

IT-10-mud

PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH

FEB 4 1956
International
Seismological
Centre
h = 34 meters.
Time Correction: Within 1.0 sec.

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

Lithologic foundation: Basalt.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	f	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947

Month January, 1956

Page No. 1

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 1 Jan. 5	eP eS F	16	11	29	1.5	Distance 110 miles	
			11	52			
		16	13				
No. 2 Jan. 8	eP F	07	16	13	0.2	USCGS preliminary epicenter 19°S, 70°W, Guerrero, Mexico	
		07	22				
No. 3 Jan. 8	eP F	21	00	03	0.9	USCGS preliminary epicenter 19°S, 70°W, northern Chili	
		21	23				
No. 4 Jan. 12	iP iS F	07	46	51	8.5	Distance 325 miles. USCGS preliminary epicenter 5°N, 75 1/2°W, western Colombia	
			47	59			
		07	53				
No. 5 Jan. 12	eP eS F	16	19	27	2.2	Distance 115 miles	
			19	51			
		16	22				
No. 6 Jan. 13	eP F	05	28	53	0.6		
		05	32				
No. 7 Jan. 16-17	iP eS F	23	40	03	2.4	Distance 700 miles. M/S "Equateur" reported "At 2337 GCT in position 01.06.5 S, 81.08.5 W seen large wave spreading all over horizon and presented strong vibrations".	
			41	55			
		00	13				
No. 8 Jan. 18	eP eS F	21	02	57	2.0	Distance 295 miles	
			03	58			
		21	06				

W. H. Esslinger,
Chief Hydrographer

MAR 13 1956

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

Lithologic foundation: Basalt.

h=36 meters.
 Time Correction: Within 1.0 sec.
 International Seismological Centre

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	f	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947

Month February, 1956

Page No. 2

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 9 Feb. 6	eP iS F	05	56	57	6.2	Distance 150 miles	
			57	28			
		06	00				
No. 10 Feb. 7	eP F	07	04	29	0.7	USCGS epicenter, northwestern Colombia	
		07	07				
No. 11 Feb. 9	iP eS F	07	33	32	1.7	Distance 275 miles USCGS epicenter 5 1/2°N, 83°W, south of Panama	
			34	29			
		07	36				
No. 12 Feb. 9	eP F	14	40	24	0.9	USCGS epicenter 32°N, 116°W, Lower California	
		15	16				

W. H. Esslinger,
 Chief Hydrographer

PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

Lithologic foundation: Basalt.

Time Correction: Within 1.0 sec.
h = 36 meters.

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	1	Photographic	Magnetic	60 mm. per min.	1.5 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T	V	G	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947

Month **March, 1956**

Page No. **3**

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 13 March 3	1P iS F	16	46	29 38		8.8	Distance 44 miles
No. 14 March 7	1P F	21	53	08 58		3.5	USCGS epicenter 9 1/2°N, 85°W, near coast of Costa Rica
No. 15 March 11	1P eS F	00	56	24 06 59		1.9	Distance 200 miles
No. 16 March 13	1P iS F	13	14	04 11 33		62.0	Felt, Force IV USCGS epicenter 7°N, 82°W, off south coast of Panama
No. 17 March 14	1P eS F	01	40	03 50 43		2.5	Distance 225 miles
No. 18, March 14	1P iS F	06	43	39 27 47		1.7	Distance 225 miles
No. 19, March 15	1P iS F	15	29	27 15 35		6.5	Distance 230 miles
No. 20 March 15	1P iS F	15	45	49 29 50		8.5	Distance 190 miles
No. 21 March 15	eP eS F	22	06	34 20 09		2.5	Distance 220 miles

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month March, 1956Page No. 4

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 22 March 22	eP F	06	36	53		0.8	
		06	47				
No. 23 March 26	eP eS F	21	48	49		2.2	Distance 220 miles
			49	35			
		21	54				
No. 24 March 27	iP iS F	20	15	26		7.5	Distance 150 miles
			15	57			
		20	20				
No. 25 March 30	eP eS F	15	12	45		2.0	Distance 115 miles
			13	09			
		15	15				

W. H. Esslinger,
Chief Hydrographer

PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

Lithologic foundation: Basalt.

Time Correction: Within 1.0 sec.

h = 36 meters.

International
Seismological
Centre

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T	V	G	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947

Month April 1956

Page No. 5

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 26 April 12	iP	21	12	56		11	Distance 145 miles
	iS		13	26			
	F	21	16				
No. 27 April 17	iP	17	31	06		1.8	Distance 125 miles
	iS		31	32			
	F	17	33				

W. H. Esslinger,
Chief Hydrographer

4059 JUN 13 1956

PANAMA CANAL COMPANY
 ENGINEERING AND CONSTRUCTION BUREAU
 METEOROLOGICAL AND HYDROGRAPHIC BRANCH



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 30" N.

