

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

254
Somed
by Mr. Hughes

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39"

Long. E 120° 34' 47"

Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 5367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.67 "	2451
Photoelectric	N-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000
Visual recording				

JANUARY 1959

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
	1	No quakes recorded.		
1)	2	13 - 58 - 40	ePb	} Very small. $\Delta b = 470$ Km.
		59 - 33	iSb	
2)		21 - 31 - 42	ePg	} Very small. $\Delta g = 35$ Km.
		46	eSg	
3)	3	22 - 23 - 32	iPg	} Very small. $\Delta g = 100$ Km. Felt in Baguio, Int. I.
		44	iSg	
4)	✓ 4	03 - 22 - 30	eP	Distant.
5)		21 - 14 - 12	iP	Very small.
6)	HHH 5	09 - 36 - 41	iP	Distant.
7)		13 - 57 - 34	ePb	} Very small. $\Delta b = 155$ Km.
		52	iSb	
8)	6	23 - 50 - 06	iPb	} Very small. $\Delta b = 165$ Km.
		25	eSb	
9)	7	09 - 12 - 25	iPg	} Very small. $\Delta g = 35$ Km. Felt in Baguio, Int. III at Mirador. Operated starting pendulum of strong motion seismograph. No record made.
		29	iSg	
10)		09 - 58 - 18	eP	Very small.
11)		10 - 08 - 44	iPg	} Very small. $\Delta g = 35$ Km.
		48	iSg	
12)		11 - 45 - 22	ePb	} Very small. $\Delta b = 283$ Km.
		54	iSb	
13)		15 - 12 - 18	ePg	} Very small. $\Delta g = 75$ Km.
		27	iSg	
14)	✓ 8	01 - 53 - 28	iP	Very small.
15)	✓	22 - 41 - 55	eP	} Distant. $\Delta = 3090$ Km. = 27.8°.
		46 - 45	eS	

January 1959...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
16)	9	06 - 44 - 58	eP	Very small. Distant. $\Delta = 1065 \text{ Km.} = 9.6^\circ$.
17)		07 - 18 - 04	eP	
		20 - 03	iS	
18)	10	16 - 51 - 50	ePg	Very small. $\Delta g = 114 \text{ Km.}$
		52 - 04	iSg	
19)		21 - 54 - 56	eP	Very small.
20)	11	02 - 31 - 12	ePg	Very small. $\Delta g = 85 \text{ Km.}$
		22	iSg	
21)		16 - 40 - 00	ePg	Very small. $\Delta g = 114 \text{ Km.}$
		14	iSg	
22)	12	17 - 51 - 36	iP	Teleseismic.
✓ 23)	13	01 - 20 - 53	iP	Distant. $\Delta = 2845 \text{ Km.} = 25.6^\circ$.
		25 - 25	iS	
24)	14	07 - 26 - 22	ePb	Very small. $\Delta b = 300 \text{ Km.}$
		56	iSb	
25)	15	05 - 14 - 31	ePg	Very small. $\Delta g = 114 \text{ Km.}$
		45	iSg	
26)		15 - 43 - 16	ePb	Very small. $\Delta b = 175 \text{ Km.}$
		36	iSb	
27)		18 - 46 - 42	ePb	Very small. $\Delta b = 140 \text{ Km.}$
		58	iSb	
✓ 28)		21 - 30 - 59	iP	Distant. $\Delta = 7020 \text{ Km.} = 63.2^\circ$.
		39 - 38	iS	
29)		22 - 17 - 54	ePb	Very small. $\Delta b = 445 \text{ Km.}$
		18 - 44	iSb	
30)	16	10 - 38 - 17	ePg	Very small. $\Delta g = 58 \text{ Km.}$
		24	iSg	
31)		14 - 52 - 08	ePg	Very small. $\Delta b = 515 \text{ Km.}$
		53 - 06	iSb	
32)		20 - 32 - 10	ePb	Very small. $\Delta b = 495 \text{ Km.}$
		33 - 06	iSb	
33)	17	01 - 18 - 58	ePb	Very small. $\Delta b = 140 \text{ Km.}$
		19 - 14	iSb	
✓ 34)		09 - 26 - 42	iPb	Small. $\Delta b = 890 \text{ Km.}$ Felt at Surigao IV, Hinatuan II, Mambajao I.
		28 - 22	iSb	
35)	18	14 - 19 - 08	ePg	Very small. $\Delta g = 110 \text{ Km.}$
		21	iSg	
36)	19	00 - 44 - 40	ePb	Very small. $\Delta b = 390 \text{ Km.}$
		45 - 24	eSb	
✓ 37)	20	16 - 51 - 52	eP	Distant. $\Delta = 3355 \text{ Km.} = 30.2^\circ$.
		56 - 59	iS	

January 1959...

	Date	Time (GMT)	Phase	Remarks
38)	✓ 21	11 - 08 - 53	iPb	Very small. $\Delta b = 245$ Km.
		09 - 21	iSb	
39)		18 - 30 - 28	iPb	Very small. $\Delta b = 245$ Km.
		56	iSb	
40)	✓ 22	05 - 16 - 22	iP	Distant. $\Delta = 3000$ Km. = 27.0° .
		21 - 05	iS	
41)		05 - 40 - 12	iP	Very small.
42)	✓	09 - 52 - 33	eP	
	23	No quakes recorded.		
43)	✓ 24	05 - 14 - 18	iP	Distant. $\Delta = 2745$ Km.
		18 - 43	iS	
44)	✓	07 - 55 - 14	eP	Distant. $\Delta = 2145$ Km. = 19.3° .
		58 - 51	eS	
45)		20 - 22 - 00	eP	Teleseismic.
	25	No quakes recorded.		
46)	26	18 - 12 - 28	iPg	Very small. $\Delta g = 110$ Km.
		41	iSg	
47)	27	20 - 12 - 39	eP	Very small.
48)		21 - 28 - 33	eP	
49)	✓ 28	14 - 03 - 57	iP	Very small.
50)	29	06 - 49 - 00	eP	Teleseismic.
51)		14 - 15 - 03	eP	Very small.
52)		18 - 34 - 45	eP	Very small.
53)	✓	20 - 31 - 53	eP	Very small.
54)	✓	21 - 08 - 45	eP	Very small.
55)	✓	21 - 24 - 35	eP	Distant.
56)	✓	23 - 36 - 55	eP	Distant. $\Delta = 3890$ Km. = 80.0° .
		47 - 09	iS	
57)	✓ 30	00 - 28 - 11	eP	Distant. $\Delta = 5120$ Km. = 46.1° .
		35 - 03	iS	
58)	✓	16 - 22 - 00	eP	Teleseismic.
59)	✓	18 - 20 - 39	eP	Very small.
60)	✓	20 - 44 - 41	iP	Distant. $\Delta = 4580$ Km. = 41.2° .
		51 - 03	iS	
61)	✓	22 - 23 - 33	iP	Distant. $\Delta = 3600$ Km. = 32.4° .
		28 - 55	iS	
	31	No quakes recorded.		

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Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification</u> (Dynamic) <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 5367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.67 "	2451
Photoelectric	N-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000
Visual recording				

FEBRUARY 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
1	No quakes recorded.		
62) ✓ 2 •	04 - 01 - 26	ePb	Distant.
3	No quakes recorded.		
63) 4	04 - 58 - 36	iP	Distant. Felt at Cebu, Int. II.
64) 5	01 - 08 - 55 59	ePg } iSg }	Very small. $\Delta g = 35$ Km.
65) 6	05 - 20 - 04	eP	Distant.
66) 6	06 - 02 - 27	eP }	Distant. $\Delta = 1335$ Km. = 12.0°.
	04 - 51	iS }	
67) 6	07 - 29 - 20 46	ePb } iSb }	Very small. $\Delta b = 230$ Km.
68) 6	10 - 34 - 16 40	ePb } iSb }	Very small. $\Delta b = 210$ Km.
69) 6	12 - 10 - 45 11 - 17	ePb } iSb }	Very small. $\Delta b = 283$ Km.
70) ✓ 6 •	14 - 43 - 12 51 - 49	iP } eS }	Distant. $\Delta = 7000$ Km. = 63.0°.
71) 7	03 - 57 - 57	iP	Very small.
72) ✓ 7 •	09 - 56 - 48	eP }	Distant. $\Delta = 2490$ Km. = 22.4°.
	10 - 00 - 53	iS }	
73) 7	10 - 17 - 03 21 - 13	eP } eS }	Distant. $\Delta = 2555$ Km. = 23.0°.

February 1959...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
74)	8	16 - 51 - 19 41	ipb } isb }	Small. $\Delta b = 190$ Km. Felt at Villaviciosa, Abra Prov. Int. I.
75)	✓ 9	• 04 - 52 - 39 05 - 00 - 47	eP } iS }	Distant. $\Delta = 6480$ Km. = 58.3° .
76)		16 - 29 - 00 21	ipb } isb }	Small. $\Delta b = 185$ Km.
77)		17 - 29 - 33 30 - 00	ePb } eSb }	Very small. $\Delta b = 235$ Km.
78)	✓	• 21 - 20 - 44 27 - 15	iP } iS }	Distant. $\Delta = 4755$ Km. = 42.8° .
79)		22 - 07 - 36 50	ePg } iSg }	Very small. $\Delta g = 114$ Km.
80)	10	15 - 56 - 19 34	ePb } iSb }	Very small. $\Delta b = 130$ Km.
81)	✓ 11	• 03 - 46 - 00	eP	Distant.
82)		18 - 09 - 14	eP	Very small.
83)	12	✗ 18 - 01 - 00	eP	Teleseismic.
	13	No quakes recorded.		
84)	14	03 - 22 - 09 27	ePb } iSb }	Very small. $\Delta b = 155$ Km.
85)	✓	• 04 - 41 - 31 45 - 43	eP } iS }	Distant. $\Delta = 2560$ Km. = 23.2° .
86)	✓	• 22 - 24 - 11 31 - 13	eP } iS }	Distant. $\Delta = 5300$ Km. = 47.7° .
87)	15	• 04 - 21 - 05	eP	Distant.
88)	✓	• 04 - 57 - 47 05 - 04 - 55	iP } iS }	Distant. $\Delta = 5420$ Km. = 48.8° .
89)		20 - 05 - 00	eP	Teleseismic.
90)	16	14 - 38 - 47 39 - 01	ePg } iSg }	Very small. $\Delta g = 114$ Km.
91)		• 17 - 51 - 47	iP	Very small.
92)	✓ 17	• 12 - 13 - 42 22 - 16	iP } iS }	Distant. $\Delta = 6935$ Km. = 62.4° .
93)	✓	• 12 - 54 - 28	eP	Very small.
94)		20 - 20 - 20 46	ipb } isb }	Very small. $\Delta b = 230$ Km.

