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List of Seismograph Stations with their Instruments and Constants

STATION	LATITUDE	LONGITUDE	HEIGHT a. s. l. (Metres)	LITHOGRAPHIC FOUNDATION	INSTRUMENT	COMPT.	PERIOD IN SECS.	STATIC MAGNI- FICATION	DAMPING RATIO	PAPER SPEED mm/min.
BOMBAY	18° 54' N	72° 49' E	6	Deccan Trap	Milne-Shaw	N	12	350	13:1	16
					Milne-Shaw	E	12	350	23:1	8
					Sprengnether	E	To = Tg = 7 secs		30	
BOKARO	23° 50' N	85° 48' E	-	Rock	Milne-Shaw	N	12	250	20:1	16
					Milne-Shaw	E	12	250	20:1	16
					Wood-Anderson	E	0.8	950	h = 0.8	60
					Wood-Anderson	N	0.8	1000	h = 0.8	60
CALCUTTA	22° 32' N	88° 22' E	(1) 7 (2) 6	(Milne-Shaw) (Omori-Ewing) Alluvium	Milne-Shaw	E	12	250	20:1	8
					Wood-Anderson	N	2	870	Critical	30
					Omori-Ewing	N	16	32	-	25.4
					Omori-Ewing	E	21	30	-	25.4
					Wenner Accelerograph ZNE					
COLOMBO	06° 54' N	79° 52' E	7	Beach Sand	Milne-Shaw	E	12	250	20:1	-
DEHRA DUN	30° 19' N	78° 02' E	682	Gravel	Wood-Anderson	N	0.8	950	Critical	60
					Wood-Anderson	E	0.8	850	Critical	60
					Milne-Shaw	N	12	250	20:1	8
					Milne-Shaw	E	12	250	20:1	8
HYDERABAD	17° 26' N	78° 27' E	536	Granite	Milne-Shaw	E	12	250	20:1	8
					Milne-Shaw	N	12	250	20:1	8
KODAIKANAL	10° 14' N	77° 28' E	2346	Rock	Milne-Shaw	E	10	250	20:1	8
MADRAS	13° 00' N	80° 11' E	15	-	Sprengnether	E	To = Tg = 72 secs		Critical	30
NEW DELHI	28° 35' N	77° 12' E	207	Massive Quartzite						
POONA	18° 32' N	73° 51' E	560	Deccan Trap	Sprengnether	Z	To = Tg = 1.6		Critical	30
					Wood-Anderson	E	4	1000	20:1	16
					Milne-Shaw	N	12	280	20:1	8
PORT BLAIR	11° 49' N	92° 43' E	-	-	Wood-Anderson	N	2	1000	20:1	30
					Wood-Anderson	E	0.8	1000	66:1	30
					Milne-Shaw	N	12	350	20:1	8
SHILLONG	25° 34' N	91° 53' E	1600	Quartzite Sand Stone (Shillong Quartzite)	Wood-Anderson	N	0.8	1000	h = 0 h = 0.8	30
					Wood-Anderson	E	0.8	1000	h = 0.8	30
					Milne-Shaw	N	12	250	20:1	8
					Benioff	Z	To = 1.0 Tg = 0.18		60	
					Sprengnether	E	To = Tg = 6.5		Critical	30
Wenner Accelerograph ZNE										
TOCKLAI	28° 45' N	94° 46' E	-	Alluvium	Wood-Anderson	E	0.8	970	h = 0.8	60
VIZIANAGRAM	18° 07' N	83° 27' E	-	-	Wood-Anderson	E	0.8	1000	h = 0.8	30
					Wood-Anderson	N	2	1000	20:1	30

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS	DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS
01	SHILLONG	Z	iP	02 17 21		Slight	04	POONA	Z	eP	03 25 12		Feeble shock. Phases not clear
01	SHILLONG	Z	iP	03 49 01		Slight		AGRA	ENZ	iP iS	03 25 28 32 30	5410	Slight, compression. Initial ground motion North and East.
01	CHATRA	Z NE	iP iS	03 52 43 54 04	780	Slight		KODAIKANAL	E	e	03 25 59		Tremor
	SHILLONG	Z	eP	03 53 16		Slight	04	Epc: Western Afghanistan. H: 03h 59m 44s GMT (U. S. C. G. S)					
01	SHILLONG	Z	eP	04 32 39		Slight		BOMBAY	NE N	e e	04 02 27 06 09		Feeble
01	SHILLONG	Z	eP	07 57 29		Slight		POONA	Z	eP eS?	04 02 38 06 27	2320	Slight
01	TOCKLAI	E	e	08 01 25		Tremor		KODAIKANAL	E	eP iS Lr M	04 03 33 07 57 09 57 11 45	2810	Initial ground movement East Per: 12 secs L: 7
	SHILLONG	Z	eP	08 05 19		Slight		HYDERABAD	E	eP eS Lr M	04 03 34 07 54 10 18 11 54	2740	Slight Per: 15 secs L: 5 Per: 10 secs L: 3
01	SHILLONG	Z	eP	09 17 30		Slight			N	M	12 30		
01	SHILLONG	Z	eP	11 34 24		Slight		AGRA	EZ Z	iP PPP iP iS	04 03 49 04 41 05 35 08 15	2860	Slight, compression. Ground motion East.
01	SHILLONG	Z	eP	18 33 14		Slight			EZ Z EZ	iP iP Lq SSS Lr	08 34 08 54 09 24 09 54		
01	SHILLONG	Z	eP	20 44 16		Slight		MADRAS	E	e	04 03 50 07 31		Slight
02	SHILLONG	Z	iP	05 31 27		Slight, distant compression		SHILLONG	Z	eP	08 05 20		Slight
02	CHATRA	Z	iP iS	15 46 29 47 43	700	Feeble		TOCKLAI	E	e	04 47 32		Feeble
02	SHILLONG	Z	iP Sg	16 45 36 46 09	230	Slight, compression	04	SHILLONG	Z	eP Sg	07 21 34 21 57	180	Slight
	TOCKLAI	E	e	16 45 59		Slight, near	04	SHILLONG	Z	iP i	08 05 20 05 30		Slight, distant Rarefaction
02	SHILLONG	Z	eP Sg	16 52 39 53 02	180	Slight		CHATRA	Z	i	08 05 37		Feeble, distant
02	SHILLONG	Z	iP	19 04 06		Slight, distant Compression		POONA	Z	i	08 07 18		Tremor
02	SHILLONG	Z	eP	20 23 09		Slight, distant	04	SHILLONG	Z	iP ZNE	11 07 50 08 23	230	Slight, compression. Felt locally.
02	SHILLONG	Z	eP	21 58 34		Slight, near		TOCKLAI	E	e	11 08 10		Slight, near
03	SHILLONG	Z	eP Sg	00 33 29 34 02	230	Slight		CHATRA	Z	iP iS	11 08 51 10 38	1040	Feeble
	TOCKLAI	E	e	00 36 57		Slight	04	PORT. BLAIR	E	iP iSg	14 37 29 37 47	140	Slight
03	SHILLONG	Z	iP Sg	05 27 33 27 56		Slight, compression	04	SHILLONG	Z	e	15 32 06		Feeble, distant
03	SHILLONG	Z	iP	07 39 55		Slight, distant Compression	04	SHILLONG	Z	iP	16 16 00		Slight, distant Rarefaction
03	DEHRA DUN	NE	e	11 00 24		Tremor	04	SHILLONG	Z	eP	21 17 28		Slight, distant
03	POONA	Z	eP	11 37 29		Feeble, phases not clear.	04	SHILLONG	Z	eP Sg	21 55 03 55 36	230	Slight
	SHILLONG	Z	iP	11 37 45		Slight, distant Compression.	04	AGRA	ENZ	iP iP iP iP	22 33 43 33 51 34 35 34 41		Slight
03	SHILLONG	Z	iP	12 09 25		Slight		CHATRA	Z NE	iP iS	22 34 38 36 37	1160	Slight
	TOCKLAI	E	e	12 09 51		Slight		SHILLONG	Z	eP	22 35 03		Slight, distant
	CHATRA	Z NE	iP iS	12 10 15 11 23	650	Slight		POONA	Z	eP e	22 36 03 38 00		Feeble, phases not clear
03	DEHRA DUN	NE	e	12 42 04 42 25		Feeble							
03	TOCKLAI	E	e	17 09 00		Tremor							
	SHILLONG	Z	iP	17 24 16		Slight, distant Compression							
03	DEHRA DUN	NE	eP PP PPP iS SS SSS	22 33 18 33 23 33 29 33 39 33 48 33 58	170	Slight							
04	MADRAS	E	e	03 24 11 30 05		Slight							
	SHILLONG	Z	iP	03 24 21		Slight, distant Compression							

