



PANAMA CANAL COMPANY
Engineering and Construction Bureau
Meteorological and Hydrographic Branch

Lat. 8° 57' 39" N
Long. 79° 33' 29" W

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - MARCH 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z.N.E); Benioff SP (z.n.e) -----

No.	Date	Phase	Time		Amplitude mm	Remarks
			G.C.T.	Period		
1	1	eP _z	12 44 15.9	0.5	2.0	△ = 140 miles
		iS _n	44 44.5			
2	1	eP _z	14 25 08.1	0.5	2.5	△ = 144 miles
		iS _n	25 38.0			
3	1	iP _z	20 15 12.7 ^C	0.6	3.0	Cut Widening Blast △ = 23 miles
		iS _n	15 17.4			
4	2	iP _z	02 49 42.8 ^C	2.4	35.0	USCGS: 0.3 S 78.7 W Ecuador
		iS _n	51 27.2			
5	4	iP _z	00 20 37.5 ^D	0.4	2.8	△ = 112 miles
		iS _n	21 01.0			
6	4	iP _z	18 11 29.0 ^D			
		iP _{R₁Z}	15 19.0			
		eS _N	22 03.4			
7	5	iP _z	18 33 05.3 ^D	0.4	9.1	△ = 107 miles
		iS _n	33 27.6			
8	7	iP _z	17 27 51.4 ^C	0.5	10.0	Cut Widening Blast △ = 24 miles
		iS _n	27 56.3			
9	8	iP _z	00 22 22.4 ^D	0.6	9.6	△ = 119 miles
		iS _n	22 47.2			
10	8	iP _z	11 33 05.3 ^C	0.5	5.8	
		iS _e	22 30.4			

Seismological Bulletin - MARCH 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
11	8	iP _z	12 57 37.6 ^C	0.5	4.1	
		iS _n	58 03.1			
△ = 221 miles						
12	9	iP _z	02 32 45.8 ^D	0.4	2.2	
		iS _n	33 11.5			
△ = 124 miles						
13	9	eP _z	07 18 07			
		eS _n	28 05			
14	9	iP _z	11 47 01	0.7	4.2	
		iS _n	48 00.7			
△ = 287 miles						
15	9	iP _z	13 06 50.7 ^D	0.5	3.1	
		iS _n	07 32.9			
△ = 202 miles						
16	9	eP _z	21 03 43.2	0.5	2.3	
		eS _n	04 24.4			
△ = 197 miles						
17	10	iP _z	16 34 24.4 ^C	0.3	11.2	Cut Widening Blast
		iS _n	34 27.5			
△ = 15 miles						
18	11	iP _z	14 49 16.9 ^C	1.2	6.4	USCGS: 19.1 N 95.8 W Vera Cruz, Mexico
		eS _N	55 15.3			
19	13	iP _z	16 15 38.8 ^D	1.1	4.9	USCGS: 40.1 S 74.5 W Off Coast of Southern Chile
20	17	eP _z	12 25 39 ^C			
		eS _e	31 27			
		eL _e	35 23.4			
△ = 2600 miles						
21	17	iP _z	14 24 12.3 ^C	0.7	4.1	
		iS _n	25 20.5			
△ = 327 miles						
22	19	iP _z	01 30 26.3 ^C	1.3	4.8	

Seismological Bulletin - MARCH 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
23	19	eP _Z iS _N	04 16 10.4 ^D 26 38			△ = 6100 miles
24	20	iP _Z iS _e	15 14 53 ^C 15 50.4	0.5	3.4	USCGS: 5.1 N 82.5 W South of Panama △ = 276 miles
25	21	iP _Z iS _n	17 02 09 ^C 02 12.1	0.3	6.8	Cut Widening Blast △ = 15 miles
26	21	iP _Z iS _n	18 13 17.8 ^D 14 34.2	0.8	21.5	USCGS: 6.8 N 73.0 W Northern Colombia Felt in Bogota and Medellin
27	24	iP _Z iS _n	03 38 38.8 ^C 39 08.9	0.7	5.5	△ = 144 miles
28	24	iP _Z iP _Z	09 19 19.2 ^D 22 41			
29	24	iP _Z iS _n	23 50 41.3 ^C 51 06.9	0.5	4.7	△ = 122 miles
30	25	iP _Z iS _E	14 29 40.5 ^D 30 14.5	0.7	12.4	△ = 115 miles
31	25	iP _Z eS _n	15 15 37 19.1 ^D 37 43.5	0.5	11.1	△ = 117 miles
32	25	iP _Z eS _n	15 51 03.9 ^D 51 27.4	0.6	25.5	△ = 112 miles
33	25	iP _Z iS _n	17 25 03.5 ^D 25 28.9	0.5	3.7	△ = 122 miles
34	25	iP _Z iS _e	17 26 28.3 ^D 26 51.7	0.6	17.7	△ = 112 miles



Seismological Bulletin - MARCH 1967

No.	Date	Phase	Time		Amplitude mm	Remarks
			G.C.T.	Period		
35	25	iP _z	23 56 47.3 ^D	0.8	9.6	△ = 117 miles
		iS _e	57 11.7			
36	26	iP _z	01 52 09 ^D	0.6	16.6	△ = 112 miles
		iS _e	52 32.3			
37	26	iP _z	16 32 01 ^D	0.5	9.5	△ = 117 miles
		eS _e	32 25.2			
38	30	iP _z	12 35 36.9 ^C	0.3	6.8	Cut Widening Blast △ = 15 miles
		iS _n	35 40.0			
39	31	eP _z	10 45 41 ^C			△ = 3700 miles
		iS _N	53 10.6			

Harold J. Million
Chief Hydrographer



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Engineering and Construction Bureau
Meteorological and Hydrographic Branch

Lat. 8° 57' 39" N
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Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - APRIL 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z.N.E); Benioff SP (z.n.e) -----

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	eP _Z	09 26 37.4	0.5	2.4	
		eS _N	27 31.5			△ = 260 miles
2	1	iP _Z	10 47 00			
		eS _E	55 03			
		iL _N	11 03 48.8			△ = 4025 miles
3	1	iP _Z	19 55 27.6 ^C	0.4	5.9	Cut Widening Blast
		iS _n	55 31.2			△ = 17 miles
4	4	eP _Z	17 08 28.3	0.6	3.0	
		iS _e	09 11.3			△ = 206 miles
5	5	iP _Z	21 44 25.5 ^D	0.7	6.1	
		iS _Z	45 49			△ = 505 miles
6	9	eP _Z	08 15 45	0.4	3.0	
		iS _n	16 00			△ = 72 miles
7	10	iP _Z	14 08 05 ^C	0.3	7.9	Cut Widening Blast
		iS _n	08 08.2			△ = 16 miles
8	11	iP _Z	12 47 05 ^C			
9	12	iP _Z	04 45 07 ^C			
10	12	iP _Z	05 11 40 ^C			
11	13	iP _Z	20 26 17.5 ^C	0.3	3.9	Cut Widening Blast
		iS _n	26 21.1			△ = 17 miles

