REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
Weather Bureau
GEOPHYSICAL DIVISION
Manila

NO. 61

JANUARY 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S horizontal component (long period). 1 Wood-Anderson torsion seismometer.

Data taken from Sprengnether Series D-H and Series H N-S component.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 JAN.						
1	1	e	12	50	08		Very small; local.
2	1	iPNEZ	13	09	28	2,390	Deeper than normal.
		iPR_1			47	or 21.5°	
		iNE		10	35		
		iSNE		12	08		
3	1	e	18	39	06		Very small; local.
4	2	iPNEZ	07	04	18	535	Moderate record.
		eSZ		05	20		
5	2	e	23	37	34		
6	3	e	06	55	06		Very small; local.
7	3	e	17	36	53		Very small; teleseismic.
8	3	e	19	03	41		Very small; local.
9	4	e	11	36	10		Very small; teleseismic.
10	4	e	23	55	57		Very small; local.
11	5	e	00	57	55		Very small; local.
12	5	ePNEZ	04	02	38	475	Felt at: Abucay, Abra.
		iSNE		03	31		
13	5	e	23	17	14		Very small; local.
14	6	ePNZ	02	51	46	535	
		eSNE		52	49		
15	6	ePNEZ	06	34	15	500	
		eSNEZ		35	11		
16	6	e	09	32	22		Very small; local.
17	6	e	16	06	17		Very small; teleseismic.
18	7	e	05	23	05		Very small; local.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 JAN.						
19	7	ePNE eSNE	12	21 22	38 45	600	
20	7	e	17	08	28		Very small; local.
21	8	e	00	16	42		Very small; local.
22	8	iPNEZ iSNEZ	08	30	02 25	200	
23	8	iPNEZ iSNEZ	21	00	13 45	280	Felt at: Casiguran, Quezon Intensity II Bangad, Tinglayan Intensity II Tabrik Pobl. Intensity I Kalinga, Mt.Prov. Intensity II
24	9	e	08	11	51		Very small; teleseismic.
25	11	iPNEZ iSNEZ	17	11 12	17 57	1,110 or 10.0°	Moderate record.
26	12	e	03	10	39		Very small; local.
27	12	eP eS	10	01	04 46	370	Small.
28	12	iPNEZ	14	29	00		Foreshock.
29	12	iPNEZ iSNE L	14	33 42 46	03 29 50	8,100 or 72.9°	
30	13	iPNEZ eNE iSNEZ Lq	00	24 29 34 39	47 24 18 02	8,200 or 73.8°	
31	13	e	06	39	03		Very small; local.
32	13	e	20	58	46		Very small; local.
33	14	eP eS e	02	14 16 18	29 55 44	1,600 or 14.3°	
34	18	iPNEZ iPR_1 iSNE	10	52 56	24 54 18	2,390 or 21.5°	
35	19	e	13	34	52		Very small; local.
36	19	e	20	05	32		Very small; local.
37	20	e	03	57	45		Very small; local.
38	20	e	14	01	15		Very small; teleseismic.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	REMARKS
	1954 JAN.						
39	20	e	16	27	54		Very small; local.
40	20	ePZ eSNEZ	22	01	07 48	365	
41	21	iPNEZ iSNEZ	14	50 51	58 19	185	Felt At: Casiguran,Quezon Intensity IV Baler, Quezon Intensity IV Dupay, N.V.
42	22	e	11	46	20		Very small; teleseismic.
43	22	iPNEZ iSNEZ	12	52 53	34 28	485	Felt at: Aparri,Cagayan Intensity III Laoag,Ilocos Sur Intensity II
44	22	ePZ iPR_1 iPR_2 iSZ	21	32 35 36 40	54 17 25 52	6,200 or 58.7°	Small record.
45	23	e	02	42	42		Very small.
46	23	e	12	31	09		Very small; local.
47	23	e	16	03	23		Very small; local.
48	23	e	16	15	17		Very small; teleseismic.
49	23	e	17	20	45		Very small; teleseismic.
50	23	e	17	55	17		Very small; local.
51	24	e	02	32	46		Very small; local.
52	24	e	13	41	48		Very small; local.
53	25	ePNZ iSNEZ	03	31 32	05 01	500	Felt at: Iloilo Intensity III
54	25	iPNEZ iSNEZ	08 09	59 00	18 19	540	Probable aftershock.
55	25	e	22	33	15		Very small; local.
56	26	e	08	07	59		Very small; local.
57	26	e	09	54	06		Very small; local.
58	27	e	01	15	00		Very small; local.
59	27	e	07	38	39		Very small; local.
60	28	e	20	21	31		Very small; local.
61	28	e	23	38	22		Very small; teleseismic.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 JAN.						
62	29	e	00	24	52		Very small; local.
63	29	e	10	08	55		Very small; teleseismic.
64	30	e	10	27	08		Very small; local.
65	31	ePZ eSZ	23	15 19	44 55	2,700 or 24.3°	Very small.

The following macroseismic tremors were reported felt but were not recorded at Manila:

		HOUR	MINUTES (GMT)	Intensity	Duration
Butuan	JAN. 4	04	27	II	05"
Surigao	9	21	30	II	07"
Butuan	21	12	50	IV	15"
Butuan	29	19	35	II	03"

Seismological Station 208 Bacon Hall Campus

Republic of the Philippines
DEPARTMENT OF COMMERCE AND INDUSTRY
Weather Bureau
GEOPHYSICAL DIVISION
Manila

MAY 24 1954

NO. 62

FEBRUARY 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for Microseismic work).
Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S horizontal component (long period).
1 Wood-Anderson torsion seismometer.

Data taken from Sprengnether Series D-H and Series H N-S component.

* 1 Weichert Inverted Pendulum seismograph located at 14° 05' N 121° 03' E Ambulong, Tanauan, Batangas. Magnification - 200.

** 1 Louckes-Omori Horizontal seismograph located at 9° 15' N 125° 36' E Mambajao, Camiguin del Sur, Cagayan de Oro. Magnification - 200.

Time control of these two stations are not accurate.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 FEB.						
66	1	iPZ	01	11	57	2, 400	Moderate amplitudes.
		eSZ		15	47	or 21.6°	
	1	e	01	54	XX**		Very small.
67	1	e	02	28	23		Very small; teleseismic.
68	1	e	07	17	58		Very small; local.
	2	e	01	45	XX**		Very small.
	3	e	17	02	XX**		Very small.
69	3	e	18	31	07		Very small; teleseismic.
	3	e	20	00	XX**		Very small.
70	4	e	03	37	28		Very small; local.
71	4	e	04	05	18		Very small; teleseismic.
72	5	iPNEZ	09	28	03	4, 100	
		ePNE		29	33	or 36.9°	
		eSNZ		33	55		
		L		35	52		
	5	e	09	28	XX**		Very small; teleseismic.
	6	e	03	04	XX**		Small. S-P = 47 seconds
73	7	iPZ	06	24	47	5, 700	
		iSNEZ		32	19	or 51.3°	

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 FEB.						
	8	eP	01	10	40**	265	Time - approximate.
		eS		11	10		
74	8	e	14	39	02		Very small; teleseismic.
75	8	e	18	48	29		Very small; teleseismic.
76	9	e	17	05	33		Very small; teleseismic.
77	9	e	19	05	40		Very small; local.
78	10	e	11	39	01		Very small; teleseismic.
79	10	e	20	29	45		Very small; teleseismic.
80	11	iPZ	00	36	22	3, 700	Moderate record.
		iPR_1		37	24	or 33.3°	
		eSZ		41	34		
		iLR		44	55		
		iLq		48	09		
	11	e	00	36	XX**		Small; teleseismic.
	11	e	00	36	XX*	3, 900 or 35.0°	S-P = 4 m 30 s
81	11	e	21	09	36		Very small; teleseismic.
	12	e	20	33	XX**		Very small.
82	12	iPNEZ	21	27	44	1, 820	Small.
		eSEZ		31	15	or 16.4°	
		eL		34	17		
83	12	e	22	03	12		Very small.
84	13	e	03	49	45		Very small; teleseismic.
85	13	e	09	52	45		Very small; local.
86	13	iPNE	21	09	18	720	Small.
		eSNE		10	38		
87	13	e	23	28	42		Very small. Felt at: Surigao Int. II Butuan Int. IV
	13	e	23	28	XX**	170	S-P = 19 seconds.
88	14	e	10	19	44		Very small; local.
89	14	e	10	53	21		Very small; teleseismic.
90	14	eP	11	41	13	750	Small.
		eS		42	37		
91	14	iP	19	23	04	425	Small.
		iS			52		
92	14	eP	20	01	36	370	Very small.
		eS		02	10		

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	REMARKS
	1954 FEB.						
93	15	iP iS	19	48	25 56	275	Very small.
94	17	eP eS	01	18 19	31 01	265	Very small.
95	17	e	01	47	37		Very small; teleseismic.
96	17	e	06	56	06		Very small; local.
97	17	e	18	28	14		Very small; local.
98	19	e	01	00	02		Very small; teleseismic.
	19	e	06	33	XX**		Very small.
99	19	e	09	02	51		Very small; local.
100	19	iP iS	13	01 02	15 10	485	Felt at: Aparri Int. III Claveria Int. II
101	19	iPNEZ ePr eSNZ	19	19 24 28	23 44 57	8,050 or 72.5°	
102	19	e	21	54	16		Very small; teleseismic.
103	20	iPNEZ eSNZ	18	39 41	19 53	1,700 or 15.3°	Moderate amplitudes.
	20	e	18	38	XX**	1,630 or 14.6°	Small to moderate amplitude
	20	e	18	38	XX*		Small.
104	20	e	21	40	03		Very small; teleseismic.
105	22	e	06	17	02		Very small; teleseismic.
106	22	e	10	32	24		Very small; teleseismic.
107	22	e	12	25	01		Very small; teleseismic.
	22	e	22	19	XX**		Very small.
108	23	ePNE eSNE eL	06	46 51 53	44 50 23	3,330 or 30.0°	Very small.
109	23	ePNEZ eSNEZ	23	17 18	53 06	110	Felt at: Infanta Int. III Burdeos Int. II
110	24	iPNEZ eSEZ iL	19	42 47 53	36 31 46	3,400 or 30.6°	
111	24	ePZ eSN	20	49 51	36 14	1,400 or 12.2°	