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS	DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS	
07	SHILLONG	Z	eP	17 58 30		Slight, distant	10	CHATRA	E	iP iS	00 16 21 16 23	10	Slight	
07	SHILLONG	Z	iPg Sg	18 40 28 41 01	230	Slight, compression		SHILLONG	Z	e	00 16 29		Feeble	
	CHATRA	Z	i	18 41 31		Feeble, distant	10	SHILLONG	Z	iP	04 14 57		Slight, rarefaction	
07	CHATRA	Z	iPg iSg	18 42 48 43 01	100	Feeble	10	SHILLONG	Z	iP	06 03 43		Slight, compression	
07	SHILLONG	Z	iP	20 08 25		Slight, distant Compression	10	SHILLONG	Z	iP	07 44 27		Slight, rarefaction	
	CHATRA	Z	i	20 30 57		Slight, distant	10	SHILLONG	Z	ePg eSg	09 20 49 20 56	20	Slight	
	DEHRA DUN	NE	e	20 33 58		Feeble								
	AGRA	EZ	iP	20 34 04		Slight, dilatation Ground motion East	10	SHILLONG	Z	eP	14 08 01		Slight	
	BOMBAY	NE E N	e e e	20 34 09 46 03 53 --		Slight	10	SHILLONG	Z	iP	16 42 52		Slight, compression. Distant	
	POONA	Z	eP	20 34 19		Slight, phases not clear	10	SHILLONG	Z	eP	17 11 46		Slight, distant	
07	SHILLONG	Z	eP	20 36 03		Slight	10	SHILLONG	Z	eP i	17 46 42 47 14		Slight	
07	SHILLONG	Z	eP	21 34 41		Slight	10	PORT BLAIR	E	eP iS Sg	20 34 56 35 20 35 24	220	Slight	
07	SHILLONG	Z	eP	22 31 19		Slight		SHILLONG	Z	iP	20 37 55 37 58		Slight, compression	
08	SHILLONG	Z	iP	04 17 16		Slight, distant	10	SHILLONG	Z	e	21 23 53		Slight	
08	SHILLONG	Z	e	16 14 32		Feeble, distant	10	SHILLONG	Z	eP	21 59 11		Slight	
	CHATRA	Z	i	16 14 40		Feeble, distant	10	SHILLONG	Z	e	22 04 59		Slight	
08	SHILLONG	Z	eP	18 12 39		Slight	10	SHILLONG	Z	eP	22 31 05		Slight	
08	Epc: 4 $\frac{1}{2}$ ° S, 138 $\frac{1}{2}$ ° E. New Guinea H = 22h 36m 08s GMT (U. S. C. G. S)							10	SHILLONG	Z	eP	23 31 43		Slight
	SHILLONG	Z	iP	22 45 37		Slight, compression	11	SHILLONG	Z	e	00 32 08		Slight	
	CHATRA	Z	i	22 46 16		Slight	11	SHILLONG	Z	eP i	00 36 09 36 43		Slight	
	AGRA	EN	P iS iP	22 47 01 55 43 55 55	7220	Slight	11	SHILLONG	Z	eP Sg	03 58 23 59 03	280	Slight	
	POONA	Z NE	eP eS	22 47 07 55 59	7430	Feeble	11	DEHRA DUN	NE	e i	07 00 57 01 18		Feeble	
	DEHRA DUN	NE	e(P) eS	22 47 15 55 57		Feeble		AGRA	ENZ	P	07 01 15		Slight, epicentre near Almora.	
	BOMBAY	NE	eS	22 56 13		Feeble		SHILLONG	Z ZE	eP eS	07 03 07 05 07	1170	Slight	
09	SHILLONG	Z	iP	00 35 10		Slight, distant Compression		POONA	Z	eP	07 05 38		Slight, probably near. Phases not certain.	
09	TACKLAI	E	e	02 02 46		Feeble, near		BOMBAY	NE	e	07 07 04		Slight, near	
09	DEHRA DUN	NE	e	03 21 33		Tremor	11	SHILLONG	Z	eP i	07 44 11 45 06		Slight	
	CHATRA	Z E	iP iS	03 22 20 25 26	1860	Slight	11	DEHRA DUN	NE	e i	11 31 24 31 45		Feeble	
	POONA	Z	e	03 22 21		Tremor	11	DEHRA DUN	NE	e	12 29 05		Tremor	
	SHILLONG	Z	iP	03 22 54		Slight, distant Compression	11	DEHRA DUN	NE	e	12 30 57		Tremor	
09	SHILLONG	Z	eP	06 00 47		Slight, near	11	DEHRA DUN	NE	e	12 48 05		Feeble	
09	SHILLONG	Z	eP	10 47 36		Slight, near		AGRA	ENZ	P	12 48 55		Feeble	
09	TACKLAI	E	e	11 04 33		Feeble, near	11	SHILLONG	Z	iP	16 35 26		Slight, distant Rarefaction	
	SHILLONG	Z	eP	11 04 43		Slight, near								
09	CHATRA	Z	iPg iSg	11 26 58 27 10	90	Feeble	11	Epc: 37° N, 79° E. Sinkiang Province, China H = 15h 43m 46s GMT (U. S. C. G. S)						
09	SHILLONG	Z	eP	21 11 21		Slight, distant		DEHRA DUN	NE	eP e(S)	16 45 35 46 51		Feeble	
09	DEHRA DUN	NE	e	21 50 45		Tremor								
	SHILLONG	Z	eP	21 53 17		Slight, distant								

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					h. m. s.	km		January 1959					h. m. s.	km	
11	AGRA	NZ	iP		16 46 13		Slight; compression. Ground motion South.	13	COLOMBO	E	P	01 26 15			Trace faint
Contd.		E	P		46 13			Contd.		S	S	35 00			
		Z	i		49 15					M	M	56 --			
		ENZ	e		49 57										
	SHILLONG	Z	iP		16 47 32		Slight		POONA	Z	iP	01 26 35	7610		Slight
	POONA	Z	e		16 48 11		Feeble		BOMBAY	E	eP	01 26 43	7810		Slight
			e		52 07					PPP		30 55			
	MADRAS	E	e		16 49 14		Feeble			eS		35 55			
			e		56 42					PS		36 23			
11	BOMBAY	NE	e		16 53 38		Slight, near			PPS		36 45			
11	SHILLONG	Z	iP		17 22 57		Slight, distant Rarefaction	13	SHILLONG	Z	iP	07 32 45			Slight, distant Compression
11	SHILLONG	Z	iP		18 40 01	120	Slight, rarefaction	13	Epc: 3°S, 102°E. Near South Coast of Sumatra - h about 150 km. -H-07h 33m 43s GMT (USCGS)						
			Sg		40 15				COLOMBO	E	P	07 39 00			
11	SHILLONG	Z	e		20 55 09		Feeble			S	S	43 05			
11	SHILLONGH	Z	iP		23 04 07	160	Felt locally			L	L	48 20			
		ZE	Sg		04 27					M	M	49 10			Amp. ≈ 0.4 mm
	TOCKLAI	E	e(P)		23 07 32		Slight, near		MADRAS	E	eP	07 39 12			Slight
12	PORT BLAIR	E	iP		01 49 52	140	Slight			e	e	39 39			
			iSg		50 09					e	e	43 08			
12	SHILLONG	Z	ePg		11 46 11	120	Slight		SHILLONG	Z	eP	07 39 38			Slight
			eSg		46 25				CHATRA	Z	iP	07 40 05			Slight
12	SHILLONG	Z	iP		14 24 54		Slight, distant Rarefaction		POONA	Z	eP	07 40 20			Feeble, phases not clear
	POONA	Z	i		14 26 56		Feeble, phases not clear		BOMBAY	NE	eP	07 40 33	3980		Slight
12	SHILLONG	Z	iP		17 50 21		Slight, distant Compression			PP	P	41 56			
12	PORT BLAIR	Z	e		18 31 54		Feeble, distant			PPP	P	42 15			
	SHILLONG	Z	e		18 34 43		Feeble, distant			eS	e	46 11			
12	DEHRA DUN	NE	e		19 10 11		Feeble			e	e	46 18			
			e		11 43					SS	S	48 54			
	SHILLONG	Z	iP		19 12 31		Slight, distant Compression.			Lq	L	49 14			
12	SHILLONG	Z	e		19 43 19		Slight, distant Compression			Lr	L	50 25			
13	DEHRA DUN	NE	e		00 58 08		Feeble		PORT BLAIR	E	eS	07 40 35			Slight
			e		59 21				AGRA	ENZ	P	07 40 43	4080		Slight
	SHILLONG	Z	eP		01 00 30		Slight, distant			iS	S	46 27			
13	Epc: 134°N, 146°E. Mariana Islands. - H = 01h 15m 25s GMT (U.S.C.G.S) Mag.: 6.4 (Pasadena)								DEHRA DUN	NE	e	07 42 12			Feeble
	SHILLONG	ZE	eP		01 24 40	5920	Slight			i(S)	S	47 05			
		E	iS		32 11				BOKARO	N	e	07 43 48			Slight
	CHATRA	E	iP		01 25 12		Slight	13	SHILLONG	Z	eP	08 53 32			Slight
	AGRA	EZ	iP		01 26 03	7190	Slight, compression. Ground motion West.		FOONA	Z	e	08 53 37			Slight shock. Phases not clear
		N	P		26 03				PORT BLAIR	E	e	08 58 57			Slight
		Z	PcP		26 25										
		EZ	iS		34 43				COLOMBO	E	P	09 41 20			
		Z	PPS		35 17					S	S	45 40			
		E	ScS, SKS		35 51					L	L	48 20			Amp. ≈ 1.0 mm
	MADRAS	E	iP		01 26 05	7170	Slight. Ground movement: West			M	M	50 05			
			PcP		26 31				MADRAS	E	eP	09 42 46	2930		Slight
			iS		34 44					eS	e	47 18			
			PS		35 08										
			PPS		35 23				BOMBAY	E	eP	09 43 15	3150		Slight
	DEHRA DUN	NE	eP		01 26 11	7130	Feeble			N	e	44 03			
			iS		34 48					E	e	44 09			
	HYDERABAD	E	iP		01 26 11	7240	Slight, Ground motion West Other phases lost while changing paper.				eS	e	48 02		
			PcS		30 34					N	e	48 07			
			iS		34 54					E	e	49 30			
			PS		35 14					N	M	58 37			Per. = 9 secs Δ = 2
			SKS1		35 59				HYDERABAD	N	eP	09 43 19	3120		Slight
			SS		38 54					E	eS	48 04			
			Lq		42 53					N	M	52 38			Per. = 9 secs Δ = 7
															Per. = 12 secs Δ = 5
									CHATRA	Z	iP	09 44 58			Slight
										E	i	56 12			

