

MR 1433—Panama Canal—2-21-44—200
Missing International Seismological Centre

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	20 to 1	May 28, 1945.
Wood-Anderson	E - W	1.0	1370	20 to 1	May 28, 1945.
Bosch-Omori)	Not in operation				
Bosch-Omori)					

Month January, 1946.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 seem 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 Jeffreys Tables is used. Whenever the beginning of the P and S phases are 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 residents of the Canal Zone are rated on the Modified Mercalli Scale, with quakes reliably reported felt by any one rated at Intensity I.</p>							
#1 Jan. 4	e F	19:45:53 19:56					Distant
#2 Jan. 5	eP eS F	1:18:11 1:18:03 1:25					Distant distance 250 miles
#3 Jan. 9	1P 1S F	18:22:40 18:22:49 18:25			11.5-N 14.0-E		Approximate distance 45 miles
#4 Jan. 10	eP 1S F	5:03:44 5:04:05 5:07			4.0-N 5.0-E		Approximate distance 100 miles
#5 Jan. 13	eP 1S F	14:26:42 14:27:16 14:31			5.0-N 5.0-E		Approximate distance 165 miles

L. T. Chapel,
Acting Chief Hydrographer.

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Month February, 1946Page No. 2

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#6 Feb. 1	e F	0:47:11					Distant
		0:58					
#7 Feb. 2	i i F	18:14:21					Nearby
		18:14:38					
		18:15					
#8 Feb. 3	i F	13:38:47			3.5M 3.0E		Distant
		13:41					
#9 Feb. 24	e e F	13:50:57					Nearby
		13:51:39					
		13:54					
#10 Feb. 26	e e F	9:56:49					Nearby
		9:57:32					
		10:00					
#11 Feb. 26	e F	15:51:31					Nearby
		15:54					
#12 Feb. 26	e e F	19:30:40					Distant
		19:31:37					
		19:36					
#13 Feb. 27	e e F	2:48:31					Nearby
		2:49:19					
		2:52					

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Bosch-Omori					

Month March 1946

Page No. 3

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE	REMARKS
		h	m	s			
#14 Mar. 4	1P	12	40	12		3.2N 22.0N 29.0E	Approximate distance 110 miles
	1S	12	40	35			
	F	12	44				
#15 Mar. 10	1P	8	25	00			Approximate distance 135 miles
	1S	8	25	28			
	F	8	28				
#16 Mar. 14	1P	7	32	16			Approximate distance 120 miles
	1S	7	32	41			
	F	7	35				
#17 Mar. 15	1P	8	50	30			Approximate distance 220 miles
	1S	8	51	16			
	F	8	53				
#18 Mar. 21	1P	2	07	03		12.0N 14.0E	Approximate distance 80 miles
	1S	2	07	19			
	F	2	10				
#19 Mar. 22	eP	6	28	05		4.0N 5.0E	Approximate distance 310 miles
	eS	6	28	57			
	F	6	34				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month March 1946Page No. 4

No. and Date	Phase	Time G. M. T.	Period	AMPLI- TUDE	REMARKS
		h m s	s	mm	
#20 Mar. 23	eP iS F	3:52:27 3:53:10 3:56			Approximate distance 175 miles
#21 Mar. 24	i i F	21:19:34 21:21:11 21:26			Distant
#22 Mar. 25	e i F	8:50:23 8:52:29 8:56			Distant
#23 Mar. 25	e F	22:19:47 22:27			Distant
#24 Mar. 26	e e F	0:12:21 0:13:05 0:16			Nearby
#25 Mar. 29	i F	7:19:13 7:28			Distant
#26 Mar. 29	i eL F	7:28:37 7:32 8:00			Distant (Probable distance of the order of 800 - 1000 miles)
#27 Mar. 29	e i F	20:08:53 20:10:17 20:15			Distant
#28 Mar. 30	e i F	0:04:10 0:05:34 0:10			Distant

