

SEISMOLOGICAL LABORATORY

California Institute of Technology  
Pasadena, California

BULLETIN ON LOCAL SHOCKS

January - March, 1960

This bulletin catalogues earthquakes in the general Southern California area for which seismograph data are sufficient for good epicenter determinations. In general this includes shocks of magnitude 3.0 within the boundaries indicated on the index map circulated with earlier issues. (A limited number of copies of this index map are still in stock, available on request until exhausted). Shocks in adjacent parts of Mexico, Nevada, and central California are included when of magnitude 4.5 or over.

Shocks of magnitude less than 3.0 in the Southern California area, or less than 4.5 in the adjacent areas, are included when reported as felt, when unusually well located, or when there is some other reason for special interest.

Artificial earthquakes due to explosions, etc., are not listed.

Dates and times are in terms of Greenwich Civil Time (G.C.T.). For Pacific Standard Time subtract 8 hours, for Pacific Daylight-Saving Time subtract 7 hours; this will sometimes change the date. Time reported is that of origination of the shock, generally to the nearest second; when determination is less precise, time is given to the nearest tenth of a minute.

Latitudes North and longitudes West are in degrees and minutes, or degrees and tenths. Quality of location is indicated in the column headed Q, as follows: A, specially investigated; B, probably within 5 kilometers (3 miles); C, probably within 15 kilometers (or 10 miles); D, very rough.

Magnitudes are given in the column headed M. Index letters and figures, such as K7, refer to the index map.

USCGS, or CGS: United States Coast and Geodetic Survey. Reports of felt earthquakes as collected by the San Francisco office, Seismological Field Survey; epicenters and origin times as determined at the office of the Director, Washington, D. C.

Roman numerals I, II, III.... are intensities on the Modified Mercalli scale of 1931.

Charles F. Richter  
Violet M. Taylor  
January 12, 1961

SEISMOLOGICAL LABORATORY  
California Institute of Technology  
Pasadena, California

BULLETIN ON LOCAL SHOCKS

January - March, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 Jan.									
2	07:11:19	33	46	118	35	C	2.4	H4	Santa Monica Bay.
2	22:51.8	35.4		121.2		D	4.0	C7	Northwest of San Luis Obispo.
5	18:07:43	34	02	117	44	B	3.0	K5	South of Pomona. Felt in Pomona area (telephone to Laboratory).
6	20:52:15	35	01	118	30	C	2.8	H7	Near Tehachapi.
8	06:51:22	33	28	116	27	B	3.1	N3	Southeast of Anza.
8	14:43:04	33	51	118	22	C	2.4	J4	Near Redondo Beach. Felt in the Compton area (press).
10	05:14:08	34	03	117	48	B	3.1	K5	South of Pomona.
11	19:08:40	37	10	117	59	B	3.7	K11	East of Tinemaha. Felt sharply, in the Independence area (telephone, from L.A. City Water Department).
12	23:15.0	31.8		115.7		D	4.1	P0	Baja California.
16	03:10:09	34	03	117	27	B	2.4	L5	Near Mira Loma.
18	21:00:42	34	55	118	57	B	3.4	H6	Near Fort Tejon.
20	02:37:31	34	25	118	50	C	2.5	H5	Near Piru.
20	03:25						5.5	C10	Minor damage in the Hollister area.
21	22:21:08	33	04	115	54	C	2.6	P3	Near Kane Springs.
21	23:52:22	32	49	117	03	B	2.5	L2	Northeast of San Diego. Felt at Descanso and La Mesa (press).
23	03:11:43	35	21	116	13	C	3.5	N7	Mojave Desert, NW of Baker.
24	16:08:32	33	07	116	05	B	3.4	N3	Near Ocotillo.
26	04:17:36	38		116 $\frac{1}{2}$			4.9	M13	Nevada. Epicenter and origin time by USCGS.
29	01:27:03	34	40	116	29	C	3.0	N6	Mojave Desert, south-east of Newberry.