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18	SHILLONG	Z	ePg iSg	06 17 13 17 29	130	Slight	20	AGRA Contd.	ZNE E	P S	16 56 14 17 04 14	6450	Slight Per.: 18 secs Amp.: 12.5 mm	
18	SHILLONG	Z	e	10 03 21		Slight		BOMBAY	E	eP PcP	16 56 15 56 40	6610	Slight	
18	SHILLONG	Z	e	11 28 11		Slight			NE	eS PS	17 04 24 04 41			
18	SHILLONG	Z	iP	14 52 00		Slight, distant			E	PPS e ScS	04 57 05 19 05 37			
18	SHILLONG	Z	e	15 20 34		Slight, distant		POONA	Z	iP	15 23 25		Phases not clear	
18	SHILLONG	Z	iP	15 59 56		Slight		CHATRA	Z	i	16 56 22		Slight	
18	SHILLONG	Z	e	18 02 18 i 03 09		Slight		DEHRA DUN	NE	e e	16 56 53 17 04 48		Feeble	
18	SHILLONG	Z	iP	19 17 25		Slight		COLOMBO	E	e L M	17 01 55 14 05 16 57		Amp.: 1.0 mm	
18	SHILLONG	Z	iP	19 35 39		Slight, distant		KODAIKANAL	E	e	17 02 58		Tremor	
18	SHILLONG	Z	i	19 38 07		Feeble, distant		HYDERABAD	N E	M M	17 20 04 22 04		Per.: 21 secs Amp.: 6 Per.: 18 secs Amp.: 6	
18	Epc: 19°S, 178°W. Fiji Islands. - h about 450 km - H = 22h 23m 15s GMT (U. S. C. G. S) Mag: 6½ (Pasadena)							21	Epc: 19°N, 120°E. Near North Coast of Luzon P.I. - H = 11h 08m 10s GMT (U. S. C. G. S)					
	SHILLONG	Z	iP	22 36 07		Slight		SHILLONG	Z E	iP iS	11 13 50 18 24	2960	Slight, compression	
	CHATRA	Z E	iPP i	22 41 16 47 20		Slight		21	CHATRA	Z E	iP iS	11 15 30(?) 20 37(?)	3480	Slight
	AGRA	NE	iPP i	22 46 52 47 52		Slight. Initial ground movement towards East		21	DEHRA DUN	NE	e iS	11 16 14 21 42		Feeble
18	SHILLONG	Z	e	23 00 26		Slight		BOMBAY	E	eS e	11 22 57 26 28		Feeble	
19	SHILLONG	Z	e	00 49 52		Slight, distant		21	Epc: 14°N, 50°E. Arabian Sea - H = 13h 57m 20s GMT (Shillong)					
19	SHILLONG	Z	e	02 39 08		Slight		BOMBAY	E N E N	iP eP eS eS	14 02 18 02 22 06 20 06 28	2490	Slight	
19	SHILLONG	Z	iP	08 19 47		Slight		POONA	Z NE	eP eS	14 02 25 06 31	2550	Slight	
19	SHILLONG	Z	iP	10 07 21		Slight		AGRA	ZNE E	iP S	14 03 25 08 09	3110	Slight	
19	SHILLONG	Z	eP	10 54 15		Slight		DEHRA DUN	NE	e eS	14 04 15 08 34		Feeble	
19	SHILLONG	Z	iP	10 56 20		Slight, distant		SHILLONG	Z	iP	14 05 04		Slight, rarefaction	
19	SHILLONG	Z	iP	14 51 54		-		CHATRA	Z	i	14 05 32(?)		Slight; distant	
19	SHILLONG	Z	iP	19 23 17 i 24 00		Slight		HYDERABAD	E	eS M	14 07 47 11 26		Per.: 15 secs Amp.: 4 Per.: 12 secs Amp.: 4	
19	POONA	Z	e	19 38 04		Tremor		N	M	13 02				
19	SHILLONG	Z	iPg Sg	19 48 49 49 12	190	Slight		21	SHILLONG	Z	iP	16 46 15		Slight, distant Compression
19	SHILLONG	Z	eP i	20 51 00 52 08		Slight		CHATRA	Z	iP	16 47 44		Feeble, very near	
19	SHILLONG	Z	eP i	20 51 00 52 08		Slight		21	SHILLONG	Z	eP Sg	17 50 56 51 29	240	Slight
19	CHATRA	Z E	iP iS	20 51 22 51 41	150	Slight		22	SHILLONG	Z	eP Sg	04 46 47 47 23	250	Slight
19	POONA	Z	i	22 52 06		Feeble, phases not clear		22	Epc: 34°N, 142°E. Near East Coast of Honshu, Japan. - H = 05h 10m 25s GMT (U. S. C. G. S) 38°N, 142.5°E. - H = 05h 10m 25s GMT (Shillong) Mag.: 6½-7 (Pasadena), 6½ (Berkeley), 7 (Shillong).					
19	SHILLONG	Z	iP	23 39 55		-		SHILLONG	ZNE NE	iP PP PPP iS PPS	05 18 37 20 15 20 58 25 08 25 20	4860	Moderate	
20	SHILLONG	Z	iP	01 30 07		Slight, distant								
20	SHILLONG	Z	eP eS	02 40 19 41 55	940	Slight								
20	Epc: 9°S, 126°E. Timor Island - H = 16h 46m 11s GMT (U. S. C. G. S)													
	PORT BLAIR	E	ePP iS	16 54 59 59 37		Slight								
	MADRAS	E	eP e e	16 55 14 58 20 17 02 39		Slight								
	POONA	Z NE N	iP eS PS PPS Mn	16 56 12 17 04 08 04 31 04 42 23 --	6380	Slight, rarefaction Per.: 15 secs Amp.: 4.5 mm								

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS	DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km	REMARKS	
January 1958														
28	POONA	Z	iP	10 24 02		Feeble, shock	29	SHILLONG	ZF	iP	23 35 09	7190	Slight	
			i	24 08		Phases not		Contd.	NE	iS	43 49			
			i	24 19		clear		BOMBAY	NE	eP	23 35 11	7130	Slight	
	BOMBAY	NE	e	10 24 05						eS	43 48			
	SHILLONG	Z	iP	10 24 21		Slight, distant		POONA	Z	eP	23 35 13	7230	Slight	
						Rarefaction			NE	eS	43 55			
28	CHATRA	Z	i	14 07 24		Feeble, near		COLOMEO	E	S	23 46 20			
28	SHILLONG	Z	iP	16 07 51		Slight, local								
	CHATRA	Z	iP	16 08 57	380	Slight	30	SHILLONG	Z	iPg	00 35 17	20	Slight	
			iS	09 49						Sg	15 19			
28	SHILLONG	Z	iP	17 15 06		Slight, distant	30	SHILLONG	Z	iP	00 31 16		Slight, distant	
						compression							Compression	
28	SHILLONG	Z	eP	17 27 09		Slight, near	30	DEHRA DUN	NE	e	13 46 50		Tremor	
	CHATRA	Z	i	17 28 10		Feeble, distant		CHATRA	Z	iP	13 48 26	1850	Slight	
									NE	iS	51 32			
28	SHILLONG	Z	eP	21 53 44	170	Slight		SHILLONG	Z	eP	13 48 41		Slight, distant	
			Sg	54 05						i	49 13			
29	SHILLONG	Z	eP	08 02 02	110	Slight	30	CHATRA	Z	iP	14 45 23	220	Slight	
			Sg	02 15						iS	45 49			
29	POONA	Z	eP	10 03 05	680	Slight, near	30	SHILLONG	Z	eP	15 26 42		Slight, distant	
			eS	04 17				POONA	Z	eP	15 35 27		Feeble, phases	
	BOMBAY	E	e	10 04 05		Slight, near				i	35 29		not clear	
		N	e	04 20				30	SHILLONG	Z	eP	16 35 51		Slight, distant
		E	e	04 40										
	SEHORE	NE	eP	10 04 25		Tremor, local	30	SHILLONG	Z	eP	18 22 53		Slight, distant	
	DEHRA DUN	NE	e	10 04 44		Tremor	30	SHILLONG	Z	iP	19 01 40	140	Slight	
	CHATRA	Z	i	10 07 45		Slight, distant				Sg	01 57			
29	SHILLONG	Z	eP	11 05 10		Slight, distant	30	SHILLONG	Z	i	19 04 58		Slight, distant	
29	SHILLONG	Z	eP	13 45 58		Slight, distant	30	Epc: 44°N, 144°E. Hokkaido, Japan						
29	Epc: 52°N, 174°W. Andros of Islands, Aleutian Islands.							- H: 20h 38m 58s (U. S. C. G. S)						
	Mag.: 5.4-6 (Pasadena)							Mag.: 5.4-6 (Pasadena)						
	SHILLONG	Z	iP	20 32 59		Slight, compression		SHILLONG	ZF	iP	20 47 25	5220	Moderate, compression	
									E	PP	49 12			
	CHATRA	Z	iP	20 33 10		Slight				PPP	50 02			
	AGRA	Z	iP	20 33 34		Slight, compression				iS	54 17			
										PS	54 24			
	POONA	Z	iP	20 34 22	9700	Feeble				PPS	54 33			
		NE	eS	45 03						SS	57 21			
	BOMBAY	NE	eP	20 34 26	9780	Feeble				Lq	58 41			
			eS	45 09						SSS	59 23			
										Lr	21 00 55		Per. = 13.5 secs	
										M	04 25		$\mu = 5.1$	
29	Epc: 52°N, 174°W. Fox Islands, Aleutian Islands							CHATRA	Z	iP	20 47 45	5550	Slight	
	- H: 20h 58m 18s GMT (U. S. C. G. S)								NE	iS	54 56			
	SHILLONG	Z	iP	21 09 50		Slight, compression		PORT BLAIR	E	iP	20 48 01	6000	Slight	
										eS	55 35			
	CHATRA	Z	iP	21 10 00		Feeble				PS	55 44			
	POONA	Z	iP	21 11 13		Slight				ScS	57 42			
29	SHILLONG	Z	e	21 29 36		Slight, distant				SS	59 17			
29	Epc: 71°N, 8°E. Off Coast of Norway							DEHRA DUN	NE	eP	20 48 22	5820	Slight	
	- H: 23h 24m 30s GMT (U. S. C. G. S)								N	PP	50 05			
	DEHRA DUN	NE	eP	23 34 07	6140	Slight				iS	55 47			
		N	eS	41 50						SS	58 51			
			SS	45 40						M	21 08 29			
			SSS	47 32										
			M	53 58										
	AGRA	Z	iP	23 34 27	6430	Slight, compression		AGRA	ZNE	iP	20 48 34	6060	Slight	
		NE	P	34 27					NE	iS	55 12			
		ZNE	iS	42 29										
	CHATRA	ZNE	iP	23 34 57	6908	Slight		HYDERABAD	N	eP	20 49 15	6750	Slight	
		NE	iS	43 15						eS	57 32			
										PS	58 02			
										ScS	59 05			
										SS	21 01 41			
										Lr	05 20			
										M	12 07		Per. = 14 secs	
													$\mu = 6$	
	BOKARO	N	eP	23 35 08	7090	Slight		MADRAS	E	eP	20 49 25	5930	Slight	
			iS	43 43						PP	51 40			
										eSp	57 51			
										PPS	58 19			