Seismological Bulletin - APRIL 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
12	14	iP _Z iS _N	04 44 34.4 ^C 48 40	0.3	3.6	USCGS: 0.3 N 90.1 W Galapagos Islands
13	14	iP _Z iS _N	13 07 01.9 ^C 08 45.6			△ = 675 miles
14	18	eP _Z eS _N	08 31 10.2 ^C 39 09			
15	18	iP _Z iS _e	20 04 51.2 ^C 04 54.4	0.7	9.2	Cut Widening Blast △ = 16 miles
16	19	iP _Z iS _e	22 00 14.2 ^C 00 22.2	0.8	6.6	△ = 39 miles
17	20	iP _Z iS _e	00 20 51.7 ^C 21 00.7	0.8	1.9	△ = 43 miles
18	21	iP _Z iS _n	12 37 33.2 ^C 37 36.3	0.3	3.9	Cut Widening Blast △ = 15 miles
19	22	iP _Z iS _E	14 44 11.9 ^D 45 00.7	1.0	11.3	△ = 235 miles
20	22	iP _Z iS _N	16 33 44.8 ^D 34 35	0.9	5.1	△ = 242 miles
21	23	iP _Z iS _e	22 26 24.6 27 14.7	0.4	5.9	△ = 241 miles
22	24	iP _Z eS _e	21 54 23.6 ^C 54 27.2	0.5	7.4	Cut Widening Blast △ = 17 miles
23	26	eP _Z iS _n	14 59 31.4 ^C 59 34.5			Cut Widening Blast △ = 16 miles

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Lat. 8° 57' 39" N
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Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - MAY 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z.N.E): Benioff SP (z.n.e) -----

No.	Date	Phase	Time	Period	Ampli-	Remarks
			G.C.T.		tude	
					mm	
1	1	iP _z	07 22 07.5 ^C			
2	1	iP _z	09 16 02.4 ^D	0.4	3.8	
		iS _n	16 11.4			△ = 44 miles
3	1	iP _z	21 46 25.4 ^C	0.3	4.7	
		iS _n	46 32.6			△ = 35 miles
4	4	iP _z	07 04 33.4 ^C	0.5	3.7	USCGS: 6.8 N 73.2 W Northern Colombia
		iS _e	05 51.7			
5	4	iP _z	08 29 24			USCGS: 55.7 S 27.9 W South Sandwich Island Region
6	4	iP _z	10 04 33.6			USCGS: 6.9 N 80.6 W South of Panama
		iS _N	05 02			△ = 137 miles
7	4	iP _z	20 59 44.3 ^C	0.4	11.0	
		iS _e	21 00 14.3			△ = 144 miles
8	5	iP _z	21 58 50.6 ^C	0.5	13.1	Cut Widening Blast
		iS _n	58 53.7			△ = 15 miles
9	6	eP _z	03 44 45.3 ^C	0.6	2.7	
		iS _n	45 28.2			△ = 205 miles
10	6	iP _z	14 03 54.7 ^D	0.7	4.3	
		iS _n	07 29.2			△ = 125 miles
11	6	iP _z	19 40 09.5 ^D	0.7	6.6	USCGS: 6.9 N 77.5 W Near West Coast of Colombia
		eS _n	41 07.8			



Seismological Bulletin - MAY 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
12	8	eP _z	08 07 59.5	0.4	2.1	
13	8	eP _z	12 59 41.8	0.4	2.4	
		iS _n	13 00 22.7			△ = 197 miles
14	10	iP _z	05 05 26.0	0.5	4.5	
		iS _e	05 54.7			△ = 137 miles
15	11	iP _z	06 09 52.6 ^D	0.7	4.7	USCGS: 6.8 N 73.1 W
		iS _n	11 07.8			Northern Colombia Felt at Bogota
16	11	iP _z	14 58 14 ^D	0.5	14.8	
		iS _e	58 42.2			△ = 135 miles
17	11	iP _z	15 11 30.6 ^C	1.0	9.2	
		iS _N	16 30			
18	11	iP _z	21 32 27.5 ^C	0.4	24.0	Cut Widening Blast
		iS _n	32 30.2			△ = 14 miles
19	12	iP _z	09 30 20.8 ^C	0.7	3.5	USCGS: 7.0 N 73.1 W
		iS _e	31 36.4			Northern Colombia Felt at Bogota
20	13	iP _z	12 48 44.2	0.5	2.5	
		iS _n	49 25.2			△ = 197 miles
21	13	iP _z	18 43 24.4 ^C	0.5	3.8	
		iS _e	43 45.6			△ = 102 miles
22	14	iP _z	23 14 25.6 ^C	0.5	4.9	
		iS _n	14 45.6			△ = 96 miles
23	16	iP _z	08 31 00 ^D			
		iS _E	36 24			
		iL _N	41 00			△ = 2350 miles



Seismological Bulletin - MAY 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
24	16	iP _Z iS _e	13 00 54.4 ^C 04 09.6			USCGS: 13.5 N 90.6 W Near Coast of Guatemala
25	19	iP _Z iS _n	17 11 55.5 ^C 11 59	0.5	8.1	Cut Widening Blast △ = 17 miles
26	20	eS _Z eS _e	01 34 26.2 35 11.8	0.7	2.3	 △ = 218 miles
27	21	iP _Z eS _N	19 05 01 ^C 14 21			
28	23	iP _Z iS _n	12 27 08.9 ^C 27 12.3	0.2	14.0	Cut Widening Blast △ = 17 miles
29	23	iP _Z iS _e	17 15 58.9 ^C 16 49.4	0.7	4.3	 △ = 242 miles
30	23	iP _Z	19 29 32.5 ^C			
31	24	iP _Z eS _e	20 23 28.9 ^C 24 37.9	0.6	3.3	 △ = 330 miles
32	24	iP _Z iS _n	20 59 46.9 59 50	0.3	11.5	Cut Widening Blast △ = 15 miles
33	25	iP _Z eS _e	21 05 12.7 ^C 05 16.4	0.3	3.0	Cut Widening Blast △ = 17 miles
34	27	iP _Z eS _e	17 36 04.6 ^C 46 28.8	1.1	3.3	USCGS: 51.9 N 176.1 E Aleutian Islands
35	30	eP _Z iS _n	07 43 40.6 ^D 44 07.3	0.6	3.3	 △ = 128 miles
36	31	iP _Z iS _n	01 10 13.8 ^C 10 57.5	0.8	3.1	 △ = 210 miles

