	57			
	F	eP	54 02	d		
	M	eP	06.2	d		
	R	iP	12.6	c		
	C	iP	02.4	d		
Nov. 27	SH	iP	19 10 38.3	c	USCGS: 5½°S, 103°E, O = 18 51 27. Off west coast of Sumatra.	
	MH	iPKP	36			
	M	ePKP	33.5			
	C	iPKP	35			
Nov. 28	SH	ePKP	02 58 07			USCGS: 19½°S, 174½°E, O = 02 45 45. Fiji Islands region.
	B	eP	03 06.9			
	BP	e(S)NE	08.7			
		e(ScS)NE	19.7			
		eQN	23.4			
		eRNE	02 58 14.9	d		
	MH	iP	22	c		
	F	eP	24.5			
	M	eP	29.5			
	R	eP	24			
Nov. 28	SH	eP	03 33 30		USCGS: 26°N, 128½°E, O = 03 20 24. Ryukyu Islands.	
	MH	(i)P	23	c		
	M	eP	13			
Nov. 28	SH	eP	12 47 15.9	c		USCGS: 28½°S, 71°W, O = 12 34 53. Chile. PAS: Magnitude 6½.
	B	iP	23.8	d		
		e	22	c		
	BP	iP	57 33	N(E)		
		iSN	47 12.4	c		
	MH	iP	20.4	d		
		i				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks		
1959			h. m. s.				
Nov. 28 (Cont.)	F	ePP	50 30				
	M	iP	47 03.4	c			
		eP	22.0	c			
		i	31.4	c			
	R	iP	15.8	c			
		i	24.9				
	C	iP	42.5	c			
	SH	iP	25.9	c			
Nov. 28	MH	eP	14 28 52				
	M	eP	50				
	SH	eP	48				
Nov. 28	B	eP	22 51 43	c	USCGS: 13°S, 167½°E, O = 22 39 13. New Hebrides Islands.		
		epP	52 21				
	BP	eGN	23 13.6				
		eREZ	17.4				
	MH	iP	22 51 45.5	d			
		ipP	52 22.4	d			
	M	eP	51 50				
		ipP	52 27.5				
	R	iP	51 55.1	c			
	C	ipP	52 33.7				
	SH	e(P)	51 56				
		iP	48.7	c			
		epP	52 26				
Nov. 29	B	iP	01 43 01.1	c	USCGS: 21°S, 177°W, O = 01 30 52. Tonga Islands.		
	MH	iP	02.2	c			
	F	eP	07				
	M	iP	11.1	c			
	R	eP	16				
	SH	eP	11				
Nov. 29	MH	iP	05 58 56.0	c		USCGS: 26½°S, 178°W, O = 05 46 56. Kermadec Islands region. h about 30 km.	
	F	eP	59				
	M	eP	59 05				
	SH	eP	06				
Nov. 30	M	eP	11 26 13	c	USCGS: 44½°N, 80½°E, O = 11 12 53. Sinkiang Province, China.		
	C	e(P)	25 54				
	SH	e(P)	26 12				
Nov. 30	B	iP	15 24 36.1	d			USCGS: 59½°N, 152°W, O = 15 18 37. Kenai Peninsula, Alaska.
	BP	eREZ	32.4				
		R from NW					
	MH	iP	15 24 38.4	d			
		i(PcP)	27 46.1				
	F	iP	24 53.6	d			
	M	eP	19				
		i(PcP)	27 41.2				
	A	i(P)	24 06.8	c			
	R	iP	32.9	d			
	C	iP	23 41.6	d			
	SH	iP	24 15	d			
Dec. 1	MH	iP	12 52 29.7		USCGS: 38°N, 21½°E, O = 12 38 46. Near west coast of Greece.		
	M	eP	10				

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 1 (Cont.)	R	e(P)	11		
	C	eP	51 58		
	SH	eP	52 09		
Dec. 1	MH	eP	14 27 05		USCGS: 0 = 14 19 30. Caribbean Sea about 250 miles west of Jamaica.
