MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Period of Seism. and Galv.	Component	Type of Amplifier
14 sec	E-W	Photographic
1½ sec	N-S	Photographic
2 sec	Z	Photographic
2 sec	E-W	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey type
14 sec	N-S	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey type

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JANUARY 1953

	Date	Time (GMT)	Phase	Remarks
1)	2	03 - 18 - 43	iPb	Very small. Δb = 210 Km.
		19 - 07	iSb	
2)		~~03~~ 10 - 31 - 01	iPb	Very small. Δb = 174 Km.
		- 21	iSb	
3)	4	12 - 36 - 59	iPg	Moderate intensity. Δg = 102 Km.
		37 - 11	iSg	Small dilat., then large compr.
4)		12 - 49 - 46	iPg	Small. Δg = 102 Km. Compression.
		- 58	iSg	
5)	5	00 - 16 - 14	iPb	Very small. Δb = 183 Km. Dilatation.
		- 35	iSb	
6)		07 - 57 - 51±	iP	Moderate to large. Deep focus, 60 Km. Δ60 = 6445± Km. Dilatation.
		- 58 - 04	ipP	
		08 - 05 - 45	iS	
		06 - 11±	isS	
7)		10 - 14 - 33	iP	Moderate to large. Δ = 4600 Km. Compression.
		20 - 56	iS	
8)		~~15~~ 57 - 52 - 16	iP	Very small. S very uncertain. L or N at 57 - 00. Δ = 1545? Km.
		55 - 00?	iS?	
9)	6	01 - 48 - 59	iPb	Very small. Δb = 165 Km.
		49 - 18	iSb	
10)		02 - 33 - 33	iPb	Very small. Δb = 174 Km.
		- 53	iSb	
11)		15 - 50 - 24±	iPb	Very small; nearby quake. P uncertain. Δb = 156± Km.
		- 42	iSb	
12)		16 - 45 - 34	iPb	Very small. Δb = 210 Km.
		- 58	iSb	
13a)		03 - 38 - 26	iPg	Very small. Δg = ~~210~~ 76 Km.
		- 35	iSg	
13b)		04 - 34 - 28	iPg	Small. Dilatation. Δg = 92 Km.
		- 39	iSg	
13c)		05 - 57 - 45±	iPg	Very small. Δg = 76± Km.
		54	iSg	

	Date	Time (GMT)	Phase	Remarks
13d)	7	14 - 15 - 44	iP	Moderate. Compr. from N? Δ = 4355± Km.
		21 - 54±	iS	Possibly deep focus.
14)	11	01 - 12 - 31	iPb	Very small. Compression. Δb = 372 Km.
		13 - 13	iSb	
15)		08 - 25 - 09	iPb	Very small. Δb = 345 Km.
		- 48	iSb	
16)		10 - 24 - 10	iP	Very small. Δ = 1190 Km.
		26 - 21	iS	
17)		19 - 24 - 32	iPb	Very small. Dilat. from N? Δb = 255 Km.
		- 51	iSb	
18)		23 - 05 - 52	iP	Small. Δ = 9065 Km.
		16 - 06	iS	
19)	12	12 - 37 - 00	iP	Very small. Compr. from S. S uncertain.
20)		13 - 16 - 47±	iPg	Very small. Δg = 23 Km.
		50	iSg	
21)		16 - 08 - 05	iPb	Very small. Δb = 532± Km.
		- 09 - 05±	iSb	
22)		17 - 31 - 49	iP	Small. Compr. Δ= 4880± Km.
		38 - 27±	iS	
23)		23 - 59 - 43	iPb	Very small. S very uncertain. Δ= 228 Km.
		24 - 00 - 09±	iSb	
24)	13	11 - 34 - 14±	iPg	Very small. Δg = 23± Km.
		- 17	iSg	
25)		12 - 11 - 19	iPb	Very small. Δb = 228 Km.
		- 45	iSb	
26)		17 - 06 - 58±	iPg	Very small. Δg = 23± Km.
		07 - 01	iSg	
27)	14	02 - 19 - 33	iPg	Very small. Compression. Δg = 109 Km.
		- 46	iSg	
28)		09 - 22 - 18	iPb	Very small. Δb = 219 Km.
		- 43	iSb	
29)		10 - 58 - 33	iPb	Very small. Δb = 273± Km.
		59 - 04±	iSb	
30)		13 - 05 - 04	iP	Very small.
31)	15	05 - 20 - 56	iPb	Very small. Δb = 156 Km.
		21 - 14	iSb	
32)		08 - 20 - 01	i	Very small.
33)		22 - 16 - 11	i	Very small.
34)	16	11 - 58 - 36	iPb	Very small. Δb = 210± Km.
		59 - 00±	iSb	
35)		12 - 34 - 09	iP	Small. Deep focus 190 Km.±. Small compr., larger dilat. Δ_{190} Km. = 2780± Km.
		- 49	ipP?	
		- 38 - 18	iS	
		- 39 - 30	isS?	
36)		13 - 16 - 23	iPg	Dilat. from approx. N. Δg = 58 Km.
		- 30	iSg	
37)		15 - 57 - 22	iPb	Very small. Compression. Δb = 793 Km.
		58 - 51	iSb	

	Date	Time (GMT)	Phase	Remarks
38)	17	17 - 38 - 00	iP	Very small. Deep focus, 110 Km. Compr.
		- 20±	ipP	from S±. Δ_{110} Km. = 4820 Km.
		- 44 - 20	iS	
		- 45 - 11	isS	
39)		18 - 35 - 58	iPb	Very small. Δb = 317 Km.
		36 - 34	iSb	
40)	18	19 - 30 - 02	iPg	Very small. Δg = 67 Km.
		- 10	iSg	
41)		- 40 - 00	iPb	Small to moderate. Compr. from NE±
		- 29	iSb	Δb = 255 Km.
42)	19	05 - 03 - 54	iP	Very small. Δ = 3720 Km.
		09 - 24	iS	
43)		14 - 54 - 21	iP	Small. Deep focus, 80 Km. Δ_{80} = 4110
		- 36	ipP	Km. Very small compr., larger dilat.
		15 - 00 - 10	iS	from S±.
		- 36	isS	
44)	20	05 - 33 - 15	iPb	Very small. Δb = 317± Km.
		- 51±	iSb	
45)		12 - 43 - 56	iPg	Small, compr., probably from SW.
		44 - 08	iSg	Δg = 102 Km.
46)		17 - 36 - 55	eP	Small. Small dilat. large compr. from
		- 59	iP	approx. N. Δ = 1755 Km.
		39 - 59	iS	
		42.3±	M	
47)		17 - 49 - 01	iP	Very small. Aftershock of preceding?
48)	21	01 - 51 - 07	iP	Very small. Compression.
		57 - 36	eS (short period)	Slightly deep focus?
		- 41	iS (long period)	Δ = 4800 Km.
49)	23	05 - 03 - 14	iP	Very small. S uncertain. Δ = 1135± Km.
		05 - 20±	iS?	
50)		09 - 39 - 04	iP	Very small. S uncertain. Δg = 92± Km.
		39 - 15±	iS	or Δ = 1490 Km.
		or 41 - 43±		
51)		18 - 45 - 13	iPb	Very small. S very uncertain. Δb =
		- 51±	iSb?	322± Km.
52)	24	16 - 33 - 56	iPb	Very small. Δb = 192 Km.
		34 - 18	iSb	
53)	25	11 - 53 - 59	iP	Very small.
54)		17 - 32 - 26	iP	Very small.
55)	26	04 - 52 - 43	iPg	Small. Dilat. from NW? Δg = 117 Km.
		- 57	iSg	
56)		05 - 12 - 39	iPg	Very small. Repetition of preceding?
		- 53	iSg	
57)		09 - 12 - 48	iP	Very small. S indeterminate.

	Date	Time (GMT)	Phase	Remarks
58)	27	02 - 07 - 19	iPb	Small. Dilat. from approx. N. Δb =
		- 36	iSb	144 Km.
59)		03 - 21 - 35	iP	Very small. Δ = 5235 Km.
		- 28 - 33	iS	
60)		03 - 32 - 31	iP	Small to moderate. Deep focus, 525±
		34 - 06	ipP	Km. Dilat. from NE? Δ525 = 5110 Km.
		38 - 29	iS	
		41 - 34	isS	
61a)		14 - 51 - 48	iPb	Very small. Compr. from approx. N.
		52 - 14	iSb	Δb = 228 Km.
61b)		15 - 57 - 09	iPb	Very small. Δb = 802 Km.
		58 - 39	iSb	
62)	28	06 - 47 - 41		
		or 57	iPb	Very small. P uncertain. Δb = 524 or
		48 - 40	iSb	380 Km.
63)		06 - 58 - 36	iPb	Small. Compr. from approx. N. Δb =
		- 57	iSb	183 Km.
64)		14 - 01 - 54	iPg	Very small. Δg = 117 Km.±.
		02 - 08	iSg	
65)	29	16 - 14 - 49	iPg	Very small. Compr. from approx. S.
		59±	iSg	Δg = 84 Km.
66)	30	07 - 02 - 21	iPb	Very small. Dilatation. Δb = 264 Km.
		- 51	iSb	
67)		21 - 56 - 07	iP	Small to moderate. Deep focus, very
		57 - 21	ipP?	small L & M but depth only approxi-
		22 - 03 - 36	iS	mate as 350± Km. Δ350 = 6555± Km.
		05 - 56	isS?	

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Period of Seism. and Galv.	Components	Type of Amplifier
14 sec	E-W	Photographic
1½ sec	N-S	Photographic
2 sec	Z	Photographic
2 sec	E-W	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey type
14 sec	N-S	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey type

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FEBRUARY 1953

	Date	Time (GMT)	Phase	Remarks
68)	1	12 - 39 - 48	iPb	Small. Compr. Δb = 138 Km.
		40 - 04	iSb	
69)		14 - 22 - 54	iPg	Very small. Δg = 58 Km.
		23 - 01	iSg	
70)	2	10 - 18 - 37	iP	Very small. Compr.
71)	3	12 - 41 - 27	iPg	Small. Dilat. Δg = 76 Km.
		- 36	iSg	
72)		14 - 55 - 38	iPb	Very small. Δb = 282 Km.
		56 - 10	iSb	
73)		18 - 56 - 46	iPb	Very small. Repetition? Δb = 282 Km.
		57 - 18	iSb	
74)	4	20 - 01 - 03	iPb	Very small. Dilat. Δb = 147± Km.
		- 20	iSb	
75)		20 - 02 - 22±	iPb	Very small. Solution probable as repetition of preceding. Δb = 156± Km.
		- 40	iSb	
76)	5	11 - 56 - 36	iP	Very small.
77)		19 - 27 - 10	iPg	Very small. Δg = 50± Km.
		- 16±	iSg	
78)	6	12 - 37 - 53	iP	Very small. Dilat. S uncertain. Δ = 3165? Km.
		- 42 - 48?	iS	
79)		13 - 19 - 33	iP	Very small. Compr. Long period seismograms seem to give (a) & Δa = 3420 Km; but short period seem to give (b) & Δb = 3865 Km.
		24 - 44	iS(a)	
		25 - 12	iS(b)	
80)		16 - 49 - 41	iPb	Very small. Dilat. Δb = 165 Km.
		50 - 00	iSb	

	Date	Time (GMT)	Phase	Remarks
81)	7	~~02~~ 18 - 31 - 55±	iP	Small.
82)	8	10 - 08 - 50	iPb	Very small. Δb = 228± Km.
		09 - 16±	iSb	
83)		15 - 27 - 26	iPb	Very small. Δb = 317± Km.
		28 - 02±	iSb	
84)		15 - 42 - 17	iPb	Very small. Δb = 435± Km.
		43 - 06±	iSb	
85)	9	01 - 47 - 49	iPb	Small to moderate amplitude. Compr. from S±. Δb = 237± Km. Felt int. II, Manila.
		- 48 - 16	iSb	
86)	10	17 - 53 - 13	iPb	Very small. Δb = 165 Km.
		- 32	iSb	
87)	12	03 - 17 - 43	eP	Very small.
88)		03 - 46 - 47	iPg	Very small. Δ = 109 Km.
		47 - 00	iSg	
89)		08 - 25 - 46	iP (short period)	Small. Compr. Δ = 6765 Km. Quake in Iran, 120 Miles NE of Teheran.
		- 50	eP (long period)	
		- 34 - 11	iS	
		- 51±	M	
90)		08 - 37 - 43±	iP	Very small. Dilat. Δ = 6720± Km. Aftershock?
		46 - 05	iS	
91)	13	12 - 09 - 19	iPg	Small to moderate amplitude. Δg = 32 Km. Felt int. I, Baguio.
		- 23	iSg	
92)		12 - 35 - 55	i	Very small. Compr.
93)		14 - 57 - 36	iP	Small. Compr. Δ = 2435 Km.
		15 - 01 - 41	iS	
94)	14	09 - 03 - 54	iPg	Very small. Small compr., large dilat. Δg = 33 Km.
		58	iSg	
95)		09 - 19 - 59	iPg	Very small. Δ = 33 Km.
		20 - 03	iSg	
96)		19 - 41 - 34±	iPb	Very small. Possibility of not being a quake. Δ = 461± Km.
		42 - 26±	iSb	
97)		21 - 53 - 38±	iP	Small. S peculiarly difficult to find. (S-P) between 3 to 4 min.
		59±	L or M	
98)	15	09 - 56 - 44	iPg	Very small. Compr. Δg = 35± Km.
		- 48	iSg	
99)		22 - 00 - 00	iPb	Very small. Δb = 587 Km.
		01 - 06	iSb	
100)	16	10 - 30 - 06±	i	Very small.
101)	18	16 - 25 - 36	iPb	Very small. Compr. Δb = 156 Km.
		- 54	iSb	
102)		10 - 06 - 00	i	Very small.

	Date	Time (GMT)	Phase	Remarks
103)	19	09 - 34 - 10±	iPb	Very small. Δb = 452± Km.
		35 - 01	iSb	
104)		13 - 17 - 17	iP	Small. S uncertain.
105)		15 - 39 - 56	iP	Very small. Teleseismic. with L at 16h-14m±, & M at 16h-48±, there seems fit for 166° or Δ = 18445 Km.
106)		18 - 18 - 58	iP	Very small.
107)		19 - 42 - 41	iPg	Very small. Δg = 92 Km.
		- 52	iSg	
108)		21 - 07 - 02	iPb	Very small. Δb = 156 Km. Compr.
		- 20	iSb	
109)	20	08 - 21 - 48	iPg	Small. Compr. from N±. Δg = 84 Km.
		- 58	iSg	
110)		18 - 39 - 34	iPb	Small. S very difficult to read as in all local quakes to S. Felt Surigao, int. III, Borongon, int. III.
		41 - 22±	iSb	
111)	23	10 - 25 - 10	iPb	Very small. Δb = 148 Km.
		- 27	iSb	
112)	24	04 - 46 - 55	iPb	Very small. Δb = 219 Km.
		47 - 20	iSb	
113)		11 - 13 - 34	iPg	Moderate to large record. Compr. to NE? Δg = 25± Km. Felt int. III-IV Baguio; int. III, San Fernando, La Union.
		- 37	iSg	
114)		16 - 16 - 10	i	Very small.
115)	25	12 - 42 - 23	i	Very small.
116)		21 - 27 - 43	iP	Very small. Readings difficult, but seem to fit. Δ_{80} = 8110 Km; 80 Km. deep focus. L & M only faintly suggested at 21-52 and 21-57 respectively.
		- 28 - 01	ipP	
		- 37 - 03	iS	
		- 33	isS	
117)	26	00 - 40 - 42	iP	Very small. Δ = 4800 Km.
		47 - 16	iS	
118)		02 - 12 - 50	i	Very small.
119)		11 - 51 - 34	iP	Small to moderate. Δ = 5490± Km.
		58 - 46±	iS	
120)		15 - 28 - 54	iPg	Small. Δg = 117 Km.
		- 29 - 08	iSg	
121)	27	01 - 31 - 46	iPb	Very small. Δb = 345 Km.
		32 - 25	iSb	
122)		05 - 52 - 34	iP	Very small. S difficult to determine. Δb = 800± Km. or Δ = 3845± Km.
		- 54 - 04± or - 58 - 12±	iS	
123)	28	03 - 34 - 40	iPb	Very small. Compr. Δb = 237 Km.
		- 35 - 07	iSb	
124)		14 - 19 - 42	iPg	Small. Compr. from S? Δg = 84 Km.
		- 52	iSg	

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2 sec	Z	Photographic
2 sec	E-W	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey type
14 sec	N-S	

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MARCH 1953

	Date	Time (GMT)	Phase	Remarks
125)	1	00 - 19 - 11	iPb	Very small. Compr. Δb = 299 Km.
		- 45	iSb	
126)		07 - 59 - 41	iP	Very small. Δ = 2865± Km.
		08 - 04 - 15±	iS	
127)		10 - 02 - 59	iPg	Small. Compr. Δg = 25± Km.
		- 03 - 02±	iSg	
128)	2	02 - 20 - 42	iP	Very small. Compr. Δ = 4400 Km.
		- 26 - 54	iS	
129)		15 - 08 - 28	iPb	Very small. Δb = 363± Km.
		- 09 - 09±	iSb	
130)	3	11 - 37 - 14	iP	Small. Δ = 6580± Km.
		- 45 - 28±	iS	
131)		23 - 02 - 00±	iP	Very small. Δ = 4655± Km.
		- 08 - 26±	iS	
132)	4	14 - 47 - 41	iPb	Small. Δ = 730± Km.
		49 - 03±	iSb	
133)	5	21 - 09 - 48	iP	Very small. Compr. Rather clear new phases appear at times appropriate for PR_1 & SR_1, & Δ = 4800 Km., but very small L & M indicate rather pP and sS, with deep focus of 550 Km. & Δ550 = 5845 Km.
		- 11 - 31	ipP(iPR_1?)	
		- 16 - 28±	iS	
		- 19 - 21	isS(iSR_1?)	
134)		21 - 29 - 51	iP	Very small. Compr. of. remarks for previous quake. Aftershock?
		31 - 31±	ipP(iPR_1?)	
		36 - 25±	iS	
		39 - 25	isS(iSR_1)	