Seismological Bulletin - MAY 1967

No.	Date	Phase	Time		Period	Ampli- tude mm	Remarks
			G.C.T.				
37	31	iP _Z	01 11 23.6 ^C				
		iS _e	12 05.9				△ = 203 miles
38	31	iP _Z	21 31 38.8 ^C	0.3	6.2	Cut Widening Blast	
		iS _e	31 42.2				△ = 16 miles

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7 MAR 1968

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Lat. 8 57' 39" N
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Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - JUNE 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z,N,E); Benioff SP (z,n,e) -----

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	iPz iSe	12 22 23.4C 31 26.6	0.3	13.2	Cut Widening Blast △ = 16 miles
2	1	iPz iSn	21 32 12.8C 32 16.5	0.3	3.3	Cut Widening Blast △ = 17 miles
3	3	iPz iSn	06 10 03.0D 10 14.5	0.5	2.7	△ = 56 miles
4	3	iPZ iPR ₁ E iSN	06 15 37.2C 19 21.6 26 11.2			USCGS: 10.8 S 79.0 W Near Coast of Peru △ = 1420 miles
5	3	iPz	13 12 09.7D	0.7	3.8	USCGS: 8.5 S 74.4 W Peru-Brazil Border Region △ = 1150 miles
6	8	iPz iSe	19 38 30.7C 38 33.2	0.3	4.4	Cut Widening Blast △ = 13 miles
7	8	iPz iSn	21 40 50.4C 40 52.9	0.3	10.4	Cut Widening Blast △ = 13 miles
8	12	ePZ iSE	05 50 19.2 56 34.0			△ = 2875 miles
9	12	iPz iSn	14 30 25.2 30 27.8	0.3	17.7	Cut Widening Blast △ = 13 miles
10	13	iPz iSn	12 56 09.4C 56 12.6	0.3	17.4	Cut Widening Blast △ = 16 miles
11	13	iPz iSn	14 25 13.9C 25 16.9	0.3	18.3	Cut Widening Blast △ = 15 miles
12	14	iPz iSe	01 51 08.8C 51 48.6	0.5	8.8	USCGS: 5.7 N 78.3 W South of Panama △ = 191 miles

SEISMOLOGICAL BULLETIN - JUNE 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
13	14	iPzZ iSE	03 19 30.5D 24 34.0	1.4	5.5	USCGS: 14.9 S 73.4 W Peru Δ = 2125 miles
14	15	iPzZ iSe	01 18 12 22.8C 12 25.2	0.3	21.5	Cut Widening Blast Δ = 13 miles
15	16	iPzZ iSN	20 23 30.2C 23 54.0	0.5	63.5	USCGS: 8.8 N 77.6 W Panama-Colombia Border Region Felt Force II at Balboa Heights
16	16	iPzZ iSN	21 20 20.7C 20 44.4	0.5	52.5	USCGS: 9.0 N 77.3 W Near North Coast of Colombia Δ = 115 miles
17	17	iPZ iSE	01 02 23.6D 10 40.0			
18	17	iPzZ iSn	05 12 04.4D 21 49.2	0.7	3.2	USCGS: 58.3 S 26.6 W South Sandwich Islands Region
19	17	iPz iSn	06 48 47.1C 49 11.6	0.3	44.7	Δ = 117 miles
20	17	iPz iSe	16 55 18.6C 55 22.2	0.3	5.0	Cut Widening Blast Δ = 17 miles
21	18	ePz eSe	02 27 41.0 28 54.4	0.6	0.9	USCGS: 6.9 N 73.0 W Northern Colombia Δ = 435 miles
22	18	iPz iSe	21 04 29.2C 04 54.2	0.5	3.6	Δ = 120 miles
23	19	iPZ IS _C PC _{SE} iLN	17 20 00.0D 30 08.8 42 23.6			USCGS: 52.7 N 166.9 W Aleutian Islands
24	19	iPz eSe	20 39 14.6C 39 54.3	0.8	8.5	Δ = 190 miles
25	21	iPzZ iSN	06 52 36.5C 55 47.6	1.3	5.4	USCGS: 2.2 S 77.6 W Peru-Ecuador Border Region Felt at Quito, Ecuador Δ = 1200 miles



SEISMOLOGICAL BULLETIN - JUNE 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
26	21	ePZ iSN eLN	18 33 53.20 46 21.2 19 13 20.4			
27	21	iPZ iSE iLN	20 16 23.20 22 18.0 27 39.6	3.5		USCGS: 25.2 S 70.5 W Near Coast of Northern Chile
28	21	iPz iSn	22 10 58.20 11 00.7	0.3	22.0	Cut Widening Blast Δ = 14 miles
29	22	ePzZ iSN eLN	13 52 31.60 55 46.4 57 14.0	0.7	3.1	USCGS: 2.3 S 77.6 W Peru-Ecuador Border Region Δ = 1225 miles
30	23	iPz iSn	12 20 38.30 20 49.8	0.3	39.4	Felt Force I Δ = 56 miles
31	23	iPz iSn	20 58 50.80 58 53.9	0.3	15.6	Cut Widening Blast Δ = 16 miles
32	24	iPz iSe	23 26 28.60 26 51.5	0.4	3.2	Δ = 110 miles
33	26	iPz iSN iLN	02 28 26.00 33 08.8 36 20.0			USCGS: 18.4 N 105.2 W Off Coast of Jalisco, Mexico Δ = 1910 miles
34	26	iPz iSe	19 40 22.80 40 25.3	0.3	8.5	Cut Widening Blast Δ = 13 miles
35	26	iPz iSe	21 37 18.20 37 21.2	0.3	8.4	Cut Widening Blast Δ = 15 miles
36	29	iPzZ iSE	02 54 00.00 55 03.6	0.7	4.1	USCGS: 5.2 N 82.7 W South of Panama Δ = 305 miles
37	30	ePZ	11 47 00.0			
38	30	iPz iSn	15 52 51.80 52 54.6	0.3	12.1	Cut Widening Blast Δ = 14 miles
39	30	iPz iSe	19 11 36.70 12 12.8	0.3	2.0	Δ = 174 miles

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7 MAR 1968

PANAMA CANAL COMPANY
Engineering and Construction Bureau
Meteorological and Hydrographic Branch

Lat. 8° 57' 39" N
Long. 79° 33' 29" W

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - JULY 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z,N,E); Benioff SP (z,n,e) -----

