MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

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 re- cording, U.S. Coast &
14 sec	N-S	Geodetic Survey type

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JULY 1952

Date	Time (GMT)	Phase	Remarks
1	1 - 19 - 53	iP	Δ = 160 Km. ± small quake, data approx.
	20 - 16	iS?	
	2 - 30 - 30	iP	Δ = 139 Km. ± small quake, data approx.
	47	iS	
	3 - 30 - 47	iP	Δ = 129 Km. ± small quake, data approx.
	31 - 03	iS	
	23 - 03 - 40	iS?	P very uncertain, probably 2 min. earlier. Small quake.
2	7 - 22 - 25	iP	Δ = 169 Km. Small quake, data uncertain.
	22 - 45	iS	
	7 - 33 - 00	iP	Δ = 139 Km. Small quake, data uncertain.
	33 - 17	iS	
	5 - 57 - 54	iS	P too small to measure. Very small quake.
	16 - 7 - 36	iS	P very small, probably 7 - 19. Hence Δ = 139 Km.
3	4 - 42 - 56±	iP	Δ = 928 Km. P too small to permit finding of direction.
	44 - 33=	iS	
	8 - 53 - 05	iP	Δ = 178 Km. P too small to permit direc- tion finding.
	- 26	iS	
	11 - 59 - 59	iP	Δ = 100 Km. Some indications of compres- sion wave from Se±. Small quake.
	12 - 00 - 12	iS	
	23 - 32 - 55	iP	(a) Seems apparently double quake. Local, intensity I. Small, since Δ = 41 Km.
	33 - 00	iS	
	23 - 33 - 23	iP±	(b) NE. at 15h - 18h GMT remarkable rise
	- 28	iS	& dying down of microseisms on ZSP & EWSP

Date	Time (GMT)	Phase	Remarks
4	4 - 56 - 16	iP }	Very small quake. Seems compr. from SW.
	- 24	iS? }	Δ = 51 Km.
	9 - 17 - 10	i	Very small quake.
	9 - 28 - 56	i	Compression wave from SE. Very small quake.
	17 - 6 - 51	iS	Very small quake. Start of P doubtful; 6 - 30??
5	10 - 21 - 31	iS	Very small quake. Start of P doubtful; Perhaps 20 - 51
	17 - 28 - 11	i	Small quake. Interpretation doubtful.
6	13 - 49 - 31	iP	Long distance quake. S uncertain. Probably iS-iP = 4^m Δ = 2420 Km. But NSLP, EWLP (obscure because of large micros.) do not seem to agree. NSLP favors 4^m, iS-iP, but EWLP 2^m 50^s
	15 - 34 - 34	iP }	Small quake. S rather uncertain.
	53	iS± }	
7	3 - 2 - 13	i }	Probably two small near quakes. No S certain. Nothing on long period records.
	4 - 9	i }	
	4 - 24 - 17	iP }	Small quake. Δ = 129 Km.
	24 - 33	iS }	
	6 - 08 - 02	iP }	Small quake. Compr. from NE. Δ = 41 Km.
	- 07	iS }	
	8 - 15 - 29	iP }	Very small quake. Δ = 41 Km.
	- 34	iS? }	
	13 - 19 - 02	i	Very small quake.
	14 - 49 - 34	i	Very small quake.
	17 - 49 - 05	iP? }	Very small. Ip doubtful.
	- 49	iS? }	
	19 - 13 - 49	iP? }	Small quake. Data uncertain.
	14 - 02	iS }	
	19 - 39 - 45		Very small trace but bit long. S?
	20 - 45 - 39	iP }	Small quake. Compr. from NW.? Δ = 41 Km.
	45 - 44	iS }	
	23 - 30 - 27	iP }	Felt sensibly, Baguio, int. I-II. Compr., probably from NE.
	- 32±	iS }	
8	11 - 15 - 39	i	Very small quake.
	17 - 15 - 21	i	
9	01 - 51 - 13±	iP }	Small quake. Δ = 149 Km.
	- 31	iS }	
	18 - 35±	e	Small quake. No time marks. Clock stopped.
	18 - 49±	i	Small quake. iP-iS = 19^s±, 159 Km. Clock stopped.
10	12 - 27±	i	Small nearby quake. Clock out of order. No time marks.
	15 - 54±	iP	Long distance quake. Seems dilatation from NE± iS-iP = 8^m 18^s±, iPR-P = 2^m47^s=, Clock still out of order; no time marks; hence time approx. Δ = 6655 Km.

Date	Time (GMT)	Phase	Remarks
12	0 - 9 - 49	i	Very small quake.
	3 - 14 - 26±	iP ⎫	Small quake, $\Delta = 139$ Km. Dilatation from N,
	43±	iS ⎭	
	5 - 49 - 50	iP± ⎫	Very small quake. $\Delta = 188$ Km.
	50 - 12	iS ⎭	
	14 - 20 - 48	iP ⎫	Rather small quake. $\Delta = 129$ Km.
	21 - 04	iS ⎭	
	14 - 39 - 27	iP ⎫	Compression from N. Rather small quake.
	- 41	iS ⎭	$\Delta = 139$ Km.
13	12 - 8 - 16	iP	Very large long distance quake. iS-iP =
	16 - 03	iS	$7^m 47^s$ $\Delta = 6110$ Km., but there are indications of depth, possibly 100 Km.
	16 - 35 - 6	iP ⎫	Small quake. $\Delta = 169$ Km.
	- 26	iS ⎭	
	17 - 39 - 10	iP ⎫	Large quake. $\Delta = 2420$ Km.
	43 - 10	iS ⎭	
	22 - 44 - 40	i	Very small quake.
14	4 - 33 - 45	iP ⎫	Small quake. Compression from S±
	34 - 03±	iS ⎭	$\Delta = 149$ Km.
	5 - 21 - 49	iP ⎫	Very small quake. Compression from SE±
	21 - 56	iS± ⎭	$\Delta = 60$ Km.
	14 - 7 - 23?	iP? ⎫	Very small quake. Δ uncertain.
	8 - 57	iS ⎭	
15	9 - 50 - 51	iS	Very small nearby quake. P onset doubtful. iS-P probably 4 to 6 sec.
16	9 - 55 - 3	iP	Very small nearby quake. Δ indeterminate. Compr. from S.
	10 - 44 - 57	iP ⎫	Small nearby quake. $\Delta = 50$ Km.
	45 - 03	iS ⎭	compr. from NW±
	12 - 15 - 46	iP ⎫	Small nearby quake. $\Delta = 129$ Km.
	16 - 02	iS ⎭	
	14 - 28 - 41	iP ⎫	Small nearby quake. $\Delta = 198$ Km.
	29 - 04	iS ⎭	Compression from SW±
	14 - 53 - 28	iP ⎫	Small nearby quake. $\Delta = 198$ Km.
	- 51	iS ⎭	
	20 - 48 - 36	iP ⎫	Small quake. $\Delta = 346$ Km.
	49 - 14	iS ⎭	
	23 - 11 - 04±	iS	Very small quake. Δ uncertain. Possibly 90 Km.
17	8 - 31 - 05	iP ⎫	Small nearby quake. $\Delta = 100$ Km.
	- 18	iS ⎭	Compression from SE.
	16 - 14 - 46	iP ⎫	Large long distance quake. Compr. from NE. Δ (if shallow quake?) = 2580 Km. S. Japan?
	18 - 58	iS ⎭	

Date	Time (GMT)	Phase	Remarks
18	2 - 50 - 47	iS	Very small nearby quake. ◬ uncertain, around 100 Km.
	8 - 47 - 48	i ⎫	Since the first time indicated was of
	9 - 00 - 49	i ⎬	small amplitudes, and the second very large and felt Intensity I at Baguio, we might seem to have two quakes. But against this we have:- 1) continous long period waves (small) between the two times. 2) No indications of separate P and S for either. 3) Long waves though small amplitudes, at 36^m after onset 8-47-48. Hence alternate solution could be of one long distance quake, possibly deep focus, around the tricky ◬ = 100' region.
	9 - 14 - 38	iS	Small quake. P obscure. Probably ◬ =165 Km.
	9 - 26 - 42	iP ⎫	Small quake. Δ = 129 Km.
	26 - 58	iS ⎬	
	9 - 39 - 00	i	Small nearby quake. ◬ probably less than 100 Km.
	10 - 21 - 07	i	Small nearby quake. ◬ uncertain, possibly 120 Km.
	10 - 21 - 32	i	Small nearby quake. ◬ uncertain, possibly 120 Km.
	10 - 35 - 56	iP ⎫	Small quake. ◬ = 129 Km.
	36 - 12	iS ⎬	
	10 - 57 - 48	iS?	Very small quake. Δ uncertain.
	20 - 37 - 59	iP ⎫	Small quake. ◬ = 129 Km.
	- 38 - 15	iS ⎬	
	22 - 44 - 37±	iP ⎫	Small quake. ◬ = 129 Km.
	- 44 - 53	iS ⎬	
	23 - 6 - 03	iP ⎫	Small quake. ◬ = 119 Km.
	- 6 - 18	iS ⎬	
19	1 - 16 - 58	iP ⎫	Small quake. ◬ = 169 Km.
	17 - 18	iS ⎬	Dilatation from N?
	15 - 15 - 11	iP ⎫	Very small quake. ◬ = 70 Km.
	- 21	iS ⎬	
	15 - 52 - 6	iP ⎫	Small quake. ◬ = 110 Km.
	20	iS ⎬	Seems compression wave from SW.
	16 - 14 - 16	iP ⎫	Small quake. ◬ = 119 Km.
	- 31	iS ⎬	
	16 - 15 - 28	iP ⎫	Small quake. ◬ = 119 Km.
	- 43	iS ⎬	
	16 - 20 - 45	i	Very small quake. ◬ undeterminate
21	9 - 9 - 18±	iP ⎫	Small quake. ◬ = 326 Km.
	- 54	iS ⎬	
	12 - 6 - 17	iP ⎫	Very large distant quake. (Tehachapi, near Bakerfield, California. P very small on short period instruments. S hardly apparent, but fine M. On long period seismographs, S group hard to read due to continuous large amplitudes for 1½-2 hrs. ◬ approximately (from records only) 11800 Km.
	16 - 57	SKS ⎬	
	18 - 07	S	
	51 - ?	M ⎭	