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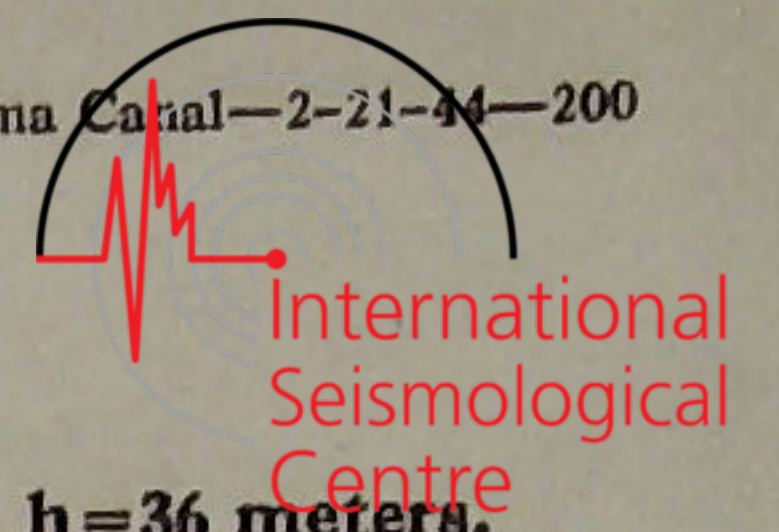
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Bosch-Omori)					
Bosch-Omori)	Not in operation				

Month April, 1946Page No. 5

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#29 Apr. 1	•	12:41:23					Distant End of record lost in beginning of next quake
#30 Apr. 1	• F	13:07:56 14:10					Distant Nos. 29 and 30 are probably of North Pacific origin and associated with destructive tidal waves in Hawaiian Islands
#31 Apr. 9	• i F	23:32:43 23:33:00 23:35					Nearby
#32 Apr. 11	• • eL F	2:03:12 2:12:10 2:14:43 3:15					Distant
#33 Apr. 13	• • F	1:19:28 1:20:08 1:25					Nearby
#34 Apr. 16	iP iS F	2:57:06 2:57:28 3:01			9.2N 10.0E		Approximate distance 105 miles.
#35 Apr. 23	eP eS F	20:57:40 20:58:05 21:00					Approximate distance 120 miles.
#36 Apr. 24	• F	3:51:47 4:00					Distant

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Wood-Anderson	E - W	1.0	1370	20 to 1	May 28, 1944.
Bosch-Omori					
Bosch-Omori					

Month May, 1946

Page No. 6

No. and Date	Phase	Time G. M. T.	Period	AMPLI- TUDE	REMARKS
		h m s		mm	
#37 May 2	e P n S F	8 : 52 : 54 8 : 53 : 20 8 : 56			Approximate distance - 125 miles
#38 May 2	i P i S F	11 : 28 : 11 11 : 28 : 33 11 : 31			Approximate distance - 110 miles
#39 May 3	e F	17 : 17 : 51 17 : 20			Nearby
<u>New constants determined May 4, 1946</u>					
		<u>Component</u>	<u>T°</u>	<u>V</u>	<u>Damping Ratio</u>
		N - S	1.0	1370	20 to 1
		E - W	1.0	1370	16 to 1
#40 May 8	e e L F	5 : 40 : 36 6 : 51 7 : 30			Distant
#41 May 15	e F	22 : 14 : 50 22 : 28			Distant
#42 May 15	e F	22 : 28 : 30 22 : 45			Distant
#43 May 16	e F	0 : 23 : 42 0 : 30			Distant

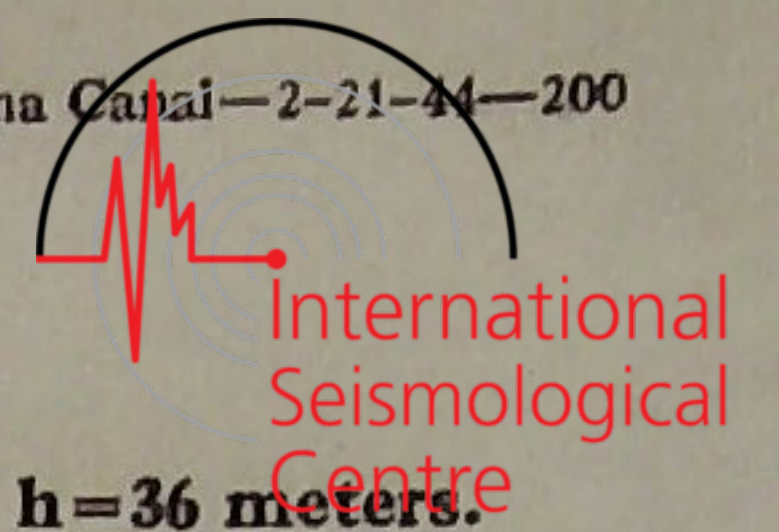
SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month May, 1946Page No. 7