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	iPZ iSE	23 21 50.4D 31 34.4	1.0	2.6	USCGS: 54.4 N 158.0 W South of Alaska Felt at Cold Bay and Sand Point
2	4	ePz iSn	03 53 03.8D 53 32.5	0.2	1.5	△ = 137 miles
3	6	iPZ eSN	12 54 43.6C 13 05 00.0			
4	6	ePzZ	18 36 41.5C	0.7	4.5	USCGS: 18.9 N 61.9 W Leeward Islands
5	6	iPz iSn	20 00 12.7C 00 15.9	0.3	4.2	Cut Widening Blast △ = 16 miles
6	10	iPz iSe	14 45 32.8D 46 01.2	0.6	8.3	△ = 136 miles
7	10	iPz iSe	15 21 55.4C 21 58.4	0.3	13.0	Cut Widening Blast △ = 14 miles
8	11	iPz iSe	00 42 50.8D 43 14.2	0.7	3.6	△ = 112 miles
9	11	ePz iSe	08 40 56.0C 41 33.8	0.3	1.4	△ = 181 miles
10	12	iPzZ iSN	21 01 26.2C 02 13.2	0.6	11.5	USCGS: 5.6 N 82.6 W South of Panama △ = 226 miles
11	12	iPz iSe	18 19 29.8C 19 32.4	0.3	6.3	Cut Widening Blast △ = 13 miles
12	14	iPzZ eSN	07 38 41.5C 39 54.0			△ = 437 miles

SEISMOLOGICAL BULLETIN - JULY 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
13	14	iPz iSn	16 29 45.9C 29 48.6	0.3	4.2	Cut Widening Blast △ = 14 miles
14	16	iPzZ	13 54 12.0C	0.8	2.7	
15	17	iPz iSn	10 19 43.5D 20 07.5	0.5	12.1	△ = 115 miles
16	18	iPz iSe	20 22 45.2C 22 48.3	0.3	12.4	Cut Widening Blast △ = 16 miles
17	19	iPz eSe	03 51 48.0D 52 39.0	0.3	4.0	△ = 245 miles
18	20	iPzZ	15 55 52.7C			
19	21	iPz iSe	17 19 53.9C 19 56.7	0.3	8.2	Cut Widening Blast △ = 14 miles
20	22	iPz eSN	04 46 10.0 C 57 16.0			
21	22	iPz iPPZ iPSE	17 10 38.8D 14 41.6 22 07.6			USCGS: 40.7 N 30.8 E Turkey - 173 killed, 183 injured and major property damage
22	22	ePz iSn	21 57 39.6C 58 03.6	0.3	2.7	△ = 115 miles
23	24	iPz iSe	22 01 44.5C 01 47.7	0.3	9.4	Cut Widening Blast △ = 16 miles
24	25	iPz iSn	21 56 19.1C 56 21.9	0.2	3.5	Cut Widening Blast △ = 14 miles
25	26	ePz eSN	09 09 41.5 11 13.6	0.5	1.9	USCGS: 8.6 N 70.9 W Venezuela △ = 550 miles
26	27	iPz iSn	19 19 44.9C 19 47.4	0.3	10.6	Cut Widening Blast △ = 13 miles
27	28	iPz iSn	12 12 28.2C 12 31.1	0.3	9.7	Cut Widening Blast △ = 15 miles



SEISMOLOGICAL BULLETIN - JULY 1967

No.	Date	Phase	G.C.T.	Period	Amplitude mm	Remarks
28	28	iPz iSn	17 53 30.6C 53 33.6	0.3	3.2	Cut Widening Blast △ = 15 miles
29	29	iPzZ iSN	10 25 58.9C 26 56:9			USCGS: 8.8 N 73.0 W Northern Colombia 10 killed, property damage moderate. Felt in Colombia and western Venezuela. Felt in Panama
30	30	iPzZ iSN	00 02 53.1D 05 10.8	0.9	42.6	
31	30	iPz iSn	03 42 20.4C 42 39.4	0.4	4.3	△ = 91 miles
32	30	ePZ eSE eLE	14 34 16.8D 44 26.4 57 33.2			
33	31	iPz iSe	12 32 13.0C 32 16.0	0.3	10.7	Cut Widening Blast △ = 15 miles

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PANAMA CANAL COMPANY
Engineering and Construction Bureau
Meteorological and Hydrographic Branch

7 MAR 1968

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

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - AUGUST 1967

Standard Seismograph System USC&GS: Sprengnether LP (Z.N.E); Benioff SP (z.n.e)

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	iPz iSn	01 18 33.9C 22 40.0	1.0	4.5	USCGS: 13.0 S 76.8 W Near Coast of Peru △ = 1580 miles
2	2	iPz iSn	17 10 32.5C 10 35.4	0.3	3.9	Cut Widening Blast △ = 14 miles
3	3	iPz iSn	12 52 32.8C 52 35.6	0.3	8.3	Cut Widening Blast △ = 14 miles
4	5	iPz eSn	21 48 27.0C 49 40.9	0.4	3.2	USCGS: 6.9 N 73.1 W Northern Colombia
5	6	iPz	20 44 48.1C	0.7	3.3	
6	7	iPz	09 54 48.9C	1.1	4.6	
7	7	iPz iSn	12 08 38.7C 08 41.6	0.3	11.9	Cut Widening Blast △ = 14 miles
8	7	iPz iSn	19 01 42.5C 01 45.5	0.3	5.1	Cut Widening Blast △ = 15 miles
9	10	iPz iSn	19 06 53.1 06 56.1	0.3	4.1	Cut Widening Blast △ = 15 miles
10	11	ePZ eSN	12 29 35.2C 30 54.4			USCGS: 11.8 N 85.9 W Nicaragua
11	11	iPz iSe	18 54 19.6C 54 22.6	0.3	7.7	Cut Widening Blast △ = 15 miles
12	11	iPz iSn	21 00 50.5C 00 53.4	0.3	14.7	Cut Widening Blast △ = 15 miles



SEISMOLOGICAL BULLETIN -- AUGUST 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
13	12	ePZ iSE iPSN	09 53 20.0C 10 03 46.0 04 51.6			USCGS: 24.7 S 177.5 W South of Fiji Islands Felt at Raoul
14	13	ePZ	22 37 42.0D			
15	13	ePZ eSE	23 05 10.4C 14 40.4			
16	14	iPz iSn	00 20 59.6C 21 45.2	0.5	5.9	USCGS: 6.7 N 82.6 W South of Panama △ = 219 miles
17	14	iPz iSn	17 54 39.2C 54 41.6	0.2	3.0	Cut Widening Blast △ = 13 miles
18	15	ePzZ	03 27 19.7D	0.7	2.2	
19	15	ePz eSe	04 08 30.6C 09 37.7	0.4	1.8	USCGS: 6.8 N 72.9 W Northern Colombia
20	16	iPz iSe	10 11 48.8C 12 13.3	0.4	3.6	△ = 117 miles
21	16	iPz iSn	17 17 25.2C 17 38.4	0.3	4.9	△ = 65 miles
22	18	iPz iSe	21 17 11.1C 17 14.1	0.3	10.2	Cut Widening Blast △ = 15 miles
23	19	iPz iSe	07 04 44.0D 05 58.0	0.7	8.7	USCGS: 6.9 N 73.0 W Northern Colombia
24	19	iPzZ	15 47 47.7D	1.8	11.8	
25	20	iPz	15 10 25.0D	1.0	4.1	
26	20	iPzZ iSN	16 44 59.9D 46 05.7	0.5	1.8	USCGS: 7.2 N 85.1 W Off Coast of Costa Rica △ = 400 miles
27	20	ePZ eSE iLE	20 05 05.6D 10 23.2 14 55.6			USCGS: 8.8 S 108.3 W Easter Islands