	Date	Time (GMT)	Phase	Remarks
135)	6	19 - 55 - 07	iP	Very small. Δ = 1300± Km. Solution only probable.
		- 57 - 28±	iS	
136)		22 - 00 - 48	iPb	Small. Compr. from N? Δ = 910± Km.
		02 - 30±	iSb	
137)	7	12 - 45 - 55	i	Very small. Surigao int. III, Mambajao II.
138)		16 - 39 - 15	i	Very small. Peculiar. Perhaps only blast.
139)		16 - 51 - 00	iP	Very small.
140)		17 - 13 - 39	i	Very small.
141)		23 - 49 - 41	iPb	Very small. Δ = 622± Km.
		- 50 - 51	iSb	
142)	8	02 - 06 - 25±	iPb	Very small. Δb = 183± Km.
		- 46	iSb	
143)		02 - 43 - 22	iPg	Very small. Compr. from S? Δg = 76 Km.
		- 31	iSg	
144)		18 - 07 - 04	iPb	Very small. Compr. from S? Δb = 264± Km.
		- 34±	iSb	
145)	9	02 - 43 - 34	iPb	Very small. Δb = 282 Km. On long period records PR_1, PR_2 seem unusually prominent.
		- 44 - 06	iSb	
146)		10 - 11 - 10	iP	Small. Dilat. from S^E? Δ = 4090 Km.
		- 17 - 03	iS	
147)		14 - 38 - 58±	iPb	Very small. Δb = 308± Km.
		39 - 33	iSb	
148)	10	06 - 08 - 53	iP	Very small. Δ = 6380 Km.
		- 16 - 55	iS	
149)		15 - 13 - 57	iP	Very small.
150)	12	00 - 51 - 49±	iP	Very small. Δ = 1690± Km.
		- 54 - 47±	iS	
152)		02 - 01 - 19	iPb	Very small. Dilat. Δb = 174 Km.
		- 39	iSb	
153)		20 - 11 - 40	iPg	Small. Dilat. from S±? Δg = 32± Km.
		- 44	iSg	
154)		21 - 28 - 35	iPb	Small. Δb = 174 Km. cf 151) Laoag II, Vigan II.
		- 55	iSb	
155)	14	17 - 03 - 18	iP	Moderate to large. Compr. from S. Δ = 1200± Km. Macros. Mambajao III, Tacloban II, Davao V, Dadiongas VI, Malaybalay, III. Tentative epicenter, 6.3° N, 124.2° E over SW coast of Cotabato.
		- 05 - 30±	iS	
156)		18 - 14 - 21	iPg	Very small. Compr. Δg = 109± Km.
		- 34±	iSg	
157)		21 - 28 - 06	iPb	Very small. Δb = 524± Km.
		- 29 - 05±	iSb	

	Date	Time (GMT)	Phase	Remarks
158)	15	00 - 13 - 50	iPb	Very small. Δ = 354 Km.
		- 14 - 30	iSb	
159)		00 - 31 - 27±	iPb	Very small. Δb = 129± Km.
		- 42	iSb	
160)		08 - 55 - 33±	iP	Very small. Dilat. Δ = 2600± Km.
		56 - 00	iPR_1	
		59 - 47±	iS	
161)	16	08 - 32 - 27	iP	Very small. Compr. Δ = 6345± Km.
		- 40 - 29±	iS	
162)		17 - 29 - 07	iPg	Small to moderate. Compr. Δ = 102± Km. Casiguran, II.
		- 19	iSg	
163)		19 - 44 - 45	iPg	Very small. Δ = 102± Km.
		- 57	iSg	
164)	17	12 - 31 - 16 or 24	iPb	Small. Very difficult to interpret. Seems, from macroseismic reports, small oscill. from 31-16 to 24 preliminary only. Δ = 426± Km. Romblon, int. IV, Rojas III.
		- 32 - 12	iSb	
165)		13 - 12 - 48	iP	Moderate sized record. Δ = 4690 Km. Turkey quake. Absence of surface waves indicates deep focus.
		- 19 - 16	iS	
		22 - 37±	iSR_1	
166)	18	19 - 09 - 04	iPb	Very small. Δb = 138 Km.
		- 20	iSb	
167)		19 - 18 - 40	eP±	Very small. Δ = 9000 Km.±
		28 - 51	eS±	
168)	19	01 - 41 - 00	iPb	Very small. Δb = 165± Km.
		- 19±	iSb	
169)		07 - 30 - 52	iPg	Very small. Dilat. from N? Δg = 117± Km.
		31 - 06±	iSg	
170)		08 - 47 - 23	iP	Moderate. Dilat. Δ = 6245 Km. Slightly deep focus? Phases very well developed for Baguio.
		49 - 28±	iPR_1	
		50 - 48±	iPR_2	
		55 - 18	iS	
		55 - 58	iPS	
		09 - 06±	L	
		- 10±	M	
171)		10 - 18 - 47	iP	Very small. Compr. Δ = 1280± Km.
		21 - 06	iS	
172)		13 - 03 - 56±	iP	Very small. S doubtful. Δ = 3535± Km.
		09 - 14±	iS	
173)		19 - 03 - 47	i	Very small.
174)	20	04 - 58 - 27	iPg	Very small. Δg = 102 Km.
		- 39	iSg	
175)		05 - 17 - 29	iPg	Small. Dilat. from N? Δg = 109 Km.
		42	iSg	

	Date	Time (GMT)	Phase	Remarks
176)	20	05 - 53 - 21	iPb	Small. Δ = 1026± Km. Macroseismic reports show that small oscillations for 56s before given iPb were only preliminary to main quake. Cagayan int. V, Malaybalay IV, Hinatuan II.
		55 - 16	iSb	
177)		08 - 37 - 53	i	Very small.
178)		15 - 14 - 29	iPg	Small. Δg = 33± Km.
		- 33	iSg	
179)		20 - 22 - 05±	iP	Very small. Δ = 2845± Km.
		26 - 37±	iS	
180)	21	06 - 37 - 53	iPg	Very small. Compr. from N? Δ = 23 Km.
		- 56	iSg	
181)		11 - 40 - 50	i	Very small.
182)		14 - 27 - 06	iPg	Very small. Δg = 102 Km.
		- 18	iSg	
183)		15 - 40 - 58±	iPg	Very small. Δg = 67± Km.
		41 - 06±	iSg	
184)	22	03 - 29 - 24	iPg	Very small. Δg = 76 Km.
		- 33	iSg	
185)		23 - 44 - 02	iPb	Small. Dilat. Δb = 165 Km.
		- 21	iSb	
186)	23	01 - 35 - 34	iPg	Very small. Δg = 109 Km.
		- 47	iSg	
187)		16 - 50 - 28	i	Very small.
188)		23 - 15 - 37	iPg	Very small. Compr. Δg = 33 Km.
		- 41	iSg	
189)	25	06 - 02 - 12±	i	Very small.
190)		10 - 30 - 14	i	Very small.
191)		13 - 22 - 46	iPb	Very small. Δb = 192 Km.
			iSb	
192)		20 - 23 - 24	iPb	Small. 327 Km.
		24 - 01	iSb	
193)	28	03 - 12 - 21±	iP	Very small. Δ = 5265± Km.
		- 19 - 21±	iS	
194)		09 - 47 - 37	iPg	Very small.
		- 46	iSg	
195)	29	01 - 21 - 11	iPb	Very small. Δb = 183 Km.
		- 32	iSb	
196)	30	03 - 45 - 44	iPg	Very small. Compr. Δg = 41 Km.
		- 50	iSg	
197)	31	04 - 31 - 00	iPb	Very small. Δb = 228 Km.
		- 26	iSb	
198)		05 - 34 - 48±	iPb	Very small. Δb = 192± Km.
		35 - 10	iSb	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Period of Seism. and Galv.	Component	Type of Amplifier
14 sec?	E-W	Photographic
1½ sec	N-S	Photographic
2 sec	Z	Photograhic
2 sec	E-W	Photoelectric, Visual recording, U. S. Coast & Geodetic Survey Type
14 sec	N-S	

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APRIL 1953

Date	Time (GMT)	Phase	Remarks
199) 1	08 - ±		Teleseismic. No record except cauda on E-W. long period.
200)	08 - 01 - 47	iPb	Very small. Δb = 156± Km.
	- 02 - 05	iSb	
201)	16 - 55 - 56	iPg	Very small. Δg = 67 Km.
	56 - 04	iSg	
202)	18 - 16 - 31±	iP	Very small. Δ = 2680± Km.
	- 20 - 51±	iS	
203) 2	02 - 01 - 58	i	Very small.
204)	04 - 03 - 19	iP	Small. Compression. Solution difficult. Best fit seems for very deep focus of 600± Km. Δ600 = 4555± Km.
	- 05 - 00±	ipP	
	- 09 - 02	iS	
	- 11 - 36±	isS	
205)	13 - 02 - 33	iPg	Very small. Δg = 102 Km.
	- 45	iSg	
206) 3	04 - 29 - 14	iP	Very small. Quake seems teleseismic. S-P = 9 min. seems to fit surface waves. Δ = 7500± Km.
	- 38 - ±	S?	
	- 56 - ±	M?	
207) 4	04 - 18 - 10	iPb	Very small. Δb = 192 Km.
	- 32	iSb	
208)	05 - 57 - 56	iP	Very small. Solution tentative only. Δ= 3120± Km.
	06 - 02 - 48	iS	
	- 08 - 46	M?	
209) 5	03 - 41 - 55	iPg	Very small. Dilatation. Δg = 67± Km.
	42 - 03	iSg	
210)	10 - 17 - 36	iP	Small. Interpretation difficult due to faint records. Δ = 1074± Km.
	- 19 - 28±	iS?	
211)	19 - 03 - 46	iPg	Small. Δg = 102 Km.
	- 58	iSg	
212)	19 - 10 - 35	iPg	Very small. Δg = 102 Km.
	- 47	iSg	

	Date	Time (GMT)	Phase	Remarks
213)	6	00 - 02 - ±	i	Very small.
214)		03 - 51 - 41	iPb	Small. Compr. from S. $\Delta b = 945^{\pm}$ Km.
		- 53 - 20±	iSb	Surigao, int. IV, Borongon IV, Tacloban III, Catbalogan III, Hinatuan III.
215)		07 - 29 - 11	iPg	Very small. Compr. $\Delta g = 41$ Km.
		- 16	iSg	
216)		12 - 23 - 19	iP	Very small. $\Delta = 4100^{\pm}$ Km.
		- 29 - 13±	iS	
217)		15 - 19 - 47	iPb	Very small. $\Delta b = 219^{\pm}$ Km.
		20 - 12±	iSb	
218)		19 - 58 - 47±	iPb	Very small. $\Delta b = 228^{\pm}$ Km.
		59 - 13	iSb	
219)	7	17 - 38 - 44	iP	Very small. Compr. $\Delta = 6800$ Km.
		47 - 11	iS	
220)		20 - 03 - 45	iPb	Very small. $\Delta b = 129$ Km.
		- 04 - 00	iSb	
221)		20 - 44 - 45	i	Very small.
222)	8	00 - 01 - 40	iP	Small. S difficult. $\Delta = 1510^{\pm}$ Km. or
		- 04 - 21±	iS	$2010^{\pm}$ Km.
		or - 05 - 03±		
223)	9	08 - 00 - 00	iPb	Very small. $\Delta b = 345^{\pm}$ Km.
		- 39±	iSb	
224)		20 - 11 - 37	iPb	Very small. $\Delta b = 192$ Km.
		- 59	iSb	
225)	10	02 - 07 - 18±	iPg	Very small. $\Delta g = 84^{\pm}$ Km.
		- 28±	iSg	
226)		07 - 04 - 26	iPb	Small. Compression. $\Delta b = 264$ Km.
		- 56	iSb	
227)		09 - 27 - 22	i	Very small.
228)		12 - 42 - 50	iPg	Small. $\Delta g = 102$ Km.
		- 43 - 02	iSg	
229)		17 - 07 - 45	iP	Very small. $\Delta = 4155^{\pm}$ Km.
		- 13 - 42±	iS	
230)		19 - 03 - 54	iPb	Very small. Dilatation $\Delta b = 237$ Km.
		- 04 - 21	iSb	
231)	11	02 - 43 - 29	iPg	Very small. $\Delta g = 84$ Km.
		- 39	iSg	
232)		03 - 24 - 20	i	Very small.
233)		12 - 34 - 14	iPb	Very small. $\Delta b = 237$ Km.
		- 41	iSb	
234)		13 - 27 - 12	iP	Very small. S uncertain. Teleseismic.
235)	12	22 - 39 - 13	i	Very small. Compr.
236)		23 - 11 - 14±	iPg	Very small. $\Delta g = 23^{\pm}$ Km.
		- 17	iSg	
237)	13	20 - 57 - 14		6 or 7 perfect 2-3 mm. ampl. 32^{s} period waves on N-S short period seism. only. Why?

Date	Time (GMT)	Phase	Remarks
238) 13	22 - 55 - 58	iPb	Small. $\Delta b = 291^{\pm}$ Km.
	56 - 31±	iSb	
239) 14	04 - 40 - 03	iPb	Small to moderate. dilatation. $\Delta b = 148^{\pm}$ Km.
	- 20±	iSb	
240)	13 - 48 - 22	iP	Small. Dilat. from N? $\Delta = 9610^{\pm}$ Km., 86?5
	- 59 - 00±	iS	
	14 - 13 - ±	L	
	- 20 - ±	M	
241)	20 - 07 - 30	iPb	Very small. $\Delta b = 356^{\pm}$ Km.
	08 - 08±	iSb	
242)	21 - 39 - 38	iPb	Very small. Compr. $\Delta b = 317^{\pm}$ Km.
	40 - 14±	iSb	
243) 15	21 - 56 - 33	iP	Very small. Compr. S uncertain. NB. No records 00-03-51, & 08-10hrs; Repairs.
244) 16	05 - 28 - 04	i	Very small.
	10 - 10 - 56	iPb	Very small. $\Delta b = 694^{\pm}$ Km.
	- 12 - 14±	iSb	
245)	11 - 55 - 22±	iPb	Very small. $\Delta b = 677^{\pm}$ Km.
	56 - 38	iSb	
246)	14 - 02 - 14	iPg	Very small. $\Delta g = 117^{\pm}$ Km.
	- 28	iSg	
247)	21 - 08 - 23	iPb	Very small. $\Delta b = 317$ Km.
	- 59	iSb	
248) 17	04 - 22 - 30	iPb	Very small. $\Delta b = 820^{\pm}$ Km. Tacloban int. II
	24 - 02±	iSb	
249)	07 - 04 - 14	iPb	Very small. $\Delta b = 148^{\pm}$ Km.
	- 31±	iSb	
250)	09 - 52 - 27±	iPb	Compression. Moderate. $\Delta b = 299^{\pm}$ Km.
	53 - 01	iSb	
251)	10 - 15 - 01±	iP	Very small. Dilat.
252)	11 - 17 - 35	iP	Small. Dilat. $\Delta = 4065^{\pm}$ Km. Deep focus?
	- 23 - 27±	iS	
253)	13 - 33 - 23	iPg	Very small. $\Delta g = 67^{\pm}$ Km.
	- 31±	iSg	
254)	13 - 58 - 13	iS	Small. P mixed in with smaller previous quakes? Indeterminate.
255)	16 - 12 - 49	iPb	Very small. $\Delta b = 174^{\pm}$ Km.
	13 - 09±	iSb	
256)	18 - 08 - 03±	iPb	Very small. $\Delta b = 148^{\pm}$ Km.
	- 19	iSb	
257) 18	00 - 00 - 41	iPg	Very small. $\Delta g = 41^{\pm}$ Km.
	- 46	iSg	
258)	17 - 42 - 53±	iPg	Small. $\Delta g = 58^{\pm}$ Km.
	43 - 00	iSg	
259)	23 - 39 - 55	iPg	Very small. $\Delta g = 76^{\pm}$ Km.
	40 - 04	iSg	

Date	Time (GMT)	Phase	Remarks
260) 19	03 - 27 - 20	iPb iSb	Small. Δb = 129± Km.
261)	08 - 09 - 04	i	Very small.
262)	15 - 58 - 13	iP	Very small. Δ = 1765± Km.?
	16 - 01 - 18±	iS?	
263) 20	03 - 00 - 53	iPb	Very small. Δb = 165 Km.
	01 - 11	iSb	
264)	10 - 35 - 11±	iPb	Very small. Δb = 147± Km.
	- 28	iSb	
265)	11 - 13 - 13	eP	Very small. Probably Δ = 7965± Km.
	15 - 49±	ePR_1	
	22 - 37±	eS	
	37 - ±	L	
	44 - ±	M	
266)	17 - 58 - 45±	iPb	Very small. Δb = 156± Km.
	59 - 03	iSb	
267) 21	01 - 22 - 38	iPb	Very small. Δb = 138± Km.
	- 54	iSb	
268)	09 - 00 - 20	iPb	Very small. Δb = 363± Km.
	01 - 01	iSb	
269)	10 - 01 - 33	iPb	Small. Δb = 553± Km. Basco, int. V.
	02 - 34	iSb	
270)	17 - 34 - 53	iP	Very small. Δ = 3045± Km.
	39 - 40±	iS	
271)	18 - 01 - 51	iPb	Very small. Δb = 219± Km.
	02 - 16±	iSb	
272)	21 - 08 - 03	iPb	Small. Compr. Δb = 712 Km. Catbalogan, int. II, Tacloban int. III.
	09 - 35	iSb	
273)	22 - 35 - 46	iPb	Small to moderate. Compr. Δb = 230± Km. Basco IV?
	36 - 12	iSb	
274) 22	05 - 15 - 23	iP	Very small.
275)	06 - 39 - 21	iPb	Very small. Δb = 820± Km.
	40 - 53±	iSb	
276)	13 - 35 - 36±	i	Very small.
277)	13 - 58 - 57	iPb	Small. Compr. Δb = 282± Km.
	59 - 29±	iSb	
278)	19 - 07 - 06	i	Very small.
279)	03 - 51 - 27	iPb	Very small. Δb = 273 Km.
	- 58	iSb	
280)	03 - 56 - 36	iP	Small. Δ = 1500 Km.
	59 - 16	iS	
281)	16 - 31 - 38	Prelim.P?	Very large, major quake Δ = 4165± Km. or 4000± Km. Quake near Rabaul, New Britain.
	- 49	iP	
	- 37 - 36±	iS	
282)	17 - 21 - 12±	i	Very small.
283)	18 - 24 - 05	i	Very small.
284)	19 - 10 - 11±	i	Very small.
285) 26	05 - 11 - 38±	iPb	Very small. Δb = 165± Km.
	- 57	iSb	