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#44 May 18	e P	19	41	18			Approximate distance - 125 miles
	i S	19	41	44		4.0 N 4.2 E	
	F	19	44				
#45 May 21	i P	8	31	49		3.8 N 3.4 E	Approximate distance - 210 miles
	i S	8	32	33		6.0 N 8.0 E	
	F	8	40				
#46 May 21	i	9	21	12			Distant
	e	9	24	42			
	F	9	40				

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Bosch-Omori					

Month June 1946

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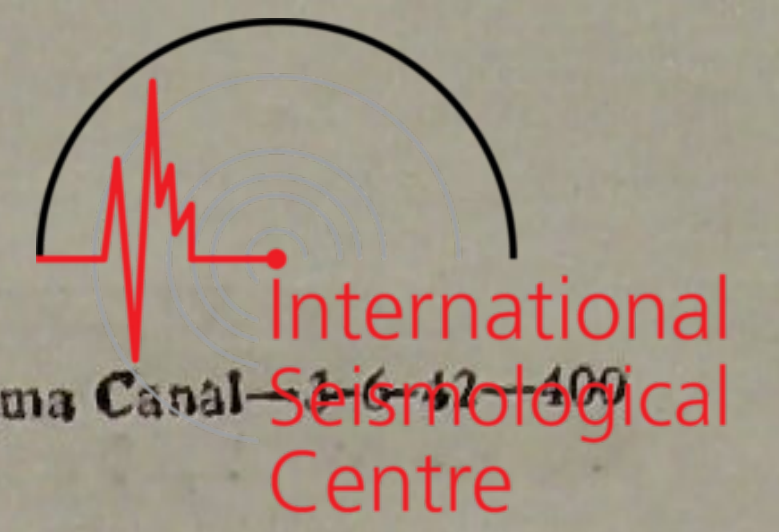
No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#47 June 1	1 P	5	53	56			Approximate distance, 210 miles
	1 S	5	54	40		2.5N	
	F	5	58			3.0E	
#48 June 2	1 P	7	37	27			Approximate distance, 220 miles
	1 S	7	38	13			
	F	7	42				
#49 June 2	1 P	17	08	32			Approximate distance 215 miles
	1 S	17	09	17		16.0N 14.0E	
	F	17	16				
#50 June 2	1 P	19	51	42			Approximate distance 145 miles
	1 S	19	52	12		3.7N 4.0E	
	F	19	55				
#51 June 3	1 P	2	58	03			Approximate distance 190 miles
	1 S	2	58	42			
	F	3	02				
#52 June 4	1 P	10	31	52			Nearby
	1 S	10	32	20		4.0N	
	F	10	35			3.4E	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month June, 1946.

Page No. 9

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#56 June 5	• • F	3:19:33 3:20:10 3:23				Nearby	
#54 June 5	• • F	7:09:50 7:10:32 7:13				Nearby	
#55 June 6	• P • S F	6:10:15 6:10:52 -				Approximate distance 180 miles Latter part of record lost in #56.	
#56 June 6	• P • S F	6:12:00 6:12:37 6:18			3.0M	Approximate distance 180 miles	
#57 June 6	• P • S F	7:47:52 7:48:29 7:55			4.5M	Approximate distance 180 miles	
#58 June 7	1 P 1 S F	4:17:07 4:20:10 4:45				Approximate distance 1130 miles Quakes reported near Isthmus of Tehuantepec according to press reports.	
#49 June 11	• • F	18:10:57 18:11:45 18:14				Nearby	
#60 June 13	• F	00:41:22 00:44:19				Faint trace local disturbance	



SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month June 1946

Page No. 10

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#61 June 14	e	11	21			Faint Trace Local Disturbance	
#62 June 23	e e f	17:23:04 17:30:47 18:00				Distant Disturbance	
#63 June 26	i f	2:12:20 2:15				Nearby	
#64 June 26	i f	7:56:40 8:12				Distant	
#65 June 26	ip is f	22:33:12 22:33:21 22:35			25.0E	Approximate Distance 45 Miles Felt by Few People Intensity II	

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Wood-Anderson	E-W	1.0	1370	16-1	May 4, 1946
Bosch-Omori	Not in Operation				
Bosch-Omori	Not in Operation				

Month July, 1946

Page No. 11

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#66 July 11	e	04:50	41			Distant	
	f	5:10					
#67 July 12	1P	20:05	03		17.0N	Distance Approximately 40 miles. Intensity III (Modified Mercalli Scale)	
	1S	20:05	11		20.0E 26.7N 20.0E		
	F	20:09					
#68 July 12	1P	23:30	18		5.0N	Near by	
	1	23:31	07		3.5E 3.0N 4.0N		
	F	23:42					
#69 July 16	e	0:13	06			Near by	
	e	0:13	58				
	F	0:16					
#70 July 26	eP	17:43	40			Near by	
	eS	17:44	03				
	F	17:46					
#71 July 31	e	0:33	23			Distant	
	e	0:36	59				
	F	0:42					

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Bosch-Omori)					

Month August, 1946.Page No. 12

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 72 Aug. 2	o	5	17	02			Nearby.
	i	5	18	09			
	F	5	22				
# 73 Aug. 2	i	19	25	52			Distant. Earthquake in Northern Chile according to Press reports.
	F	19	45				
# 74 Aug. 4	iP	17	54	31	Short.	15.ON	Approximate distance 1000 miles. Press reports describe destructive earthquake near Dominican Republic. A tidal wave damages towns on North coast of Dominican Republic. Note: Several after shocks are superposed on record of principal shock.
	eS	17	57	12		12.5E	
	eL	17	58	15	12-20S.	8.0E	
	F	19	45		12-20S.	8.5N 9.5E	
# 75 Aug. 4	e	20	56	52			Distant. Probable origin near Dominican Republic.
	e	20	59	19			
	F	21	05				
# 76 Aug. 7	e	18	29	50			Distant. Probable origin near Dominican Republic.
	e	18	32	27			
	F	18	35				
# 77 Aug. 7	e	19	24	53			Distant. Probable origin near Dominican Republic.
	e	19	27	24			
	F	19	30				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month August, 1946.Page No. 13

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 78 Aug. 8	eP	13	31	58		4.0N	Approximate distance 1000 miles Press reports indicate epicenter near Dominican Republic.
	eS	13	34	39		3.0E	
	eL	13	35	37		3.5N	
	F	15	00			3.0E	
# 79 Aug. 8	eP	14	32	09			Distant Probable origin near Dominican Republic.
	eS	14	34	49			
	F	14	40				
# 80 Aug. 8	eP	17	27	30			Distant Probable origin near Dominican Republic.
	eS	17	29	59			
	F	17	35				
# 81 Aug. 9	eP	8	29	11			Distant Probable origin near Dominican Republic.
	eS	8	31	38			
	F	8	35				
# 82 Aug. 9	eP	20	10	10			Distant Probable origin near Dominican Republic.
	eS	20	12	48			
	F	20	18				
# 83 Aug. 9	eP	20	56	44			Distant Probable origin near Dominican Republic.
	eS	20	59	22			
	F	21	02				
# 84 Aug. 10	eP	11	49	16			Distant Probable origin near Dominican Republic.
	eS	11	51	46			
	F	11	55				