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	R E M A R K S
	1954 FEB.						
112	25	e	22	31	10		Very small; teleseismic.
113	25	e	23	57	17		Very small; teleseismic.
114	26	ePZ	18	54	53	2,000	Very small.
		eSZ		58	12	or 18.0°	
115	27	ePZ	23	43	49	6,200	
		e		45	53	or 55.8°	
		eSZ		50	39		
116	28	iPNEZ	00	59	03	1,800	Small to moderate
		iSNEZ	01	02	07	or 16.2°	amplitudes.
		eL		06	04		

Republic of the Philippines
DEPARTMENT OF COMMERCE AND INDUSTRY
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GEOPHYSICAL DIVISION
Manila

NO. 63

MARCH 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S horizontal component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

** 1 Louckes-Omori Horizontal seismograph located at 9° 15' N 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification - 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 MAR.						
117	1	e	09	05	34		Very small; local.
118	3	iPNEZ	06	09	00	3,000	
		iPR_1		09	45	or 27.0°	
		iSNEZ		13	34		
**	3	iP	06	09	25	2,600	Time control not accurate.
		iS		12	29	or 23.4°	
119	3	iPNEZ	07	54	26	4,580	Small.
		ePCP		56	12	or 41.2°	
		eSNE	08	00	33		
120	3	e	15	27	35		Very small; teleseismic.
121	3	e	20	58	48		Very small; teleseismic.
122	3	e	23	46	06		Very small; local.
123	4	ePNE	03	39	34		Very small.
		eSNE		40	26		
124	5	e	04	19	55		Very small; teleseismic.
125	5	iPNEZ	11	22	41	2,400	Small.
		iSNE		26	29	or 21.6°	
126	6	iPNEZ	00	39	45	7,550	
		iSNEZ		48	10	or 68.0°	
127	6	iPNEZ	01	38	23	510	Small.
		iSNEZ		39	20		
128	6	iPNEZ	02	41	10	150	Small.
		iSNEZ			27		
129	7	e	14	33	23		Very small; local.
130	7	iPNEZ	21	09	52	195	Small.
		iSNEZ		10	14		

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 MAR.						
131	9	e	02	49	50		Very small; probably S of teleseismic quake.
132	9	ePNEZ eSN	05	47 53	46 27	5,100 or 45.8°	Very small.
133	10	e	11	15	17		Very small.
134	10	e	14	09	55		Very small; teleseismic.
135	10	e	21	38	11		Very small; local.
136	11	e	02	25	32		Very small; local.
137	11	ePNEZ iSNZ	18	13	15 35	175	Very small.
138	12	e	11	34	40		Very small; teleseismic.
139	13	e	01	08	19		Very small; teleseismic.
140	13	e	09	47	10		Very small; local.
141	13	ePNEZ iSNEZ	18	19 23	56 09	2,700 or 24.3°	Small.
142	14	e	09	03	22		Very small; teleseismic.
143	15	e	19	44	30		Very small; local.
144	16	e	07	21	25		Very small; local.
145	16	e	19	44	27		Very small; local.
146	17	eP eS	02	19	22 39	150	
147	17	e	02	43	37		Very small; local.
148	18	eP eS	07	50 51	55 58	560	Felt at: Calayan Int.IV Epicenter: 19°.4'N 122°.0 E
149	18	e	09	10	35		Very small; local.
150	18	iPNEZ eSNEZ	13	43 45	50 07	685	
151	18	e	14	33	17		Very small; local.
152	19	e	07	44	26		Very small; local.
153	19	e	08	22	27		Very small; teleseismic.
154	19	iPNEZ eSNEZ	13	35 36	39 57	700	
155	19	e	15	05	54		Very small; local.
156	20	e	02	04	27		Very small; local.
157	20	eP eS	20	56	05 59	480	

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	REMARKS
	1954 MAR.						
158	21	iP	23	47	32	3,300	Recorded at Mambajao.
		i		48	13	or 29.0°	S indeterminate.
		eS?		52	26		
		e		53	00		
		i		54	17		
159	22	e	09	50	19		Very small; teleseismic.
160	23	ePNEZ	00	07	44	1,750	
		eSNEZ		10	25	or 15.7°	
161	23	e	12	19	49		Very small; local.
162	23	e	14	19	57		Very small; local.
163	24	ePNEZ	01	36	45	2,600	
		eSNE		40	38	or 23.4°	
164	24	e	14	24	01		Very small; local.
165	25	e	01	41	33		Very small; local.
166	25	e	02	44	07		Very small; local.
167	25	ePNEZ	06	53	02	145	
		eSNEZ			26		
168	26	ePNEZ	00	31	35	320	
		eSNEZ		32	11		
169	26	e	04	42	51		Very small; teleseismic.
170	26	e	05	25	34		Very small; local.
171	26	e	18	38	02		Very small; teleseismic.
172	27	ePNEZ	05	11	21	210	
		eSNE			45		
173	27	e	19	00	32		Very small; teleseismic.
174	27	e	22	14	10		Very small; local.
175	28	e	06	46	25		Very small; local.
176	28	e	20	20	32		Very small; local.
177	28	iPNEZ	20	46	09	6,360	
		eNE		48	15	or 57.2°	
		eN		49	16		
		eSNEZ		54	05		
178	28	e	21	07	48		Very small; teleseismic.
179	29	iPNEZ	04	02	36	560	Felt at: Calayan Int.IV
		iSNEZ		03	39		Basco Int.IV
							Aparri Int.III
							Epicenter: 19°.4'N 122°.0E

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 MAR.						
180	29	ePZ	06	31	17	12,000 or 108.0°	
		PR_1		35	45		
		pPR_1		37	56		
		SKS		41	00		
		eSNEZ		42	18		
		sP		43	47		
		sS		46	34		
		SS		50	28		
181	29	e	09	31	44		Very small; local.
182	30	e	10	54	42		Very small; teleseismic.
183	30	e	18	54	04		Very small; teleseismic.
184	30	iP	20	54	16	445	Felt at: Laoag Int.III
		iS		55	06		Vigan Int.III
185	31	iP	18	36	00	6,600 or 59.4°	
		iPR_1		38	21		
		iSNEZ		44	22		
		iSR_1		48	41		
		iLq		50	33		

The following macroseismic tremors were reported felt but were not recorded at Manila:

		(GMT) H	M	(INTENSITY)	(DURATION)
Sta. Cruz, Zambales	MAR. 7	21	14	II	03"
Monkayo, Davao	18	05	10	--	25"
Mamburao, Occ. Mindoro	19	14	45	I	01"
Mamburao, Occ. Mindoro	20	21	08	III	01"
Virac, Catanduanes	22	04	42	III	05"
Butuan, Agusan	24	08	47	II	10"

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NO. 64

APRIL 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S horizontal component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

** 1 Louckes-Omori Horizontal seismograph located at 9° 15' N 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification - 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	R E M A R K S
	1954 APR.						
186	1	ePNEZ	18	26	34	4,650 ±	
		ePR_1		28	12	or 41.9°	
		eSE		32	45		
187	2	iPNEZ	10	01	03	355 ±	
		iSNEZ		01	43		
188	2	e	11	06	42		Very small; teleseismic.
189	2	iPZ	15	09	53	8,200 ±	
		ePR_1		12	26	or 73.8°	
		eSE		19	27		
190	3	eP	23	51	32		Beginning of a quake just as paper was taken off.
191	4	iPNEZ	23	20	33	4,050 ±	
		ePR_1		21	57	or 36.5°	
		iSNE		26	16		
		iL		31	00		
192	5	e	06	36	50		Very small; local.
193	5	ePNZ	12	41	52	550 ±	
		eSNZ		42	54		
**	6	eP	00	31	35	330 ±	
		eS		32	12		
194	6	iPNEZ	00	31	55	445 ±	Felt at: Iloilo Int. II
		iSNE		32	46		Roxas City Int. III
							Cuyo Int. IV
195	6	ePZ	12	56	02	370 ±	
		eSZ		56	44		
196	7	e	04	26	00		Very small; local.
197	7	e	18	35	52		Very small; teleseismic.
198	7	ePNEZ	21	54	56	500 ±	
		eSZ		55	52		

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 APR.						
199	9	iPNEZ iSNEZ	07	16 17	29 28	525 ±	Felt at: Calayan Int. V Aparri Int.IV
200	9	e	07	29	00		Very small. Probable aftershock.
201	9	ePNEZ eSNEZ	13	24 25	52 58	585 ±	
202	9	e	14	00	30		Very small; local.
203	9	e	22	58	42		Very small; local.
204	10	ePNEZ eS	01	57 59	43 58	670 ±	Small.
205	10	ePNE? eSZ	15	34 35	16 43	780 ±	
206	11	iPNEZ ePR_2 iSNEZ	03	10 12 16	49 48 59	4,550 ± or 40.9°	Very small.
207	11	iPNEZ iSNEZ	03	23 29	37 45	4,500 ± or 40.5°	Very small.
208	11	iPNEZ iSNEZ	07	44 44	03 34	275 ±	Small.
209	11	iPNEZ iSNEZ	09	45 46	45 19	300 ±	Small.
210	11	ePNEZ ePR_2 eSNE L	10	35 39 44 48	52 33 04 26	7,000 ± or 63.0°	
211	11	ePNEZ ePR_1 ePR_2 iSNE	11	02 04 04 08	06 08 45 56	5,300 ± or 47.7°	Small.
212	11	e	18	44	20		Very small; teleseismic.
213	12	e	00	47	10		Very small; teleseismic.
214	12	ePNEZ eSNEZ	21	01 03	41 33	1,000 ±	Small.
215	13	ePZ eSZ	07	56 57	08 05	505 ±	Small.
216	13	iPNEZ iSNEZ	15	08 09	11 38	775 ±	Small.
217	13	ePNE iSNE	15	30 34	17 19	2,600 ± or 23.4°	Small.
**	13	iP iS	15	32 32	15 36	185 ±	