	Date	Time (GMT)	Phase	Remarks
286)	26	05 - 42 - 22	iPb	Small. Δb = 183± Km.
		- 43±	iSb	
287)		06 - 10 - 30	iPb	Very small. Δb = 282 Km.
		11 - 02	iSb	
288)		07 - 18 - 37	iPb	Very small. Δb = 192± Km.
		- 59	iSb	
289)	27	01 - 45 - 18	iPb	Small. Δb = 138 Km.
		- 34	iSb	
290)		07 - 40 - 55	iPb	Very small. Compr. from SW? Δb = 524 Km.
		41 - 54	iSb	
291)		07 - 41 - 11±	iPb	Very small. Δb = 524± Km.
		42 - 10	iSb	
292)	28	16 - 11 - 28	iPb	Very small. Δb = 345± Km.
		12 - 07±	iSb	
293)		17 - 22 - 38	iPg	Very small. Δg = 101± Km.
		50	iSg	
294)		23 - 24 - 16	iPb	Very small. Δb = 210± Km.
		40	iSb	
295)	29	03 - 39 - 49	iP	Small. Δ = 5065± Km.
		46 - 37±	iS	
296)		14 - 56 - ±	i	Very small. Probably teleseismic.
297)		20 - 26 - 16	iP	Very small. Δ = 4920± Km.
		32 - 56±	iS	
298)		22 - 01 - 48	i	Very small.
299)	30	01 - 08 - 42±	iPg	Very small. Δ = 128± Km.
		- 57	iSg	
300)		01 - 55 - 58±	iPg	Very small. Δg = 58± Km.
		56 - 05	iSg	
301)		06 - 36 - 57	iP	Small to medium. Long waves well developed. S tentative. Δ = 6565± Km.?
		- 45 - 10±	iS	
302)		14 - 36 - 19±	iPb	Very small. Δb = 543± Km.
		37 - 20±	iSb	
303)		19 - 25 - 46±	i	Very small.
304)		21 - 01 - 35±	iPg	Very small. Δg = 117± Km.
		- 49±	iSg	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually Recording	E-W	1.3	1.56	3000	Very rough average. Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

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MAY 1953

	Date	Time (GMT)	Phase	Remarks
305)	1	10 - 21 - 46±	iPb	Very small. Δb = 497± Km.
		22 - 42±	iSb	
306)		16 - 02 - 59±	iPb	Very small. Δb = 165± Km.
		03 - 19±	iSb	
307)		23 - 11 - 50±	iPb	Very small. Δb = 165± Km.
		12 - 09	iSb	
308)	2	08 - 59 - 17±	i	Very small.
309)		10 - 34 - 01±	i	Very small.
310)		15 - 36 - 56±	iPb	Very small. Δb = 174± Km.
		37 - 16	iSb	
311)		18 - 46 - 30±	iP	Very small. Solution only tentative. Δ = 8900± Km.
		58 - ±	PS	
		19 - 12 - ±	L	
		- 19 - ±	M	
312)	3	01 - 51 - 10±	iPb	Very small. Δb = 524± Km.
		52 - 09	iSb	
313)		08 - 26 - 55±	iPb	Very small. Δb = 165± Km.
		27 - 14	iSb	
314)	4	11 - 38 - 00±	iP	Very small. Δ = 5300± Km.
		- 45 - 02±	iS	
		- 54 - ±	L	
		57 - ±	M	
315)		15 - 45 - 40±	i	Very small.
316)		22 - 08 - 32±	i	Very small.
317)		23 - 44 - 39±	iPg	Very small. Δg = 68± Km.
		- 47	iSg	
318a)	5	04 - 02 - 05±	i	Very small.
318b)		04 - 13 - 25	iPb	Small. Δb = 174 Km.
		- 45	iSb	

	Date	Time (GMT)	Phase	Remarks
319)	6	17 - 36 - 48±	eP_1^1	Large. Chile quake. All records small except N-S long period, which gives remarkably fine record. The final waves (given tentatively as L & M long way around the earth 30 & 50 cm. amplitude. Δ = 158°; 17,555 Km; 10,900 miles. Phases on NL apparently well marked. L_1 M_1 = L & M short way round earth; L_2, M_2 = long way.
		- 36 - 58	eP_2^1	
		- 40 - 20	SKS	
		- 47 - 10±	SKKS	
		- 50 - 20	PS_cP_cS	
		- 56 ±	ePPS	
		- 59 ±	SR_1?	
		18 - 07 ±	SR_2?	
		- 31 ±	L_1	
		- 42 ±	M_1	
		19 - 12 ±	L_2	
		- 17 ±	M_2	
320)	8	02 - 03 - 32	iPb	Very small. Δb = 165 Km.
		- 51	iSb	
321)		07 - 11 - 32±	iPb	Very small. Δb = 290± Km.
		12 - 05	iSb	
322)		09 - 25 - 22	iPb	Small to moderate. Δb = 121 Km.
		- 36	iSb	
323)		15 - 15 - 04±	i	Very small. Teleseismic?
324)		17 - 33 - 06±	iPb	Very small. Δb = 363± Km.
		- 43±	iSb	
325)		23 - 16 - 44±	iPb	Very small. Δb = 174± Km.
		17 - 04	iSb	
326)	9	10 - 00 - 49	iPg	Very small. Δg = 92± Km.
		01 - 00	iSg	
327)		11 - 37 - 47	iPb	Small to moderate. Δb = 613± Km.
		38 - 56	iSb	Felt:-Catbalogan, III; Virac III.
328)		17 - 46 - 55	iP	Very small. Dilatation. Δ= 4455 Km.
		- 53 - 10	iS	
329)		18 - 12 - 18	iPb	Very small. Δb = 129 Km.
		- 33	iSb	
330)	10	05 - 20 - 43±	iP	Very small. Teleseismic.
		18 - 27 - 40±	iPg	Very small. Δg = 58± Km.
		- 47	iSg	
331)		19 - 54 - 46	iP	Very small. Teleseismic. S uncertain. S-P probably 4 to 5 mm.
332)	11	10 - 26 - 53±	iP	Very small. Δ= 6320= Km.
		- 35 - 15	iS	
333)		18 - 00 - 30±	iPb	Small. Δb = 488± Km.
		01 - 25±	iSb	
334)	13	12 - 04 - 11	eP	Very small. Δ= 9180± Km.
		- 15 - 30±	eS	
		33 - 02±	eL	

	Date	Time (GMT)	Phase	Remarks
335)	14	02 - 15 - 37	eP	Very small. Δ = 2755± Km.
		20 - 03±	eS	
		23 - ±	eL	
336)		02 - 26 - 20	iPg	Very small, rather peculiar record.
		- 23±	iSg	Δg = 23± Km.
337)		21 - 17 - 02	iPg	Very small. Compression. Δg = 33 Km.
		- 06	iSg	
338)	15	18 - 29 - 43±	iPg	Very small. Δg = 117± Km.
		- 57	iSg	
339)		18 - 29 - 49	iPg	Very small. Doubtful quake. Δg =
		30 - 05±	iSg	128± Km.
340)	16	17 - 01 - 43	iP	Very small. Teleseismic. S-P could be
		Indeterminate	S	either 3m - 40s± or 5m-30s±
341)	17	09 - 49 - 13	iPb	Small. Dilatation. Δb = 641± Km.
		- 50 - 25±	iSb	
342)		09 - 54 - 48	iPb	Small. S difficult. Δb = 389± Km.
		- 55 - 32		or 694± Km.
		or - 55 - 56	iSb	
343)		13 - 17 - 32±	eP	Very small. Dilatation. Δ = 3090± Km.
		22 - 22±	eS	
344)		20 - 17 - ±	e	Very small. Teleseismic?
345)		21 - 57 - 02	iPb	Very small. Δb = 317± Km.
		- 38	iSb	
346)		22 - 17 - 20±	iP	Very small. Teleseismic. S indeterminate.
347)	18	03 - 06 - 48	iPb	Very small. Δb = 156± Km.
		07 - 06±	iSb	
348)		08 - 01 - 14	iP	Small. Small dilatation, then large
		08 - 08±	iS	compression. Δ = 6235± Km.
349)		08 - 21 - 25	iP	Very small. Compression. Δ = 3100±
		26 - 16±	iS	Km.
350)		12 - 34 - 57	iPb	Very small. Compression. Δb = 192±
		35 - 19±	iSb	Km.
351)		13 - 27 - 07	iPg	Small to moderate. Compression. Δb =
		- 21±	iSg	117± Km.
352)		15 - 08 - 17±	iPb	Very small. Δb = 147± Km.
		34	iSb	
353)		18 - 37 - 58±	iPg	Very small. Δg = 109± Km.
		38 - 13	iSg	
354)		20 - 43 - 26	i	Very small.
355)	19	03 - 19 - 40	eP	Very small. Δ = 5110± Km.
		26 - 31	eS	
356)		05 - 27 - 24	ePb	Very small. Δb = 264± Km.
		54±	iSb	
357)		15 - 55 - 41	iP	Very small. Compression. 3145± Km.
		56 - 27±	ePR_1	
		16 - 00 - 35±	iS	
		- 04 - =	L	

Date	Time (GMT)	Phase	Remarks
358) 20	08 - 36 - 15±	ePg	Very small. Δg = 102± Km.
	27	iSg	
359)	10 - 47 - 40	iP	Very small. Δ = 1780± Km.
	50 - 46±	iS	
	52 - 50±	L	
360)	20 - 39 - 55±	iP	Very small. S-P indeterminate. Probably 1m±.
361) 21	07 - 36 - 08±	iPb	Very small. Δb = 121± Km.
	- 22	iSb	
362)	14 - 39 - ±	e	Small amplitude long period waves.
363) 22	03 - 43 - 29	iPb	Small to moderate. Compression. Δb = 174± Km. NB. 08h.-19m GMT to 10hr.-00m no records. Power trouble.
	- 49	iSb	
364)	11 - 01 - 52	eP	Very small. Δ = 2635± Km.
	06 - 09±	eS?	
365)	20 - 24 - 32	iPb	Very small. Δb = 936± Km. Peculiar record.
	26 - 17±	iSb?	
366)	21 - 57 - 42 or 51	e	Very small.
367) 23	04 - 31 - 41	eP	Small. S-P uncertain. Probably 1m-39s
368) 24	00 - 30 - 35±	ePb	Very small. Δb = 246± Km.
	31 - 03	iSb	
369)	01 - 22 - 01	iPb	Very small. Δb = 246 Km.
	- 29	iSb	
370)	01 - 39 - 02±	eP	Very small. Δ = 1955± Km.
	42 - 24	eS	
	43 - 30±	L or M	
371)	05 - 59 - 16	iPb	Small. Compression. Δb = 246 Km.
	- 44	iSb	
372)	21 - 24 - 51	iPg	Very small. Δg = 76 Km.
	25 - 00	iSg	
373) 25	12 - 44 - 01	iP	Small. Compression. Δ = 3710± Km.
	49 - 30±	iS	
	53 - 43±	L	
	57 - 15±	M	
374)	17 - 49 - 05	iP	Very small. Δ = 5010± Km.
	55 - 50±	iS	
	18 - 03 - 40±	L	
375) 26	01 - 49 - 37	eP	Small. Δ = 3580± Km.
	54 - 58±	eS	
376)	02 - 02 - 39	iPg	Very small. Δg = 32± Km.
	- 43±	iSg	
377)	09 - 49 - 32	iPb	Very small. Δb = 138± Km.
	48±	iSb	
378)	22 - 34 - 48	iP	Very small. Dilatation. Δ = 2055± Km.
	38 - 18±	iS	

	Date	Time (GMT)	Phase	Remarks
379)	27	19 - 05 - 14±	iP	Very small. Teleseismic. S-P very uncertain.
380)		1903 - 59 - 22	iPg	Small. Compression. Δg = 50± Km.
		- 28	iSg	
381)	28	02 - 03 - 32	iPg	Very small. Δg = 84 Km.
		- 42	iSg	
382)		18 - 09 - 02	iP	Small. Compression. Δ= 4555± Km.
		15 - 22±	iS	
		21 - ±	L	
383)		21 - 52 - 53	eP	Very small. Teleseismic. S-P very uncertain.
384)	29	04 - 07 - 45±	iPb	Very small. Δb = 156± Km.
		08 - 03	iSb	
385)		10 - 24 - 55	iPb	Small. Compression. S-P difficult to read. Δb = 551± Km.
		25 - 57±	iSb	
386)		10 - 49 - 09	iPb	Small. Δb = 551± Km. NB This & preceding quake remarkably similar to each other. amplitudes & phases
		50 - 11±	iSb	
387)	30	07 - 21 - 38±	iP	Very small. Δ = 2410± Km. tentative only.
		25 - 37	eS	
388)		15 - 05 - 09	iPb	Small. Δb = 174± Km.
		- 29±	iSb	
389)		15 - 40 - 42±	ePb	Very small. Δb = 138± Km.
		- 58	iSb	
390)		15 - 59 - 14±	eP	Very small.
391)		20 - 22 - 43±	ePb	Very small. Δb = 389± Km.
		23 - 27±	eSb	
392)	31	05 - 05 - 35±	iP	Medium to large. Compression. Δ = 3755± Km.
		10 - 07±	iS	
393)		18 - 36 - 23	iPg	Very small. Δg = 58± Km. Compression
		- 30±	iSg	
394)		19 - 46 - 22	iP	Very small. Compression.
395)		20 - 18 - 07	e	Small. Record lasted to 22 hrs. The following phases seem fairly well shown. P_I^I, S_cP_cP, PS_cP_cS, L & M. Δ = 169°±. Solution tentative.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock.

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually Recording	E-W	1.3	1.56	3000	Very rough average. Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

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Date	Time (GMT)	Phase	Remarks
396) 1	07 - 35 - 49±	e	Very small.
397)	07 - 41 - 12	e	Very small.
398)	19 - 58 - 01	iPg	Very small. Δ = 92 Km.
	- 12	iSg	
399) 2	16 - 49 - 56±	iPg	Very small. Δ = 101± Km.
	50 - 08±	iSg	
400)	16 - 55 - 45±	iP	Very small. Masked by micros.
401)	17 - 55 - 29	iP	Small. Compression. Δ = 2680± Km.
	- 59 - 49±	iS	
402) 3	02 - 23 - ±	iP	Small. No time marks. S-P = 1m 33s± Δb = 829± Km.
403) 4	01 - 23 - 10±	iP	Very small. Masked by micros.
	- 48±	iS	
404)	03 - 13 - 10±	iP	Small. Compression. Δb = 192± Km. Felt Manila, int. II.
	- 32±	iS	
405)	11 - 19 - 13	iPb	Small. Masked by micros. Δg = 165 Km.
	- 32	iSb	
406) 5	12 - 48 - 35	iPb	Very small. Δb = 121 Km.
	49	iSb	
407)	16 - 36 - 02±	iPb	Very small. Δb = 354± Km.
	- 42±	iSb?	
408)	16 - 42 - 10	iP	Small. S-P uncertain.
409)	18 - 19 - 58±	ePb	Very small. S uncertain. Δb = 604± Km.
	21 - 06±	iSb?	
410)	19 - 09 - 06±	iP	Very small. S very uncertain.
411)	19 - 49 - 53	iP	Very small. Δ = 1690± Km.
	52 - 51	iS	
412)	20 - 48 - 40	iPb	Very small. Δb = 174± Km.
	49 - 00	iSb	
413)	21 - 02 - 21±	eP	Very small.

	Date	Time (GMT)	Phase	Remarks
414)	5	21 - 58 - 53	ePb	Very small. Δb = 210 Km.
		59 - 17	iSb	
415)	6	01 - 15 - 29	iPb	Small to moderate. Compr. Δb = 543± Km.
		16 - 30±	iSb	
416)		13 - 00 - 50	iP	Small. Compr. then larger dilatation. Δ = 3120± Km. Determination of S rather uncertain.
		05 - 42±	iS	
417)		18 - 48 - 10±	iPb	Very small.
		49 - 00±	iSb	
418)		19 - 00 - 41	iPb	Very small. Δb = 426± Km.
		01 - 29±	iSb	
419)		22 - 08 - 35	iPb	Very small. Δb = 291± Km.
		09 - 08±	iSb	
420)		22 - 28 - 22	iPb	Very small. Δb = 345± Km.
		29 - 01±	iSb	
421)	7	03 - 06 - 21	iPb	Very small. Δb = 389± Km.
		07 - 05	iSb	
422)		07 - 44 - 01±	iPb	Very small. Δb = 435± Km.
		- 50	iSb	
423)		09 - 42 - 05	iPb	Very small. Δb = 147 Km.
		- 22	iSb	
424)		20 - 06 - 02	iPg	Very small. Δg = 23 Km.
		- 05	iSg	
425)	8	03 - 24 - 21	iPg	Very small. Δg = 67 Km.
		- 29	iSg	
426)		11 - 49 - 05	iP	Very small. Dilatation. Δ = 5120± Km.
		55 - 57±	iS	
427)		16 - 28 - 47±	iPb	Very small. Δb = 210± Km.
		29 - 11	iSb	
428)		17 - 57 - 39±	iPb	Very small. Δb = 174± Km.
		- 59±	iSb	
429)	9	00 - 43 - 48±	iP	Very small. Compr. Determination of S difficult. Either Δ = 1520± Km. or 3280± Km.
		46 - 30		
		or 48 - 50	iS	
430)		01 - 47 - 44	eP	Very small. Δ = 5380± Km.
		- 54 - 50±	eS	
		02 - 03 - ±	L	
431)		02 - 30 - 53	iPb	Very small. Dilatation.
		31 - 07	iSb	
432)		05 - 38 - 59	iP	Very small. S indeterminate.
433)		16 - 48 - 14	iPg	Very small. Δg = 76 Km.
		- 23	iSg	
434)		17 - 44 - 18	iPb	Very small. Δb = 121± Km.
		- 32	iSb	
435)		19 - 27 - 04	iPb	Very small. Compression. Δb = 121 Km
		- 18	iSb	
436)		20 - 09 - 18	iPb	Small. Dilatation from N±. Δb = 138 Km.
		- 34	iSb	
437)		20 - 12 - 14	iPb	Small. Twin of preceding quake. Dilatation. Δb = 138 Km.
		- 30±	iSb	

