

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF METEOROLOGY AND HYDROGRAPHY



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	I	Photographic	Magnetic	60 mm. per min.	1.3 gr.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	100 kg.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	C	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
Bosch-Omori	} Not in operation.				
Bosch-Omori					

Month JANUARY 1950

Page No. 1

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
<p>Maximum trace amplitudes are tabulated for each phase whenever the maximum amplitude for either component exceeds 3.0 millimeters. No entry in the amplitude column indicates an amplitude of less than 3.0 millimeters.</p> <p>Approximate distances are given whenever the P and S phases seen clear and distinct. For earthquakes distant less than 300 statute miles local tables are used. For earthquakes distant more than 300 statute miles the 1932 Edition of Jeffrey's tables is used. Whenever the beginning of the P and S phases is indistinct, earthquakes are roughly classified as NEARBY or DISTANT depending upon whether the character of the record indicates an epicenter distant less or more respectively than 300 statute miles.</p> <p>All earthquakes felt in any degree by any residents of Canal Zone are rated on the MODIFIED MERCALI SCALE.</p>							
#1 Jan. 11	1P 1S F	13	30	40 22 34			Approximate distance 200 miles
#2 Jan. 18	1P 1S F	19	07	23 09 10			Approximate distance 220 miles
#3 Jan. 19	1P 1S F	2	42	15 35 45			Approximate distance 100 miles
<p>L. T. CHAPEL Acting Chief Hydrographer</p>							

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INSTRUMENTS	COMPONENT	T _c	v	ε	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	" "
Bosch-Omori) Not in operation				
Bosch-Omori					

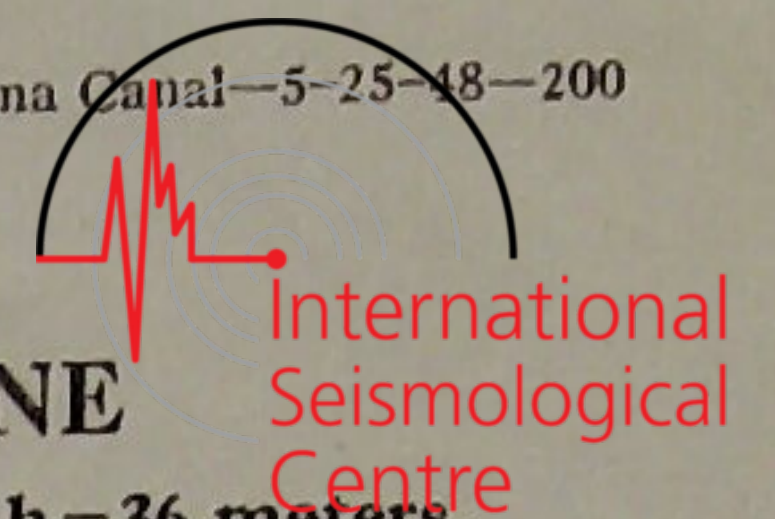
Month FEBRUARY, 1950

Page No. 2

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
		No record 09:58 to 12:55, February 15 on account of light failure.					
# 4	1P	6	02	39			Approximate distance 200 miles.
	1S	6	03	21		14.0 N	
Feb. 24	F	6	09			14.0 N	

G. E. Matthew,
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Bosch-Omori					

Month MARCH 1950Page No. 3

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TITUDE mm	REMARKS
		h	m	s			
#5 Mar. 3	1P	00:33:10					
	1S	00:33:41					
	F	00:36					APPROXIMATE DISTANCE 140 MILES
#6 Mar. 3	1P	00:44:02			12.78		
	1S	00:44:30			7.08		
	F	00:48					APPROXIMATE DISTANCE 140 MILES
#7 Mar. 3	e	02:02:12					
	1S	02:02:40					APPROXIMATE DISTANCE 140 MILES
	F	02:04					
#8 Mar. 4	1P	09:56:38			9.08		
	1S	09:57:05			4.58		
	F	10:00					APPROXIMATE DISTANCE 130 MILES
#9 Mar. 5	e	13:46:33					
	1S	13:47:19					
	F	13:49					APPROXIMATE DISTANCE 280 MILES
Mar. 6							NO RECORD 12:15 OCT to 21:46 OCT
#10 Mar. 9	1P	10:08:14					
	F	10:18					INSTANT