- 2 -

Pasadena Local Shocks  
January - March, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
<u>1960</u>									
<u>Jan.</u>									
29	02:07:48	34	05	118	38	C	2.3	H5	Near Topanga. Felt in North Hollywood and Panorama City (telephone to Laboratory).
30	02:19:34	34	11	118	43	B	2.5	H5	Near Calabasas.
30	20:27:55	34	29	117	51	C	2.3	K5	Near Valyermo.
31	05:54:46	34	14	116	29	B	3.4	N5	West of 29 Palms.
<u>Feb.</u>									
3	08:37.3	32.1		116.0		D	4.5	N1	Baja California.
9	14:01:49	33	11	116	28	B	3.7	N3	Santa Rosa Mountains. Felt in Borrego Spring area (press, from Fred Robinson).
13	00:35:38	34	25	117	00	C	2.8	L5	Vicinity of Lucerne Valley. Peculiar.
16	05:58:20	34	03	117	47	C	2.5	K5	Near Pomona.
16	22:16:20	35	00	118	30	C	2.7	H7	South of Tehachapi.
17	18:00:47	34	08	118	15	C	1.9	J5	Near Glendale. Felt at Warner Bros. studio Hollywood.
17	23:24:46	34	13	118	38	C	2.5	H5	Near Chatsworth.
21	17:02:51	35	18	118	36	B	3.2	H7	Near Caliente.
22	10:54:09	35	18	118	32	C	3.0	H7	East of Caliente.
22	22:57:42	32	13	115	41	C	3.9	P1	Baja California; near Laguna Salada.
24	13:12:34	34	00	117	34	B	3.8	K5	Near Mira Loma. Felt at Fontana, Riverside, Pomona (press).
25	01:39:49	35	20	118	29	C	3.0	J7	Northeast of Caliente.
26	12:58:41	35	06	118	32	B	3.3	H7	Southwest of Tehachapi.
27	08:40:30	34	01	117	46	C	2.4	K5	Near Walnut.
28	02:55:32	34	20	119	57	C	3.1	F5	Off the coast west of Santa Barbara.

- 3 -

Pasadena Local Shocks  
January - March, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 March									
1	12:39:57	33	41	118	06	B	2.7	J4	Off Seal Beach.
2	02:46:43	32	15	115	45	C	3.7	P1	Near Laguna Salada.
4	02:20:13	33	42	118	03	B	2.8	J4	Near Seal Beach.
6	04:26:42	35	02	118	50	C	3.5	H7	Near Wheeler Ridge.
8	00:30:42	35	07	118	42	C	2.8	H7	Near Wheeler Ridge.
16	08:21:38	34	22	118	56	C	3.2	H5	Seismograms peculiar. Near Fillmore. Felt at Santa Paula (press)
19	07:11:35	34	01	116	58	B	2.7	M5	East of Yucaipa.
19	16:09:46	33	30	116	35	B	2.9	M4	Southeast of Anza.
24	09:56:08	36	13	118	18	B	3.2	J9	Sierra Nevada north- west of Haiwee.
24	11:04:40	35	03	119	00	C	2.9	G7	Near Wheeler Ridge.
25	00:27:44	33	59	117	30	B	2.8	K4	Near Mira Loma.
25	14:31:44	35	57	118	26	B	3.2	J8	North of Kernville.
29	03:31.2	38.3		119.3		D	3.9	G13	Vicinity of Bridgeport
29	04:02.0	38.3		119.3		D	4.0	G13	Vicinity of Bridgeport
29	09:58:11	35	58	117	22	C	3.0	L8	Argus Mountains, NE of China Lake.