SEISMOLOGICAL BULLETIN - AUGUST 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
28	21	iPZ eSN iLE	07 33 05.2D 08 02 10.8 18 33.2			
29	21	iPz iSE	21 08 53.5C 08 56.4	0.3	8.8	Cut Widening Blast △ = 15 miles
30	22	iPzZ iSE iLE	13 14 24.0C 24 40.0 41 20.0			USCGS: 60.8 S 24.6 W South Sandwich Island Region
31	22	iPz iSe	19 01 28.8C 01 31.8	0.3	8.8	Cut Widening Blast △ = 15 miles
32	23	iPzZ iSN	09 25 10.1C 29 04.4	1.2	2.6	USCGS: 4.3 S 81.5 W Near Coast of Northern Peru △ = 1500 miles
33	24	iPz iSn	17 23 31.6D 24 27.2	0.5	6.2	△ = 267 miles
34	24	iPz iSn	19 32 05.1C 32 08.1	0.3	4.7	Cut Widening Blast △ = 15 miles
35	25	iPz iSe	12 10 30.7C 10 33.8	0.3	13.2	Cut Widening Blast △ = 15 miles
36	25	iPz iSe	19 08 43.4C 08 46.4	0.3	6.9	Cut Widening Blast △ = 15 miles
37	26	iPZ iSE	00 56 02.0C 59 29.6			△ = 1300 miles
38	27	iPzZ iSn	13 10 42.3C 12 06.0	1.4	23.1	USCGS: 12.3 N 86.2 W Nicaragua
39	28	iPz iSe	12 43 41.9C 43 44.8	0.3	14.4	Cut Widening Blast △ = 15 miles
40	28	iPz iSe	20 58 35.1C 58 38.0	0.3	13.5	Cut Widening Blast △ = 15 miles
41	30	iPZ iSN	04 41 23.6C 44 28.8			△ = 1475 miles

SEISMOLOGICAL BULLETIN - AUGUST 1967

No.	Date	Phase	Time		Period	Ampli- tude mm	Remarks
			G.C.T.				
42	30	iPz iSn	18 56 01.1C 56 04.1	0.3	4.5	Cut Widening Blast Δ = 15 miles	
43	30	iPz iSe	20 57 00.6C 57 03.3	0.3	12.7	Cut Widening Blast Δ = 14 miles	

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 Meteorological and Hydrographic Branch

7 MAR 1968

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

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - SEPTEMBER 1967

Standard Seismograph System USC&GS: Sprengnether LP (Z,N,E); Benioff SP (z,n,e)

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	iPz iSn	02 50 54.4D 52 10.8	0.7	5.6	USCGS: 6.9 N 73.0 W Northern Colombia Felt at Bogota
2	1	iPz iSe	12 17 06.0C 17 09.0	0.3	11.7	Cut Widening Blast △ = 15 miles
3	2	iPz iSe	17 45 44.4C 45 47.4	0.3	3.1	Cut Widening Blast △ = 15 miles
4	2	iPz iSe	20 56 11.7C 56 14.7	0.3	19.1	Cut Widening Blast △ = 15 miles
5	3	iPzZ iSE	21 11 57.2C 15 30.0	1.5	20.7	USCGS: 10.6 S 79.8 W Off Coast of Peru
6	5	iPzZ iSe	05 24 48.9 25 00.7	1.1	57.8	USCGS: 9.8 N 79.1 W Panama Felt Force II △ = 60 miles
7	5	ePz iSe	21 30 14.5D 30 53.2	0.9	19.2	△ = 186 miles
8	6	iPz iSe	15 23 18.7C 23 21.7	0.3	12.3	Cut Widening Blast △ = 15 miles
9	8	iPz iSn	00 23 11.9D 23 40.4	0.4	5.6	△ = 137 miles
10	9	iPzZ iSE	10 13 30.2C 18 53.2	0.4	39.5	USCGS: 27.7 S 63.1 W Santiago del Estero Province Argentina
11	9	ePZ iSN iLN	17 04 02.2 14 05.2 29 05.6			USCGS: 54.8 S 136.0 W South Pacific

SEISMOLOGICAL BULLETIN - SEPTEMBER 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
12	10	iPz iSn	17 05 51.6D 06 15.1	0.5	14.9	$\Delta = 112$ miles
13	11	iPzZ eSN	00 37 10.3D 38 48.1	0.9	23.2	USCGS: 3.5 N 82.8 W South of Panama $\Delta = 590$ miles
14	12	iPz iSn	17 17 45.6C 17 48.6	0.4	3.8	Cut Widening Blast $\Delta = 15$ miles
15	12	iPz iSn	19 58 57.5C 59 00.6	0.4	5.7	Cut Widening Blast $\Delta = 15$ miles
16	13	ePz iSn	12 13 17.3D 13 44.1	0.4	2.0	$\Delta = 128$ miles
17	13	iPz iSn	12 15 43.6C 15 46.6	0.3	18.4	Cut Widening Blast $\Delta = 15$ miles
18	14	iPz iSe	12 23 47.6C 23 50.6	0.3	13.8	Cut Widening Blast $\Delta = 15$ miles
19	14	iPZ iSE	14 18 16.8D 20 12.0			USCGS: 1.6 N 84.9 W Off Coast of Ecuador
20	14	iPz iSe	17 11 52.7C 11 55.7	0.3	5.6	Cut Widening Blast $\Delta = 15$ miles
21	16	iPz iSn	17 03 23.8C 03 26.8	0.3	17.5	Cut Widening Blast $\Delta = 15$ miles
22	16	iPzZ iSE	18 25 57.6C 26 20.4	0.5	24.5	USCGS: 5.3 N 82.4 W South of Panama $\Delta = 109$ miles
23	16	iPz iSe	19 53 38.6C 53 41.6	0.3	13.5	Cut Widening Blast $\Delta = 15$ miles
24	17	ePzZ eSe	08 00 10.8C 04 04.8	1.0	3.4	USCGS: 17.2 N 94.1 W Mexico
25	17	ePZ	14 30 26.8C	0.5	4.1	$\Delta = 97$ miles

