

THE PANAMA CANAL

DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

REGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.

(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)



Month JANUARY Year 1952

Latitude 8° 57' 39" north.
Longitude 79° 33' 29" west.

M-S 100 K
Magnification 35

Greenwich mean time midnight to midnight.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	h.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													
3													
4												20	Faint tremors from distant disturbance recorded 2:36 to 2:48. Slight damage reported in Lima, Peru.
5													
6													
7													
8												20	Light tremors from distant disturbance recorded 14:35 to 15:23. Distance and direction indeterminate.
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

P. T. Preliminary tremors. L. W. Large waves.
Greenwich mean time five hours faster than 75th meridian time.

THE PANAMA CANAL

DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS



REGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.

(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)

E-W 100 K

Month JANUARY Year 1932

Magnification 35.

Greenwich mean time midnight to midnight.

Latitude 8° 57' 39" north.
Longitude 79° 33' 29" west.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	h.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													
3													
20													Faint tremors from distant disturbance recorded
4												20	2:36 to 2:48. Slight damage reported in Lima, Peru.
5													
6													
7													
29													Light tremors from distant disturbance recorded
8												20	14:35 to 15:23. Distance and direction indeterminate.
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

P. T. Preliminary tremors, L. W. Large waves.
Greenwich mean time five hours faster than 75th meridian time.

THE PANAMA CANAL

DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

REGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.

(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)

Month FEBRUARY Year 1932Latitude $8^{\circ} 57' 39''$ north.
Longitude $79^{\circ} 33' 29''$ west.N - S 100 K
Magnification 35.

Greenwich mean time midnight to midnight.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	h.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													Distance 720 miles.
3	6:18:41		6:20:41		6:23:41		6:30:20		7:04:00		2.5	20	Epicenter 19.3° N. Lat. 76.0° W. Long. (From Coast and Geodetic Survey.)
4													
5													
6	?		9:20:51		9:21:16		9:21:21		9:28:00		0.7	20	Preliminary tremors uncertain.
7													
8													Distance about 50
9 ⁵	21:16:52		21:17:06		-		-		21:18:43		-	20	miles. Felt by a few people in Balboa, C.Z.
10													
11													
12 ¹⁷	Very faint tremors from local disturbance recorded between 16:09 and 16:20. Phases weak and uncertain.												
13												20	
14													
15													Distance about 50
16	10:48:18		10:48:32		-		-		10:51:00		-	20	miles. Felt by a few people in Balboa, C.Z.
17													
18													Distance about 270
19 ²²	4:38:27		4:39:14		4:39:31		4:39:42		4:47:00		0.6	20	miles.
20													
21													
22 ²⁹	Very faint tremors from local disturbance recorded between 5:50 and 5:52. Phases uncertain.												
23												20	
24													
25													
26													
27													
28													
29													
30													
31													

P. T. Preliminary tremors, L. W. Large waves,
Greenwich mean time five hours faster than 75th meridian time,

THE PANAMA CANAL

DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

REGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.

(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)

Month F E B R U A R Y Year 1932.Latitude $8^{\circ} 57' 39''$ north.
Longitude $79^{\circ} 33' 29''$ west.E-W 100 K
Magnification 55.

Greenwich mean time midnight to midnight.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	h.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													Distance 720 miles.
3	6:18:46		6:20:46		6:23:33		6:24:13		7:04:00		1.9	20	Epicenter 19.3° N. Lat., 76.0° W. Long. (From Coast and Geodetic Survey.)
4													
5													
6												20	Phases uncertain. See N-S report.
7													
8													
9	21:16:55		21:17:09		-		-		?		-	20	Distance about 50 miles. Felt by a few people in Balboa, C. Z. Ending uncertain.
10													
11													
12													
13												20	Very faint tremors from local disturbance recorded between 16:09 and 16:20. Phases weak and uncertain.
14													
15													
16	10:48:20		10:48:34		-		-		10:51:00		-	20	Distance about 50 miles. Felt by a few people in Balboa, C. Z.
17													
18													
19	4:38:26		4:39:13		4:39:33m		-		4:47:00		-	20	Distance about 270 miles. No definite maximum.
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

P. T. Preliminary tremors, L. W. Large waves,
Greenwich mean time five hours faster than 75th meridian time.

THE PANAMA CANAL

DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYSREGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.
(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)Month M A R C H Year 1932Latitude $8^{\circ} 57' 39''$ north.
Longitude $79^{\circ} 33' 29''$ west.N-S 100 K
Magnification 35.