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month MARCH 1950

Page No. 4

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#11 Mar. 11	e	22:55:01					APPROXIMATE DISTANCE 125 MILES
	e	22:55:27					
	F	22:58					
#12 Mar. 13	e	09:44:42					APPROXIMATE DISTANCE 85 MILES
	s	09:45:00					
	F	09:47					
#13 Mar. 14	1P	03:14:06					U. S. Coast & Geodetic Survey Reports epicenter 8° S. Lat., 74° W. Long. Eastern Peru APPROXIMATE DISTANCE 1,250 MILES
	1S	03:17:27					
	eP P	03:25:36 03:29					
#14 Mar. 16	1P	15:05:51					APPROXIMATE DISTANCE 500 MILES
	eS	15:07:10					
	P	15:09					
#15 Mar. 24	1P	12:07:58			17.5N	APPROXIMATE DISTANCE 110 MILES. Felt by few throughout the Canal Zone, most notice- ably on the upper floors. Intensity III modified Mercalli scale. Also felt at Santiago, R. P.	
	1S	12:08:21			16.5E		
	P	12:16			51.0N 52.0E		

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Bosch-Omori	II	Smoked Sheet	Air *	15 mm. per min.	100 kg.

INSTRUMENTS—DETERMINED CONSTANTS

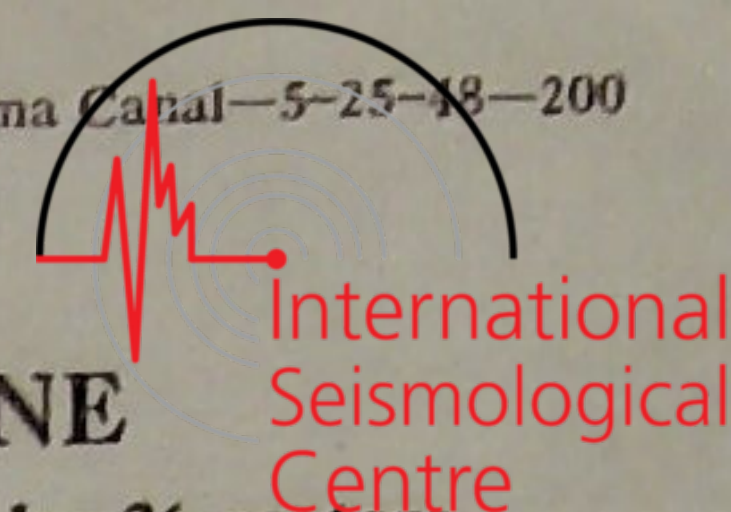
INSTRUMENTS	COMPONENT	T.	V	G	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori	Not in operation				
Bosch-Omori					

Month APRIL 1950Page No. 5

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#16 APR 3	e	13	21	34			APPROXIMATE DISTANCE 275 MILES
	e	13	22	31			
	F	13	27				
#17 APR 10	IP	16	50	10		3.5N	Coast & Geodetic Survey reports Epicenter near 5° N. Lat., 76-1/2° W. Long. (Western Colombia) Approximate distance 300 miles
	IS	16	51	11		5.0E 17.5E 17.5N	
	F	17	00				
#18 APR 15	eP	14	54	21			Coast & Geodetic Survey reports epicenter at 14° N. Lat., 91° W. Long. (Near coast of Guatemala) Approximate distance 840 miles
	F	15	02				
#19 APR 30	IP	23	50	37			Approximate distance 215 miles
	IS	23	51	22		9.0N	
	F	00	06			8.0E	

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INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T _c	V	G	DETERMINED
Wood-Anderson	H-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori)	Not in operation				
Bosch-Omori)					