SEISMOLOGICAL BULLETIN - SEPTEMBER 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
26	17	iPzZ iSe	19 17 40.1D 18 10.3	0.5	13.2	USCGS: 7.7 N 77.4 W Panama-Colombia Border Region
27	18	iPzZ iSN	18 58 06.4D 58 47.2	0.7	20.6	USCGS: 7.3 N 82.8 W South of Panama △ = 195 miles
28	18	iPz iSe	20 05 48.8D 06 29.5	0.6	9.7	△ = 195 miles
29	19	ePz iSn	06 33 21.5 34 13.0	0.5	1.7	△ = 248 miles
30	20	iPZ iSN	09 58 47.2 10 08 28.8			
31	21	iPz iSn	19 16 35.1C 16 37.9	0.3	15.7	Cut Widening Blast △ = 14 miles
32	21	iPz iSe	21 01 36.2C 01 39.4	0.3	10.6	Cut Widening Blast △ = 16 miles
33	21	ePz eSe	23 52 43.2 53 31.1	0.5	2.7	△ = 230 miles
34	23	ePz iSn	00 24 39.2D 25	0.5 19.4	3.1	△ = 194 miles
35	23	iPz iSn	17 08 04.5C 08 07.5	0.4	4.2	Cut Widening Blast △ = 15 miles
36	23	iPz iSn	17 23 59.3D 24 09.3	0.4	6.3	△ = 47 miles
37	25	ePzZ eSE	08 56 14.9 59 54.8	0.6	2.0	USCGS: 17.7 N 61.6 W Leeward Islands
38	25	iPz iSe	20 58 38.7C 58 41.6	0.4	14.6	Cut Widening Blast △ = 15 miles
39	26	iPZ iSN	11 19 18.8D 25 41.2			USCGS: 33.6S 70.5 W Chile-Argentina Region Minor damage in Santiago, Chile



SEISMOLOGICAL BULLETIN - SEPTEMBER 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
40	26	iPz iSn	12 12 15.30 12 18.3	0.4	7.8	Cut Widening Blast △ = 15 miles
41	26	iPZ iSN	16 18 51.90 24 56.4			USCGS: 30.0 S 71.5 W Near Coast of Central Chile
42	28	ePzZ	05 15 59.40	0.9	5.3	
43	28	iPz iSe	15 10 12.40 10 15.4	-0.3	18.8	Cut Widening Blast △ = 15 miles
44	28	ePZ	15 56 11.20			USCGS: 59.5 N 147.1 W Gulf of Alaska Felt on Middleton Island
45	29	iPZ	05 21 38.40			USCGS: 12.3 N 91.2 W Off Coast of Central America
46	29	iPz iSn	13 10 30.30 10 33.3	0.3	8.0	Cut Widening Blast △ = 15 miles
47	30	iPz iSe	20 08 29.30 08 32.3	0.3	3.5	Cut Widening Blast △ = 15 miles

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7 MAR 1968

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

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - OCTOBER 1967

----- Standard Seismograph System USCG&S: Sprengnether LP (Z,N,E); Benioff SP (z,n,e) -----

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	3	iPz iSn	12 07 38.0C 07 41.0	0.3	13.2	Cut Widening Blast △ = 15 miles
2	3	iPzZ iSN	18 17 43.2D 19 26.0	0.9	13.3	USCGS: 10.9 N 85.9 W Costa Rica
3	4	iPzZ iSE	06 03 55.2D 05 32.4	1.0	4.1	USCGS: 10.7 N 86.0 W Off Coast of Costa Rica
4	4	ePZ iSE	17 40 24.4D 42 24.0			△ = 790 miles
5	4	iPz iSe	22 06 19.3C 06 22.3	0.2	9.9	Cut Widening Blast △ = 15 miles
6	5	iPz iSe	13 31 00.5C 31 03.5	0.3	4.9	Cut Widening Blast △ = 15 miles
7	9	ePz iSn	11 53 43.0 54 25.4	0.5	5.3	△ = 202 miles
8	9	iPZ iSN iPSN iLE	17 34 38.8C 44 14.8 45 34.0 59 39.2			
9	9	iPz iSn	19 02 44.8C 02 47.7	0.3	4.2	Cut Widening △ = 15 miles
10	9	iPz iSe	20 55 39.2C 55 42.2	0.3	10.2	Cut Widening △ = 15 miles
11	10	iPz iSe	16 47 00.0C 47 03.0	0.3	5.6	Cut Widening △ = 15 miles
12	12	iPzZ	18 51 21.2C	1.3	7.1	

SEISMOLOGICAL BULLETIN - OCTOBER 1967

No.	Date	Phase	Time		Period	Ampli- tude mm	Remarks
			G.C.T.				
13	14	iPzZ eSE	03 35 37.2C 36 33.6		0.9	5.5	$\triangle = 272$ miles
14	15	iPzZ iSE	08 02 32.1D 03 44.8		1.3	34.5	USCGS: 11.9 N 86.0 W Near Coast of Nicaragua
15	17	iPz iSn	05 15 03.7D 15 27.8		0.4	8.1	$\triangle = 116$ miles
16	18	iPZ iSN iLE	01 23 50.5C 33 55.2 44 57.6				USCGS: 79.8 N 2.4 E Greenland Sea
17	18	ePz iSn	17 16 29.7C 16 32.7		0.3	7.3	Cut Widening Blast $\triangle = 15$ miles
18	19	iPz iSn	16 13 38.2C 13 41.2		0.3	7.0	Cut Widening Blast $\triangle = 15$ miles
19	20	ePz	10 01 09.1D		0.6	3.0	
20	21	iPZ iSN	02 42 26.0D 48 20.4				USCGS: 27.7 S 71.8 W Near Coast of Northern Chile
21	21	ePz eSe	17 47 11.3C 48 28.1		0.6	3.8	USCGS: 6.9 N 73.0 W Northern Colombia
22	22	ePz eSn	07 30 26.9C 31 39.3		0.6	3.0	$\triangle = 440$ miles
23	24	iPz iSn	17 21 09C 21 12.5				Cut Widening Blast $\triangle = 15$ miles
24	24	iPz iSn	19 05 56C 05 59				Cut Widening Blast $\triangle = 15$ miles
25	25	iPZ iSN	01 18 36C 29 00				
26	25	iPz iSn	04 51 14D 52 26		0.5	3.3	USCGS: 6.8 N 73.0 W Northern Colombia
27	26	iPz iSn	13 49 16C 49 22				$\triangle = 30$ miles

SEISMOLOGICAL BULLETIN - OCTOBER 1967

No.	Date	Phase	Time		Period	Ampli- tude mm	Remarks
			G.C.T.				
28	28	iPz iSn	15 52 53 23	38.5D	0.5	2.0	△ = 215 miles
29	30	iPz iSe	13 37 38 37	53.5D	0.6	2.3	△ = 210 miles
30	31	iPz iSn	05 05 07 04	53D	0.4	1.1	△ = 340 miles

