



PANAMA CANAL COMPANY  
Engineering and Construction Bureau  
Meteorological and Hydrographic Branch

Balboa Heights, Canal Zone

Lat. 8° 57' 39" N  
Long. 79° 33' 29" W

SEISMOLOGICAL BULLETIN - JANUARY 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(miles)	
1	1	iP is	Zne ne	10-59-07 59-43	175	
2	3	iP is	Z ne	08-18-23 19-06	205	
3	9	eP eS	Zn ne	21-18-00 18-43	210	
4	13	iP	ALL	15-45-50D	1,800	
5	15	iP	ALL	09-35-31C	1,800	
6	17	iP is	Z E	03-03-04D 07-26	1,800	USCGS: 14½ S 74½ W Near Coast of Southern Peru
7	18	iP is	Z E	11-00-05C 01-34	550	
8	18	iP is	ALL NEne	19-30-53C 31-16.5	120	USCGS: Felt Force III
9	20	iP is	ALL ALL	10-57-31D 57-57	120	
10	23	iP	Z NE	05-00-51		USCGS: 4 S 127½ E Geram Island Region
11	23	iP	Z NE	07-51-08		USCGS: 4 S 127½ E Geram Island Region
12	23	iP	Z NE	18-16-29		USCGS: 4 S 127½ E Geram Island Region
13	30	iP is	Zn n	01-44-28C 45-42	450	



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Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(miles)	
14	30	iP	Zn	04-29-030	85	
		iS	ne	29-21		
15	30	iP	Zne	17-02-15D	325	
		iS	ne	03-12		

*W. H. Esslinger*  
W. H. ESSESLINGER  
Chief Hydrographer



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SEISMOLOGICAL BULLETIN - FEBRUARY 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance (miles)	Remarks
				G.C.T.		
1	4	eP	Z	04-05-55		USCGS: 4½ S 153½ E New Ireland Region
2	7	eP eS	ne ne	04-26-47 28-10	500	USCGS: 7½ N 71½ W Venezuela
3	8	iP iS	ZNE NE	12-56-35D 13-05-37	4,650	USCGS: 58 S 67 W Drake Passage
4	10	iP	Z	00-15-43C		USCGS: 4 S 128 E Ceram Island Region
5	10	iP eS	Z ne	22-54-30D 55-47	450	
6	25	eP eS	ne ne	08-52-23 52-30	130	
7	25	eP eS	Z ne	15-16-50D 17-64	450	
8	27	iP iS	ALL ne	12-06-36C 07-15	185	
9	29	iP iS	ALL ne	02-12-34D 12-57	110	USCGS: Felt Force II
10	29	iP iS	ALL ne	02-23-47 D 24-08	110	USCGS: Felt Force I
11	29	iP iS	ALL ne	03-04-44C 05-05	110	USCGS: Felt Force I

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SEISMOLOGICAL BULLETIN - MARCH 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
1	5	eP	Z	14-09-08		USCGS: 1 N 129 E Halmahera I.
2	5	iP iS	Z ne	14-10-52D 11-25	160	
3	9	iP	Z	23-59-52C		USCGS: 16 S 72 W Southern Peru
4	13	iP iS	ALL NEne	23-54-12 54-18	180	USCGS: 7½ N 77 W Panama-Colombia Border Felt Force I
5	14	iP iS	ALL NEne	00-41-23 41-59	180	USCGS: 7½ N 77 W Panama-Colombia Aftershock Felt Force I
6	20	i	N	17-56-28		USCGS: 40 N 143½ E Off Northeast Coast of Honshu, Japan
7	28	iP iS	ALL NEne	00-14-27C 15-03	175	USCGS: 7½ N 82 W Off South Coast of Panama Felt Force III
8	28	iP iS	ALL NEne	00-31-41C 32-17	175	
9	28	iP iS	ALL NEne	01-08-28C 09-04	175	
10	28	iP iS	ALL NEne	01-13-06C 13-42	175	
11	28	iP iS	ALL NEne	02-03-20D 03-56	175	
12	28	iP iS	ALL NEne	05-38-11C 38-47	175	