Month May 1950Page No. 6

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TITUDE mm	REMARKS
		h	m	s			
#20 May 2	1P	03:09:56					Approximate distance 180 miles
	1S	03:10:40					
	F	03:13					
#21 May 3	eP	12:05:02					Approximate distance 150 miles
	1S	12:06:35					
	F	12:11					
#22 May 4	e	05:02:01					Approximate distance 180 miles
	e	05:02:42					
	F	05:05					
NOTE: No record May 6, 1950, between 12:22 G.C.T. and 18:10 G.C.T.							
#23 May 21	eP	18:43:02					Distant - very faint trace
	F	18:47					
#24 May 28	e	05:08:14					Distant
	F	05:14					

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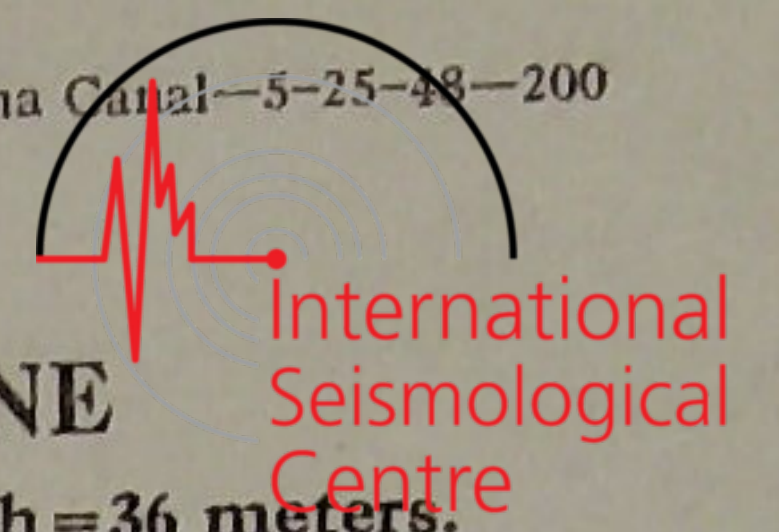
INSTRUMENTS	COMPONENT	T.	V	C.	DETERMINED
Wood-Anderson	H-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	H-W	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori	Not in Operation				
Bosch-Omori					

Month June - 1950Page No. 7

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 25 June 7	ip is F	16:	55:	47			U.S. Coast & Geodetic Survey Reports Epicenter near 4°S Lat., 76-1/2° W. Long. (Northern Peru) Approximate Distance 1,050 Miles
# 26 June 8	ep F	16:	19:	45			U.S. Coast & Geodetic Survey Reports Epicenter near 45-1/2° S. Lat., 15° W. Long. (South of Tristan da Cunha) Faint Trace Approximate Distance 6,000 Miles
# 27 June 8	ip is F	17:	43:	07 35 47			Approximate Distance 135 Miles
# 28 June 14	ip is F	03:	25:	36 49		6.0 N 6.0 N	Approximate Distance 65 Miles
# 29 June 15	es F	21:	15:	45 18			Local Faint Trace
# 30 June 21	ep is F	22:	00:	31 31 04			Approximate Distance 280 Miles
# 31 June 22	ep F	20:	45:	23 51			Distant Faint Trace
# 32 June 25	e F	11:	25:	47 30			Distant

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INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T ₀	V	G	DETERMINED
Wood-Anderson	I-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	I-W	1.0	1370	13 to 1	June 30, 1947
Bosch-Omori	} Not in operation				
Bosch-Omori					

Month July 1940

Page No. _____

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#33 July 2	SP P	22	51	30			Coast & Geodetic Survey Reports Epicenter near 4° N. Lat., 73-1/2° W. Long. (Central Columbia. Felt in Bogota) Approximate distance 200 miles
#34 July 8	1 P S P	04	27	45		23.0H	Generally felt in Canal Zone. Intensity III modified Mercalli Scale. Approximate distance 40 miles.
#35 July 9	S P P	01	48	27			Distant very faint
#36 July 9	1 P S P	02	37	05		4.0H	Approximate distance 450 miles
#37 July 9	1 P S P	04	43	43		4.0H	Approximate distance 1,100 miles
#38 July 9	1 P S P	04	53	43			Approximate distance 1,100 miles