January 12, 1961

C. F. Richter  
Violet M. Taylor

SEISMOLOGICAL LABORATORY

California Institute of Technology  
Pasadena, California

BULLETIN ON LOCAL SHOCKS

April - June, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 April									
9	03:38.3	38.3		118.8		D	3.8	H13	South of Hawthorne, Nevada.
9	04:00.6	38.3		118.8		D	3.9	H13	South of Hawthorne, Nevada.
9	04:37.9	38.3		118.8		D	4.3	H13	South of Hawthorne, Nevada.
9	08:01.4	38.3		118.8		D	3.6	H13	South of Hawthorne, Nevada.
11	23:35:46	34	38	117	03	C	2.7	L6	South of Barstow.
13	02:50:17	32	44	115	42	B	3.6	P2	West of El Centro.
14	20:45:23	32	52	115	29	B	3.3	Q2	Near El Centro. Felt there (press).
15	19:43:39	34	52	116	42	C	3.1	M6	Near Newberry.
18	02:16.3	37.0		121.2		D	3.9	C11	Region of Hollister.
21	18:08:36	32	44	115	42	B	3.6	P2	West of El Centro. First of a typical Imperial Valley swarm, including about 20 recorded shocks; those of magnitude 3.0 and over listed here.
21	18:11:12	32	44	115	42	B	3.5	P2	West of El Centro.
21	18:36:24	32	44	115	42	B	3.4	P2	West of El Centro.
21	22:53:29	32	44	115	42	B	3.3	P2	West of El Centro.
21	23:39:20	32	44	115	42	B	4.2	P2	West of El Centro. Largest of swarm. Felt at El Centro (press).
24	23:46:30	33	19	116	01	B	3.3	N3	West shore of Salton Sea.
26	10:42:00	33	57	117	33	C	2.6	K4	Near Mira Loma.

- 2 -

Pasadena Local Shocks  
April - June, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
<u>1960</u>									
<u>May</u>									
8	02:26:59	33	06	116	39	B	3.4	M3	Near Julian.
9	06:42:31	34	22	117	45	C	2.0	K5	Northeast of Mt. Wilson
11	07:02:56	33	07	116	26	B	3.3	N3	East of Banner.
12	07:22:19	34	01	117	32	B	2.7	K5	Near Mira Loma. Felt in Riverside area (press)
18	07:08:58	33	06	115	58	B	3.5	P3	West of Kane Springs.
18	11:13:11	33	48	118	40	C	3.1	H4	Outer Santa Monica Bay.
19	06:27:29	33	53	118	40	B	2.9	H4	Outer Santa Monica Bay.
20	23:30:36	34	38	116	53	C	2.8	M6	Near Daggett.
21	21:43:08	34	25	118	45	B	2.7	H5	Near Piru.
23	12:25:18	33	08	116	26	B	3.1	N3	East of Banner.
24	15:30:57	34	10	118	08	C	1.5	J5	Small disturbance near Pasadena; reported felt in Flintridge (press).
25	09:37:16	34	10	118	08	C	1.2	J5	Near Pasadena.
25	12:38:25	34	10	118	08	C	1.5	J5	Near Pasadena. Felt in La Canada (telephone to Laboratory).
25	13:34:54	34	10	118	08	C	1.5	J5	Near Pasadena. Felt in La Canada (telephone to Laboratory).
25	13:51:27	34	10	118	08	C	1.3	J5	Felt in La Canada (telephone to Laboratory).
27	11:24:14	34	10	118	08	C	1.2	J5	Near Pasadena. Reported felt in La Canada (telephone to Laboratory).
27	13:24:27	34	10	118	08	C	1.1	J5	Near Pasadena. Reported felt in La Canada (telephone to Laboratory).
29	04:58:33	34	10	118	08	C	1.2	J5	Near Pasadena.
<u>June</u>									
5	07:47:08	37.5		118.6		D	5.1	H12	Northwest of Bishop. At Lake Crowley, sleepers awakened and water became muddy (personal report to Laboratory). Felt in Yosemite Valley (press)