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h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
13	29	iP	Zne	01-46-56D	175	
		iS	ne	47-32		
14	29	iP	Zne	16-01-50	175	
		iS	ne	02-25		
15	30	iP	Zne	22-36-15D	80	
		iS	ne	36-32		
16	31	iP	Zne	03-47-44D	175	
		iS	ne	48-20		
17	31	iP	Zne	09-34-59D	175	
		iS	ne	35-44		
18	31	iP	Zne	09-58-47D	175	
		eS	ne	59-32		
19	31	i	Z	15-18-40		USCGS: Pacific Ocean, about 900 Miles Southwest of Galapagos Islands

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SEISMOLOGICAL BULLETIN - APRIL 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
1	2	iP iS	Zne ne	10-35-04D 35-40	175	
2	2	iP iS	Zne ne	15-02-12C 03-25	180	USCGS: 3 N 76½ W Colombia
3	4	eP iS	Z e	23-51-56 52-42	210	
4	6	iP iS	Zne ne	14-59-28C 15-00-15	225	
5	7	iP iS	ALL ne	06-02-44D 03-20	175	Felt strong on Island of Coiba, R. de P.
6	9	iP iS	Zne ne	07-19-04D 19-43	185	
7	13	iP iS	ZNE N	12-40-58D 43-48	1,050	USCGS: 15½ N 92½ W Guatemala-Mexico Border
8	15	iP iS	Z N	03-34-25C 41-32	3,450	USCGS: 27 S 113 W Easter Island Region
9	21	iP	ZNE	02-23-04D		USCGS: 2½ S 110 W Pacific Ocean, About 1200 Miles West of Galapagos Islands
10	24	iP	Z	03-41-28D		USCGS: 6 S 113½ E Java Sea
11	26	iP	Z	04-35-25D		USCGS: 11 N 84½ W Nicaragua-Costa Rica Border
12	29	iP	Z	12-49-38C		USCGS: 1 S 78½ W Ecuador
13	29	iP	Z	19-52-11C		USCGS: 0 122 E Celebes

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SEISMOLOGICAL BULLETIN - MAY 1960

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No.	Date	Phase	Comp.	Time	Epicentral Distance (Miles)	Remarks
				G.C.T.		
1	1	iP iS	ZNE NE	00-28-29D 29-03	165	
2	1	iP iS	ZNE NE	03-40-53C 41-39	220	
3	6	iP iS	Z n	00-03-54C 04-44	240	
4	12	iP iS	Zne ne	22-33-05C 33-29	110	USCGS: 7½ N 81 W Felt strong in Southwest Panama Felt Force IV
5	12	iP iS	Zne ne	22-36-49 37-13	110	
6	12	iP iS	Zne ne	22-42-17 42-41	110	
7	12	iP iS	Zne ne	22-44-38D 45-01	110	
8	12	iP iS	Zne ne	22-48-14D 48-38	110	: Felt Force I
9	12	iP iS	Zne ne	22-52-43C 53-05	110	
10	12	iP iS	Zne ne	22-53-28D 53-52	110	
11	12	iP iS	Zne ne	22-55-17C 55-41	110	: Felt Force I
12	12	iP iS	Zne ne	23-00-14C 00-38	110	
13	12	iP iS	Zne ne	23-01-08D 01-32	110	USCGS: 7½ N 80½ W Near South Coast of Panama Felt Force I
14	12	iP iS	Zne ne	23-05-00C 05-24	110	