Date	Time (GMT)	Phase	Remarks
21	13 - 57 - 58	iP }	Small nearby quake. △ = 70 Km.
	58 - 04±	iS }	
	15 - 23 - 38	iP }	Small nearby quake. △ = 70 Km.
	- 44±	iS }	
	19 - 49 - 46	iP }	Felt Baguio Intensity II-III.Laoag,Aparri,
	50 - 00±	iS }	Tuguegarao. Int. IV. Compression from
			NW. △ = 110 Km.
	20 - 59 - 49±	iP }	Small quake. Dilat. from NW △ = 100 Km.
	21 - 00 - 02	iS }	
22	8 - 52 - 29	i	Very small quake. P,S and △ indeterminate.
	9 - 36 - 5±	iP }	Small nearby quake. △ = 119 Km.
	20	iS }	
	9 - 42 - 9±	iP }	Very small quake. △ = 119 Km.
	24 -	iS }	
24	10 - 41 - 20	i	Very small quake. P & S indeterminate.
	22 - 16 - 00	iP }	Long distance quake. Compr. from NW?
	21 - 19	iS }	△ = 3555 Km.
	27 - 22	M }	
25	11 - 37 - 06	i	Very small quake. △ uncertain.
	20 - 41 - 30±	iP }	Very small quake. △ = 19 Km.
	20 - 41 - 33±	iS }	Blast?
	21 - 45 - 26	iP }	Very small quake. △ = 50 Km.
	- 32	iS }	Compression from Sw±
	23 - 06 - 48	iP }	Very small quake. △ = 59 Km.
	- 55	iS }	
	23 - 56 - 40	iP }	Very small quake. △ = 100 Km.
	53	iS }	Compression from S±
26	11 - 0 - 24	i	Very small quake. △ indeterminate.
	13 - 36 - 40	i	Very small quake. △ indeterminate.
	14 - 31 - 54	iP }	Small quake. △ = 134 Km.
	32 - 10±	iS }	
	15 - 18 - 02	i	Very small quake. △ indeterminate.
	17 - 53 - 20	iP }	Moderate quake. △ = 326 Km.
	53 - 56	iS }	
	18 - 19 - 28	i	Very small quake. △ indeterminate.
	18 - 56 - 15	i	Very small quake. △ indeterminate.
27	8 - 33 - 54	iP }	Moderate distant quake.
	- 42 - 32	iS }	△ = 7010 Km.
28	14 - 2 - 42	iP	Small quake. △ = 464 Km.
	3 - 32	iS	
29	9 - 06 - 40	iP }	Small quake. △ = 149 Km.
	- 58	iS }	
30	7 - 51 - 49	iP }	Very small quake. △ = 169 Km.
	52 - 9	iS }	
	15 - 55 - 35	iP }	Small quake. △ = 58 Km.
	- 42 -	iS }	

MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

<u>Instruments</u> (All Sprengnethers)   <u>Hard Limestone Bedrock</u>

<u>Period of Seism. and Galv.</u>	<u>Component</u>	<u>Type of Amplifier</u>
1¼ sec	E-W	Photographic
1½ sec	N-S	Photographic
2 sec	Z	Photographic
2 sec	E-W	{ Photoelectric, Visual re-
14 sec	N-S	cording, U.S. Coast & Geodetic Survey type

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AUGUST 1952

Date	Time (GMT)	Phase	Remarks
2	6 - 27 - 41	iP }	Small quake, compr. from S±. Δ = 326 Km.
	28 - 17	iS }	
	14 - 59 - 46	iP? }	Very small quake; compr. from S±
	15 - 00 - 01	iS }	Δ = 119 Km.±
3	3 - 41 - 49	iP? }	Very small quake. Δ = 297 Km.±
	42 - 21	iS }	
	11 - 31 - 41	i	Very small quake.
	21 - 46 - 33	iP }	Dilatation from SW±. Δ = 237 Km.
	47 - 00	iS }	
4	12 - 21 - 48	iP }	Very small quake. Δ = 277 Km.
	22 - 19	iS }	
	14 - 50 - 26	iP }	Very small quake. Compr. from S±.
	- - 48	iS }	
5	19 - 30 - 23	i	Very small quake.
	21 - 51 - 45	iP }	Moderate quake. Δ = 2590 Km., unless
	55 - 58	iS }	deep focus.
6	4 - 42 - 7?	iP }	Moderate quake. Δ = 356 Km., but some
	- 46	iS }	evidence for deep focus.
	7 - 11 - 47?	eP	Very small quake. Δ indeterminate.
	13 - 32 - 32	iP }	Very small quake. Δ = 178 Km.±
	33 - 0	iS }	
	15 - 57 - 48	iP }	Very small quake. Δ = 560 Km.? ±.
	58 - 48	iS?? }	
7	8 - 35 - 15	iP }	Small quake. Δ = 100 Km.
	- 28	iS }	
	12 - 47 - 42	iP }	Moderate quake. Felt Baguio, Int. I.
	52?	iS }	Dilatation from NW. Δ = 70 Km.±
	13 - 25 - 7	iP }	Small quake. Compression from S±
	21	iS }	Δ = 110 Km.

Date	Time (GMT)	Phase	Remarks
8	2 - 24 - 33	iP $\}$	Very small quake. Δ = 326 Km.$^\pm$
	25 - 09	iS	
	13 - 23 - 55$^=$	iP $\}$	Very small quake. Δ = 170 Km.$^\pm$
	24 - 22$^=$	iS	
	15 - 15 - 18	iP $\}$	Very small quake. Δ = 139 Km.$^=$
	- 35	iS	
9	15 - 05 - 53	iP $\}$	Small quake. Dilatation. Δ = 287 Km.
	- 06 - 25	iS	
10	3 - 1 - 55$^\pm$	iP	Very small quake. Δ indeterminate.
	15 - 31 - 06	iP $\}$	Very small quake. Δ = 169 Km.$^\pm$
	- 26	iS	
	18 - 20 - 47	iP $\}$	Small quake. Δ = 1245 Km.$^\pm$
	23 - 03$^\pm$	iS	
11	6 - 15 - 34	iP $\}$	Small quake. Dilatation from S$^\pm$
	16 - 06	iS	Δ = 288 Km.
12	6 - 36 - 58	i	Small. Perhaps S phase of distant quake.
	21 - 39 - 51	eP $\}$	Distant quake. Δ = 2210 Km.$^\pm$
	43 - 34	iS	
13	23 - 10 - 48	iP $\}$	Small quake. Δ = 90 Km.
	11 - 00	iS	
14	5 - 15 - 34	iP $\}$	Very small quake. Δ = 847 Km.$^\pm$
	16 - 03?	iS	
	6 - 29 - 27	iP	S uncertain. Probably distant quake.

N.B. No records from August 14th, 7:19 GMT to 15th, 1:00. Power and light supply struck by nearby lightning.

Date	Time (GMT)	Phase	Remarks
15	14 - 4 - $^\pm$		Time uncertain. Δ = 159 Km.$^\pm$
16	13 - 59 - 20	eP $\}$	Moderate long distance quake. Separate
	- 27	iP	eP and iP (by 7$^{S\pm}$) distinct on two or
	14 - 5 - 29	iS	three components. iP-eP small amplitude. Not found as to S. Δe = 4345 Km., Δi = 4235 Km.
17	4 - 35 - 11	eP $\}$	Small quake. Δ = 188 Km.$^\pm$
	- 33?	iS	
	4 - 56 - 36	iP $\}$	Very small record, distant quake; Δ =
	5 - 02 - 51?	iS	approx. 4455 Km.
	10 - 56 - 39	iP $\}$	Small record, distant quake; Δ = 4365 Km.$^\pm$
	11 - 02 - 49?	iS	cf. previous quake and 16th, 13-59-20.
	16 - 8 - 20	eP $\}$	Large distant quake. Dilatation from NW?
	13 - 36?	iS	Δ = 3500 Km.$^=$

Date	Time (GMT)	Phase	R e m a r k s
18	2 - 17 - 21	iP	Very small quake. △ indeterminate.
	3 - 25 - 6	eP?	Small long distance quake.
	9 - 10 - 46	iP	Very small quake. △ indeterminate.
	19 - 24 - 24	i	Very small quake. △ indeterminate.
	21 - 47 - 49	iP }	Small quake. Dilatation from NW?
	51 - 21	iS }	△ = 2080 Km.
19	10 - 6 - 25	iP }	Long distance quake. Compr. from NW?
	9 - 45	iS? }	△ = 1935 Km.±
	- 12 - 12	iM }	
	10 - 42 - 47	iP }	Long distance quake. △ = 2310 Km.±
	46 - 38	iS± }	
20	15 - 39 - 17±	eP }	Long distance quake. △ = 9290 Km.±
	49 - 41±	eS }	
	16 - 06 - ±	L }	
21	00 - 50 - 27±	eP }	Data indeterminate. △ only approx. equals
	51 - 28±	eS }	572 Km.
	10 - 18 - 18?	iP }	Very small quake. △ = 100 Km.±
	- 31	iS }	
	15 - 24 - 18?	eP }	Very small quake. △ = 70 Km.±
	28	iS }	
	16 - 29 - 21	i	Distant small quake. Phase could be either S or P.
	20 - 13 - 57	iP }	Very small quake. △ = 327 Km.
	14 - 44	iS }	Dilatation from S±
	22 - 25 - 28	iP }	Very small quake. Compr. from S±. △ =
	48?	iS }	169 Km.±
	22 - 31 - 12	eP }	Moderate distant quake. iP-eP small ampli-
	- 20	iP }	tude; iP starts larger amplitude. eP com-
	34 - 11±	iS }	pr. from S±; iP dilat. from SW±. △e = 1700 Km.±; △i = 1620 Km.=
22	0 - 52 - 27	iP }	Small quake. Compr. from N? △ = 70 Km.
	- 37	iS }	
	4 - 21 - 09	iP }	Small quake. Compr. from S? △ = 326 Km.±
	- 45±	iS }	
	5 - 46 - 43	iP }	Small quake. △ = 1755 Km.±
	49 - 47±	eS }	
	6 - 20 - 48	i	Very small quake; indeterminate.
	8 - 03 - 50±	eP }	Very small quake. △ = 1745 Km.±
	06 - 53±	iS }	
	12 - 35 - 49±	i	Very small quake; indeterminate.
	18 - 15 - 42±	i	Very small quake; indeterminate.
	20 - 40 - 8	iP }	Very small quake. △ = 119 Km.
	- 23	iS }	
23	5 - 46 - 58	iP }	Small quake. Dilatation from S±. △ = 1105 Km.
	48 - 53	iS }	
	8 - 05 - 46	iP	Very small quake. S-P possibly 11s; △ = 80 Km.±