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 June									
6	01:17:48	41		125			5.5	A15	Off Cape Mendocino. Epicenter and origin time by USCGS. Felt in Humboldt and Del Norte Counties.
9	20:53.3						4.5		Baja California.
11	21:36:56	32	16	115	42	C	4.5	P1	Near Laguna Salada.
12	16:16:58	34	10	117	25	B	2.5	L5	Northwest of San Bernardino.
12	20:36:50	33	42	118	14	C	2.3	J4	Off Long Beach.
17	01:15:24	34	50	116	35	C	2.7	M6	Near Newberry.
19	20:24:43	34	55	119	20	C	2.8	G6	South of Maricopa.
22	21:42:25	35	15	118	41	C	2.7	H7	West of Caliente.
23	18:36:11	33	40	116	45	B	2.7	M4	Near Hemet Reservoir.
24	00:39:56	33	50	117	03	B	3.0	L4	Northwest of San Jacinto.
24	14:38:01	35	21	118	40	C	3.0	H7	Northwest of Caliente.
27	02:52:00	34	00	118	49	B	3.1	H5	Point Dume.
27	21:33:49	34	05	117	27	B	2.9	L5	Near Fontana.
28	12:11:17	31	10	118	45	C	3.5	H0	Off Baja California.
28	17:47:53	34	59	116	54	B	3.1	M6	Northeast of Barstow.
28	20:00:48	34	08	117	26	B	4.1	L5	Northwest of San Bernardino. Intensity IV there and in Colton, Fontana, Pomona, Rialto, Riverside; felt as far as Los Angeles (press)
28	20:34:41	34	08	117	26	B	2.2	L5	Northwest of San Bernardino; aftershock
29	11:33:50	34	08	117	26	B	2.2	L5	Northwest of San Bernardino; aftershock
30	21:16:51	34	06	117	26	B	2.5	L5	Northwest of San Bernardino; aftershock

January 16, 1961

C. F. Richter  
Violet M. Taylor

SEISMOLOGICAL LABORATORY

California Institute of Technology  
Pasadena, California

BULLETIN ON LOCAL SHOCKS

July - September, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 July									
1	03:25:48	35	15	118	35	C	2.5	H7	Near Caliente. Keene, IV (USCGS).
1-	09:31:07	32	11	115	42	C	3.8	P1	Laguna Salada. Felt in Descanso, Calif. Residents were awakened by sharp jolt. (Phone).
1	22:13:45	35	09	117	12	B	4.5	L7	Northwest of Barstow. Press reports are con- fused with those for 09:31 preceding, and do not clearly show this shock was felt.
3	12:21.7	31.7		115.9		D	3.9	P0	Baja California. Reported felt in San Diego (press); probably confusion with instrumental record.
8	03:35:44	33	43	117	52	C	3.3	K4	Near Santa Ana. IV there; felt widely in Orange County (press).
13	07:24:55	30 $\frac{1}{2}$		114			4.5		Gulf of California. Epicenter and origin time by USCGS.
14	05:26.9	32.2		115.6		D	4.0	P0	Baja California.
16	00:22:52	34	15	118	00	C	2.0	J5	Near Mt. Wilson.
20	10:24:57	34	12	117	24	B	3.1	L5	Northwest of San Bernardino, near Devore.
21	02:03:05	34	08	117	48	B	2.9	K5	Near Dalton.
30	02:02:25	35	21	118	30	C	2.9	J7	East of Caliente.

- 2 -

Pasadena Local Shocks  
July - September, 1960

Date	G.C.T.	Lat.	N.	Long. W.	Q.	M.	Index	Remarks
1960 August								
1	02:55:15	34	18	119	03	C	3.4	G5 Near Santa Paula. Felt at Ventura (Mr. Nordquist); at Oxnard and in the San Fernando Valley (press).
1	19:39:30	33	10	116	28	C	4.2	N3 East of Banner. Felt at Descanso (press).
1	22:56:01	35	00	119	02	B	2.9	G7 Near Wheeler Ridge.
3	19:43:26	33	07	116	24	B	3.4	N3 East of Banner.
6	14:36:40	33	08	116	25	B	3.3	N3 East of Banner.
9	02:26:34	35	19	118	30	B	3.8	H7 East of Caliente.
10	19:12:05	32	37	115	17	C	3.6	Q2 Near Volcano Lake, Baja California.
10	19:19:47	32	37	115	37	C	3.7	Q2 Near Volcano Lake.
10	19:29:35	32	37	115	37	C	3.7	Q2 Near Volcano Lake.
10	19:55:22	32	37	115	17	C	3.5	Q2 Near Volcano Lake.
12	04:11:59	33	07	116	25	B	3.6	N3 East of Banner.
16	19:50:33	35	00	119	02	B	3.2	G7 Near Wheeler Ridge.
17	09:05:48	36	09	117	58	B	3.1	K9 Very near Haiwee.
20	23:27:42	33	41	118	22	B	3.8	J4 Off Point Fermin. Rattled dishes and window in Long Beach and vicinity; felt at Redondo Beach, Gardena, Firestone Park, Lennox, Huntington Park, and as far north as Los Angeles civic center (press).
21	10:00:54	35	15	118	35	B	3.0	H7 Near Caliente.
21	21:27:32	31.9		116.2		D	4.0	N0 Baja California.
21	23:07:03	34	11	117	25	B	3.8	L5 Northwest of San Bernardino. Felt at Cucamonga, Fontana, Riverside, San Bernardino, and as far as Pasadena (press).
24	02:44.6	31.7		115.3		D	4.4	Q0 Baja California.