	Date	Time (GMT)	Phase	Remarks
438)	10	07 - 18 - 13	iPg	Very small. Compression. Δg = 112 Km.
		- 26	iSg	
439)		10 - 46 - 13±	iP	Very small.
440)		18 - 28 - 42±	iP	Small to moderate. Deep focus? Δ = 2490 Km.
		32 - 47±	iS	
441)	11	03 - 57 - 32±	ePb	Very small. Δb = 219± Km.
		57	iSb	
442)		05 - 19 - 14	eP	Very small. S uncertain.
443)		05 - 58 - 14±	ePb	Very small. Δb = 165± Km.
		- 33	iSb	
444)		22 - 35 - 51	ePb	Very small. Δb = 515± Km.
		36 - 49±	iSb	
445)		22 - 51 - 35±	ePb	Very small. Δb = 228± Km.
		52 - 01	iSb	
446)		23 - 41 - 15	iPg	Medium to large. Dilatation. Δg = 84 Km. Felt intensity I, Baguio.
		- 25	iSg	
447)	12	02 - 05 - 32±	i	Very small.
448)		02 - 23 - 03±	iPb	Very small. Δb = 210± Km.
		- 27±	iSb	
449)	13	03 - 16 - 13	iPb	Small. Dilatation. Δb = 282 Km.
		- 45	iSb	
450)		17 - 01 - 59±	iPb	Very small. Δb = 372± Km.
			iSb	
451)		19 - 27 - 40	iPg	Small to moderate. Compr. from N±? Δg = 23± Km.
		- 43	iSg	
452)		21 - 42 - 56	iPg	Very small. Compression. Δg = 41± Km.
		43 - 01	iSg	
453)		21 - 52 - 30±	iP	Very small. S uncertain; probably S-P = 1m-20s±
454)		22 - 58 - 36	iPb	Very small. Δb = 380± Km.
		- 59 - 19±	iSb?	
455)	14	22 - 22 - 16±	iPg	Very small. Δg = 50± Km.
		- 22±	iSg	
456)		23 - 27 - 41	iPg	Moderate. Compression from NW? Δg = 22 Km. Felt intensity II-III Baguio.
		- 44	iSg	
457)		23 - 31 - 03	iS	Very small. P indeterminate.
458)		23 - 48 - 49	iPg	Very small. Peculiar record. Δg = 23 Km.
		- 52	iSg	
459)	15	17 - 31 - 54±	iPb	Very small. Δb = 210± Km.
		- 32 - 18	iSb	
460)		17 - 58 - 48±	eP	Small. Δ = 8200± Km.
		18 - 08 - 24	iS	
		- 22m & 29m	L & M	
461)		19 - 38 - 35±	iPb	Small. Δb = 201± Km.
		- 58	iSb	
462)		21 - 39 - 04	iPb	Small. Δb = 246± Km.
		- 32	iSb	

	Date	Time (GMT)	Phase	Remarks
463)	16	09 - 58 - 22	iP	Small. Δ = 2645± Km. or 2745± Km.
		10 - 02 - 40 or 47	eS	
464)		18 - 09 - 06	iPg	Very small. Dilatation. Δg = 58 Km.
		- 13	iSg	
465)		19 - 59 - 34±	iP	Very small. Dilatation. Δ = 8000± Km.
		20 - 09 - 00±	eS	
466)	17	01 - 13 - 46	iPb	Very small. Compression. Δb = 201 Km.
		- 14 - 09	iSb	
467)		07 - 41 - 03±	iPb	Very small. Δb = 121± Km.
		- 17±	iSb	
468)		13 - 34 - 46	iPb	Very small. Δb = 134± Km.
		35 - 02	iSb	
469)		15 - 14 - 25±	iPb	Very small. Δb = 174± Km.
		- 45	iSb	
470)	18	10 - 12 - 38	iP	Small. Compression. Possibly deep focus. Δ = 4400± Km.
		18 - 50	iS	
		22 - 30±	iSR_2	
		25 - ±	L	
		28 - ±	M	
471)		13 - 20 - 57	iP	Very small. Teleseismic. Possibly aftershock of previous quake.
		- 27 - ±	iS	
472)	19	09 - 42 - 16	iP	Very small. Compression. S uncertain S-P probably 2± min.
473)		12 - 15 - 41	iP	Very small. Compression. S uncertain.
474)		17 - 00 - 08	eP	Very small.
475)		17 - 13 - ±	eP	Very small.
476)		18 - 33 - 40	iP	Very small. Δ = 1245± Km.
		35 - 56±	iS	
477)	21	10 - 01 - 07	iP	Very small. Compression. S uncertain.
478)		19 - 43 - 10	iPb	Very small. Δb = 299± Km.
		- 44±	iSb	
479)	22	07 - 23 - 01	iP	Very small. Possibly deep focus, 300± Km. Δ = 14,665± Km., 1320±
		- 24 - 05	ipP	
		- 35 - 47	iS	
		- 37 - 41	isS	
480)		09 - 24 - 30±	iPb	Very small. Δb = 138± Km.
		- 46	iSb	
481)		12 - 43 - 39	iPg	Very small. Δg = 84 Km.
		- 49	iSg	
482)	23	01 - 11 - 06	iPb	Very small. Δb = 299 Km.
		- 40	iSb	
483)		14 - 01 - 54	iP	Very small. Probably deep focus. 150± Km. Δ150 = 5110 Km.
		- 02 - 34±	ipP	
		- 08 - 32	iS	
		- 09 - 46±	isS	
484)		21 - 14 - 58	iP	Very small. Δ = 4410± Km.
		21 - 11	iS	

	Date	Time (GMT)	Phase	Remarks
485)	24	14 - 39 - 53	iPb	Very small. Compr. Δb = 147± Km.
		40 - 10	iSb	
486)		23 - 43 - 01	iPg	Small. Compression. Δg = 93 Km.
		- 12	iSg	
487)	25	04 - 54 - 19	iPb	Very small. Δb = 317± Km.
		- 55±	iSb	
488)		06 - 03 - 52	iP	Small. Δ = 2845± Km. cf next quakes
		08 - 24±	iS	
489)		06 - 28 - 42±	iP	Very small. Δ = 2980± Km. cf next quake.
		33 - 24±	iS	
490)		10 - 49 - 26	iP	Large, major quake. S very difficult due to large & quick vibrations & overlapping records. Δ = 2880± Km.
		54 - 01±	iS	
491)		15 - 17 - 33±	iP	Very small. Probably aftershock of previous quake.
		22 - 13±	iS	
492)	26	03 - 48 - 22	iP	Very small. Δ = 2565± Km.
		- 52 - 33±	eS?	
493)		05 - 48 - 19	iP	Moderate to large quake. Δ = 2735± Km. Aftershock of #490?
		- 53 - 43±	iS	
494)		07 - 45 - 22	iP	Very small.
495)		22 - 36 - 58	iP	Very small. Aftershock of #490?
		41 - 11±	eS	Δ = 2590± Km.
496)	27	06 - 50 - 54	iPb	Very small. Δ = 497 Km.
		- 51 - 50	iSb	
497)		09 - 55 - 21	iP	Very small. Dilatation Δ = 4145± Km.
		10 - 01 - 18±	iS	
498)	28	05 - 42 - 25±	iP	Very small. Δ = 2910± Km.
		47 - 02±	eS?	
499)		07 - 04 - 34±	i	Very small.
500)		14 - 48 - 03±	i	Very small.
501)	29	09 - 18 - 06	iPb	Very small. Δb = 165± km.
		- 25±	iSb	
502)		11 - 57 - 58±	iPb	Small. Δb = 156± Km.
		58 - 16±	iSb	
503)		14 - 01 - 01	iPb	Small. Δb = 138± Km.
		- 17±	iSb	
504)	30	06 - 16 - 50±	iPg	Very small. Δg = 109± Km. Micros.
		17 - 03±	iSg	
505)		07 - 46 - 24±	iPg	Very small. Compression. Δg = 117± Km. Micros.
		- 38±	eSg	
506)		09 - 15 - 24±	iPb	Very small. Δb = 264± Km. Micros.
		- 54±	iSg	
507)		20 - 13 - 04±	iPg	Very small. Δg = 85± Km. Micros.
		- 14	iSg	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock.

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually Recording	E-W	1.3	1.56	3000	Very rough average. Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

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	Date	Time (GMT)	Phase	Remarks
508)	1	03 - 07 - 51	iP	Moderate. Compr. Δ = 4765± Km.
		- 14 - 23±	iS	
509)		17 - 55 - 25	e	Very small.
510)	2	07 - 06 - 40	iP(short period)	Large quake. Compression. Δ = 6180± Km., 55°.6.
		- 43	iP(long period)	
		- 14 - 31±	iS	
511)		07 - 36 - 10±	e	Very small. Phases mixed with previous quake.
512)		22 - 32 - 09±	iP	Very small. Phases lost in micros.
513)	3	02 - 16 - 16±	iPb	Very small. Δb = 201± Km.
		- 39	iSb	
514)		02 - 40 - 47	iP	Very small. S uncertain.
515)		02 - 47 - 42	iPb	Very small. Δb = 317± Km.
		- 48 - 18±	iSb	
516)		05 - 33 - 30	iP	Small to moderate. Small dilat., then large compr. Δ = 1745± Km.
		- 36 - 33±	iS	
517)		05 - 19 - 29±	iPg	Very small. Δg = 117± Km.
		- 43±	iSg	
518)		19 - 29 - 21	iP	Very small. S uncertain; micros.
519)	4	09 - 56 - 36	iPb	Small. Δb = 121 Km.
		50	iSb	
520)	5	00 - 38 - 59±	iPb	Very small. Δb = 299± Km.
		39 - 33	iSb	
521)		03 - 27 - 57	iPb	Very small. Δb = 121 Km.
		- 28 - 11	iSb	
522)		08 - 02 - 31	iP	Very small. Compr. Δ = 2635± Km.
		- 06 - 48±	iS	
523)		12 - 59 - 28	iP	Very small. Dilat.? Δ = 2610± Km.
		13 - 03 - 43±	iS	cf. previous quake.
524)		17 - 20 - 14±	iPb	Very small. Δb = 228± Km.
		- 40	iSb	

	Date	Time (GMT)	Phase	Remarks
525)	6	04 - 06 - 03	iP	Moderate record. Compression. Interesting but puzzling records of explosion of 83 tons of dynamite at Ambuklao Dam project, 22 km. to ENE of our station.
526)		09 - 48 - 47±	iPb	Very small. △b = 147± Km.
		49 - 04	iSb	
527)		21 - 06 - 42	iPb	Very small. △b = 129± Km.
		- 57±	iSb	
528)		22 - 02 - 31	iP	Very small. Compression. △= 3735± Km
		- 08 - 02±	iS	
		- 12 - 00±	L	
529)	7	02 - 20 - 24	iPb	Very small. △b = 156± Km.
		- 42±	iSb	
530)		04 - 12 - 57	iP	Moderate. Compr. from S±? △= 2520± Km. = 22°.7
		- 13 - 25	iPR1	
		- 17 - 05	iS	
		- 18 - 54	L	
531)		13 - 51 - 58±	iP	Very small. S uncertain.
532)		17 - 33 - 37	iP	Small. △= 2655± Km. = 23°.9
		38 - 56±	iS	
533)	8	05 - 17 - 49±	iP	Very small.
534)		15 - 23 - 14±	iP	Very small.
535)	9	06 - 53 - 03	iP	Very small. Dilatation. △= 1320 Km.
		- 56 - 04	eS	
536)		17 - 23 - 10	iPb	Very small. △b = 147 Km.
		- 27	iSb	
537)		19 - 10 - 20±	iP	Very small. △= 4845± Km. Solution tentative.
		16 - 56±	iS	
538)		21 - 43 - 04±	iP	Very small. △= 1300± Km. Solution only tentative, because groups of long waves at 06h-30m± to 07-10 make very distant quake (132°△) a possibility.
		- 45 - 25±	eS	
		46 - 35±	M	
539)	10	08 - 13 - 42	iP	Very small. Dilat. △= 3610± Km. = 32°.5
		- 19 - 05	iS	
540)		15 - 15 - 10	iP	Small to moderate. Compression from S±. Very difficult to interpret; may be extraordinarily deep focus 800± Km. Then △800± = 5335± Km. = 48°. Another less probable solution △= 1255± Km.
		- 17 - 27	ipP	
		- 21 - 15±	iS	
		- 25 - 13±	isS	
541)	11	00 - 02 - 01	iPb	Very small. Compr. △= 138 Km.
		- 17	iSb	
542)		07 - 15 - 33	iP	Very small. △= 1093± Km.
		- 17 - 27±	iS	
543)		10 - 38 - 59	iP?	Small. Phases all uncertain.
544)		18 - 55 - 29	eP	Very small. S uncertain.

	Date	Time (GMT)	Phase	Remarks
545)	12	01 - 01 - 40	iPb	Very small. Compr. Δb = 219 Km.
		- 02 - 05	iSb	
546)		05 - 18 - 09	iPg	Very small. Δ = 147± Km.
		- 26	iSg	
547)		06 - 48 - 38	eP	Small to moderate. Δ = 2700± Km. = 24°.3
		- 53 - 00±	iS	
548)		08 - 56 - 12	eP	Very small. Δ = 2735± Km. = 24°.6. cf. previous quake.
		09 - 00 - 36±	iS	
549)		09 - 12 - 16	eP	Very small.
550)	13	21 - 38 - 36	iP	Very small.
551)		22 - 03 - 02	iPb	Very small. Δb = 165 Km.
		- 21	iSb	
552)	14	22 - 24 - 16	iPb	Very small. Δb = 165 Km.
		- 35	iSb	
553)	15	13 - 33 - 38	iP	Very small. Teleseismic.
554)		18 - 55 - 23	iPb	Very small. Compr. Δb = 156 Km.
		- 41	iSb	
555)		22 - 34 - 28	iPb	Small. Dilat., from N? Δb = 831 Km.
		36 - 01	iSb	
556)	16	02 - 32 - 00	iPg	Very small. Dilat. Δg = 92 Km.
		- 11	iSg	
557)		03 - 02 - 57±	iPb	Very small. Δb = 282± Km.
		- 03 - 29	iSb	
558)		04 - 40 - 51	iP	Very small.
559)	17	17 - 08 - 44	eP	Very small. Teleseismic.
560)	18	05 - 30 - 20	iPb	Small. Δb = 138 Km.
		- 36	iSb	
561)		20 - 29 - 29	iPg	Very small. Δg = 117 Km.
		- 43	iSg	
562)	19	19 - 37 - 00	iPb	Very small. Compression. Δb = 201± Km.
		- 23±	iSb	
563)	20	08 - 19 - 30	iP	Very small. Solution only tentative. Δ= roughly 8700± Km.
		- 29 - 30±	iS	
		- 44 - 00±	L	
564)		09 - 22 - 16	iPb	Very small. Compression. Δb = 174± Km.
		- 36	iSb	
565)		09 - 52 - 00±	iPg	Very small. Δg = 84± Km.
		- 10	iSg	
566)	21	14 - 27 - 55	iPg	Small. Compr. Very simple type. Felt intensity I, Baguio. Blast? Δg = 30± Km.
		- 59	iSg	
567)		17 - 25 - 35±	iP	Small. Δ = 1555± Km.
		28 - 20±	iS	

	Date	Time (GMT)	Phase	Remarks
568)	22	05 - 19 - 28	iP	Small. Perhaps deep focus? Δ = 4900 Km. = 44°.1 Compr. from NE?
		- 26 - 07	iS	
569)		07 - 15 - 34	iPb	Very small. Δb = 121 Km.
		- 48	iSb	
570)		16 - 14 - 29	iPb	Very small. Δb = 345 Km.
		15 - 08	iSb	
571)		21 - 39 - 02	iPb	Very small. Δb = 152 Km. Compr.
		- 27	iSb	
572)	23	02 - 33 - 44	iP	Small. Small compr., larger dilat. Surface waves small. Δ = 2600 Km. = 23°.4.
		- 37 - 58	iS	
573)		04 - 25 - 06	iPb	Very small. Δb = 153± Km.
		- 23	iSb	
574)		11 - 22 - 35	iPb	Small. Dilat. Δb = 192 Km.
		- 57	iSb	
575)	24	11 - 00 - 47±	i	Very small. Teleseismic.
576)		18 - 19 - 39	iPb	Small. Δb = 291± Km.
		20 - 12±	iSb	
577)	25	07 - 46 - 14±	iP	Very small. Compr. Δ = 2865± Km. 25°.8±.
		- 50 - 58±	iS	
578)		15 - 49 - 13±	eP	Very small. Δ = 3200± Km. = 28°.8±
		- 54 - 10±	eS	
579)		17 - 38 - 10±	eP	Very small.
580)	26	11 - 26 - 08	iP	Very small. Δ = 2120± Km. = 19°.1±
		29 - 43	eS	
581)		16 - 58 - 20	iP	Medium to large. Compr. from SE±.
		17 - 02 - 21	iS	Δ = 2435 Km. = 21°.9
582)		18 - 08 - 48	iPb	Small. Δ = 138 Km.
		- 09 - 04	iSb	
583)	27	02 - 46 - 44±	eP	Very small. Teleseismic?
584)		15 - 24 - 05	iPg	Very small. Δg = 14 Km. Blast?
		- 07	iSg	
585)	28	04 - 53 - 48	iPb	Very small. Δb = 192 Km.
		54 - 10	iSb	
586)		07 - 50 - 05	i	Small. These seem from same quake which appears teleseismic, but phases small & uncertain.
		- 58 - 38	i	
587)		08 - 59 - 47.5	iPg	Very small. Compression from S±. Blast? Δg = 20± Km.
		- 50	iSg	
588)		09 - 23 - 02	iPg	Very small. Compr. from S. Δg = 20± Km.
		- 04.5±	iSg	
589)		14 - 04 - 00±	eP	Very small. S uncertain.
590)		18 - 02 - 50±	eP	Very small, too small for phases to be well determined.
		- 07 - 20±	S?	
591)		21 - 24 - 42±	iP	Very small. Repetition of previous quake?