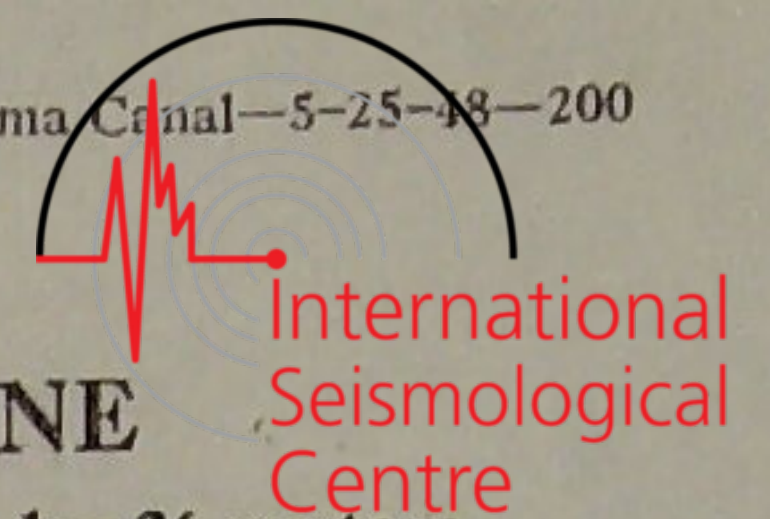
SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month July 1950Page No. 9

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
839 July 9	I P	09:48:41					Approximate distance 1,100 miles
	I S	09:51:41					
	F	09:56					
840 July 9	e	09:58					Faint distant
	F	10:02					
841 July 12	e P	15:50:58					Approximate distance 150 miles
	I S	15:51:29			6.08		
	F	15:55			4.05		
NOTE: July 18	NO RECORD FROM 12:15 G.C.T. TO 20:09 G.C.T.						
NOTE: July 28-29	NO RECORD FROM JULY 28, 14:13 G.C.T. TO JULY 29, 12:30 G.C.T.						
842 JULY 29	e P	17:05:44					DISTANT
	F	17:11					

 G. E. MATHIAS
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Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori	} Not in Operation				
Bosch-Omori					

Month August, 1950

Page No. 10

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#43 Aug. 3	1 P	09:	29:	54			Approximate Distance 475 miles
	1 S	09:	31:	12			
	F	09:	36:				
#44 Aug. 3	1 P	22:	20:	42			Coast & Geodetic Survey Reports Epicenter Near 10° N. Lat., 69-1/2° W. Long. (North- western Venezuela) Approximate Distance 625 miles
	1 S	22:	22:	26	7.5N		
	F	22:	46:		8.0E		
#45 Aug. 4	e P	10:	47:	37			Approximate Distance 600 miles
	e S	10:	49:	19			
	F	10:	52:				
#46 Aug 7	e P	03:	04:	46			Coast & Geodetic Survey Reports Epicenter Near 6° N. Lat., 126° E. Long. Distant
	F	03:	17:				
#47 Aug. 14	1 P	22:	58:	26			Coast & Geodetic Survey Reports Epicenter near 27° S. Lat., 62-1/2° W. Long. (North- ern Argentina) Approximate distance 2,350 miles
	e S	23:	03:	49			
	e	23:	07:	23			
	F	23:	16:				
#48 Aug. 15	e P	03:	11:	07			Approximate distance 200 miles
	1 S	03:	11:	49			
	F	03:	15:				
#49 Aug. 15	e P	14:	29:	26			Coast & Geodetic Survey Reports Epicenter Near 28-1/2° N. Lat., 97° E. Long. (Region of China-Burma-India Border). Approximate distance 10,000 miles
	e S	14:	45:	13			
	e L	15:	22:		36 Sec.		
	e L	15:	31:		28 Sec.		
	F	17:	00:				
→ #50 Aug. 31	e P	07:	25:	42			Distant
	F	07:	32:				