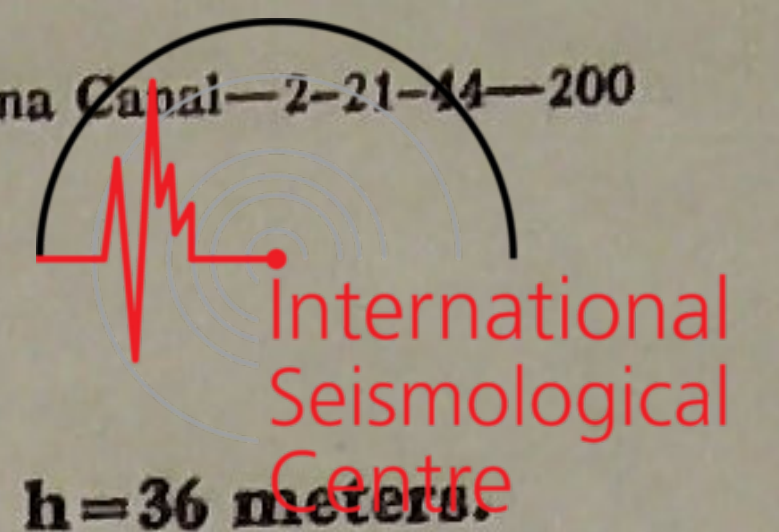
SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month August, 1946.Page No. 14

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 85 Aug. 11	eP	18	00	31			Approximate distance 110 miles.
	eS	18	00	54			
	F	18	03				
# 86 Aug. 17	e	11	23	11			Distant.
	e	11	25	51			
	F	11	28				
# 87 Aug. 19	e	5	44	09			Distant.
	e	5	46	42			
	F	5	50				
# 88 Aug. 21	eP	19	21	08			Approximate distance 940 miles.
	eS	19	23	40			
	F	19	50				
# 89 Aug. 24	e	2	44	11			Distant.
	F	2	55				
# 90 Aug. 24	e	14	36	33			Distant.
	e	14	39	15			
	F	14	45				
# 91 Aug. 28	e	22	34	55			Distant. May represent more than one disturbance.
	e	22	40	11			
	e	22	44	01			
	F	22	47				

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Wood-Anderson	E-W	1.0	1370	16 to 1	May 4, 1946
Bosch-Omori)	Not in operation.				
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Month September 1946

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No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 92 Sept. 7	e F	10: 54: 33 10: 58				Nearby.	
# 93 Sept. 12	e F	15: 37: 11 16: 08				Distant. Probably same source as Quake No. 95	
# 94 Sept. 12	e F	16: 24 17: 33	22-32s			Distant. Press reports quake 8000 miles from California, possibly in India, Burma or East Indies.	
# 95 Sept. 12	e e F	17: 43: 00 17: 45: 31 18: 04				Approximate distance 930 miles. Probable origin near Dominican Republic.	
# 96 Sept. 15	e i F	5: 22: 28 5: 23: 13 5: 27				Approximate distance, 220 miles.	
# 97 Sept. 25	e F	8: 28: 32 8: 31				Nearby.	
# 98 Sept. 25	e e F	10: 09: 14 10: 11: 42 10: 17				Approximate distance 900 miles.	
# 99 Sept. 25	e e F	15: 01: 34 15: 04: 03 15: 07				Approximate distance 915 miles.	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month September 1946Page No. 16

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
# 100 Sept. 29	e	3:	21:	16		Distant.	
	e	3:	23:	41			
	F	3:	32				
# 101 Sept. 29	e	3:	55:	14		Distant. Long period waves.	
	e	4:	01:	14			
	F	4:	30				
# 102 Sept. 29	e	14:	15:	23		Approximate distance 260 miles.	
	e	14:	16:	06			
	F	14:	18				
# 103 Sept. 30	e	1:	04:	38		Approximate distance 1600 miles.	
	e	1:	08:	46			
	F	1:	16				

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NOV 21 1946
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THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF METEOROLOGY AND HYDROGRAPHY

MR 1433—Panama Canal—2-21-44—200



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	20 to 1	May 4, 1946
Wood-Anderson	E - W	1.0	1370	16 to 1	May 4, 1946
Bosch-Omori)					
Bosch-Omori)	Not in operation.				