Long. 79° 33' 29" W.

h = 36 meters.

Time Correction: Within 1.0 sec.

Lithologic foundation: Basalt.

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T	V	F	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947

Month May, 1956

Page No. 6

No. and Date	Phase	Time G. C. T.			Period	AMPLITUDE mm	REMARKS
		h	m	s			

No seismic disturbances were recorded during the month of May.

W. H. Esslinger,
 Chief Hydrographer

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

Lithologic foundation: Basalt.

Time Correction: Within 1.0 sec.

h=30 meters.
International
Seismological
Centre

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	f	DETERMINED
Wood-Anderson	N-S	1.0	1370	1 to 6.5	June 15, 1956
Wood-Anderson	E-W	1.0	1370	1 to 11.0	June 15, 1956

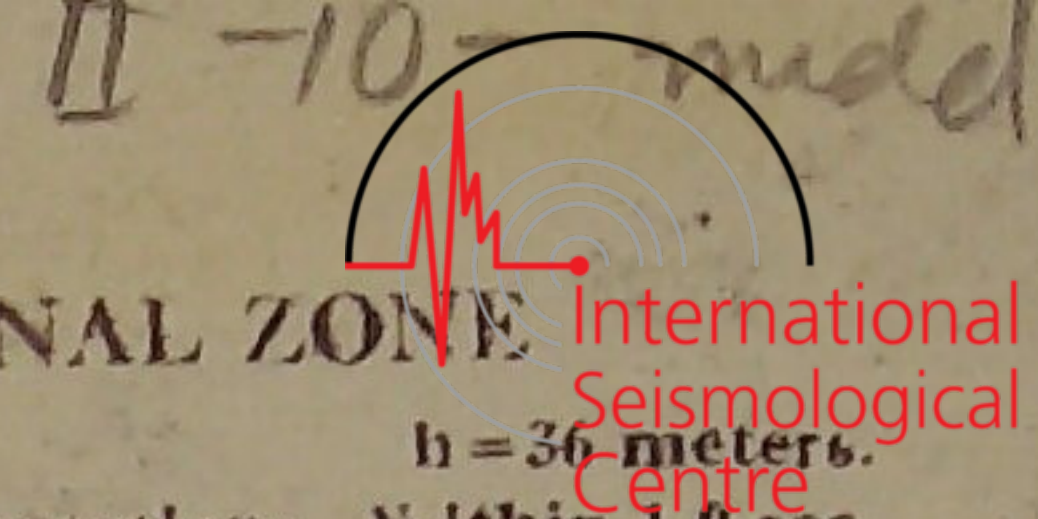
Month June, 1956

Page No. 7

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 28 June 5	iP	05	33	34	1.0	Distance 250 miles	
	iS		34	26			
	F	05	37				
No. 29 June 23	iP	18	00	38	21.2	Distance 235 miles. USCGS epicenter, 6°N, 83°W, South of Panama	
	iS		01	27			
	F	18	09				
No. 30 June 23	eP	18	29	27		Distance 235 miles	
	iS		30	16			
	F	18	34				
No. 31 June 23	eP	23	07	01	2.0	Distance 235 miles	
	iS		07	50			
	F	23	11				
No. 32 June 30	iP	10	53	38	1.5	Distance 180 miles	
	iS		54	16			
	F	10	56				

W. H. Esslinger,
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PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

Time Correction: Within 1.0 sec.

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson		Photographic	Magnetic	60 mm. per min.	1.3 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T	V	C	DETERMINED
Wood-Anderson	N-S	1.0	1370	1 to 6.5	June 15, 1956
Wood-Anderson	E-W	1.0	1370	1 to 11.0	June 15, 1956

Month July, 1956

Page No. 8

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 33 July 3	eP eS F	00	33	14			Distance 475 miles USCGS epicenter, Colombia-Venezuela border
No. 34 July 9	iP iS F	09	59	10		3.2	Distance 825 miles USCGS epicenter, 20°N, 73°W, near coast of Haiti
No. 35 July 11	iP F	02	57	02		0.7	
No. 36 July 11	eP iS F	21	38	27		4.0	Distance 160 miles
No. 37 July 14	iP iS F	05	07	46		2.1	Distance 100 miles
No. 38 July 17	eP? F	07	53	12		0.7	USCGS epicenter, 7°S, 126 1/2°E, Banda Sea
No. 39 July 18	eP? F	06	39	11		1.0	USCGS epicenter, 5°S, 130°E, Banda Sea
No. 40 July 19	iP eS F	23	27	42		7.5	Distance 320 miles
No. 41 July 19	eP eS F	23	39	19		2.7	Distance 315 miles
No. 42 July 19	eP F	23	57	01		1.0	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