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

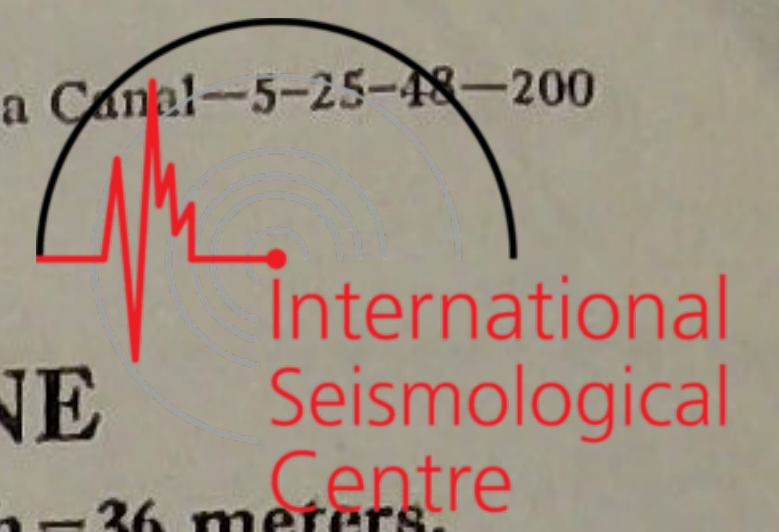
Page No. ----

Month _____

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#51	1 P	12	28	55			
Aug. 31	1 S	12	29	15			
	F	12	31				Approximate distance 100 miles

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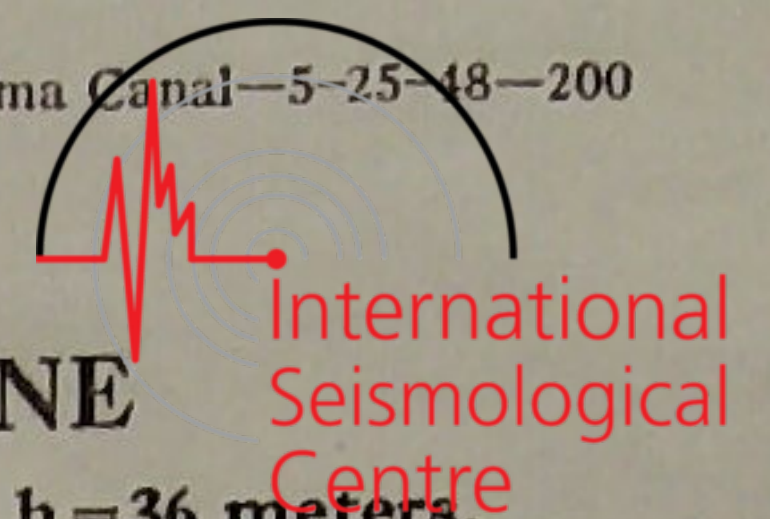
Month September 1950

Page No. 12

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
Sept 1-2	No record	13	12		Sept. 1 to 06:54 Sept. 2, 1950		
# 52 Sept. 10	1p 1s P	22	51	05 27 55		6.58	Approximate distance 105 miles
# 53 Sept 15	1p 1s P	09	47	58 16 52		18.58 18.08	Generally felt in Canal Zone Intensity III modified Mercalli scale. Approximate distance 90 miles
# 54 Sept. 21	1p 1s P	15	10	30 12 15		5.08 4.58	Approximate distance 200 miles
# 55 Sept. 29	1p P	06	38	10 26			Disturb