International Seismological Centre

Date	Time (GMT)	Phase	Remarks
23	12 - 06 - 23	iP }	Small quake. Compr. from S$^{\pm}$ $\triangle$ = 51 Km.
	31	iS }	
	14 - 22 - 23	iP }	Small quake. Compr. from S$^{\pm}$ $\triangle$ = 110 Km.$^{\pm}$
	- 37	iS }	
	17 - 25 - 23	eP }	Small quake. Compr. from S$^{\pm}$ $\triangle$ = 788 Km.
	26 - 46	iS }	
	21 - 42 - 10?	eP }	Small quake. Dilat. from S$^{\pm}$ $\triangle$ = 70 Km.$^{\pm}$
	20	iS }	
	23 - 16 - 39	iP }	Small quake. $\triangle$ = 129 Km.
	- 55	iS }	
24	2 - 28 - 32	iP }	Very small quake. Compr. from N$^{\pm}$
	- 53	iS }	$\triangle$ = 178 Km.
	10 - 04 - 43	iP }	Very small quake. $\triangle$ = 356 Km.
	05 - 22	iS }	
	12 - 50 - 37	eS? }	Interpretation doubtful. Data seem to
	- 49	iS? }	fit $\triangle$ = approx. 4000 Km.
	55 - 14	L }	
	58 - $\pm$	M }	
	21 - 38 - 02	iP }	Very small quake. $\triangle$ = 817 Km.$^{\pm}$
	38	iS }	
	22 - 22 - 42	iP }	Very small quake. $\triangle$ = 857 Km.
	23 - 12	iS }	
25	1 - 55 - 16	eP }	Small quake. $\triangle$ = 2135 Km.
	58 - 52	iS }	
	2 - 02 - 02	M }	
	4 - 40 - 05	iP }	Very small quake. $\triangle$ = 100 Km.
	- 18	iS }	
	13 - 39 - 39	eP }	Small quake. Dilatation from N$^{\pm}$
	- 59	iS }	$\triangle$ = 169 Km.
26	12 - 12 - 20	iP }	Very small quake. Dilat. from N$^{\pm}$
	- 32	iS }	$\triangle$ = 80 Km.
	22 - 08 - 14	iP }	Very small quake. $\triangle$ = 139 Km.
	- 31	iS }	
	6 - 29 - 59	iP? }	Very small quake. $\triangle$ = 966 Km.$^{\pm}$
	31 - 40	iS? }	
27	4 - 53 - 25	iP }	Very small quake. $\triangle$ = 159 Km.
	- 44	iS }	
	11 - 39 - 00	iP }	Very small quake. $\triangle$ = 150 Km.
	- 18	iS }	
	22 - 28 - 20?	iP }	Very small quake. $\triangle$ = 257 $\pm$ Km.
	- 49?	iS }	
28	1 - 07 - 37?	iP }	Very small quake. $\triangle$ = 119 $\pm$ Km.
	52?	iS }	
	10 - 52 - 08	iP	Very small quake.
	11 - 01 - 54	iP }	Small quake. $\triangle$ = 1171 $\pm$ Km.
	- 01 - 56	iS }	
	- 04 - 14	iSR }	
	11 - 13 - 16	e	Very small distant quake.

Date	Time (GMT)	Phase	Remarks
28	11 - 16 - 29	iP }	Very small quake. Compr. from N?
	- 16 - 50	iS }	Δ = 178 Km.
	12 - 19 - 14	iP }	Very small quake. Δ = 149 Km.±
	32?	S }	
	14 - 57 - 17	iP }	Very small quake. Δ = 424 Km.
	58 - 03	iS }	
29	5 - 33 - 49	iP }	Small Distant quake. Δ = 2865 Km.
	38 - 23	iS }	
	6 - 13 - 46	iP }	Very small quake. Δ = 149 Km.
	14 - 04	iS }	
	10 - 03 - 43	iP }	Very small quake. Δ = 90 Km.
	03 - 55	iS }	
	19 - 37 - 53	iP }	Small quake. Compr. from S± Δ = 110 Km.
	38 - 07	iS }	
30	11 - 23 - 32	i	Very small. Phases indeterminate.
	20 - 56 - 43	iP }	Small distant quake. Δ = 2420 Km.
	21 - 00 - 43	eS }	
	08 - ?	L or M }	
31	16 - 16 - 03	e	Distant quake. Phases indeterminate due to typhoon micros.
	23 - 42 - 28	iP	S indeterminate due to large micros.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

<u>Instruments</u> (All Sprengnethers)   <u>Hard Limestone Bedrock</u>

<u>Period of Seism. and Galv.</u>	<u>Component</u>	<u>Type of Amplifier</u>
14 sec	E-W	Photographic
1½ sec	N-S	Photographic
2 sec	Z	Photographic
2 sec	E-W	⎧ Photoelectric, Visual re-
14 sec	N-S	⎨ cording, U.S. Coast &
		⎩ Geodetic Survey type

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SEPTEMBER 1952

<u>Date</u>	<u>Time (GMT)</u>	<u>Phase</u>	<u>R e m a r k s</u>
1	5 - 41 - 16	iP ⎰	Small quake. Compr. from NW. $\triangle$ = 926 Km.
	42 - 53	iS ⎱	
	8 - 53 - 07	iP? ⎰	Very small quake. $\triangle$ = 227 ± Km.
	- 33	iS ⎱	
	19 - 21 - 33	iP ⎰	Very small quake. $\triangle$ = 60 Km.
	- 42	iS ⎱	
	20 - 51 - 38	iP ⎰	Very small quake. Compression. $\triangle$ = 227
	52 - 04	iS ⎱	Km.
2	3 - 46 - 7	iP ⎰	Small quake. Compr. from generally N di-
	- 21	iS ⎱	rection. $\triangle$ = 110 Km.
	4 - 24 - 56	iP ⎰	Very small quake. $\triangle$ = 346 Km.
	- 25 - 34	iS ⎱	
	7 - 33 - 37	iP ⎰	Very small quake. $\triangle$ = 50 Km.±
	- 44	iS ⎱	
	20 - 24 - 55	eP ⎰	Small quake. $\triangle$ = 2980 Km.
	29 - 37	iS ⎱	
3	3 - 43 - 19	iP ⎰	Very small quake. $\triangle$ = 80 ± Km.
	- 30±	iS ⎱	
	6 - 15 - 20	iP ⎰	Moderate quake. Dilatation from SE.
	- 31	eS ⎬	$\triangle e$ = 80 Km., $\triangle i$ = Km. 149
	- 38	iS ⎭	
	10 - 27 - 29	iP ⎰	Moderate quake. Probably dilatation from
	- 34	eS ⎬	SE. $\triangle e$ = 41 Km., $\triangle i$ = 90 Km. Felt
	- 41	iS ⎭	at Iba, int. II
	17 - 44 - 25	i	Small quake.
4	16 - 51 - 43	iP ⎰	Very small quake. $\triangle$ = 100 Km.
	- 56	iS ⎱	
5	1 - 53 - 57	eP ⎰	Very small quake. $\triangle$ = 90 ± Km.
	54 - 9	iS ⎱	

Date	Time (GMT)	Phase	Remarks
5	5 - 26 - 8	i	Very small quake.
	21 - 32 - 23	iP ⎫	Very small quake. Compression from N±
	35 - 11	iS ⎬	Δ = 1590 Km.
	38 - 22	M ⎭	
6	10 - 52 - 06	iP ⎫	Very small quake. Δ = 621 ± Km.
	53 - 12±	iS ⎭	
	13 - 50 - 34±	eP ⎫	Very small quake. Δ = 424 ± Km.
	51 - 20	iS ⎭	
	22 - 25 - 3	e	Very small quake.
7	2 - 36 - 06	iP ⎫	Very small quake. Compr. from N±.
	- 21	iS ⎭	Δ = 119 Km.
	8 - 05 - 23	iP ⎫	Very small quake. Δ = 80 Km.
	- 34	iS ⎭	
	8 - 28 - 13	eP ⎫	Very small quake. Δ = 178 Km.
	- 34	iS ⎭	
	13 - 30 - 14	iP ⎫	Very small quake. Δ = 100 Km.
	- 27	iS ⎭	
	14 - 20 - 44	eP ⎫	Very small quake. Δ = 80 Km.
	- 55	iS ⎭	
	15 - 36 - 17	iP ⎫	Very small quake. Δ = 100 ± Km.
	- 30±	eS ⎭	
	16 - 29 - 57±	i	Very small quake.
	16 - 31 - 48	iP ⎫	Moderate quake. Δ = 119 Km.
	32 - 03	iS ⎭	
	16 - 36 - 38	iP ⎫	Small quake. Δ = 454 ± Km.
	37 - 27?	iS ⎭	
	16 - 40 - 13	iP ⎫	Moderate quake. Dilatation from N±
	- 28	iS ⎭	Δ = 119 Km.
	22 - 23 - 55	e	Very small quake.
	22 - 27 - 17	i	Very small quake.
	22 - 48 - 08	i	Very small quake.
8	6 - 43 - 34	iP ⎫	Small quake. Δ = 297 ± Km.
	44 - 07?	iS ⎭	
	6 - 47 - 38	i	Very small quake.
	15 - 04 - 42	iP ⎫	Small moderate quake. Dilatation from
	08 - 52	iS ⎭	NW±. Δ = 2550 Km.
	19 - 31 - 06±	eP ⎫	Very small quake. Δ = 70 ± Km.
	- 16±	iS ⎭	
	21 - 51 - 56	i	Very small quake.
	22 - 0 - 9	i	Very small quake.
9	0 - 16 - 25	iP ⎫	Very small quake. Δ = 149 ± Km.
	- 43±	iS ⎭	
	12 - 56 - 02	iP ⎫	Interpretation very doubtful. May be part
	13 - -0 - 59	iS? ⎬	of next recorded very long distance quake
	13 - 14 - 23	SKS ⎫	Large quake, with remarkably clear and
	14 - 03	L ⎬	long surface waves, apparently coming to
	- 15 - 23	M ⎭	Baguio short and long way. Δ = 159°.7,
			17,745 ± Km. Interpretation made, rely-
			ing mainly on times of L & M, but is
			doubtful.