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	REMARKS
	1954 APR						
218	14	e	09	57	18		Very small; local.
**	14	iP iS	11	47 47	17 21	120 ±	
219	14	ePNEZ eSNE	13	30 35	40 24	3,100 ± or 27.9°	Small.
220	14	e	21	06	40		Very small.
221	15	e	06	27	20		Very small; local.
222	15	ePNE eSNE	08	04 05	43 11	170 ±	Very small.
**	15	iP iS	23	11 11	05 17	105 ±	
223	16	iPNEZ iSNEZ	06	06 06	03 44	365 ±	Felt at: Virac Int. III
224	17	e	01	40	59		Very small.
225	17	e	02	38	44		Very small.
**	17	iP iS	14	52 53	53 01	245 ±	
226	17	ePNE eSEZ	14	54 55	06 39	830 ±	Felt at: Hinatuan Int. II
**	17	iP iS	17	16 16	21 47	230 ±	
227	17	ePNEZ eSEZ	17	17 19	59 34	845 ±	Aftershock.
228	17	e	19	15	49		Very small.
229	17	ePNEZ ePR_1 ePR_2 eSNE eL	20	20 23 24 28 32	48 10 22 55 57	6,600 ± or 59.4°	
230	17	e	22	24	50		Very small.
231	18	e	02	32	28		Very small.
232	18	e	03	15	05		Very small; teleseismic.
233	18	iP iS	03	19 19	13 36	200 ±	Small.
**	18	eP iS	03	48 49	51 32	365 ±	
**	19	e	03	36	XX		Very small.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS.	REMARKS
	1954 APR						
234	19	e	17	36	08		Very small; local.
235	20	e	05	18	27		Very small; local.
236	20	e	12	37	24		Very small; local.
237	20	eP eS	14	13 14	54 10	140 ±	Very small.
238	20	e	16	53	11		Very small; local.
239	21	eP iS	00	07 10	48 07	1,500 ±	Very small.
240	21	e	05	46	50		Very small; local.
241	21	e	12	59	05		Very small.
242	21	e	18	29	35		Very small; local.
243	22	e	02	07	11		Very small; local.
244	22	e	02	35	07		Very small; local.
245	22	e	14	46	52		Very small; local.
246	22	iP iS	14 15	58 02	28 07	2,200 ± or 19.8°	Small.
**	23	e	02	11	XX		Very small.
247	23	eP eS	13	26 27	46 24	335 ±	Very small.
248	23	e	18	58	10		Very small; local.
249	23	eP eS	23	00 01	44 34	445 ±	Very small.
250	23	e	20	38	46		Very small.
251	24	e	00	18	00		Very small.
252	24	eP eS	06	02 02	01 21	120 ±	Very small.
253	24	e	20	56	36		Very small.
254	25	e	10	57	59		Very small.
255	25	iPZ eSZ	12	29 29	15 53	335 ±	Small.
256	25	ePZ eSZ	14	41 43	10 02	1,000 ±	Very small.
257	25	e	18	17	58		Very small.
**	26	eP eS	05	42 42	16 38	190 ±	Small.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 APR						
258	26	iPNEZ ePR_2 iSNEZ	20	33 34 40	20 48 18	5,400 ± or 48.6°	Small.
**	27	e	00	02	XX		Very small.
259	27	e	10	26	22		Very small.
260	27	e	10	46	49		Very small; local.
**	27	iP iS	16	50 50	00 32	280 ±	
261	27	iP eS	16	51 53	55 48	1,005 ±	Felt at: Hinatuan Int. III Mambajao Int. II Davao Int. V
262	27	eP eS	21	33 42	10 00	7,100 ± or 63.9°	Small.
263	28	e	23	28	37		Very small.
264	29	e	11	53	51		Very small.
265	29	iP iS	17	07 08	37 09	285 ±	Small to moderate.
**	29	iP iS	23	24 25	38 12	300 ±	
266	29	e	23	53	50		Very small.
267	30	e	02	50	13		Very small; local.
268	30	eP eP' sPR_1 PR_2 eS SP	13	15 18 20 22 27 29	25 04 35 26 25 03	12,200 ± or 109.8°	

Republic of the Philippines
DEPARTMENT OF COMMERCE AND INDUSTRY
Weather Bureau
GEOPHYSICAL DIVISION
Manila

NO. 65

MAY 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S horizontal component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Leuckes-Omori Horizontal seismograph located at 9° 15' N 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 MAY						
269	1	ePZ	00	31	20	7,000 ± or 63.0°	Very small.
		ePR_1		33	35		
		eSNE		39	45		
270	1	e	01	36	49		Very small; local.
271	1	iPNEZ	18	08	00	720 ±	Small to moderate.
		iSNEZ		09	21		
272	2	ePNE	17	53	56	3,300 ± or 29.7°	Small.
		eSN		58	48		
		Lq_1	18	00	01		
		Lq_2		04	06		
273	3	ePNEZ	15	38	28	5,300 ± or 47.9°	Small.
		ePR_1		40	34		
		ePR_2		41	27		
		iSNE		45	23		
274	3	e	18	26	00		Very small.
275	4	e	04	36	00		Very small; local.
276	4	e	13	38	17		Very small; local.
277	4	e	16	36	43		Very small; local.
278	4	e	18	18	02		Very small; teleseismic.
279	4	e	20	53	51		Very small; local.
280	5	e	11	40	48		Very small; teleseismic.
281	5	e	17	23	24		Very small; teleseismic.
282	6	ePNEZ	09	10	27	4,950 ± or 44.9°	Small.
		eSNE		16	48		
283	7	e	02	26	34		Very small; teleseismic.
284	7	iPNEZ	04	39	59	595 ±	Small to moderate.
		iSNEZ		41	06		

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 MAY						
***	8	e	05	37	09		
285	8	ePZ eSZ	13	04 05	34 19	400 ±	Very small.
***	8	eP eS	13	04 05	44 29		
286	8	iPNEZ iSNEZ	20	20 24	27 27	2,500 ± or 22.5°	Small to moderate.
287	9	iPNEZ iSNEZ	20	46 48	59 59	1,075 ± or 9.6°	Small.
288	10	e	06	39	14		Very small. Microseisms started to increase in amplitude.
289	10	ePZ? eSZ	06	44 46	31 51	1,550 ± or 13.9°	Small.
290	11	e	13	19	44		Very small; local.
***	12	eP eS	06	24 24	07 51		
291	12	iPNEZ eSNE	06	24 26	55 55	1,070 ±	Very small. Felt at: Davao Int.II Tentative epicenter: 5° 55'N 125° 05' E Microseisms returned to normal.
***	12	eP eS	07	19 20	20 02		
292	12	e	12	07	03		Very small; local.
293	13	e	13	19	57		Very small; local.
294	13	ePNE iSNE	15	05 09	46 12	2,060 ± or 18.5°	Small.
295	14	iPNEZ ePR1 eSNE	22	44 45 48	35 25 07	2,845 ± or 25.6°	Moderate.
	14		Power failure at: 22	50	00		
***	15	eP eS	19	17 18	37 19		
296	16	e	20	19	16		Very small; teleseismic.
297	17	e	03	26	16		Very small; teleseismic.
298	17	iP eS	11	26 26	03 19	165 ±	

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 MAY						
299	18	e	00	19	42		Very small.
300	18	e	08	42	09		Very small.
301	18	iP iS	10	16 18	36 36	1,155 ± or 10.4°	Small.
302	18	iP iS	10	27 29	46 17	810 ±	Small.
303	18	e	13	18	57		Very small; local.
304	18	e	22	40	37		Very small; local.
***	19	e	06	03	XX		
305	19	iP eS	06	04 06	03 18	1,450 ±	Very small.
306	19	iPNEZ iPR_1 iSNE iSR_1	23	14 15 20 23	27 49 20 05	4,450 ± or 40.1°	
307	20	ePNEZ eSNE	00	52 52	39 58	165 ±	Very small.
308	20	e	02	28	03		Very small.
309	20	e	16	43	52		Very small.
310	20	e	20	52	20		Very small.
311	20	iPNEZ iSNE	22	55 55	36 57	185 ±	Small to moderate. Felt at: Manila Int.I Tentative epicenter: 14°35' N 119°18' E
312	21	e	05	19	36		Very small; teleseismic.
313	22	eP eS	20	35 35	20 39	165 ±	Very small.
314	22	iPNEZ iSNEZ	21	20 21	51 10	165 ±	Small.
315	22	ePNEZ eSNEZ	22	36 37	51 10	165 ±	Very small.
316	23	ePZ iSNEZ eSS	04	17 23 26	46 41 52	4,450 ± or 40.0°	Very small.
***	23	eP eS	06	57 58	08 21		
317	23	iP e eSNE e e e	06 07	59 01 01 03 04 05	40 24 58 16 26 55	1,500 ±	Small.