	M	iP	13.1	d	
	R	iP	01.3	d	
Dec. 2	B	i(PP)	04 30 05.2	c	BCIS: 51°N, 156°E, 0 = 04 18 34. South coast of Kamchatka.
	MH	i(PP)	05.8	c	
	M	eP	28 16.4		
		i(PP)	30 15.7		
	C	eP	27 51		
Dec. 2	SH	iP	28 12.9	d	USCGS: 9°S, 80°W, 0 = 07 02 52. Off coast of Peru.
	MH	iP	07 13 06.6	d	
	M	eP	18		
	R	eP	10		
	C	eP	44		
Dec. 2	SH	eP	23		USCGS: 5°S, 104°E, 0 = 07 30.05. Near coast of Sumatra.
	MH	iPKP	07 49 00.8	c	
	M	iPKP	48 56.0	d	
	R	e	49 30.3		
	C	ePKP	48 52		
Dec. 2	SH	ePKP	57		USCGS: 1°S, 123°E, 0 = 09 34 00. Celebes.
	B	ePKP	09 52 38		PAS: Magnitude 6-1/2 - 6-3/4.
	BP	ePP	53 10		
		e(PS)E	10 02 16		
		e(SS)N	08 36		
		eGN	19 10		
		eRNEZ	25 05		
			R from W		
	MH	ePKP	09 52 38.8		
	F	ePKP	38		
		ePP	53 28		
	M	ePKP	52 37		
		e	10 03 52		
	R	ePKP	09 52 42		
Dec. 3	C	ePKP	36		USCGS: 16½°S, 177½°W, 0 = 13 16 26. Fiji Islands region.
	MH	iP	13 28 12.0		
	F	e(P)	18		
	M	eP	21		
	R	e(P)	29		
Dec. 4	SH	eP	20		USCGS: 21°S, 178½°W, 0 = 09 24 04. Fiji Islands region.
	B	iP	09 35 11.3	(d)	
	MH	iP	12.1	d	
	F	iP	16.2	c	
	M	iP	20.6	c	
	R	iP	24.6	c	
	C	iP	29.5	c	
Dec. 5	SH	iP	20.1	d	40°18'N, 125°25'W, 0 = 08 13 42. Off Cape Mendocino. Magnitude 5.1.
	B	eSNE	08 15 16.0		
	BP	ePNEZ	14 44	NWd	
	MH	iP	46.4	c	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 5 (Cont.)		i	15 28.6		
		i	31.8		
	F	iP	09.2	c	
	M	iP	14 28.5	c	
	A	iP	03.1	c	
	R	iP	50.1	c	
	C	eP	52.4		
	SH	iP	21.0	c	
	V	i(P)NE	55.9	d	
	PA	iP	40.6	c	
	SF	iP	36.8	c	
	ML	ePNE	30		
Dec. 7	MH	eP	03 14 40		USCGS: 18°S, 178°W, 0 = 03 01 44. Fiji Islands. h about 600 km.
	F	eP	44		
	M	eP	52		
	SH	eP	49		
Dec. 8	MH	iP	03 11 32.1	c	USCGS: 36½°N, 141½°E, 0 = 02 59 56. Near east coast of Honshu, Japan. Felt: Tokyo.
	M	iP	27.3	d	
	R	e(P)	33		
	C	eP	03		
	SH	eP	19		
Dec. 8	MH	(i)	04 48 04	d	USCGS: 1°S, 124°E, 0 = 04 30 06. Celebes region.
	M	(e)	42	c	
	R	(e)	49 30.3		
	SH	(e)	08		
Dec. 8	MH	eP	08 18 38		USCGS: 67°N, 18°W, 0 = 08 08 21. Off north coast of Iceland.
	M	eP	19		
Dec. 8	MH	eP	17 17 13	d	
	M	eP	33		
	R	eP	22		
	SH	eP	37		
Dec. 9	B	iP	14 15 31.0	c	USCGS: 17°S, 177½°W, 0 = 14 04 28. Fiji Islands. h about 450 km.
