SECTION V.—SEISMOLOGY.

SEISMOLOGICAL ABBREVIATIONS USED IN THE INSTRUMENTAL REPORTS.

CHARACTER OF THE EARTHQUAKE.

I = noticeable.
II = conspicuous.
III = strong.
d = (terræ motus domesticus) = local earthquake (sensible or felt).
v = (terræ motus vicinus) = nearby earthquake (within 1000 km.).
r = (terræ motus remotus) = distant earthquake (1000 to 5000 km. distant).
u = (terræ motus ultimus) = very distant earthquake (beyond 5000 km.).

Examples.—I_d indicates a local earthquake of small intensity but sensible to individuals.

III_r indicates a distant earthquake whose record shows motions of considerable amplitude.

PHASES.

P = (undæ primæ) = first preliminary tremors.
PR*n* = P waves reflected *n* times at the earth's surface.
S = (undæ secundæ) = second preliminary tremors.
SR*n* = S waves reflected *n* times at the earth's surface.
PS = transformed waves; longitudinal (P) to transversal (S) or vice versa.
L = (undæ longæ) = long waves in the principal portion.
M = (undæ maximæ) = greatest motion in the principal portion.
C = (coda) = trailers.
F = (finis) = end of sensible disturbance.

NATURE OF THE MOTION.

i = (impetus) = abrupt beginning.
e = (emersio) = gradual appearance.
T = period = twice the time of oscillation.
A = amplitude of the earth's movement, reckoned from the zero line.

E or N attached to a symbol signifies the E–W and N–S component, respectively, thus:

A_E is the E–W component of A, A_N is the N–S component of A: measured in microns (μ) $\frac{1}{1000}$ mm.

INSTRUMENTAL CONSTANTS.

T_0 = period of the instrument.
V = magnification of the instrument.
ϵ = damping coefficient.

SEISMOLOGICAL REPORTS FOR JUNE, 1915.

By WILLIAM J. HUMPHREYS, Professor in charge of Seismological Investigations.

[Dated, Washington, D. C., July 29, 1915.]

TABLE 1.—*Noninstrumental earthquake reports, June, 1915.*

Day.	Approximate time, Greenwich Civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forel.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
		ARIZONA.								
	H. m.		° ′	° ′			*M. s.*			
23	4 00	Tucson	32 15	110 50	2	1			Disturbance in southern California.	C. E. Gassick.
	4 00	Wickenburg	33 56	112 44	3	1				W. J. Haswell.
	4 00	Yuma	32 45	114 36	7	1	2	Rumbling		C. J. Wood.
	4 00	Yuma	32 45	114 36	6	1	5		Slight damage	E. E. Roddis.
23	4 56	Parker	34 06	114 13	5	3	3	Rattling		F. R. Macpherson.
	4 56	Wickenburg	33 56	112 44	5		4		Shook buildings	W. J. Haswell.
	4 56	Yuma	32 45	114 36	7	1	4			C. J. Wood.
	4 56	Yuma	32 45	114 36	6	1	5			U. S. Weather Bureau.
27	8 30	Mesa	33 24	111 50	2	6	6			E. B. Hill.
		CALIFORNIA.								
4	21 10	Shively	40 25	123 56	5	3	1			Frank Essig.
6	17 51	Coyote	37 14	121 44			3			Chas. Fletcher.
	17 51	Oakland	37 47	122 15	4	1	2			Chas. Burckhalter.
	17 51	Oakland	37 47	122 15	4	1	2	Faint		Mrs. O. Whittaker.
	17 51	San Francisco	37 48	122 26	4	1				U. S. Weather Bureau.
15	20 55	Chester	33 53	117 38	2	2				G. W. Olsen.
17	16 13	San Jose	37 15	121 46	4		1			Prof. Louis Kroeck.
18	15 05	Avalon	33 27	118 22	5	1	1			T. S. Manning.
	15 05	Los Angeles	34 03	118 15	4	1				Mrs. J. J. Walsh.
	15 05	San Pedro	33 45	118 14	4	3			Rattled windows	Mr. Walters.
	15 05	Santa Monica	34 00	118 30	5	1	5			F. E. Hill.
19	15 15	Avalon	33 27	118 22	2	1	1			T. S. Manning.

TABLE 1.—*Noninstrumental earthquake reports, June, 1915*—Concluded.

Day.	Approximate time, Greenwich Civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forel.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
		CALIFORNIA—contd.								
	H. m.		° ′	° ′			*M. s.*			
23	4 00	Barrett Dam	32 43	116 46	5	1				Mrs. L. P. Beidleman.
	4 00	Beaumont	33 55	117 00	3	2	1			Beaumont Co.
	4 00	Bonita	32 40	117 03	4	1	5			R. B. Dilley.
	4 00	Blythe	33 35	114 38	2	2	1 00			C. L. Suits.
	4 00	Brawley	32 59	115 40	8	1	1 00	Rumbling	Walls cracked	M. D. Witter.
	4 00	El Cajon	32 48	116 58	4	1	30			H. H. Kessler.
	4 00	Indio	33 43	116 12	5	1	30			Bruce Drummond.
	4 00	Indio	33 43	116 12	6	1				F. N. Johnson.
	4 00	Julian	33 05	116 37	3	1	5	Rattling		J. H. L. Vogt.
	4 00	Los Angeles	34 03	118 15	2	1				U. S. Weather Bureau.
	4 00	Nellie	33 22	116 52	3	2	6	Faint		N. H. Hargrave.
	4 00	Oak Grove	33 26	116 51	5	2	24			J. B. Simmons.
	4 00	Sterling	32 49	114 50	4	1	10	Rumbling		J. G. Castleberry.
23	4 56	Barrett Dam	32 43	116 46	5	1	10			Mrs. L. P. Beidleman.
	4 56	Blythe	33 35	114 38	2	1	1			C. L. Suits.
	4 56	Bonita	32 40	117 03	4	1	5			R. B. Dilley.
	4 56	Brawley	32 59	115 40	8	1	1 00	Rumbling	Walls cracked	M. D. Witter.
	4 56	El Cajon	32 48	116 58	4	2	30			H. H. Kessler.
	4 56	Indio	33 43	116 12	4	2				Bruce Drummond.
	4 56	Julian	33 05	116 17	3	1	35	Rattling		J. H. L. Vogt.
	4 56	Los Angeles	34 03	118 15	3					U. S. Weather Bureau.
	4 56	Nellie	33 22	116 52	3	2	6			N. H. Hargrave.
	4 56	Oak Grove	33 26	116 51	5	1	12			J. B. Simmons.
	4 56	Sterling	32 49	114 50	5	1	10	Rumbling		J. G. Castleberry.
	4 56	Redlands	34 04	117 12	2	1		Faint		P. W. Moore.
		NEVADA.								
28	6 18	Thorne	38 36	118 38	3	1				A. D. Radcliffe.
	6 18	Yerrington	38 58	119 10	4	2	10	Faint		A. E. Ricksecker.
		PORTO RICO.								
29	0 30	Vieques	18 09	65 27	3	1	5	Rumbling		H. W. Pease.