Month OCTOBER 1946Page No. 17

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#104 Oct. 4	e	14:	48:	55		4.0 N	Approximate distance 930 miles
	e	14:	51:	26		3.0 E	
	f	15:	07			4.5 N 3.0 E	
#105 Oct. 4	e	15:	00:	14			Aftershock from same source as #104
	f	15:	06				
#106 Oct. 4	e	15:	30:	10		1.5 N	Distance 39.5 miles. Explosion of 16 Naval mines approximately 1 miles North of Cristobal Breakwater Entrance
	f	15:	32			1.5 E	
#107 Oct. 8	e	23:	10:	37			Approximate distance 460 miles.
	i	23:	11:	55		5.0 N	
	f	23:	18			6.0 E	
#108 Oct. 9	e	19:	36:	54			Approximate distance 310 miles
	e	19:	37:	46			
	f	19:	42				
#109 Oct. 9	e	19:	58:	48			Distant
	f	20:	01				
#110 Oct. 10	i	9:	27:	27			Approximate distance 375 miles
	e	9:	28:	31		2.0 N	
	f	9:	33			2.5 E	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month OCTOBERPage No. 18

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#111	e	18:	26:	21			Approximate distance 85 miles
Oct. 12	e	18:	27:	35		7.5 N	
	f	18:	28			5.0 E	
#112						5.0 N	Nearby Record lost.
Oct. 13- -14						6.5 E	
#113	e	8:	21:	24			Approximate distance 90 miles
Oct. 15	e	8:	21:	39		22.5 N	
	f	8:	24			22.5 E	
#114	e	8:	30:	53			Approximate distance 145 miles
Oct. 15	e	8:	31:	16		7.5 N	
	f	8:	34			5.5 E	
#115	e	7:	47:	51			Approximate distance 45 miles
Oct. 17	e	7:	48:	00			
	f	7:	49				
#116	e	19:	47:	20		1.4 N	Approximate distance 45 miles Reported felt by several persons Intensity I, Modified Mercalli Scale.
Oct. 19	e	19:	47:	30		1.4 E	
Oct. 19	e	19:	47:	30		15.5 N	
	f	19:	50			14.5 E	
#117	e	23:	39:	24			Nearby
Oct. 20	f	23:	42				
#118	e	13:	46:	07		8.5 N	Approximate distance 270 miles
	i	13:	46:	52		7.0 E	
						48.0 N	
Oct. 21	f	14:	02			49.0 E	

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month OCTOBER, 1946Page No. 19

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#119 Oct. 21	e	13:	57:	46			Approximate distance 270 miles
	e	13:	58:	31			Aftershock to Quake No. 118
	f	14:	01				
#120 Oct. 22	e	17:	54:	18			Approximate distance 315 miles
	e	17:	55:	10		5.0 N 4.8 E	
	f	18:	05				
#121 Oct. 22	e	21:	16:	51			Approximate distance 315 miles
	e	21:	17:	44			
	f	21:	22				
#122 Oct. 25	e	0:	33:	04			Faint waves from distant quake
	f	0:	40				
#123 Oct. 26	e	5:	33:	04			Approximate distance 275 miles
	e	5:	33:	50			
	f	5:	36				

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Chief Hydrographer

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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 _z	V	ε	DETERMINED
Wood-Anderson	N-S	1.0	1370	20 to 1	May 4, 1946
Wood-Anderson	E-W	1.0	1370	16 to 1	May 4, 1946
Bosch-Omori	Not operating.				
Bosch-Omori					

NOVEMBER 1946

Month

Page No. **20**

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#124 NOV. 1	•	11	27				Faint trace of distant disturbance.
	F	11	45				
#125 NOV. 2	•	14	23	57			Distant
	F	14	29				
#126 NOV. 2	•	18	48				Distant
	•	18	59				
	e1	19	07				
	F	20	04				
#127 NOV. 2	•	19	39	22			Approximate distance 210 miles.
	•	19	40	06			
	F	19	43				
#128 NOV. 3	•	19	43	10			Distant
	•	19	52	45			
	F	20	00				
#129 NOV. 6	•	2	46	28			Approximate distance 105 miles.
	•	2	46	50			
	F	2	49				
#130 NOV. 7	•	18	09	36			Distant
	•	18	12	04			
	F	18	17				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month NOVEMBER 1946Page No. 21