SEISMOLOGICAL BULLETIN . . . Cont'd.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE KMS	REMARKS
	1954 MAY						
318	23	e	08	00	58		Very small; teleseismic.
319	24	e	01	13	03		Very small; local.
320	24	e	08	20	16		Very small; teleseismic.
321	24	ePNEZ eSNEZ	10	43 44	19 03	390 ±	Very small.
322	24	ePZ eSN	17	57 59	40 26	945 ±	Very small.
323	25	eP iSE	11	23 24	22 10	425 ±	Small. Felt at: Virac Int.III Tentative epicenter: 13°10' N 124°48' E
324	26	e	01	51	46		Very small; teleseismic.
325	26	e	02	53	19		Very small.
326	26	e	19	05	51		Very small; teleseismic.
327	26	eP eS	19	45 46	31 53	730 ±	Very small.
328	26	e	23	39	11		Very small; local.
329	27	ePZ eSNEZ	06	07 10	56 51	1,660 ±	Small.
***	27	eP eS	16	20 21	06 25		
330	27	iPNEZ iSNE	16	21 23	20 53	1,480 ±	Small.
331	27	e	23	30	46		Very small; local.
332	28	e	05	20	17		Very small; local.
333	29	ePZ ePR_1 eSNE	05	47 50 55	29 06 57	7,000 ± or 63.0°	Very small.
334	29	iPNEZ iSNEZ	22	45 45	02 17	130 ±	Small.
335	30	ePNZ eSNZ	16	15 15	27 42	130 ±	Very small.
336	30	iPNEZ iSNEZ	19	50 52	10 58	1,600 ±	Small.
337	31	e	09	41	41		Very small; local.
338	31	iPNEZ iPR_1 iSNEZ	15	53 54 57	44 15 53	1,650 ± or 14.7°	Small to moderate.

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
WEATHER BUREAU
Geophysical Division
MANILA

NO. 66

JUNE 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Turr.

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H; 1 E-W horizontal component and one vertical component; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 JUNE						
339	1	e	02	03	28		Very small; local.
***	1	iP iS	04	46 47	55 09	120 ±	Time control not accurate.
340	1	e	18	06	40		Very small; local.
341	2	e	00	14	40		Very small; local.
342	2	e	11	21	17		Very small; local.
343	3	ePEZ eSE	07	10 12	22 00	872 ±	Small.
344	3	ePEZ eSE? e	10	48 53 56	20 02 09	2,980 ± or 26.8°	Small.
345	5	ePZ eSZ	01	08 10	39 54	1,210 ± or 10.9°	Very small. Recorded also at Mambajao.
346	5	iPNEZ iSNEZ	19	26 27	31 01	265 ±	Small.
347	5	ePZ eSZ	19	39 40	42 14	282 ±	Small.
348	5	ePZ iSNEZ	19	44 44	27 59	282 ±	Small.
349	5	e	19	57	03		Very small; local. Felt at: Cotabato Int. III.
350	5	ePZ eSEZ	20	29 29	08 41	290 ±	Very small.
351	5	ePZ? eSNEZ	23	12 12	14 33	165 ±	Very small.
352	6	iPNEZ iSZ	16 17	55 00	47 07	2,680 ± or 24.1°	Large.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JUNE						
353	6	ePZ eSN	22	04 08	02 24	2,700 ± or 24.3°	
354	7	e	06	12	14		Very small; local.
355	7	e	06	47	12		Very small; local.
***	7	iP iS	10	20 25	56 04		Time control not accurate.
356	7	iPNEZ iPR_1 iSNEZ Lr	10	22 23 27 29	00 21 09 51	3,600 ± or 32.4°	Large.
***	8	iP iS	20	49 49	08 33	220 ±	Time control not accurate.
357	8	iPNEZ iSNEZ	20	51 53	57 38	900 ±	Small to moderate.
358	9	ePNEZ eSNEZ	09	39 39	18 59	365 ±	Small. Felt at: Tuguegarao Int. II.
359	9	iPNEZ iSNEZ	10	03 04	41 25	390 ±	Moderate. Felt at: Tuguegarao Int. III. Aparri Int. III Laoag Int. II Baguio Int. II Tentative epicenter: 18° N ; 121° 40' E
360	9	ePZ eSN	17	45 45	12 53	365 ±	
361	10	ePZ eSNEZ	16	12 13	54 32	335 ±	Small. Felt at: Abucay, Abra Int. III
362	10	e	21	43	11		Very small. Felt at: Borongan Int. III Tacloban Int. III
363	10	ePEZ eSEZ	22	42 45	24 52	2,200 ± or 19.8°	
364	11	iPZ eSNEZ	02	10 11	42 02	175 ±	Small.
365	11	ePZ iSNEZ	04	48 49	58 46	425 ±	Small. Felt at: Virac Int. III
366	11	e	21	28	36		Very small.
367	11	ePZ eSZ	21	34 34	34 54	175 ±	Very small.
368	12	e	05	04	28		Very small; teleseismic.
369	12	ePNE eSNE	05	45 53	26 34	6,750 ± or 60.7°	
370	13	e	01	24	38		Very small; teleseismic.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 JUNE						
371	13	iPNEZ iSN	17	25 28	43 45	1,800 ± or 16.2°	Small.
372	13	iPNEZ iSNEZ	23	03 03	06 57	440 ±	Small.
***	14	iP iS	13	30 30	13 50	328 ±	Time control not accurate.
373	14	iPNE iSNEZ	13	30 31	33 37	1,020 ±	Small. Felt at: Dadiangas Int. III Davao Int. II Mambajao Int. I Tentative epicenter: 5° 55' N ; 124° 55' E.
374	15	e	13	49	49		Very small; teleseismic.
375	16	e	21	00	57		Very small; local.
***	16	iP iS	22	51 52	52 16	210 ±	
376	17	e	01	54	07		Very small; teleseismic.
377	17	e	08	26	33		Very small; teleseismic.
***	17	iP iS	20	57 57	12 20	68 ±	Very small.
***	17	iP eS	21	11 11	35 55	175 ±	Time control not accurate.
378	17	e	21	15	05		Very small; local.
379	18	iPNEZ eSNE	18	00 04	20 54	2,865 ± or 25.8°	Small.
380	19	ePNEZ iSE	02	00 03	34 42	1,900 ±	Small.
381	20	ePN eSNZ	18	15 16	42 45	560 ±	Small. Felt at: Borongan Int. IV Tacloban Int. II Tentative epicenter: 11° 50' N ; 125° 18' E.
382	20	e	20	52	23		Very small; teleseismic.
383	21	e	02	08	40		Very small; teleseismic.
***	21	iP iS	02	10 13	19 22	1,745 ±	Time control not accurate.
384	21	iPNEZ iSNEZ	02	12 16	07 02	2,500 ± or 22.5°	Small to moderate.
385	22	ePNZ iSNE	00	11 12	14 12	515 ±	Small.
	22		Power failure at: 09	33	15		
			Power on at: 10	41	00		

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JUNE						
386	23	e	01	29	32		Very small.
387	24	iPNEZ	08	03	15	2,600 ±	Small.
		iPR_1		03	47	or 23.4°	
		eSNE		07	17		
		e		08	50		
388	26	e	05	14	06		Very small.
389	26	ePZ	11	07	03	2,335 ±	Small.
		eSZ		10	55	or 21.0°	
390	27	ePZ	01	36	30	2,410 ±	
		ePR_1		37	07	or 21.7°	
		eSZ		40	29		
391	27	ePNEZ	04	10	29	930 ±	Very small.
		eSNE?		12	13		
***	27	iP	07	47	15	220 ±	Time control not accurate.
		iS		47	40		
392	27	ePNZ	16	20	28	2,750 ±	Very small.
		eSNE		24	46	or 24.7°	
		Lr		26	33		
393	28	ePNEZ	03	29	32	2,000 ±	Small.
		iSNEZ		32	40	or 18.0°	
394	29	iPNEZ	07	13	21	290 ±	Small to moderate.
		eSZ		13	54		
395	30	e	13	39	11		Very small; teleseismic.

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
WEATHER BUREAU
Geophysical Division
MANILA

NO. 67

JULY 1954

ϕ = 14° 40' N. λ = 121° 05' E. h = 704 M. Tuff.

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H ; 1 E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