February 1959...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
95)	18	05 - 01 - 35	iPg	} Very small. $\Delta g = 110$ Km.
		48	eSg	
96)		09 - 50 - 06	iPb	} Small. $\Delta b = 210$ Km.
		30	iSb	
97)		17 - 34 - 26	iPb	} Very small. $\Delta b = 355$ Km.
		35 - 06	eSb	
98)	19	07 - 36 - 08	iPb	} Distant. $\Delta b = 1125$ Km. = 10.1° .
		38 - 14	iSb	
99)		14 - 24 - 48	iP	} Very small.
100)		14 - 51 - 26	ePg	
		37	iSg	} Very small. $\Delta g = 93$ Km.
101)	20	01 - 33 - 04	eP	} Very small.
102)		05 - 45 - 58	ePg	
		46 - 12	eSg	} Very small. $\Delta g = 114$ Km.
103)		06 - 39 - 10	ePg	
		24	iSg	} Very small. $\Delta g = 114$ Km.
104)		06 - 43 - 16	ePb	
		31	iSb	} Very small. $\Delta b = 130$ Km.
105)		08 - 10 - 20	eP	
				} Very small.
106)	21	05 - 20 - 54	ePb	} Distant. $\Delta b = 1125$ Km. = 10.1° .
		23 - 00	eSb	
107)		08 - 28 - 08	iPb	} Small. $\Delta b = 210$ Km.
		32	iSb	
108)	22	01 - 02 - 12	ePg	} Very small. $\Delta g = 85$ Km.
		22	iSg	
109)		03 - 34 - 03	eP	} Distant.
110)		10 - 31 - 30	iP	
		35 - 40	iS	} Distant. $\Delta = 2555$ Km. = 23.0° .
111)		21 - 34 - 17	iPb	} Distant. $\Delta b = 1055$ Km. = 9.5° .
		36 - 15	iSb	
112)	23	02 - 05 - 45	eP	} Distant. $\Delta = 7155$ Km. = 64.4° .
		14 - 31	iS	
113)	24	03 - 52 - 29	ePg	} Very small. $\Delta g = 35$ Km.
		33	iSg	
114)		04 - 40 - 49	ePg	} Very small. $\Delta g = 68$ Km.
		57	iSg	
115)		12 - 21 - 02	ePb	} Distant. $\Delta b = 820$ Km. = 7.4° . Felt at Iloilo, Int. IV; Roxas City, Int. III,
		22 - 34	iSb	
116)		12 - 47 - 08	ePb	} Distant. $\Delta b = 890$ Km. = 8.0° . Felt at Iloilo, Int. III; Roxas City, Int. III; Cuyo, Int. III; Cebu, Int. II.
		48 - 48	iSb	

February 1959...

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
117)	25	08 - 56 - 46	ePb	} Very small. $\Delta b = 335$ Km.
		57 - 24	iSb	
118)	✓ 25	11 - 23 - 10	eP	} Distant. $\Delta = 1955$ Km. = 17.6° .
		26 - 32	iS	
119)	✓ 25	20 - 12 - 29	iP	} Distant. $\Delta = 2200$ Km. = 19.8° .
		16 - 11	iS	
120)	26	01 - 45 - 07	ePb	} Very small. $\Delta b = 910$ Km. = 8.2° .
		46 - 49	iSb	
121)		19 - 40 - 08	ePb	} Very small. $\Delta b = 148$ Km.
		25	eSb	
122)	✓ 27	20 - 59 - 49	eP	} Distant. $\Delta = 1400$ Km. = 12.6° .
		21 - 02 - 19	iS	
123)	28	08 - 17 - 35	iPb	} Very small. $\Delta b = 190$ Km.
		57	iSb	
124)		18 - 04 - 16	iPb	} Very small. $\Delta b = 255$ Km.
		45	iSb	

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Instruments (All Sprengnethers) Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> Synchronous
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.57 "	2451
Photoelectric	N-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000

MARCH 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
125)	1 11 - 54 - 25	ePb	Very small. $\Delta b = 245$ Km.
	53	iSb	
126)	16 - 54 - 03	iP	Distant. $\Delta = 2410$ Km. = 21.7° .
	58 - 02	iS	
127)	20 - 34 - 12	ePb	Very small. $\Delta b = 283$ Km.
	44	iSb	
128)	2 09 - 19 - 14	eP	Distant. $\Delta = 3090$ Km. = 27.8° .
	24 - 04	iS	
129)	10 - 57 - 00	ePb	Very small. $\Delta b = 210$ Km.
	24	iSb	
130)	16 - 00 - 04	iP	Very small.
131)	3 14 - 39 - 23	ePb	Very small. $\Delta b = 148$ Km.
	40	iSb	
	4	No quakes recorded.	
	5	No quakes recorded.	
132)	6 20 - 44 - 00	eP	Teleseismic.
133)	7 09 - 18 - 11	eP	Distant. $\Delta = 3210$ Km. = 28.9° .
	25 - 09	eS	
134)	19 - 58 - 22	ePg	Very small. $\Delta g = 50$ Km.
	28	iSg	
135)	19 - 59 - 39	ePg	Very small. $\Delta g = 40$ Km.
	44	iSg	

March 1959...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
136)	7	20 - 55 - 43 49	iPg } iSg }	Very small. $\Delta g = 50$ Km.
137)	8	14 - 23 - 59 24 - 10	ePg } iSg }	Very small. $\Delta g = 93$ Km.
138)	9	03 - 21 - 03 07	ePg } eSg }	Very small. $\Delta b = 35$ Km.
139)		10 - 19 - 27 20 - 47	ePb } iSb }	Small. $\Delta b = 710$ Km. = 6.4° . Felt at Virac, Int. IV; Legaspi, Int. II.
140)		12 - 47 - 01 52	ePb } iSb }	Very small. $\Delta b = 450$ Km.
141)		15 - 36 - 25 39	ePg } eSg }	Very small. $\Delta g = 114$ Km.
142)	10	17 - 52 - 27 39	ePg } eSg }	Very small. $\Delta g = 100$ Km.
143)	11	05 - 52 - 19 23	ePg } iSg }	Very small. $\Delta g = 35$ Km.
144)		16 - 05 - 03 31	ePg } iSg }	Very small. $\Delta g = 245$ Km.
145)	✓ 12	01 - 34 - 39 39 - 09	iP } iS }	Distant. $\Delta = 2810$ Km. = 25.3° .
	13	No quakes recorded.		
146)	14	11 - 08 - 13 53	ePb } iSb }	Very small. $\Delta b = 355$ Km.
147)		17 - 20 - 11	eP }	Very small.
	15	No quakes recorded.		
	16	No quakes recorded.		
148)	✓ 17	08 - 28 - 39 31 - 21	iP } iS }	Distant. $\Delta = 1520$ Km. = 13.7° .
149)	✓ 18	00 - 44 - 39 47 - 29	eP } iS }	Distant. $\Delta = 1610$ Km. = 14.5° .
150)	19	02 - 04 - 16	iP }	Very small.
151)	20	20 - 51 - 13 41	ePb } iSb }	Very small. $\Delta b = 155$ Km.
	21	No quakes recorded.		

March 1959...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
	22	No quakes recorded.		
152)	23	10 - 48 - 32 49 - 02	ipb } isb }	Very small. $\Delta b = 265$ Km.
	24	No quakes recorded.		
	March 24 to end of month - frequent power failures, some for an hour or more.			
153)	25	19 - 43 - 25 58	ePb } isb }	Very small. $\Delta b = 290$ Km.
154)	26	04 - 43 - 10 19	ePg } isg }	Very small. $\Delta g = 75$ Km.
155)	✓	05 - 28 - 48 32 - 48	iP } is }	Distant. $\Delta = 2420$ Km. = 21.8° .
156)	27	18 - 31 - 17	iP	Very small.
157)		21 - 30 - 10 35	ipb } isb }	Small. $\Delta b = 220$ Km.
158)	28	17 - 12 - 27 13 - 31	ePb } isb }	Distant. $\Delta b = 570$ Km. = 5.1° .
159)	✓	19 - 57 - 27 20 - 05 - 59	iP } is }	Distant. $\Delta = 6900$ Km. = 62.1° .
160)		21 - 09 - 37 11 - 45	eP } is }	Distant. $\Delta = 1155$ Km. = 10.4° .
161)	29	11 - 03 - 57	eP	Distant.
162)	30	08 - 02 - 07 31	ePb } eSb }	Very small. $\Delta b = 210$ Km.
163)	31	11 - 59 - 06 13	ePg } isg }	Very small. $\Delta g = 58$ Km.

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April - June

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Lat. N. 16° 24' 39"

Long. E. 120° 34' 47"

Alt. 1507 meters

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		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.57 "	2451
Photoelectric Visual recording	N-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000

APRIL 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
	April 1 to 30		- Frequent power failures, some for an hour or more.
164)	1 21 - 41 - 19 47 - 16	iP iS	Distant. $\Delta = 4120 \text{ Km.} = 37.1^\circ$
165)	2 04 - 06 - 09 19	ePg eSg	Very small. $\Delta g = 85 \text{ Km.}$
166)	05 - 33 - 19 35	ePb iSb	Very small. $\Delta b = 140 \text{ Km.}$
167)	19 - 22 - 35 24 - 06	iPb iSb	Small. $\Delta b = 810 \text{ Km.} = 7.3^\circ$
168)	3 05 - 50 - 30 06 - 25 - 50	eP eP	Distant. Very small.
170)	12 - 02 - 04 23	ePb iSb	Very small. $\Delta b = 165 \text{ Km.}$
171)	14 - 44 - 26 49 - 31	eP iS	Distant. Power failure 20 - 04 to 20 - 48 when final waves of a distant quake appear. Distant. $\Delta = 3335 \text{ Km.} = 30.0^\circ$
172)	16 - 15 - 00	eP	Teleseismic.
173)	4 00 - 01 - 53 02 - 01	ePg iSg	Very small. $\Delta g = 68 \text{ Km.}$
174)	06 - 56 - 15	eP	Very small.

April 1959 ...