DATE	STATION	COMPT PHASE	G. M. T. h. m. s.	Δ km	REMARKS	DATE	STATION	COMPT PHASE	G. M. T. h. m. s.	Δ km	REMARKS	
30	POONA Contd.	Z NE N	eP eS Mn	20 49 29 57 58 21 17 --	5980 Slight Per. = 11.3 secs Δ = 3.7	30	HYDERABAD Contd.	N SS SSS Lr M	22 39 32 42 14 45 40 49 55		Per. = 12 secs Δ = 5	
	BOMBAY	NE N NE E N E N	eP PcP eS PS PPS SKS ₁ e SS	20 49 34 49 52 58 10 58 28 58 44 59 09 59 31 21 02 22	7110 Slight Per. = 14 secs Δ = 6		MADRAS	E eP PP eS PS PPS	22 27 17 29 30 35 48 35 01 36 17	7010	Slight	
	COLOMBO	E	S L M	20 58 02 21 18 05 24 10	Amp. = 0.9 mm		POONA	Z NE	eP eS	22 27 20 35 51	7030	Slight
	KODAIKANAL	E	S	20 58 17	Tremor		BOMBAY	NE E NF N E N	eP eS PS e SS Lq M	22 27 24 35 01 35 23 37 17 40 17 43 40 55 39	7130	Slight Per. = 15 secs Δ = 8
30	Epc: 44°N, 144°E, Hokkaido, Japan. - H = 22h 16m 47s GMT (U.S.C.G.S.) MAG: 6% (Pasadena). Minor damage at Deshikutsu (USCGS).						KODAIKANAL	E	e(S)	22 35 32		Tremor
	SHILLONG	ZE E	eP PP PPP iS PS PPS SS SSS M	22 25 13 26 59 27 49 32 03 32 13 32 20 34 58 35 58 41 58	4990 Moderate Per. = 15 secs Amp. = 1 mm Δ = 7.1		COLOMBO	E	S e M	22 35 35 55 50 23 02 05		Amp. = 0.9 mm
	CHATRA	Z NE	iP iS	22 25 35 32 46	5550 Slight	30	SHILLONG	Z	eP	22 55 40		Slight, distant
	DEHRA DUN	NE N	eP iS SSS/Lq M	22 25 13 33 40 37 52 45 27	5850 Slight	31	SHILLONG	Z	e	00 48 20		Slight, distant
	PORT BLAIR	E	iP iS ScS	22 26 23 33 58 35 04	5000 Slight	31	SHILLONG	Z	iP Sg	05 15 31 15 44	110	Slight, compression
	AGRA	ZNE E ZN ZNE	iP iS SS iP Lr	22 25 27 34 08 37 52 38 35 44 41	Slight, compression	31	SHILLONG	Z	iP Sg	06 38 59 39 17	140	Slight, compression
	HYDERABAD	N	eP iS PS	22 27 03 35 17 35 00	5590 Slight	31	CHATRA	Z	iPg iSg	15 15 20 15 32	90	Feeble
						31	SHILLONG	Z	eP i	15 36 24 35 55		Slight
						31	DEHRA DUN	NE	e	21 45 15		Tremor
						31	SHILLONG	Z	iP	21 47 17		Slight, compression, distant
						31	SHILLONG	Z	eP	22 28 35		Slight, distant
						31	SHILLONG	Z	eP	23 07 29		Slight, distant
						31	SHILLONG	Z	eP	23 45 14		Slight, distant
							CHATRA	Z	iP iS	23 45 31 49 40	1890	Slight

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Earthquake Reports

(Non Instrumental Reports)

The following is the list of Earthquakes that were reported by Voluntary Observers from different stations during the month of January, 1959.

Place at which felt	Date GMT	Time at which felt G.M. T. h. m.	Duration in secs.	Intensity in R.F. scale	No. of shocks	Remarks
GAUHATI	03	12 11	5	II	One	-
SHILLONG	06	04 30	3	II	One	-
SHILLONG	12	23 02	2	III	One	-
SHILLONG	28	15 07	3	IV	One	-
SHILLONG	28	15 08	10	V	One	-

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GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

Dec, 1959  
Feb



Published under the direction of  
Shri S. Basu, M.Sc., F.N.I.,  
Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants.

| STATION              | LATITUDE  | LONGITUDE | HEIGHT<br>a. s. l.<br>(Metres) | LITHOGRAPHIC<br>FOUNDATION                            | INSTRUMENT           | COMPT. | PERIOD<br>IN<br>SECS.     | STATIC<br>MAGNI-<br>FICATION | DAMPING<br>RATIO | PAPER<br>SPEED<br>mm/min. |
|----------------------|-----------|-----------|--------------------------------|-------------------------------------------------------|----------------------|--------|---------------------------|------------------------------|------------------|---------------------------|
| BOMBAY               | 18° 54' N | 72° 49' E | 6                              | Deccan Trap                                           | Milne-Shaw           | N      | 12                        | 350                          | 13:1             | 16                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 350                          | 23:1             | 8                         |
|                      |           |           |                                |                                                       | Sprengnether         | E      | To = Tg = 7 secs          |                              | 30               |                           |
| BOKARO               | 23° 50' N | 85° 48' E |                                | Rock                                                  | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 16                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 16                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 950                          | h = 0.8          | 60                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | N      | 0.8                       | 1000                         | h = 0.8          | 60                        |
| CALCUTTA             | 22° 32' N | 88° 22' E |                                | (1) 7 (Milne-Shaw)<br>(2) 6 (Omori-Ewing)<br>Alluvium | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
|                      |           |           |                                |                                                       | Wood-Anderson        | N      | 2                         | 870                          | Critical         | 30                        |
|                      |           |           |                                |                                                       | Omori-Ewing          | N      | 16                        | 32                           | -                | 25.4                      |
|                      |           |           |                                |                                                       | Omori-Ewing          | E      | 21                        | 30                           | -                | 25.4                      |
| CHATRA               | 26° 50' N | 87° 10' E | 161                            | Sand Stone                                            | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 16                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | N      | 1                         | 1000                         | 30:1             | 60                        |
|                      |           |           |                                |                                                       | Benioff              | Z      | To = 0.72 Tg = 0.45 secs. |                              | 60               |                           |
|                      |           |           |                                |                                                       | Wenner Accelerograph | ZNE    | -                         | -                            | -                | -                         |
| COLOMBO              | 06° 54' N | 79° 52' E | 7                              | Beach Sand                                            | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | -                         |
| DEHRA DUN            | 30° 19' N | 78° 02' E | 682                            | Gravel                                                | Wood-Anderson        | N      | 0.8                       | 950                          | Critical         | 60                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 850                          | Critical         | 60                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 8                         |
|                      |           |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
| HYDERABAD            | 17° 26' N | 78° 27' E | 536                            | Granite                                               | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
|                      |           |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 8                         |
| KODAIKANAL           | 10° 14' N | 77° 28' E | 2346                           | Rock                                                  | Milne-Shaw           | E      | 10                        | 250                          | 20:1             | 8                         |
| MADRAS               | 13° 00' N | 80° 11' E | 15                             | -                                                     | Sprengnether         | E      | To = Tg = 72 secs         |                              | Critical         | 30                        |
| NEW DELHI            | 28° 35' N | 77° 12' E | 207                            | Massive Quartzite                                     |                      |        |                           |                              |                  |                           |
| POONA                | 18° 32' N | 73° 51' E | 560                            | Deccan Trap                                           | Sprengnether         | Z      | To = Tg = 1.6             |                              | Critical         | 30                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | E      | 4                         | 1000                         | 20:1             | 16                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 280                          | 20:1             | 8                         |
| PORT BLAIR           | 11° 49' N | 92° 43' E |                                |                                                       | Wood-Anderson        | N      | 2                         | 1000                         | 20:1             | 30                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | 56:1             | 30                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 350                          | 20:1             | 8                         |
| SHILLONG             | 25° 34' N | 91° 53' E | 1600                           | Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite)    | Wood-Anderson        | N      | 0.8                       | 1000                         | h = 0 h = 0.8    | 30                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|                      |           |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 8                         |
|                      |           |           |                                |                                                       | Benioff              | Z      | To = 1.0 Tg = 0.18        |                              | 60               |                           |
|                      |           |           |                                |                                                       | Sprengnether         | E      | To = Tg = 6.5             |                              | Critical         | 30                        |
| Wenner Accelerograph | ZNE       | -         | -                              | -                                                     | -                    |        |                           |                              |                  |                           |
| TOCKLAI              | 28° 45' N | 94° 46' E | -                              | Alluvium                                              | Wood-Anderson        | E      | 0.8                       | 970                          | h = 0.8          | 60                        |
| VI ZIANAGRAM         | 18° 07' N | 83° 27' E |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|                      |           |           |                                |                                                       | Wood-Anderson        | N      | 2                         | 1000                         | 20:1             | 30                        |