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Bosch-Omori					

Month OCTOBER 1950Page No. 13

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#56 Oct. 2	eP eS F	10:16:54 10:17:51 10:19					Approximate distance 300 miles
#57 Oct. 5	iPN iPE iSN iSE LN IS IN ME CN CS FNE	16:10:55 16:10:53 16:12:29 16:12:25 16:12:33 16:12:29 16:12:37 16:12:33 16:13:59 16:14:01 18:00			70.0+ 70.0+		Approximate distance 370 miles Reports indicate epicenter west coast of Costa Rica. Maximum amplitude cannot be measured as light swung past edge of window. Measurable amount in excess of 70.0 M.M. C. & G.S. locate epicenter at 10.5°N. Lat. 85°W. Long., Northwestern Costa Rica. Damage reported at Puntarenas. +15 second correction applied based on C. & G.S. correction
#58 Oct. 5	ePNE FNE	16:41:52 16:46					Superposed on end portion of #57.
#59 Oct. 5	ePN ePE FNE	16:49:08 16:49:07 17:59					Superposed on end portion of #57.
#60 Oct. 5	ePN ePE FNE	17:02:44 17:02:43 17:07					Superposed on end portion of #57.
#61 Oct. 5	ePN ePE FNE	17:35:51 17:35:58 17:38					Superposed on end portion of #57.
#62 Oct. 5	ePN ePE FNE	18:41:44 18:41:45 18:46					Aftershock
#63 Oct. 5	eFNE FNE	19:49:59 19:53					Aftershock

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month OCTOBER 1950Page No. 14

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#64 Oct. 5	1PNE FNE	20:10:46 20:20					Aftershock
#65 Oct. 5	ePN ePE FNE	20:53:48 20:53:45 21:05					Aftershock
#66 Oct. 5	1PN ePE FNE	23:10:49 23:10:53 23:15					Faint Distant
#67 Oct. 6	ePN ePE FNE	00:44:08 00:44:10 00:48					Faint Distant
#68 Oct. 7	eP F	13:55:14 14:00					Faint Distant
#69 Oct. 8	eP F	03:42:36 04:17					C. & G.S. locate epicenter at 4°S, 128°E Distant
#70 Oct. 8	eP F	04:28:40 04:31					Faint Distant
#71 Oct. 8	eP F	05:44:10 05:49					Faint Distant
#72 Oct. 8	eP F	13:36:20 13:42					Faint & indistinct Distant
#73 Oct. 10	1P eS F	16:21:13 16:23:00 16:28					Distance approximately 530 miles.
#74 Oct. 11	1P 1S F	02:55:00 02:58:00 03:02					Distance approximately 280 miles C. & G.S. locates epicenter at 6°N 83°W
#75 Oct. 11	eP F	04:02:20 04:07					Faint and indistinct
#76 Oct. 11	1P 1S F	18:56:38 18:56:51 19:01			55.0B		Intensity I. Felt by a few people. Approximate distance 65 miles.

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

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No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#77 Oct. 14	eP P	13:28:07 13:34				Indistinct	
#78 Oct. 14	1P 1S P	13:47:18 13:47:35 13:49				Approximate distance 110 miles.	
#79 Oct. 14	eP eS P	17:42:20 17:43:39 17:48				Approximate distance 480 miles.	
#80 Oct. 15	1P 1S P	17:16:51 17:16:63 17:21				Approximate distance 190 miles	
#81 Oct. 17	eP P	10:32:25 10:39				Distant	
#82 Oct. 17	eP P	14:56:51 15:08				Believe epicenter same as that of #84	
#83 Oct. 17	eP P	15:08:49 15:14				Aftershock of #82	
#84 Oct. 17	eP eS P	22:08:04 22:09:14 22:20				Approximate distance 340 miles.	
#85 Oct. 19	eP P	03:51:57 03:54				Faint and indistinct. C. & G.S. locates epicenter at 19°N 64°W off NE coast of Puerto Rico	
#86 Oct. 23	1PNE 1SNE LN LE LN ME GN GE FN FE	16:16:39 16:19:21 16:19:56 16:19:57 16:21:53 16:20:59 16:36:42 16:36:07 17:41 17:42			5.5N 7.5E	Approximate distance 990 miles This record is well-marked & clear, however, the S phase continues and is superimposed on the first L waves for approximately two minutes. Press reports place epicenter in Northern Guatemala or Southern Mexico. C. & G.S. locate epicenter at 14.5°N, 92°W, near coast of Guatemala	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