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
175)	5	10 - 34 - 13 35 - 00	iPb iSb	Very small. $\Delta b = 415$ Km. Distant. Power failure 19 - 02 to 19 - 47 when final waves of a distant quake appear.
176)	✓ 5	23 - 36 - 08 41 - 50	eP iS	Distant. $\Delta = 3910$ Km. = 35.2°
177)	6	14 - 07 - 33 08 - 02	ePb iSb	Very small. $\Delta b = 435$ Km.
178)	✓ 6	14 - 18 - 18 23 - 22	iP iS	Distant. $\Delta = 3310$ Km. = 29.8°
7	No Quakes recorded.			
179)	✓ 8	01 - 34 - 26	iP	Very small. Distant. Very small. $\Delta b = 140$ Km.
180)	✓ 8	08 - 12 - 56	iP	
181)	✓ 8	12 - 04 - 04	iP	
182)	✓ 8	13 - 05 - 40 56	ePb iSb	
183)	✓ 9	06 - 29 - 30 38 - 30	eP iS	Distant. $\Delta = 7455$ Km. = 67.1°
184)	✓ 9	13 - 13 - 20 14 - 20	ePb iSb	Very small. $\Delta b = 535$ Km.
185)	✓ 9	17 - 14 - 05	eP	Very small.
186)	✓ 9	17 - 55 - 58 56 - 16	ePb iSb	Very small. $\Delta b = 155$ Km.
187)	✓ 10	05 - 57 - 52 06 - 06 - 14	iP iS	Distant. $\Delta = 6720$ Km. = 60.5°
188)	✓ 11	11 - 33 - 17 36 - 50	iP iS	Distant. $\Delta = 2090$ Km. = 18.8°
189)	12	00 - 32 - 12 35	ePb iSb	Very small. $\Delta b = 200$ Km.
190)	12	01 - 45 - 54 46 - 12	ePb iSb	Very small. $\Delta b = 155$ Km.
191)	12	08 - 23 - 04	eP	Teleseismic.
192)	12	10 - 04 - 58 05 - 20	ePb iSb	Very small. $\Delta b = 190$ Km.
193)	✓ 12	10 - 13 - 56	iP	Very small.
194)	✓ 12	11 - 01 - 18 03 - 48	iP eS	Distant. $\Delta = 1400$ Km. = 12.6°
195)	✓ 12	15 - 27 - 50 32 - 18	iP iS	Distant. $\Delta = 2790$ Km. = 25.1°
196)	12	17 - 32 - 36 54	ePb iSb	Very small. $\Delta b = 155$ Km.

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39"

Long. E. 120° 34' 47"

Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u>	
		<u>Seism.</u>	<u>Galv.</u>	<u>Synchronous</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa	3367
	E-W	10.90 "	11.70 "		2000
	N-S	1.84 "	1.57 "		2451
Photoelectric	N-S	11.80 "	12.00 "		1000
	Visual recording	E-W	1.54 "		3000

MAY 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
May 1-17			Frequent power failures, some for an hour or more.
240)	1	18 - 25 - 43	} Very small. $\Delta g = 50$ Km.
		49	
241)		18 - 30 - 25	} Very small. $\Delta g = 40$ Km.
		30	
242)		18 - 59 - 25	} Very small. $\Delta b = 140$ Km.
		41	
243)		22 - 48 - 03	} Very small. $\Delta g = 40$ Km.
		08	
244)	2	03 - 34 - 55	} Very small. $\Delta g = 40$ Km.
		35 - 00	
245)		03 - 57 - 45	} Very small. $\Delta g = 35$ Km.
		49	
246)		03 - 59 - 59	} Very small. $\Delta g = 50$ Km.
		04 - 00 - 05	
247)		04 - 04 - 09	} Very small. $\Delta g = 40$ Km.
		14	
248)		07 - 34 - 05	} Very small. $\Delta g = 40$ Km.
		10	
249)	3	20 - 13 - 58	} Very small. $\Delta g = 40$ Km.
		14 - 03	

Seismological Bulletin, May 1959

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
250)	4	03 - 19 - 23 20 - 48	iPb iSb	} Very small. $\Delta b = 220$ Km.
251)		04 - 45 - 53	eP	
252)		04 - 47 - 34 44	ePg eSg	} Very small. $\Delta g = 85$ Km.
253)	✓ 07 - 31 - 06		iS	
				Distant. KAMCHATKA Quake. Power off 06:01 to 07:29 when waves of distant quake appear. "P" onset not known.
254)	5	00 - 29 - 53 30 - 22	iPb iSb	} Very small. $\Delta b = 255$ Km.
255)	✓ 19 - 12 - 52 20 - 00		eP iS	
256)	6	18 - 57 - 05 19 - 00 - 52	iP iS	} Distant. $\Delta = 2265$ Km. = 20.4°
257)	7	✓ 00 - 10 - 04 15 - 36	iP iS	
258)		✓ 20 - 28 - 12 32 - 54	iP iS	} Distant. $\Delta = 2980$ Km. = 26.8°
259)	8	23 - 38 - 07	iP	
260)		23 - 59 - 30 24 - 01 - 04	ePb iSb	} Very small. Very small. $\Delta b = 300$ Km.
9		No Quakes Recorded.		
261)	10	07 - 27 - 34 53	ePb iSb	} Very small. $\Delta b = 165$ Km.
262)	11	19 - 50 - 07 38	iPb iSb	
263)	12	✓ 05 - 06 - 55 14 - 22	eP iS	} Distant. $\Delta = 5745$ Km. = 51.7°
264)		08 - 14 - 14	iP	
265)		✓ 10 - 07 - 08 12 - 58	iP iS	} Very small. Distant. $\Delta = 4035$ Km. = 36.5°
266)		✓ 22 - 10 - 06	iP	
13		No Quakes Recorded.		
267)	14	✓ 00 - 54 - 28	iP	} Teleseismic. Distant. $\Delta = 6090$ Km. = 98.0°
268)		05 - 49 - 36 59 - 54	iP iS	
15		No Quakes Recorded.		

Seismological Bulletin, May 1959

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
269)	16	00 - 58 - 35	ePb	} Very small. $\Delta g = 250$ Km.
		59 - 01	iSb	
270)	✓ 06	23 - 47	iP	} Distant. $\Delta = 4110$ Km. = 37.0°
		29 - 41	iS	
271)		17 - 13 - 55	ePg	} Very small. $\Delta g = 35$ Km. Felt at Baguio, Int. I. Did not operate starting pendulum of strong motion seismograph.
		59	iSg	
272)	17	09 - 13 - 57	iPg	} Very small. $\Delta g = 40$ Km.
		14 - 02	iSg	
273)		22 - 23 - 42	ePg	} Very small. $\Delta g = 40$ Km.
		47	iSg	
274)	18	09 - 55 - 00	eP	} Teleseismic.
275)		14 - 15 - 08	iPg	
		20	iSg	} Very small. $\Delta g = 100$ Km.
276)	19	03 - 39 - 28	iPg	} Very small. $\Delta g = 114$ Km.
		42	iSg	
277)		07 - 51 - 40	ePb	} Small. $\Delta b = 318$ Km.
		52 - 16	iSb	
278)		11 - 28 - 49	ePg	} Very small. $\Delta g = 40$ Km.
		54	iSg	
279)	20	06 - 12 - 06	eP	} Very small.
280)		11 - 30 - 47	iP	
		34 - 18	iS	} Distant. $\Delta = 2065$ Km. = 18.6°
281)		12 - 40 - 52	iPb	} Very small. $\Delta b = 140$ Km.
		41 - 08	iSb	
282)		16 - 14 - 42	iPb	} Very small. $\Delta g = 114$ Km.
		56	iSg	
283)	✓ 19	42 - 17	iP	} Distant.
284)	21	02 - 23 - 32	iPb	} Small. $\Delta b = 190$ Km. Felt in Baguio, Int. II; Bangued, Abra, Int. I. Operated starting pendulum of strong motion seismograph. No record made.
		54	iSb	
285)		21 - 12 - 24	ePg	} Very small. $\Delta g = 35$ Km.
		28	iSg	
286)		22 - 11 - 09	ePb	} Very small. $\Delta b = 310$ Km.
		44	iSb	
287)	✓ 22	07 - 06 - 14	ePb	} Very small. $\Delta b = 515$ Km. = 4.6°
		07 - 12	eSb	
288)	23	08 - 38 - 10	ePb	} Very small. $\Delta b = 165$ Km.
		29	iSb	

Seismological Bulletin, May 1959

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
289)	23	17 - 03 - 56 04 - 19	ePb iSb	} Very small. $\Delta b = 200$ Km.
290)	24	• 11 - 34 - 29	iP	} Very small. Distant. $\Delta = 1910$ Km. = 17.2°
291)		19 - 06 - 46 10 - 04	iP iS	
292)	25	00 - 37 - 43 48	ePg iSg	} Very small. $\Delta g = 40$ Km.
293)		07 - 21 - 58 22 - 04	iPg iSg	} Very small. $\Delta g = 50$ Km.
294)	26	✓ 04 - 15 - 57 18 - 08	iP iS	} Distant. $\Delta = 1190$ Km. = 10.7°
295)	27	03 - 41 - 24	iP	} Very small. Small. $\Delta b = 495$ Km. = 4.4° Felt at Catarman, Int. II; Catbalogan, Int. II.
296)		21 - 53 - 44 57 - 40	iPb iSb	
297)	28	✓ 15 - 15 - 50 16 - 50	iPb iSb	} Small. $\Delta b = 535$ Km. = 4.8° Felt at Legaspi, Int. IV; Virac, Int. III.
298)		18 - 03 - 30	eP	} Very small. Very small. $\Delta b = 535$ Km. = 4.8°
299)		18 - 38 - 10 39 - 10	ePb iSb	
300)	29	✓ 10 - 52 - 46 58	iPg iSg	} Small. $\Delta g = 100$ Km.
301)	30	04 - 51 - 37 52 - 14	ePb iSb	} Very small. $\Delta b = 325$ Km.
302)		09 - 55 - 22 30	ePg iSg	} Very small. $\Delta g = 68$ Km.
303)		20 - 24 - 38	iP	} Very small.
304)	31	✓ 09 - 38 - 03 42 - 23	iP iS	} Distant. $\Delta = 545$ Km. = 40.9°

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MANILA OBSERVATORY
 Mirador, Baguio City
 Philippines

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39" Long. E. 120° 34' 47" Alt. 1507 meters

Instruments (All Sprengnethers) Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 sec	11.70 sec	2000
	N-S	1.84 sec	1.57 sec	2451
Photoelectric Visual recording	N-S	11.80 sec	12.00 sec	1000
	E-W	1.54 sec	1.49 sec	3000