| DATE | STATION                                                                                                                                         | COMPT | PHASE | G. M. T. | Δ        | REMARKS                                      | DATE          | STATION     | COMPT | PHASE | G. M. T. | Δ        | REMARKS                     |  |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|----------|----------------------------------------------|---------------|-------------|-------|-------|----------|----------|-----------------------------|--|
|      |                                                                                                                                                 |       |       | h. m. s. | km       |                                              | February 1959 |             |       |       | h. m. s. | km       |                             |  |
| 05   | SHILLONG                                                                                                                                        | Z     | i     | 19 54 13 |          | Slight, distant Compression                  | 07            | DEHRA DUN   | NE    | ePKP1 | 09 56 39 |          | Phases not clear            |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               | Contd.      |       | i     | 58 24    |          |                             |  |
| 05   | SHILLONG                                                                                                                                        | Z     | iP    | 20 42 49 |          | Slight, distant Rarefaction                  |               |             |       | i     | 10 00 06 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 06 26    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 08 24    |          |                             |  |
| 05   | SHILLONG                                                                                                                                        | Z     | iP    | 20 42 49 |          | Slight, distant Rarefaction                  |               |             |       | i     | 11 01    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 19 19    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 21 49    |          |                             |  |
| 05   | SHILLONG                                                                                                                                        | Z     | eP    | 21 18 58 | 220      | Slight                                       |               | BOMBAY      | NE    | ePKP1 | 09 56 42 | 16780    |                             |  |
|      |                                                                                                                                                 |       | Sg    | 19 28    |          |                                              |               |             |       | PKP2  | 57 06    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 57 30    |          |                             |  |
| 06   | SHILLONG                                                                                                                                        | Z     | iP    | 05 23 42 |          | Slight, distant Compression                  |               |             | E     | PKS1  | 10 00 21 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             | NE    | PKS1  | 00 27    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | PP    | 00 53    |          |                             |  |
| 06   | SHILLONG                                                                                                                                        | Z     | iP    | 06 06 00 |          | Slight, distant Rarefaction                  |               |             | N     | SKS2  | 03 46    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | PPP   | 04 38    |          |                             |  |
|      | POONA                                                                                                                                           | Z     | e     | 06 07 44 |          | Feeble, phases not clear                     |               |             | NE    | SKKS1 | 07 16    |          |                             |  |
|      |                                                                                                                                                 |       | e     | 11 24    |          |                                              |               |             |       | SKKS  | 07 55    |          |                             |  |
|      |                                                                                                                                                 |       | e     | 14 43    |          |                                              |               |             |       | PKKP1 | 08 18    |          |                             |  |
|      | BOMBAY                                                                                                                                          | N     | e     | 06 14 57 |          | Very slight                                  |               |             | N     | SSP   | 20 50    |          |                             |  |
|      |                                                                                                                                                 |       | e     | 15 01    |          |                                              |               |             |       | M     | 11 10 36 |          | Per. 19 secs<br>Amp. 32     |  |
| 06   | SHILLONG                                                                                                                                        | Z     | eP    | 07 27 52 |          | Slight, distant                              |               | POONA       | Z     | iPKP1 | 09 56 43 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             | ZNE   | e     | 10 00 25 |          |                             |  |
| 06   | Epc: 51°N, 175°W. Andreanof Islands in the Aleutians<br>Aleutians. - H = 14h 32m 58s (U.S.C.G.S)<br>Mag: 6 (Pasadena), 5 1/2 - 5 1/4 (Berkeley) |       |       |          |          |                                              |               |             |       | N     | M        | 11 08 09 |                             |  |
|      | SHILLONG                                                                                                                                        | Z     | iP    | 14 44 22 | 7950     | Compression                                  |               | SHILLONG    | Z     | iPKP1 | 09 56 50 | 17350    | Compression                 |  |
|      |                                                                                                                                                 | E     | iS    | 53 51    |          |                                              |               |             |       | PP    | 10 00 58 |          |                             |  |
|      | CHATRA                                                                                                                                          | Z     | iP    | 14 44 35 |          |                                              |               |             |       | PPP   | 04 35    |          |                             |  |
|      |                                                                                                                                                 | E     | eP    |          |          |                                              |               |             |       | SKKS1 | 07 43    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | SKKS2 | 11 13    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | SSP   | 21 46    |          |                             |  |
|      | AGRA                                                                                                                                            | Z     | iP    | 14 45 02 |          | Compression                                  |               | HYDERABAD   | NE    | e     | 09 56 51 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 10 00 03 |          |                             |  |
|      | PORT BLAIR                                                                                                                                      | E     | iP    | 14 45 18 | 9240     |                                              |               |             | E     | e     | 00 18    |          |                             |  |
|      |                                                                                                                                                 |       | iS    | 55 38    |          |                                              |               |             |       | e     | 07 31    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             | N     | e     | 07 35    |          |                             |  |
|      | POONA                                                                                                                                           | Z     | eP    | 14 45 49 | 9530     |                                              |               |             | E     | e     | 15 52    |          |                             |  |
|      |                                                                                                                                                 |       | i     | 45 05    |          |                                              |               |             | N     | e     | 15 59    |          |                             |  |
|      |                                                                                                                                                 | N     | eS    | 56 22    |          |                                              |               |             | E     | e     | 20 25    |          |                             |  |
|      | BOMBAY                                                                                                                                          | NE    | eP    | 14 45 51 | 9530     |                                              |               |             | N     | e     | 21 07    |          |                             |  |
|      |                                                                                                                                                 |       | eS    | 56 28    |          |                                              |               |             |       | e     | 36 52    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             | E     | e     | 37 34    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 41 31    |          |                             |  |
|      | DEHRA DUN                                                                                                                                       | NE    | e     | 14 54 48 |          |                                              |               |             | N     | e     | 42 19    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             | E     | e     | 54 13    |          |                             |  |
| 06   | SHILLONG                                                                                                                                        | Z     | eP    | 14 58 02 | 180      | Slight                                       |               | SEHORE      | NE    | e     | 09 56 52 |          |                             |  |
|      |                                                                                                                                                 |       | Sg    | 58 22    |          |                                              |               |             |       |       |          |          |                             |  |
| 06   | SHILLONG                                                                                                                                        | Z     | iP    | 18 08 11 | 150      | Slight, compression                          |               | BOKARO      | NE    | e     | 09 56 53 |          | Phases not clear            |  |
|      |                                                                                                                                                 |       | Sg    | 08 29    |          |                                              |               |             |       | e     | 57 19    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 10 00 53 |          |                             |  |
| 06   | SHILLONG                                                                                                                                        | Z     | iP    | 21 39 03 |          | Slight, distant Compression                  |               | COLOMBO     | E     | i     | 09 56 57 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 10 01 24 |          |                             |  |
|      | CHATRA                                                                                                                                          | Z     | i     | 21 39 32 |          | Feeble                                       |               |             |       | e     | 11 49    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 11 02 29 |          |                             |  |
| 07   | MADRAS                                                                                                                                          | E     | e     | 03 22 05 |          | Feeble                                       |               |             |       | e     | 11 29    |          |                             |  |
|      |                                                                                                                                                 |       | e     | 24 39    |          |                                              |               |             |       |       |          |          |                             |  |
|      |                                                                                                                                                 |       | e     | 25 05    |          |                                              |               | MADRAS      | E     | PKP?  | 09 56 57 |          |                             |  |
|      | SHILLONG                                                                                                                                        | Z     | iP    | 03 22 51 |          | Slight, distant Compression                  |               | TOCKLAI     | E     | e     | 09 56 59 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       |       |          |          |                             |  |
|      | POONA                                                                                                                                           | Z     | i     | 03 23 39 |          | Feeble, phases not clear                     |               | PORT BLAIR  | E     | i     | 09 57 03 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 59 24    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 10 02 27 |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 06 25    |          |                             |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | e     | 09 33    |          |                             |  |
|      | BOMBAY                                                                                                                                          | NE    | eP    | 03 23 50 | 2780     | Slight                                       |               |             |       | e     | 11 34    |          |                             |  |
|      |                                                                                                                                                 | E     | e     | 24 10    |          |                                              |               |             |       | e     | 17 23    |          |                             |  |
|      |                                                                                                                                                 | NE    | eS    | 28 12    |          |                                              |               |             |       |       |          |          |                             |  |
| 07   | Epc: 4°S, 81 1/2°W. Near Coast of Northern Peru.<br>H = 09h 36m 51s (U.S.C.G.S)<br>Mag: 7 1/2 - 7 1/4 (Pasadena and Berkeley)                   |       |       |          |          |                                              |               |             |       |       |          |          |                             |  |
|      | CHATRA                                                                                                                                          | Z     | i     | 09 56 34 |          | Slight                                       |               | SHILLONG    | Z     | iP    | 10 20 46 |          | Slight, distant Rarefaction |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       |       |          |          |                             |  |
|      | AGRA                                                                                                                                            | ZNE   | iPKP  | 09 56 39 | 16330    | Initial ground motion towards South and West |               | CHATRA      | Z     | i     | 10 21 18 |          | Slight                      |  |
|      |                                                                                                                                                 |       | iP    | 56 47    |          |                                              |               |             |       |       |          |          |                             |  |
|      |                                                                                                                                                 |       | ZN    | PP       | 57 19    |                                              |               | POONA       | Z     | i     | 10 22 43 |          | Tremor                      |  |
|      |                                                                                                                                                 |       | ZNE   | PPP      | 59 59    |                                              |               |             |       | i     | 23 19    |          |                             |  |
|      |                                                                                                                                                 |       |       | iP       | 10 00 21 |                                              |               |             |       |       |          |          |                             |  |
|      |                                                                                                                                                 |       | NE    | iP       | 00 39    |                                              |               |             |       |       |          |          |                             |  |
|      |                                                                                                                                                 |       | ZNE   | SKS      | 03 40    |                                              |               | KODAIKANAL  | E     | iP    | 11 01 25 |          |                             |  |
|      |                                                                                                                                                 |       | Z     | PS       | 06 48    |                                              |               |             |       |       |          |          |                             |  |
|      |                                                                                                                                                 |       | ZNE   | iP       | 10 08    |                                              |               | 07 SHILLONG | Z     | iP    | 14 19 37 |          | Slight, near                |  |
|      |                                                                                                                                                 |       | ZE    | SS       | 12 58    |                                              |               | 07 CHATRA   | Z     | iP    | 15 21 32 |          | Feeble                      |  |
|      |                                                                                                                                                 |       |       |          |          |                                              |               |             |       | i     | 22 12    |          |                             |  |