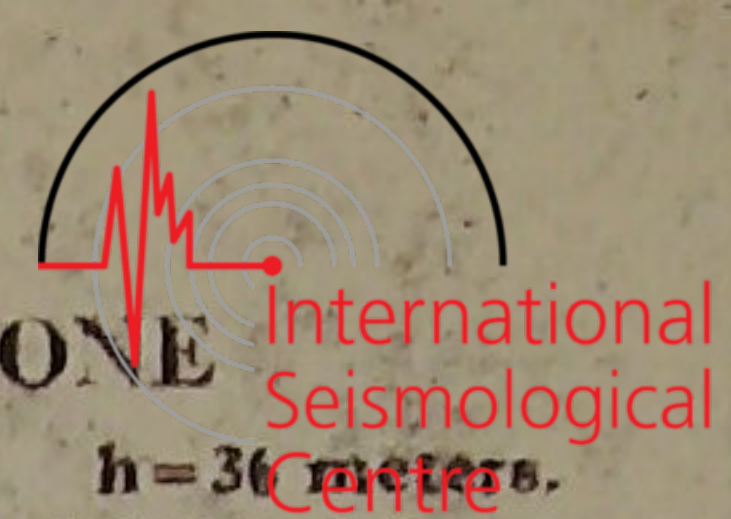
Month July, 1956

Page No. 9

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 43 July 20	eP F	17	58	34		1.7	
No. 44 July 27	eP F	08	11	13		0.9	
No. 45 July 28	iP iS F	20	06	21 32		1.2	Distance 50 miles
No. 46 July 30	eP F	17	51	46		0.6	

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METEOROLOGICAL AND HYDROGRAPHIC BRANCH



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Time Correction: Within 1.0 sec.

Lithologic foundation: Basalt.

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	50 mm. per min.	1.3 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	σ	ν	ζ	DETERMINED
Wood-Anderson	N-S	1.0	1370	1 to 6.5	June 15, 1956
Wood-Anderson	E-W	1.0	1370	1 to 11.0	June 15, 1956

Month August, 1956

Page No. 10

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 47 Aug. 2	iP iS F	07	12	33 30	15.0	Distance 275 miles USCGS epicenter, 5°N, 75 1/2°W, Central Colombia	
		07	19				
No. 48 Aug. 5	eP F	04	06	26 10			0.9
No. 49 Aug. 5	eP eS F	04	40	37 24 43	0.7	Distance 225 miles	
No. 50 Aug. 5	eP iS F	12	48	40 24 54	7.5	Distance 210 miles	
No. 51 Aug. 8	eP F	09	32	27 35	1.0		
No. 52 Aug. 9	eP F	17	02	39 07	0.9		
No. 53 Aug. 10	iP F	02	18	24 25	4.2		
No. 54 Aug. 13	iP iS F	00	42	23 32 45	17.8	Distance 45 miles Felt, Force II	
No. 55 Aug. 13	eP F	02	04	56 08	1.4		

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month August, 1956

Page No. 11

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 56 Aug. 19	eP	02	51	23		5.3	Distance 230 miles
	eS		52	11			
	F	02	57				
No. 57 Aug. 19	eP	03	47	33		3.0	Distance 230 miles
	eS		48	21			
	F	03	52				
No. 58 Aug. 20	iP	05	34	17		85.0	Distance 110 miles Felt, Force IV USCGS epicenter, 7 1/2°N, 80°W, near south coast of Panama
	iS		34	40			
	F	05	55				
No. 59 Aug. 20	iP	07	06	51		65.0	Distance 105 miles Felt, Force III USCGS epicenter, 7 1/2°N, 80°W, Panama, aftershock
	iS		07	13			
	F						
No. 60 Aug. 20	iP	07	20	28		53.0	Distance 105 miles Felt, Force III USCGS epicenter, 7 1/2°N, 80°W, Panama, aftershock
	iS		20	50			
	F	07	34				
No. 61 Aug. 20	eP	15	15	18		2.7	Distance 110 miles
	iS		15	41			
	F	15	18				
No. 62 Aug. 20	eP	15	58	40		3.7	Distance 110 miles
	iS		59	03			
	F	16	02				
No. 63 Aug. 23	eP?	13	54	06		0.5	USCGS epicenter, 15°S, 68°W, Bolivia
	F	14	09				
No. 64 Aug. 26	eP	05	26	46		1.3	Distance 240 miles
	eS		27	36			
	F	05	30				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month August, 1956