TABLE 2.—*Instrumental seismological reports, June, 1915.*

Time used: Mean Greenwich, midnight to midnight. Nomenclature: International.

Alaska. **Sitka. Magnetic Observatory,** U. S. Coast and Geodetic Survey. J. W. Green.

Lat., 57° 03′ 00″ N.; long., 135° 30′ 06″ W. Elevation, 15.2 meters.

Instruments: Two Bosch-Omori, 10 and 12 kilograms.

Instrumental constants: E: V 10, T_0 17.4; N: V 10, T_0 15.6

Date.	Character.	Phase.	Time.	Period. T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 1		eP_N	14 53 34					
		S_N	14 58 04					
		L	15 05 50	19				
		M	15 07 40	12	950	100		
		C	15 12 00	13				
		F	15 36 00					
6		eP_E	21 43 22	4				No principal portion on E-W.
		S_E	21 52 52	8				
		S_N	21 53 02					
		L_N	22 00 02	20				
		M	22 01 25	25		20		
		F	22 47 00					
23		eL	4 15 00	10				Only a few waves of small amplitude.
		C	4 20 00		10			
23		L	5 12 06	8				
		M	5 12 42		10	10		
		C	5 17 00					

Arizona. **Tucson. Magnetic Observatory,** U. S. Coast and Geodetic Survey. F. P. Ulrich.

Lat., 32° 14′ 48″ N.; long., 110° 50′ 06″ W. Elevation, 769.6 meters.

Instruments: Two Bosch-Omori, 10 and 12 kg.

Instrumental constants: E: V 10, T_0 16; N: V 10, T_0 19.6

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 1		eP_E	15 03 09	9				
		eP_N	15 03 49	9				
		L	15 15 49	12				
		M_E	15 18 08	17	120			
		M_N	15 22 42	14		80		
		C	15 25 00	14				
		F	15 50 00	10				
6		P	21 40 00	7				
		S	21 48 32	8				
		L	21 56 17	33				
		M	21 49 31	10	50	50		
		M_E	22 00 12	20	30			
		M_N	22 09 28	24		20		
		C_N	22 11 00	20				
		F_N	22 35 00	10				
23		P	3 59 46	4				
		L	4 00 50	5				
		M	4 01 30	6	300	680		
		C	4 02 00	4				
		F	4 32 00	4				
23		P	4 56 33	3				
		L	4 57 26	3				
		M	4 57 36	4	510	300		
		C	4 59 06	4				
		F	5 25 04	4				

TABLE 2.—*Instrumental seismological reports, June, 1915*—Continued.

California. **Point Loma. Raja Yoga Academy.** F. J. Dick.

Lat., 32° 43′ 03″ N.; long., 117° 15′ 10″ W. Elevation, 91.4 meters.

Instrument: Two component, C. D. West seismoscope.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 23	I_d		8 02 00					
		M	8 58 00		1,140*	1,020*		

*Amplitude on instrument.

Colorado. **Denver. Sacred Heart College.** A. W. Forstall, S. J.

Lat., 39° 40′ 36″ N.; long., 104° 56′ 54″ W. Elevation, 1,655 meters.

Instrument: Wiechert 80 kg., astatic, horizontal pendulum.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 3			7 57 00					Very small waves on E-W. Thickening of pen marks on N-S.
			8 03 00					
5			3 30 00					Very small but distinct wavelets on N-S.
6		L_E	21 48 00					Just visible on E-W; very broken and irregular on N-S.
		M_E	21 49 00					
		F	21 52 00					
23		L_N	4 03 00	6				Earthquake in Imperial Valley, Cal.
		L_E	4 03 00					
		M_N	4 03 50	6		62		
		C_N	4 05 00	4-5				Preliminary phases very doubtful.
		C_E	4 05 –					
		F	4 08 00					Hardly anything on E-W except broken irregular waves.
23		L_N	5 30 00					Earthquake in Imperial Valley, Cal.
		L_E	5 30 00					
		M_N	5 30 00	12		87		
		M_E	5 30 00	10	37			Preliminary phases not visible on either component.
		C	5					
		F	5 50 ..					
24								Very small period waves on N-S from 10h 30m to 10h 32m.

District of Columbia. **Washington. U. S. Weather Bureau.**

Lat., 38° 54′ N.; long., 77° 03′ W. Elevation, 21 meters.

Instrument: Marvin (vertical pendulum), undamped. Mechanical registration.