Greenwich mean time midnight to midnight.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	h.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													
3	Very light tremors from local disturbance recorded												
4			from 21:50:13 to 21:53:00.		Phases indistinct.						20		
5													
6	22:44:47	22:45:47	22:46:04	22:46:30	23:07:00	4.0	20	Distance 340 miles.					
7													
8													
9	Very light tremors from local disturbance recorded												
10			between 19:35 and 19:38.		Very faint, but certainly						20		
11			seismic.										
12													
13													
14	Very faint tremors from local disturbance recorded												
15			between 21:28 and 21:31.		Trace barely discernible.						20		
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

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DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYSREGISTER OF EARTHQUAKES AT BALBOA HEIGHTS, C. Z.
(AS RECORDED BY BOSCH-OMORI SEISMOGRAPH)Month M A R C H Year 1932Latitude $8^{\circ} 57' 39''$ north.
Longitude $79^{\circ} 33' 29''$ west.E-W 100 K
Magnification 35.

Greenwich mean time midnight to midnight.

MR 9566—Panama Canal—4-4-28—1,000

DATE	P. T. COMMENCE		2D GROUP COMMENCE		L. W. COMMENCE		MAXIMUM		END		MAX. AMPLITUDE	PERIOD OF PENDULUM	REMARKS
	A.	m.	h.	m.	h.	m.	h.	m.	h.	m.			
1													
2													
3													
4												20	Very light tremors from local disturbance recorded from 21:50:13 to 21:53:00. Phases indistinct.
5													
6													
7													
7	22:44:48		22:45:48		22:46:07		22:47:52		23:07:00		5.0	20	Distance 340 miles.
8													
9													
10													
10													
11													
12												20	Very light tremors from local disturbance recorded between 19:35 and 19:38. Very faint, but certainly seismic.
13													
14													
15													
16												20	Very faint tremors from local disturbance recorded between 21:28 and 21:31. Trace barely discernible.
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
28													
29													
30													
31													

P. T. Preliminary tremors, L. W. Large waves,
Greenwich mean time five hours faster than 75th meridian time,

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

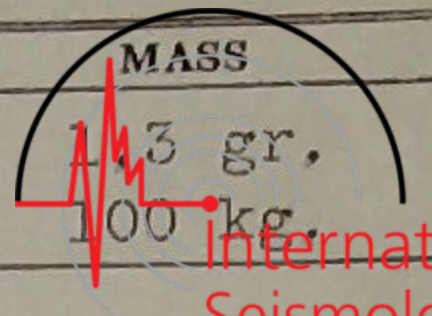
Time Correction: Within 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm, per min.	143 gr. 100 kg.
Bosch-Omori	II	Smoked Sheet	Air	15 mm, per min.	

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.			V		h		DETERMINED
Wood-Anderson	N-S	0.8	1370	Critical	July 28, 1932				
Wood-Anderson	E-W	0.8	1370	Critical	July 28, 1932				
Bosch-Omori	NOT OPERATING.								
Bosch-Omori	NOT OPERATING.								



International
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Month May 1932