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7 MAR 1968

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

Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - NOVEMBER 1967

----- Standard Seismograph System USC&GS: Sprengnether LP (Z,N,E); Benioff SP (z,n,e) -----

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	2	iPz iSn	13 24 19.1C 24 23.1	0.4	7.3	Cut Widening Blast △ = 18 miles
2	2	iPz iSn	18 41 18D 41 23.6	0.5	7.0	△ = 28 miles
3	2	iPz iSn	19 12 03.2D 12 06.3	0.5	0.5	Cut Widening Blast △ = 15 miles
4	3	iPz iSn	08 19 33.0C 19 37.1	1.0	3.0	△ = 20 miles
5	4	iPz iSn	02 45 14.7 45 42.5	0.7	3.9	USCGS: 4.1 N 77.1 W Near West Coast of Colombia
6	4	iPz iSn	03 09 01.2C 09 29.9	0.5	2.0	
7	4	iPz iSn	15 15 53.5D 16 14.3	1.0	3.0	△ = 100 miles
8	4	iPz iSn	16 29 36.7 30 40.5	1.0	11.2	△ = 307 miles
9	5	iPz iSn	14 25 45.0C 26 21.0	1.0	2.5	USCGS: 3.2 N 74.7 W Colombia
10	7	iPz iSn	03 40 00 46 30			
11	7	iPz iSn	16 19 33.9C 19 36.7	0.4	2.7	△ = 14 miles
12	7	iPz iSn	17 08 08.0C 08 10.1	0.6	10.8	Cut Widening Blast △ = 11 miles

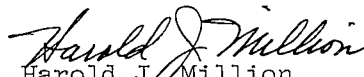


SEISMOLOGICAL BULLETIN - NOVEMBER 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
13	8	iPz iSn	03 13 14.3D 14 22.4	1.5	7.0	USCGS: 16.8 N 85.9 W Caribbean Sea
14	8	iPz iSn	06 27 02.0 27 05.5	0.6	5.2	△ = 175 miles
15	8	iPz iSn	17 08 50.1C 08 53.0	0.5	4.1	Cut Widening Blast △ = 15 miles
16	8	iPz iSn	19 56 49.9C 56 58.4	0.5	4.2	Cut Widening Blast △ = 42 miles
17	10	iPz iSn	18 58 30.5C 58 41.3	0.8	2.2	△ = 53 miles
18	11	iPz	12 02 41.5C 03 03.0	0.3	3.6	△ = 103 miles
19	11	iPz iSn	12 15 49.1D 15 54.4	1.0	3.5	△ = 28 miles
20	11	iPz	12 34 50.0D	1.1	5.7	△ = 32 miles
21	13	ePz eXz	16 07 37.5D 07 52.8	0.8	2.0	USCGS: 10.4 N 85.7 W Costa Rica
22	13	iPz iSn	17 26 28.5C 26 31.7	0.6	3.2	Cut Widening Blast △ = 15 miles
23	14	iPz iSn	12 51 28.8C 51 41.0	0.4	3.1	△ = 60 miles
24	14	iPz iSn	18 55 16.1C 55 18.4	0.5	3.5	Cut Widening Blast △ = 13 miles
25	14	iPz iSn	20 15 42.4C 15 46.5	0.3	5.1	Cut Widening Blast △ = 20 miles
26	15	iPz iXz	18 40 09.3D 40 19.2	1.8	0.6	USCGS: 2.0 S 81.0 W Near Coast of Ecuador
27	15	iPz iSn	20 03 42.6 03 45.0	0.4	8.5	Cut Widening Blast △ = 13 miles

SEISMOLOGICAL BULLETIN - NOVEMBER 1967

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
28	15	iPz iSn	21 39 16.0C 39 30.5	1.3	4.2	△ = 70 miles
29	16	iPz iSn	14 22 17.6C 22 20.0	0.3	2.7	Cut Widening Blast △ = 13 miles
30	17	iPz iSn	09 20 05.4D 20 15.2	0.3	3.2	△ = 48 miles
31	17	iPz iSn	17 18 23.1C 18 45.5	0.4	3.2	△ = 108 miles
32	17	ePz iSn	19 21 00.0C 21 11.4	0.4	2.7	△ = 55 miles
33	18	iPz iXz	12 19 20.1C 19 49	0.8	2.0	USCGS: 13.4 N 89.1 W Salvador
34	19	iPz iXz	06 27 06.2D 27 36.7	0.4	4.4	USCGS: 6.9 N 77.9 W Near West Coast of Colombia
35	21	iPz iSn	14 03 56.8D 03 59.8	0.4	3.0	Cut Widening Blast △ = 15 miles
36	23	iPz iSn	11 06 08.2C 06 11.5	0.5	2.0	Cut Widening Blast △ = 15 miles
37	23	iPz iSn	13 54 11.2C 54 27.2	1.2	2.0	△ = 77 miles
38	27	iPz iSn	15 22 54.3C 22 56.8	0.4	3.4	Cut Widening Blast △ = 13 miles
39	28	iPz iSn	06 03 38D 04 05.4	0.6	3.4	△ = 132 miles
40	28	iPz iSn	22 09 19.8C 09 32.0	0.3	2.8	△ = 65 miles
41	30	iPz iSn	19 31 25.7D 32 13.2	0.4	3.2	△ = 229 miles
42	30	iPz iSn	20 19 41.8 19 45.6	0.5	3.7	Cut Widening Blast △ = 15 miles


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7 MAR 1968

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Balboa Heights, Canal Zone

h: 36 meters

SEISMOLOGICAL BULLETIN - DECEMBER 1967

Standard Seismograph System USC&GS: Sprengnether LP (Z,N,E); Benioff SP (z,n,e)

No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
1	1	ePZ iSN	14 13 34C 21 10			
2	1	iPz iSn	19 44 36.0D 44 46.5	0.7	13.0	△ = 52 miles
3	2	iPZ iSN	00 37 42.4D 43 08			USCGS: 24.1 N 108.6 W Gulf of California
4	2	iPz iSN	17 59 24.0C 59 26.5	0.5	9.5	Cut Widening Blast △ = 13 miles
5	3	iPz iSN	00 57 45.6D 57 54.3	0.2	2.6	△ = 45 miles
6	4	iPz iSN	04 10 55.5C 10 58.5	0.6	4.0	Cut Widening Blast △ = 15 miles
7	4	iPz iXz	08 50 27.0D 50 34.3	0.4	10.5	△ = 37 miles
8	4	ePZ iSN	09 11 20.0D 15 44.8			△ = 1740 miles
9	4	iPz iSN	20 07 11.0C 07 13.0	0.3	7.7	Cut Widening Blast △ = 10 miles
10	5	ePZ iSN	11 26 25.2D 32 26.4			△ = 2620 miles
11	5	iPz iSN	13 15 21.2C 15 23.7	0.5	5.7	Cut Widening Blast △ = 15 miles
12	5	iPz iSN	16 00 59.0D 01	0.3 01.3	2.2	Cut Widening Blast △ = 12 miles