	Date	Time (GMT)	Phase	Remarks
592)	29	02 - 51 - 21±	iPg	Very small. Δg = 92± Km.
		- 32±	iSg	
593)		05 - 11 - 27	iPb	Very small. Δb = 201 Km.
		12 - 00	iSb	
594)		06 - 32 - 11±	ePb	Very small. Δb = 461± Km.
		- 33 - 03±	iSb	
595)		23 - 29 - 35	iP	Very small. S very uncertain; perhaps teleseismic.
596)	30	03 - 48 - 39	iP	Small. Δ = 1520± Km. = 13°.7±
		- 51 - 21±	iS	
597)		08 - 28 - 10	iPb	Very small. Compr. Δb = 165 Km.
		- 29	iSb	NB. P is sharp & large impulse comparable to S. Perhaps two very near quakes?
598)		16 - 22 - 38	iPb	Very small. Δb = 192 Km.
		23 - 00	iSb	
599)		19 - 42 - 54±	ePb	Very small. Δb = 694± Km. = 6°.2±
		44 - 12	iSb	
600)		23 - 49 - 48	eP	Small. Compression. S uncertain, but solution seems best to fit L & M. Δ = 2220± Km. = 20°.0±
		- 53 - 31±	iS?	
601)	31	07 - 20 - 48	i	Very small.
602)		10 - 19 - 28	i	Very small.
603)		14 - 05 - 50	iPb	Small. Dilat. Δb = 156 Km.
		06 - 08	iSb	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually Recording	E-W	1.3	1.56	3000	Very rough average. Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

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	Date	Time (GMT)	Phase	Remarks
604)	1	18 - 14 - 33	eP	Small. Compression. S difficult. If shallow quake, Δ = 2745± Km. = 24°.7±. But perhaps focus 100± Km. deep.
		- 35	iP	
		- 18 - 58±	iS	
605)	2	01 - 51 - 52	eP	Very small. Δ = 1800± Km.
		55 - 00±	iS?	
606)		07 - 26 - 23	iP	Very small. Δ = 2045± Km.
		- 29 - 52±	eS	
607)		17 - 21 - 15	iP	Small. Compr. Δ = 2910± Km.
		- 25 - 52±	iS	
608)		17 - 53 - 05	iPb	Very small. Δb = 264± Km.
		- 35±	iSb	
609)		20 - 23 - 27	eP	Very small. S very uncertain.
610)		21 - 04 - 14	iP	Very small. Δ = 2235± Km.
		- 07 - 58	iS±	
611)		23 - 25 - 08±	ePg	Very small. Δg = 102± Km.
		- 20	iSg	
612)	3	00 - 50 - 30	iPb	Very small. Δb = 147 Km.
		- 47	iSb	
613)		12 - 57 - 36	iP	Very small. Dilatation. Δ = 2200± Km.
		13 - 01 - 18±	eS	
614)		14 - 46 - 07	iPg	Small. Compr. P very sharp & large; like S. Blast? Δg = 58 Km.
		- 14	iSg	
615)		21 - 33 - 51	iPb	Moderate to large. Δb = 398 Km. Felt Daet IV, Aurora, Quezon Province V.
		34 - 36	iSb	
616)	4	00 - 09 - 02	iPb	Small. Compr. Δb = 363± Km. Aftershock of preceding quake?
		- 43	iSb	
617)		05 - 51 - 18	iPb	Very small. Δb = 129 Km.
		- 33	iSb	

	Date	Time (GMT)	Phase	Remarks
618)	4	14 - 02 - 46	iP	Small. Dilatation. Possibly deep focus, 220 Km.± Δ_{220} = 6335± Km. = 57°.0
		- 03 - 40±	ipP?	
		- 10 - 26	iS	
		- 11 - 46	isS	
619)		18 - 08 - 44	iPb	Small. Δb = 264± Km.
		- 09 - 14±	iSb	
620)		19 - 00 - 50	iPb	Very small. Δb = 129 Km.
		- 01 - 05	iSb	
621)	5	06 - 50 - 37	iP	Very small. S uncertain. Possibly teleseismic.
622)		11 - 54 - 37	iPb	Small. Compr. Δb = 237 Km.
		- 55 - 04	iSb	
623)		12 - 03 - 49±	iPb	Very small. Δb = 300± Km.
		- 04 - 23	iSb	
624)		13 - 56 - 45	iPb	Small. Compr. Δb = 264 Km.
		57 - 15	iSb	
625)		14 - 02 - 33	iPb	Very small. Δb = 237± Km.
		03 - 00±	iSb	
626)	6	19 - 11 - 56	iPg	Very small. Dilatation. $\Delta g = 58$ km.
		- 12 - 03	iSg	
627)		19 - 02 - 42±	eP?	Very small. If these are really P & L, then Δ = 5200± Km.
		- 17 - ±	L or M	
628)	7	01 - 26 - 04±	iPb	Very small. Almost lost in micros. Δb = 255± Km.
		- 33±	iSb	
629)		01 - 33 - 35	iPb	Very small. Δb = 245± Km.
		- 34 - 03±	iSb	
630)		09 - 23 - ±	ePg	Very small.
		- 23 - 18	iSg	
631)		10 - 40 - 12±	eP	Very small. Δ = 1445± Km.
		- 42 - 47±	iS	
632)	8	07 - 52 - 56	iP	Very small. Dilatation. Tentative solution, Δ = 100°±
		08 - 04 - 28±	SKS?	
		- 34 - ± ff.	L & M	
633)	9	15 - 11 - 56	iPb	Small. Dilatation. Δb = 201 Km.
		- 12 - 19	iSb	
634)		16 - 16 - 10±	eP	Very small. Teleseismic.
635)	10	10 - 47 - 29	iP	Very small. S indefinite, but Δ = 25° approx., from L or M.
		55 - 20±	L or M	
636)		11 - 28 - 43	iPg	Small. Dilat. from NE±. Felt Casiguran, int. II. Δ = 110 Km.
		- 56	iSg	
637)		14 - 36 - 56	i	Very small.
638)	11	03 - 45 - 13	iP	Small. Small compr., then larger dilat. More probable solution, deep focus 200± Km. Δ_{200} = 89°± = 9890± Km. Epicenter near Cephallonia Island, Western Greece.
		- 46 - 05±	ipP	
		- 55 - 45±	iS	
		- 57 - 09±	isS	

	Date	Time (GMT)	Phase	Remarks
639)	11	11 - 56 - 56	iP	Very small. Dilatation. Δ = 1645± Km. = 14°.8±
		- 59 - 49	iS	
640)		19 - 35 - 12	iS	Very small. P too small & uncertain to measure.
641)	12	09 - 36 - 44	iP	Small to moderate. S indefinite due to heavy micros. Greece quake. Note in this quake large surface waves. Hence this quake shallow, as shown by surface phenomena at epicenter.
		10 - 11 - 56±	L or M	
642)		15 - 43 - 02±	iPb	Very small. Δb = 165± Km.
		- 21	iSb	
643)		15 - 45 - 24±	iPb	Very small. Δb = 156± Km.
		- 42	iSb	
644)		17 - 23 - 48	iPb	Small. Δb = 165 Km.
		24 - 07	iSb	
645)		17 - 25 - 41	iSb	Very small. P lost in micros. Most probably of Tuguegarao series.
646)		18 - 42 - 42	iPb	Very small. Δb = 165 Km.
		- 59	iSb	
647)		20 - 12 - 20	iSb	Very small. P lost in micros. Probably of Tuguegarao origin.
648)		- 13 - 35±	iPb	Small. Felt Tuguegarao intensity II. Δb = 174± Km.
		- 55±	iSb	
649)		20 - 22 - 18±	iPb	Moderate. Compr. from N. Δb = 156± Km. Felt Tuguegarao int. III.
		- 36±	iSb	
650)		20 - 49 - 04	iPb	Very small. Δb = 165 Km.
		- 23	iSb	
651)		21 - 41 - 19±	i	Very small.
652)		22 - 25 - 58	iPb	Small. Compr. Δb = 165 Km.
		- 26 - 17	iSb	
653)		22 - 26 - 54	iPb	Small to moderate. Δb = 174± Km. Felt Tuguegarao int. IV, Aparri III, Baguio I-II, Casiguran I. Note tendency of most of these Tuguegarao quakes to be double.
		27 - 14±	iSb	
654)		22 - 35 - 09	iPb	Very small. Δb = 165 Km.
		- 28±	iSb	
655)		22 - 45 - 41	iPb	Very small. S difficult; probably double quake.
656)		22 - 54 - 42	iPb	Very small. Δb = 165 Km.
		- 55 - 01	iSb	
657)		23 - 19 - 35	iPb	Very small. Δb = 174 Km.
		- 20 - 15	iSb	
658)		23 - 26 - 39	iPb	Very small. Δb = 317± Km.
		- 27 - 15	iSb	
659)		23 - 49 - 05	iPb	Very small. Δb = 174 Km.
		- 25	iSb	
660)	13	00 - 08 - 53	iPb	Small; compr. from N. Δb = 165 Km.
		- 09 - 12	iSb	
661)		01 - 01 - 25±	iPg	Very small. Δg = 50± Km.
		- 31	iSg	

	Date	Time (GMT)	Phase	Remarks
662)	13	01 - 19 - 08	iPb	Very small. Δb = 174 Km.
		- 28	iSb	
663)		04 - 19 - 54±	iPb	Very small. Δb = 165 Km.
		20 - 13±	iSb	
664)		09 - 33 - 32	iP	Small. Δ = 6680± Km. = 60°.1±
		- 41 - 52±	iS	
665)		12 - 56 - 09	iPb	Small. Δb = 165 Km.
		- 28	iSb	
666)		19 - 42 - 50±	iPg	Very small. Δ = 33± Km.
		- 54±	iSg	
667)		22 - 09 - 09	iPb	Small. Δb = 407± Km.
		- 55±	iSb	
668)	14	03 - 53 - 35	iPb	Very small. Δb = 174 Km.
		- 55	iSb	
669)		~~06~~ - 28 - ~~32~~07	iPb	Small. Δb = 165 Km.
		- ~~51~~ 26	iSb	
670)		17 - 54 - 49±	iPb	Very small. Δb = 156± Km.
		55 - 07	iSb	
671)	15	05 - 31 - 54	i	Very small.
672)		12 - 55 - 05±	iS?	Small. P, if quake, indefinite. May be due to wind turbulence from passing small vortex during aftermath of strong typhoon "Nina"
673)		19 - 17 - 48±	iPb	Small. Δb = 174± Km.
		- 18 - 08	iSb	
674)	16	07 - 10 - 52	iS	Very small. P indeterminate.
675)		21 - 56 - 25	iPg	Small to moderate. Dilatation to SW±.
		- 28	iSg	Δg = 23 Km.
676)	17	03 - 49 - 55	eP	Small. Small dilat., then sharp large compr. Surface waves small, hence possible deep focus, but sS not discernible. Δ if shallow = 2735± Km. = 24°.6. If deep Δ75 Km. = 2890± Km. = 26°.
		- 49 - 56	iP	
		- 50 - 09	ipP	
		- 54 - 19	eS	
677)		06 - 54 - 31	iP	Very small. S & Δ uncertain.
		- 56 - 30±	L?	
678)	18	14 - 02 - 05	iPg	Small. Dilat. from S±. Δg = 23 Km.
		- 08	iSg	
679)		15 - 17 - 04	iPb	Very small. Compr. Δb = 273 Km.
		- 35	iSb	
680)	19	06 - 30 - 46±	iPb	Very small. Δ = 810± Km.
		32 - 17±	iSb	
681)		10 - 53 - 14	iPb	Very small. Compr. Δ = 147± Km.
		- 31±	iSb	

	Date	Time (GMT)	Phase	Remarks
682)	20	07 - 42 - 20±	ePb	Very small. P uncertain. Δb = 129± Km.
		- 35	iSb	
683)	21	12 - 42 - 11±	iPb	Very small. Δb = 363± Km.
		- 52±	iSb	
684)		12 - 59 - 39±	iPg	Very small. Δg = 109± Km.
		- 52±	iSg	
685)		19 - 54 - 19±	eP	Very small. S very uncertain. S-P of order of 1^m - 40^s.
686)	22	00 - 35 - ±	P	Very small. Teleseismic. S-P very uncertain.
687)		02 - 19 - 37	iPb	Very small. Δb = 246± Km.
		- 20 - 05	iSb	
688)		12 - 44 - 35±	Pg	Very small. Δg = 109± Km.
		- 48	iSg	
689)		18 - 27 - 13	iPb	Very small. Dilatation. Δb = 156 Km.
		- 31	iSb	
690)		19 - 04 - 40±	P	Very small.
691)		19 - 39 - 04	iPb	Very small. Dilatation. Δb = 174 Km.
		- 24	iSb	
692)	23	12 - 31 - 37	iPb	Very small. Δb = 147 Km.
		- 54	iSb	
693)		07 - 40 - ±	e	Teleseismic. Very small, ½ hr. record.
694)	25	02 - 11 - 38	iP	Small to moderate. Δ = 4035± Km. = 36°.3. NB. Perhaps deep focus. If so $\Delta 500^{\pm}$=4665± Km. = 42°, and iPR_2 & iSR_2 are then ipP and isS. Size & location of surface waves seem preferably to indicate shallow focus.
		13 - 10±	iPR_2	
		- 17 - 28	iS±	
		- 20 - 20	iSR_2	
		11 - 51 - 39	e	
695)		11 - 53 - 51	iPb	Very small. Δb = 165 Km.
		- 54 - 10	iSb	
696)		13 - 57 - 23	iP	Small. Δ = 2465± Km. = 22°.2
		14 - 01 - 26±	iS	
697)		19 - 26 - 12	iP	Very small. Δ = 2420± Km. = 21°.8
		- 30 - 12±	iS	
698)		19 - 54 - 57	iPb	Small. Dilatation. Δb = 273± Km.
		- 55 - 28±	iSb	
699)	27	09 - 42 - 02	iP	Very small. Teleseismic. S uncertain. Probably same as 2 & 3 following quakes.
		- 53 - ±	L,M	
700)		20 - 49 - 51	ePb	Very small. Δb = 148 Km.
		- 50 - 07	iSb	
702)		20 - 51 - 52	iP	Small. Compr. Δ = 3045 Km. = 27°.4 if shallow. Possibly ipP instead of iPR_2, and deep focus.
		- 52 - 41	iPR_2	
		- 53 - 39	iS	
		- 58 - 32±	iSR_2	

	Date	Time (GMT)	Phase	Remarks
702)	27	21 - 29 - 29	eP	Very small. Δ = 3090± Km.
		- 34 - 19±	eS	
703)		22 - 54 - 40	iPg	Small. Δg = 117 Km.
		- 54	iSg	
704)	28	02 - 23 - 15±	iPb	Very small. Δb = 255± Km. The S of this quake confuses P of following quake.
		- 44	iSb	
705)		23 - ?	P	Very small.
		- 59	iS	
706)		18 - 59 - 12	iPb	Very small. Δb = 283 Km.
		- 44	iSb	
707)		19 - 31 - 01±	ePg	Very small. Δg = 41± Km. Blast?
		- 06	iSg	
708)		21 - 17 - 01	ePb	Very small. Δb = 246± Km.
		- 29±	iSb	
709)		21 - 56 - 03	iSg	Very small. Blast like 19-31-01?
710)		22 - 05 - 41	iPg	Very small. Δg = 63± Km.
		- 53	iSg	
711)	29	13 - 36 - 23±	eP	Very small. Δ = 1155± Km. = 10°.4
		- 38 - 31±	eS	
712)		13 - 58 - 49	iPg	Small to moderate. Sharp Compr. from NE±. Δg = 37± Km.
		- 53.5	iSg	
713)	30	14 - 45 - 58	iPg	Very small. Δg = 117± Km.
		- 46 - 12±	iSg	
714)	31	16 - 11 - 51±	iPg	Very small. Δ = 84± Km.
		- 12 - 01	iSg	
715)		19 - 17 - 16±	iPb	Very small. Δb = 129± Km.
		- 31	iSb	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually Recording	E-W	1.3	1.56	3000	Very rough average Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

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SEPTEMBER 1953

	Date	Time (GMT)	Phase	Remarks
716)	1	21 - 17 - 54	iP	Very small. Compr. from generally S direction. Δ = 1735± Km. = 15°.6
		- 20 - 56±	iS	
717)	2	06 - 21 - 59.5	iPg	Small. Ambuklao blast. Δg = 20 Km. Compr.
		22 - 02.0±	iSg	
718)		11 - 57 - 56	iPb	Very small. Δb = 183± Km.
		- 58 - 17±	iSb	
719)		21 - 27 - 15±	iPb	Very small. Δb = 147± Km.
		- 32	iSb	
720)		22 - 08 - 07	iPb	Small. Small compr., larger dilatation. Δb = 201± Km.
		- 30±	iSb	
721)		22 - 25 - 59±	iPb	Very small. Δb = 174± Km.
		- 26 - 19	iSb	
722)	3	02 - 36 - 40	iPb	Moderate. Compr.? Δ = 210 Km. Felt int. IV, Laoag.
		- 37 - 04	iSb	
723)		10 - 22 - 41	iPb	Small. Δb = 327 Km.
		- 23 - 18	iSb	
724)	4	07 - 31 - 18	iP	Moderate. Compr. (from NE±?) Could possibly be deep focus, but large surface waves indicate rather shallow focus. If shallow Δ = 4780 Km. = 43°
		- 32 - 49	iPR_1	
		- 33 - 30	iPR_2	
		- 37 - 50	iS	
		?	iSR_1	
		- 41 - 13	iSR_2	
		45 - ± ff.	L & M	
725)		11 - 25 - 30±	iPg	Very small. Δg = 109± Km.
		- 43	iSg	
726)		14 - 27 - 15	e	Traces for one hour of teleseism: Phases not readable.
727)		15 - 44 - 28	iPb	Very small. Δb = 174± Km.
		- 48±	iSb	

	Date	Time (GMT)	Phase	Remarks
728)	5	17 - 03 - 37	iPb	Very small. Δ = 273 Km.
		- 04 - 08	iSb	
729)		19 - 06 - 30	iP	Small. Compression. Δ = 4965 Km. = $44^{o}.7$
		- 08 - 01	iPR_1	
		- 13 - 13	iS	
		- 16 - 49	iSR_2	
		- 23 - ±	L & M	
730)		19 - 54 - 27	iPb	Very small. Δb = 201 Km.
		- 50	iSb	
731)	6	01 - 55 - ±	L or M	Very small. Teleseismic.
732)		02 - 14 - 44	eP	Very small.
733)		02 - 26 - 38±	ePb	Very small. Δb = 210± Km.
		- 27 - 02±	iSb	
734)		04 - 31 - 39±	ePg	Very small. Δg = 92± Km.
		- 50	iSg	
735)		07 - 45 - 09±	eP	Very small.
		- 50 - ±	eS	
736)		09 - 30 - 18±	eP	Very small. Δ = 1945± Km. = $17^{o}.5$
		- 33 - 39±	eS	
737)	7	01 - 35 - 22±	eP	Very small. Teleseismic.
738)		03 - 34 - 52	i	Very small. Blast?
739)		04 - 10 - 55±	eP	Small. Δ = 8780± Km. = $79^{o}.0$. Large surface waves.
		- 20 - 57±	eS	
		- 43 - 00±	M	
740)		05 - 04 - 10	iP	Small. Compression. Δ = 7345± Km. = $66^{o}.1$ Surface waves small, perhaps deep focus, but phases indefinite.
		- 13 - 05	iS	
		- 22 - ±	L or M	
741)		17 - 35 - 40±	ePg	Very small. Δg = 50± Km.
		- 46	iSg	
742)	8	06 - 14 - 15	iPb	Small. Compression. Δ = 444± Km.
		- 15 - 05±	iSb	
743)		06 - 30 - 56±	ePg	Very small. Start of P indistinct. Δ = 92± Km.
		- 31 - 07	iSg	
744)		08 - 16 - 55±	iPb	Very small. Δb = 183± Km.
		- 17 - 16	iSb	
745)		14 - 56 - 56	iS	Very small. P uncertain. Δg = possibly 117± Km.
746)		15 - 49 - 10	iS	Very small. Start of P very uncertain
747)		20 - 42 - 54±	ePb	Very small. Δb = 154± Km.
		- 43 - 12	iSb	
748)	9	07 - 37 - 30	iS	Very small. P indeterminate. Nearby quake.
749)		07 - 59 - 22±	ePb	Very small. Δb = 147± Km.
		- 39	iSb	
750)		09 - 53 - 14±	iPb	Very small. Δb = 201± Km.
		- 37	iSb	
751)		14 - 03 - 04±	e	Very small.