Instrumental constants.. V 110 T_0 6

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 1	I_r	eP_N	14 52 37				4,400	
		iP_N	14 52 58					
		S_N?	14 58 47					
		L_E	15 09 27	22				Long waves nearly equal in intensity from 15h 09m 30s to 15h 13m 00s.
		M_E	15 09 00	20	23			
		M_N	15 14 00	18		23		
		F	16 00 00					
6	I_u	iP_N	21 39 09				6,240	
		iS_E	21 46 58					
		L_E	21 54 24	22				
		M_E	21 54 55		20			
		F	23 30 00					
12		e_E	6 33 00					Phases not distinct.
		F	6 50 00					
22	I_u	P_N	3 34 03				6,750	Other phases not distinct.
		S	3 42 19					
		F	4 20 00					
23	I_r	eP_E	4 09 54				3,210?	Origin in Imperial Valley, Cal.
		S_N	4 14 52					
		M_N	4 16 10	7		32		Long waves not well marked.
		F	4 55 00					
23	I_r	P_N	5 06 07				3,690	Long waves not distinct.
		S_N	5 11 36					
		M_N	5 15 15	6		32		
		F	5 50 00					

District of Columbia. **Washington. Georgetown University.** F. L. Tondorf, S. J.

Lat., 38° 54′ 25″ N.; long., 77° 04′ 24″ W. Elevation, 42.4 meters. Subsoil: Decayed diorite.

Instrument: Wiechert, 200 Kg., astatic horizontal pendulums.

Instrumental constants: {E 165 5.4 2.6; N 143 5.2 3.4} (V T_0 e:1)

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 1		eP_E	15 01 07	3			5,997	
		eP_N	15 01 08	4		1		
		$PR1_N$	15 03 09					
		$PR2_N$	15 03 30	4				
		S_N	15 08 07	6		2		
		S_E?	15 08 14					
		L_E	15 14 35					
		L_N	15 16 42					
		M_E	15 18 48	23	33			
		M_N	15 25 33	12		6		
		F_E	15 40 00					
		F_N	15 50 00					
6		eP_N	21 47 22	2			4,648?	
		P_E	21 47 58					
		S_N?	21 52 55	6				Record lost from 21h 53m to 21h 55m 30s in change of record.
		L_N?	21 59 24	19				
		L_E	22 00 09					
		M_E	22 03 06	21	11			
		F_E	22 23 00					L_N irregular; no decided maximum.
		F_N	22 37 00					
23		P_E	4 10 01?					Imperial Valley, Cal.
		P_N	4 11 19					
		L_N	4 23 07	7				
		L_E	4 23 11					
		F_E	4 33 00					
		F_N	4 34 00					
23		P_N	5 08 12					Imperial Valley, Cal.
		P_E?	5 09 24					
		L_E	5 19 30					
		L_N	5 19 39					
		M_N	5 20 32	4		6		
		M_E	5 21 21	3	2			
		F_E	5 30 00					
		F_N	5 35 00					

Hawaii. **Honolulu. Magnetic Observatory.** U. S. Coast and Geodetic Survey. Wm. W. Merrymon.

Lat., 21° 19′ 12″ N.; long., 158° 03′ 48″ W. Elevation, 15.2 meters.

Instrument: Milne seismograph of the Seismological Committee of the British Association.

Instrumental constant.. T_0 18.9

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	*μ*	*μ*	*Km.*	
June 1		P	14 59 06					
		S	15 11 18					
		L	15 23 42	22				
		M	15 27 30		500*			
		C	15 41 30					
		F	16 50 18					
3		L	23 43 54	24				
		M	23 49 06		300*			
		F	23 55 12					
4		P	22 14 36					
		L	22 22 48	24				
		M	22 27 36		300*			
		C	22 39 12					
		F	23 12 36					
6		L	3 56 30					
		M	4 05 12		100*			
		F	4 14 24					
6		eP	7 20 54					
		L	7 24 42					
		M	7 28 00		200*			
		C	7 33 42					
		F	7 55 00					
6		L	8 49 00					
		M	8 53 30		100*			
		F	9 07 00					
6		P	19 54 24					
		L	20 02 18	26				
		M	20 08 54		1,400*			
		C	20 19 12					
		F	20 45 00					

TABLE 2.—*Instrumental seismological reports, June, 1915*—Continued.

Hawaii. Honolulu. Magnetic Observatory—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 6		P	21 43 30					
		S	21 47 36					
		L	21 53 00					
		M	21 54 48		2,500*			
		C	22 28 36					
7		F	0 43 36					
7		P	22 15 00					
		L	22 22 12	24				
		M	22 28 36		500*			
		C	22 33 18					
		F	23 19 48					
11		eP	3 52 12					
		M	3 59 12		100*			
		F	4 03 12					
11		eP	15 28 54					
		M	15 31 54		200*			
		C	15 42 24					
		F	16 25 06					
14		eL	3 49 00					
		M	3 54 24		200*			
		F	4 02 48					
18		L	0 12 30					
		M	0 22 30		200*			
		C	0 30 00					
		F	0 40 00					
23		L	4 16 24					
		M	4 19 24		400*			
		C	4 25 00					
23		L	5 14 24					
		M	5 16 12		300*			
		C	5 19 00					
27		P	15 41 30					
		L	15 48 54	22				
		M	15 55 00		1,200*			
		C	16 01 00					
		F	16 46 00					
29		P	13 56 42					
		L	14 07 42	22				
		M	14 12 12		500*			
		C	14 23 00					
		F	14 39 48					

*Trace amplitude.

Corrigendum.—This note in the REVIEW, February, 1915, should read as here.

Kansas. Lawrence. University of Kansas. Department of Physics and Astronomy. F. E. Kester.

Lat., 38° 57′ 30″ N.; long., 95° 14′ 58″ W. Elevation, 304.8 meters.

Instrument: Wiechert.