JUNE 1959

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
305)	1	05 - 38 - 24	iP	Very small.
306)		05 - 43 - 54	iP	Very small.
307)		12 - 39 - 37	iP	Very small.
308)		12 - 45 - 18	iP	Distant. $\Delta = 2035 \text{ Km.} = 18.3^\circ$.
		48 - 46	iS	
309)		17 - 15 - 09	iP	Distant. $\Delta = 4565 \text{ Km.} = 41.1^\circ$.
		21 - 30	iS	
310)		19 - 21 - 08	ePg	Very small. $\Delta g = 93 \text{ Km.}$
		19	iSg	
311)	2	00 - 51 - 32	eP	Distant.
312)		02 - 00 - 15	eP	Distant. $\Delta = 1810 \text{ Km.} = 16.3^\circ$.
		03 - 24	iS	
313)		02 - 38 - 58	iPb	Small. $\Delta b = 425 \text{ Km.}$
		39 - 46	iSb	
314)		04 - 58 - 29	iPb	Moderate. $\Delta b = 505 \text{ Km.} = 4.5^\circ$.
		59 - 26	iSb	
315)		05 - 43 - 48	iPb	Small. $\Delta b = 765 \text{ Km.} = 6.8^\circ$.
		45 - 14	eSb	
316)		06 - 02 - 04	eP	Very small.
317)		06 - 05 - 52	eP	Very small.
318)		08 - 28 - 04	ePb	Very small. $\Delta b = 515 \text{ Km.} = 4.6^\circ$.
		29 - 02	eSb	

June 1959 - - page 2

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
319)	2	16 - 21 - 16	ePg	Very small. $\Delta g = 50$ Km.
		22	iSg	
320)		16 - 54 - 52	ePg	Very small. $\Delta g = 58$ Km.
		59	iSg	
321)		19 - 15 - 32	ePb	Distant. $\Delta b = 710$ Km. = 6.4° .
		16 - 52	iSb	
322)	3	03 - 01 - 00	ePg	Very small. $\Delta g = 110$ Km.
		13	iSg	
323)		11 - 07 - 10	ePb	Very small. $\Delta b = 190$ Km.
		32	iSb	
324)		20 - 00 - 04	ePb	Very small. $\Delta b = 460$ Km.
		56	iSb	
325)		23 - 01 - 08	ePg	Very small. $\Delta g = 100$ Km.
		20	iSg	
326)	4	23 - 38 - 58	ePb	Very small. $\Delta b = 535$ Km. = 4.8° .
		39 - 58	iSb	
327)	5	04 - 24 - 30	iPb	Very small. $\Delta b = 515$ Km. = 4.6° .
		25 - 28	iSb	
328)		08 - 35 - 48	ePb	Very small. $\Delta b = 515$ Km. = 4.6° .
		36 - 46	iSb	
329)		09 - 11 - 52	ePb	Very small. $\Delta b = 405$ Km.
		12 - 38	eSb	
330)		10 - 49 - 16	ePg	Very small. $\Delta g = 93$ Km.
		27	iSg	
	6	No Quakes Recorded.		
331)	7	00 - 54 - 51	eP	Distant.
332)		02 - 40 - 17	ePb	Distant. $\Delta b = 945$ Km. = 8.5° .
		42 - 03	eSb	
333)		03 - 47 - 22	iP	Distant. $\Delta = 860$ Km. = 7.7° . Felt at Surigao, Int. III.
		48 - 59	iS	
334)		05 - 34 - 31	iP	Very small.
335)		06 - 45 - 04	iP	Distant. $\Delta = 1765$ Km. = 15.9° .
		48 - 09	iS	
336)		07 - 23 - 09	iP	Very small.
337)		08 - 34 - 14	ePb	Distant. $\Delta b = 1115$ Km. = 10.0° .
		36 - 19	iSb	
338)		09 - 00 - 17	eP	Very small.
339)	8	01 - 07 - 32	eP	Distant. $\Delta = 1690$ Km. = 15.2° .
		10 - 30	iS	
340)		11 - 07 - 54	eP	Distant. $\Delta = 1565$ Km. = 14.1° .
		10 - 40	iS	
341)	9	08 - 55 - 34	ePb	Very small. $\Delta b = 310$ Km.
		56 - 09	iSb	

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
363)	17	11 - 47 - 10 20	ePg } iSg }	Very small. $\Delta g = 85 \text{ Km.}$
364)	18	15 - 40 - 09 47 - 15	eP } iS }	Distant. $\Delta = 5400 \text{ Km.} = 48.6^\circ.$
365)	19	12 - 07 - 09 13	ePg } eSg }	Very small. $\Delta g = 35 \text{ Km.}$
366)		18 - 43 - 46 44 - 47	ePg } iSb }	Very small. $\Delta b = 540 \text{ Km.} = 4.9^\circ.$
367)	20	15 - 27 - 56 28 - 09	ePg } iSg }	Very small. $\Delta g = 110 \text{ Km.}$
368)		15 - 53 - 03 18	iPb } iSb }	Very small. $\Delta b = 130 \text{ Km.}$
369)		17 - 28 - 08 18	iPg } iSg }	Very small. $\Delta g = 85 \text{ Km.}$
370)	21	14 - 17 - 29	iP	Distant.
371)		15 - 17 - 24 50	iPb } iSb }	Very small. $\Delta b = 230 \text{ Km.}$
372)		17 - 37 - 56 38 - 14	ePb } iSb }	Very small. $\Delta b = 155 \text{ Km.}$
373)		19 - 24 - 00	eP	Teleseismic.
374)		22 - 21 - 12	eP	Very small.
375)	22	18 - 10 - 14 46	ePb } iSb }	Very small. $\Delta b = 283 \text{ Km.}$
376)		21 - 40 - 40 48	ePg } iSg }	Very small. $\Delta g = 68 \text{ Km.}$
377)	23	11 - 02 - 22 30	iPg } iSg }	Very small. $\Delta g = 68 \text{ Km.}$
378)		21 - 25 - 33 26 - 07	iPg } iSg }	Very small. $\Delta g = 300 \text{ Km.}$
379)	24	05 - 33 - 57	eP	Very small.
380)		14 - 40 - 50 41 - 26	iPb } iSb }	Very small. $\Delta b = 318 \text{ Km.}$
381)		15 - 55 - 59 56 - 20	iPb } iSb }	Small. $\Delta b = 185 \text{ Km.}$
382)		17 - 40 - 08 35	ePb } iSb }	Very small. $\Delta b = 235 \text{ Km.}$
383)		22 - 25 - 22 31	ePg } iSg }	Very small. $\Delta g = 75 \text{ Km.}$
384)	25	01 - 34 - 30 38	iPg } iSg }	Very small. $\Delta g = 68 \text{ Km.}$

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
	26	No Quakes Recorded.		
385)	27	19 - 16 - 04 25 - 30	iP } iS }	Distant. $\Delta = 8000$ Km. = 72.0° .
386)	28	04 - 06 - 53 07 - 06	iPg } iSg }	Very small. $\Delta g = 110$ Km.
387)		09 - 54 - 40	iP	Very small.
388)	19	19 - 48 - 58 53 - 39	iP } iS }	Distant. $\Delta = 2965$ Km. = 26.7° .
389)	29	07 - 23 - 59 30 - 13	eP } iS }	Distant. $\Delta = 4435$ Km. = 39.9° .
390)		13 - 22 - 35 24 - 55	eP } iS }	Distant. $\Delta = 1290$ Km. = 11.6° .
391)		13 - 57 - 55 58 - 11	ePb } iSb }	Very small. $\Delta b = 140$ Km.
392)	30	03 - 54 - 08 39	ePb } iSb }	Very small. $\Delta b = 275$ Km.

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MANILA OBSERVATORY
Mirador, Baguio City
PHILIPPINES

254

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39"

Long. E. 120° 34' 47"

Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.57 sec	Circa 3367
	E-W	10.90 sec	11.70 sec	2000
	N-S	1.84 sec	1.57 sec	2451
Photoelectric	N-S	11.80 sec	12.00 sec	1000
	Visual recording	E-W	1.54 sec	3000

JULY 1959

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
393)	✓ 1	02 - 31 - 53 35 - 20	iP iS	Distant. $\Delta = 2020$ km. = 18.2°.
394)	2	00 - 50 - 32 55	ePb iSb	Very small. $\Delta b = 200$ km.
395)		18 - 13 - 47 14 - 02	iPb iSb	Very small. $\Delta b = 130$ km.
396)	3	07 - 10 - 46 11 - 18	ePb iSb	Very small. $\Delta b = 283$ km.
397)	✓	18 - 05 - 26 13 - 44	iP iS	Distant. $\Delta = 6645$ km. = 59.8°.
398)	4	13 - 35 - 44 42 - 40	eP iS	Distant. $\Delta = 5200$ km. = 46.8°.
	5	No Quakes Recorded.		
399)	✓ 6	09 - 29 - 21 42 - 32	iP iX	Distant.
	7	No Quakes Recorded.		
400)	8	17 - 42 - 58 43 - 09	iPg iSg	Very small. $\Delta g = 93$ km.
401)		21 - 43 - 30 44 - 00	ePb eSb	Very small. $\Delta b = 265$ km.
402)		22 - 13 - 26 56	iPb eSb	Very small. $\Delta b = 265$ km.
403)	9	02 - 29 - 25	iP	Very small.
404)	✓	16 - 25 - 21 31 - 19	iP iS	Distant. $\Delta = 4165$ km. = 37.5°.

SEISMOLOGICAL BULLETIN - July 1959 - 2 -

	Date	Time (GMT)	Phase	Remarks
405)	10	04 - 18 - 47 19 - 21	ePb iSb	Very small. $\Delta b = 300$ km.
406)	✓ 10	17 - 31 - 22	eP	Very small.
407)		18 - 20 - 20 21 - 14	ePb iSb	Very small. $\Delta b = 480$ km.
408)		18 - 25 - 28 26 - 34	iPb iSb	Small. $\Delta b = 585$ km. = 5.2° .
409)	✓ 11	12 - 12 - 33 21 - 11	iP iS	Distant. $\Delta = 7010$ km. = 63.1° .
410)		18 - 30 - 10 21	iPg eSg	Very small. $\Delta g = 93$ km.
411)	12	00 - 35 - 00 09	iPg iSg	Very small. $\Delta g = 75$ km.
412)		08 - 49 - 55 50 - 14	iPb eSb	Very small. $\Delta b = 165$ km.
413)		12 - 56 - 22	iP	Distant.
414)	13	12 - 39 - 16 47 - 44	iP iS	Distant. $\Delta = 6820$ km. = 61.4° .
415)	✓ 14	22 - 35 - 20 38 - 22	eP iS	Distant. $\Delta = 1737$ km. = 15.6° .
416)	15	12 - 53 - 42 50	ePg iSg	Very small. $\Delta g = 68$ km.
417)	16	23 - 41 - 12 32	iPb iSb	Very small. $\Delta b = 175$ km.
	17	No Quakes Recorded.		
418)	✓ 18	19 - 55 - 24 42	iPb iSb	Moderate. $\Delta = 155$ km. Felt in greater part of Luzon. Int. V in Baguio. Secondary obtained from strong motion Seismograph.
419)	✓ 19	03 - 48 - 00 53 - 06	iP iS	Distant. $\Delta = 3345$ km. = 30.1° .
420)		07 - 04 - 25 44	ePb iSb	Very small. $\Delta b = 165$ km.
421)		09 - 15 - 14 28	iPg iSg	Very small. $\Delta g = 114$ km.
422)		09 - 43 - 02 32	iPb iSb	Very small. $\Delta b = 265$ km.
423)		15 - 18 - 02	eP	Very small.
424)	✓ 19	15 - 25 - 58 31 - 00	iP eS	Distant. $\Delta = 3280$ km. = 29.5° .
425)	✓ 20	02 - 45 - 42 49 - 18	iP iS	Distant. $\Delta = 2135$ km. = 19.2° .
426)		15 - 06 - 26 44	ePb iSb	Very small. $\Delta b = 155$ km.
427)	21	07 - 52 - 52 08 - 00 - 44	iP iS	Distant. $\Delta = 6200$ km. = 55.8° .