Date	Time (GMT)	Phase	Remarks
9	20 - 03 - 58?	iP }	Very small quake. Δ = 198 ± Km.
	04 - 21	iS	
	20 - 22 - 03	eP }	Very small quake. Δ = 169 ± Km.
	- 23	iS	
10	7 - 37 - 55	iP }	Small quake. Δ = 326 or 424 Km.
	31 or	iS	Compr. from S±.
	41		
	12 - 10 - 49	eP }	Very small quake. Δ = 58 ± Km.
	10 - 56	iS	
	12 - 37 - 35	iP }	Moderate to large quake. Compr. from N±.
	- 38 - 14	iS	Felt Calayan, int. V. Δ = 356 Km.
	14 - 16 - 22	iP }	Very small quake. Dilatation from N=.
	- 29	iS	Δ = 58 Km.
	15 - 12 - 48	eP }	Very small quake. Δ = 424 ± Km.
	13 - 34?	iS	
	18 - 48 - 45	eP }	Moderate to large quake. S surprisingly
	- 50 - 02?	iS	difficult to determine. Δ = 729 ± Km.
			Felt Cebu, int. V, Iloilo IV, Romblon,
			Dumaguete, Tacloban, Cuyo II.
	19 - 57 - 38	iP }	Very small quake. Compr. from S±
	57 - 59	iS	Δ = 178 ± Km.
	21 - 10 - 54	i	Very small quake.
11	4 - 39 - 3	iP }	Very small quake. Δ = 100 Km.
	16	iS	
	5 - 48 - 00	i	Very small quake.
	6 - 51 - 09±	iP }	Very small quake. Δ = 149 ± Km.
	- 27±	iS	
	7 - 30 - 10	iP }	Very small quake. Δ = 237 Km.
	- 37	iS	
	14 - 41 - 15	iP± }	Very small quake. Δ = 129 ± Km.
	- 31	iS	
	22 - 07 - 22	iP }	Moderate to large quake. Compr. from SW.
	09 - 38	iS	Δ = 1245 Km.
	23 - 42 - 30	i	Very small quake.
12	2 - 45 - 30	iP }	Very small quake. Δ = 80 Km.
	- 41	iS	
	6 - 12 - 23	iP }	Small to moderate quake. Compr. from S±.
	16 - 47	iS	Δ = 2735 Km.
	8 - 16 - 28	iS	P indeterminate. Very small nearby quake.
	19 - 02 - 46±	iP }	Very small quake. Δ = 129 ± Km.
	03 - 02	iS?	
13	2 - 24 - 03	iP }	Very small quake. Δ = 346 ± Km. Felt at
	- 48	iS?	Tacloban, int. II.
	4 - 20 - 02	iP }	Very small quake. Δ = 149 Km.
	- 20	iS	
	4 - 39 - 33	iP }	Very small quake. Δ = 129 Km.
	- 49	iS	
	6 - 10 - 56	iP }	Very small quake. Δ = 346 Km.
	11 - 34	iS	

Date	Time (GMT)	Phase	Remarks
13	8 - 14 - 09	iP ⎫	Small quake. Dilatation from N±.
	- 23	iS ⎭	Δ = 110 Km.
	13 - 06 - 50	iS	Very small nearby quake. P̲ uncertain.
14	3 - 36 - 41	iP ⎫	Small to moderate quake. Compr. from S±.
	38 - 01	iS ⎭	Δ = 759 Km. Felt at Tacloban, int. III
	6 - 01 - 48	i	Very small quake.
	6 - 33 - 40	iP ⎫	Small to moderate quake. Compr. Δ = 267
	34 - 10	iS ⎭	Km.
	8 - 44 - 11	eP? ⎫	Very small quake. Δ = 267 ± Km.
	- 41	iS ⎭	
	9 - 35 - 00±	eP ⎫	Moderate long distance quake with remark-
	- 41 - 35	eS ⎰	ably strong M, even on N-S short period
	48 - 20±	L ⎱	record. P & S rather uncertain, especial-
	51 - 35±	M ⎭	ly P. Δ = 43°.0, 4780 Km. seems to fit
			travel time tables very well.
	10 - 17 - 41	eP ⎫	Small quake. Δ = 857 ± Km. Felt at
	19 - 11	iS? ⎭	Tacloban, int. III.
	11 - 22 - 31	eP ⎫	Small quake. Δ = 956 ± Km. Felt at Tac-
	- 24 - 11	iS? ⎭	loban, int. III
	13 - 20 - 19	iS	Very small quake.
	21 - 17 - 35	eP? ⎫	Very small quake. Δ = 70± Km.
	- 45	iS ⎭	
15	5 - 58 - 04	e	Very small quake.
	11 - 37 - 00	i	Very small quake.
	12 - 13 - 24	i	Small quake.
	12 - 56 - 44	i	Very small quake.,
	18 - 15 - 59	iP ⎫	Small quake. Dilatation from SE±.
	16 - 17±	iS ⎭	Δ = 150 ± Km.
16	06 - 29 - 27	iP ⎫	Small quake. Dilatation from NW.
	- - 50	iS ⎭	Δ = 198 Km.
	10 - 27 - 48	iP ⎫	Small to moderate quake. Compr. from SE.
	- 28 - 05	iS ⎭	Δ = 139 Km.
	22 - 26 - 27	iP	Very small nearby quake. S̲ indeterminate.
	23 - 42 - 40	iP ⎫	Very small quake. Compr. F̲rom S±.
	- 47	iS ⎭	Δ = 58 ± Km.
17	00 - 55 - 00	iP ⎫	Very small quake. Δ = 90 Km.
	- 12	iS ⎭	
	20 - 17 - 51	iP ⎫	Very small quake. Compr. from S±.
	- 18 - 23	iS? ⎭	Δ = 267 ± Km.
	21 - 12 - 41	iP ⎫	Small quake. Compr. Δ = 139 ± Km.
	- 58	iS ⎭	
	21 - 14 - 44	iP ⎫	Very small quake. Compr. Δ = 129 ± Km.
	15 - 00?	iS ⎭	
	21 - 50 - 38	i	Very small quake.

Date	Time (GMT)	Phase	Remarks
18	06 - 03 - 26	eP	Very small. Teleseismic?
	07 - 55 - 22	eP }	Small, teleseismic. $\Delta = 6000 \pm$ Km.
	08 - 03 - 02	eS?}	
	11 - 09 - 45	iP }	Small quake. $\Delta = 228$ Km.
	- 10 - 11	iS }	
	12 - 37 - 12	iS	Very small nearby quake. P unceratin.
	17 - 49 - 27	eP }	Very small quake. $\Delta = 1054$ Km.
	- 51 - 17	iS }	
	21 - 15 - 55$\pm$	iP }	Very small quake. $\Delta = 169\pm$ Km.
	16 - 15	iS }	
	21 - 19 - 47	iP }	Small to moderate. Compr. from SW.
	20 - 06	iS }	$\Delta = 159$ Km.
	22 - 20 - 16	iP	Very small quake.
	23 - 56 - 31	iP }	Small quake. $\Delta = 2566$ Km.
	24 - 00 - 42	iS }	
19	10 - 48 - 48	iP }	Small quake. Compr. from N$\pm$.
	49 - 04	iS }	$\Delta = 129$ Km.
	14 - 38 - 48	iP }	Very small, teleseismic. $\Delta = 4,400\pm$ Km.
	45 - 00	iS }	
	17 - 32 - 18	iP }	Moderate to large quake. $\Delta = 562$ Km.
	33 - 18	iS }	
	22 - 49 - 23	i	Very small quake.
20	10 - 47 - 17	iP }	Small, Compression. $\Delta = 149$ Km.
	- 35	iS }	
21	02 - 50 - 18	eP }	Moderate to large quake, Teleseismic.
	03 - 01 - 51$\pm$	iS?}	$\Delta = 10965\pm$ Km. Interpretation difficult
	06 - 29 - 30	e	Very small quake.
	07 - 56 - 58	e	Very small quake.
	10 - 14 - 07	eP }	Small quake. $\Delta = 149 \pm$ Km.
	- 25$\pm$	iS }	
	11 - 17 - 35	eP	Very small. Teleseismic?
	22 - 48 - 29	eP }	Very small, Teleseismic. $\Delta = 1210$ Km?.
	51 - 07	iS?}	
22	01 - 15 - 10	eP }	Very small, teleseismic. $\Delta = 2800 \pm$ Km.
	19 - 39$\pm$	eS }	
	05 - 29 - 46	iP }	Small to moderate quake. Compr. from NE?
	30 - 00	iS }	$\Delta = 110$ Km.
	05 - 43 - 15	i	Very small quake.
	08 - 02 - 18	i	Very small quake.
	12 - 34 - 04	e	Very small quake.
	12 - 48 - 06	e	Very small quake.
23	02 - 31 - 37	i	Very small quake.
	02 - 34 - 13	iP }	Small quake. Dilatation from N?
	- 35	iS }	$\Delta = 188$ Km.
	06 - 37 - 17	iP }	Very small quake. $\Delta = 159 \pm$ Km.
	- 36$\pm$	iS }	
	15 - 03 - 05	iP }	Small to moderate quake. Compr. from N?
	- 46	iS }	$\Delta = 277$ Km.
	23 - 20 - 55	iS	Very small quake, local. P indeterminate.

Date	Time (GMT)	Phase	Remarks
24	03 - 49 - 33	eP }	Very small quake. Δ = 346 Km.
	50 - 11	iS }	
	04 - 45 - 19±	eP }	Very small quake. Δ = 129 ± Km.
	35	iS }	
	16 - 11 - 09±	eP }	Very small quake. Δ = 247 ± Km.
	37	iS }	
	20 - 40 - 35	iP }	Small quake, Teleseismic. Compr. from S?
	49 - 48	iS }	Δ = 7745 Km.
	20 - 51 - 20	i	Very small quake.
	23 - 24 - 40	e	Very small quake.
25	15 - 03 - 22	iP }	Small quake. Δ = 2080 ± Km.
	- 06 - 54±	iS }	
26	13 - 31 - 33±	eP }	Very small quake. Δ = 198 ± Km.
	56±	iS }	
	17 - 28 - 24	}	Between these two times, many indetermi-
	58 - 48	}	nate remnants of a teleseismic quake.
27	02 - 31 - 02	iP }	Small quake. Compr. from NE? Preliminary
	- 21	iS }	to Ilagan quakes, starting 10-32-26.
	04 - 32 - 40±	eP }	Very small quake. Δ = 661 ± Km.
	33 - 50±	iS }	
	04 - 59 - 52±	eP }	Very small quake. Δ = 80 ± Km.
	05 - 00 - 03	iS }	
	10 - 32 - 26	iP }	Moderate nearby quake, felt Ilagan, P.I.,
	43	iS }	intensity III. Δ = 139 Km. Remarkable
			number of aftershocks; 19 recorded at
			least.
	10 - 42 - 26	iP }	Aftershock # 1. Very small.
	- 43	iS }	
	44 - 09	iP }	Aftershock # 2. Very small.
	- 26	iS }	
	10 - 50 - 35	iP }	Aftershock # 3. Very small.
	- 52	iS }	
	11 - 10 - 12	iP }	Aftershock # 4. Very small.
	- 29	iS }	
	11 - 27 - 00	iP }	Aftershock # 5. Very small.
	- 17	iS }	
	11 - 38 - 24	iP }	Aftershock # 6?. Very small.
	- 46	iS }	
	11 - 58 - 18	iP }	Aftershock # 7. Very small.
	35	iS }	
	12 - 30 - 12	iP }	Aftershock # 8. Very small.
	29	iS }	
	12 - 40 - 40	eP }	Aftershock # 9. Very small.
	- 58	iS }	
	14 - 38 - 09	iP }	Aftershock # 10. Very small.
	- 28	iS }	
	15 - 04 - 39	iP }	Aftershock # 11. Small. Felt in Ilagan.
	- 57	iS }	Intensity II.
	15 - 24 - 38	iP }	Aftershock # 12? Small.
	- 53	iS }	