	MH	iP	32.4	c	
	F	iP	36.8	c	
	M	iP	40.7	c	
	R	iP	45.5	c	
	C	iP	50.2	c	
Dec. 10	SH	iP	39.5	c	
	MH	iP	07 12 32.2	d	
	M	iP	22.7	d	
	SH	iP	20.7	d	
Dec. 10	MH	iP	08 14 09.3	d	BCIS: 0 = 08 01.8. Mariana Islands. h about 150 km.
	M	iP	09.6	c	
	SH	iP	06.8	c	
Dec. 11	MH	iP	01 50 41.0	d	USCGS: 23°S, 175°W, 0 = 01 38 33. Tonga Islands region.
		i	54.0	c	
	M	eP	51		
	R	e(P)	05		
Dec. 11	B	e(P)	10 19 30		USCGS: 23°S, 175°W, 0 = 10 07 12. Tonga Islands region.
	MH	iP	19.6	d	
	M	eP	31		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 11 (Cont.)	R	iP	45.0	d	USCGS: 18°S, 173½°W, 0 = 17 36 07. Tonga Islands.
Dec. 13	SH	iP	40.3	d	
	F	eP	17 47 51		
	R	iP	48 01.1	d	
	SH	eP	47 56		
Dec. 14	M	iP	18 12 20.7	d	
	C	eP	10		
	SH	iP	17.3		
Dec. 14	B	eP	18 16 35		
	MH	i	00.5	c	
		i	41.0		
	F	e(P)	24		
	M	e(P)	25		
	R	i	48.2		
	C	i(P)	17.9		
Dec. 14	SH	iP	31.7	d	
	F	e(P)	18 23 10.4		
	M	eP	22 52		
	R	iP	57.3	c	
	SH	eP	44		
Dec. 14	B	eP	22 07 46.5	(d)	
	BP	eSE	13 21		
		eR	16.8		
			mu sec		
		PZ	2.5 7		
		SH	7.4 10		
	MH	iP	22 07 58.0	d	
		i	09 17.9	d	
	F	eP	08 05		
	M	iP	07 36.9	d	
		i	49.9	c	
	A	e(P)	23		
	R	iP	51.2	d	
	C	iP	08.1	c	
	SH	iP	32.2	d	
	V	eP	58		
Dec. 14	B	iPKP	23 40 59.4		
		e(PP)	42 52		
		e(PPP)	44 39		
	BP	eRNEZ	24 22.5		
	MH	iPKP	23 40 58.8	c	
		i(PP)	42 49.4		
		i(PPP)	44 38.9		
	F	ePKP	40 52		
	M	ePKP	41 01		
		i	10.5	c	
		e(PP)	43 04		
	A	ePKP	41 08.2		
	R	ePKP	01		
		i(PP)	43 04.1		
	C	iPKP	41 13.4	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 14 (Cont.)	SH	ePKP	40 53		USCGS: 17°N, 145°E, 0 = 05 04 14. Mariana Islands.
	V	i	41 02.9	d	
Dec. 15	M	ePKP	40 58.5		USCGS: 17½°N, 145°E, 0 = 08 56 20. Mariana Islands.
	R	iP	05 16 38.5	c	
	SH	eP	46		USCGS: 47½°N, 152°E, 0 = 11 21 47. Kurile Islands.
Dec. 15	SH	iP	35.0	c	
Dec. 15	R	e(P)	09 08 51		BCIS: 20½°S, 178°W, 0 = 16 45 45. Fiji Islands region. h about 600 km.
	SH	e	39		
Dec. 16	M	iP	11 31 54.9	d	USCGS: 21½°N, 121°E, 0 = 02 31 02. Off south coast of Formosa.
	SH	iP	50.0	d	
Dec. 16	M	eP	16 57 00		USCGS: 24°S, 177°W, 0 = 02 55 58. Tonga Islands region. h about 100 km.
	SH	iP	56 58.2	c	
Dec. 17	R	eP	02 44 37		USCGS: 5½°S, 102½°E, 0 = 05 53 46. Off south coast of Sumatra.