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
428)	21	13 - 00 - 51 59	ePg iSg	} Very small. $\Delta g = 68$ km.
429)	22	11 - 19 - 15 22 - 07	eP iS	} Distant. $\Delta = 1635$ km. = 14.7° .
430)		14 - 59 - 10 18	iPg eSg	} Very small. $\Delta g = 68$ km.
431)		16 - 39 - 03 40 - 07	iPb iSb	} Very small. $\Delta b = 570$ km. = 5.1° .
32)	21	19 - 31 - 34 37 - 24	iP iS	} Distant. $\Delta = 4045$ km. = 36.7° .
433)		21 - 50 - 35 52 - 32	ePb iSb	} Distant. $\Delta b = 1045$ km. = 9.4° .
434)		22 - 25 - 02 44	iPb iSb	} Small. $\Delta b = 370$ km.
435)		23 - 00 - 28 01 - 56	ePb iSb	} Very small. $\Delta b = 785$ km. = 7.0° .
436)	23	23 - 09 - 46 15 - 38	iP iS	} Distant. $\Delta = 4065$ km. = 36.6° .
437)	23	00 - 29 - 08	eP	Very small.
438)		21 - 28 - 01	iP	Very small.
439)	24	00 - 49 - 43 50 - 13	ePb iSb	} Very small. $\Delta b = 265$ km.
440)		01 - 16 - 59	eP	Distant.
441)		01 - 48 - 00	eP	Distant.
442)		18 - 08 - 53 58	ePg iSg	} Very small. $\Delta g = 40$ km.
443)		22 - 26 - 37 49	ePg iSg	} Very small. $\Delta g = 100$ km.
444)	23	23 - 25 - 41	iP	Very small.
445)	25	22 - 32 - 40 58	iPb iSb	} Very small. $\Delta b = 155$ km.
446)	26	00 - 15 - 36 51	ePb iSb	} Very small. $\Delta b = 130$ km.
447)		01 - 32 - 08 24	iPb iSb	} Very small. $\Delta b = 140$ km.
448)		07 - 37 - 52 38 - 09	iPb iSb	} Very small. $\Delta b = 148$ km.
449)		12 - 17 - 42 18 - 09	ePb eSb	} Very small. $\Delta b = 235$ km.
450)	27	13 - 00 - 34 01 - 07	ePb iSb	} Very small. $\Delta b = 290$ km.
451)	28	18 - 02 - 00	eP	Teleseismic.
452)		20 - 54 - 09 28	iPb iSb	} Very small. $\Delta b = 165$ km.
	29	No Quakes Recorded.		
453)	30	23 - 18 - 40 56	ePb iSb	} Very small. $\Delta b = 140$ km.
	31	No Quakes Recorded.		

MANILA OBSERVATORY
Mirador, Baguio City
PHILIPPINES

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39"

Long. E. 120° 34' 47"

Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u>
		<u>Seism.</u>	<u>Galv.</u>	<u>Synchronous</u>
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 sec	11.70 sec	2000
	N-S	1.84 sec	1.57 sec	2451
Photoelectric	N-S	11.00 sec	12.00 sec	1000
	E-W	1.54 sec	1.49 sec	3000

AUGUST 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
1	No Quakes Recorded.		
454)	04 - 58 - 31 59 - 05	ePb iSb	} Very small. $\Delta b = 300$ km.
3	No Quakes Recorded.		
455)	11 - 40 - 53 41 - 03	ePg iSg	} Very small. $\Delta g = 85$ km.
456)	16 - 02 - 57 03 - 13	iPb iSb	
457)	05 - 18 - 18 19 - 23	iPb iSb	} Small. $\Delta b = 580$ km. = 5.2° . Felt at Catarman, Int. IV; Catbalogan, Int. IV; Ilogaspi, Int. III; Barongan, Int. III; Virac, Int. II; Tacloban, Int. I.
458)	02 - 29 - 43	iP	
459)	02 - 32 - 39 33 - 47	ePb iSb	
460)	11 - 17 - 52 18 - 08	ePb iSb	} Very small. $\Delta b = 140$ km.
461)	00 - 56 - 48 01 - 03 - 47	iP iS	
462)	21 - 06 - 39 07 - 14	ePb iSb	} Very small. $\Delta b = 310$ km.

Seismological Bulletin - August 1959 - 2 -

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
463)	9	02 - 38 - 30 41 - 30	eP iS	Distant. $\Delta = 1710 \text{ km.} = 15.7^\circ$.
10	No Quakes Recorded.			Power failure from 09-23-51 to 10-04-15.
464)	11	19 - 58 - 03 13	iPg iSg	Very small. $\Delta g = 85 \text{ km.}$
465)		21 - 58 - 43 22 - 05 - 55	iP iS	Distant. $\Delta = 5455 \text{ km.} = 49.1^\circ$.
466)	12	08 - 57 - 07 58 - 59	ePb eSb	Very small. $\Delta b = 1000 \text{ km.} = 2.0^\circ$.
467)		10 - 09 - 35 18 - 55	iP iS	Distant. $\Delta = 7890 \text{ km.} = 71.0^\circ$.
13	No Quakes Recorded.			
468)	14	04 - 43 - 13 46 - 34	eP iS	Distant. $\Delta = 1945 \text{ km.} = 17.5^\circ$.
469)		12 - 36 - 59 37 - 26	ePb iSb	Very small. $\Delta b = 235 \text{ km.}$
470)	15	02 - 15 - 44 16 - 24	ePb iSb	Very small. $\Delta b = 355 \text{ km.}$
471)		08 - 57 - 27	eipb S	Strong. Formosa quake. Felt at Aparri Int. II.
472)		10 - 56 - 40 57 - 45	ePb iSb	Very small. $\Delta b = 540 \text{ km.} = 5.2^\circ$.
473)		12 - 10 - 10 11 - 24	ePb eSb	Small. $\Delta b = 660 \text{ km.} = 5.9^\circ$.
474)		13 - 23 - 37 24 - 50	iPb iSb	Small. $\Delta b = 650 \text{ km.} = 5.8^\circ$. Felt at Catbalogan, Int. II; Borongan, Int. II.
475)	16	01 - 01 - 58 10 - 14	eP iS	Distant. $\Delta = 6610 \text{ km.} = 59.5^\circ$.
476)		01 - 22 - 32 24 - 16	ePb iSb	Distant. $\Delta = 930 \text{ km.} = 8.4^\circ$.
477)		01 - 38 - 54 39 - 18	iPb eSb	Very small. $\Delta b = 210 \text{ km.}$
478)		01 - 47 - 50 48 - 05	iPb eSb	Very small. $\Delta b = 155 \text{ km.}$
479)		03 - 13 - 50 16 - 10	eP iS	Distant. $\Delta = 1290 \text{ km.} = 11.6^\circ$.
480)		13 - 34 - 50 35 - 09	iPb iSb	Very small. $\Delta b = 165 \text{ km.}$
481)		18 - 00 - 00	P	Distant.
482)		19 - 59 - 50 20 - 00 - 26	ePb eSb	Very small. $\Delta b = 318 \text{ km.}$
483)	17	01 - 04 - 08 05 - 14	ePb iSb	Distant. $\Delta b = 535 \text{ km.} = 5.2^\circ$.
484)		03 - 01 - 55 02 - 09	ePg iSg	Very small. $\Delta g = 114 \text{ km.}$

Seismological Bulletin - August 1959 - 3 -

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
485)	17	04 - 28 - 52	eP	Distant. $\Delta = 1710$ km. = 15.4° .
		31 - 52	iS	
486)		07 - 59 - 36	ePb	Small. $\Delta b = 515$ km. = 4.6° .
		08 - 00 - 34	eSb	
487)		08 - 26 - 46	ePb	Distant. $\Delta b = 800$ km. = 7.2° .
		28 - 16	iSb	
488)		09 - 12 - 51	ePb	Distant. $\Delta b = 775$ km. = 6.9° .
		14 - 18	iSb	
489)		12 - 40 - 20	eP	Distant. $\Delta = 1980$ km. = 17.3° .
		43 - 44	iS	
490)		21 - 11 - 12	iP	Distant. Solomon Islands.
		12 - 16	iX	
		19 - 08	iX	
491)		22 - 35 - 46	eP	Very small.
492)	18	00 - 33 - 42	iPb	Distant. $\Delta b = 945$ km. = 8.5° .
		35 - 28	iSb	
493)		06 - 51 - 24	iP	Distant. $\Delta = 11555$ km. = 104.0° . Yellowstone Park Quake.
		07 - 02 - 28	iS	
494)		15 - 40 - 41	eP	Distant. $\Delta = 9110$ km. = 82.0° .
		50 - 57	iS	
495)	19	05 - 05 - 00	eP	Teleseismic.
496)		07 - 09 - 41	ePb	Small. $\Delta b = 585$ km. = 5.2° .
		10 - 47	iSb	
	20	No Quakes Recorded.		
497)	21	04 - 56 - 45	iPb	Very small. $\Delta b = 275$ km.
		57 - 16	iSb	
498)		08 - 17 - 49	eP	Distant. $\Delta = 6265$ km. = 56.4° .
		25 - 45	iS	
499)		22 - 11 - 06	iPb	Very small. $\Delta b = 265$ km.
		36	iSb	
500)	22	15 - 28 - 46	ePg	Very small. $\Delta g = 100$ km.
		58	iSg	
501)	23	08 - 53 - 16	ePb	Very small. $\Delta b = 370$ km.
		58	iSb	
502)		19 - 40 - 16	iPb	Very small. $\Delta b = 185$ km.
		37	iSb	
503)		20 - 07 - 18	ePb	Very small. $\Delta b = 370$ km.
		08 - 00	iSb	
504)		23 - 57 - 12	eP	Very small.
505)	24	12 - 58 - 59	iPb	Very small. $\Delta b = 165$ km.
		59 - 18	iSb	
506)		15 - 50 - 26	eP	Distant. $\Delta = 5180$ km. = 46.6° .
		57 - 21	eS	
507)		21 - 39 - 32	eIP	Distant. $\Delta = 5320$ km. = 47.9° .
		46 - 35	iS	
508)		23 - 50 - 25	eP	Very small.