Instrumental constants.. E: V 177, T_0 3.7, ϵ 4.0; N: V 205, T_0 3.7, ϵ 3.8

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1		P	15 54 08					
		S	16 05 49	15				
		L	16 10 ?	18–25	3	2		L waves lost in the P waves of another quake.
1		P	16 06 07					
		F	16 14 47					
6		P	21 50 ?	2				
		L	21 58 10	10	50	28		
23		P	4 02 33	2				Phases indistinct.
		L	4 07 46	10	8	28		
		F	4 27 00					
23		P	4 59 16	2–3				Phases indistinct.
		L	5 04 21	10	12	27		
		F	5 28 00					
29		P	23 49 23	2				
		L	23 54 39	12				

Maryland. Cheltenham. Magnetic Observatory. U. S. Coast and Geodetic Survey. George Hartnell.

Lat., 38° 44′ 00″ N.; long., 76° 50′ 30″ W. Elevation, 71.6 meters.

Instrument: Two Bosch-Omori, 10 and 12 kg.

Instrumental constants.. E: V 10, T_0 31; N: V 10, T_0 29

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1		P	15 00 24	3				
		L	15 09 34	28				
		M_E	15 10 42	21	90			
		M_N	15 14 03	16		20		
		C	15 18 00	13				
		F	15 45 00	10				
6		P_N	21 39 20	3				
		S	21 47 05	4				
		L	21 54 22	22				
		M_E	21 54 45	16	20			
		M_N	21 58 52	17		50		
		C_N	22 15 00	16				
		F	22 31 00	14				
23		P_N	4 15 24	4				Only a few waves of P on E–W.
		L_N	4 15 53	10				
		M_N	4 16 18	12		50		
		C_N	4 17 00	8				
		F	4 25 00					
23		P_N	5 11 54	3				Nothing on E–W except a few waves of P.
		L_N	5 12 38	10				
		M_N	5 12 48	12		80		
		C	5 14 00	8				
		F	5 22 00					

Massachusetts. Cambridge. Harvard University Seismographic Station. J. B. Woodworth.

Lat., 42° 22′ 36″ N.; long., 71° 06′ 59″ W. Elevation, 5.4 meters. Foundation: Glacial sand over clay.

Instrument: Two Bosch-Omori, 100 kg., horizontal pendulums (mechanical registration).

Instrumental constants.. E: V 80, T_0 23, ϵ 0; N: V 50, T_0 25, ϵ 4:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1		*O*	14 43 50				5,100	
		eP	14 52 29					
		S_N	14 59 13					
		S_E	14 59 17					
		$SR1_N$	15 02 37	15				
		$SR1_E$	15 02 41	15				
		eL_E	15 05 08					Sinusoidals set in.
		L_N	15 07 09	26				
		L_E	15 08 47					
		M_E	15 12 33					
		C_E	15 17 03					
		F	16 15 00					
6		*O*?	.. .. ..					P and S lost in microseisms.
		P_E?	20 16 26					
		S_N?	20 33 54					
		L_E	20 38 07	30–20				
		F	20 50 00					
6		*O*	21 29 37				6,450	
		P_N	21 39 32					
		P_E	21 39 34					
		S_N	21 47 32					
		S_E	21 47 34					Amplitude (undamped) of S_E very large.
		M_E	21 47 53					
			21 49 31					No decided maximum of long waves.
			21 50 32					
		eL_E	21 54 14					
		eL_N?	21 54 30					
		F_N	22 58 00					
7		F_E	0 20 00					

Record from June 16 will not be issued until about October 1.

O=Time at origin.

TABLE 2.—*Instrumental seismological reports, June, 1915*—Continued.

Missouri. Saint Louis. St. Louis University. Geophysical Observatory. J. B. Goesse, S. J.

Lat., 38° 33′ 15″ N.; long., 90° 13′ 53″ W. Elevation, 160.4 meters. Foundation: 12 feet of tough clay over limestone of Mississippi system, about 300 feet thick.

Instrument: Wiechert 80 kg. astatic, horizontal pendulum.

Instrumental constants.. V 80, T_0 7, ϵ:1 5:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1	II_r..	eS_E?..	14 59 00				4,800	
		eL_E...	15 04 30					
		M_E...	15 14 12	13	30			
		F....	15 37 00					
6	II_r..	eS_E?..	21 39 26				5,800	
		L_E...	21 47 24					
		M_N...	21 47 34	8		44		
		M_E...	21 47 38	8	94			
		M_E...	21 50 24	10	50			
		F....	22 12 00					
22	I_r...	i_E...	3 41 48					
		eL_N...	3 41 48					
		F....	3 48 00					
23	II_r..	eP_E...	4 04 ?				2,450	
		L_E...	4 10 00					
		L_N...	4 10 00					
		F....	4 20 30					
23	II_r..	eP_E...	5 03 ?				2,450	
		eP_N...	5 03 00					
		S_N...	5 06 12?					
		S_E...	5 07 00					
		M_N...	5 07 00					
		M_E...	5 08 12	9	14			
		F....	5 20 00					

New York. Buffalo. Canisius College. John A. Curtin, S. J.

Lat., 42° 53′ 02″ N.; long., 78° 52′ 40″ W. Elevation, 190.5 meters.

Instrument: Wiechert, 80 Kg. horizontal.