***1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 JULY						
396	1	ePNEZ iSZ	05	26 27	10 55	935 or 8.4°	Very small.
397	1	iPNEZ eSNEZ	08	51 53	55 39	925 or 8.3°	Very small.
***	1	e	08	51	xx		Pens thrown off from paper.
398	1	ePNEZ eSNE?	10	11 14	39 07	1,600 or 14.3°	Very small.
399	2	iPNEZ eSZ?	02	46 46	02 46	385	Major quake. Light spots on horizontal components blurred due to speed of movement. Felt at: Sorsogon Int.VII Daet Int.V Virac Int.IV Legaspi Int.IV Roxas City Int.IV Catarman Int.IV Masbate Int.IV Aurora Int.IV Catbalogan Int.III Tacloban Int.III Iloilo Int.II Mambajao Int.II
***	2	iP iS	02	46 46	05 49		
400	2	eP	03	05	17		Aftershock. Very small.
401	2	e	03	39	xx		Aftershock. Very small. Phase difficult to read because first quake still registering.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JULY						
402	2	e	03	40	xx		Aftershock. Very small. Same difficulty as preceding shock.
403	2	e	03	44	26		Aftershock. Very small. Same difficulty as preceding quake.
404	2	iP iS	03	47 47	10 54	385	Aftershock.
405	2	ePE	04	14	42		Aftershock. Readings taken from E-W component only as N-S component still confused
406	2	ePE	04	47	38		Aftershock. Same condition as preceding quake. Felt at: Iloilo Int. I
407	2	iPNEZ eSNEZ	09	22 23	38 17	372	Aftershock. Felt at: Legaspi Int. III
***	2	eP iS	09	50 50	06 28	195	
408	2	ePZ? eSNE	09	50 52	34 04	800	Felt at: Surigao Int.III Mambajao Int.II Naoloban Int.II Tentative epicenter: 9° 45' N ; 126° 25' E. Power failure at: 10 08 xx Power on at: 11 00 xx
409	2	ePNEZ iSZ	15	15 16	17 00	380	Aftershock of July 2 major quake.
410	2	e	19	01	35		Aftershock. Very small.
411	2	iPZ iSNEZ	20	18 19	32 16	385	Aftershock.
412	2	eP? eS	20	31 32	32 15	390	Aftershock.
413	2	e	21	22	xx		Aftershock. Very small.
414	2	iPNEZ iSNEZ	21	31 31	12 57	398	Aftershock.
415	2	e	23	12	33		Aftershock. Very small.
416	3	eZ	00	07	08		Very small.
417	3	eZ	03	08	08		Aftershock of July 2 major quake. Very small.
418	3	ePZ eSZ	03	31 32	33 18	390	Aftershock.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JULY						
419	3	eZ	04	51	04		Very small; local.
420	3	ePZ eSZ	05	01 01	10 57	417	Aftershock of July 2 major quake. Small
421	3	ePZ iSNEZ	10	15 15	33 36	30	Very small.
422	3	ePZ eSZ	16	25 25	03 47	390	Aftershock of July 2 major quake. Small.
423	3	iPNEZ iSNEZ	21	16 17	15 15	535	Small to moderate. Felt at: Calayan Int.IV Aparri Int.III Tentative epicenter: 19° 40' N ; 121° 35' E.
424	3	iPNEZ eSZ	22	05 06	35 39	570	Felt at: Borongan Int.IV Catbalogan Int.II Iloilo Int.I Tentative epicenter: 12° 18' N ; 125° 45' E.
425	3	iPNEZ e eSNEZ	22	36 39 41	56 16 44	3,065 or 27.6°	Small to moderate.
426	4	e	01	15	40		Very small; local.
427	4	ePNEZ eSNEZ	04	47 48	34 16	372	Aftershock of July 2 major quake.
428	4	iPEZ iSEZ	06	37 38	41 21	354	Aftershock of July 2 major quake.
429	4	ePNZ eSNZ	07	37 38	54 36	385	Aftershock of July 2 major quake.
430	4	ePNEZ iSNEZ	08	41 42	46 30	390	Aftershock of July 2 major quake.
431	4	e	12	01	12		Very small; local.
432	4	ePNEZ iSZ	12	47 48	47 34	417	Aftershock of July 2 major quake.
433	4	e	19	51	13		Very small; local.
434	4	e	21	22	14		Very small; local.
435	5	e	05	29	42		Very small; local.
436	5	eZ	14	00	37		Very small; teleseismic.
437	5	ePZ iSEZ	14	19 20	29 11	372	Aftershock of July 2 major quake.
438	5	e	16	31	41		Very small.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JULY						
439	5	e	23	57	15		Aftershock of July 2 major quake. Start of a quake just as paper was taken off.
440	6	iPNEZ	04	06	41	3,535 or 31.8°	Small.
		ePR?		08	04		
		eSNE		11	59		
		eLq		13	47		
441	6	iPNEZ	08	12	23	4,700 or 42.3°	Small.
		iPP		13	59		
		ePPP		14	32		
		eSNE		18	31		
		iLr		24	01		
442	6	e	10	21	57		Very small; teleseismic.
443	6	e	11	19	29		Very small; teleseismic.
444	6	e	11	23	xx		Very small; teleseismic.
445	6	e	11	30	31		Very small; teleseismic.
446	6	e	12	06	35		Very small; local.
447	6	iPNEZ	21	39	51	290	Small.
		iSNEZ		40	24		
448	7	e	01	30	02		Very small; teleseismic.
449	7	e	16	30	45		Very small; local
450	8	e	01	09	08		Very small; teleseismic.
451	8	e	14	03	51		Very small; local
452	8	iPNEZ	17	21	59	192	
		iSZ		22	21		
453	8	ePEZ	20	09	26	400	Felt at: Roublon Int.III
		iSNE		10	11		Capiz Int III
454	9	e	15	42	10		Very small; teleseismic.
455	9	e	16	30	18		Very small; teleseismic.
456	9	ePZ	18	34	41		Very small; local.
457	10	ePZ	03	48	35	165	Very small.
		eSEZ		48	54		
458	10	ePZ	10	23	41	175	Very small.
		eSN		24	51		
459	10	iPNE	16	09	26	175	Very small.
		iSNE		09	46		
460	10	e	20	29	33		Very small; local.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JULY						
461	10	ePZ iPR2 iSNE	23	05 08 12	25 02 18	5,300 or 47.7°	Very small
462	11	iPNEZ iSNE	05	43 43	08 37	255	Small.
463	11	e	17	17	16		Very small.
464	13	e	03	47	31		Very small; local.
465	13	ePZ eSE	08	11 17	39 13	3,790 or 34.1°	
466	14	e	05	31	50		Very small
467	14	e	12	54	04		Very small.
468	14	ePNEZ eSNE	19	25 26	26 07	365	Aftershock of July 2 major quake. Small
469	14	ePNE eSN	21	08 09	31 01	355	Aftershock of July 2 major quake. Very small.
470	15	e	00	14	58		Very small; teleseismic.
471	15	e	00	48	50		Very small; local.
472	15	ePNE iSZ	12	31 32	15 05	445	Very small.
473	16	e	02	59	07		Very small.
474	16	e	10	55	54		Very small.
475	16	ePNE eSNEZ	20	00 01	33 32	525	Small.
476	16	e	21	46	xx		Very small.
477	16	iPNEZ eSNEZ	22	50 52	56 02	585	Small.
478	17	iPZ eSNE	17	03 04	40 20	355	Aftershock of July 2 major quake. Small.
479	18	e	01	03	03		Very small; local.
480	18	ePNEZ eSNEZ	05	07 07	02 48	390	Aftershock of July 2 major quake. Small.
481	18	ePNEZ eSNE	06	43 51	45 05	5,620 or 50.6°	Very small.
482	18	iPNEZ i ePR2 eSNE	09	13 14 15 18	10 06 03 03	2,980 or 26.8°	Small to moderate.
483	18	ePNE eSNE	10	24 24	05 45	355	Aftershock of July 2 major quake.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 JULY						
484	18	iPNE iSNZ	10	58 59	52 36	390	Aftershock of July 2 major quake. Small to moderate.
485	18	ePNEZ eSNE	19	07 08	38 33	372	Aftershock of July 2 major quake. Small.
486	18	e	19	20	36		Very small.
487	18	iPNEZ iSNE?	20	04 13	10 09	7,550 or 68.0°	
489	19	e	00	19	47		Very small; local.
490	19	e	00	33	50		Very small; local.
491	19	ePZ eSNEZ	00	54 55	42 49	595	Very small. Felt at: Tacloban Int.III Borongan Int.III
492	19	e	01	11	37		Very small; local.
493	19	e	02	02	01		Very small; local.
494	19	ePZ eSZ	03	07 08	48 27	345	Aftershock of July 2 major quake. Very small.
495	19	iPNEZ iSEZ	08	57 57	10 27	140	Very small.
496	20	e	07	33	30		Very small.
497	21	iPNEZ iSNEZ	04	43 48	56 06	2,720 or 24.3°	Small.
498	21	ePNEZ eSN?	05	52 55	12 10	1,800	Very small.
499	21	ePZ eSE	08	47 51	31 51	2,800	Very small.
500	21	e	17	08	04		Very small; local.
501	21	e	17	10	06		Very small; local.
502	21	ePEZ eS?	19	15 16	54 34	345	Aftershock of July 2 major quake. Very small.
	22						Power failure at: 06 21 xx Power on at: 06 40 xx
503	23	e	04	53	30		Very small; teleseismic.
504	24	e	09	51	14		Very small.
	24						Power failure at: 05 14 xx Power on at: 09 04 xx

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 JULY						
505	24	ePNEZ iSNEZ	10	52 53	41 39	515	Small.
506	24	ePZ eSZ?	17	18 18	30 38	70	Very small.
507	24	e	21	53	38		Very small; local.
508	25	e	00	56	xx		Very small.
509	25	iPZ eSZ	07	50 50	16 58	370	Aftershock of July 2 major quake. Very small.
510	26	e	04	10	00		Very small.
511	26	e	09	03	51		Very small.
512	26	e	17	07	31		Very small.
513	26	e	20	35	39		Very small; teleseismic.
514	26	e	22	29	43		Very small.
515	27	ePNEZ eSNEZ	03	18 19	32 10	355	Aftershock of July 2 major quake. Small.
516	27	e	06	18	20		Very small; local.
517	27	e	07	06	34		Very small.
518	27	e	07	18	27		Very small; local.
519	27	iPNEZ iSZ	07	39 39	00 26	230	Small.
520	27	iPZ iSNZ	16	02 03	55 39	390	Aftershock of July 2 major quake. Small.
521	27	e	21	17	45		Very small; teleseismic.
522	28	e	06	44	33		Very small.
523	28	e	08	17	17		Very small.
	28						Power failure at: 10 58 xx Power on at: 12 04 xx
524	28	e	15	09	10		Very small.
525	28	e	22	31	28		Very small.
526	29	ePNEZ ePR2 eSNE	03	42 45 49	47 15 25	5,000 or 45.0°	Small.
527	29	e	06	39	31		Very small; teleseismic.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 JULY						
528	30	e	09	05	38		Very small; teleseismic.
529	30	e	14	31	45		Very small; local.
530	30	e	21	53	45		Very small; local.
531	31	ePNEZ iPR_1 eSNEZ	01	06 06 10	00 59 31	2,835 or 25.5°	Small.
							For the month of July 38 aftershocks of the July second Sorsogon earthquake were recorded.

A TRUE COPY

OF THE

MEMORANDUM REPORT ON THE
SORSOGON EARTHQUAKE OF JULY 2, 1954.

This memorandum report covers the findings of the Weather Bureau and the Commission on Volcanology regarding the strong earthquake that caused some damage and a number of casualties in the Province of Sorsogon on July 2, 1954 at 10:45 in the morning.

AREA THAT FELT THE EARTHQUAKE:

Reports received by the Weather Bureau from its provincial stations showed that the Sorsogon earthquake of July 2 was felt over a wide area of the Philippines and embraced the provinces of Sorsogon, Albay, Camarines Norte, Camarines Sur, Southern Quezon, and the islands of Samar, Leyte, Masbate, Cebu, Bohol, Negros and Panay.