- 3 -

Pasadena Local Shocks  
July - September, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 September									
1	07:35:05	34	07	117	17	B	3.5	L5	Near San Bernardino. Felt at Fontana, Redlands, San Bernar- dino and vicinity (press).
1	12:53:04	35	11	118	39	B	2.9	H7	North of Caliente
1	22:39:54	33	48	116	08	B	3.8	N4	North of Indio.
3	15:53:08	33	46	117	32	B	2.9	K4	South of Corona.
5	03:28:23	33	45	116	06	B	3.5	N4	Northeast of Indio.
5	11:14:47	35	19	118	32	C	2.9	H7	East of Caliente.
8	18:41.6	37.5		118.7		D	4.0	H11	Northwest of Bishop.
9	12:28.2	31.7		115.7		D	3.8	P0	Baja California.
10	00:42:46 <sup>x</sup>	34	20	117	53	B	2.1	K5	Northeast of Mt. Wilson. Artificial?
19	04:46:26	29.0		114.1			4.2	S0	Gulf of California. Epicenter by USCGS.
28	06:26.4	31.7		116.0		D	3.9	P0	Baja California.
28	10:09:03	34	05	116	42	C	2.9	M5	Near Mt. San Gorgonio.
28	22:37:10	33	54	118	22	C	2.3	J4	Near El Segundo.

July 25, 1961

C. F. Richter  
Violet M. Taylor  
Shawn Biehler

*check for Am*

AUG 11 1960 SEISMOLOGICAL LABORATORY  
California Institute of Technology  
Pasadena, California

BULLETIN ON LOCAL SHOCKS

October - December, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 October									
3	04:38.9	31.7		116.0		D	3.9	N0	Baja California.
4	09:22:16	34	12	117	18	B	2.7	L5	North of San Bernardino. Felt at Upland (telephone to Laboratory).
5	08:04:50	35	26	118	46	B	3.1	H7	Northwest of Caliente.
5	13:09:24	34	07	117	26	B	2.4	K5	Near Fontana.
8	12:47:04	34	53	116	26	C	3.2	N6	Cady Mountains (east of Barstow).
8	16:25:08	35	02	119	06	C	3.1	G7	Near Wheeler Ridge.
9	06:32:16	35	03	119	11	C	3.4	G7	Southeast of Taft.
14	21:02:51	35	01	119	01	B	3.4	G7	Near Wheeler Ridge.
15	04:30:39	34	11	117	32	B	2.7	K5	North of Etiwanda.
16	23:05:59	35	45	117	20	C	3.4	L8	Searles Lake.
18	12:17:08	35	41	119	20	C	3.3	G8	Northwest of Bakersfield.
18	16:37:46	35	41	119	20	B	3.3	G8	Northwest of Bakersfield.
21	00:11:44	35	08	119	02	C	3.2	G7	North of Wheeler Ridge.
25	16:22:42	35	05	118	19	C	2.7	J7	Near Tehachapi Pass.
28	02:00:40	33	37	118	02	B	2.7	J4	Off Huntington Beach.
28	19:22:05	33	37	118	02	B	2.7	J4	Off Huntington Beach.
29	02:39:33	34	18	116	21	B	3.1	N5	Northwest of 29 Palms.
29	05:33:58	34	18	116	21	B	3.4	N5	Northwest of 29 Palms.
30	04:16:17	33	00	117	29	C	3.0	L3	Northwest of San Diego.
30	15:57:55	34	19	116	17	B	2.9	N5	Northwest of 29 Palms.
31	04:46:25	34	22	116	12	B	3.3	N5	Northwest of 29 Palms.
31	09:59:56	34	19	116	17	B	3.0	N5	Northwest of 29 Palms.