| DATE | STATION                                                                              | COMPT       | PHASE                               | G. M. T.<br>h. m. s.                                  | $\Delta$<br>km | REMARKS                                                                       | DATE | STATION   | COMPT    | PHASE      | G. M. T.<br>h. m. s.          | $\Delta$<br>km | REMARKS                         |                                |
|------|--------------------------------------------------------------------------------------|-------------|-------------------------------------|-------------------------------------------------------|----------------|-------------------------------------------------------------------------------|------|-----------|----------|------------|-------------------------------|----------------|---------------------------------|--------------------------------|
|      |                                                                                      |             |                                     |                                                       |                | February 1959                                                                 |      |           |          |            |                               |                |                                 |                                |
| 01   | SHILLONG                                                                             | Z           | eP                                  | 03 14 34                                              |                | Slight                                                                        | 03   | SHILLONG  | Z        | eP         | 10 40 20                      |                | Slight, distant                 |                                |
| 01   | Epc: 36°N, 71°E. In the Hindukush. - h = 200 km<br>- H = 03h 13m 26s (U. S. C. G. S) |             |                                     |                                                       |                |                                                                               |      | 03        | SHILLONG | Z          | iP                            | 14 31 25       |                                 | Slight, distant<br>Compression |
|      | DEHRA DUN                                                                            | NE          | eP<br>iS<br>SS<br>Lr<br>SSS<br>Sg/M | 03 15 36<br>17 08<br>17 19<br>17 22<br>17 31<br>18 00 | 890            | Slight                                                                        | 03   | CHATRA    | Z        | iP<br>iS   | 17 45 53<br>46 12             | 150            | Feeble                          |                                |
|      | AGRA                                                                                 | ZNE         | iP<br>iS                            | 03 16 08<br>18 02                                     | 1110           | Slight, Rarefaction,<br>initial ground<br>movement towards<br>North and West. | 03   | CHATRA    | Z        | iPg<br>iSg | 18 53 17<br>53 18             | 10             | Feeble                          |                                |
|      | CHATRA                                                                               | Z<br>ZNE    | iP<br>iS                            | 03 17 18<br>20 24                                     | 1860           | Slight                                                                        | 03   | CHATRA    | Z        | iPg<br>iSg | 19 50 32<br>50 38             | 40             | Feeble                          |                                |
|      | POONA                                                                                | Z<br>ZNE    | iP<br>iS                            | 03 17 34<br>20 59                                     | 2070           | Slight                                                                        | 04   | SHILLONG  | Z        | iP         | 00 17 51                      |                | Slight, distant<br>Compression  |                                |
|      | SHILLONG                                                                             | Z<br>NE     | iP<br>PP<br>PPP<br>eP<br>iS<br>SS   | 03 18 01<br>18 39<br>18 47<br>19 07<br>21 39<br>22 49 | 2200           | Slight,<br>Rarefaction                                                        |      | CHATRA    | Z        | i          | 00 18 01                      |                | Feeble, distant                 |                                |
|      | BOMBAY                                                                               | E<br>N<br>E | e<br>e<br>i                         | 03 18 26<br>20 49                                     |                | Slight, deep                                                                  | 04   | SHILLONG  | Z        | eP         | 05 03 39                      |                | Slight                          |                                |
|      | MADRAS                                                                               | E           | eP<br>eS<br>SSS<br>Lr               | 03 18 43<br>22 44<br>23 35<br>24 16                   | 2470           | Slight                                                                        |      | POONA     | Z        | e          | 05 05 45                      |                | Feeble, phases<br>not clear     |                                |
|      | TOCKLAI                                                                              | Z           | e                                   | 03 20 42                                              |                | Tremor                                                                        | 04   | SHILLONG  | Z        | eP         | 11 04 15                      |                | Slight, local                   |                                |
|      | PORT BLAIR                                                                           | E           | i                                   | 03 24 32                                              |                | Slight                                                                        | 04   | SHILLONG  | Z        | eP         | 11 10 53                      |                | Slight, distant<br>Compression  |                                |
| 01   | SHILLONG                                                                             | Z           | iP                                  | 06 42 09                                              |                | Slight, distant<br>compression                                                | 04   | SHILLONG  | Z        | eP         | 20 32 15                      |                | Slight                          |                                |
| 01   | SHILLONG                                                                             | Z           | iP                                  | 09 08 47                                              |                | Slight, distant<br>compression                                                | 04   | SHILLONG  | Z        | iP         | 23 00 49                      |                | Slight, distant<br>Compression  |                                |
| 01   | SHILLONG                                                                             | Z           | eP<br>Sg                            | 09 10 39<br>10 52                                     | 130            | Slight                                                                        | 05   | SHILLONG  | Z        | iP<br>Sg   | 01 16 49<br>04 00 22<br>00 30 | 70             | Slight                          |                                |
| 01   | SHILLONG                                                                             | Z           | eP                                  | 09 39 08                                              |                | Slight, near                                                                  | 05   | DEHRA DUN | NE       | e<br>i     | 08 42 20<br>42 39             |                | Feeble                          |                                |
| 01   | SHILLONG                                                                             | Z           | iP<br>i                             | 12 10 06<br>10 13                                     |                | Slight, ne<br>compression                                                     |      | CHATRA    | Z        | i          | 08 43 36                      |                | Feeble, distant                 |                                |
| 01   | TOCKLAI                                                                              | E           | eP<br>iS                            | 17 16 26<br>16 42                                     | 130            | Slight                                                                        |      | POONA     | Z        | e<br>e     | 08 47 55<br>48 31             |                | Mild shock<br>Phases not clear  |                                |
|      | SHILLONG                                                                             | Z           | eP<br>S                             | 17 16 42<br>17 27                                     | 410            | Slight                                                                        | 05   | CHATRA    | Z        | i          | 09 44 12                      |                | Feeble, distant                 |                                |
|      | CHATRA                                                                               | Z           | iP<br>i                             | 17 19 01<br>19 48                                     |                | Feeble                                                                        | 05   | POONA     | Z        | i          | 10 15 50                      |                | Mild shock<br>Phases not clear  |                                |
| 01   | SHILLONG                                                                             | Z           | eP<br>S                             | 18 35 49<br>36 14                                     | 210            | Slight                                                                        | 05   | SHILLONG  | Z        | eP         | 10 44 19                      |                | Slight, distant                 |                                |
| 01   | SHILLONG                                                                             | Z           | e                                   | 21 41 05                                              |                | Very feeble                                                                   | 05   | SHILLONG  | Z        | eP         | 12 07 01                      |                | Slight, distant                 |                                |
| 02   | CHATRA                                                                               | Z<br>ZNE    | iP<br>i                             | 00 18 23<br>18 33                                     |                | Slight                                                                        | 05   | TOCKLAI   | E        | eP         | 12 47 14                      |                | Slight, distant                 |                                |
| 02   | SHILLONG                                                                             | Z           | iP                                  | 04 04 39                                              |                | Slight, distant<br>rarefaction                                                |      | SHILLONG  | Z        | eP         | 12 47 31                      |                | Slight, near                    |                                |
|      | BOMBAY                                                                               | NE          | e                                   | 04 13 38                                              |                | Very slight                                                                   |      | CHATRA    | Z        | iP<br>i    | 12 48 33<br>51 19             |                | Slight                          |                                |
| 02   | SHILLONG                                                                             | Z           | iP                                  | 19 30 39                                              |                | Slight, distant<br>rarefaction                                                | 05   | BOKARO    | N        | e          | 12 50 46                      |                | Tremor                          |                                |
| 02   | SHILLONG                                                                             | Z           | iP                                  | 19 59 39                                              |                | Slight, distant<br>compression                                                | 05   | SHILLONG  | Z        | eP         | 13 13 44                      |                | Slight, distant                 |                                |
| 02   | SHILLONG                                                                             | Z           | iP                                  | 22 18 01                                              |                | Slight, distant<br>Compression                                                | 05   | SHILLONG  | Z        | eP<br>Sg   | 14 25 28<br>15 13 07<br>13 32 | 190            | Slight                          |                                |
| 03   | SHILLONG                                                                             | Z           | e                                   | 07 02 21                                              |                | Slight, distant                                                               | 05   | CHATRA    | Z        | iP<br>i    | 15 50 45<br>51 15             |                | Slight                          |                                |
| 03   | POONA                                                                                | ZE          | e                                   | 08 41 57                                              |                | Mild, tremor                                                                  |      | SHILLONG  | Z        | eP         | 15 50 52                      |                | Slight, near                    |                                |
| 03   | SHILLONG                                                                             | Z           | e                                   | 09 42 09                                              |                | Slight, distant                                                               | 05   | SHILLONG  | Z        | iP         | 16 03 24                      |                | Slight, distant<br>Rarefaction  |                                |
|      |                                                                                      |             |                                     |                                                       |                |                                                                               | 05   | SHILLONG  | Z        | eP         | 16 50 28                      |                | Slight, distant                 |                                |
|      |                                                                                      |             |                                     |                                                       |                |                                                                               | 05   | SHILLONG  | Z        | iP         | 16 55 19                      |                | Slight, distant<br>Rarefaction. |                                |