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No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
15	12	iP	Zne	23-13-18	110	
		iS	ne	13-41		
16	12	iP	Zne	23-24-17	110	
		iS	ne	24-40		
17	12	iP	Zne	23-32-18	110	
		iS	ne	32-42		
18	13	iP	Zne	00-13-30D	110	
		iS	ne	13-53		
19	13	iP	Zne	00-31-08D	110	USCGS: Felt Force I
		iS	ne	31-32		
20	13	iP	Zne	00-34-02	110	USCGS: Felt Force I
		iS	ne	34-26		
21	13	iP	Zne	00-51-44D	110	
		iS	ne	52-07		
22	13	iP	Zne	01-11-02D	110	USCGS: Felt Force I
		iS	ne	11-26		
23	13	iP	Zne	01-19-08C	110	USCGS: Felt Force I
		iS	ne	19-32		
24	13	iP	Zne	08-08-46	110	
		iS	ne	09-10		
25	13	iP	Zne	12-27-32D	110	
		iS	ne	27-56		
26	13	iP	Zne	14-35-39D	110	
		iS	ne	36-18		
27	13	iP	Zne	17-58-04	110	
		iS	ne	58-28		
28	14	iP	Zne	02-19-09D	110	
		iS	ne	19-33		





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No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
29	14	iP	Zne	03-09-19D	110	
		iS	ne	09-43		
30	14	iP	Zne	04-12-20D	110	
		iS	ne	12-45		
31	14	iP	Zne	08-02-46D	110	
		iS	ne	03-11		
32	15	iP	Zne	03-22-55D	110	
		iS	ne	23-19		
33	15	iP	Zne	18-56-37C	110	
		iS	ne	56-58		
34	16	iP	Zne	01-59-04D	110	
		iS	ne	59-27		
35	17	iP	Zne	09-38-34D	110	
		iS	ne	38-58		
36	18	iP	Z	23-37-46D	110	
		iS	n	38-08		
37	21	iP	Z	03-36-59D		
		iS	ne	37-23		
38	21	iP	Z	10-11-24C	3,200	USCGS: 37½ S 73½ W Near Coast of Chile. Extensive damage at Concepcion and the Surrounding Area
		iS	N	17-54		
39	21	iP	Z	11-03-53C		USCGS: 37½ S 72½ W Chile
		iS	e	04-17		
40	21	iP	Z	13-08-30C		USCGS: 37½ S 72½ W Chile
41	21	iP	Z	19-37-26D		
		iS	e	38-01		
42	22	iP	Z	10-39-14D		USCGS: 38 S 73½ W Near Coast of Chile



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No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
43	22	iP iS	Z NE	19-04-35C 11-25		
44	22	iP	Z	22-16-57C		USCGS: 38 S 73½ W Near Coast of Chile
45	22	iP	Z	22-22-44C		
46	23	iP	Z	00-34-20C		USCGS: 38½ S 75 W Near Coast of Chile
47	23	iP	Z	00-59-45C		USCGS: 37½ S 72 W Chile
48	23	iP	Z	01-02-41D		
49	23	iP	Z	01-43-38D		USCGS: 39½ S 74 W Near Coast of Chile
50	23	iP	Z	02-55-32C		USCGS: 41½ S 73½ W Southern Chile
51	23	iP	Z	03-05-29D		USCGS: 43 S 75½ W Near Coast of Chile
52	23	iP	Z	05-22-12D		USCGS: 38 S 73½ W Chile
53	23	iP	Z	06-33-13D		
54	23	iP	Z	07-19-05C		USCGS: 48 S 77 W Off Coast of Chile
55	23	iP	Z	10-47-17D		USCGS: 43½ S 73¼ W Chile
56	25	iP	Z	08-44-03D		USCGS: 45 S 76 W Off Coast of Chile
57	27	iP	Z	23-16-19C		USCGS: 45 S 77 W Off Coast of Chile
58	28	iP	Z	03-14-39D		USCGS: 39½ S 74½ W Chile



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No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
59	28	iP iS	Z e	05-59-19D 59-42	110	
60	29	iP iS	Z NE	07-48-00C 54-50	3,900	USCGS: 38 S 72½ W Chile
61	31	iP iS	Z N	02-48-47D 55-53	3,450	USCGS: 39½ S 75 W Chile
62	31	iP iS	Z E	11-06-46C 10-38	1,500	USCGS: 18 N 62 W Leeward Islands