The following places outside of Sorsogon felt the earthquake:

Daet	Intensity	V
Legaspi.	"	IV
Virac	"	IV
Roxas City	"	IV
Aurora	"	IV
Masbate	"	IV
Catarman	"	IV
Catbalogan	"	III
Tacloban	"	III
Iloilo	"	II
Mambajao	"	II

CENTER OF THE EARTHQUAKE:

The center of the earthquake, as determined by instrumental data on its aftershocks by seismographs of the Weather Bureau, Commission on Volcanology, and the Manila Observatory, has been located at 380 kilometers southeast of Manila and in the immediate vicinity of the towns of Sorsogon and Bacon.

Field investigations of the destruction caused by the earthquake and its effects on the land surface, such as fissures, slides, and sand boils, substantiated the instrumental determination of the earthquake's center.

CAUSE:

The cause of the Sorsogon earthquake was tectonic in nature. It must have been brought about by a sudden dislocation of the earth's crust along a plane of fracture that approximates the line joining the towns of Sorsogon and Bacon. The evidence for this conclusion is:

1. The earthquake was felt over a large area. Earthquakes of a volcanic origin are only perceptible in the vicinity of a volcano.

2. The time distribution and intensities of after-shocks indicate that the same are those that generally accompany strong tectonic tremors.

3. There are no observable effects upon the quiescent activity of the Bulusan Volcano close to the earthquake's center.

EARTHQUAKE EFFECTS:

Casualties: The official report of casualties obtainable at Sorsogon shows that a total of thirteen (13) were killed either by falling debris or were pinned under heavy household furniture. Of the thirteen deaths, eight (8) were in Sorsogon town, four (4) in Bacon, and one (1) in Legaspi City when a laborer fell from a scaffolding he was working on.

A total of one hundred one (101) injured persons were treated at the Sorsogon Provincial Hospital, seven (7) of which were serious cases. Four (4) of the more serious cases were brought to Manila for needed medical attention.

Structural damage: The damage to buildings was essentially limited to old and poorly-built structures of bricks and cobbles cemented only by lime mortar. The belfries of the churches at Sorsogon and Bacon collapsed while the rest of the churches remained relatively intact. Other old buildings were only slightly fractured. Water mains in the town of Sorsogon were broken and several electric lines were disconnected.

Damage to roads were relatively insignificant. Some minor fissures were noted at Bacon but they were small and hardly affected the utility of the roads. An old Spanish bridge at the provincial road between Bacon and Sorsogon was fractured at the middle and may have to be reconstructed to allow heavier traffic.

SUBSEQUENT TREMORS:

Right after the major earthquake which occured at 10:45 in the morning of Friday, July 2, other tremors of slight intensities were felt, especially in the Sorsogon-Bacon area. The people after their unnerving experience with the major shock were alarmed over the recurring tremors.

The after-tremors, however, should not cause alarm. They are to be expected after a strong tectonic earthquake. Their intensities would be lower than that of the main shock and their number would get less as the days pass. This information was given to the authorities in the area so as to allay the fears of the people.

PRECAUTIONARY MEASURES RECOMMENDED:

To help allay the fears of the people on the situation brought about by the earthquake, the following information for public dessimination was given to Brigadier General Alfonso Arellano, PAFC Commander and the President's

personal representati ve to supervise over-all relief activities in the area.

"The earthquake that hit Sorsogon on July 2, 1954, was caused by dislocation of the earth's crust somewhere along a line joining Sorsogon and Bacon towns, and was of intensity VII.

As is the case in big earthquakes of this nature, aftertremors can be expected. These after earthquakes, however, would not be as strong as the main earthquake and would become less often as days pass. They should not cause any alarm.

As a precautionary measure, people should avoid living in weakened structures and in case of an earthquake should avoid being near objects and structures that may fall."

It was also recommended that a survey of the hilly area where slides have occurred should be undertaken with the object of ascertaining whether some damming of streams were caused by the slides. Such damming would pose the danger of floods over the lower areas of the dammed streams should the impounded waters break through the obstructing slides.

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REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
WEATHER BUREAU
Geophysical Division
MANILA

NO. 68 AUGUST 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H ; 1 E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 AUG.						
532	1	ePNEZ eSNE	03	28 32	11 33	2,800 or 25.2°	Small.
533	1	e	06	49	58		Very small; local.
534	1	ePZ iSNE	13	20 24	45 33	2,400 or 21.6°	Very small.
535	1	e	21	35	42		Very small.
536	1	e	21	50	10		Very small; teleseismic.
537	1	iPNEZ eSNEZ	22	36 36	01 31	265	Small.
538	2	e	05	32	xx		Very small.
	3						Microseisms started to increase in amplitude.
539	5	e	23	51	06		Very small; teleseismic. Phases masked by large microseisms.
540	8	e	05	50	27		Very small; local. Microseisms returned to normal.
541	8	e	08	28	55		Very small; local.
542	9	iPNEZ iSZ	04	16 16	22 52	265	Small.
543	9	iPNEZ iSNEZ	04	44 45	39 09	265	Small to moderate.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 AUG.						
544	9	e	04	50	52		Very small. Superimposed on preceding quake.
545	9	iPNEZ eSNEZ	04	58 58	20 50	265	Small. Felt at: Casiguran Int.I
546	9	iPZ eSZ	05	09 10	32 03	270	Very small.
547	9	iPZ iSZ	05	28 29	56 27	270	Small.
548	9	iPZ iSNEZ	05	59 59	08 33	265	Small.
549	9	iPNEZ iSNEZ	07	23 24	42 12	265	Small. Note: All the 8 preceding quakes of this date are strikingly very similar. Tentative epicenter: 16° 58' N ; 121° 45' E.
550	9	iPNEZ ePR1 ePR2 iSNE	19	25 27 28 32	43 41 35 50	5,400 or 48.6°	Small.
***	10	e	03	06	xx		Very small.
***	10	e	03	44	xx		Very small.
551	11	e	19	58	25		Very small. Felt at: Hinatuan Int.IV Zamboanga Int.II Mambajao Int.III
***	11	e	19	58	xx		
***	12	e	11	55	xx		
552	12	ePZ eSN	11	56 58	09 10	1,080 or 9.7°	Very small. Tentative epicenter: 17° 40' N ; 127° 55' E.
553	12	e	19	15	25		Very small; local.
554	13	e	23	45	30		Very small; teleseismic. Microseisms started to increase in amplitude.
555	14	eZ	10	38	54		Phases masked by microseisms
***	14	e	14	14	xx		
556	14	ePZ eZ	23	00 02	30 36	1,125 or 10.1°	Phases masked by microseisms.
***	16	e	13	04	xx		
557	16	ePZ eSZ	17	28 29	28 06	335	Horizontal components masked by microseisms.

NO.	DATE	PHASE	ORIGINATE TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 AUG.						
558	18	iPNEZ iPR1 ePR2 eSZ	04 05	53 56 57 02	30 15 12 28	7,800 or 70.2°	Small. Microseisms returned to normal.
***	18	e	10	45	xx		
559	21	iPNEZ eSNZ	06	40 42	54 48	1,020	Felt at: Davao Int.V Dadiangas Int.III Minatuan Int.III Butuan Int.II Tentative epicenter: 7° 05' N ; 126° 10' E. Mambajao reading: S-P = 32 s
***	21	e	21	22	xx		
560	22	e	01	40	48		Very small.
561	22	e	18	19	18		Very small; teleseismic.
***	24	e	08	55	xx		
562	24	e	17	46	29		Very small.
563	25	ePZ eSNZ	08	52 53	20 29	615	Very small.
564	25	iPZ iSNEZ	14	48 49	35 29	440	Small.
565	26	e	10	00	55		Very small; local.
566	26	e	18	47	35		Very small; teleseismic.
567	26	e	19	24	26		Very small; local.
568	26	iPNEZ eSNZ	21	48 48	00 50	445	Very small.
569	26	ePZ eS?	22	01 02	22 22	535	
570	27	ePZ eSZ	10 11	59 04	56 21	2,900	Small. Microseisms started to increase in amplitude. Horizontal components masked by microseisms.
571	27	e	13	59	38		Very small; local.
572	28	iPNEZ iSNEZ	17	37 37	10 29	165	Small.
573	30	e	08	04	32		Very small; teleseismic. Phases masked by large microseisms.
574	31	eZ	20	06	24		Very small; local.
575	31	iPZ iSZ	20	23 23	21 39	108	Small. Horizontal components masked by large microseisms

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
WEATHER BUREAU
Manila

Bulletin

NO. 69 SEPTEMBER 1954

ϕ = 14° 40' N. λ = 121° 05' E. h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H ; 1 E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms	R E M A R K S
	1954 SEPT						
576	2	ePZ?	19	00	57	5,300	Large microseisms.
		ePR1		02	49	or 47.7°	
		eSN		07	39		
***	4	iP	03	32	48	2,065	
		eS		36	18		
577	4	iPNEZ	03	34	00	2,800	Small to moderate.
		iPR1		34	37	or 25 2°	Large microseisms
		eSNE		38	29		
578	4	iPNEZ	08	55	06	785	Small to moderate.
		iSZ		56	34	or 7.0°	Large microseisms. Felt at: Basco Int. II
579	4	ePZ	09	23	02		Small. Phases masked by large microseisms and tail end of preceding quake.
580	4	e	10	34	21		Very small; local
581	4	e	13	21	03		Very small; teleseismic.
582	5	ePNEZ	07	56	12	6,955	Small to moderate.
		ePR1		58	29	or 62.6°	
		iSNE	08	04	57		
583	5	e	17	18	38		Very small; teleseismic.
584	5	iPNEZ	19	22	58	400	Small.
		iSNZ		23	43		Felt at: Laoag Int. IV Abra Int. III
585	6	e	11	27	05		Very small. Foreshock of Basco region quake.
586	6	ePNEZ	14	08	12	660	Small. Foreshock of Basco region quake.
		eSNEZ		09	26		