	C	iP	13.0	c	
	SH	iP	25.3	d	BCIS: 16½°S, 178°E, 0 = 09 47 10. Fiji Islands region.
Dec. 17	MH	iP	03 08 05.0	d	
		ipP	37.5	d	USCGS: 36½°S, 101½°W, 0 = 16 48 55. South Pacific Ocean.
	F	eP	09		
	M	iP	14.9	c	USCGS: 18°S, 178½°E, 0 = 09 57 07. Fiji Islands. h about 600 km.
	R	e(P)	19		
	SH	iP	13.5	d	USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
Dec. 17	B	ePKP	06 12 59	d	
	M	ePKP	57	c	USCGS: 59½°S, 31°W, 0 = 23 21 56. Sandwich Islands. PAS: Magnitude 7.
	R	ePKP	13 01		
	SH	ePKP	12 56		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
Dec. 17	MH	iP	09 59 08.3	d	
	M	eP	16		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	SH	iP	14.9	d	
Dec. 17	B	eP	17 00 46		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	MH	eP	43		
	F	eP	36		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	M	eP	58		
	R	i(P)	55.5	d	USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	C	eP	01 22		
	SH	eP	00 59		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
Dec. 18	B	eP	10 08 03	(c)	
	MH	iP	04.6	c	USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
		epP	10 05		
	F	eP	08 10		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	M	iP	13.5	d	
	R	iP	17.9	d	USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
	SH	iP	12.0	c	
Dec. 18	BP	iSE	16 37 20		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
		eGN	39.5		
		eREZ	40.9		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
			R from W		
			mu sec		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
		PZ	0.6 16		
		SH	4.2 15		USCGS: 53°N, 168½°W, 0 = 16 24 50. Fox Islands, Aleutian Islands. PAS: Magnitude 6½.
		GH	7 18		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 18 (Cont.)	MH	iP	16 31 51.3	d	
	F	eP	32 05		
	M	eP	31 34	d	
	A	eP	27		
	R	eP	51		
	C	eP	08		
Dec. 19	SH	iP	09 20 30.0	d	BCIS: 18°S, 178½°W, 0 = 09 09 55. Fiji Islands. h about 600 km.
	B	iP	42.5	c	
	MH	iP	48.4	c	
	F	iP	52.7	c	
	M	iP	57.2	d	
	R	iP	21 01.2	c	
	C	iP	05.7	d	
Dec. 19	SH	iP	20 56.1	c	27½°N, 112½°W, 0 = 15 07 00. Near east coast of Baja California.
	B	eP	15 10 14		
	BP	iQNE	12 46	SW	
	MH	iP	10 05.0	c	
		i	12 13.8		
		e	13 12		
	F	iP	10 46.9	d	
	M	iP	38.7	c	
		i	11 09.0	c	
		e	14 58.1		
	A	e(P)	10 59		
	R	iP	20.1	d	
	C	iP	11 30.3	c	
	SH	iP	10 58.5	c	
Dec. 19	M	eP	23 01 12.4	d	
	R	e	32		
	SH	eP	08		
Dec. 20	MH	iP	00 33 48.1	c	
	M	iP	57.6		
	SH	iP	56.7	c	
Dec. 20	MH	iP	06 35 53.9	c	
	F	eP	58		
	M	eP	36 03		
	R	eP	07		
	SH	iP	02.0	c	
Dec. 20	MH	e(P)	08 18 27		USCGS: 0 = 08 05 34. South of Kermadec Islands.
	F	e(P)	36		
	M	e(P)	46		
	R	e(P)	19 02		
	SH	e(P)	18 41		
Dec. 20	MH	iP	16 47 29.3	c	BCIS: 17.5°N, 61.7°W, 0 = 16 37 59. Lesser Antilles.
	M	iP	20.0	d	
	SH	iP	33.0	c	
Dec. 21	B	eP	10 33 02		USCGS: 27½°S, 176°W, 0 = 10 20 33. Kermadec Islands region. PAS: Magnitude 6.