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
NOV. 8		No record from 20:15:07 to 20:23:20.					
NOV. 9		No record from 14:30:07 to 14:41:12, 18:43:20 to 18:53:20, 19:19:30 to 19:37:52					
#131 NOV. 10	1P 1S F	8:26:04 8:26:14 8:28				2.0E 14.0E	Approximate distance 48 miles. N-S record lost.
#132 NOV. 10	e F	13:02:29 13:15					Distant
#133 NOV. 10	1P e 1S e eL F	17:46:57 17:48:46 17:50:26 17:51:29 17:52:12 18:48	4.0			2.2N 5.5E 3.5N 3.0E	Approximate distance 1300 miles. Violently destructive in Northern Peru. Press reports over 500 people killed.
#134 NOV. 10	e e F	18:54:55 18:58:21 19:02					After shock to #133.
#135 NOV. 10	e e F	21:06:40 21:10:07 21:16					After shock to #133.
#136 NOV. 12	1P 1S F	6:38:04 6:39:08 6:43				1.5N 1.5E 4.0N 4.0E	Approximate distance 375 miles.

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month NOVEMBER 1946Page No. 22

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
NOV. 15	No record from 4:19:12 to 4:22:30.						
#137 NOV. 17	iP IS F	4:49:29 4:50:21 4:55			1.0E 1.5N 6.0N 5.5E	Approximate distance 250 miles.	
#138 NOV. 19	eP IS F	17:35:28 17:36:11 17:40			1.0N 1.0E 4.8N 5.9E	Approximate distance 205 miles.	
#139 NOV. 29	eP eS F	10:31:29 10:31:53 10:33				Approximate distance 150 miles.	

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Bosch-Omori	Not Operating				
Bosch-Omori					

Month DECEMBER - 1946Page No. 23

No. and Date	Phase	Time G. M. T.			Period	AMPLI- TUDE mm	REMARKS
		h	m	s			
#140 Dec. 2	o	23	21	53		Approximate distance 95 miles N 2.5 E 2.5	
	1	23	22	13			
	F	23	24				
#141 Dec. 3	o	3	46	07		Approximate distance 220 miles N 2.5 E 2.0	
	1	3	46	53			
	F	3	48				
#142 Dec. 4	1	3	10	15		Nearby, trace confused.	
	F	3	12				
#143 Dec. 6	oP	14	50	46		Approximate distance 135 miles N 2.0 E 1.8	
	oS	14	51	14			
	F	14	53				
#144 Dec. 9	o	16	39	07		Approximate distance 125 miles	
	o	16	39	33			
	F	16	41				
#145 Dec. 10	1P	4	25	09		Approximate distance 58 miles N 2.5 E 2.0 N 3.8 E 8.0	
	1S	4	25	21			
	F	4	27				

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month **DECEMBER - 1946**Page No. **24**

No. and Date	Phase	Time G. M. T.			Period s	AMPLI- TUDE mm	REMARKS
		h	m	s			
#146 Dec. 11	1P	4	13	19		N 15.5 E 11.5	Approximate distance 53 miles. Reported felt by a few. Intensity I, modified Mercalli scale.
	1 S	4	13	30		N 11.4 E 21.0	
	F	4	17				
#147 Dec. 12	•	21	26	06			Approximate distance 120 miles.
	•	21	26	31		N 2.0 E 1.5	
	F	21	28				
#148 Dec. 13	•	12	52	37			Faint trace of distant disturbance.
	F	13	02				
#149 Dec. 18	•	6	21	45			Nearby
	•	6	22	20			
	F	6	24				
#150 Dec. 20	•	19	38	20			Japanese quake.
	•	19	51	19			
	• L	20	12	24	20 mm.		
	F	22	00				
#151 Dec. 26	•	19	39	02			Distant
	F	19	45				
#152 Dec. 28	•	1	01	30			Approximate distance 900 miles.
	•	1	03	56			
	F	1	07				

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