Page No. 1

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E	N	
						mm	mm	
753 May 20 Symbol I	e PE FE	15	43	58 00				Very feeble shock. N-S trace very dim.
754 May 21 I	e PE i SE e LE e ME FE	05	35	57 22 24 26 30				distance 140 miles Very feeble shock N-S trace very dim
755 May 21 I	i PE i SE e LE e ME FE	10	12	24 26 00 06 00	1.0 1.2 1.7 2.0		2.1	13° N, 88° W U.S.C.G.S.: 0 = 10:10:11 J.S.A.: 13.8° N, 88.5° W 0 = 10:10:17 Distance 700 miles. Destructive in San Salvador.
756 May 22 I	e NE F NE	22	42	38 00				Very feeble shock J.S.A.: 14° N, 88.5° W
757 May 25 I	e NE	19	10	37				Small surface waves recorded.
758 May 25 I	e PN e SN e LN MN i CN FN	19	14	11 39 45 52 21 00	0.7		2.0	Distance approximately 210 miles P masked by microseisms E-W record not legible.
759 May 26 I	e NE i NE F NE	16	26	00 32 00				Distance about 7,300 miles 16°S, 175°W U.S.C.G.S.: 0 = 16:09:33 J.S.A.: 23°S 180°E 0 = 16:09:40
760 May 29 I	i PN i SN i LN MN CN FN	13	45	42 03 07 19 55 00	0.4 0.6 0.6		5.0	Distance 120 miles. E-W not operating
761 May 31 I	e N	17	33	57				Very feeble.
762 May 31 I	e N FN	18	07	00 00				Apparently of local origin.

R. Z. KIRKPATRICK,
Chief of Surveys.

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SECTION OF SURVEYS

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

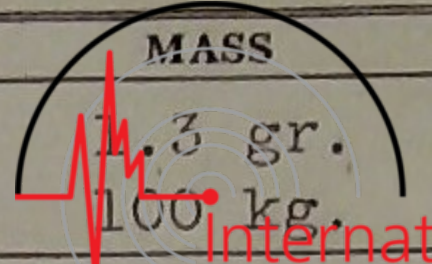
Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

Time Correction: Within 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	h	DETERMINED
Wood-Anderson	N-S	0.8	1370	Critical	July 28, 1932
Wood-Anderson	E-W	0.8	1370	Critical	July 28, 1932.
Bosch-Omori					
Bosch-Omori		Not operating.			

Month June, 1932.Page No. 2

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
763 June 3 I	i PN	10:42:30			2.0			Distance 1300 miles. 17°N, 104°W. U.S.C.G.S.: 0 = 10:36.6. 16°N, 104°W. J.S.A.: 0 = 10:36:25 Destructive in Mexico
	i PE	10:42:32			1.6			
	i SN	10:45:32			3.0			
	i SE	10:45:47			3.0			
	e LN	10:46:41			5.8			
	e LE	10:47:22			6.0			
	MN	10:54:32			18.0		5.0	
	ME	10:54:20			21.0	5.5		
	CN	11:18:23						
	CE	11:18:32						
	FNE	12:33:00						
764 June 6 I	e E	09:15:19					Very feeble waves.	
	FE	09:20:00					N-S not operating.	
765 June 6 I	e E	11:52:38					Very feeble waves.	
	FE	11:58:00					N-S not operating.	
766 June 9 I	i NE	12:58:15					Very feeble shock.	
	FNE	12:59:00					Local origin.	
767 June 10 I	e NE	20:42:06					Small waves recorded.	
	FNE	20:45:00						
768 June 14 I	e NE	06:19:00					Trace of short period waves.	
	FNE	06:22:00						
769 June 14 I	e NE	07:54:00					Trace of short period waves.	
	FNE	07:59:00						
770 June 14 I	i FNE	22:10:49					Dist. 160 miles.	
	e SNE	22:11:19					Very feeble shock.	
	FNE	22:13:19						
771 June 15 I	i PNE	12:30:25					Identification of	
	i SNE	12:31:03					S doubtful, may be	
	MNE	12:31:05				2.5	L.	
	FNE	12:34:00					Distance 210 miles?	
772 June 19 I		23:49					Very faint but	
		to					certainly seismic.	
		23:51						
773 June 20 I		05:09					Very feeble shock;	
		to					records blurred.	
		05:12					Note:- This is the first of a series	
							of sheets that have become blurred	
							due to excessive humidity encounter-	
							ed in tropical climates. Extra	
							supply of sheets are now kept in	
							dry locker using a 50-watt heater	
							with creditable results.	
774 June 20 I		09:04					Very faint trace of 2.0	
		to					sec. period waves.	
		09:13						

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Month June, 1932.