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Month OCTOBER 1950

No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#87 Oct. 23	eP F	17:08:42 17:14					Aftershock superimposed on #86
#88 Oct. 23	eP F	17:49:17 18:18					Faint and indistinct with almost imperceptible L waves to end
#89 Oct. 23	eP F	18:03:06 18:07					Superimposed on #88
#90 Oct. 23	eP F	19:54:03 19:59					Faint & indistinct
#91 Oct. 23	eP F	21:35:18 21:37					Faint & indistinct
#92 Oct. 23	eP F	23:42:03 23:57					Faint & Indistinct
#93 Oct. 24	eP F	00:55:20 01:20					Faint & indistinct
#94 Oct. 24	eP F	09:32:10 09:35					Faint & indistinct
#95 Oct. 28	eP F	23:18:46 23:25					Faint & indistinct
#96 Oct. 28	1P 1S F	23:40:14 23:40:39 23:45			19.5E 20.5N		Approximate distance 150 miles
#97 Oct. 30	eP F	10:13:04 10:16					Faint & indistinct

Microseismic Activity was noticed almost continuously from October 18 to October 31 with the most marked period occurring between October 18 to October 31.

G. E. MATHEW
Chief Hydrographer.

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF METEOROLOGY AND HYDROGRAPHY

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.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	100 kg.

INSTRUMENTS—DETERMINED CONSTANTS

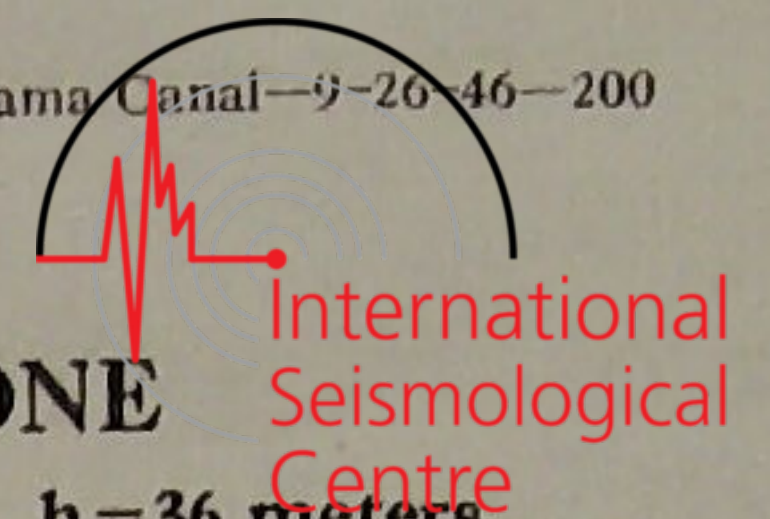
INSTRUMENTS	COMPONENT	T.	V	G	DETERMINED
Wood-Anderson	N-S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	E-W	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori	Not in operation				
Bosch-Omori					

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No. and Date	Phase	Time G. M. T.	Period	AMPLI- TUDE	REMARKS
		h m s		mm	
#98 Nov. 1	1P 1S F	12:46:41 12:48:16 13:00			Approximate distance 570 miles C. & G.S. epicenter at 10°N 85°W, near West Coast of Costa Rica.
#99 Nov. 2	1P F	15:47:54 17:35			Record is well marked but difficult to interpret beginning & ending of any phases with the exception of the P phase. C. & G.S. epicenter at 6°S 129 1/2°E, in Banda Sea region.
#100 Nov. 11	eP eS F	13:52:25 13:54:14 14:07			Secondary phase doubtful as it is poorly defined. Approximate distance 650 miles.
#101 Nov. 12	eP F	04:14:59 04:19			Faint & indistinct. Distant
#102 Nov. 12	eP F	04:35:46			Faint & indistinct Distant
#103 Nov. 12	1P 1S F	05:22:44 05:23:10 05:27			Approximate distance 125 miles.
#104 Nov. 12	1P F	13:11:23 13:17			Faint & indistinct Distant
#105 Nov. 13	1P 1S F	13:31:37 13:31:59 13:35			Approximate distance 105 miles.
#106 Nov. 17	eP F	19:33:23 19:49			Faint & indistinct
#107 Nov. 27	1P eS F	20:38:07 20:38:09 20:39			Faint & indistinct