| DATE          | STATION                                                                                          | COMPT | PHASE                 | G. M. T.<br>h. m. s.                   | Δ<br>km | REMARKS                                                            | DATE   | STATION                                                                          | COMPT     | PHASE             | G. M. T.<br>h. m. s.       | Δ<br>km | REMARKS                         |
|---------------|--------------------------------------------------------------------------------------------------|-------|-----------------------|----------------------------------------|---------|--------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|-----------|-------------------|----------------------------|---------|---------------------------------|
| February 1959 |                                                                                                  |       |                       |                                        |         |                                                                    |        |                                                                                  |           |                   |                            |         |                                 |
| 07            | SHILLONG                                                                                         | Z     | iP                    | 16 52 03                               |         | Slight, distant<br>Compression                                     | 09     | SHILLONG                                                                         | Z         | e                 | 20 39 40                   |         | Slight, very<br>distant         |
|               | CHATRA                                                                                           | Z     | i                     | 16 52 32<br>54 18                      |         |                                                                    | 09     | SHILLONG                                                                         | Z         | eP                | 20 53 00                   |         | Slight, distant                 |
| 07            | CHATRA                                                                                           | Z     | iPg<br>iSg            | 20 17 58<br>18 10                      | 90      | Feeble                                                             | 09     | Epc: 5°S, 154°E. Solomon Islands. - h = 100 km<br>- H = 21h 13m 18s (U.S.C.G.S)  |           |                   |                            |         |                                 |
| 07            | SHILLONG                                                                                         | Z     | eP                    | 20 18 27                               |         | Slight, distant                                                    |        | SHILLONG                                                                         | Z         | iP                | 21 24 09                   |         | Slight, distant<br>Compression  |
| 07            | SHILLONG                                                                                         | Z     | eP                    | 21 47 02                               |         | Slight, distant                                                    | 09     | CHATRA                                                                           | Z         | iP<br>i           | 21 24 42<br>25 07          |         | Slight                          |
| 08            | TOCKLAI                                                                                          | E     | eP                    | 00 46 29                               |         | Slight, distant                                                    |        | POONA                                                                            | Z         | iP<br>i<br>i      | 21 25 35<br>25 55<br>26 03 |         | Feeble, phases<br>not clear     |
|               | SHILLONG                                                                                         | Z     | eP                    | 00 46 45                               |         | Slight, distant                                                    |        | DEHRA DUN                                                                        | NE        | eP<br>i           | 21 25 38<br>35 23          |         | Slight, phases<br>not clear     |
| 08            | Epc: 49°N, 28°W. North Atlantic Ocean<br>- H = 01h 02m 26s (U.S.C.G.S)<br>Mag.: 5½-6½ (Pasadena) |       |                       |                                        |         |                                                                    |        | BOMBAY                                                                           | NE        | eP<br>e<br>eS     | 21 25 42<br>26 10<br>35 51 | 9000    | Slight                          |
|               | CHATRA                                                                                           | Z     | iP                    | 01 10 06                               |         |                                                                    |        |                                                                                  |           |                   |                            |         |                                 |
|               |                                                                                                  | E     | i                     | 15 26                                  |         |                                                                    |        |                                                                                  |           |                   |                            |         |                                 |
|               | AGRA                                                                                             | Z     | iP                    | 01 14 35                               |         | Rarefaction                                                        | 09     | SHILLONG                                                                         | Z         | e                 | 21 52 40                   |         | Slight, distant                 |
|               | DEHRA DUN                                                                                        | NE    | e<br>i                | 01 14 39<br>24 17                      |         |                                                                    | 10     | SHILLONG                                                                         | Z         | eP                | 01 17 41                   |         | Slight, very<br>distant         |
|               | POONA                                                                                            | Z     | i                     | 01 14 58                               |         | Phases not clear                                                   | 10     | SHILLONG                                                                         | Z         | eP                | 03 59 42                   |         | Slight, near                    |
|               | BOMBAY                                                                                           | N     | e<br>e                | 01 15 13<br>25 14                      |         |                                                                    | 10     | SHILLONG                                                                         | Z         | iP                | 04 13 21                   |         | Slight, distant<br>Compression  |
|               | SHILLONG                                                                                         | Z     | iP                    | 01 15 19                               |         | Rarefaction                                                        | 10     | SHILLONG                                                                         | Z         | eP                | 12 49 48                   |         | Slight, very<br>distant         |
| 08            | PORT BLAIR                                                                                       | E     | i                     | 15 33 37                               |         | Slight                                                             | 10     | POONA                                                                            | Z         | e                 | 14 41 37                   |         | Mild shock,<br>phases not clear |
| 08            | SHILLONG                                                                                         | Z     | iP                    | 16 11 37                               |         | Slight, distant<br>Compression                                     |        | BOMBAY                                                                           | E         | e                 | 14 42 02                   |         | Near, tremor                    |
| 08            | SHILLONG                                                                                         | Z     | eP                    | 16 55 01                               |         | Slight, near                                                       | 10     | SHILLONG                                                                         | Z         | eP                | 18 30 15                   |         | Slight, very<br>distant         |
| 08            | SHILLONG                                                                                         | Z     | eP                    | 17 04 21                               |         | Slight, distant                                                    | 10     | SHILLONG                                                                         | Z         | iP                | 20 38 28                   |         | Slight, distant<br>Compression  |
| 08            | SHILLONG                                                                                         | Z     | eP                    | 23 14 16                               |         | Slight, near                                                       | 10     | SHILLONG                                                                         | Z         | iP<br>E           | 22 59 58<br>23 00 51       | 500     | Slight, distant<br>Compression  |
| 09            | Epc: 50°N, 177°W. Andreanof Islands in the<br>Aleutians. - H = 04h 42m 33s (U.S.C.G.S)           |       |                       |                                        |         |                                                                    |        | TOCKLAI                                                                          | E         | eP                | 23 00 30                   |         | Moderate, distant               |
|               | SHILLONG                                                                                         | Z     | iP<br>iS              | 04 53 53<br>05 03 13                   | 7980    | Slight,<br>rarefaction                                             | CHATRA | Z                                                                                | iP<br>ZNE | 23 00 51<br>03 20 |                            | Slight  |                                 |
|               | CHATRA                                                                                           | NE    | i                     | 04 54 08                               |         | Slight, distant                                                    | BOMBAY | E                                                                                | e<br>e    | 23 10 54<br>11 56 |                            | Slight  |                                 |
|               | BOKARO                                                                                           | NE    | eP<br>SKS             | 04 54 23<br>05 04 26                   | 8380    | Slight, phases<br>not clear                                        | 11     | Epc: 9°N, 127°E. Near Coast of Mindanao Island.<br>- H = 03h 43m 38s (U.S.C.G.S) |           |                   |                            |         |                                 |
|               | DEHRA DUN                                                                                        | NE    | eP<br>eS              | 04 54 26<br>05 04 06                   | 8380    | Slight, phases<br>not clear                                        |        | SHILLONG                                                                         | Z         | iP                | 03 50 47                   |         | Slight, distant<br>Compression  |
|               | AGRA                                                                                             | ZNE   | iP                    | 04 54 29                               |         | Slight, Rarefaction<br>Initial ground<br>motion North and<br>East. | 11     | SHILLONG                                                                         | Z         | i                 | 03 54 49                   |         | Slight, distant                 |
|               | PORT BLAIR                                                                                       | E     | iP                    | 04 54 53                               |         | Slight                                                             |        | POONA                                                                            | Z         | iP<br>i           | 03 52 49<br>56 53          |         | Slight, phases<br>not clear     |
|               | POONA                                                                                            | Z     | iP<br>i<br>eS         | 04 55 22<br>58 50<br>05 06 01          | 9680    | Slight,<br>rarefaction                                             | 11     | SHILLONG                                                                         | Z         | eP                | 20 17 00                   |         | Slight, very<br>distant         |
|               | BOMBAY                                                                                           | NE    | eP<br>PP<br>SKS<br>eS | 04 55 24<br>58 52<br>05 05 50<br>06 05 | 9730    |                                                                    | 12     | DEHRA DUN                                                                        | NEe       | e                 | 10 13 12                   |         | Tremor                          |
|               |                                                                                                  | N     | PS                    | 07 20                                  |         |                                                                    | 12     | SHILLONG                                                                         | Z         | iPg<br>Sg         | 15 02 37<br>02 47          | 90      | Slight,<br>compression          |
| 09            | SHILLONG                                                                                         | Z     | iP                    | 11 24 17                               |         | Slight, distant<br>Compression                                     | 12     | SHILLONG                                                                         | Z         | ePg<br>Sg         | 15 46 56<br>47 09          | 110     | Slight                          |
| 09            | CHATRA                                                                                           | Z     | iP<br>i               | 12 45 08<br>45 37                      |         | Slight                                                             | 12     | SHILLONG                                                                         | Z         | iP                | 17 16 18                   |         | Slight, distant<br>compression  |
|               | SHILLONG                                                                                         | Z     | iP                    | 12 45 42                               |         | Slight, compre-<br>ssion, near                                     | 12     | SHILLONG                                                                         | Z         | iP                | 18 04 00                   |         | Slight, distant<br>compression  |
| 09            | SHILLONG                                                                                         | Z     | eP<br>S               | 19 24 17<br>24 52                      | 320     | Slight                                                             | 12     | SHILLONG                                                                         | Z         | i                 | 23 16 11                   |         | Slight, distant<br>compression  |
| 09            | SHILLONG                                                                                         | Z     | ePg<br>Sg             | 19 57 09<br>57 20                      | 100     | Slight, local                                                      | 13     | CHATRA                                                                           | Z         | iP<br>i           | 06 13 09<br>14 18          |         | Feeble                          |