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No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
13	5	iPz iSn	20 28 02.5C 28 04.5	0.5	3.3	Cut Widening Blast △ = 10 miles
14	6	ePZ iSn	02 55 08.0C 56 41.2			USCGS: 12.5 N 87.2 W Near Coast of Nicaragua Felt at San Salvador
15	6	iPz iSn	18 45 01.0C 15 04.0	0.3	4.3	Cut Widening Blast △ = 14 miles
16	7	iPz iSn	08 19 12.3D 20 57.8	0.5	1.6	USCGS: 9.7 N 70.1 W Venezuela
17	7	iPz iSn	21 19 44.1D 19 46.5	0.2	3.0	Cut Widening Blast △ = 13 miles
18	8	iPz iXz	12 51 33.6C 51 40.1	0.4	2.3	△ = 33 miles
19	10	iPz iSn	12 15 54.0D 15 57.8	0.9	2.0	Cut Widening Blast △ = 19 miles
20	10	iPz iSn	23 10 54.0C 10 58.6	1.3	1.5	Cut Widening Blast △ = 23 miles
21	11	iPz iSn	12 43 39.7D 43 42.9	0.3	7.8	Cut Widening Blast △ = 15 miles
22	12	iPz iSn	12 54 38.2C 54 40.5	0.3	3.5	Cut Widening Blast △ = 12 miles
23	13	iPz iSn	15 18 57.4C 19 02.3	0.5	3.0	Cut Widening Blast △ = 24 miles
24	13	iPZ iSN	19 19 32.8D 24 36.0			△ = 2250 miles
25	14	iPz iSn	15 23 17.3C 23 19.7	0.3	4.0	Cut Widening Blast △ = 12 miles
26	14	iPz iSn	15 39 15.4D 39 17.8	0.3	2.3	Cut Widening Blast △ = 12 miles
27	14	iPz iSn	18 26 18.2C 26 21.5	0.4	7.5	Cut Widening Blast △ = 17 miles

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No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
28	15	iPz iSn	17 13 39.7C 13 42.1	0.4	7.8	Cut Widening Blast △ = 13 miles
29	16	iPz iXz	03 22 02.2D 22 30.3	0.8	4.5	USCGS: 2.9 S 77.0W Peru-Ecuador Border Region
30	16	iPz iSn	16 25 33.3C 25 37.5	0.3	3.0	Cut Widening Blast △ = 22 miles
31	16	iPz iSE	12 35 56.0C 47 08.0			
32	16	ePz iSN	21 04 47.2D 12 02			
33	17	iPz iSn	10 33 19.0D 33 21.5	0.5	3.0	Cut Widening Blast △ = 13 miles
34	18	iPz iSn	15 06 15.0C 06 18.0	0.5	4.9	Cut Widening Blast △ = 15 miles
35	19	iPz iSn	12 43 21.0D 43 22.8	0.4	2.3	△ = 17 miles
36	19	iPz iSn	22 02 31.6C 03 17.0	0.7	8.1	USCGS: 5.6 N 78.1 W South of Panama △ = 217 miles
37	20	iPz iSn	16 50 16.1C 51 22.5	0.9	8.5	USCGS: 8.6 N 84.3 W Off Coast of Costa Rica
38	20	iPz iSn	17 33 18.1C 33 20.9	0.3	8.0	Cut Widening △ = 13 miles
39	21	iPz iSE	02 31 49.2D 37 04.4	0.9	8.6	USCGS: 21.8 S 70.0 W Near Coast of Northern Chile 1 killed, 30 injured and major property damage Felt in Southern Bolivia
40	21	ePz iSn	11 39 12.7C 40 48.7	0.5	2.2	USCGS: 7.0 N 72.1 W Northern Colombia
41	22	iPz iSn	15 51 50.4C 51 53.7	0.3	26.7	Cut Widening Blast △ = 18 miles

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No.	Date	Phase	Time		Period	Ampli- tude mm	Remarks
			G.C.T.				
42	23	ePz iSn	00 31 31 27.3	11.6D	0.4	2.3	△ = 77 miles
43	24	iPzZ iSN	20 07 11 18.0	41.6D	1.2	25.6	USCGS: 17.4 N 61.1 W Leeward Islands
44	24	ePzZ iSE	21 37 40 40.4	02.0D	0.9	7.6	USCGS: 17.4 N 61.3 W Leeward Islands
45	25	ePZ eSE	01 39 44 37.6	14.0C			
46	25	iPZ iSE eLE	10 47 53 02.2 56 20.8	53.2C			USCGS: 21.5 S 70.4 W Near Coast of Northern Chile
47	25	iPz iSn	21 25 25 58.4	50.3C	0.4	4.8	△ = 39 miles
48	26	iPz iSn	21 32 32 15.1	11.6C	0.4	14.3	Cut Widening Blast △ = 15 miles
49	27	iPz iSn	03 59 59 25.5	07.1C	0.6	17.0	Felt Force I Balboa Heights △ = 90 miles
50	27	iPzZ iSE	09 24 29 17.6	11.2D			USCGS: 21.2 S 68.3 W Chile-Bolivia Border Region
51	27	ePZ	16 36	23.6C			
52	28	ePz iSn	05 28 28 44.2	20.7C	0.5	3.4	△ = 115 miles
53	28	ePz iSN iLE	06 35 43 34.8 53 34.4	42.0D			USCGS: 42.2 N 128.8 W Off Coast of Oregon
54	28	iPz iSnN	09 51 51 28.4	08.6D			△ = 95 miles
55	28	iPz LS1	17 15 15 19.0	15.4C	0.4	3.7	Cut Widening Blast △ = 15 miles



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No.	Date	Phase	Time G.C.T.	Period	Ampli- tude mm	Remarks
56	28	iPz iSn	17 35 17.2C 36 12.1	0.6	16.3	USCGS: 6.9 N 72.8 W Northern Colombia Felt at Bogota and Medellin
57	28	iPz iSn	20 58 50.4C 58 52.5	0.4	3.7	Cut Widening Blast △ = 15 miles
58	29	iPz iSn	02 59 38.5D 03 00 05.5	0.6	20.0	△ = 130 miles
59	29	iPz iSE	21 38 41.7C 38 44.7	0.3	17.0	Cut Widening Blast △ = 15 miles
60	30	iPz iSn	19 33 41.3C 33 44.0	0.3	6.1	Cut Widening Blast △ = 15 miles
61	31	ePz iSn	00 21 21.6D 21 29.4	0.3	2.2	△ = 38 miles

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