Seismological Bulletin - August 1959 - 4 -

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
509)	25	09 - 13 - 59	iPb	Very small. Δ b = 155 km.
		14 - 17	eSb	
510)		13 - 47 - 52	iP	Distant. Δ = 4355 km. = 39.2°.
		54 - 02	iS	
511)		17 - 30 - 40	ePb	Very small. Δ b = 190 km.
		31 - 02	eSb	
512)	26	08 - 44 - 46	iP ¹	Distant. Δ = 15000 km. = 135.0°. Mexico quake.
		47 - 02	iPP	
513)		09 - 49 - 14	iPg	Very small. Δ g = 100 km.
		26	iSg	
514)		10 - 40 - 48	iP	Distant. Δ = 9710 km. = 87.4°.
		51 - 30	iS	
515)		17 - 55 - 40	iP	Very small.
516)	27	07 - 54 - 16	iP	Distant. Δ = 1745 km. = 15.7°.
		57 - 19	iS	
517)		33 - 58 - 42	eP	Distant. Δ = 5300 km. = 47.7°.
		00 - 05 - 44	iS	
518)	28	07 - 56 - 02	ePb	Very small. Δ b = 190 km.
		24	eSb	
519)		16 - 48 - 51	ePb	Very small. Δ b = 200 km.
		49 - 14	iSb	
520)	29	17 - 10 - 22	eP	Distant. Δ 4445 km. = 40.0°.
		17 - 16 - 36	iS	
		17 - 20 - 38	SR ₂	
521)		21 - 21 - 32	ePb	Very small. Δ b = 190 km.
		54	iSb	
	30	No Quakes Recorded.		
522)	31	02 - 50 - 50	ePb	Very small. Δ b = 405 km.
		51 - 36	iSb	

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39"

Long. E. 120° 34' 47"

Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.57 "	2451
Photoelectric Visual Recording	N-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000

SEPTEMBER 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
523)	1 09 - 33 - 35	ePb	Very small. Δ b = 155 km.
	53	iSb	
524)	11 - 50 - 30	iP	Distant. Δ = 9420 km. = 84.8°. Albania Quake.
	12 - 01 - 00	eS	
525)	2 18 - 57 - 10	ePb	Very small. Δ b = 445 km.
	58 - 00	iSb	
526)	22 - 37 - 12	iPb	Very small. Δ b = 175 km.
	32	iSb	
527)	23 - 06 - 12	ePb	Very small. Δ b = 175 km.
	32	iSb	
528)	3 06 - 32 - 16	iP	Distant. Δ = 2455 km. = 22.1°.
	36 - 18	iS	
529)	11 - 33 - 26	ePb	Very small. Δ b = 362 km.
	34 - 07	iSb	
530)	21 - 40 - 40	ePb	Very small. Δ b = 445 km.
	41 - 30	eSb	
531)	4 08 - 44 - 43	iPb	Small. Δ b = 570 km. = 5.1°.
	45 - 47	iSb	
532)	15 - 39 - 55	iPb	Very small. Δ b = 190 km.
	40 - 17	iSb	
533)	15 - 44 - 32	ePb	Very small. Δ b = 200 km.
	55	iSb	
534)	17 - 11 - 34	ePb	Very small. Δ b = 445 km.
	12 - 24	iSb	
535)	5 03 - 48 - 32	ePb	Very small. Δ b = 190 km.
	54	iSb	

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
536)	5	03 - 50 - 46 56	ePg iSg	Very small. $\Delta g = 85$ km.
537)		05 - 00 - 40 58	ePb eSb	Very small. $\Delta b = 155$ km.
538)		06 - 06 - 17 40	ePb iSb	Very small. $\Delta b = 200$ km.
539) ✓		06 - 11 - 48 15 - 12	eP iS	Distant. $\Delta = 1980$ km. = 17.8° .
540)		15 - 13 - 16 20	ePg iSg	Very small. $\Delta g = 35$ km.
541) ✓		15 - 38 - 54 42 - 18	eP iS	Distant. $\Delta = 1980$ km. = 17.8° .
542)		16 - 10 - 52 11 - 20	ePb iSb	Very small. $\Delta b = 245$ km.
543)		20 - 20 - 52 21 - 26	ePb iSb	Very small. $\Delta b = 300$ km.
544) ✓	6	00 - 31 - 02 34 - 04	eP iS	Distant. $\Delta = 1735$ km. = 15.6° .
545)		03 - 54 - 00	eP	Very small.
546)		13 - 19 - 12 20 - 02	ePb eSb	Small. $\Delta b = 445$ km.
547)	7	01 - 52 - 00 08	iPg iSg	Very small. $\Delta g = 68$ km.
548)	8	05 - 23 - 49 56	iPg iSg	Very small. $\Delta g = 58$ km.
549)		06 - 21 - 36 58	ePb iSb	Very small. $\Delta b = 190$ km.
550)		19 - 05 - 02 42	iPb iSb	Small. $\Delta b = 355$ km.
551)	9	18 - 53 - 50	eP	Very small.
552) ✓	10	05 - 42 - 50 48 - 57	iP iS	Distant. $\Delta = 4310$ km. = 38.8° .
553)	11	13 - 06 - 24 50	iPb iSb	Very small. $\Delta b = 230$ km.
554)	12	02 - 00 - 18 05 - 24	iP iS	Distant. $\Delta = 3345$ km. = 30.1° .
555)		07 - 08 - 18 13 - 48	iP iS	Distant. $\Delta = 37.20$ km. = 33.5° .
556)		07 - 20 - 40 58	ePb iSb	Very small. $\Delta b = 155$ km.
557)		11 - 32 - 37 39 - 10	iP iS	Distant. $\Delta = 4800$ km. = 43.1° .
558)	13	16 - 26 - 51 27 - 06	iPb iSb	Very small. $\Delta b = 130$ km.

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
559)	13	17 - 50 - 44 55	ePg iSg	Very small. $\Delta g = 93$ km.
560)		18 - 02 - 56 03 - 05	ePg iSg	Very small. $\Delta g = 75$ km.
561)		18 - 35 - 00 15	ePb iSb	Very small. $\Delta b = 130$ km.
562) ✓		22 - 44 - 50 48 - 12	iP iS	Distant. $\Delta = 1955$ km. = 17.6° .
563)	14	08 - 11 - 00 16	ePb iSb	Very small. $\Delta b = 140$ km.
564)		14 - 21 - 23 31 - 14	iP iS	Distant. $\Delta = 8535$ km. = 76.8° . Kermadec Islands region.
565)		17 - 17 - 59 18 - 17	iPb iSb	Very small. $\Delta b = 155$ km.
566)		17 - 29 - 02 31	ePb iSb	Very small. $\Delta b = 255$ km.
567)		20 - 30 - 26 31 - 16	ePb iSb	Very small. $\Delta b = 445$ km.
568)	15	04 - 55 - 22 56 - 58	ePb eSb	Very small. $\Delta b = 855$ km. = 7.7° .
569)		06 - 11 - 27 06 - 29 - 16	iP eS	Distant. $\Delta = 6155$ km. = 55.4° .
570)		11 - 15 - 52 24 - 17	iP iS	Distant. $\Delta = 6765$ km. = 60.9° .
571)		22 - 19 - 02 20	ePb iSb	Very small. $\Delta b = 155$ km.
572)	16	05 - 33 - 30 34 - 02	ePb eSb	Very small. $\Delta b = 283$ km.
573)		16 - 08 - 50	iP	Distant.
574)		17 - 12 - 34 13 - 08	iPb iSb	Very small. $\Delta b = 300$ km.
575)	17	04 - 31 - 26 58	ePb iSb	Very small. $\Delta b = 283$ km.
576)		14 - 47 - 59	eP	Distant.
577)	18	13 - 25 - 38 26 - 23	ePb iSb	Very small. $\Delta b = 395$ km. Felt at Daet, Int. III; at Jegaspi, Int. II.
578)	19	19 - 50 - 56 51 - 04	iPg iSg	Very small. $\Delta g = 68$ km.
579)	20	12 - 52 - 34 46	iPg iSg	Very small. $\Delta g = 100$ km.
580)	21	00 - 10 - 34 11 - 14	ePb iSb	Very small. $\Delta b = 355$ km.
581)		02 - 15 - 50 21 - 45	iP iS	Distant. $\Delta = 4120$ km. = 37.1° .

Monthly Seismological Bulletin - September 1959 - p. 4 -

	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
582)	21	21 - 26 - 16 27	iPg iSg	Very small. $\Delta g = 75$ km.
	22	No Quakes Recorded.		
	23	No Quakes Recorded.		
583)	24	05 - 53 - 53 54 - 13	iPb eSb	Very small. $\Delta b = 175$ km.
584)		06 - 08 - 29 39	ePg iSg	Very small. $\Delta g = 85$ km.
585)		19 - 58 - 43 59 - 08	ePb iSb	Very small. $\Delta b = 220$ km.
586)	25	00 - 20 - 39	eP	Very small.
587)		02 - 38 - 17 40 - 41	iP eS	Distant. $\Delta = 1335$ km. = 12.0° .
588)		03 - 02 - 45 03 - 47	eP iS	Very small. $\Delta b = 550$ km. = 4.9° .
589)		10 - 43 - 18	eP	Very small.
590)	26	00 - 15 - 57 16 -	ePg iSg	Very small. $\Delta g = 85$ km.
591)		06 - 46 - 27 43	ePb iSb	Very small. $\Delta b = 140$ km.
592)		09 - 03 - 21 30	ePg iSg	Very small. $\Delta g = 75$ km.
593)		10 - 31 - 57 33 - 01	ePb iSb	Very small. $\Delta b = 570$ km. = 5.1° .
594)		20 - 37 - 06 59	iPb iSb	Very small. $\Delta b = 470$ km.
595)		21 - 21 - 24 45	ePb iSb	Very small. $\Delta b = 185$ km.
596)	27	03 - 58 - 55 59 - 09	ePg iSg	Very small. $\Delta g = 114$ km.
597)		10 - 25 - 42 29 - 59	iP eS	Distant. $\Delta = 2635$ km. = 23.7° .
598)	28	04 - 28 - 00	eP	Teleseismic.
599)	29	05 - 54 - 14 53	iPb iSb	Very small. $\Delta b = 345$ km.
600)		11 - 27 - 55 28 - 45	ePb eSb	Very small. $\Delta b = 445$ km.
601)		14 - 50 - 54 51 - 07	ePg iSg	Very small. $\Delta g = 110$ km.
602)		15 - 05 - 43 57	ePg iSg	Very small. $\Delta g = 114$ km.
603)		15 - 43 - 43 54 - 05	eP iS	Distant. $\Delta = 9235$ km. = 83.1° .
604)		17 - 39 - 22 40 - 07	ePb iSb	Very small. $\Delta b = 395$ km.