	Date	Time (GMT)	Phase	Remarks
752)	9	15 - 33 - 12±	ePb	Small. Δb = 192± Km.
		- 34±	eSb	
753)		15 - 56 - 48	iP	Small. Compr. from S± Δ = 2900 Km. = 26°.1
		16 - 01 - 24	iS	
		- 03 - 00±	L	
754)		17 - 11 - 10±	iS	Very small. P indeterminate. Nearby quake.
755)		21 - 29 - 14±	ePb	Very small. Δb = 121± Km.
		- 28±	iSb	
756)		22 - 11 - 58±	ePb	Very small. Δb = 372± Km.
		12 - 40±	iSb	
757)		22 - 26 - 01±	ePb	Very small. Δb = 237± Km.
		- 28	iSb	
758)	10	04 - 01 - 00±	iPb	Very small. Δb = 363± Km.
		- 41±	iSb	
759)		04 - 18 - 10	iP	Small. Remarkably sharp S almost all records, with 3^{s} periods on short period records. Δ = 8735 Km. = 78°.6. Cypress quake.
		- 28 - 10	iS	
		- 46 - ±	L	
760)		09 - 45 - 53	iPb	Small. Compr. Δb = 372± Km.
		- 46 - 35	iSb	
761)		11 - 19 - 23±	iPb	Small. Δb = 354± Km.
		20 - 03±	iSb	
762)	11	04 - 48 - 56	iS	Very small. P indefinite. Nearby quake.
763)		06 - 50 - 56	iS	Very small. P indefinite. Nearby quake.
764)		12 - 55 - 01	iPg	Small. Compr. to S±? Δg = 92± Km.
		- 12	iSg	
765)	12	06 - 29 - 11±	eP	Very small. Teleseismic.
766)		20 - 12 - 58	iPb	Small to moderate. Δb = 246 Km. Compr. from NW?
		- 13 - 24	iSb	
767)		20 - 30 - 09±	ePg	Very small. Δg = 76± Km.
		- 18	iSg	
768)	13	02 - 29 - 44	iPb	Small to mod. Slight dilat., then large compr.- to SE? Δb = 147 Km.
		- 30 - 01	iSb	
769)		12 - 50 - 31±	ePb	Very small. Δb = 147± Km.
		- 48	iSb	
770)	14	00 - 37 - 22	eP	Small to moderate. Δ = 7345 Km. = 66°.1 of #740
		- 46 - 17	iS	
		- 58± & 63±	L & M	
771)		07 - 52 - 55±	ePb	Very small. Δb = 264± Km.
		- 53 - 25	iSb	
772)		15 - 34 - 19±	ePb	Very small. Δb = 165± Km.
		- 38	iSb	
773)		22 - 29 - 36±	ePb	Very small. Δb = 560± Km.
		- 30 - 39	iSb	

	Date	Time (GMT)	Phase	Remarks
774)	15	03 - 23 - 16	iPb	Very small. Δb = 156 Km.
		- 34	iSb	
775)		03 - 44 - 51	iPb	Very small. Δb = 165± Km.
		45 - 10±	iSb	
776)		11 - 09 - 55±	iP	Compression. Small. Most probably deep focus. 600± Km. $\Delta 600$ = 5780 Km. = 52°.0
		- 11 - 47	ipP	
		- 16 - 33	iS	
		- 20 - 00	isS	
777)		21 - 05 - 14±	iPg	Very small. Δg = 33 Km.
		- 18	iSg	
778)		21 - 20 - 06±	iPb	Very small. Δb = 156± Km.
		- 24	iSb	
779)		21 - 23 - 11±	iPb	Very small. Δb = 192± Km.
		- 33	iSb	
780)		21 - 28 - 59	iPb	Small. Δb = 221 Km. Small dilat., then larger compr.
		- 29 - 24	iSb	
781)	16	02 - 00 - 06±	eP	Very small. Δ = 7945 Km. = 71°.5
		- 09 - 29	iS	
		- 23 - ±	L	
782)		20 - 40 - 38	iPb	Very small. Δb = 246 Km.
		- 41 - 06	iSb	
783)	17	03 - 37 - 50	iPb	Small. Compr. Δb = 145± Km.
		- 38 - 14±	iSb	
784)		17 - 31 - 51±	ePg	Very small. Δg = 109± Km.
		- 32 - 04±	iSg	
785)		21 - 23 - 20	iP	Small. Δ = 8110 Km. = 73°.0
		- 32 - 52	iS	
		- 52 - ±	M	
786)	18	17 - 59 - ± to		Traces of teleseism.
		18 - 30 - ±		
787)	19	03 - 48 - 33	iP	Moderate. Compr. from SW? Deep focus $\Delta 100$ = 2890± Km. = 26°.0±
		- 48 - 50	ipP	
		- 52 - 48	iS	
		- 53 - 20	isS	
788)		15 - 37 - 59±	iPb	Very small. Δb = 363± Km.
		- 38 - 40±	iSb	
		19 - 12 - 32	iPb	Small. Δb = 308± Km.
		- 13 - 07±	iSb	
789)	20 (1)	00 - 22 - 14±	ePb	Very small. P uncertain; micros. Δb = 210± Km.
		- 22 - 38±	iSb	
790)	21	14 - 49 - 02±	ePb	Small to moderate. Compr. Δb = 299± Km.
			iSb	
791)	23	02 - 22 - 43	iP	Small. Compr. from NW? Δ = 4735 Km. = 42°.6
		29 - 13	iS	
		35 - ±	L	

	Date	Time (GMT)	Phase	Remarks
792)	23	13 - 57 - 58±	iPg	Very small. Δg = 58± Km.
		- 58 - 05	iSg	
793)		14 - 52 - 44±	iPb	Very small. Δb = 129± Km.
		- 59	iSb	
794)		18 - 46 - 59	iPb	Very small. Δb = 121 Km.
		- 47 - 13	iSb	
795)	24	04 - 33 - 56	iPb	Small. Δb = 237 Km.
		- 34 - 23	iSb	
796)		08 - 45 - ±	e	Very small. Evident traces of teleseism. Phases lost in micros.
797)	25	00 - 50 - 10	iP	Small. Compr. Teleseismic. S lost in large typhoon micros.
798)		13 - 46 - 10±	iP	Small to moderate. Δ = 2420± Km. = 21°.8. Phases difficult; heavy micros.
		- 50 - 10±	iS	
799)	26	01 - 10 - 46	iP	Small. Compr. Δ = 4645± Km. = 43°.6± Heavy typhoon micros.
		- 17 - 22±	iS	
800)		04 - 16 - 37±	iPg	Very small. Δg = 50± Km.
		- 43	iSg	
801)		09 - 39 - 45±	iPb	Very small. Δb = 327± Km.
		- 40 - 22	iSb	
802)		17 - 30 - 23±	iPg	Very small. Δg = 14± Km. Probably blast.
		- 25	iSg	
803)		19 - 41 - 59±	iP	Dilatation. Δ = 3920± Km. = 35°.4± Heavy micros.
		- 47 - 42±	iS	
		- 52 - ±	L	
804)	27	01 - 41 - 36	iPb	Very small. Compr. Δb = 138 Km.
		- 52	iSb	
805)		05 - 57 - 52±	iP	Very small. S unreadable; micros Teleseismic.
806)		06 - 25 - 20	iP	Very small. Compression. S unreadable micros. Teleseismic.
807)		07 - 38 - 05±	eP	Very small. S unreadable; micros. Teleseismic.
808)		22 - 37 - 29	iPb	Very small. Δb = 121 Km.
		- 43	iSb	
809)	28	02 - 05 - 38	iPb	Very small. Δb = 174 Km.
		- 58	iSb	
810)		06 - 14 - 52±	eP	Very small. Δ = 5110± Km. = 46°.0±
		21 - 43	iS	
811)		13 - 22 - 35±	eP	Very small. S indeterminate. Teleseismic.
812)		20 - 25 - 32	iPb	Very small. Δb = 129 Km.
		- 47	iSb	
813)		20 - 26 - 41	iPb	Very small. Δb = 138 Km.
		- 57	iSb	

	Date	Time (GMT)	Phase	Remarks
814)	28	23 - 46 - 20±	eP	Very small. Δ = 7555± Km. = 68°.0± very roughly.
		- 55 - 24±	eS	
		24 - 08 - ±	L	
815)	29	01 - 38 - 55	iPb	Small. Δb = 201± Km.
		- 39 - 18±	iSb	
816)		01 - 47 - 58	iP	Large. L & M practically absent. Deep focus, 320± Km. indicated. Δ320 = 8290± Km. = 74°.6
		- 49 - 17±	ipP	
		- 57 - 10	iS	
		- 59 - 27	isS	
817)		10 - 17 - 02	iPg	Very small. Δg = 102 Km.
		- 14	iSg	
818)		10 - 52 - 49±	ePg	Very small. Δg = 117± Km.
		53 - 03±	iSg	
819)	30	05 - 00 - 11	iP	Small. Compr. Practically no surface waves. Probably deep focus 250-300 Km. Δ250-300 = 2890± Km. = 26°.0±
		- 01 - 02	ipP	
		- 03 - 55	iS	
		- 05 - 29	isS	
820)		12 - 33 - ±	e	Very small. Traces of teleseism on E-W long period.
821)		14 - 40 - 46±	ePg	Very small. Δg = 86± Km.
		- 56	iSg	
822)		14 - 59 - 46	iPg	Small. Compr. from NE. Δg = 32 Km. Main shock. Many aftershocks. Confer below.
		- 50	iSg	
823)		15 - 03 - 18	iS	Very small. P indeterminate.
824)		15 - 05 - 29±	iPg	Very small. Δg = 28± Km.
		- 32	iSg	
825)		15 - 06 - 22	iPg	Very small. Δg = 32 Km.
		- 26	iSg	
826)		15 - 11 - 13	iSg	Very small. P indeterminate.
827)		- 16 - 28±	iSg	Very small. P indeterminate.
828)		- 17 - 31	iSg	Very small. P indeterminate.
829)		15 - 28 - 50	iPg	Very small. Δg = 32 Km.
		- 54	iSg	
830)		15 - 42 - 44	iPg	Small. Compr. Δg = 32 Km.
		- 48	iSg	
831)		15 - 50 - 07±	iPg	Very small. Δg = 32± Km.
		- 11	iSg	
832)		16 - 05 - 32	iPg	Very small. Δg = 32± Km.
		- 36	iSg	
833)		16 - 06 - 24	iPg	Small. Compr. Δg = 32 Km.
		- 28	iSg	
834)		16 - 20 - 19±	iPg	Small. Δg = 41± Km.
		- 24	iSg	
835)		20 - 27 - 31	iP	Very small. Dilatation. Δ = 3220 Km. = 29°.0
		- 32 - 30	iS	
836)		21 - 19 - 29	iPg	Small. Δg = 32± Km.
		- 33±	iSg	
837)		23 - 22 - 49	i	Very small except E-W long period, which is small. Latter seems to indicate Δ = 90°±. S phases not clear
		- 53 - ±	L	

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 1970	1400
	E-W	12.0	11.8	3510	2700
	N-S	2.2	1.5	2870	2208
Photoelectric, Visually recording	E-W	1.3	1.56	3000	Very rough average Magn. depends both on ampl. & period.
	N-S	11.78	11.26	8000	

OCTOBER 1953

	Date	Time (GMT)	Phase	Remarks	
838)	1	14 - 05 - 11	i	Very small.	
839)		20 - 44 - 18	i	Very small.	
840)		21 - 39 - 46	iPg	Very small.	Δg = 32 Km.
		- 50	iSg		
841)		22 - 51 - 42	iPg	Very small.	Δg = 32 Km.
		- 46	iSg		
842)		23 - 12 - 31	iPg	Very small.	Δg = 32 Km.
		- 35	iSg		
843)	2	01 - 01 - 55	iPg	Very small.	Δg = 32 Km.
		- 59	iSg		
844)		01 - 26 - ±	e	Very small.	Traces of teleseism.
845)		06 - 20 - 43	i	Very small.	
846)		07 - 27 - 21	iPg	Very small.	Δg = 41 Km.
		- 26	iSg		
847)		07 - 53 - ±	e	Very small.	Teleseism.
848)		09 - 00 - 41±	iPg	Very small.	Δg = 57± Km.
		- 49±	iSg		
849)		14 - 27 - 05±	i	Very small.	
850)		15 - 39 - 57	iPg	Very small.	Δg = 32 Km.
		40 - 01	iSg		
851)	3	12 - 00 - 00±	i	Very small.	
852)		22 - 49 - 13±	iPg	Very small.	Δg = 32± Km.
		- 17	iSg		
853)		23 - 06 - 15	iPg	Very small.	Δg = 58 Km.
		- 22	iSg		
854)	4	05 - 47 - 25	iS	Very small. P indefinite.	Local.
855)		06 - 46 - 05	iS	Very small. P indefinite.	Local.

	Date	Time (GMT)	Phase	Remarks
856)	4	11 - 30 - 28	iPb	Very small. Δb = 156 Km.
		- 46	iSb	
857)		14 - 46 - 04	eP	Very small. Δ= 4445± Km. = 40°.0±
		- 52 - 18±	eS?	
858)		16 - 23 - 00	iPb	Small to moderate. Compression from N. Δ = 165 Km.
		- 19	iSb	
859)		18 - 28 - 57	iPg	Moderate. Compr. from NE±. S somewhat doubtful. Δg = 84± Km.
		29 - 07	iSg?	
860)		22 - 05 - 07	iPb	Small. Δb = 174 Km.
		- 27	iSb	
861)		22 - 10 - 47	iPb	Small to moderate. Δb = 156± or 372± Km.
		- 11 - 05		
		or 11 - 29	iSb	
862)		22 - 27 - 47	iPb	Small. Δb = 165 Km.
		- 28 - 06	iSb	
863)	5	03 - 06 - 25±	ePb	Very small. Δb = 144± Km.
		- 42	iSb	
864)		04 - 40 - 33	iP	Small. Compr. from NE? Δ= 5265 Km. = 47°.4
		- 47 - 33	iS	
865)		10 - 05 - 35±	eP	Very small. Teleseismic. Aftershock?
866)		12 - 50 - 51	iP	Moderate. Dilat. to SE? Δ= 712± Km. or 506 Km.
		51 - 48		
		or 52 - 11	iS	
867)		12 - 56 - 10±	iS	Moderate. P lost in previous quake. Most probably the two quakes from same origin.
868)		13 - 10 - 58	iPb	Small. Δb = 165± or 201± Km.
		- 11 - 17 or 23	iSb	
869)		17 - 41 - 51	iPb	Very small. Δb = 192 Km.
		- 42 - 13	iSb	
870)		23 - 24 - 07	iP	Very small. Δ= 4400 Km. = 39°.6
		- 30 - 19	iS	
871)	6	01 - 01 - 26±	iPb	Very small. Δb = 156± Km.
		- 44	iSb	
872)		05 - 59 - 03±	iPb	Very small. Δb = 147± Km.
		- 20±	iSb	
873)		21 - 45 - 19	eP	Moderate. Δ = 3900± Km. = 35°.1
		- 51 - 00±	iS	
		- 56 - 00±	L or M	
874)		23 - 04 - 05±	iP	Small. S indefinite. Teleseismic.
875)	7	00 - 17 - 50±	iPg	Very small. Δg = 32± Km.
		- 54	iSg	
876)		06 - 56 - 26	iPg	Small. Compr. from S? Δg = 109 Km.
		- 39	iSg	
877)		22 - 30 - 57	iS	Very small. P indefinite.