Date	Time (GMT)	Phase	Remarks
27	16 - 37 - 41	eP }	Aftershock # 13. Very small.
	- 57	iS }	
	16 - 46 - 37	eP }	Aftershock # 14. Very small.
	53	iS }	
	18 - 19 - 09	iP }	Aftershock # 15. Small.
	- 27	iS }	
	18 - 22 - 39	iP }	Aftershock # 16. Very small.
	56	iS }	
	19 - 13 - 56	eP }	Very small, teleseismic. Δ = 4835 Km.
	20 - 31	iS }	
	19 - 29 - 54	eP }	Aftershock # 17. Very small.
	30 - 11	iS }	
	20 - 03 - 01	iP }	Aftershock # 18. Very small.
	- 18	iS }	
	20 - 44 - 03	iP }	Aftershock # 19?. Very small.
	- 22	iS }	
28	07 - 09 - 23±	eP }	Very small quake. Δ = 1710 ± Km.
	- 12 - 23±	iS }	
	12 - 38 - 29	i	Very small quake.
	14 - 27 - 19	iP }	Very small quake. Δ = 100 Km.
	- 32	iS }	
	14 - 38 - 55	iP }	Very small quake. Δ = 100 Km.
	39 - 08	iS }	
	17 - 37 - 51±	eP }	Very small quake. Δ = 90 ± Km.
	- 38 - 03	iS }	
	19 - 56 - 00	iP }	Very small quake. Δ = 129 Km.
	- 16	iS }	
	20 - 24 - 58	iP }	Small quake. Δ = 159 Km.
	25 - 17	iS }	
	22 - 01 - 49±	eP }	Very small, teleseismic. Readings doubtful.
	06 - 04±	eS }	
29	01 - 16 - 08	iP }	Very small quake. Δ = 149 Km.
	- 26	iS }	
	08 - 08 - 56	iP }	Small quake. Δ = 277 Km.
	- 09 - 27	iS }	
30	00 - 45 - 50	iP }	Very small quake. Δ = 80 Km.
	- 46 - 01	iS }	
	05 - 40 - 27	iP }	Very small quake. Δ = 277 Km.
	- 58	iS }	
	11 - 05 - 48	i	Very small quake.
	12 - 53 - 58	i	Very small quake.
	12 - 56 - 50±	iP }	Moderate to large quake. Δ = 2365 ± Km.
	13 - 00 - 45±	iS }	
	- 05 -	M }	

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

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Up to the present month, for earthquakes nearer than 2000 Km., Rev. Jos. J. Joliat, S.J. "Tentative Travel Times for Near Earthquakes" (St. Louis Univ., 1931) have been used, taking on Pn and Sn. However, considering the dicta contained in p. 8. of Neumann's "Principles under-lying the interpretation of Seismograms", Spec. Publ. No. 254, U. S. Coast and Geod. Survey, Washington, paragraph commencing "Wave Types in Distance Zone 0 to 1,000 km.", both the Philippine Weather Bureau and ourselves have decided to use Joliat's Pg and Sg for distances up to 120 km. between station and epicenter, Pb and Sb (P, S) for distan-ces from 120 to 1,000 km., and Pn and Sn for distances from 1,000 km. to 2,000 km. These Tables should suffice until enough nearby quakes have been studied to compile other Tables, better suited for the Phi-lippines themselves.

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OCTOBER 1952

Date	Time (GMT)	Phase	Remarks
1	07 - 58 - 45	iP }	Very small record. Δ = 2710 ± Km.
	08 - 03 - 08	iS? }	
	13 - 58 - 09	i	Very small quake. Teleseismic?
2	00 - 10 - 04	ePg }	Very small quake. Δg = 92 Km.
	00 - 10 - 15	iSg }	
	08 - 37 - 55	i	Very small quake.
	12 - 01 - 51	i	Very small quake.
3	01 - 04 - 57	iPb }	Moderate quake. Compr. from SE.
	01 - 05 - 22	iSb }	Δb = 219 Km.
	01 - 06 - 35	iPb }	Moderate quake. Compression.. Δb = 219
	07 - 00	iSb }	Km.
	04 - 22 - 27	iPg }	Small quake. Δg = 41 Km.
	- 32	iSg }	
	04 - 24 - 34	iPg }	Moderate quake. Felt intensity II - III
	- 40±	iSg }	at Baguio. Dilatation. Δg = 50 ± Km.
	07 - 56 - 37	iPg }	Very small quake. Δg = 67 ± Km.
	45±	iSg }	

Date	Time (GMT)	Phase	Remarks
3	12 - 09 - 22	iPb }	Small quake. Δb = 201 Km.
	- 45	iSb }	
	12 - 54 - 13	iPb }	Small quake. Δb = 282 Km.
	45	iSb }	
	21 - 20 - 00±	i	Small to moderate quake. Teleseismic.
4	00 - 22 - 21	iPg }	Moderate quake. Δg = 76 ± Km.
	- 30±	iSg }	
	02 - 34 - 29	iPg }	Very small quake. Δg = 50 Km.
	- 35	iSg }	
	07 - 12 - 29	iP	Very small nearby quake. S indeterminate.
	21 - 37 - 58	iP	Small quake. S indeterminate.
5	03 - 04 - 19	iPb }	Very small quake. Dilat. from S±. Δb = 174 ± Km.
	- 29	iSb }	
	06 - 44 - 32	iPb }	Small quake. Δb = 479 ± Km.
	45 - 26	iSb }	
	07 - 28 - 04	iPb }	Very small quake. Δb = 318 Km.
	- 40	iSb }	
	13 - 01 - 12	iPb }	Very small quake. Δb = 192 ± Km.
	- 34±	iSb }	
	13 - 04 - 19	iPb }	Small to moderate. Δb = 183 Km. NB. Amplitude from 04-19 to 04-21.5 small, thereafter large. Meaning? Deep focus, or 04 - 19 P through basaltic, then later granitic?
	- 40	iSb }	
	13 - 11 - 56	iPb }	Small quake. Δb = 174 Km. Same phenomenon as N.B. of previous quake.
	12 - 16	iSb }	
	13 - 15 - 07	iPb }	Small to moderate quake. Δb = 192± Km.
	- 29±	iSb }	
	14 - 27 - 33	iPb }	Very small quake. Δb = 174 Km.
	- 53	iSb }	
	20 - 16 - 10	iPb }	Small to moderate quake. Δb = 165 ± Km.
	- 29±	iSb }	
	22 - 10 - 56	iP }	Very small quake. Teleseismic?
	14 - ?	S? }	
	22 - 27 - to	}	Teleseismic long waves.
	- 33 -		
	22 - 54 - 02	iPb }	Small to moderate. Compression. Δb = 174 Km.
	- 22	iSb }	
6	07 - 08 - 58	e	Very small quake.
	07 - 11 - 01	ePb }	Very small quake. Δb = 470 ± Km.
	- 54	iSb }	
	10 - 30 - 11	iPb }	Small quake. Δb = 354 ± Km.
	- 51	iSb }	
	10 - 34 - 31	iPg }	Small to moderate. Δg = 102 ± Km.
	- 43±	iSg }	
	10 - 53 - 35	iPb }	Very small quake. Δb = 345 ± Km.
	54 - 14	iSb }	
	14 - 57 - 25	iPg }	Small quake. Δg = 84 ± Km.
	- 35	iSg }	
	19 - 49 - 18	ePb }	Very small quake. Δb = 273 Km.
	- 49	iSb }	
	22 - 17 - 22	ePb }	Very small quake. Δb = 210 ± Km.
	- 46±	iSb }	
	22 - 38 - 18	i	Very small quake.

Date	Time (GMT)	Phase	Remarks
7	06 - 12 - 29	iPb ⎫	Very small quake. Δb = 282 Km.
	13 - 01	iSb ⎭	
	06 - 26 - 22	i	Very small quake.
	15 - 20 - 07	i	Very small quake.
	19 - 20 - 24	iPb ⎫	Very small quake. Δb = 632 ± Km. Felt
	21 - 35±	iSb ⎭	at Cuyo, Int. IV, Romblon Int. III,
	23 - 08 - 26	i	Iloilo, Int. II
8	10 - 55 - 33	iP	Very small quake. Teleseismic?
	14 - 29 - 17	iP ⎫	Small quake. Compr. From N?
	33 - 36	iS ⎬	Δ = 2655 Km.
	39 - -	M ⎭	
	18 - 49 - 30	iPb ⎫	Small quake. Dilatation. Δb = 372 Km.
	- 50 - 12	iSb ⎭	
9	06 - 26 - 04	iPb ⎫	Very small quake. Δb = 160 ± Km.
	- 23±	iSb ⎭	
	06 - 40 - 29±	ePb ⎫	Very small quake. Δb = 345 ± Km.
	41 - 08	iSb? ⎭	
	09 - 45 - 45	i	Very small quake. Teleseismic?
10	03 - 52 - 28	iPb ⎫	Very small. Compr. from N±? Δb = 201 ±
	- 51±	iSb ⎭	Km.
	04 - 04 - 38	IPb ⎫	Very small. Compr. Δb = 158 Km.
	- 56	iSb ⎭	
	05 - 10 - 27	iPb ⎫	Small to moderate. Δb = 345 Km.
	- 11 - 06	iSb ⎭	
	05 - 19 - 22	iPb ⎫	Small. Δb = 345 Km.
	20 - 01	iSb ⎭	
	07 - 46 - 01	iPb ⎫	Very small. Δb = 345 Km.
	- 40	iSb ⎭	
	12 - 49 - 20±	e	Very small.
	13 - 09 - 07	i	Very small.
	13 - 22 - 57	i	Very small.
	14 - 29 - 03±	ePb ⎫	Very small. Δb = 336 ± Km.
	- 41	iSb ⎭	
	16 - 06 - 53	iP ⎫	Very small. Δ = 8110 ± Km.
	- 16 - 25	iS ⎬	
	31 - ±	L ⎭	
	18 - 56 - 23	iP ⎫	Small to moderate. Compression.
	19 - 03 - 28	iS ⎬	Δ = 5355 ± Km.
	- 15 - ±	M ⎭	
	20 - 27 - 18±	iPb ⎫	Very small. Δb = 354 ± Km.
	- 58±	iSb ⎭	
	21 - 15 - 27	iP	Teleseismic?
11	00 - 20 - 50	iP ⎫	Small. Dilatation. Δ = 3920 ± Km.;
	26 - 33±	iS ⎬	rough estimate only.
	31 - ±	L ⎭	
	03 - 24 - 29±	ePb ⎫	Very small. Δb = 282 ± Km.
	- 25 - 01±	iSb ⎭	
	04 - 54 - 11	e	Very small.
	08 - 02 - 07	iPg ⎫	Small. Dilatation from N±.
	- 23	iSg ⎭	Δg = 136 Km.