Page No. 3

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
775 June 20 I	e NE FNE	21:47:40 21:50:00						Faint trace of short period waves, 0.5 sec. or less.
776 June 23 I	e NE	13:05:09						End of record lost, sheet changed at 13:33. U.S.C.G.S.: 19.5°N 104°W 0 = 12:59:00 J.S.A. 17.3°N 103.5°W 0 = 12:59:18 Destructive in Mexico.
777 June 24 I	e PNE 1 SNE MN ME FNE	07:41:55 07:42:44 07:42:48 07:42:51 07:46:00					2.0	Distance 270 miles? Identification of S waves doubtful, may be L.
778 June 29 I	1 PN 1 PE 1 SN 1 SE 1 LN 1 LE 1 MN 1 ME 1 ON 1 OE FNE	22:20:59 22:20:59 22:21:38 22:21:41 22:21:47 22:21:50 22:22:21 22:22:04 22:23:55 22:23:21 22:31:00		0.5 0.4 0.5 0.5 0.8 0.6			10.5	Distance 240 miles Epicenter 05.5° N, 78° W., According to St. Louis.



International
Seismological
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R. Z. KIRKPATRICK,
Chief of Surveys.

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

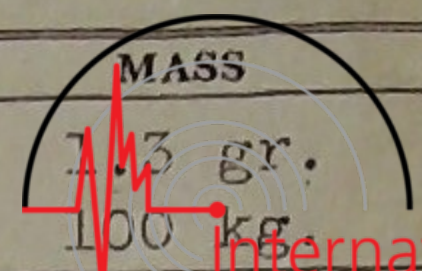
Time Correction: Within 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.43 gr. 100 kg.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T.	V	h	DETERMINED
Wood-Anderson	N-S	0.8	1370	Critical	July 28, 1932
Wood-Anderson	E-W	0.8	1370	Critical	July 28, 1932
Bosch-Omori	N-S	20	35	Critical	July 27, 1932
Bosch-Omori	E-W	20	35	Critical	July 27, 1932.



International
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Month July, 1932.

Page No. 4

No. and Date	Phase	Time			Period	Amplitude		REMARKS
		G. M. T.				E	N	
		h	m	s		mm	mm	
779 July 6 I	1 PE	15:09:55					Very feeble shock. 1E appears to be beginning of second quake superposed. N-S not operating. sinusoidal waves, very small amplitude.	
	1 E	15:11:59						
	FE	16:16:00						
780		16:32					N-S blurred. Very feeble short period waves. E-W time irregular.	
July 7 I		to 16:47						
781	e N	22:10:42					Very feeble shock. E-W record blurred.	
July 10 I	FN	22:13:00 ±						
782	e N	07:11:17					Very faint. N-S stopped U.S.C.G.S.: 25° N, 110° W 0 = 19:24:10 J.S.A. 25.6° N, 110.5° W 0 = 19:24:10	
July 12 I	FN	07:14:00 ±						
783	e E	19:30:30					Feeble short period waves.	
July 12 I	FE	20:00:00 ±						
784	e NE	07:49:56					Distance approximately 130 miles. Vibration too rapid to record. L & M waves. E-W record blurred.	
July 14 I	FNE	07:52:00						
785	1 PN	7:20:03		0.5				
July 21 I	1 SN	7:20:26						
	FN	7:24:00						

Instruments not operating from July 25th to July 29, 1932,
due to faulty storage battery.

R. Z. KIRKPATRICK,
Chief of Surveys.

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

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 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	1.43 gr.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	100 kg.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T _c	V	h	DETERMINED
Wood-Anderson	N-S	0.8	1370	Critical	July 28, 1932.
Wood-Anderson	E-W	0.8	1370	"	"
Bosch-Omori	N-S	20	35	"	July 27, 1932.
Bosch-Omori	E-W	20	35	"	"