	Date	Time (GMT)	Phase	Remarks
878)	8	03 - 28 - 54±	iP	Very small. Δ = 1800± Km. = 16°.2±
		- 32 - 04	iS	
879)		04 - 20 - 19±	eP	Very small. Δ = 2520± Km. = 22°.7
		- 24 - 29	iS	
880)		08 - 53 - 49	iPb	Very small. Δb = 121 Km.
		54 - 03	iSb	
881)		13 - 15 - 09	ePb	Very small. Δb = 121 Km.
		- 23	iSb	
882)		14 - 16 - 27	iPb	Very small. Δb = 273 Km.
		- 58	iSb	
883)		16 - 25 - 41	eP	Very small. Δ = 2880± Km. = 25°.9±
		30 - 16±	eS	
884)		18 - 26 - 28	ePb	Very small. Δb = 282 Km.
		- 27 - 00	eSb	
885)		19 - 18 - 18±	eP	Very small. Δ = 4065± Km. = 36°.6
		- 24 - 10±	eS	
886)		20 - 06 - 00±	i	Very small.
887)	9	01 - 27 - 31	iPb	Very small. Δb = 147± Km.
		- 48±	iSb	
888)		06 - 13 - 08	iPb	Very small. Δb = 147± Km.
		- 25	iSb	
889)		11 - 53 - 16	iPg	Very small. Δg = 117± Km.
		- 30±	iSg	
890)	10	11 - 31 - 46±	iPg	Very small. Δg = 102± Km. Compr.
		- 58	iSg	
891)		18 - 44 - 08	iPb	Very small. Δb = 174 Km.
		- 28	iSg	
892)		22 - 03 - 41	iP	Very small. Compr. Δ = 4765 Km. = 42°.9.
		- 10 - 13	iS	
893)	11	06 - 40 - 55	iPg	Very small. Dilat. from NW? Δ = 84 Km.
		- 41 - 05	iSg	
894)		13 - 46 - 41	iP	Moderate. Compr. from NE? Δ = 4680 Km. = 42°.1
		- 53 - 08	iS	
		- 58± & 61±	L & M	
895)		15 - 44 - 57	iS	Very small. P indeterminate.
896)		17 - 15 - 21	iP	Small except for large surface waves.
		- 21 - 14±	iS	Δ = 4090± Km. = 36°.8.
897)		22 - 02 - 50±	iPb	Very small. Δb = 165± Km.
		03 - 09	iSb	
898)	12	14 - 20 - 15	iPg	Very small. Δg = 23± Km.
		- 18	iSg	
899)		16 - 55 - 25±	iPb	Very small. Δb = 317± Km.
		- 56 - 01	iSb	
900)	13	09 - 12 - ±	eP?	Small. Traces on EL & NL of very long distance quake. Phases uncertain.
		- 54 - ±	L or M	

	Date	Time (GMT)	Phase	Remarks
901)	13	13 - 57 - 12	iP	Small. Compr. Difficult. Deep focus?
		14 - 01 - 45	iS or L?	
902)		15 - 52 - 00	iPb	Very small. Δb = 147 Km.
		- 17	iSb	
903)	14	03 - 59 - 25	iPg	Very small. Δg = 50 Km.
		- 31	iSg	
904)		14 - 53 - 53	iP	Small. Dilatation. Δ = 3455 Km. = $31^{\circ}.1$. Perhaps slightly deep focus.
		- 59 - 06	iS	
905)	15	05 - 30 - 56	iPb	Small. Compr. Δb = 156 Km.
		- 31 - 14	iSb	
906)		19 - 49 - 55±	eP	Very small. Δ = 1710± Km. = $15^{\circ}.4$
		- 52 - 55±	eS	
		- 55 - 30±	M	
907)		21 - 27 - 49	iPb	Small. Compr. Δb = 148 Km.
		- 28 - 06	iSb	
908)		21 - 38 - 54	iS	Very small. P indeterminate. Near quake.
909)	16	04 - 30 - 10	iPg	Moderate. S difficult. Dilat. Δg = 84± Km.
		- 20±	iSg	
910)		11 - 10 - 35	iPb	Very small. Δb = 154 Km.
		- 53	iSb	
911)	17	02 - 02 - 55	iPg	Large ES, very small NL. Ambuklao (30± Km) Dam. 40 ton dynamite explosion.
		- 59	iSg	
912)		04 - 02 - 32	iPb	S difficult, due to gradual crescendo. Only ES & NL available but nothing on NL!
		- 55?	iSb	
913)		13 - 35 - 00	iPg	Small. Δg = 41± Km.
		- 05±	iSg	
914)		17 - 00 - 07	iPg	Small. Δg = 41± Km.
		- 12	iSg	
915)		17 - 49 - 56±	iPb	Small. Δb = 165 Km.
		- 40	iSb	
916)		21 - 15 - 56	iP	Small. Absence of large surface waves on NL, only long period record, would seem to indicate very deep focus, and Δ_{550} = $54^{\circ}.0$ = 6000 Km. to E or W. If not deep focus, ipP & isS fit PR_1 & SR_1 resp. for Δ = 5200 Km. = $46^{\circ}.8$.
		17 - 38	ipP	
		22 - 50	iS	
		26 - 09	isS	
		34 - 30±	L or M	
917)	18	03 - 11 - 50±	ePb	Very small. Δb = 148± Km.
		- 12 - 07±	iSb	
918)		10 - 38 - 40±	ePb	Very small. Δb = 264± Km.
		- 39 - 10	iSb	

	Date	Time (GMT)	Phase	Remarks
919)	18	11 - 56 - 23±	ePb	Very small. Δb = 148± Km.
		- 40	iSb	
920)		11 - 59 - 10±	iPb	Very small. Δb = 156± Km.
		- 28	iSb	
921)		12 - 09 - 05±	iPb	Very small. Δb = 148± Km.
		- 22±	iSb	
922)		12 - 17 - 20±	iPb	Very small. Δb = 156± Km.
		- 38	iSb	
923)		21 - 40 - 23±	iPb	Very small. Δb = 165± Km.
		- 42	iSb	
924)	19	00 - 15 - 45	iPg	Very small. Dilat. Δg = 92± Km.
		- 56	iSg	
925)		00 - 42 - 24±	iPg	Very small. Δg = 92± km.
		- 35	iSg	
926)		08 - 14 - 48±	iPg	Very small. Δb = 156± Km.
		15 - 06	iSb	
927)		08 - 45 - 09±	iPb	Very small. Δb = 156± Km.
		- 26	iSb	
928)		11 - 51 - 39	iPg	Small. Dilat. from NE? Δg = 41 Km.
		- 44	iSg	
929)		13 - 29 - 47±	iPb	Very small. Δb = 147± Km.
		30 - 04	iSb	
930)		13 - 39 - 49	iP	Very small. Δ = 3245± Km. = 29°.2.
		- 44 - 49±	iS	
		- 47 - 30±	L or M	
931)		16 - 46 - 40	eP	Very small. Perhaps teleseismic.
932)		22 - 38 - 26	iPg	Very small. Dilat. from NE? Δg =
		- 32	iSg	50 Km.
933)		23 - 15 - 27	iPb	Very small. Δb = 165 Km.
		- 46	iSb	
934)		23 - 25 - 42	iPb	Very small. Δb = 156± Km.
		26 - 00±	iSb	
935)	20	07 - 18 - 42	iS	Very small. P indeterminate.
936)		09 - 13 - 57	iPb	Very small. Compr. Δb = 156 Km.
		14 - 15	iSb	
937)		15 - 36 - 33	iPg	Very small. Δg = 67 Km.
		- 41	iSg	
938)		16 - 11 - 21	iPg	Very Small. Compr. Δg = 67 Km.
		- 29	iSg	
939)		16 - 15 - 00	iPg	Very small. Δg = 67 Km.
		- 08	iSg	
940)	21	05 - 28 - 59	iPb	Small. Δb = 192 Km.
		- 29 - 21	iSb	
941)		05 - 33 - 59	iPb	Small to moderate. Dilat. from NE?
		34 - 20±	iSb	Δb = 183± Km.
942)		15 - 04 - 06	iPb	Very small. Δb = 210 Km.
		- 30	iSb	

	Date	Time (GMT)	Phase	Remarks
943)	21	18 - 52 - 46	iPg	Very small. Dilat. Δg = 67 Km.
		- 54	iSg	
944)		19 - 28 - ±	e	Very small. Long waves traces of
		to 55 - ±	e	teleseism.
945)	22	03 - 49 - 42	iPb	Small. Dilat. from NE±? Δb = 228
		- 50 - 08	iSb	Km.
946)		13 - 10 - 39	e	Teleseismic. Very small.
947)		18 - 06 - 42	iS	Very small. P indeterminate.
948)	23	14 - 54 - 21	iPg	Small. Dilat. from N? Δg = 41 Km.
		- 26	iSg	
949)	24	12 - 58 - 24	iPb	Very small. Δb = 444± Km.
		59 - 14±	iSb	
950)		21 - 51 - 37±	ePg	Very small. Δg = 92± Km.
		- 48±	iSg	
951)	25	05 - 31 - 17±	iPg	Very small. Δg = 76± Km.
		- 26	iSg	
952)	26	00 - 43 - 19	iPg	Moderate. Δg = 50 Km. Epicenter to
		- 25	iSg	S, from Diliman records.
953)		13 - 42 - 57	iPg	Small. Dilat. from SE±. Δg = 117
		43 - 11	iSg	Km.
954)	27	03 - 47 - 31	iP	Very small. Dilat. to SW±? Δ =
		52 - 51±	iS	3565± Km. = 32°.1±.
955)		18 - 40 - 25	iP	Very small. Compr. Phases indistinct Most probably teleseism, approx. Δ = 11,000 Km.
956)	28	02 - 12 - 37	iP	Very small. Compr. Δ = 1680 Km. =
		- 15 - 34	iS	15°.1.
957)		12 - 24±	e	Very small. Teleseismic.
958)		23 - 09 - 34	iPg	Very small. Δg = 67 Km.
		- 42	iSg	
959)	30	17 - 03 - 20	iP	Very small. Dilat. from SE? Δ =
		- 06 - 20±	iS	1710± Km. = 15°.4 or deep focus 100 Km., i.e. Δ_{100} = 1780± Km. = 16°.0.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 2167	1540
	E-W	10.5	10.7	2282	1755
	N-S	1.91	1.39	3000	2500
Photoelectric, Visually recording	E-W	1.43	1.65	3000	Very rough average Magn. depends both on ampl. & period.
	N-S	11.2	12.2	8000	

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NOVEMBER 1953

	Date	Time (GMT)	Phase	Remarks
961)	1	09 - 50 - 22	iP	Very small. Dilat. from SE. S uncertain. Felt Catbalogan int. I. Δ = ?
		- 44	iS	
962)		18 - 18 - 32	iP	Small to moderate. Δ = 778 Km.
		- 19 - 54	iS	
963)		21 - 03 - 31	i	Very small. Teleseismic traces.
964)	2	05 - 40 - 01	iP	Very small. Δ = 935± Km. S very uncertain.
		- 41 - 49±	iS±	
965)		15 - 00 - 58	iPb	Very small. Δb = 147± Km.
		- 01 - 15±	iSb	
966)	3	11 - 00 - 06	iPb	Very small. Δb = 121 Km.
		- 20	iSb	
967)		11 - 22 - 18±	iPb	Very small. Δb = 174± Km.
		- 38	iSb	
968)		12 - 42 - 29	iP	Very small. Compr.
969)		16 - 54 - 51	iP	Very small.
970)	4	03 - 58 - 36	iP	Large, major quake. Δ = 5935 Km. = 53°.4. NB. Reported by Guam as 03-55-55 iP. ∴ to SE. Diliman 03-58-25 iP
		04 - 06 - 13	iS	
971)		04 - 14 - 13±	iP	Moderate. Compr. Aftershock of above. Δ = 5910± Km. = 53°.2.
		- 21 - 49	iS	
972)		08 - 56 - 40	iP	Very small. Aftershock. Δ = 5935 Km. = 53°.4
		09 - 04 - 17	iS	
973)		09 - 41 - 56	iP	Very small.
974)		11 - 55 - 39	iP	Very small. Dilat. Δ = 6010± Km. Aftershock.
		12 - 03 - 20±	iS	
975)		12 - 37 - 09	iP	Moderate. Compr. Δ = 5900 Km. = 53°.1
		- 44 - 44	iS	

	Date	Time (GMT)	Phase	Remarks
976)	4	17 - 54 - 09	iPb	Very small. Δb = 308± Km.
		- 44	iSb	
977)		22 - 47 - 27±	iPb	Very small. Δb = 299± Km.
		48 - 01	iSb	
978)	5	04 - 39 - 24	iP	Very small. Probably teleseismic.
979)		08 - 30 - 00	iP	Very small. Compr. Δ = 5010 Km. = 45°.1
		- 36 - 45	iS	
980)		15 - 18 - 00	iPb	Very small. Compr. Δb = 183 Km.
		- 21	iSb	
981)	6	01 - 32 - 38	iPb	Very small. Compr. Δb = 228 Km.
		- 33 - 04	iSb	
982)		05 - 16 - 50	iPg	Very small. Δg = 117± Km.
		- 17 - 04±	iSg	
983)		12 - 36 - 00	iP	Very small. Teleseismic.
		- 58 - ±	L	
984)	7	13 - 08 - 58	iP	Small. Compr. from SE? Δ = 3000 Km. = 27°.0
		- 13 - 41	iS	
985)		13 - 36 - 40	iP	Very small. Compr. Teleseismic.
986)		16 - 10 - 27	eP	Very small. Teleseismic.
987)	8	03 - 18 - 27	iP	Very small. Compr. Only certain phase. Teleseismic.
988)		17 - 49 - 23	iPb	Very small. Compr. Δg = 147 Km.
		- 40	iSb	
989)	9	07 - 35 - 48	iPg	Very small. Δg = 109 Km.
		- 36 - 01	iSg	
990)		12 - 12 - 48±	eP	Very small. Δb = 138± Km.
		13 - 04	eS?	
991)		15 - 41 - 20	iP	Small. Teleseismic. Phases indefinite. Dilatation.
992)		17 - 34 - 12	iP	Small. Compr. from SE? Δ = 5110 Km. = 46°.0. Or perhaps very distant quake.
		- 41 - 03	iS	
993)		19 - 34 - 26	iPb	Compr. from S±. Δb = 121 Km.
		- 40	iSb	
994)		21 - 15 - 15	iPb	Very small. Dilat. from S±. Δb = 336 Km.
		- 53	iSb	
995)	10	02 - 20 - 56	iPg	Small. Compr. from ENE. Ambuklao blast. 50 tons dynamite.
		- 59	iSg	
996)		04 - 41 - 54	iPb	Very small. Δb = 524 Km.
		42 - 53	iSb	
997)		05 - 14 - 42	iPb	Small. Compr. Δb = 910 Km.
		- 16 - 24	iSb	
998)		10 - 03 - 35	iP	Very small. Compr. S uncertain.
999)		11 - 07 - 37	iPb	Very small. Dilatation. Δb = 847 Km.
		- 09 - 12±	iSb	

	Date	Time (GMT)	Phase	Remarks
1000)	10	11 - 32 - 18	iPb	Very small. Δ = 156 Km.
		- 36	iSb	
1001)		22 - 57 - 41	iP	Very small. Seems teleseismic. S uncertain.
1002)		23 - 48 - 38	iP	Small. Compr. Δ = 5020 Km. = 45°.2
		- 55 - 24	iS	
1003)	11	06 - 35 - 30	iPg	Very small. Compr. Δg = 100 Km.
		- 43	iSg	
1004)		07 - 31 - 01	eP	Very small. S indeterminate.
1005)	12	13 - 48 - 56	iPb	Very small. Δ = 121 Km.
		- 49 - 10	iSb	
1006)		23 - 02 - 20	iPb	Very small. Δ = 148 Km.
		- 37	iSb	
1007)	13	11 - 15 - 03	iP	Small. Compr. S indefinite.
		20 - ±	M	
1008)		16 - 22 - 51	iP	Small. S very indefinite.
1009)		19 - 25 - 07	iP	Moderate. Dilat. Δ = 5935± Km. = 53°.4
		- 32 - 44	iS±	
1010)	14	05 - 08 - 00	iP	Very small. Compr. S indefinite.
1011)		20 - 12 - 09	iP	Very small. Compr. Δ = 5455± Km. = 49°.1
		- 19 - 19±	eS	
		- 33 - ±	M	
1012)	15	00 - 37 - 57	iP	Small. Dilat. S difficult; may be 00-44 is start of another quake. Δ = 4245± Km. = 38°.2
		- 44 - 00±	iS?	
1013)		09 - 21 - 03	iPb	Very small. Δb = 308± Km.
		- 38	iSb±	
1014)		18 - 27 - 58	iPb	Very small. Δb = 129 Km.
		- 28 - 13	iSb	
1015)		21 - 29 - 17	iPb	Very small. Dilat. Δb = 201± Km.
		- 40±	iSb	
		17 - 19	NB.	Electric power off from 00 - 49 or 17th to 04 - 00 on 19th due to typhoon "Cora" damage.
1016)	20	02 - 15 - 51	iPb	Small. Dilat. Δb = 246 Km.
		- 16 - 19	iSb	
1017)	21	05 - 59 - 44±	iPg	Very small. Δg = 109± Km.
		- 57	iSg	
1018)	22	07 - 59 - 18	iPb	Very small. Δb = 210± Km.
		- 42±	iSb	

	Date	Time (GMT)	Phase	Remarks
1019)	23	03 - 47 - 06	iP	Very small. Dilat. Δ = 1455± Km. = 13°.1
		49 - 40±	iS?	
1020)		18 - 34 - 37	iPb	Small. Dilat. Δb = 174 Km.
		- 57	iSb	
1021)	25	01 - 50 - 50	iPb	Very small. Δ = 372 Km.
		51 - 32	iSb	
1022)		17 - 46 - 41±	iP	Very small. Seems teleseismic.
1023)		01 - 54 - 18	iP	Very large. Compr. Japan quake. S almost indescernible. Δ = 2580± Km. = 23°.2. Epicenter 34°.5 N., 141°.0 E.
		- 58 - 30±	iS?	
1024)		19 - 07 - 54	iP	Very small. Δ = 2790± Km. = 25°.1
		- 12 - 22±	iS±	
1025)	26	00 - 08 - 59	iP	Small. S quite indefinite. Δ = approx. 2420± Km.
		- 12 - 59±	iS?	
1026)		01 - 52 - 57	iP	Very small. Δ = 9935± Km. = 89°.4. Stromboli, Italy quake?
		02 - 03 - 49±	iS	
1027)		04 - 27 - 02±	iP	Very small. Teleseismic.
1028)		08 - 19 - 45	iP	Small to moderate. Δ = 10155± Km. = 91°.4. Stromboli?
		- 30 - 46	iS	
1029)		10 - 55 - 10±	iP	Very small. Teleseismic.
1030)	27	02 - 27 - 28	iP	Very small. Δ = 2080± Km.
		- 31 - 00±	iS	
1031)		11 - 35 - 33	iP	Very small. S indeterminate.
		- 41 - ±	L or M	
1032)		23 - 50 - 57	e	Very small. Teleseismic traces.
1033)	28	02 - 20 - 30±	e	Very small. Teleseismic traces.
1034)		04 - 31 - 41	iPb	Small. Compr. from S quadrant. S difficult. Δb = 117± Km. or Δb = 354± Km.
		- 31 - 55		
		or 32 - 21	iSb	
1035)		05 - 32 - 26	iPb	Very small. Δb = 117± Km.
		- 40	iSb	
1036)		07 - 16 - 37	iPb	Very small. Δb = 192± Km. or 299± Km.
		- 16 - 59		
		or - 17 - 11	iSb	
1037)		23 - 19 - 07	iP	Very small. S indeterminate.
1038)	29	12 - 14 - ±	e	Very small. Teleseismic surface waves.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Type	Component	Period Seism.	Period Galv.	Magnification (Dynamic) Maximum	Magnification (Dynamic) Synchronous
Photographic	Z	1.4 sec	1.384 sec	Circa 2167	1540
	E-W	10.5	10.7	2282	1755
	N-S	1.91	1.39	3000	2500
Photoelectric, Visually recording	E-W	1.43	1.65	3000	Very rough average Magn. depends both on ampl. & period.
	N-S	11.2	12.2	8000	