	BP	eSNE	43 22		
		eNEZ	44 22		
		eQNE	54.0		
		eRNEZ	57.8		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 21 (Cont.)	MH	iP	32 59.8	c	
		i	33 12.9		
	F	eP	08		
	M	eP	10		
	R	eP	13		
	C	e(P)	24		
	SH	eP	09		
Dec. 21	B	eP	11 26 43		USCGS: 27½°S, 176°W, 0 = 11 14 17. Kermadec Islands region. PAS: Magnitude 6½.
	BP	eSNE	37 02		
		eRNEZ	53		
	MH	iP	26 44.1	c	
	F	eP	46.8		
	M	eP	52.9	d	
		i	27 36.8	d	
	R	iP	26 56.9	c	
	SH	iP	52.6	d	
Dec. 21	B	e	11 38 44		USCGS: 14°N, 52°E, 0 = 11 19 14. Gulf of Aden. PAS: Magnitude 6-1/2 - 6-3/4.
	BP	eQN	12 14		
	MH	eP	11 38 28	d	
		i	40 35.9		
	F	eP	38 28		
	M	eP	21		
	R	e(P)	22		
	C	e(P)	39 45.3		
	SH	e	38 32.6		
Dec. 21	B	iP	12 48 54.5	d	
	MH	iP	53.5	d	
	M	eP	57		
	R	e(P)	49 04		
	SH	eP	48 57.8		
Dec. 22	B	iPNEZ	02 39 43.5	NWd	40°16'N, 124°31'W, 0 = 02 38 57. Southwest of Ferndale. Magnitude 4.7.
	MH	iP	54.1	d	
	F	eP	40 15.4		
	M	iPEZ	39 34.6	c	
	A	iP	10.2	c	
		iS	19.0		
	R	iP	56.5	d	
	C	eP	40 04.8		
	SH	iP	39 27.7	c	
	PA	iP	48.6	d	
Dec. 22	SF	iP	42.9	d	
	B	eP	04 43 06		
	MH	iP	04.6	d	
	M	eP	10		
	SH	iP	10.0	d	
Dec. 23	B	iP	03 55 12.3	d	USCGS: 56½°N, 158°W, 0 = 03 49 00. Alaska Peninsula.
	MH	iP	18.9	d	
	F	iP	31.0	d	
	M	eP	54 59.2	d	
	R	iP	55 12.7	d	
	C	iP	54 25.6	c	
	SH	iP	53.8	d	

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 23	F	eP	14 11 24		USCGS: 27½°S, 176°W, 0 = 13 59 02. Kermadec Islands region.
	M	eP	39		
	F	e(P)	42		
Dec. 24	SH	eP	37		USCGS: 13½°S, 74½°W, 0 = 12 50 35. Southern Peru.
	F	eP	13 01 21		
	R	iP	37.6	d	
Dec. 25	B	eP	04 01 32		USCGS: 27½°S, 176°W, 0 = 03 48 58. Kermadec Islands region.
	MH	iP	25.8	c	
	F	iP	32.9	c	
Dec. 25	M	iP	36.5	c	USCGS: 25½°S, 67°W, 0 = 10 18 47. Chile-Argentina border region. Felt at Antofagasta, Chile. h about 100 km. PAS: Magnitude 6-1/2 - 6-3/4.
	R	e(P)	34.6		
	SH	iP	35.1		
	B	iP	10 30 54.2	d	
		epP	31 22		
		isP	44		
		e(S)E	40 55	d	
	BP	iP	30 56.1	d	
	MH	ipP	31 15.3	c	
	F	iP	30 41.8	d	
Dec. 26	M	iP	55.5	d	52°S, 101½°E, 0 = 12 11 09. South Indian Ocean.
		ipP	31 29.7		
	R	iP	30 53.6	d	
	C	iP	31 20.7	d	
	SH	eP	04.3		
	B	iPKP	12 30 53.6	d	
	MH	iPKP	53.9	d	
	F	iPKP	56.1	d	
	M	iPKP	59.1	c	
	R	iPKP	31 01.3	d	
Dec. 26	SH	iPKP	58.2	d	USCGS: 59½°N, 151½°W, 0 = 18 19 10. Kenai Peninsula, Alaska. PAS: Magnitude 6¼.