Instrumental constants.. V 80, T_0 7, ϵ:1 5:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1	II_u..	eP_N...	14 50 10	2			6,200	Reported from Alaska.
		eS_E...	14 57 00					
		eS_N...	14 57 30	5				
		L_E...	15 05 00					
		L_N...	15 07 00					
		M_E...	15 08 00	25	25			
		M_N...	15 13 00	15		30		
		C_E...	15 16 00					
		C_N...	15 17 00					
		F_E...	15 23 00					
		F_N...	15 26 00					
3	f....	i_E...	19 04 00	3				This shock was preceded by intermittent earth tremors on E-W.
6	II_r..	iP_N...	21 37 45	10		2		
		iP_E...	21 38 00					
		iS_N...	21 46 00	15		3		
		iS_E...	21 46 00	15	16			
		M....	21 54 00	25				L and M waves interwoven with those of succeeding quake.
		F....	22 11 00					
6	II_r..	iP_N...	21 38 30					
		iS_N...	21 47 30			2		
		S_E...	21 48 30					
		M....	22 07 00	25				
		F....	22 19 00					
23	I_r...	eP....	4 12 15					No record on E-W.
		M....	4 15 00	20		12		S masked by microseisms.
		C....	4 19 00					
		F....	4 20 00					Reported from southern California.
23	I_r...	eP....	5 08 00					Not recorded on E-W.
		M....	5 10 00	18		18		S masked by microseisms.
		C....	5 11 30					
		F....	5 14 00					
27	I_v...	iP_E...	22 35 10					
		iP_N...	22 35 15					
		iS_E...	22 36 10					
		M_N...	22 36 30	8				
		M_E...	22 36 30	15	2			
		F_N...	22 36 45					
		F_E...	22 36 50					

New York. Fordham. Fordham University. W. C. Repetti, S. J.

Lat., 40° 51′ 47″ N.; long., 73° 53′ 08″ W. Elevation, 23.9 meters.

Instrument: Wiechert, 80 Kg.

Instrumental constants.. T_0 E 6.6, N 7.1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1		eP_E...	14 48 07					
		eP_N...	14 47 59	4				
		S_N?..	14 55 00	6				
		S_E...	14 55 12	6				
		L_E...	15 01 48					
		L_N...	15 02 48					
		M_E...	15 05 39	20	335			
		M_N...	15 05 59	22		210		
		F_E...	15 52 00					
		F_N...	15 56 00					
3–4								Microseisms on the 3d–4th.
6		eP_N...	21 34 52					
		eP_E...	21 35 05	2				
		S_N...	21 42 43					
		S_E...	21 42 50					
			21 42 53	7	13			
		S_N...	21 43 01	8		10		
		L_N...	21 51 46					
		L_E...	21 52 05					
		M_N...	22 01 00	21		140		
		F_E...	22 12 00					
		F_N...	22 47 00					
23								Record received of the California earthquake, but time marks failed to record.

Panama, Canal Zone. Balboa Heights. Isthmian Canal Commission.

Lat., 8° 57′ 39″ N.; long., 79° 33′ 29″ W. Elevation, ——.

Instruments: Two Bosch-Omori 25 kg.

Instrumental constants.. V 8, T_0 20

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 6	I_v...	P_E...	14 35 25				1,600	
		P_N...	14 35 30					
		L_E...	14 40 15					
		L_N...	14 40 15					
		M_N...	14 42 05			250		
		M_E...	14 45 50		62			
		F_E...	14 52 50					
		F_N...	15 10 05					
17	II_v..	P_N...	5 33 28				485	Direction probably southwest.
		P_E...	5 33 30					
		L_N...	5 34 28					
		L_E...	5 34 30					
		M_E...	5 34 39		75			
		M_N...	5 34 45			125		
		F_E...	5 39 08					
		F_N...	5 40 30					
28	III_v.	P_E...	8 27 01				145	Direction southeast.
		P_N...	8 27 16					
		L_E...	8 27 16					
		L_N...	8 27 31					
		M_N...	8 27 31			1,250		
		M_E...	8 27 36		250			
		F_E...	8 28 01					
		F_N...	8 29 26					

Porto Rico. **Vieques. Magnetic Observatory.** U. S. Coast and Geodetic Survey. H. M. Pease.

Lat., 18° 09′ N.; long., 65° 27′ W. Elevation, 19.8 meters.

Instruments: Two Bosch-Omori.

Instrumental constants.. V E 10, N 10; T_0 E 21.4, N 21.1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 6		P....	21 37 27	5				
		S....	21 41 58	8				
		L....	21 45 00	12				
		M....	21 46 06	12	350	180		
		C....	21 56 00	11				
		F....	22 42 00	10				
29	I_d...	L....	0 35 37					Felt by several people in Vieques.
		M....	0 35 42		10	10		
		F....	0 35 54					

TABLE 2.—*Instrumental seismological reports, June, 1915*—Continued.

Vermont. Northfield. U. S. Weather Bureau. Wm. A. Shaw.

Lat., 44° 10′ N.; long., 72° 41′ W. Elevation, 256 meters.

Instruments: Two Bosch-Omori, mechanical registration.

Instrumental constants.. E: V 10, T_0 15; N: V 10, T_0 16

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1	I_r	eP_N	14 52 12				4,885	
		S_N	14 58 48					
		L_E	15 07 02	22				
		M_E	15 10 30	16	20			
		M_E	15 11 30	14	20			
		F	16 00 00					
6	I_n	eP_N	21 39 45				6,750	Long waves not well developed.
		S_N	21 48 01					
		F	23 15 00					
22		M_E	3 43 35		25			Other phases indistinct.
		M_E	3 44 16		25			
		F	4 00 00					
		eS_N?	4 15 06					Origin in southern California.
23		M_N	4 17 56	12		125		
		F	4 40 02					
23	I_r	eP_N	5 06 40				3,360	Origin in southern California.
		S_N	5 11 48					
		M_N	5 14 32	12		125		Record on E-W very faint.
		F	5 40 00					

Canada. Ottawa. Dominion Astronomical Observatory. Earthquake Station. Otto Klotz.

Lat., 42° 23′ 38″ N.; long., 75° 42′ 57″ W. Elevation, 83 meters.

Instruments: Two Bosch photographic horizontal pendulums, one Spindler & Hoyer 80 kg. vertical seismograph.