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 SEPT						
587	6	iPNEZ iSNEZ	16	48 49	37 50	650	Main shock. Tentative epicenter: 20° 30' N ; 121° 10 E.
588	6	iPNEZ iPR iSNEZ	18	39 41 46	20 13 13	5,155 or 46.4°	Small.
589	6	e	18	52	19		Very small; local.
590	6	ePZ eSNZ	20	12 13	16 26	625	Aftershock of Basco region quake. Small.
591	6	ePNE eSNE	20	32 33	00 17	685	Small. Aftershock of Basco region quake.
592	6	ePNEZ iSNEZ	23	55 56	39 51	640	Moderate. Aftershock of Basco region quake. Felt at: Basco Int. II
593	7	iPNEZ iSZ	00	09 11	55 08	650	Moderate. Aftershock of Basco region quake. Felt at: Basco Int. III
594	7	iPNEZ iSNEZ	00	36 38	48 00	640	Moderate. Aftershock of Basco region quake. Felt at: Basco Int. III
595	7	e	02	13	12		Very small; local.
596	7	ePNEZ eSNE	03	40 42	38 03	750	Small.
597	7	iPNEZ eSNE?	10	00 08	14 18	1,850	Small.
	8						Microseisms started to increase in amplitude.
598	9	e	01	22	44		Very small; teleseismic.
***	9	iP iS	20	26 27	45 06	185	
599	10	e	20	10	37		Very small; local.
600	11	e	01	27	14		Very small; local.
601	12	e	07	50	35		Very small; teleseismic.
602	12	iPNEZ iSNEZ	18	30 30	04 26	190	Small.
***	12	iP iS	19	18 18	17 40	200	
603	13	e	02	21	05		Very small; teleseismic.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 SEPT						
604	13	e	18	14	13		Small. Aftershock of Basco region quake. Horizontal components masked by large microseisms.
605	13	e	18	20	52		Small. Aftershock of Basco region quake. Horizontal components masked by large microseisms.
606	13	e	19	24	42		Very small. Probable aftershock of Basco region quake.
607	14	iPNEZ eSZ	00	49 51	54 14	710	Small to moderate. Felt at: Basco Int. II Secondary phases masked by large microseisms.
608	14	e	07	23	34		Very small; teleseismic.
609	15	e	18	06	14		Small; teleseismic. Horizontal components masked by large microseisms.
610	17	e	01	20	26		Very small; teleseismic.
611	17	ePZ eSZ	06	09 09	02 16	120	Very small.
612	17	iPNEZ eSZ	07	35 37	48 37	975	Small to moderate. Phases masked by large microseisms.
613	17	iPNEZ eiPR_1 iPR_2 iSZ	11	14 16 18 22	13 49 35 33	7,800 or 70.2°	
614	18	iPNEZ eSNZ	15	36 38	14 22	1,500	Small.
615	19	ePNEZ eSNEZ	01	36 37	46 44	515	Small.
616	19	ePZ eSNE	19	10 10	07 47	345	Small.
617	19	iPNEZ iSNEZ	21	41 42	58 29	275	Very small.
618	20	iPNEZ iSNE	00	43 46	27 31	1,755	Moderate.
619	21	iPNEZ iPR_1 iSNEZ	03	45 46 49	17 53 13	2,500 or 22.5°	Small.
***	21	eP eS	04	56 57	53 16	200	

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 SEPT						
620	21	iPZ eSNEZ	04	58 59	00 11	630.	Small. Felt at: Tacloban Int. III Borongan Int. III Tentative epicenter: 10° 25' N ; 125° 25' E.
621	21	e	09	47	10		Very small; teleseismic.
622	21	e	14	56	53		Very small.
623	23	e	21	51	45		Very small; teleseismic.
624	24	e	21	25	55		Very small; local.
625	26	e	10	43	42		Very small; microseisms returned to normal.
626	27	e	16	44	57		Very small; teleseismic.
627	28	e	00	33	47		Very small; teleseismic.
628	28	e	13	14	34		Very small; teleseismic.
629	28	iPNEZ iSNEZ	13	41 41	11 38	235	Small.
630	29	ePZ eSNZ	02	10 11	46 48	555	Very small.
631	29	iPNEZ iSNEZ	02	45 45	08 33	220	Small.
632	30	iPNEZ iSNEZ	00	01 02	53 25	280	Very small.
633	30	e	03	15	50		Very small; local.
634	30	e	17	04	17		Very small; teleseismic.
635	30	ePZ eSN	17	09 14	22 48	3,700	Very small.
636	30	e	23	32	35		Very small; local.

The following tremors were reported felt but were not recorded in Manila:

PLACE	DATE	Time (GMT) H	M	INTENSITY
1. Buluan, Cotabato	Sept. 7	09	58	V
2. Davao City	" 7	09	59	III
3. Laoag	" 8	10	26	II
4. Iligan City	" 12	19	15	IV
5. Tacloban	" 24	01	38	II
6. Tacloban	" 24	02	08	II

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
WEATHER BUREAU
Manila

NO. 70

OCTOBER 1954

ϕ = 14° 40' N λ = 121° 05' E h = 70.4 m.Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H ; 1 E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 OCT.						
637	1	iPNEZ	01	32	46	280	Small.
		iSNEZ		33	18		
638	1	iPNEZ	01	41	57	265	Small.
		iSNEZ		42	27		
639	1	iPNEZ	03	04	43	5,880	Small to moderate.
		ePR_1		05	35	or 52.9°	
		ePR_2		07	57		
		eSNE		12	08		
640	1	ePZ	23	26	06	585	Small.
		eSZ		27	11		
641	2	ePNEZ	04	09	14	660	Very small.
		iSNEZ		10	28		
642	2	e	06	35	03		Very small; local.
643	2	ePZ	10	05	09	2,050	Very small.
		eSNE?		08	34	or 18.4°	
644	3	iPNEZ	02	56	18	5,800	Moderate.
		ePR_1		58	22	or 52.2°	
		iSNE	03	03	38		
645	3	e	04	12	04		Very small; teleseismic.
646	3	iPNEZ	08	57	05	165	Small.
		iSNE		57	24		
647	3	e	09	46	28		Very small; local.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 OCT.						
648	3	iPZ ePP iSNE	11	30 34 39	32 17 08	8,650 or 77.8°	Small to moderate.
649	3	e	19	23	44		Very small.
650	3	e	20	21	23		Very small.
651	3	iPNEZ iSNZ	23	25 28	42 08	2,050 or 18.4°	
652	4	iPEZ eSNE	01	35 37	52 54	1,090 or 9.8°	Small.
653	4	iPNEZ eSNEZ	08	15 18	23 05	1,600	Small.
654	4	iPNEZ ePNE ePPNE iSNE	09	42 44 45 49	00 08 22 34	6,000 or 54.0°	Small.
655	4	e	16	02	52		Very small; teleseismic.
656	4	e	17	36	11		Very small.
657	5	ePZ eSN	04	23 27	48 48	2,400 or 21.6°	Very small.
658	5	iPNEZ iSNEZ	16	37 38	41 14	290	Small.
***	6	iP iS	05	34 34	26 47	185	
***	6	eP iS	13	58 59	52 13	185	
659	7	iPZ eSZ?	02	54 56	54 20	765	Small.
660	7	iPNEZ eSNE?	11	23 23	16 38	190	Small.
661	7	iPNEZ iSNEZ	15	56 56	00 50	445	Small. Felt at: Roxas City Int.III
662	7	e	19	25	47		Very small; teleseismic.
663	8	ePNEZ eSNEZ	13	46 47	37 08	275	Small.
664	9	iPNEZ iSNEZ	06	05 06	39 09	265	Small.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 OCT.						
665	9	iPNEZ iSNEZ	09	45 45	06 36	265	Small.
666	9	iPNEZ iSNEZ	10	01 02	53 24	275	Small. Note: The four preceding quakes are very similar to each other.
667	9	e	17	07	50		Very small.
	10						Power failure at: 00 00 xx Power on at: 04 35 xx
668	11	e	01	51	26		Very small; local.
669	11	iPNEZ eSZ	06	29 29	24 46	190	Very small. Felt at: Daet Int.III Tentative epicenter: 14° 05'N ; 122° 45'E.
670	11	e	13	55	35		Very small; teleseismic.
671	11	e	16	20	37		Very small; teleseismic.
672	11	iPZ iSZ	17	21 28	00 47	6,200	Very small.
673	12	e	17	25	14		Very small.
674	12	ePNEZ eSZ	23	29 29	20 41	185	Very small.
675	13	iPNEZ iSZ	04	04 04	15 45	265	Small. Note: Similar to quakes of October 8 and 9.
676	13	e	04	38	28		Very small.
677	14	iPNEZ iSNEZ	01	40 44	12 20	2,700 or 24.3°	Small to moderate.
678	15	e	06	58	25		Very small; local.
679	16	iPZ eSNEZ	03	53 54	24 25	540	Small.
680	17	e	01	36	55		Very small; local.
	17						Power failure at: 07 19 00 Power on a t: 10 15 00
681	19	iPNEZ iSNEZ	01	04 04	04 23	165	Small to modera te.
682	20	ePZ eSZ?	13	57 59	12 26	1,400	Very small.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 OCT.						
683	20	iPNEZ	23	47	06	2,800	Small.
		ePR_1		47	45	or 25.2	
		eSNE?		51	36		
684	21	ePZ	00	21	05	7,100	Small.
		iPR_1		23	03	or 63.9°	
		eSN		29	43		
685	21	ePZ	06	38	04	570	
		eSZ		39	08		
686	21	e	07	14	41		Very small; teleseismic.
687	22	iPNEZ	05	58	10	145	Very small.
		eSNE		58	27		
688	22	ePZ	07	42	41	540	Very small.
		eSZ?		43	42		
689	23	e	03	38	06		Very small.
	23						Power failure at: 07 01 28 Power on at: 07 13 00
690	24	ePNEZ	00	51	50	390	Small.
		iSNE		52	34		
691	24	iPNEZ	13	54	12	210	Small.
		iSNEZ		54	38		
692	25	iPNEZ	00	15	13	910	Very small.
		iSNEZ		16	55		
693	25	e	06	19	19		Very small; teleseismic.
694	26	ePZ	18	29	21	300	Very small.
		eSZ		29	54		
695	27	iPNEZ	08	21	35	200	Small to moderate.
		iSNEZ		22	08		Felt at: Baguio Int.II
696	27	e	20	14	30		Very small.
***	28	iP	06	23	00	155	Felt at: Dadiangas Int.II
		iS		23	18		
697	28	e	13	55	24		Very small; local.
698	29	iPNEZ	06	55	30	290	Very small.
		iSNEZ		56	03		
699	29	e	11	19	18		Very small; teleseismic.
700	20	ePZ	22	00	31	575	Very small.
		eSZ		01	36		
701	31	ePZ	23	22	51	6,250	Very small.
		eSNE		30	41	or 56.3°	