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DECEMBER 1953

Date	Time (GMT)	Phase	Remarks
1039) 1	05 - 12 - 07	iP	Moderate to large. Δ = 1555± Km.
	- 14 - 52	iS?	But solution only tentative. S may be at 05-20-30±. cf next quake.
1040)	05 - 20 - 30±	iP?	Very small. Another phase 05-24-00. cf. previous quake.
1041) 2	04 - 14 - 51	iPb	Small. Compr. Δb = 156± Km.
	- 15 - 09±	iSb	
1042)	04 - 30 - 53	iP	Small to moderate. Δ = 3035± Km. = 27°.3±.
	- 35 - 39±	iS	
1043)	17 - 59 - 40±	e	Very small. Teleseismic surface waves.
1044) 3	01 - 45 - 22	iPb	Very small. Δb = 210 Km.
	- 46	iSb	
1045)	01 - 49 - 54±	iPg	Very small. Dilat. Δg = 32± Km.
	- 58	iSg	
1046)	04 - 27 - 19	iPb	Very small. Compr. Δb = 165± Km.
	- 38±	iSb	
1047)	15 - 01 - 03	iP	Small to moderate. Compr. Δ = 3790± Km. = 34°.1.
	- 06 - 37±	iS	
1048)	21 - 37 - 07	iPb	Very small. Δb = 300± Km.
	- 41	iSb	
1049) 4	02 - 04 - 43	iP	Moderate. S indefinite, P-crescendo type. Compr.
1050)	08 - 47 - 10	iP	Very small. S indefinite.
1051)	08 - 54 - 02	iP	Very small. S indefinite.
1052)	09 - 12 - 50	iPb	Very small. Δb = 192± Km.
	13 - 12±	iSb	

	Date	Time (GMT)	Phase	Remarks
1053)	4	15 - 19 - ±	e	Traces of teleseismic surface waves.
1054)		21 - 57 - 49	iP	Very small. S difficult. Δ = 1510±
		- 00 - 30±	iS?	Km. = 13°.6±
1055)	5	09 - 46 - 48	iPb	Small. Compr. S difficult. Δb =
		- 47 - 55±	iSb?	596± Km.
1056)	6	08 - 46 - 38	iP	Very small. S indefinite. Is S at 52-19. cf next quake.
1057)		- 52 - 19	iP?	Very small. S indefinite. cf. previous quake.
1058)		15 - 31 - 37±	iPb	Very small. Δb = 264± Km.
		32 - 07	iSb	
1059)		17 - 27 - 49	iPb	Compr. from SE? S indefinite. Δ approx. 1100 Km.
		31 - 06±	L	
1060)		17 - 49 - 14	iPb	Very small. Δb = 228± Km.
		- 40±	iSb	
1061)	7	01 - 39 - 40	iPb	Very small. Δb = 264± Km.
		40 - 10	iSb	
1062)		02 - 25 - 38	iP	Small. Compr. Δ = 3145± Km. =
		- 30 - 32±	iS	28°.3±.
1063)		09 - 55 - 39	iPb	Very small. Δb = 273± Km.
		- 56 - 10±	iSb	
1064)		14 - 17 - 32	iP	Small. Δ = 3120± Km. = 28°.1±.
		- 22 - 24±	iS	
1065)	8	02 - 02 - 16	iPg	Small. Compr. Δg = 102 Km.
		- 28	iSg	
1066)		02 - 16 - 04	iP	Small. Dilat. to SE? Δ = 2655 Km. =
		- 20 - 23	iS	23°.9.
1067)		20 - 17 - 26	iP	Small. Compr. Δ = 1600 Km. = 14°.4
		- 20 - 15	iS	
1068)	9	07 - 39 - 30	iPb	Very small. Δb = 317± Km.
		- 40 - 06±	iSb	
1069)		15 - 40 - 55	iPb	Very small. Δb = 192± Km.
		- 41 - 17±	iSb	
1070)	10	17 - 59 - 30	iPb	Small. Δb = 318± Km.
		18 - 00 - 06±	iSb	
1071)	11	05 - 32 - 06	iPb	Small. Compr. Δb = 299± Km.
		- 40±	iSb	
1072)	12	01 - 06 - 14±	iPb	Very small. Δb = 308± Km.
		- 49±	iSb	
1073)		05 - 35 - 13	iP	Very small. S indeterminate.

Date	Time (GMT)	Phase	Remarks
1074) 12	17 - 51 - 39	iP	Small. Δ = 18,000± Km. = 162°.0± Peru-Ecudor quake.
	18 - 01 - 54	SKKS?	
	- 09 - ±	PPS?	
	19 - 02 - ±	L	
	- 20 - ±	M	
1075) 13	07 - 04 - 27±	iPb	Very small. Δb = 192± Km.
	- 49±	iSb	
1076)	08 - 54 - 32	iPb	Very small. Δb = 147± Km.
	- 49	iSb	
1077)	12 - 24 - 18	iPg	Small to mod. Dilatation to NW? Δg = 92± Km. FELT INT. I, LEPANTO, MT. PROV.
	- 29	iSg	
1078) 14	10 - 37 - 53	iPb	Large. Compr. to NE. Δb = 245± Km. Felt Aparri, int. III. General Note. S in all following shocks of this date very difficult to find.
	- 38 - 22±	iSb	
1079)	10 - 50 - 11	iP	Moderate to large. Most probably aftershock of preceding.
1080)	10 - 55 - 30	iP	Moderate. Aftershock? S indefinite.
1081)	11 - 10 - 25±	iPb	Very small. Δb = 219± Km. Aftershock?
	- 50±	iSb	
1082)	13 - 40 - 36±	iPb	Moderate to large. Compr. to NE. Δb = 264± Km.
	41 - 06±	iSb	
1083)	14 - 37 - 40±	iP	Very small. Aftershock?
1084)	17 - 26 - 41±	iP	Small. S indefinite. Teleseismic?
1085)	17 - 55 - 21±	iPb	Very small. Δb = 264± Km. Aftershock?
	- 51±	iSb	
1086)	19 - 16 - 13	iPb	Small. Δb = 300± Km. Aftershock?
	- 47±	iSb	
1087)	20 - 38 - 16±	iPb	Very small. Δb = 308± Km. Aftershock?
	- 51	iSb	
1088) 15	00 - 09 - 31	iPb	Small. Δb = 470± Km.
	- 10 - 24±	iSb	
1089)	04 - 01 - 44	iPb	Small. P crescendo. S rather uncertain. Δb = 444± Km.
	02 - 34±	iSb?	
1090)	07 - 08 - 25	iPb	Small. Δb = 308± Km.
	09 - 00±	iSb	
1091) 17	19 - 18 - 23	iPb	Small. Compr. to S±. Δb = 121 Km.
	- 37	iSb	
1092)	20 - 56 - 04	iPb	Very small. Δb = 129± Km.
	- 20±	iSb	
1093) 18	01 - 20 - 00	iPb	Very small. Compr. to S? Δb = 121 Km.
	- 14	iSb	
1094)	03 - 29 - 25	iPb	Very small. Compr. Δb = 237 Km.
	- 52	iSb	

	Date	Time (GMT)	Phase	Remarks
1095)	19	05 - 15 - 20	iPb	Small to moderate. Dilatation. To
		- 33	iSb	S±? Felt int. I, Lepanto. Δb = 112± Km.
1096)		17 - 31 - 07	iPg	Moderate. Compr. from SW? Δg = 67±
		- 15	iSg?	Km. But S a little doubtful, with P crescendo.
1097)		18 - 01 - 04	iPb	Small. Compr. from S? Δb = 102± Km.
		- 18	iSb	
1098)		23 - 50 - 36	iPb	Small. Dilat. Δb = 112± Km.
		- 49	iSb	
1099)	20	06 - 35 - 22	iPb	Moderate to large. Compr. to SW?
		- 39	iSb	Δb = 147± Km. Felt Iba, int. II.
1100)		06 - 59 - 30	iPb	Very small. Δb = 165± Km.
		- 49±	iSb	
1101)		07 - 22 - 35±	iPb	Very small. Δb = 129± Km.
		- 50	iSb	
1102)		09 - 44 - 34	iPb	Very small. Δb = 210± Km.
		- 58±	iSb	
1103)		10 - 11 - 37	iPb	Very small. Compr. Δb = 174± Km.
		- 57±	iSb	
1104)		10 - 36 - 04	iPb	Small. Dilat. Δb = 192± Km.
		- 26±	iSb	
1105)		10 - 46 - 08	iP	Very small. S indeterminate.
1106)		12 - 00 - 27	iPb	Small. Δb = 129 Km.
		- 42	iSb	
1107)		16 - 56 - 24	iPb	Small to moderate. Compr. Δb =
		- 42±	iSb	156± Km. Felt Vigan, int. III.
1108)		20 - 37 - 14	iPb	Very small. Δb = 174± Km.
		- 34	iSb	
1109)		21 - 18 - 53	iP	Very small. S indeterminate.
1110)		21 - 25 - 45	iPb	Very small. Δb = 291± Km.
		26 - 18±	iSb	
1111)		21 - 35 - 54	iPb	Small. Δb = 192± Km.
		- 36 - 16	iSb	
1112)		22 - 56 - 53	iPb	Very small. Δb = 291± Km.
		- 57 - 16±	iSb	
	21	NB. Note aftershocks of quakes of 20th continue.		
1113)		00 - 51 - 53	iPb	Small. Compr. Δb = 183± Km.
		52 - 14	iSb	
1114)		01 - 04 - 27	iPb	Very small. Δb = 129± Km.
		- 42±	iSb	
1115)		01 - 14 - 52	iPb	Very small. Δb = 174± Km.
		15 - 12	iSb	
1116)		01 - 29 - 07	iPb	Very small. S indeterminate.
1117)		02 - 20 - 19	iPb	Very small. Δb = 183± Km.
		- 40	iSb	

	Date	Time (GMT)	Phase	Remarks
1118)	21	03 - 08 - 35	iPb	Very small. Δb = 165± Km.
		- 54	iSb	
1119)		03 - 30 - 04	iP	Very small. S indeterminate.
1120)		04 - 03 - 14±	iP	Very small. S indeterminate.
1121)		12 - 31 - 26±	iPb	Very small. Δb = 138± Km.
		- 42±	iSb	
1122)		12 - 32 - 52	iP	Very small. S indeterminate.
1123)		17 - 22 - 49	iPb	Very small. Dilatation. Δb = 174±
		23 - 09	iSb	Km.
1124)		17 - 42 - 41±	iP	Very small. S indeterminate.
1125)		17 - 47 - 51	iP	Very small. S indeterminate.
		52 - 30	L	
1126)	22	02 - 09 - 10	iPb	Small. Dilat. Δb = 138± Km.
		- 26±	iSb	
1127)		07 - 55 - 21	iPb	Very small. Δb = 120± Km.
		- 35±	iSb	
1128)		16 - 30 - 06	iPb	Very small. Δb = 120± Km.
		- 20±	iSb	
1129)		18 - 45 - 47	iP	Moderate to large. S indeterminate.
1130)		20 - 04 - 43	iPb	Very small. Δb = 120± Km.
		- 57	iSb	
1131)		20 - 37 - 00	iPb	Small to moderate. Compr. Δb =
		- 19		308± Km. or Δb = 165± Km.
		or - 35±	iSb	
1132)		20 - 43 - 39	iP	Small or mod. Compr. S indeterminate.
1133)		21 - 46 - 36	iPb	Very small. Δb = 183± Km.
		- 57±	iSb	
1134)	23	01 - 42 - 23	iPg	Very small. Δg = 120± Km.
		- 37	iSg	
1135)		03 - 51 - 53	iPg	Very small. Compr. Δg = 112± Km.
		52 - 06±	iSg	
1136)		05 - 23 - 12	iPg	Very small. Δg = 112± Km.
		- 25	iSg	
1137)		05 - 48 - 43	iP	Very small. S indeterminate.
1138)		08 - 19 - 37	iP	Very small. S indeterminate.
1139)		08 - 44 - 13	iPb	Very small. Δb = 156± Km.
		- 31	iSb	
1140)		15 - 16 - 33	iPb	Very small. Δb = 138 Km.
		- 49	iSb	
1141)		16 - 39 - 32	iP	Very small. Compr. S indeterminate.
1142)		19 - 18 - 58	iPg	Very small. Δg = 110± Km.
		19 - 11±	iSg	
1143)		22 - 51 - 40	iPb	Small. Compr. Δb = 380± Km.
		- 52 - 23	iSb	
1144)		23 - 31 - 21	iPb	Small. Dilat. Δb = 147± Km.
		- 38	iSb	
1145)		23 - 44 - 53	iPb	Very small. Δb = 156± Km.
		45 - 11	iSb	

	Date	Time (GMT)	Phase	Remarks
1146)	24	01 - 08 - 13±	iP	Very small. S indeterminate.
1147)		01 - 20 - 30±	iPb	Very small. Δb = 165± Km.
		- 49	iSb	
1148)		02 - 42 - 09±	iP	Very small. Δ = 4135± Km. = 37°.2±.
		- 48 - 03±	iS	
1149)		06 - 03 - 01±	iP	Very small. S indeterminate.
1150)		06 - 10 - 39±	iPb	Very small. Compr. Δb = 246± Km.
		11 - 07	iSb	
1151)		09 - 41 - 41±	iP	Very small. S indeterminate.
1152)		09 - 50 - 46	iPb	Very small. Δb = 165± Km.
		51 - 05±	iSb	
1153)		14 - 35 - 37±	iP	Very small. S indeterminate.
1154)		14 - 38 - 08±	iP	Very small. S indeterminate.
1155)		15 - 23 - 45±	iPb	Very small. Δb = 148± Km.
		24 - 02±	iSb	
1156)		17 - 16 - 51±	iPb	Very small. Δb = 129± Km.
		17 - 06	iSb	
1157)		21 - 58 - 00	iPg	Very small. Δg = 112± Km.
		- 13±	iSg	
1158)		22 - 37 - 17	iPb	Very small. Δb = 183± Km.
		- 38±	iSb	
1159)		23 - 29 - 50	iP	Small. Compr. Δ = 5110± Km. = 46°.0±.
		- 36 - 41±	iS	
1160)	25	01 - 10 - 03±	iPb	Very small. Δb = 156± Km.
		- 21±	iSb	
1161)		01 - 26 - 23±	iP	Very small. S indeterminate.
1162)		02 - 00 - 05	iP	Small to mod. Dilat. Δ = 5145± Km.
		- 06 - 58	iS	= 46°.3±.
1163)		03 - 19 - 56	iPb	Very small. Δb = 210± Km.
		20 - 20	iSb	
1164)		06 - 39 - 19	iPg	Very small. Δg = 76± Km.
		- 28±	iSg	
1165)		07 - 15 - 04±	iP	Very small. S indeterminate.
1166)		08 - 07 - 54	iP	Very small. S indeterminate.
1167)		16 - 18 - 46	iP	Very small. Teleseismic. S indeter-
		- 23 or 24±	L	minate.
1168)		19 - 00 - 17	iP	Very small. S indeterminate.
1169)		21 - 51 - 42	iPb	Small. Compr. Δb = 282± Km.
		- 52 - 14	iSb	
1170)		22 - 14 - 43±	iPg	Small, Time marks poor. Δg = 58±
		- 50±	iSg	Km.
1171)		22 - 39 - 20	iPb	Very small. Time marks poor. Δb =
		- 40±	iSb	174± Km.
1172)	27	07 - 59 - 18	iPb	Small. Compr. Δb = 192± Km. Felt
		- 40±	iSb	Int. I, Salegseg, Balbalan, Mt. Province.
1173)		09 - 09 - 01	iPb	Small to moderate. Dilat., to SW?
		- 25±	iSb	Δb = 210± Km. Felt Iba, int. III.

	Date	Time (GMT)	Phase	Remarks
1174)	28	00 - 45 - 01±	iPg	Very small. Δg = 74± Km.
		- 10	iSg	
1175)		01 - 59 - 44±	iPg	Very small. Δg = 67± Km.
		- 52	iSg	
1176)		03 - 52 - 21	iPg	Very small. Δg = 117± Km.
		- 35±	iSg	
1177)		05 - 48 - 26	iPg	Very small. Δg = 117± Km.
		- 40±	iSg	
1178)		14 - 26 - 00	iPg	Very small. Δg = 117± Km.
		- 14±	iSg	
1179)	29	02 - 08 - 36	iPb	Small to medium. Compr. Δb = 138±
		- 52±	iSb	Km.
1180)		02 - 45 - 13	iPb	Very small. Δb = 138± Km.
		- 29±	iSb	
1181)		05 - 44 - 58	iPb	Very small. Δb = 129± Km.
		45 - 13±	iSb	
1182)		13 - 37 - 45±	i	Very small.
1183)		17 - 03 - 24±	i	Very small.
1184)	30	00 - 48 - 58	iPb	Very small. Δb = 147± Km.
		49 - 15±	iSb	
1185)		07 - 02 - 12±	iPg	Very small. Δg = 93± Km.
		- 23±	iSg	
1186)		09 - 31 - 10	iPb	Small. Δb = 138± Km.
		- 26±	iSb	
1187)		11 - 25 - 37±	iPb	Very small. Δb = 201± Km.
		20 - 00	iSb	
1188)	31	01 - 49 - 12±	iPb	Very small. Δb = 389± Km.
		- 56±	iSb	
1189)		04 - 40 - 42±	iPb	Very small. Δb = 308± Km.
		41 - 17±	iSb	
1190)		12 - 21 - 20	iPb	Small to medium. ~~Small~~. Compr.,
		- 56	iSb	then larger dilat. Δb = 317± Km.
1191)		12 - 30 - 36	iPb	Very small. Δb = 308± Km.
		31 - 11	iSb	
1192)		21 - 20 - 57±	i	Very small.

FELT AT PARRU AMP. III

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INT. III