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SEISMOLOGICAL BULLETIN - JUNE 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time		Epicentral Distance (Miles)	Remarks
				G.C.T.			
1	1	iP iS	Z N	18-42-12D 42-52		190	
2	2	iP iS	Z N	06-07-40D 15-24		3,800	USCGS: 46½ S 74 W Southern Chile
3	2	iP	Z	08-06-26D			
4	2	iP	Z	08-45-02D			USCGS: 40 S 74 W Near Coast of Chile
5	3	iP iS	Z n	03-35-54C 36-35		195	
6	4	iP	ZNE	02-32-44C			USCGS: 20 N 104½ W Near Coast of Jalisco, Mexico
7	6	iP	Z	01-26-53D			USCGS: 41 N 125 W Off Coast of Northern California
8	6	iP	ZNE	06-05-22D			USCGS: 40½ S 72 W Southern Chile
9	8	iP iS	Zne ne	21-49-13C 50-12		285	
10	11	iP iS	Z N	00-41-01C 44-57		1,500	USCGS: 21S 64½ W Southern Bolivia
11	11	iP	Z	15-33-19D			USCGS: 9 S 152½ E D'Entrecasteaux Is.
12	11	iP	Z	16-56-50D			USCGS: 9½ S 152½ E D'Entrecasteaux Is.
13	12	iP	Z	07-28-30D			USCGS: 36 S 98 W South Pacific Ocean

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No.	Date	Phase	Comp.	Time	Epicentral Distance		Remarks
				G.C.T.	(Miles)		
14	13	iP iS	Z e	17-30-15C 30-51	175		
15	15	eP	Z	07-27-32			
16	20	iP iS	Z E	02-09-46C 16-50	3,425	USCGS: 38 S 73½ W Near Coast of Chile	
17	20	iP iS	Z E	13-08-24C 15-24	3,425	USCGS: 39½ S 73 W Chile	
18	21	eP iS	N N	08-43-34 48-54	2,300		
19	25	iP iS	ALL ne	13-55-33D 56-46	450		
20	29	iP iS	Zne ne	11-50-24D 50-48	115		

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SEISMOLOGICAL BULLETIN - JULY 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
1	1	iP	Z	05-26-15D	165	
		iS	n	26-49		
2	3	iP	Z	20-33-39D	6,200	
		iS	N	44-23		
3	4	iP	Z	04-38-45D	4,150	
		iS	N	46-59		
4	4	iP	Z	11-19-37D	145	
		iS	n	20-07		
5	7	iP	Z	08-58-08D	200	
		iS	ne	58-50		
6	19	iP	Z	04-23-02D	1,100	
		iS	E	26-09		
7	25	i	Z	11-30-22D		
8	30	iP	Z	02-07-19D		USCGS: 1.4 S 79.1 W Ecuador
9	31	iP	Z	03-14-56D		
10	31	iP	Z	15-04-12C		USCGS: 43.6 S 74.3 W Near Coast of Central Chile

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SEISMOLOGICAL BULLETIN - AUGUST 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance (Miles)	Remarks
				G.C.T.		
1	1	iP iS	Z n	12-35-34D 35-59	120	
2	9	iP iS	NE NE	7-38-40D 45-48		USCGS: 21.1 S 71.6 W Off Coast of Chile
3	11	iP iS	ZneNE ne	12-39-49C 40-30	205	: Felt in Puerto Armuelles Panama
4	11	iP	ZNE	23-36-34D		
5	11	iP	ZNE	23-58-16C		USCGS: 11.5 S 66.3 E Santa Cruz Island
6	13	iP iS	ZNE NE	14-23-42 30-45	3,400	USCGS: 39.7 S 74.8 W Near Coast of Chile
7	14	iP iS	ZNE NE	22-52-41 58-02	2,350	USCGS: 23.5 S 66.4 W Jujuy Province, Argentina
8	15	iP iS	ZNE NE	07-18-40 23-54	2,250	
9	15	i	Z	14-53-21		USCGS: 13.5 S 67.0 E Indian Ocean
10	15	i	Z	23-20-08		
11	16	iP iS	Z NE	02-52-52 57-26	1,800	USCGS: 16.5 S 71.5 W Southern Peru
12	16	iP iS	Z ne	22-53-30 54.43		
13	20	iP iS	Z NE	00-22-24 25-11	1,000	USCGS: 14.3 N 91.4 W Guatemala Felt in El Salvador
14	20	iP iS	Z	20-20-17 29-45	6,000	USCGS: 35.6 S 15.4 W Tristan da Cunha region