Month August, 1932.Page No. 5

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
I 786 Aug. 9	e NE FNE	17:59:56 18:03:00						Trace of short period waves.
I 787 Aug. 10	e PNE e SNE FNE	06:20:04 06:20:40 06:24:00						Distance about 210 miles. L & M waves not clear. Seismometer lamp out of focus.
I 788 Aug. 14	1 PN IN	04:44:25 04:50:00						Short period small amplitude waves. E-W time irregular.
I 789 Aug. 17		08:50 to 08:54						Faint trace of 1 sec. period waves.
I 790 Aug. 19	e PE FE	13:12:45 13:18:00						Trace of short period waves. N-S not operating.
I 791 Aug. 23	e PE 1 SE FE	12:07:22 12:07:45 12:09:00						P- uncertain. Dist. approx. 130 miles. N-S time marker not working.
II 792 Aug. 24	1 PNE 1 SNE ME CE FE	19:22:32 19:22:57 19:23:00 19:23:45 19:25:00			1.7			Wood Anderson instruments not operating. Record from Bosch-Omori. Distance 140 miles. Quake felt by a few residents of Balboa & Panama City.
I 793 Aug. 26	e PNE 1 SN 1 SE 1 LN 1 LE MN ME FNE	23:27:00 23:27:20 23:27:22 23:27:25 23:27:26 23:27:29 23:27:31 23:30:00	0.5 0.5 0.5 0.8 0.8			5.1	5.0	Distance 130 miles. Feeble shock.
I 794 Aug. 28	1 PNE 1 SNE MNE FNE	08:43:28 08:43:41 08:43:45 08:45:00				2.0 2.0	4.0 4.0	Distance approximately 70 miles. Very feeble shock.
I 795 Aug. 28	e NE FNE	13:38:30 13:43:00						Trace of short period waves. Amplitude less than 0.5 mm.

R. Z. KIRKPATRICK,
Chief of Surveys.

THE PANAMA CANAL
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SECTION OF SURVEYS

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

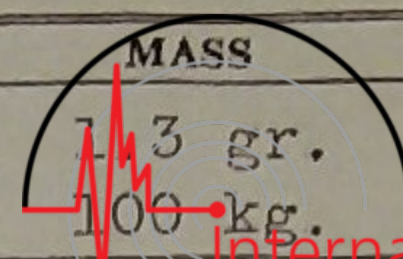
Time Correction: Within 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	13 gr. 100 kg.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T ₀	v	h	DETERMINED
Wood-Anderson	N-S	0.8	1370	Critical	July 28, 1932
Wood-Anderson	E-W	0.8	1370	"	"
Bosch-Omori	N-S	20	35	"	July 27, 1932
Bosch-Omori	E-W	20	35	"	"



International
Seismological
Centre

Month September, 1932.

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No. and Date	Phase	Time G. M. T.	Period s	Amplitude		REMARKS
				E mm	N mm	
I 796 Sept. 2	e PNE	03:43:55	0.8	1.1	1.0	Dist. approx. 250 miles Very feeble shock.
	i SNE	03:44:38				
	MN	03:44:48				
	ME	03:44:47				
	FNE	03:47:00				
I 797 Sept. 5	1 PE	11:12:55				Distance approximately 60 miles. Very feeble shock. N-S not operating.
	1 SE	11:13:05				
	ME	11:13:13				
	FE	11:15:00				
I 798 Sept. 14	e PE	09:21:52				Distance approximately 170 miles. Very feeble shock. N-S not operating.
	e SE	09:22:24				
	ME	09:22:27				
	FE	09:24:00				

R. Z. KIRKPATRICK,
Chief of Surveys.

THE PANAMA CANAL
DEPARTMENT OF OPERATION AND MAINTENANCE
SECTION OF SURVEYS

SEISMOLOGICAL RECORD AT BALBOA HEIGHTS, CANAL ZONE

Lat. 8° 57' 39" N.

Long. 79° 33' 29" W.

h = 36 meters.

Lithologic foundation: Basalt.

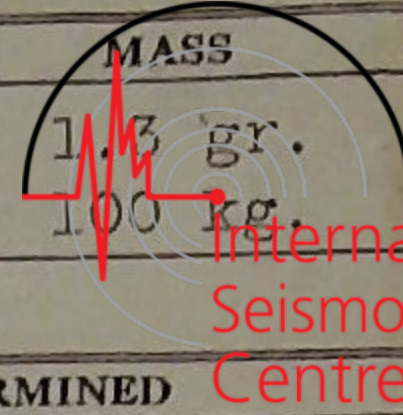
Time Correction: Within 0.5 sec.