Date	Time (GMT)	Phase	Remarks
11	10 - 48 - 14	iPb }	Small. $\Delta b = 327^{\pm}$ Km.
	- 51$^{\pm}$	iSb }	
	12 - 16 - 23$^{\pm}$	iPb }	Small. Dilatation. $\Delta b = 327^{\pm}$ Km.
	17 - 00$^{\pm}$	iSb }	
	17 - 03 - 47$^{\pm}$	iPb }	Small. $\Delta b = 308^{\pm}$ Km.
	04 - 22	iSb }	
	17 - 31 - 25	e	Very small.
	18 - 23 - 12	iPb }	Small quake. Compr. from SE.
	- 29	iSb }	$\Delta b = 147$ Km.
12	02 - 21 - 50	i	Very small.
	07 - 29 - 42	iPg }	Small. Dilat. from SE. $\Delta g = 84$ Km.
	- 52	iSg }	
	08 - 06 - 19	i	Very small.
	20 - 07 - 48	iPb }	Small. Dilatation from S$^{\pm}$.
	08 - 24	iSb }	$\Delta b = 318$ Km.
13	20 - 08 - 53	iPb }	Small. Dilatation from N$^{\pm}$. $\Delta b = 138^{\pm}$ Km.
	09 - 09$^{\pm}$	iSb }	
	20 - 54 - 59$^{\pm}$	iPg }	Very small. Compression. $\Delta g = 67^{\pm}$ Km.
	55 - 07$^{\pm}$	iSg }	
14	03 - 45 - 00$^{\pm}$	iPb }	Very small. $\Delta b = 187^{\pm}$ Km.
	- 22	iSb }	
	07 - 09 - 59	iPb }	Very small. $\Delta b = 317$ Km.
	10 - 35	iSb }	

NB.   12^{hr} to 16^{hr} GMT strong short period (2$^{\pm}$ sec.) microseisms even on long period seismograph. Depression in China Sea.

Date	Time (GMT)	Phase	Remarks
15	02 - 48 - 17	iP	Very small. Teleseismic?
	05 - 56 - 41	iP	Very small. Teleseismic?
	13 - 28 - 21	iPb }	Very small. $\Delta b = 192^{\pm}$ Km.
	- 43	iSb }	
	19 - 10 - 47	iP	Very small.
17	02 - 20 - 08	iPb }	Very small. $\Delta b = 560$ Km.
	- 21 - 11	iSb }	
	02 - 50 - 50$^{\pm}$	iPb	Very small. $\Delta b = 442^{\pm}$ Km. Readings un-certain. Δb may be same as previous quake.
	- 51 - 41$^{\pm}$	iSb	
	06 - 02 - 18$^{\pm}$	iPb }	Small. Deep focus? $\Delta b = 604^{\pm}$ Km.
	03 - 26	iSb }	
	12 - 15 - 56	iPb }	Very small. $\Delta b = 138^{\pm}$ Km.
	- 16 - 12$^{\pm}$	iSb }	
	20 - 47 - 23	iS?	Very small.
18	05 - 32 - 20	iP }	Moderate. Dilatation from SW. $\Delta = 6200$ Km.
	- 40 - 12	iS }	

Date	Time (GMT)	Phase	Remarks
18	07 - 29 - 06	iPb }	Very small. Compression from S$^\pm$. Δb =
	- 22	iSb }	138 Km.
	12 - 17 - 24	iPg }	Very small. Compression Δg = 109 Km.
	- 37$^\pm$	iSg }	
20	03 - 46 - 15	iPb }	Small. Compression from S$^\pm$. Δb = 282 Km.
	- 47	iSb }	
	05 - 32 - 11	iPb }	Very small. Δb = 282$^\pm$ Km.
	- 43$^\pm$	iSb }	
	08 - 57 - 25	iPb }	Very small. Δb = 264$^\pm$ Km.
	- 55$^\pm$	iSb }	
	14 - 33 - 20	iP }	Very small. Δ = 6245$^\pm$ Km. Compression.
	- 41 - 15$^\pm$	iS }	
	15 - 10 - 47	iP }	Small. Δ = 6735$^\pm$ Km.
	- 19 - 10$^\pm$	iS }	
	18 - 27 - 03$^\pm$	iPb }	Very small. Δ = 288$^\pm$ Km.
	- 29	iSb }	
21	09 - 21 - 41	iP	Very small. Teleseismic? Compr. from S$^\pm$.
	14 - 08 - 53$^\pm$	iPg }	Very small. Δg = 68$^\pm$ Km.
	09 - 01	iSg }	
	22 - 24 - 01	iP	Very small. Dilatation.
22	06 - 30 - 28	iPg }	Very small. Δg = 102 Km.
	- 40	iSg }	
	08 - 24 - 00	iPb }	Very small. Δb = 349$^\pm$ Km.
	- 46$^\pm$	iSb }	
	22 - 32 - 08	iPb }	Small to moderate. Δb = 174$^\pm$ Km. Felt
	28$^\pm$	iSb }	int. II at Casiguran, Quezon Prov.
23	13 - 00 - 32	iPg }	Very small. Δg = 102 Km.
	- 44	iSg }	
	15 - 28 - 06$^\pm$	iPb }	Very small. Δb = 219$^\pm$ Km.
	- 31	iSb }	
24	01 - 11 - 43	iPg }	Very small. Δg = 41 Km.
	- 48	iSg }	
	05 - 19 - 42	iP }	Small. Δ = 2500 Km.
	- 23 - 48	iS }	
	16 - 16 - 51$^\pm$	iPb }	Very small. Δb = 148$^\pm$ Km.
	- 17 - 07$^\pm$	iSb }	
26	08 - 45 - 48	iP }	Moderate. Dilatation from NE. Δ = 2265
	- 49 - 35	iS }	Km.
	08 - 56 - 22	i	Small.
	15 - 52 - 30$^\pm$	i	Very small.
	15 - 59 - 20$^\pm$	iP }	Small to moderate. Δ = 3245$^\pm$ Km. Large
	16 - 04 - 20	iS }	micros.
	18 - 08 - 25$^\pm$	iP }	Small. Teleseismic. Large typhoon micros.
	- 13$^\pm$	iS }	readings difficult.
	19 - 25 - 33	iP	Small. Teleseismic. Readings difficult;
			typhoon micros.

Date	Time (GMT)	Phase	Remarks
27	01 - 54 - 53	iPg }	Small. Compr. from S? Δg = 76 Km.
	- 55 - 02	iSg }	
	03 - 23 - 30±	iP }	Readings difficult due to typhoon micros.
	- 28 - 40±	iS }	Δ = 3400± Km.
	10 - 39 - 45	iPb }	Δb = 174± Km.
	- 40 - 05	iSb }	
	13 - 09 - 25	iPb }	Δb = 156 Km.
	- 43	iSb }	
28	09 - 21 - 24	iP }	Compr. from S±. Δ = 1710± Km.
	- 24 - 24±	iS }	
29	19 - 15 - 02	iS	Small. P uncertain.
	19 - 45 - 36	iP }	Small to moderate. Compr. from NW.
	- 54 - 51	iS }	Δ = 7790 Km. Surface waves very small. Deep focus.
30	22 - 19 - 19	iPg }	Small to moderate. Δb = 847± Km.
	- 20 - 54	iSb }	
31	14 - 01 - 12	iPb }	Small to moderate. Δb = 345 Km.
	- 51	iSb }	
	16 - 43 - 32±	iP }	Small to moderate. Δ = 3245± Km.
	- 48 - 32±	iS }	
	16 - 57 - 13	iP }	Small. Δ = 1335 Km.
	- 59 - 37	iS }	
	19 - 22 - 36±	iPg? }	Very small. Δg = 49± Km.
	- 42	iSg }	
	20 - 52 - 11±	iPg? }	Very small. Δg = 22± Km.
	- 14	iSg }	
	23 - 57 - 05±	iP }	Moderate to large. Prominent L and M.
	00 - 01 - 31±	iS }	Δ = 2755± Km.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

<u>Instruments</u> (All Sprengnethers)   <u>Hard Limestone Bedrock</u>

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

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NOVEMBER 1952

Date	Time (GMT)	Phase	R e m a r k s
1	05 - 39 - 34	iP	Very small. Probably teleseismic.
	23 - 56 - 56±	iP	Small. S rather uncertain, & may be deep
	00 - 03 - 12±	iS	focus. Δ = 4480± Km.
	- 07 - 23±	SR$_2$	
2	06 - 20 - 02±	i	Very small.
	10 - 09 - 49	iPg	Small. Dilatation from SW. Δ= 41 Km.
	54	iSg	
3	08 - 59 - 56	iPb	Small to moderate. Dilatation from S±.
	09 - 00 - 35±	iSb	Δb = 345 Km.
	09 - 44 - 41±	i	Small.
	13 - 12 - 30±	iPg	Small. Δg = 41± Km.
	35±	iSg	
4	17 - 07 - 01	iP	Very large, important Kamchatka quake.
	- 07 - 09	ipP	Δ = 5445 Km., depth of focus 100± Km.
	- 14 - 04	iS	
	17 - 45 - ±	iP	Seems aftershock of above, superimposed on long L or M waves.
	18 - 36 - 58	iP	Moderate. If we assume deep focus (100
	- 43 - 22	iS	Km.±) Δ = 4890± Km.; if not deep, Δ = 4620 Km.
	19 - 19 - 03	i	Very small. Probably aftershock.
	20 - 37 - 32	i	Very small. Dilatation. Prob. aftershock.
	20 - 57 - 09	iP	Moderate to small. Dilatation from NE.
	21 - 03 - 46	iS	Δ = 5055 Km. if deep focus, Δ = 4855 if not.
	21 - 09 - 37±	iP	Dilatation. Small. Probably aftershock.
	22 - 01 - 08	iP	Teleseismic. Very small. Aftershock?
	22 - 21 - 44	iP	Dilatation. Small. Aftershock?
	22 - 28 - 16	iP	Small to moderate. Δ = 5390± Km. if deep.
	- 35 - 13	iS	focus aftershock. Δ = 5210 Km. if not.
	22 - 45 - 30	iP	Very small. Aftershock?

Date	Time (GMT)	Phase	Remarks

4   23 - 37 - 21   iP }   Small to moderate. $\Delta = 5155$ Km. if deep
    - 44 - 00±   iS }   focus aftershock, $\Delta = 4900$ Km. if not.

5   02 - 28 - 11   iP }   Small; aftershock of Kamchatka quake?
    34 - 45   iS } $\Delta = 5000$ Km. if deep focus (100 Km.±),
    $\Delta = 4800$ Km. if not.

03 - 38 - 09   iP }   Small. Dilatation. Aftershock?
    45 - 03   iS } $\Delta = 5380$ Km. if deep focus; $\Delta = 5165$ Km.
    if not.