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				G.C.T.	(Miles)	
15	21	iP iS	Z NEne	04-56-23 57-12	235	
16	21	iP iS	Z ne	21-44-40 45-23	205	USCGS: 4.6 N 78.9 W Off Coast of Colombia
17	23	e	NE	23-30-12		
18	24	e	NE	06-44-59		
19	28	iP iS	ALL Nene	06-06-52 08-06		USCGS: 3.7 N 82.8 W South of Panama
20	28	iP	Z	12-14-36		
21	28	iP iS	Z NEne	19-04-00 05-45		
22	29	iP	Z NE	04-55-43 57-44		USCGS: 1.0 N 85.3 W Galapagos Islands Region
23	29	iP iS	Z ne	09-15-04 15-34		
24	30	eP eS	Z NE	06-53-32 07-00-10	3,010	USCGS: 20.9 S 113.7 W South Pacific Ocean
25	30	iP iS	ALL ALL	11-18-30 58	135	
26	31	eP eS	NE NE	07-31-11 37-49		USCGS: 20.9 S 114.1 W South Pacific Ocean

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Balboa Heights, Canal Zone

Lat. 8° 57' 39" N  
Long. 79° 33' 29" W

SEISMOLOGICAL BULLETIN - SEPTEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
1	1	iP iS	ALL ALL	6-00-40 01-19	175	USCGS: 7.0 N 77.3 W Panama Colombia Border
2	1	eP eS	NE NE	15-58-06 16-19-06		USCGS: 56.1 N 153.7 W Kodiak Island, Alaska
3	2	iP i	ALL ALL	11-10-04 11-18		USCGS: 15.2 S 167.4 E New Hebrides Island
4	2	iP iS	Z E	22-15-26 25-16		USCGS: 52.0 N 171.4 W Fox Islands, Aleutian Island
5	7	iP	Z	01-29-22		USCGS: 37.2 S 16.1 W Tristan da Cunha Region
6	8	e	Z	11-27-25		USCGS: 6.2 N 126.2 E Near East Coast of Mindanao, P. I.
7	9	eP iS	Z NE	17-07-35 11-07	1,270	
8	10	e	Z	11-05-52		USCGS: 4.0 N 122.6 E Celebes Sea
9	14	iP	ZNE NE	01-56-46 02-03-05	2,950	USCGS: 19.6 N 70.3 W Dominican Republic
10	14	iP	ZNE NE	05-06-10 13-29	3,560	USCGS: 35.1 S 106.0 W South Pacific Ocean
11	15	iP iS	Z ALL	15-44-07 45-25	500	
12	16	iP iS	Z ALL	15-43-16 44-08	200	
13	17	eP eS	Z NE	06-45-21 46-42	500	



PANAMA CANAL COMPANY  
Engineering and Construction Bureau  
Meteorological and Hydrographic Branch