- 2 -

Pasadena Local Shocks  
October - December, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960									
November									
3	06:50.4	37.0		121.1		D	4.8	C10	Hollister district.
6	11:55:22	33	41	118	02	B	3.3	J4	Near Huntington Beach.
7	21:11:01	35	18	119	20	C	3.8	G7	Near Buena Vista Lake. Deeper than usual?
8	01:22:17	35	17	118	35	B	2.9	H7	Near Caliente.
8	19:00:18	33	18	118	36	C	3.0	H3	West of Catalina Island.
11	14:04.5						3.9	P0	Baja California.
13	07:52:58	35	45	118	00	B	3.4	J8	Near Walker Pass.
17	06:55:47	33	18	116	38	C	3.4	M3	Near Warner Springs.
18	11:03:15	39.3		120.5			4 $\frac{1}{4}$	E15	Felt in Plumas County. Epicenter and origin time by USCGS; magni- tude by Berkeley.
18	23:22:11	34	57	117	40	C	2.5	K6	Artificial? Mojave Desert south of Kramer.
19	23:59								Artificial? Off the coast.
20	04:39:02	34	07	117	48	B	2.9	K5	Near Dalton.
22	05:47:42	35	05	116	36	B	3.3	M7	Northeast of Barstow.
23	00:15:24	32	43	118	15	C	3.0	J2	Off San Clemente Island. Reported felt at San Diego. Possibly artificial.
23	17:44:28	32	43	118	15	C	3.0	J2	Off San Clemente Island. Times closely like those of the preceding. Seismo- grams peculiar. Artificial?
25	22:30:28	33	16	117	31	C	3.4	K3	Off Oceanside.
28	13:26:56	33	07	118	52	C	3.3	H3	Northwest of San Clemente Island.
December									
1	05:39:55	37	30	118	35	C	3.6	H12	Northwest of Bishop.
1	14:23:49	34	20	119	51	B	3.2	F5	Off Santa Barbara.
1	19:52:45	32	54	115	29	B	3.5	Q2	Northeast of El Centro. Rattled windows at Brawley and Westmorland (press).

- 3 -

Pasadena Local Shocks  
October - December, 1960

Date	G.C.T.	Lat.	N.	Long.	W.	Q.	M.	Index	Remarks
1960 December									
2	20:38:44	34	37	117	10	C	2.9	L6	East of Victorville.
3	18:07:43	34	04	117	14	B	2.7	L5	Near San Bernardino.
5	13:00	31.5		115.5			4.1	P0	Baja California.
18	23:23.6	38.7		119.5		D	4.2	F14	Southeast of Lake Tahoe.
20	22:18:15	35	07	116	35	C	3.0	M7	Northeast of Barstow.
22	04:11:18	33	10	116	01	B	3.2	N3	West of Salton Sea.
23	18:39:53	35	20	118	35	C	2.7	H7	Near Caliente.
26	22:47:09	34	08	118	38	C	2.6	H5	Northwest of Santa Monica.
28	15:59.8	32.2		115.7		D	3.7	P1	Near Laguna Salada.
29	14:32:55	35	25	117	47	B	2.9	K7	Near Garlock. Times peculiar
30	21:33:44	33	16	115	56	B	3.8	N3	West shore of Salton Sea, near Truckhaven.
30	21:40:25	33	16	115	56	B	4.0	N3	West shore of Salton Sea, near Truckhaven.
31	06:18:34	34	05	116	49	C	3.0	M5	Near Mt. San Gorgonio.

July 27, 1961

C. F. Richter  
Violet M. Taylor  
Shawn Biehler