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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

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INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	ε	DETERMINED
Wood-Anderson	N - S	1.0	1370	14 to 1	June 30, 1947
Wood-Anderson	S - N	1.0	1370	18 to 1	June 30, 1947
Bosch-Omori	Not in operation				
Bosch-Omori					

Month DECEMBER 1950

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No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#108 Dec. 1	eP	14	57	27			C. & G.S. report epicenter near 14°N. Lat., 47°W. Long. about 800 miles off northeast coast of Brazil Approximate distance 2250 miles
	eS	15	02	44			
	F	15	32				
#109 Dec 2	1P	15	23	05			Well marked and clear. Approximate distance 1100 miles. C. & G.S. reports epicenter near 8°S. Lat., 71½°W. Long. (Western Brazil)
	1S	15	26	06			
	e	15	33	17			
	F	15	39				
#110 Dec. 2	eP	20	11	09			Faint trace. Distant
	F	21	20				
#111 Dec. 4	eP	16	46	58			Faint & indistinct. Distant
	F	17	11				
#112 Dec. 7	1P	19	00	10			Felt by many in the Canal Zone. Intensity III on the modified mercalli scale. Approximate distance 55 miles.
	1S	19	00	22	57.0N		
	F	19	05		58.5E		
#113 Dec. 9	1P	11	45	36	4.5N		C. & G. S. report epicenter 24°S. Lat., 67½°W. Long. Northern Chile. Approximate distance 2450 miles.
	1S	21	51	10	5.5E		
					5.5N		
	F	23	16		4.0E		
#114 Dec. 10	1P	02	55	54			C. & G.S. report epicenter near 14½°S. Lat. 76½°W. Long. Southern Peru. Approximate distance 1650 miles. Several people killed. Severe property damage.
	eS	03	00	08			
	F	03	13				
#115 Dec. 10	eP	13	46	46			Faint Approximate distance 1100 miles.
	eS	13	49	41			
	F	13	59				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

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No. and Date	Phase	Time G. C. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#116 Dec. 11	1P	14	50	27			C. & G.S. reports epicenter 8°S.Lat., 71° W. Long. (Western Brazil) Approximate distance 1100 miles.
	1S	14	53	28			
	•	15	00	39			
	F	15	03				
#117 Dec. 14	•	02	06	14			C. & G.S. reports epicenter at 19½°S.Lat., 176°W. Long. Very faint trace. Distant.
	•	02	16	28			
	F	03	15				
#118 Dec. 14	1P	14	20	28			Near Mexico City. Approximate distance 1500 miles. C. & G.S. reports epicenter near 17°N.Lat., 98°W. Long.
	1S	14	24	22			
	L	14	25		10 sec.		
	F	15	15				
#119 Dec. 15	eP	17	22	00			Faint. Distant
	F	17	25				
#120 Dec. 15	1P	20	02	15			Approximate distance 125 miles
	1S	20	02	41			
	F	20	08				
#121 Dec. 18	eP	08	07	38			C. & G.S. Reports epicenter near 15°N.Lat., 90°W. Long.
	F	08	14				
#122 Dec. 18	eP	09	45	48			Faint. Near by
	F	09	48				
#123 Dec. 24	1P	04	01	45			Approximate distance 100 miles.
	1S	04	02	06		13.5M	
	F	04	05			11.0M	
#124 Dec. 26	1P	12	44	10			Approximate distance 180 miles
	1S	12	44	48			
	F	12	48				
#125 Dec. 30	1P	13	04	48			Approximate Distance 700 miles.
	1S	13	06	42		7.0M	
	F	13	10			5.0M	

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