Instrumental constants.. V 120, T_0 26

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 1		eP_N	14 52 03				4,860	
		iP	14 52 07					
		PR_N	14 53 49					
		S	14 58 38	5				
		eL_E	15 04 08	36				
		eL_N	15 04 09	40				
		L_E	15 06 00	26				
		L_N	15 07 00	26				
		L_E	15 07 00	20				
		M_E	15 07 05	20	50			
		M_N	15 10 00	18		60		
		L_E	15 11 to 15 44 00	12 / 11				
		F	16 10 00					
4		eL	21 30 08	20				
		L_E	21 32 00	10				
		F	21 35 00					
6		e_E	22 21 22	6				
		L	22 50 04	24–20				
		L_E	22 58 00	12				
		L_N	23 03 29					
		F	23 05 00					

Canada. Ottawa. Dominion Astronomical Observatory—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
June 5		L_E	20 02 to 20 05 00	22 / 22				
5		e	20 15 33	4				
		e	20 25 22					
		F	20 30 00					
6		eL_E	20 38 02	24				
		eL_N	20 41 02	20				
		L_E	20 42 00	20				
		L_E	20 45 00	18				
		L_E	20 53 00	16				
		F	21 00 00					
6		iP_N	21 39 53	5			6,940	
		iS	21 48 19	5	25	9		
		i	21 49 30	5				
		i_E	21 50 49	5				
		eL_N	21 56 02	40				
		eL_E	21 56 07	44				
		L	22 01 00	20–18				
		L_E	22 11 00	20				
		L_N	22 13 00	17				
		L_E	22 16 00	16				
		i_N	22 32 03	5				
		L	22 38 00	14				
		L	22 48 00	14				
		F	24 00 00					
7		e	12 26 00	6				
		eL_E	12 26 00	20				
		L_E	12 28 00	18				
		F	12 35 00					
12		e_N	6 32 00					By mishap spotlight not on E-W.
		e_N	6 40 00					
		eL_N	6 46 03	20				
		L_N	6 49 00	14				
		L_N	6 52 00	12				
		F	7 00 00					
22		iP_N	3 34 58				7,210	
		iS	3 43 38	6				
		SR2?	3 51 02	11				
		eL_N	3 54 05	22				
		eL_E	3 55 00	22				
		L	4 00 00	11				
		F	4 15 00					
23		eP_N?	4 10 14				3,700	In southern California.
		iS_N	4 15 43	3				
		S_E	4 16 00					
		M_N	4 16 58	5		5		
		M_E	4 17 24	10	2			
		eL	4 18 03	20–18				
		F	4 55 00					
23		eP_N?	5 06 48				3,700	
		iS_N	5 12 19					
		S_E	5 12 36					
		M_N	5 13 34	5		10		
		M_E	5 15 36	10	4			
		eL	5 15 50	20–10				
		F	5 55 00					

TABLE 3.—*Late seismological reports.* (*Instrumental.*)

New York. Buffalo. Canisius College. John A. Curtin, S. J.

Lat., 42° 53′ 02″ N.; long., 78° 52′ 40″ W. Elevation, 190.5 meters.

Instrument: Wiechert 80 kg. horizontal.

Instrumental constants.. V 80, T_0 7, ϵ:1 5:1

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
Apr. 1	.....	.....	14 18 30	.....	.....	.....	.....	Earth tremors on N-S.
			14 19 30	.....	.....	.....	.....	
2	.....	.....	14 00 00	.....	.....	.....	.....	Earth tremors on N-S.
			14 20 00	.....	.....	.....	.....	
3	.....	.....	.....	.....	.....	.....	.....	Earth tremors per day and night on N-S.
23	I....	i_N.....	15 36 45	3	.....	12	.....	
		i_E.....	15 36 45	1	.....	.....	.....	
23	I....	i_N.....	15 43 15	5	.....	38	.....	
		i_E.....	15 43 15	3	25	.....	.....	
		F.....	15 46 30	.....	.....	.....	.....	
24-25	.....	.....	.....	.....	.....	.....	.....	Earth tremors on E-W on 24th and 25th.
May 1	II_u..	eP.....	5 12 45	3	.....	.....	8,976?	E-W component not recorded; pen being repaired.
		eS.....	5 22 45	5	.....	.....	.....	
		L.....	5 43 00	.....	.....	.....	.....	
		M.....	5 47 00	30	.....	62	.....	
		M.....	5 50 00	25	.....	.....	.....	
		M.....	5 53 00	.....	.....	62	.....	
		C.....	5 58 00	15	.....	.....	.....	
		C.....	6 00 00	10	.....	.....	.....	
		C.....	6 04 00	.....	.....	.....	.....	
		C.....	6 31 00	.....	.....	.....	.....	
		F.....	6 46 00	.....	.....	.....	.....	
6	II_r..	eP.....	12 21 40	.....	.....	.....	2,340	Pen of E-W component not working properly.
		eS.....	12 23 50	.....	.....	.....	.....	
		L.....	12 26 30	10	.....	.....	.....	
		M.....	12 28 00	15	.....	16	.....	
		C.....	12 30 00	8	.....	.....	.....	

Canada. Toronto. Dominion Meteorological Service.

Lat., 43° 40′ 01″ N.; long., 79° 23′ 54″ W. Elevation, 113.7 meters. Subsoil: Sand an clay.

Instrument: Milne horizontal pendulum, North. In the meridian.