Balboa Heights, Canal Zone

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SEISMOLOGICAL BULLETIN - SEPTEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.	(Miles)	
14	17	eP	NE	20-20-23	500	
15	18	iP	Z	14-05-33	450	
		iS	ALL	06-45		
16	19	e	Z	03-59-23		USCGS: 15.6 N 120.0 E Luzon Island Philippine Islands
17	19	iP	Z	18-52-38	230	
		iS	Z	53-26		
18	19	iP	Z	18-59-09	230	
		iS	Z	58-58		
19	19	iP	Z	19-02-06	230	USCGS: 6.9 N 77.5 W Colombia-Panama Border Felt Force I
		iS	NE	02-53		
20	19	eP	Z	21-18-54	230	
		eS	Z	19-42		
21	20	iP	Z	13-51-26	185	
		iS	neN	52-04		
22	20	iP	Z	16-07-54	185	
		iS	neN	08-33		
23	20	iP	Z	19-37-01	185	
		iS	neN	40		
24	22	eP	Z	09-16-47	220	USCGS: 2.8 S 29.8 E Belgian Congo
		eS	ZNE	09-17-33		
25	22	eP	Z	22-10-43	210	
		iS	ALL	11.27		
26	23	eP	Z	02-06-37	230	
		iS	ALL	07-25		



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SEISMOLOGICAL BULLETIN - SEPTEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance (Miles)	Remarks
				G.C.T.		
27	23	iP	Z	02-27-37	205	
		iS	ALL	28-20		
28	23	iP	Z	02-53-25	200	
		iS	ALL	54-07		
29	23	eP	Z	03-21-29	205	
		eS	ALL	22-11		
30	23	iP	Z	16-50-20D	500	
		iS	NE	51-41		
31	23	iP	ALL	21-59-19	115	
		iS	ne	59-43		
32	26	iP	Z	15-15-18D	240	
		iS	n	16-08		
33	26	iP	Z	17-03-46 C		USCGS: 15.9 S 72.9 W Southern Peru
34	26	iP	Z	20-13-28	215	
		iS	n	14-13		
35	26	iP	Z	20-56-34D	125	
		iS	n	57-00		
36	27	iP	Z	01-15-42D	125	
		iS	n	16-07		
37	27	iP	Z	18-09-55D	125	
		iS	n	10-19		
38	28	iP	Z	01-29-01C	125	
		iS	n	29-27		
39	29	iP	ZNE	18-57-14C		USCGS: 14.9 N 90.3 W Guatemala

W. H. ESSLINGER  
Chief Hydrographer



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Balboa Heights, Canal Zone

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SEISMOLOGICAL BULLETIN - OCTOBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SL horizontal (n,e).

No.	Date	Phase	Comp.	Time	Epicentral Distance	Remarks
				G.C.T.		
1	2	iP iS	Z N	13-43-22G 44-05	205	
2	7	iP i	Z ne	15-38-16G 38-28		USCGS: 7.4 S 130.7 E Banda Sea
3	7	eP iS	n n	19-08-47 09-55	325	
4	7	iP i	NE NE	20-16-13 22-14	3,400	USCGS: 20.4 S 113.7 W Easter Island Region
5	8	iP iS	Z N	01-56-15D 02-00-00	1,400	USCGS: 16.7 N 97.9 W Oaxaca, Mexico
6	8	iP	Z	06-10-54		USCGS: 40.0 N 129.7 E Sea of Japan
7	13	iP iS	Z N	14-11-26D 12-16	240	
8	13	iP iS	Z N	17-19-15G 20-02	225	
9	14	iP	Z	21-31-44G		
10	16	iP	Z	09-37-39D		USCGS: 9.4 N 90.6 W Off Coast of Nicaragua
11	17	iP iS	ALL ne	15-46-35G 47-22	225	USCGS: 4.8 N 78.4 W Off Coast of Colombia
12	17	iP iS	Z n	15-57-11D 57-58	225	USCGS: 5.1 N 78.1 W Near Coast of Colombia
13	27	iP iS	Z E	05-28-16D 32-13	1,550	USCGS: 1.4 N 90.9 W Galapagos Islands Region



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SEISMOLOGICAL BULLETIN - OCTOBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson horizontal (n,e).

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
14	30	iP	Z	12-21-15C		USCGS: 23.3 S 70.3 W Near Coast of Chile
15	30	iP iS	Z N	21-39-28C 44-47	2,300	USCGS: 22.8 S 68.0 W Chile-Bolivia Border
16	31	iP iS	ALL ne	19-18-33C 18-50	80	Felt Force III NE

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Balboa Heights, Canal Zone

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SEISMOLOGICAL BULLETIN - NOVEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e).