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	<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
605)	30 ✓	20 - 35 - 56	eP	Distant. $\Delta = 6380$ km. $= 57.4^\circ$.
		43 - 58	iS	
606)		22 - 42 - 37	iPb	Very small. $\Delta b = 148$ km.
		54	iSb	

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Oct 1959

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39" Long. E. 120° 34' 47" Alt. 1507 meters

Instruments (All Sprengnethers) Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 "	11.70 "	2000
	N-S	1.84 "	1.57 "	2451
Photoelectric	N-S	11.80 "	12.00 "	1000
	Visual recording	E-W	1.54 "	1.49 "

OCTOBER 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
1	No Quakes Recorded.		
2	No Quakes Recorded.		
607)	04 - 11 - 26	iPg	Very small. $\Delta g = 85$ km.
	36	eSg	
608)	07 - 37 - 05	iPg	Very small. $\Delta g = 100$ km.
	17	iSg	
609)	08 - 34 - 19	ePb	Very small. $\Delta b = 200$ km.
	42	iSb	
610)	23 - 12 - 23	iPg	Very small. $\Delta g = 85$ km.
	33	iSg	
611)	05 - 48 - 14	iP	Distant. $\Delta = 2135$ km. $\pm 19.2^\circ$.
	51 - 50	iS	
612)	18 - 14 - 06	ePg	Very small. $\Delta g = 100$ km.
	18	iSg	
613)	01 - 05 - 50	ePg	Very small. $\Delta g = 100$ km.
	06 - 02	iSg	
614)	10 - 26 - 04	ePb	Very small. $\Delta b = 245$ km.
	32	iSb	
615)	11 - 21 - 54	ePb	Very small. $\Delta b = 140$ km.
	22 - 10	iSb	
616)	15 - 03 - 00	eP	Teleseismic.
617)	17 - 12 - 16	ePb	Very small. $\Delta b = 140$ km.
	32	iSb	
618)	00 - 13 - 34	iPb	Very small. $\Delta b = 140$ km.
	50	iSb	
619)	05 - 10 - 43	iPb	Very small. $\Delta b = 185$ km.
	11 - 04	iSb	
620)	07 - 53 - 00	eP	Teleseismic.
621)	09 - 49 - 03	ePb	Very small. $\Delta b = 140$ km.
	19	iSb	

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	Date	Time (GMT)	Phase	Remarks
622)	9	11 - 11 - 39 14 - 15	iP iS	Distant. $\Delta = 1455 \text{ km.} = 13.1^\circ$.
623)	10	01 - 58 - 50 59 - 07	ePb iSb	Very small. $\Delta b = 148 \text{ km.}$
624)		16 - 30 - 00	eP	Teleseismic.
625)		19 - 04 - 05 10	iPg iSg	Very small. $\Delta g = 40 \text{ km.}$
626)		22 - 21 - 53 22 - 03	ePg iSg	Very small. $\Delta g = 85 \text{ km.}$
627)	11	13 - 55 - 53 56 - 12	ePb iSb	Very small. $\Delta b = 165 \text{ km.}$
628)	12	03 - 27 - 34 32 - 09	iP iS	Distant. $\Delta = 2890 \text{ km.} = 26.0^\circ$.
629)		08 - 38 - 13 44	iPb iSb	Very small. $\Delta b = 275 \text{ km.}$
630)	13	11 - 43 - 17 44 - 42	ePb iSb	Very small. $\Delta b = 580 \text{ km.} = 5.2^\circ$.
631)		16 - 04 - 32 50	ePb iSb	Very small. $\Delta b = 155 \text{ km.}$
632)		18 - 11 - 05 28	ePb iSb	Very small. $\Delta b = 200 \text{ km.}$
633)		20 - 51 - 50 52 - 00	ePg iSg	Very small. $\Delta g = 85 \text{ km.}$
634)	14	05 - 08 - 41 09 - 07	ePb iSb	Very small. $\Delta b = 230 \text{ km.}$
635)		09 - 59 - 31 47	ePb iSb	Very small. $\Delta b = 140 \text{ km.}$
636)		10 - 01 - 21 39	iPg iSg	Very small. $\Delta g = 100 \text{ km.}$
637)		12 - 01 - 56 02 - 00	ePg iSg	Very small. $\Delta g = 35 \text{ km.}$
638)		22 - 20 - 10 23	ePg iSg	Very small. $\Delta g = 110 \text{ km.}$
639)	15	06 - 19 - 26 22 - 34	iP iS	Distant. $\Delta = 1800 \text{ km.} = 16.2^\circ$.
640)	16	12 - 29 - 26 43	ePb iSb	Very small. $\Delta b = 148 \text{ km.}$
641)		12 - 52 - 01 22	iPb iSb	Very small. $\Delta b = 185 \text{ km.}$
642)		13 - 54 - 06 56	ePb iSb	Very small. $\Delta b = 445 \text{ km.}$
643)		16 - 19 - 04	iP	Distant.
	17	No Quakes Recorded.		
	18	No Quakes Recorded.		
	19	No Quakes Recorded.		
	20	No Quakes Recorded.		
644)	21	03 - 55 - 16 31	ePb iSb	Very small. $\Delta b = 130 \text{ km.}$

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39" Long. E. 120° 34' 47" Alt. 1507 meters

Instruments (all Sprengnethers) Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367
	E-W	10.90 "	11.70 "	2000
	N-S	1.54 "	1.57 "	2451
Photoelectric	E-S	11.80 "	12.00 "	1000
	E-W	1.54 "	1.49 "	3000

NOVEMBER 1959

<u>Date</u>	<u>Time (G.T)</u>	<u>Phase</u>	<u>Remarks</u>
665)	1 06 - 02 - 46	ePb	Very small. Δ b = 235 km.
	03 - 13	iSb	
666)	07 - 38 - 36	iPb	Very small. Δ b = 235 km.
	39 - 03	iSb	
667)	12 - 35 - 42	ePb	Very small. Δ b = 200 km.
	36 - 05	iSb	
668)	2 06 - 58 - 36	ePb	Very small. Δ b = 175 km.
	56	iSb	
669)	08 - 49 - 05	eP	Distant. Δ = 2445 km. = 22.0°.
	53 - 06	iS	
670)	17 - 47 - 27	iPg	Very small. Δ g = 40 km.
	32	iSg	
671)	20 - 10 - 44	iP	Distant. Δ = 3920 km. = 35.3°.
	16 - 27	iS	
672)	3 00 - 35 - 59	eP	Very small.
673)	02 - 38 - 04	eP	
674)	03 - 49 - 09	ePb	Very small. Δ b = 190 km.
	31	iSb	
675)	03 - 54 - 30	iP	Very small.
676)	05 - 04 - 01	iPb	
	31	iSb	Very small. Δ b = 265 km.
677)	08 - 39 - 10	iPb	
	27	iSb	Very small. Δ b = 148 km.
678)	09 - 46 - 06	iP	
	50 - 25	iS	Distant. Δ = 2665 km. = 24.0°.

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	<u>Date</u>	<u>Time (G&T)</u>	<u>Phase</u>	<u>Remarks</u>	
679)	4	03 - 16 - 19	iPb	} Very small. $\Delta b = 230$ km.	
		45	iSb		
680)		05 - 33 - 18	iPb	} Very small. $\Delta b = 230$ km.	
		44	iSb		
681)	5	11 - 59 - 40	eP	} Distant. $\Delta = 5955$ km. = 53.6° .	
		12 - 07 - 18	iS		
682)		15 - 03 - 12	eP	} Distant. $\Delta = 1720$ km. = 15.5° .	
		06 - 13	eS		
683)		17 - 46 - 25	iP	} Distant., $\Delta = 4845$ km. = 43.6° .	
		53 - 01	iS		
684)	6	01 - 15 - 47	iP	} Distant., $\Delta = 2500$ km. = 22.5° .	
		19 - 53	iS		
685)		11 - 46 - 29	iPg	} Very small. $\Delta g = 100$ km.	
		41	iSg		
686)		16 - 34 - 33	iPb	} Very small. $\Delta b = 130$ km.	
		48	iSb		
687)	7	05 - 32 - 51	ePg	} Very small. $\Delta g = 114$ km.	
		33 - 05	iSg		
688)	8	11 - 18 - 50	ePb	} Very small. $\Delta b = 130$ km.	
		19 - 05	iSb		
689)		14 - 01 - 26	eP	} Distant.	
690)		14 - 52 - 50	eP		} Very small. $\Delta b = 530$ km. = 4.8°
		53 - 50	iS		
691)	9	14 - 47 - 25	ePb	} Very small. $\Delta b = 230$ km.	
		51	iSb		
692)		15 - 21 - 51	ePg	} Very small. $\Delta g = 40$ km.	
		56	iSg		
693)	10	08 - 36 - 14	ePb	} Very small. $\Delta b = 175$ km.	
		34	iSb		
	11	NO QUAKES RECORDED.			
694)	12	06 - 57 - 31	iPb	} Very small. $\Delta b = 490$ km.	
		58 - 26	iSb		
695)		10 - 10 - 24	iPg	} Very small. $\Delta g = 50$ km.	
		30	iSg		
696)		17 - 36 - 19	ePg	} Very small. $\Delta g = 85$ km.	
		29	iSg		
697)	13	11 - 53 - 59	eP	} Very small. $\Delta b = 210$ km.	
		54 - 23	iS		
698)		23 - 37 - 25	ePg	} Very small. $\Delta g = 35$ km.	
		29	iSg		
699)	14	02 - 11 - 54	iPb	} Very small. $\Delta b = 405$ km.	
		12 - 40	iSb		