Instrumental constant.. T_0 18. Pillar deviation, 1 mm. swing of boom = 0.59″.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
Apr. 2	.....	P.....	6 02 30	.....	.....	.....	.....	
		L.....	6 12 06	.....	.....	.....	.....	
		M.....	6 14 30	.....	200*	.....	.....	
		F.....	6 19 48	.....	.....	.....	.....	
3	.....	P.....	20 49 06	.....	.....	.....	.....	
		L.....	21 00 54	.....	.....	.....	.....	
		iL.....	21 06 42	.....	.....	.....	.....	
		iL.....	21 10 48	.....	.....	.....	.....	
		M.....	21 11 12	.....	500*	.....	.....	
		F.....	21 45 48	.....	.....	.....	.....	
3	.....	P?....	22 00 00	.....	.....	.....	.....	
		L.....	22 05 24	.....	.....	.....	.....	
		M.....	22 06 42	.....	100*	.....	.....	
		F.....	22 32 36	.....	.....	.....	.....	
7	.....	L.....	16 15 30	.....	.....	.....	.....	
		iL.....	16 16 18	.....	.....	.....	.....	
		M.....	16 16 48	.....	300*	.....	.....	
		F.....	16 20 48	.....	.....	.....	.....	
7	.....	L.....	16 35 48	.....	50*	.....	.....	
		F.....	16 43 12	.....	.....	.....	.....	
8	.....	L.....	14 44 12	.....	200*	.....	.....	
		F.....	14 51 54	.....	.....	.....	.....	
23	.....	P?....	15 38 48	.....	.....	.....	.....	
		S.....	15 44 12	.....	.....	.....	.....	
		L.....	15 52 42	.....	.....	.....	.....	
		L.....	16 00 00	.....	.....	.....	.....	
		M.....	16 01 00	.....	200*	.....	.....	
		F.....	16 14 12	.....	.....	.....	.....	
28	.....	P.....	4 04 30	.....	.....	.....	.....	
		L.....	4 16 48	.....	.....	.....	.....	
		M.....	4 23 54	.....	100*	.....	.....	
		F.....	4 34 00	.....	.....	.....	.....	

* Trace amplitude.

Canada. Toronto. Dominion Meteorological Service—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. m. s.*	*Sec.*	μ	μ	*Km.*	
Apr. 30	.....	P?....	2 15 48	.....	.....	.....	.....	
		L.....	2 39 12	.....	50*	.....	.....	
		F.....	3 03 24	.....	.....	.....	.....	
May 1	.....	iP.....	5 12 24	.....	300*	.....	7,700	A well-marked disturbance. Long waves continued for a long time. Three elongated cigar-shaped movements before and just after M.
		iP.....	5 15 12	.....	.....	.....	.....	
		S.....	5 22 12	.....	2,300*	.....	.....	
		L.....	5 31 12	18	1,300*	.....	.....	
		L.....	5 42 12	.....	2,300*	.....	.....	
		M.....	5 45 06	.....	8,200*	.....	.....	
		iL.....	5 48 24	.....	.....	.....	.....	
		M.....	5 51 42	18-24	12,000*	.....	.....	
		M.....	5 52 42	.....	8,500*	.....	.....	
		iL.....	5 56 36	.....	4,300*	.....	.....	
		iL.....	5 58 54	.....	.....	.....	.....	
		C.....	6 02 06	24	.....	.....	.....	
		C.....	6 03 12	.....	.....	.....	.....	
		M.....	6 05 12	.....	4,300*	.....	.....	
		L.....	6 59 00	.....	800*	.....	.....	
		L.....	7 02 18	.....	.....	.....	.....	
		L.....	7 20 12	.....	.....	.....	.....	
		iL.....	7 38 00	.....	.....	.....	.....	
		L.....	8 01 24	.....	.....	.....	.....	
		L.....	9 20 00	.....	.....	.....	.....	
		F?....	9 23 48	.....	.....	.....	.....	
1	.....	L?....	9 25 54	.....	.....	.....	.....	Possibly a dual earthquake with the preceding, or repeat.
		L.....	9 29 30	.....	.....	.....	.....	
		M.....	9 31 06	.....	200*	.....	.....	
		M.....	9 35 18	.....	.....	.....	.....	
		F.....	9 58 12	.....	.....	.....	.....	
1	.....	L.....	11 19 42	.....	100*	.....	.....	Slight thickeness of line.
		F.....	11 33 00	.....	.....	.....	.....	
2	.....	P.....	4 31 12	.....	.....	.....	.....	Well-marked light disturbance.
		S.....	4 40 24	.....	.....	.....	.....	
		L.....	4 44 24	.....	.....	.....	.....	
		M.....	4 50 42	.....	400*	.....	.....	
		L.....	4 53 54	.....	.....	.....	.....	
		F.....	5 20 54	.....	.....	.....	.....	
3	.....	P.....	3 45 54	.....	.....	.....	.....	
		S.....	3 51 00	.....	.....	.....	.....	
		L.....	3 55 06	.....	.....	.....	.....	
		L.....	3 59 06	.....	.....	.....	.....	
		M.....	4 05 42	.....	1,300*	.....	.....	
		L.....	4 08 48	.....	.....	.....	.....	
		L.....	4 36 48	.....	.....	.....	.....	
		F.....	4 47 30	.....	.....	.....	.....	
3	.....	P.....	4 50 12	.....	.....	.....	.....	
		L.....	5 03 06	.....	.....	.....	.....	
		L.....	5 11 18	.....	.....	.....	.....	
		M.....	5 27 42	.....	400*	.....	.....	
3	.....	P?....	6 06 24	.....	.....	.....	.....	P mixed up with trailers of preceding earthquake.
		S.....	6 15 [illegible]	.....	.....	.....	.....	
		iL.....	6 21 36	.....	.....	.....	.....	
		M.....	6 22 54	.....	300*	.....	.....	
		F.....	6 40 18	.....	.....	.....	.....	
5	.....	P.....	12 04 48	.....	.....	.....	.....	
		L.....	12 20 12	.....	.....	.....	.....	
		M.....	12 30 48	.....	300*	.....	.....	
5	.....	P?....	13 13 12	.....	.....	.....	.....	P mixed up with trailers of preceding quake.
		iL.....	13 28 42	.....	200*	.....	.....	
		F.....	14 06 00	.....	.....	.....	.....	
6	.....	P.....	12 17 30	.....	.....	.....	.....	
		S.....	12 21 48	.....	.....	.....	.....	
		S.....	12 25 42	.....	.....	.....	.....	
		iL.....	12 29 24	.....	600*	.....	.....	
		L.....	12 29 48	.....	.....	.....	.....	
		L.....	12 31 00	.....	.....	.....	.....	
		M.....	12 31 48	.....	800*	.....	.....	
		F.....	13 01 18	.....	.....	.....	.....	
8	.....	L?....	14 48 54	.....	.....	.....	.....	P lost in local vibrations.
		L.....	14 52 12	.....	.....	.....	.....	
		M.....	14 52 36	.....	300*	.....	.....	
		F.....	15 17 00	.....	.....	.....	.....	
12	.....	P?....	10 43 54	.....	.....	.....	.....	
		S.....	10 50 00	.....	.....	.....	.....	
		L.....	11 04 12	.....	.....	.....	.....	
		L.....	11 11 30	.....	.....	.....	.....	
		M.....	11 13 30	.....	300*	.....	.....	
		F.....	12 13 00	.....	.....	.....	.....	
12	.....	P?....	17 07 42	.....	.....	.....	.....	
		S.....	17 09 18	.....	.....	.....	.....	
		L.....	17 15 36	.....	.....	.....	.....	
		M.....	17 16 30	.....	200*	.....	.....	
		F.....	17 27 54	.....	.....	.....	.....	