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
GEOPHYSICAL DIVISION
WEATHER BUREAU
Manila

NO. 71

NOVEMBER 1954

ϕ = 14° 40' N

λ = 121° 05' E

h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H 1 one E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

***1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE kms.	REMARKS
	1954 NOV.						
702	1	e	11	44	29		Very small; large microseisms Recorded also at Mambajao. Mambajao distance: 400 kms.
703	2	iPZ eSZ	08	29 33	15 08	2,400 or 21.6°	Small to moderate. Horizontal components masked by large microseisms.
704	2	e	10	31	55		Very small; teleseismic.
705	2	e	10	44	55		Very small; teleseismic.
706	2	e	13	20	35		Very small; local.
707	3	e	08	56	55		Very small; local.
708	4	e	14	38	49		Very small; local.
709	4	ePZ eSZ	17	19 20	32 01	245	Very small.
710	5	e	18	57	39		Very small; local.
711	5	e	22	55	40		Very small; local.
712	6	ePNEZ eSNEZ	13	09 11	28 38	885 or 7.9°	Small.
713	7	ePNEZ eSNEZ	07	42 42	24 46	190	Very small.
	8						Large typhoon microseisms.
	9						Large typhoon microseisms.
	10						Microseisms returned to normal.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE kms.	REMARKS
	1954 NOV.						
714	11	e	20	29	03		Very small; local.
715	11	ePZ eSNEZ	03	06 07	48 05	150	Very small.
716	11	e	23	29	xx		Note: Tail end of a quake. P was not recorded because this quake occurred just as paper was being changed. Mambajao distance: 175 kms.
717	12	e	06	22	36		Very small;local.
718	12	e	10	23	07		Very small; teleseismic.
719	13	e	12	29	30		Very small.
720	13	ePZ eSN? e	13	28 32 34	52 12 36	2,050 or 18.4°	Very small. Microseisms increasing in amplitude.
721	14	e	15	50	53		Very small; local.
722	15	ePNEZ ePR_2 eSNE	16	31 32 35	51 27 51	2,560 or 23.1°	Small to moderate.
723	16	iPZ eSZ	19	47 47	20 44	210	Small. Horizontal components masked by large typhoon microseisms.
724	17	e	17	22	45		Very small; teleseismic.
725	17	ePZ eSZ	23	02 03	18 14	495	Very small. Horizontal components masked by large typhoon microseisms.
726	18	e	05	28	03		Very small; teleseismic.
727	18	e	20	51	11		Very small; teleseismic.
728	19	e	05	34	20		Small; teleseismic. Horizontal components masked by large microseisms.
729	19	iPZ iPR_2 iSZ	06	01 01 05	09 29 19	2,650 or 23.9°	Small.
***	19	eP	18	34	09		S difficult to determine.
730	20	e	20	28	45		Very small; local.
731	20	e	03	32	13		Very small; local.
732	20	e	16	52	29		Very small; local.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE kms.	REMARKS
	NOV.						
733	21	e	04	52	38		Very small; teleseismic.
734	21	e	05	08	20		Very small; local.
735	21	e	07	49	12		Very small; teleseismic.
736	21	iPNEZ iSNEZ	19	16 16	14 42	245	Felt at: Aurora, Quezon Int. III Epicenter: 14° 45'N; 123°45'E
737	22	e	10	34	23		Very small; probably teleseismic.
738	22	e	12	35	14		Very small; local.
739	23	e	02	36	52		Very small; teleseismic.
740	23	e	05	56	19		Very small; teleseismic.
741	23	e	18	08	15		Very small; teleseismic.
742	23	e	10	26	19		Very small; teleseismic.
743	23	e	10	37	26		Very small; teleseismic.
744	23	ePNEZ eSNEZ	14	40 41	10 34	750	Very small.
745	23	ePNEZ eSN	21	21 28	43 17	5,100 or 45.9°	Very small.
746	24	e	00	43	45		Very small; teleseismic.
747	24	iPNEZ iSNEZ	16	57 58	00 09	615	
748	24	e	22	09	05		Very small; local.
749	25	ePZ eSZ	05	36 36	00 43	380	Very small.
750	25	ePZ eSE	08	19 20	47 35	425	Very small.
751	25	iPZ e	11	30 33	14 40		Small. S uncertain.
752	25	e	12	12	12		Very small; teleseismic.
753	25	e	18	59	00		Very small; local.
754	25	iPNEZ ePR_1 iPR_2 iSNEZ	21	43 45 47 51	42 50 15 52	6,700 or 60.3°	Small to moderate.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE kms.	R E M A R K
	1954 NOV.						
755	27	ePZ eSNE	21	31 32	02 10	605	Very small.
756	28	e	01	48	04		Very small; local.
***	29	eP eS	02	58 58	00 50	445	
757	30	e	12	09	xx		Very small; local.

REPUBLIC OF THE PHILIPPINES
Department of Commerce and Industry
GEOPHYSICAL DIVISION
WEATHER BUREAU
Manila

NO. 72

DECEMBER 1954

ϕ = 14° 40' N

λ = 121° 05' E

h = 70.4 m. Tuff

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INSTRUMENTS

2 Sprengnether horizontal seismometers, Series H (for microseismic work). Sprengnether seismometers, Series D-H ; one E-W horizontal component and one vertical component ; Series H for N-S component (long period).

Data taken from Sprengnether Series D-H and Series H N-S component.

*** 1 Louckes-Omori horizontal seismograph located at 9° 15' N ; 125° 36' E Mambajao, Camiguin del Sur, Misamis Oriental. Magnification = 200.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	R E M A R K S
	1954 DEC						
***	2	ePNE	08	16	00	290	Very small.
		iSNE		16	33		
758	3	ePZ	11	28	26	265	Very small. Horizontal components masked by microseisms.
		eSZ		28	56		
759	4	ePNEZ	07	07	47	3,600 or 32.4°	Small.
		ePR_2		09	12		
		eSNE		13	08		
		Lr		16	05		
		Lq		19	03		
760	4	iPNEZ	18	10	06	320	Small.
		iSNEZ		10	42		
761	4	e	18	51	05		Very small; teleseismic.
***	5	iPNE	18	42	00	275	Very small.
		iSNE		42	31		
762	5	e	19	33	07		Very small.
763	6	ePZ	02	50	50	810	Very small.
		eSZ		52	30		
764	6	ePZ	15	47	43	1,450	Very small.
		eSN		49	58		
***	6	ePNE	15	49	50	435	Very small.
		iSNE		50	39		
***	6	ePNE	18	59	08	150	Very small.
		iSNE		59	25		
765	6	e	22	02	44		Very small.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 DEC						
766	7	iPNEZ eSNE	14	51 53	25 44	1,420	Very small. Felt at: Mambajao Int. I
767	7	e	21	40	56		Very small.
768	8	iPNEZ iSEZ	01	50 50	30 50	175	Very small.
769	9	e	04	23	12		Very small.
770	10	iPNEZ eSNE?	12	53 53	23 58	310	Small.
***	12	iPNE iSNE	21	00 00	31 48	150	Small.
***	13	iPNE iSNE	09	19 20	38 10	280	
771	13	e	09	22	46		Very small. Felt at: Hinatuan Int. II Davao Int. II Mambajao Int. I Tentative epicenter: 6° 35' N ; 126° 40' E
772	15	iPZ iSZ	16	07 07	05 31	230	Very small. Horizontal components masked by microseisms.
773	16	e	07	09	37		Very small; local.
774	16	ePZ eSZ	19	06 07	53 40	415	
***	16	iPNE iSNE	22	17 17	55 59	35	Small.
	18						Microseisms returned to normal.
775	19	iPNEZ iSNEZ	03	05 06	44 05	185	Small.
776	19	ePZ eSZ	08	56 57	09 02	470	Very small.
777	19	ePP ePPP eSKSP eSS	10 11	44 48 53 01	42 24 00 02	18,890 or 170°	Very small.
778	21	iPNEZ iSNEZ	01	23 24	43 49	585	Small. Felt at: Calayan Int. II Basco Int. II
779	21	iPNEZ iSNEZ	02	49 50	23 38	670	Small.

NO.	DATE	PHASE	GREENWICH TIME h	m	s	DISTANCE Kms.	REMARKS
	1954 DEC						
780	21	iPNEZ	12	03	34	3,520	Very small.
		ePR_2		04	54	or 31.7°	
		eP_cP		06	04		
		eSNE		08	54		
		Lq		10	18		
781	21	ePP	20	13	40	11,550	Very small.
		iSNE		20	49	or 104°	
782	22	e	04	25	43		Very small; teleseismic.
	24						Microseisms started to increase in amplitude.
783	26	e	13	23	00		Very small.
***	27	iPNE	06	52	14	1,700	Small.
		iSNE		54	56		
784	27	iPNEZ	06	52	24	2,600	Small.
		iSNZ		56	26	or 23.4°	
785	28	iPNEZ	01	07	55	4,000	Small.
		ePR_2		09	17	or 36.0°	
		eSNZ		13	37		
786	28	iPNEZ	15	05	31	180	Small.
		iSNEZ		05	52		
***	30	iPNE	01	44	20	140	Small.
		iSNE		44	36		

The following tremor was reported felt but was not recorded in Manila:

PLACE	DATE	TIME (GMT)	INTENSITY
Romblon	Dec. 8	09h 05m	IV