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Date	Time (G.T)	Phase	Remarks
700)	15 02 - 06 - 13	ePb	Very small. $\Delta b = 300$ km.
	47	iSb	
701)	10 - 33 - 29	iPb	Very small. $\Delta b = 245$ km.
	57	iSb	
702)	17 - 21 - 35	eP	Distant., $\Delta = 9220$ km. = 83.0° .
	31 - 56	iS	
16	NO QUAKES RECORDED.		
17	NO QUAKES RECORDED.		
18	NO QUAKES RECORDED.		
703)	19 01 - 39 - 26	ePg	Very small. $\Delta g = 50$ km.
	32	iSg	
704)	04 - 24 - 32	ePb	Very small. $\Delta b = 130$ km.
	47	iSb	
705)	04 - 41 - 28	eP	Very small. Distant. $\Delta = 3590$ km. = 32.3° .
705)	11 - 15 - 18	iP	
	20 - 30	iS	
707)	16 - 18 - 22	eIb	Very small. $\Delta b = 210$ km.
	46	eSb	
20	NO QUAKES RECORDED.		
708)	21 17 - 58 - 21	ePb	Very small. $\Delta b = 165$ km.
	40	iSb	
709)	18 - 37 - 52	iPb	Very small. $\Delta b = 155$ km.
	38 - 10	iSb	
710)	22 - 59 - 28	iPb	Very small. $\Delta b = 165$ km.
	47	iSb	
711)	22 02 - 37 - 21	ePb	Very small. $\Delta b = 325$ km.
	58	iSb	
712)	17 - 09 - 40	ePg	Very small. $\Delta g = 50$ km.
	46	iSg	
713)	19 - 44 - 58	iP	Very small.
714)	23 21 - 07 - 37	iPb	Very small. $\Delta b = 800$ km. = 7.2° .
	09 - 07	iSb	
715)	24 11 - 14 - 21	eP	Very small.
716)	12 - 12 - 40	ePb	
	57	iSb	Very small. $\Delta b = 148$ km.
717)	13 - 12 - 49	ePb	
	13 - 07	iSb	Very small. $\Delta b = 155$ km.
718)	14 - 57 - 39	iPg	
	53	iSg	Small local quake. $\Delta g = 114$ km. Felt in Baguio, Int. I; Bangued, Abra, Int. II. Operated starting pendulum for strong motion seismograph. Only straight line on record.

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<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
719) 24	15 - 08 - 31	aPb	} Very small. $\Delta b = 155$ km.
	49	iSb	
720)	15 - 14 - 01	iPb	} Very small. $\Delta b = 140$ km.
	17	iSb	
721) 25	20 - 13 - 56	ePb	} Very small. $\Delta b = 660$ km. = 5.9° .
	15 - 10	iSb	
722) 26	06 - 26 - 02	iPg	} Very small. $\Delta g = 100$ km.
	14	iSg	
723)	07 - 12 - 14	iP	} Distant. $\Delta = 3565$ km. = 32.1° .
	17 - 34	iS	
724)	23 - 15 - 18	iP	} Distant., $\Delta = 3680$ km. = 33.1° .
	20 - 45	iS	
27	NO QUAKES RECORDED.		
725) 28	22 - 48 - 46	iP	Very small.
29	NO QUAKES RECORDED.		
726) 30	18 - 56 - 24	iPb	} Very small. $\Delta b = 255$ km.
	53	iSb	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

MONTHLY SEISMOLOGICAL BULLETIN

Lat. N. 16° 24' 39" Long. E. 120° 34' 47" Alt. 1507 meters

Instruments (All Sprengnethers)

Hard Limestone Bedrock

<u>Type</u>	<u>Component</u>	<u>Period</u>		<u>Magnification (Dynamic)</u> <u>Synchronous</u>
		<u>Seism.</u>	<u>Galv.</u>	
Photographic	Z	1.41 sec	1.37 sec	Circa 3367 2000 2451
	E-W	10.90 "	11.70 "	
	N-S	1.84 "	1.57 "	
Photoelectric Visual recording	N-S	11.80 "	12.00 "	1000 3000
	E-W	1.54 "	1.49 "	

DECEMBER 1959

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>Remarks</u>
727)	01 02 - 43 - 35	ePg	} Very small. $\Delta g = 114$ km.
	49	iSg	
728)	04 - 39 - 25	ePb	} Very small. $\Delta b = 190$ km.
	47	iSb	
729)	✓ 13 - 14 - 32	iP	} Distant. $\Delta = 1155$ km. = 10.5° .
	16 - 40	iS	
730)	02 03 - 59 - 32	ePb	} Very small. $\Delta b = 335$ km.
	04 - 00 - 10	iSb	
731)	09 - 38 - 12	iP	} Teleseismic. Distant. $\Delta = 2520$ km. = 22.7° .
732)	✓ 09 - 38 - 12	iP	
	42 - 20	iS	
733)	22 - 09 - 15	iPg	} Very small. $\Delta g = 40$ km.
	20	iSg	
734)	03 23 - 43 - 30	ePg	} Very small. $\Delta g = 100$ km.
	42	iSg	
04	No Quakes Recorded.		
05	No Quakes Recorded.		
06	No Quakes Recorded.		
07	No Quakes Recorded.		

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Date	Time (GMT)	Phase	Remarks
735)	08 04 - 34 - 19	iPb	} Very small. $\Delta b = 730 \text{ km.} = 6.6^\circ$.
	35 - 41	iSb	
736)	08 - 06 - 35	iP	} Very small.
737)	09 12 - 00 - 00	iPb	} Very small. $\Delta b = 275 \text{ km.}$
	00 - 31	iSb	
738)	12 - 27 - 15	ePb	} Very small. $\Delta b = 300 \text{ km.}$
	49	iSb	
739)	21 - 20 - 36	ePg	} Very small. $\Delta g = 58 \text{ km.}$
	43	iSg	
740)	10 08 - 40 - 33	ePg	} Very small. $\Delta g = 110 \text{ km.}$
	46	iSg	
741)	16 - 22 - 28	iPg	} Very small. $\Delta g = 58 \text{ km.}$
	35	iSg	
742)	11 00 - 36 - 49	iPb	} $\Delta b = 210 \text{ km.}$
	37 - 13	iSb	
743)	12 19 - 50 - 13	iPg	} Very small. $\Delta g = 40 \text{ km.}$
	18	iSg	
744)	13 10 - 05 - 57	eP	} Very small.
745)	15 - 52 - 22	ePb	
	53 - 19	iSb	
746)	14 00 - 08 - 19	ePb	} Very small. $\Delta b = 190 \text{ km.}$
	41	iSb	
747)	00 - 55 - 11	iP	} Very small.
748)	10 - 10 - 01	ePb	} Very small. $\Delta b = 290 \text{ km.}$
	34	iSb	
749)	16 - 21 - 02	ePb	} Very small. $\Delta b = 140 \text{ km.}$
	18	iSb	
750)	18 - 01 - 22	iP	} Distant. $\Delta = 1910 \text{ km.} = 17.2^\circ$.
	03 - 40	iS	
751)	21 - 53 - 07	iP	} Distant. $\Delta = 1810 \text{ km.} = 16.4^\circ$.
	56 - 16	iS	
752)	22 - 11 - 39	eP	} Distant. $\Delta = 7190 \text{ km.} = 64.7^\circ$.
	20 - 26	eS	
753)	23 - 41 - 10	iP	} Distant. $\Delta = 2010 \text{ km.} = 18.1^\circ$.
	44 - 36	iS	
754)	15 01 - 40 - 36	iP	} Distant.
755)	05 - 09 - 27	iP	
756)	07 - 37 - 40	ePb	
	38 - 04	iSb	

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Date	Time (GMT)	Phase	Remarks
757)	15 09 - 01 - 33	eP	} Very small. Very small. $\Delta b = 148$ km.
758)	09 - 33 - 20	ePb	
	37	iSb	
759)	11 - 30 - 22	eP	
760)	16 14 - 48 - 11	iPg	} Very small. $\Delta g = 100$ km.
	23	iSg	
761)	17 02 - 32 - 21	ePb	} Small. $\Delta b = 460$ km.
	33 - 13	iSb	
762)	02 - 48 - 18	ePb	} Very small. $\Delta b = 545$ km. = 4.9° .
	49 - 19	iSb	
18	No Quakes Recorded.		
19	No Quakes Recorded.		
763)	20 02 - 51 - 28	iPb	} Very small. $\Delta b = 155$ km.
	46	eSb	
764)	12 - 55 - 48	iPb	} Very small. Felt at Surigao, Int. VI; at Mambajao, Int. II.
765)	14 - 56 - 28	ePb	
	44	iSb	} Very small. $\Delta b = 140$ km.
766)	21 10 - 32 - 24	ePb	} Very small. $\Delta b = 175$ km.
	44	iSb	
767)	11 - 30 - 06	iP	} Distant. $\Delta = 7290$ km. = 65.6° .
	38 - 58	iS	
768)	22 05 - 03 - 02	iPb	} Very small. $\Delta b = 175$ km.
	22	iSb	
769)	14 - 27 - 04	ePg	} Very small. $\Delta g = 100$ km.
	16	iSg	
770)	14 - 43 - 11	ePb	} Very small. $\Delta b = 130$ km.
	26	iSb	
771)	15 - 17 - 02	ePb	} Very small. $\Delta b = 148$ km.
	19	iSb	
772)	23 02 - 52 - 44	ePg	} Very small. $\Delta g = 114$ km.
	58	iSg	
773)	05 - 33 - 00	eP	Teleseismic.
774)	24 12 - 11 - 08	ePg	} Very small. $\Delta g = 110$ km.
	21	iSg	
775)	13 - 10 - 51	iPb	} Distant. $\Delta b = 1110$ km. = 10.0° .
	12 - 55	iSb	

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Date	Time (GMT)	Phase	Remarks
25	No Quakes Recorded.		
26	No Quakes Recorded.		
776)	27 10 - 07 - 44	eFb	} Very small. $\Delta b = 140$ km.
	08 - 00	iSb	
777)	16 - 01 - 57	iF	} Distant. $\Delta = 5480$ km. = 49.3° .
	09 - 08	iS	
778)	28 07 - 29 - 12	iF	} Distant. $\Delta = 6280$ km. = 56.5° .
	36 - 09	eS	
779)	29 07 - 08 - 45	eF	} Very small.
780)	15 - 56 - 38	iFg	
		52	} Very small. $\Delta g = 114$ km.
781)	20 - 39 - 57	eFb	
	40 - 55	iSb	} Very small. $\Delta b = 515$ km. = 4.6° .
30	No Quakes Recorded.		
782)	31 01 - 36 - 39	eFb	} Very small. $\Delta b = 435$ km.
	37 - 28	eSb	
783)	14 - 38 - 03	iFg	} Very small. $\Delta g = 100$ km.
	15	eSg	

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