* Trace amplitude.

TABLE 3.—*Late seismological reports.* (*Instrumental*)—Continued.

Canada. Toronto. Dominion Meteorological Service—Continued.

Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. M. S.*	*Sec.*	μ	μ	*Km.*	
May 14		iP	7 12 00?					P and S phases doubtful.
		iS	7 18 00?					
		iL	7 21 00					
		L	7 30 18					
		M	7 32 06		300*			
		L	7 35 12					
		F	8 06 06					
17		L	13 27 24					
		M	13 30 12		100*			
		F	13 40 24					
18		L	15 11 48		100*			P and S not recorded.
		F	15 15 42					
21		L	5 11 06					P and S not recorded.
		L	5 14 36					
		M	5 16 24		300*			
		M	5 20 36		300*			
		iL	5 29 30					
		M	5 31 00		200*			
		F	5 45 06					
29		L	0 34 24		50*			
		F	0 56 42					
29		L	7 04 42		50*			
		F	7 08 48					

Canada. Victoria, B. C. Dominion Meteorological Service.

Lat., 48° 24′ N.; long., 123° 19′ W. Elevation, 67.7 meters. Subsoil: Rock.

Instrument: Milne horizontal pendulum, North. In the meridian.

Instrumental constant.. T_0 18. Pillar deviation: 1 mm. swing of boom = 0.54″.

1915.			*H. M. S.*	*Sec.*	μ	μ	*Km.*
Apr. 2		P	0 18 54				
		L	0 20 24				
		M	0 20 54		200*		
		F	0 24 54				
3		P	20 41 54				
		L	20 46 54				
		M	20 59 54		300*		
		F	21 26 24				
3		P	21 42 48				
		L	21 49 36		100*		
		F	22 07 36				
7		P	16 18 00				
		L	16 20 00				
		M	16 20 18		100*		
		F	16 23 48				
8		P	14 37 42				
		L	14 38 42				
		M	14 41 12		400*		
		F	14 45 42				
23		P	15 40 06				
		L	15 48 18				
		M	15 49 06		400*		
		F	16 08 36				
26		P?	19 00 18		100*		
		L	.. .. ..				
		F	19 02 18				
28		P	4 05 54				
		L	4 09 24				
		M	4 10 24		200*		
		F	4 25 24				
30		P	2 11 30				
		L	2 29 30				
		M	2 35 00		200*		
		F	2 58 30				

* Trace amplitude.

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Date.	Character.	Phase.	Time.	Period T.	Amplitude. A_E.	Amplitude. A_N.	Distance.	Remarks.
1915.			*H. M. S.*	*Sec.*	μ	μ	*Km.*	
May 1		iP	5 08 30	18			4800?	Well-defined disturbance. Long waves continued for several hours.
		iP	5 10 24					
		P	5 13 36					
		iS	5 15 48		1800*			
		iL	5 20 24	30	2800*			
		M	5 35 30					
		M	5 38 48	18–30	6500*			
		L	5 39 42	18				
		C	5 45 12					
		C	5 47 06	18				
		iL	6 08 30	18–30	4300*			
		F	9 10 30					
1		P	9 12 30					
		S	9 15 30					
		L	9 20 00					
		M	9 20 30		300*			
		F	9 53 30					
2		P	4 32 24					
		L	4 34 54					
		M	4 36 54		500*			
		F	5 16 24					
3		P	3 35 00					
		S	3 38 36					
		L	3 43 24					
		L	3 47 24					
		M	3 51 54		600*			
3		P	4 49 24					Beginning confused with trailers of preceding.
		L	4 52 24					
		M	4 55 24		500*			
		F	5 37 24					
3		P	6 01 48					
		L	6 07 42		50*			
		F	6 39 06					
5		P	11 56 18					
		L	11 59 18					
		M	12 03 48		200*			
		F	12 32 18					
6		P	12 12 54					
		L	12 13 24					
		M	12 14 54		400*			
		F	13 08 24					
8		P	15 02 30					
		L	15 10 30					
		M	15 12 30		100*			
		F	15 27 30					
12		P	11 14 06					
		S	11 20 36					
		L	11 24 06					
		M	11 33 36		500*			
		F	12 02 06					
12		P	16 56 06					
		S	16 58 06					
		L	17 00 36					
		M	17 01 36		100*			
		F	17 05 36					
14		P	7 07 42					
		L	7 13 12					
		M	7 17 12		300*			
		F	8 02 12					
17		L	13 44 00		50*			
		F	13 46 00					
21		L	5 30 54					Measurements doubtful.
		L	5 35 42					
		M	5 38 06		50*			
		F	5 44 42					
23		P	23 26 42					
		L	23 29 12					
		M	23 29 42		100			
		F	23 31 42					
29		P	6 48 18					
		L	6 53 18					
		M	6 53 48		200*			
		F	7 01 18					

* Trace amplitude.