	B	iP	18 25 08.2	c	
	BP	e(S)NE	30.0		
Dec. 26		eR	32.7		USCGS: 53°N, 160°E, 0 = 22 02 35. Kamchatka foreshock.
		R from NW			
	MH	iP	18 24 14.4	d	
		i	26 57.6		
	F	iP	25 25.8	d	
	M	eP	24 52	d	
		i	25 01.9	d	
	A	iP	24 38.7	c	
	R	iP	25 05.0	d	
	C	iP	24 12.9	d	
Dec. 26	SH	eP	46.5		
	B	e(P)	22 12 15		
	BP	eSE	19 48		
		eREZ	28.3		
		R from W			
Dec. 26	MH	iP	22 12 21.0	d	
	F	eP	47		
	M	iP	07.9	c	
R	eP	07			

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 26	C	e(P)	11 26		USCGS: 52½°N, 160½°E, 0 = 04 47 45. Kamchatka foreshock.
	SH	eP	47		
Dec. 27	B	e(P)	04 57 28		
	BP	iSE	05 05 01		
		eQN	10.6		
		eREZ	13.4		
		R from W			
Dec. 27	MH	i	04 57 31.6		
	M	eP	13.1	d	
	R	e(P)	26.1		
	C	e(P)	56 50.1		
	SH	eP	59.9		
Dec. 27	MH	iP	05 11 27.9	c	USCGS: 52½°N, 160°E, 0 = 05 01 55. Kamchatka foreshock.
	M	eP	12		
	R	e(P)	46		
Dec. 27	SH	eP	08		
	MH	eP	05 17 10		
	M	eP	16 56		
Dec. 27	R	e(P)	17 13		
	SH	eP	16 58		
	MH	eP	07 01 07		
Dec. 27	M	eP	00 53		
	R	eP	01 03		
	SH	eP	00 50		
Dec. 27	MH	iP	08 04 46.2	d	BCIS: 0 = 07 54.9. Kamchatka foreshock.
	M	eP	15		
	R	eP	32		
Dec. 27	SH	eP	02		
	MH	iP	08 15 16.8	d	USCGS: 52½°N, 160°E, 0 = 08 05 30. Near southeast coast of Kamchatka.
	M	eP	14 55		
Dec. 27	R	e(P)	15 15		
	B	e	12 04 26		
	MH	iP	20.3	d	
Dec. 27	F	eP	38.8		
	M	eP	04		
	R	eP	17		
Dec. 27	C	e(P)	03 39		
	SH	eP	04 01		
	B	iP	12 50 50.5	c	
Dec. 27	MH	iP	47.9	c	USCGS: 28°S, 63°W, 0 = 12 39 09. Santiago del Estero Province, Argentina. h about 650 km.
	F	iP	52 58.5	d	
	M	iP	50 38.5	c	
Dec. 27	A	iP	55.5	c	
	R	eP	51 05.0		
	C	iP	50 49.3		
Dec. 27	SH	iP	51 13.7	d	
	B	eP	50 58.7		
	BP	eP	16 02 06		
Dec. 27		eSNEZ	09 27		
		eSSEZ	13 13		
		iGNE	15.0		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 27 (Cont.)		eREZ	17.5		
			R from W		
			mu sec		
		PZ	5 16		
		PH	1.7 18		
		SH	21 27		
		GH	22 28		
	MH	eP	16 02 10		
	F	eP	22		
	M	eP	01 54		
	R	eP	02 06		
	C	eP	01 26		
	SH	eP	49		
	SF	eP	02 11		
Dec. 28	BP	eP	07 30 02	NE	USCGS: 52½°N, 160°E, 0 = 07 20 32. Near east coast of Kamchatka. PAS: Magnitude 6½.