INSTRUMENTS—FIXED CONSTANTS

INSTRUMENTS	SYMBOL	REGISTRATION	DAMPING	PAPER SPEED	MASS
Wood-Anderson	I	Photographic	Magnetic	60 mm. per min.	13 gr.
Bosch-Omori	II	Smoked Sheet	Air	15 mm. per min.	100 gr.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T _c	V	h	DETERMINED
Wood-Anderson		NOT OPERATING.			
Wood-Anderson		NOT OPERATING.			
Bosch-Omori	N-S	20	35	Critical	July 27, 1932.
Bosch-Omori	E-W	20	35	Critical	July 27, 1932.



Month OCTOBER 1932.

Page No. 7

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
II 799 Oct. 2	e FN	03:01:16			3.0 2.0	2.5		Distance 510 miles. U.S.C.G.S. Lat. 12° N., Long. 86° W. 0 = 2h 59.3 m. E-W phases uncertain.
	e PE	03:01:09						
	e SNE	03:02:59						
	LN	03:03:17						
	MN	03:03:57						
	CN	03:05:05						
FN	03:22:00							
II 780 Oct. 29	e FN	12:05:50			0.8	0.6		Distance approx. 120 miles.
	e PE	12:05:46						
	e LN	12:06:31						
	e LE	12:06:26						
	FNE	12:11:00						

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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.

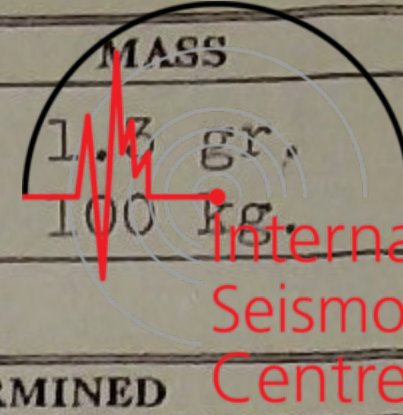
Time Correction: Within 0.5 sec.

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 gr.

INSTRUMENTS—DETERMINED CONSTANTS

INSTRUMENTS	COMPONENT	T _c	V	h	DETERMINED
Wood-Anderson	Not operating.				
Wood-Anderson	E-W	20	35	critical	July 27, 1932
Bosch-Omori	N-S	20	35	"	"
Bosch-Omori					



Month November 1932

Page No. 8

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
II 801 781 Nov. 11	ePN	00:39:26					S-waves uncertain Distance approx. 120 miles.	
	ePE	00:39:24						
	ILN	00:40:05				0.7		
	eLE	00:40:03			0.8			
	FNE	00:43:00						
II 802 782 Nov. 13	ePN	20:23:49					S-waves uncertain Distance approx. 110 miles.	
	ePE	20:23:46						
	eLN	20:24:26				0.8		
	eLE	20:24:23			1.0			
	FNE	20:27:00						

R. Z. KIRKPATRICK,
Chief of Surveys.

THE PANAMA CANAL
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SECTION OF SURVEYS

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 0.5 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 _c	V	h	DETERMINED
Wood-Anderson					
Wood-Anderson					
Bosch-Omori	E-W	20	35	critical	July 27, 1932
Bosch-Omori	N-S	20	35	"	" " "

Month December, 1932Page No. 9

No. and Date	Phase	Time G. M. T.			Period s	Amplitude		REMARKS
		h	m	s		E mm	N mm	
II 803 Dec. 14		03:31						Very light tremors from local disturbance.
II 804 Dec. 21		08:25						Faint trace of long period waves. Press reports people in Reno, Nevada panic stricken
II 805 Dec. 25		01:58						Very faint trace of long period waves.

Correction: Page 8, November, 1932. Nos. 781 and 782 should be 801 and 802 respectively.

R. Z. KIRKPATRICK,
Chief of Surveys.