Page No. 12

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 65 Aug. 26	eP iS F	07	52	10 34		1.2	Distance 115 miles
		07	54				
No. 66 Aug. 27	eP iS F	11	18	56 21		3.0	Distance 120 miles
		11	22				
No. 67 Aug. 29	iP iS F	23	35	43 10		2.5	Distance 130 miles
		23	39				

W. H. Esslinger,
Chief Hydrographer

PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.
Lithologic foundation: Basalt.

Long. 79° 33' 29" W.

h = 36 meters.
Time Correction: Within 1.0 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	30 mm. per min.	2.3 gr.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T ₁	V	δ	DETERMINED
Wood-Anderson	N-S	1.0	1370	1 to 6.5	June 15, 1956
Wood-Anderson	E-W	1.0	1370	1 to 11.0	June 15, 1956

Month September, 1956

Page No. 12

No. and Date	Phase	Time G. C. T.			Period	AMPLI- TITUDE mm	REMARKS
		h	m	s			
No. 68 Sept. 2	eP F	02	02	17			
		02	08		0.8		
No. 69 Sept. 3	eP IS F	21	06	57			
			07	23	2.0	Distance 125 miles	
		21	10				
No. 70 Sept. 6	eP F	01	31	28			
		01	41		3.0		
No. 71 Sept. 11	eP IS F	00	00	20			
			01	05	25.0	Distance 215 miles. USCGS epicenter 8 1/2° N, 83° W, Costa Rica-Panama border	
		00	09				
No. 72 Sept. 11	eP IS F	00	09	30			
			09	48	3.0	Distance 85 miles	
		00	10				
No. 73 Sept. 15	IP eS F	07	21	08			
			22	06	3.5	Distance 280 miles	
		07	26				
No. 74 Sept. 15	eP? F	07	45	05			
		07	58		3.5	USCGS epicenter, 20° S, 69° W, Northern Chile	
No. 75 Sept. 24	eP	—	—	—	1.8	Time record interrupted. Disturbance occurred between 0500 and 0600 GCT.	
No. 76 Sept. 25	eP eS F	05	19	23			
			20	08	2.1	Distance 215 miles. Felt at Puerto Armuelles	
		05	24				
No. 77 Sept. 25	eP eS F	06	01	58			
			02	39	1.8	Distance 200 miles. Felt at Puerto Armuelles	
		06	06				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

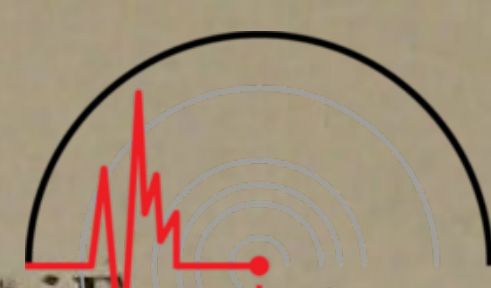
Month September, 1956

Page No. 13

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
No. 78 Sept. 25	eP eS F	06	57	57			Distance 215 miles, Felt at Puerto Armuelles
			58	42		2.1	
		07	01				
No. 79 Sept. 25	eP IS F	21	31	56			Distance 220 miles, Felt at Puerto Armuelles
			32	42		3.0	
		21	38				
No. 80 Sept. 28	eP eS F	12	40	31			Distance 165 miles
			41	05		1.5	
		12	45				
No. 81 Sept. 29	eP F	04	26	20			Distance 145 miles
			26	50		3.9	
		04	29				

W. H. Esslinger,
Chief Hydrographer

PANAMA CANAL COMPANY
ENGINEERING AND CONSTRUCTION BUREAU
METEOROLOGICAL AND HYDROGRAPHIC BRANCH



International
Seismological
Centre

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.
Time Correction: Within 1.0 sec.

Lithologic foundation: Basalt.

INSTRUMENTS - FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson		Photographic	Magnetic	40 mm. per sec.	1.4 gr.