04 - 18 - 43   iP   Very small. Aftershock?
04 - 24 - 50   iP?   Very small. Aftershock?
06 - 05 - 54   iP }   Small. Dilatation. Aftershock? $\Delta = 4980$
    - 12 - 27   iS }   Km. if deep focus. $\Delta = 4790$ Km. if not.
10 - 23 - 46   iP   Very small. Teleseismic.
11 - 54 - 44   iP }   Very small. Aftershock?
12 - 01 - 20   iS } $\Delta = 5045$ Km. if deep focus. $\Delta = 4845$ Km.
    if not.

13 - 15 - 00   iP }   Very small. Aftershock? $\Delta = 5420$ Km. if
    21 - 57   iS }   deep focus, $\Delta = 5210$ Km. if not.
14 - 56 - 51   iP }   Small. Dilatation. Aftershock? $\Delta = 5000$
15 - 03 - 26   iS }   Km. if deep focus. $\Delta = 4820$ Km. if not.
19 - 17 - 14   iP }   Very small. Aftershock. $\Delta = 5555$ Km. if
    24 - 19   iS }   deep focus; $\Delta = 5355$ Km. if not.
19 - 58 - 48   iPg }   Very small. Nearby. $\Delta g = 178$ Km.
    59 - 09   iSg }
20 - 38 - 41   iP }   Very small. Compression. $\Delta = 5290$ Km. if
    45 - 31   iS }   deep focus; $\Delta = 5090$ Km. if not.
22 - 54 - 35   iP }   Very small. Compression. $\Delta = 5380$ Km. if
23 - 01 - 32   iS }   deep focus; $\Delta = 5210$ Km. if not.

NB.   There were numerous other very small quakes, too small to
give accurate readings.

6   16 - 08 - 31   iPg }   Small. Nearby. $\Delta g = 144$ Km.
    - 48   iSg }
    19 - 53 - 48 }   iP }   Seems very deep focus, 370 - 400 Km.
    - 55 - 04 }   ipP } $\Delta_{370} = 39° = 4335$ Km. Compr. from SE.
    - 59 - 06 }   iS }
    20 - 01 - 31 }   isS }

7   12 - 17 - 58   iP }   Very small. Aftershock? If deep focus,
    24 - 59   iS } $\Delta_{100} = 5465$ Km.; if not, $\Delta = 5245$ Km.
    13 - 50 - 33   iP }   Very small. Aftershock? If deep focus,
    - 57 - 34   iS } $\Delta_{100} = 5490$ Km.; if not, $\Delta = 5290$ Km.
    14 - 16 - 44   iP }   Small. Aftershock? If deep focus,
    14 - 23 - 19   iS } $\Delta_{100} = 5180$ Km.; if not, $\Delta = 4835$ Km.
    22 - 13 - 17±   iP }   Very small. Aftershock? If deep focus,
    - 19 - 39±   iS } $\Delta_{100} = 4690±$ Km.; if not, $\Delta = 4580±$ Km.
    23 - 23 - 53   iP }   Small. $\Delta = 1620$ Km.
    26 - 44   iS }

8   03 - 09 - 14   iPb }   Small. Compr. from N? $\Delta b = 918$ Km.
    - 10 - 57   iSb }

Date	Time (GMT)	Phase	Remarks
8	05 - 08 - 42	iP	Very small. Teleseismic. Kamchatka aftershock?
	08 - 58 - 02	iP	Very small.
	17 - 12 - 55	iP	Very small. Teleseismic.
	18 - 31 - 54	iPb }	Small. Dilatation from S? $\Delta b = 237$ Km.
	18 - 32 - 21	iSb }	
	19 - 41 - 25	iP }	Very small. Dilat. from N? Aftershock?
	47 - 56	iS }	Δ (deep focus, 100 Km.) = 4945 Km.; if not deep, Δ = 4755 Km.
9	00 - 30 - 27	iP }	Small. Kamchatka aftershock?
	- 36 - 53	iS }	If deep, Δ_{100} = 4925 Km; if not, Δ = 4665 Km.
	01 - 26 - 15	iP }	Very small. Aftershock? Compression. If
	- 33 - 13	iS }	deep, Δ_{100} = 5415 Km; if not, Δ = 5235 Km.
	03 - 00 - 00±	iP	Very small.
	04 - 43 - 16	iP }	Very small. Aftershock? If deep, Δ_{100} =
	49 - 53	iS }	5055 Km., if not, Δ = 4855 Km.
	06 - 05 - 07	iP }	Very small. Compr. from N±. Aftershock?
	- 11 - 43	iS }	If deep Δ_{100} = 5045 Km.; if not Δ = 4845 Km.
	06 - 59 - 28	iP }	Very small. Aftershock? If deep, Δ_{100} =
	07 - 05 - 54	iS }	4915 Km.; if not, Δ = 4655 Km.
	08 - 03 - 35	iP }	Small. Aftershock? If deep, Δ_{100} = 4940
	- 10 - 02	iS }	Km. if not, Δ = 4680 Km.
	08 - 31 - 48	iP	Very small. Compression.
	15 - 31 - 18	iP }	Very small. Compression. Aftershock. If
	38 - 30±	iS }	deep, Δ_{100} = 5700± Km.; if not, Δ = 5490± Km.
10	01 - 03 - 31	iP }	Very small. Kamchatka aftershock.
	- 10 - 07	iS }	If deep, Δ_{100} = 5045 Km; if not, Δ = 4845 Km.
	05 - 33 - 44±	iP	Very small; teleseismic.
	06 - 14 - 12	iP	Very small; teleseismic.
	09 - 02 - 20	iP	Very small.
	20 - 35 - 22	iP }	Very small; aftershock? If deep, Δ_{100} =
	42 - 26	iS }	5545 Km; if not, Δ = 5345 Km.
12	14 - 26 - 06	iP	Small. Dilatation. Teleseismic.
	23 - 09 - 08	iP	Very small.
13	08 - 07 - 10	iP }	Small to moderate. Kamchatka aftershock?
	- 13 - 43	iS }	If deep, Δ_{100} = 4970 Km; if not, Δ = 4790 Km.
	15 - 31 - 46	iP }	Very small. Aftershock? If deep, Δ_{100} =
	- 38 - 41	iS }	5395 Km; if not, Δ = 5180 Km.
	17 - 43 - 06±	iPb }	Very small. $\Delta b = 138\pm$ Km.
	- 22	iSb }	
	22 - 34 - 00	iP }	Very small; aftershock? If deep, Δ_{100} =
	40 - 34	iS }	5000 Km. Δ = 4800 Km.
14	03 - 15 - 09	iP	Very small. Compr. from S±. Teleseismic.
	09 - 51 - 04±	iP	Very small.

Date	Time (GMT)	Phase	Remarks
14	14 - 05 - 34	iP	Very small. Dilatation.
	20 - 38 - 30±	iP	Very small.
15	05 - 20 - 17	iP	Small. Teleseismic?
	05 - 31 - 44	i	Very small. Is this iS for previous quake?
	12 - 36 - 50	iP	Very small. Teleseismic.
	14 - 44 - 31±	iP	Very small. Teleseismic: S-P probably 8m±
16	07 - 45 - 40	iP	Very small. Teleseismic. S-P = 6$^{m±}$.
	10 - 26 - 11	iPb }	Very small. Δb = 291 Km.
	- 44	iSb }	
17	11 - 40 - 21	iPb }	Small. Compression. Δb = 156 Km.
	- 39	iSb }	
	13 - 34 - 48	iPg }	Moderately large record. Felt intensity II at Baguio. Δg = 76± Km.
	- 57±	iSg }	
18	07 - 51 - 00±	iP	Very small. Teleseismic.
	08 - 21 - 45	iP }	Small Kamchatka aftershock?
	- 22 - 18	ipP }	Deep focus, 150 Km.±. Δ = 5110± Km.
	- 28 - 21	iS }	
	- 29 - 16	isS }	
	08 - 50 - 37	iP }	Very small. Aftershock? Δ_{150} Km. = 5100 Km.
	- 57 - 07	iS }	
19	12 - 06 - 21	iP }	Moderate. Most probably deep focus, 100 Km. Δ_{100} = 480± Km.
	- 29	ipP }	
	07 - 15	iS }	
	- 30	isS }	
20	05 - 06 - 48	iPg }	Moderate. Tentatively analysed as deep focus, 100 Km.±. Δg = 50± Km. Dilatation.
	- 54	ipPg }	
	07 - 00	iSg }	
	- 10	isSg }	
	05 - 36 - 23	iPb }	Small. Δb = 192 Km. Dilatation from N±.
	- 45	iSb }	
21	07 - 43 - 29	iP }	Small. Compr. from SW? Δ = 2120± Km. S difficult to find.
	- 47 - 04±	iS }	
22	15 - 32 - 17	iPg }	Very small. Local? Δg = 20± Km.
	- 19	iSg }	
	18 - 37 - 00	iPg }	Very small. Δg = 41± Km.
	05±	iSg }	
	21 - 32 - 10	iPb }	Small. Δb = 299± Km.
	- 44±	iSb }	
	23 - 49 - 58±	iPb }	Very small. Δb = 192± Km.
	50 - 20±	iSb }	
23	07 - 04 - 38	iPb }	Very small. Δb = 524± Km.
	05 - 37±	iSb }	
	23 - 40 - 15	iPb }	Small. Δb = 165 Km.
	- 34	iSb }	

Date	Time (GMT)	Phase	Remarks
24	02 - 19 - 37$^{\pm}$ - 23 - 00$^{\pm}$	iP } iS }	Small. Rather striking disagreement as to time of S on different components; possibly deep focus. $\Delta = 1965^{\pm}$ Km. Compr.
	15 - 10 - 04	iP	Small. Dilatation
25	09 - 28 - 04 - 12	iPg } iSg }	Very small. $\Delta g = 68$ Km.
26	21 - 06 - 59 10 - 09$^{\pm}$	iP } iS }	Very small. Compression. $\Delta = 1820^{\pm}$ Km.
27	07 - 29 - 02 36 - 58$^{\pm}$	iP } iS }	Small. Compression. $\Delta = 6265^{\pm}$ Km.
	09 - 38 - 24 42 - 24	iP } iS }	Small. Compression. $\Delta = 2420$ Km.
28	05 - 39 - 47	iP	Very small. Dilatation from S?
	08 - 14 - 07 - 20 - 59	iP } iS }	Small. Compression. $\Delta = 5120$ Km.
	14 - 43 - 06 45 - 21$^{\pm}$	iP } iS }	Small. Compression, S doubtful. $\Delta = 1235^{\pm}$ Km.
	21 - 09 - 15 - 40 15 - 27 16 - 10	iP } ipP } iS } isS }	Small to moderate. Compression from S? Surely deep focus. $\Delta_{100} = 4555$ Km.
29	01 - 47 - 49	iS	Small, nearby quake. P too small for accurate measurement. S-P = 4 - 7s$^{\pm}$
	08 - 31 - 12 - 20 38 - 12 - 27$^{\pm}$	iP } ipP } iS } isS }	Small. Deep focus. Compression. $\Delta_{50-Km.} = 5380$ Km.
	23 - 58 - 10 24 - 07 - 37	iP } iS }	Very small. $\Delta = 8020$ Km.
30	19 - 37 - 26 44 - 22	iP } iS }	Very small. Compression. $\Delta = 5200$ Km.