		iSNEZ	37 36		
		eSSE	47 17		
		eQN	43.0		
		eRNEZ	46.0		
			R from WNW		
			mu sec		
		PZ	2.0 10		
		PH	0.9 12		
		SH	15 20		
	MH	iP	07 30 04.0	d	
		i	46.8	c	
	F	eP	16		
	M	eP	29 49		
		i	31 13.9		
	R	eP	30 02		
	C	eP	29 22		
	SH	iP	44.5	d	
	SF	iP	30 02.4	d	
Dec. 28	B	iP	10 15 05.4	c	USCGS: 22½°S, 67½°W, 0 = 10 03 08. Chile-Bolivia border. Felt: Antofagasta. h about 100 km.
		i	31.1		
		i	42.1		
	MH	iP	01.3	d	
		i	28.1	d	
		i	38.8	c	
	F	eP	14 51.6		
	M	eP	15 10.5	d	
		i	37.3		
	R	iP	04.4	c	
	C	iP	31.9	c	
	SH	eP	13.6		
	SF	e	34.9		
Dec. 28	B	(e)P	13 14 07		USCGS: 52½°N, 160°E, 0 = 13 04 30. Near southeast coast of Kamchatka.
	BP	eSE	21 39		PAS: Magnitude 6.
		eQN	27.5		
		eREZ	30.0		
			R from W		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 28 (Cont.)	MH	i(P)	13 14 02.3		
	F	eP	12		
	M	eP	13 48		
	R	iP	14 00.1	c	
	C	e(P)	13 29		
	SH	eP	42		
Dec. 28	MH	eP	13 41 56.5		USCGS: 18°S, 170°E, 0 = 13 29 15. New Hebrides Islands.
	M	eP	42 03.4		
	SH	eP	00.9		
Dec. 29	B	iPNEZ	02 33 14.5	NWc	36°54'N, 121°29'W, 0 = 02 32 53. Northwest of Hollister. Magnitude 4.7.
		iSNE	31.3		
	MH	iPNEZ	02.4	SEd	
		iSNE	08.9		
	F	iP	18.3	c	
		iS	35.5		
	M	eP	47.8		
	A	eP	34 15.2		
	SH	iP	33 54.9		
	V	iP	00.5	NW	
	PA	iPNEZ	08.6	NWc	
	SF	iPNEZ	14.0	NWc	
		iSE	31.4		
Dec. 29	MH	eP	12 10 48		51°N, 130°W, 0 = 12 07 12. Queen Charlotte Islands region.
	F	eP	11 05		
	M	iP	10 10.6	d	
	R	eP	41		
	C	eP	09 12		
	SH	e	10 35		
Dec. 29	B	eP	17 26 38		USCGS: 21½°S, 174°W, 0 = 17 14 40. Tonga Islands.
	BP	eR	51		
			R from SW		
	MH	iP	17 26 35.7	c	
		i	48.7		
		i	27 12.2		
	F	iP	26 41		
	M	eP	46		
		i	58.4	c	
	R	eP	51		
	C	eP	58		
	SH	eP	45		
Dec. 29	B	eP	20 46 50		USCGS: 18°N, 145°E, 0 = 20 35 08. Mariana Islands. h about 350 km. PAS: Magnitude 6 - 6¼.
	MH	iP	54.4	d	
		i	47 19.8	d	
	F	iP	02.5	d	
	M	iP	46 49.5	d	
		i	47 27.6	c	
	R	iP	46 58.2	d	
	C	iP	38.7	d	
		i	49.5		
	SH	iP	46.7	d	
	SF	eP	51		

Date	Sta.	Phase	Time (GCT)	Ground Motion	Remarks
1959			h. m. s.		
Dec. 30	MH M R SH	iP eP eP eP	07 46 28.0 39 52 41	d	BCIS: 0 = 07 34.5. Tonga Islands aftershock.
Dec. 31	M C	e(P) e(P)	21 04 17 55	c	USCGS: 37½°N, 25°W, 0 = 20 52 55. Azores Islands.