INSTRUMENTS - DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T	V	G	DETERMINED
Wood-Anderson	N-S	1.0	1370	1 to 6.5	June 15, 1956
Wood-Anderson	E-W	1.0	1370	1 to 11.0	June 15, 1956

Month October, 1956

Page No. 14

No. and Date	Phase	Time (G. C. T.)			Period	AMPLI- TITUDE mm	REMARKS
		h	m	s			
No. 82 Oct. 3	eP F	08	26	22 38		0.8	
No. 83 Oct. 7	eP F	06	53	08 56		1.8	Times are approximate
No. 84 Oct. 12	eP? F	02	43	06 02		0.2	USCGS epicenter, 15°S, 74 1/2°W- near coast of Central Peru
No. 85 Oct. 13	iP eS F	04	06	58 42 14		1.5	Distance 630 miles
No. 86 Oct. 23	eP F	08	12	06 27		0.2	
No. 87 Oct. 24	eP F	20	23	34 38		1.3	
No. 88 Oct. 27	eP F	15	34	53 50		0.6	
No. 89 Oct. 30	eP F	22	53	36 57		0.9	
No. 90 Oct. 31	eP F	00	04	12 07		1.0	

W. H. Esslinger,
Chief Hydrographer

The Panama Canal Company

Engineering and Construction Bureau

Meteorological and Hydrographic Branch

Balboa Heights, Canal Zone

Lat. $8^{\circ} 57' 39''$ N.
 Long. $79^{\circ} 33' 29''$ W.

SEISMOLOGICAL BULLETIN - NOVEMBER 1956



No.	Date	Phase	Time	Amp.	Epicentral Distance	Remarks
	Nov.		G.C.T.	(mm.)		
91	1	iP iS F	15:42:29 :42:44 :49:00		75 miles	Force IV - felt USGS: 10° N., 80° W. Near north coast Panama
92	3	eP F	11:55:13 :58:00			
93	3	eP F	18:39:56 42:00			
94	6	eP eS F	13:39:49 :40:30 :42:00	0.8	195 miles	
95	8	iP iS F	23:14:50 :15:16 :16:00	0.7	125 miles	
96	10	eP F	00:10:01 :19:00	0.7		USGS: $10 \frac{1}{2}^{\circ}$ N., 86° W. Near coast of Costa Rica
97	15	iP iS F	17:33:38 :41:44 :58:00	30.0*		USGS: 3° S., $103 \frac{1}{2}^{\circ}$ W. *Sprengnether LP inst. N-S comp.
98	16	iP iS	11:55:58 :57:28	26.0* N-S	335 miles	USGS: $8 \frac{1}{2}^{\circ}$ N., 71° W. Venezuela
99	17	iP iS F	20:46:08 :54:33	14.0* N-S	4,300 miles	USGS: $54 \frac{1}{2}^{\circ}$ N., 134° W. Near Queen Charlotte Isl
100	18 20	iP iS	02:44:54 :45:04		48 miles.	Felt. Force III
101	22	iP	08:33:32		190 miles	



Balboa Heights, Canal Zone

Lat. $8^{\circ} 57' 39''$ N.
 Long. $79^{\circ} 33' 29''$ W.

SEISMOLOGICAL BULLETIN - DECEMBER 1956

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

No.	Date	Phase	Dir.	Time	Epicentral Distance	Remarks
	Dec.			G. C. T.	(miles)	
101-A	1	iP iS	Z,ne	14 31 27 32 17	240	
102	2	iP iS	Z,ne	22 22 20 22 33	65	
103	12	iP iS	n,e	10 16 45 17 03	85	Felt, Force III. Reported strong in Divisa, Sta. Maria and Canaza Panama.
104	15	iP iS	Z,N,E n,e	23 13 45 14 41	270	USGS: 7° N. $78\ 1/2^{\circ}$ W. Colombia foreshock
105	15	iP iS	Z,N,E n,e	23 42 35 43 12	175	
106	16	iP iS	Z,N,E	01 42 40 43 25	215	USGS: $6\ 1/2^{\circ}$ N., 78° W. Felt, Force III Colombia
107	18	eP eS	Z,N,E, n,e	02 38 05 43 38	2,600	USGS: $25\ 1/2^{\circ}$ S., $68\ 1/2^{\circ}$ W. Chile-Argentina border
108	21	iP iS	Z,N,E	09 08 59 12 38	1,400	
109	22	iP	N,E	23 27 03		USGS: $33\ 1/2^{\circ}$ N., 139° E.
110	24	eP eS	Z,N,E, n,e	04 35 46 36 31	225	
111	25	iP iS	N,E	09 43 37 51 39	4,125	USGS: $48\ 1/2^{\circ}$ N., 28° W. North Atlantic Ocean
112	25	eP eS	n,e	23 50 19 50 42	110	
113	27	iP iS	N,E	00 28 30 33 12	1,900	
114	29	iP iS	N,E	20 46 32 55 10	4,900	

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