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
1	1	iP iS	Z E	08-54-32D 09-01-50	3,550	USCGS: 38.4 S 74.4 W Near Coast of Chile
2	1	iP iS	Z ne	17-21-24D 21-42	85	
3	2	iP	Z	17-33-31D		USCGS: 10.9 S 164.9 E Santa Cruz Islands
4	6	i	E	07-04-09		
5	9	iP iS	Z E	03-30-15D 40-25	5,600	USCGS: 60.7 S 24.8 W Sandwich Islands
6	9	iP	ZN	20-12-57D		USCGS: 23.2 S 70.6 W Near Coast of Chile
7	10	iP	Z	15-04-15C		USCGS: 2.6 S 139.4 E Near Coast of New Guinea
8	13	iP	Z	06-56-49 C		USCGS: 1.4 N 127.2 E Molucca Passage
9	13	iP iS	Z E	09-32-56D 43-11	5,600	USCGS: 51.1 N 168.8 W Fox Islands, Aleutian Islands
10	14	iP iS	Z E	20-02-46 07-21	1,800	USCGS: 14.5 N 92.8 W Near Coast of Chiapas, Mexico
11	14	eP iS	Z N	23-03-59 05-18	500	
12	15	eP eSR <sub>2</sub>	Z N	06-47-59C 07-08-24	6,300	USCGS: 62.5 S 161.7 W Antarctic Ocean, Southeast of New Zealand
13	16	iP iS	Z NE	15-39-43D 40-43	290	USCGS: 10.4 N 74.2 W Near Coast of Colombia



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SEISMOLOGICAL BULLETIN - NOVEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson horizontal (n,e).

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
14	20	iP	Z	22-05-36G		USCGS: 6.8 S 80.7 W Near Coast of Peru
15	21	iP iS	Z ne	15-36-50G 37-21	150	
16	23	eP iS	E E	14-26-14 36-54	6,200	
17	24	iP iS	Z NE	07-06-28 17-06	6,200	USCGS: 24.2 S 176.1 W South of Tonga Islands Region

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SEISMOLOGICAL BULLETIN - DECEMBER 1960

h: 36 meters

Sprengnether vertical (Z); Sprengnether LP horizontal (N,E); Wood-Anderson SP horizontal (n,e)

No.	Date	Phase	Comp.	Time G.C.T.	Epicentral Distance (Miles)	Remarks
1	2	eP, iP iS, iS'	Z ZNE E E	09-17-25 17-39D 18-50 18-59	500	
2	2	iP'	Z	09-44-26G		USCGS: 24.3S 69.8W Near Coast of Chile
3	6	iP iS	Z ne	08-57-01D 57-51	240	USCGS: Felt in Chiriqui Province, Panama. Rated Intensity V from press accounts.
4	13	i i	Z NE	07-56-22G 08-06-14	5,000	USCGS: 52.1S 160.9E Macquarie Islands
5	15	iP	Z	00-11-12C		
6	17	iP	Z	07-44-00D		USCGS: 15.1S 73.5W Southern Peru
7	18	iP iS	Z n	19-40-05D 40-54	235	USCGS: 24.2S 76.6W Northern Chile-Argentina Border
8	22	iP	Z	21-22-06D		USCGS: 6.8S 155.3E Solomon Islands
9	24	iP	Z	23-21-35D		
10	26	iP iS	Z ne	05-37-37D 38-25	230	USCGS: Costa Rica-Panama Border Region
11	27	iP	Z	18-14-43D		USCGS: 13.7S 74.3W Near Coast of Peru
12	29	iP iS	Z NE	10-46-05C 53-36	3,450	USCGS: 44.8S 75.6W Near Coast of Southern Chile
13	31	iP	ZN	18-17-24D		USCGS: 43.9S 75.0W Near Coast of Southern Chile

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