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MANILA OBSERVATORY
Mirador, Baguio City
Philippines

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

Instruments (All Sprengnethers) Hard Limestone Bedrock

Period of Seism. and Galv.	Component	Type of Amplifier
14 sec	E-W	Photographic
$1\frac{1}{2}$ sec	N-S	Photographic
2 sec	Z	Photographic
2 sec	E-W	Photoelectric, Visual recording, U.S. Coast & Geodetic Survey type
14	N-S	

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DECEMBER 1952

Date	Time (GMT)	Phase	Remarks
1	20 - 32 - 55	iP }	Very small. Dilatation from NE?
	35 - 05	iS }	Δ = 1180 Km.
2	05 - 14 - 13	iP }	Very small. Compression. Deep focus,
	- 35	ipP }	100 Km. Δ_{100} = 4445 Km.
	20 - 15	iS }	
3	21 - 28 - 22	iPg }	Very small. Compr. from NE?
	- 32	iSg }	Δg = 84 Km.
4	04 - 01 - 19	iP }	Small. Δ = 6120 Km., but possibility of
	- 09 - 07	iS }	deep focus.
	06 - 18 - 28	iP	Very small. Teleseismic, but <u>S</u> very difficult to estimate.
	07 - 08 - 53	iP	Very small. <u>S</u> indeterminate. Δ may be either Δb = 972 Km., or Δ = 3720 Km.
6	07 - 08 - 23	iPb }	Small. Δb = 210 Km.
	- 47	iSb }	
	10 - 49 - 20	iP }	Moderate to large. Dilatation from S?
	55 - 51	iS }	Δ = 4745 Km.
	20 - 58 - 37	iP }	Small. Aftershock? Δ = 4680 Km.
	21 - 05 - 04	iS }	
7	00 - 59 - 52	iP }	Small to moderate. Compr. from S?
	01 - 07 - 34	iS }	Δ = 6020 Km.
	17 - 18 - 05	iP	Very small.
	20 - 28 - 00	iP }	Small. Deep focus. Compression.
	- 09	ipP }	Δ_{40} = 4665 Km.
	34 - 22	iS }	
	- 36	isS }	
	21 - 19 - 29	iPb }	Small. Δb = 147 Km.
	- 46	iSb }	

Date	Time (GMT)	Phase	Remarks
8	15 - 14 - 13	iP ⎫	Small. Dilatation. If deep focus Δ_{30} =
	14 - 21	ipP? ⎬	2500 Km; if not, Δ = 2410 Km.
	18 - 12	iS ⎭	
9	06 - 24 - 42	iPg ⎫	Very small. Dilatation. Δg = 84 Km.
	- 52	iSg ⎭	
	09 - 25 - 00	iP ⎫	Small. Dilatation. Δ = 5990 Km.
	- 32 - 40	iS ⎭	
10	06 - 07 - 00±	iPb ⎫	Small. Δb = 299± Km.
	- 34±	iSb ⎭	
	18 - 13 - 47	iPg ⎫	Very small. Δg = 84 Km.
	- 57	iSg ⎭	
	18 - 57 - 13	i	Very small.
	19 - 10 - 07	iPb ⎫	Small.
	- 22	iSb ⎭	
11	03 - 32 - 47	iPg ⎫	Small. Δg = 84 Km. Dilat. from S±.
	- 57	iSg ⎭	
	05 - 13 - 23	iPg ⎫	Small. Dilat. Δg = 67 Km.
	- 31	iSg ⎭	
	09 - 06 - 15	iP ⎫	Small. Compression. Δ = 4545 Km.
	- 12 - 35	iS ⎭	
	11 - 06 - 10	iPg ⎫	Very small. Δg = 32± Km.
	14±	iSg ⎭	
12	08 - 12 - 12	iPb ⎫	Small. S̲ uncertain. Δb = 246 or 461
	12 - 40 ⎱	iSb ⎬	Km.
	or 13 - 04 ⎰		
	17 - 26 - 25	iP ⎫	Very small. Δ = 2700 Km.
	- 30 - 47	iS ⎭	
13	11 - 18 - 59	iPb ⎫	Very small. Δb = 237 Km.
	19 - 26	iSb ⎭	
	19 - 10 - 13±	iPb ⎫	Very small. Δb = 201± Km.
	- 36	iSb ⎭	
15	03 - 01 - 57	iPg ⎫	Very small. Δg = 117 Km.
	02 - 11	iSg ⎭	
	16 - 36 - 02	iPg ⎫	Very small. Δg = 67 Km.
	- 10	iSg ⎭	
16	04 - 05 - 57	iPb ⎫	Small. Δg = 255 Km.
	06 - 26	iSb ⎭	
	20 - 32 - 07 ⎱	iPb ⎫	Small. Compr. Δb = 138 or 282 Km. S̲
	- 23 ⎰	⎬	uncertain.
	or - 39	iSb ⎭	
17	01 - 55 - 49	iPb ⎫	Very small. Δb = 291 Km.
	56 - 22	iSb ⎭	
	23 - 16 - 42	iP ⎫	Small. Δ = 9465± Km.
	27 - 14±	iS ⎭	

Date	Time (GMT)	Phase	Remarks
18	01 - 49 - 52	iPb }	Very small. Δb = 354 Km.
	50 - 32	iSb }	
	09 - 29 - 27±	iP }	Very small. Difficult interpretation due
	36 - 31±	iS }	to heavy micros. Δ = 5345± Km.
	21 - 08 - 28	iPg }	Very small. S doubtful. Δg = 109± Km.
	- 41±	iSg }	
19	17 - 30 - 14	iPg }	Small. Compr. from N±. Δg = 84 Km.
	- 24	iSg }	
21	05 - 56 - 30	iP }	Small. Compr. from SE? Δ = 2735 Km.
	06 - 00 - 54	iS }	
	15 - 58 - 29	iPg }	Very small. Δ = 109 Km.
	- 42	iSg }	
22	10 - 07 - 13	iPb }	Small. Readings difficult due to heavy
	09 - 00±	iSb }	micros. Δb = 954± Km.
	19 - 13 - 22	iPb }	Small to moderate. S difficult due to
	15 - 00±	iSb }	micros. Δb = 873± Km.
	22 - 33 - 29	iP	Very small. S indeterminate due to micros.
24	08 - 40 - 42	iP }	Moderate size. Compr. from S±. Δ = 3920 Km.
	46 - 25	iS }	
	14 - 31 - 06	iP }	Small. Compression. Δ = 1790 Km.
	34 - 13	iS }	
	18 - 07 - 36	iP }	Small. Δ = 4290 Km.
	- 09 - 07	PR2 }	
	- 13 - 42	iS }	
	- 16 - 32	SR2 }	
	18 - 25 - 46	iP	Very small.
	18 - 46 - 56	iP }	Small. Compr. Fine L & M on short pe-
	52 - 57	iS }	riod N-S component. Δ = 4210 Km.
	21 - 27 - 32	i	Very small.
	22 - 14 - 27	iP }	Moderate size. Compr. from S? Δ = 4090 Km.
	20 - 20	iS }	
25	02 - 36 - 00	iP }	Small. Compr. from N±. Δ = 4010 Km.
	41 - 48±	iS }	
	02 - 46 - 59	i	Very small. Compr.
	03 - 07 - 44	iPg }	Very small. Compr. from S±. Δg = 168 Km.
	08 - 04	iSg }	
	03 - 27 - 10	iP }	Small. Compr. from S? Δ = 4100 Km.
	33 - 04	iS }	
	03 - 58 - 22	iP }	Small. Compr. from S. Δ = 4090± Km.
	04 - 15±	iS }	
	08 - 21 - 34	i	Very small.
	08 - 39 - 19	iPb }	Small. Dilatation. Δb = 200 Km.
	- 44	iSb }	
	08 - 43 - 24	iPb }	Small. Compr. from S? Δb = 228 Km.
	- 50	iSb }	
	08 - 55 - 17	iPb }	Very small. Compr. Δb = 308 Km.
	- 52	iSb }	

Date	Time (GMT)	Phase	R e m a r k s
25	15 - 04 - 01	iPb ⎫	Very small. Dilat. from S. Δb = 873 Km.
	05 - 39	iSb ⎭	
	17 - 01 - 45	iPg ⎫	Very small. Δg = 50 Km.
	- 51	iSg ⎭	
	17 - 04 - 13	iPg ⎫	Very small. Δg = 117 Km.
	- 27	iSg ⎭	
	22 - 31 - 30	iP ⎫	Very small. Δ = 5345 Km.
	38 - 34	iS ⎭	
26	04 - 04 - 45	iPg ⎫	Medium size record. Very difficult to
	04 - 51 ⎫	iSg ⎬	interpret S. Δg = 49 Km. or Δb =
	or 05 - 13 ⎭	iSb ⎭	238 Km.
	05 - 57 - 28	i	Very small.
27	01 - 34 - 18±	i	Very small.
	02 - 57 - 30±	iPb ⎫	Very small. Δb = 299 Km.
	58 - 04±	iSb ⎭	
	07 - 03 - 00	iP	Very small. Dilat. from S.
	18 - 16 - 23	i	Very small. Compr. from S.
28	05 - 00 - 02	iPb ⎫	Very small. Δb = 873 Km.
	- 40	iSb ⎭	
	13 - 39 - 14±	iPb ⎫	Very small. Δb = 766± Km.
	- 40	iSb ⎭	
	14 - 52 - 11	iPb ⎫	Small. Δb = 192± Km.
	33	iSb ⎭	
	15 - 04 - 21	iPg ⎫	Small to moderate. S doubtful Δg = 67±
	29?	iSg ⎭	Km.
29	07 - 32 - 54 ⎤	iPb ⎫	Moderate. S difficult to interpret.
	23 ⎬		Compr. Δb = 255 Km. or 355 Km.
	or 33 - 33 ⎦	iSb ⎭	
	09 - 21 - 12	iPb ⎫	Small to moderate. Dilat. from N?
	22 - 32	iSb ⎭	Δb = 176 Km.
	18 - 35 - 39	iP	Very small.
30	06 - 22 - 41	iP	Very small. S uncertain.
	16 - 23 - 39	iP	Very small.
31	21 - 52 - 00	iPb ⎫	Very small. Compr. Δb = 407 Km.
	- 46	iSb ⎭	

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