| DATE          | STATION                                                              | COMPT     | PHASE                                    | G. M. T.<br>h. m. s.                                                    | Δ<br>km | REMARKS                     | DATE | STATION                                                                                                                           | COMPT                                                                      | PHASE                                            | G. M. T.<br>h. m. s.                                                             | Δ<br>km           | REMARKS                                                        |                                |
|---------------|----------------------------------------------------------------------|-----------|------------------------------------------|-------------------------------------------------------------------------|---------|-----------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------|--------------------------------|
| February 1959 |                                                                      |           |                                          |                                                                         |         |                             |      |                                                                                                                                   |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
| 13            | TOCKLAI                                                              | E         | eP                                       | 18 27 08                                                                |         | Slight, distant             | 14   | Epc: 28°N, 96°E. East Pakistan<br>- H = 22h 25m 50s (Shillong)<br>28°N, 97°E. - H = 22h 25m 50s (U.S.C.G.S)<br>Mag.: 6 (Shillong) |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
| 13            | CHATRA                                                               | Z<br>NE   | iP<br>i                                  | 23 13 22<br>14 42                                                       |         | Slight                      |      |                                                                                                                                   |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
|               | TOCKLAI                                                              | E         | e                                        | 23 13 56                                                                |         | Slight, distant             |      |                                                                                                                                   |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
| 14            | Epc: 7½°S, 122°E. Flores Sea<br>- H = 04h 36m 10s (U.S.C.G.S)        |           |                                          |                                                                         |         |                             |      |                                                                                                                                   |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
|               | PORT BLAIR                                                           | ZNE       | eP<br>PP<br>iS                           | 04 43 06<br>44 42<br>48 32                                              | 3790    | Slight                      |      | SHILLONG                                                                                                                          | Z                                                                          | eP<br>S                                          | 22 27 04<br>27 54                                                                | 480               |                                                                |                                |
|               | SHILLONG                                                             | Z<br>E    | iP<br>PP<br>iS<br>PS<br>PPS<br>SS<br>SSS | 04 44 24<br>46 04<br>46 44<br>50 56<br>51 06<br>51 12<br>54 12<br>55 04 | 4890    | Slight,<br>Rarefaction      |      | CHATRA                                                                                                                            | Z<br>NE                                                                    | iP<br>i                                          | 22 27 53<br>30 13                                                                |                   |                                                                |                                |
|               | MADRAS                                                               | E         | eP<br>PP<br>eS<br>Lq<br>Lr               | 04 44 43<br>46 38<br>51 27<br>55 14<br>57 35                            | 5090    | Slight                      |      | BOKARO                                                                                                                            | NE                                                                         | eP<br>i<br>M                                     | 22 28 21<br>30 06<br>31 25                                                       |                   |                                                                |                                |
|               | POONA                                                                | Z         | e                                        | 04 45 38                                                                |         | Slight                      |      | KODAIKANAL                                                                                                                        | E                                                                          | e                                                | 22 28 31                                                                         |                   |                                                                |                                |
|               | AGRA                                                                 | ZNE       | eP                                       | 04 45 46                                                                |         | Slight, near                |      | AGRA                                                                                                                              | ZNE                                                                        | iP<br>iS                                         | 22 29 38<br>32 38                                                                |                   | 1800 Initial ground<br>motion East.                            |                                |
| 14            | BOMBAY                                                               | E<br>NE   | eP<br>PP<br>PPP<br>eS<br>PS              | 04 45 51<br>48 01<br>49 00<br>53 26<br>53 34                            | 6000    | Slight                      |      | PORT BLAIR                                                                                                                        | E                                                                          | iP<br>PP<br>iS                                   | 22 29 40<br>29 52<br>32 45                                                       |                   | 1850 Slight                                                    |                                |
| 14            | SHILLONG                                                             | Z         | ePg<br>Sg                                | 06 54 41<br>54 51                                                       | 90      | Slight, local               |      | DEHRA DUN                                                                                                                         | NE<br>N                                                                    | eP<br>PP<br>PPP<br>Lq<br>i<br>iS<br>SS<br>e<br>M | 22 29 41<br>29 53<br>30 01<br>32 31<br>32 34<br>32 49<br>33 02<br>33 12<br>34 27 |                   | 1880                                                           |                                |
| 14            | SHILLONG                                                             | Z         | iP<br>Pg                                 | 12 51 28<br>52 14                                                       | 310     | Slight,<br>compression      |      | HYDERABAD                                                                                                                         | NE<br>N                                                                    | iP<br>iS<br>SS<br>Lr<br>M                        | 22 30 17<br>34 01<br>34 14<br>35 17<br>36 14                                     |                   | 2260 Initial ground<br>motion North<br>and East                |                                |
| 14            | SHILLONG                                                             | Z         | eP<br>Sg                                 | 17 39 51<br>40 26                                                       | 240     | Slight                      |      | MADRAS                                                                                                                            | E                                                                          | iP<br>PP<br>PPP<br>iS<br>Lq<br>SS<br>Lr          | 22 30 35<br>31 03<br>31 13<br>34 36<br>34 58<br>35 18<br>35 50                   |                   | 2470 Initial ground<br>motion West.                            |                                |
| 14            | SHILLONG                                                             | Z         | eP                                       | 21 10 41                                                                |         | Slight, near                |      | POONA                                                                                                                             | ZNE<br>Z<br>N                                                              | iP<br>iPP<br>S                                   | 22 30 52<br>31 21<br>34 58                                                       | 2540              |                                                                |                                |
| 14            | SHILLONG                                                             | Z         | eP                                       | 21 27 55                                                                | 240     | Slight, local               |      | BOMBAY                                                                                                                            | E                                                                          | eP<br>e<br>e<br>iS<br>i<br>Lq                    | 22 32 00<br>33 18<br>34 01<br>35 14<br>35 25<br>35 48                            | 2650              | Slight                                                         |                                |
| 14            | Epc: 28°N, 96°E. Pakistan Foreshock<br>- H = 22h 10m 43s (U.S.C.G.S) |           |                                          |                                                                         |         |                             |      |                                                                                                                                   |                                                                            |                                                  |                                                                                  |                   |                                                                |                                |
|               | SHILLONG                                                             | ZNE<br>NE | iP<br>PP<br>PPP<br>iS<br>SS<br>SSS       | 22 11 57<br>12 07<br>12 15<br>12 50<br>13 00<br>13 10                   | 490     | Slight,<br>compression      |      | 14                                                                                                                                | COLOMBO                                                                    | E                                                | P<br>M                                                                           | 22 36 00<br>52 35 |                                                                |                                |
|               | CHATRA                                                               | Z<br>NE   | iP<br>i                                  | 22 12 47<br>15 16                                                       |         | Slight                      |      | 14                                                                                                                                | CHATRA                                                                     | Z                                                | iP<br>i                                                                          | 23 41 36<br>41 48 |                                                                | Slight                         |
|               | PORT BLAIR                                                           | E         | iP<br>S                                  | 22 14 31<br>17 41                                                       |         | Slight                      |      | 15                                                                                                                                | SHILLONG                                                                   | Z                                                | eP                                                                               | 00 55 37          |                                                                | Slight                         |
|               | DEHRA DUN                                                            | NE        | eP<br>i<br>i                             | 22 14 35<br>17 28<br>17 48                                              |         | Slight, phases<br>not clear |      | 15                                                                                                                                | SHILLONG                                                                   | Z                                                | eP                                                                               | 02 18 55          |                                                                | Slight, distant                |
|               | AGRA                                                                 | ZNE       | eP<br>i                                  | 22 14 36<br>17 24                                                       |         | Slight                      |      | 15                                                                                                                                | SHILLONG                                                                   | Z                                                | eP                                                                               | 03 06 37          |                                                                | Slight, distant                |
|               | BOKARO                                                               | NE        | i                                        | 22 15 02                                                                |         | Slight, phases<br>not clear |      | 15                                                                                                                                | SHILLONG                                                                   | Z                                                | iP                                                                               | 03 51 58          |                                                                | Slight, distant<br>Compression |
|               | MADRAS                                                               | E         | eP<br>e                                  | 22 15 30<br>19 31                                                       |         | Slight                      |      | 15                                                                                                                                | Epc: 44°N, 83°E. Sinkiang Province, China<br>- H = 04h 02m 22s (U.S.C.G.S) |                                                  |                                                                                  |                   |                                                                |                                |
|               | POONA                                                                | ZNE       | iP<br>PP<br>i                            | 22 15 42<br>16 15<br>19 53                                              |         | Slight                      |      | CHATRA                                                                                                                            | Z<br>NE                                                                    | iP<br>iS                                         | 04 06 33<br>09 49                                                                | 1970              | Slight                                                         |                                |
|               | BOMBAY                                                               | E         | eP<br>eS<br>i<br>Lq                      | 22 15 58<br>20 08<br>20 18<br>20 40                                     | 2600    | Slight                      |      | SHILLONG                                                                                                                          | ZNE                                                                        | iP                                               | 04 05 58                                                                         |                   | Slight,<br>compression                                         |                                |
| 14            | SHILLONG                                                             | Z         | eP                                       | 22 22 05                                                                |         | Slight                      |      | BOKARO                                                                                                                            | NE                                                                         | iP<br>i                                          | 04 07 05<br>11 02                                                                |                   | Slight, initial<br>ground motion<br>towards South<br>and West. |                                |
| 14            | HYDERABAD                                                            | N         | M                                        | 22 22 17                                                                |         |                             |      | POONA                                                                                                                             | Z                                                                          | eP<br>i                                          | 04 08 08<br>12 57                                                                |                   | Slight                                                         |                                |
|               |                                                                      |           |                                          |                                                                         |         |                             |      | BOMBAY                                                                                                                            | NE                                                                         | eP<br>eS                                         | 04 08 21<br>13 00                                                                | 3030              | Slight                                                         |                                |

| DATE | STATION                                                          | COMPT        | PHASE                      | G. M. T.<br>h. m. s.                                  | $\Delta$<br>km | REMARKS                     | DATE | STATION                                                                       | COMPT             | PHASE                                                       | G. M. T.<br>h. m. s.                                                                      | $\Delta$<br>km    | REMARKS                     |        |
|------|------------------------------------------------------------------|--------------|----------------------------|-------------------------------------------------------|----------------|-----------------------------|------|-------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------|-----------------------------|--------|
| 15   | MADRAS                                                           | E            | eP<br>eS<br>e<br>e         | 04 09 46<br>14 53<br>14 59<br>17 08                   | 3480           | Moderate                    | 15   | SHILLONG                                                                      | Z                 | eP                                                          | 21 30 34                                                                                  |                   | Slight, very distant        |        |
| 15   | Epc: 59°S, 25°W. Sandwich Islands<br>H = 03h 59m 25s (U.S.C.G.S) |              |                            |                                                       |                |                             |      | 15                                                                            | PORT BLAIR        | E                                                           | eP<br>iS                                                                                  | 22 57 08<br>57 45 | 330                         | Slight |
|      | POONA                                                            | Z<br>E       | e<br>e<br>e<br>e<br>e      | 04 12 57<br>16 57<br>20 23<br>20 42<br>28 04<br>32 42 |                |                             | 15   | SHILLONG                                                                      | Z                 | eP                                                          | 23 00 130                                                                                 |                   | Slight, very distant        |        |
|      | HYDERABAD                                                        | E<br>NE<br>E | e<br>eS<br>e               | 04 17 50<br>28 17<br>54 39                            |                |                             | 16   | DEHRA DUN                                                                     | NE                | e                                                           | 00 59 06                                                                                  |                   | Tremor                      |        |
|      | CHATRA                                                           | Z            | i                          | 04 18 22                                              |                | Feeble, distant             |      | POONA                                                                         | Z                 | iP                                                          | 00 59 23                                                                                  |                   | Slight                      |        |
|      | SHILLONG                                                         | Z            | PKP1                       | 04 18 37                                              |                |                             |      | CHATRA                                                                        | Z                 | i                                                           | 00 59 27                                                                                  |                   | Slight, distant             |        |
| 15   | KODAIKANAL                                                       | E            | e                          | 04 22 43                                              |                | Slight, phases not clear    |      | SHILLONG                                                                      | Z                 | iP                                                          | 00 59 29                                                                                  |                   | Slight, distant compression |        |
|      | BOMBAY                                                           | NE           | e                          | 04 28 03                                              |                | Slight, distant             | 15   | SHILLONG                                                                      | Z                 | i                                                           | 20 52 07                                                                                  |                   | Slight, distant             |        |
| 15   | CHATRA                                                           | Z            | i                          | 05 01 35                                              |                | Feeble, distant             | 16   | SHILLONG                                                                      | Z                 | ePg<br>Sg                                                   | 21 39 13<br>39 25                                                                         | 110               | Slight                      |        |
|      | BOMBAY                                                           | NB           | e                          | 05 11 17                                              |                | Slight, distant             | 17   | SHILLONG                                                                      | Z                 | eP                                                          | 00 14 01                                                                                  |                   | Slight, distant             |        |
| 15   | SHILLONG                                                         | Z            | iP                         | 09 27 09                                              |                | Slight, distant compression |      | CHATRA                                                                        | Z<br>E            | iP<br>i                                                     | 00 15 01<br>17 34                                                                         |                   | Slight                      |        |
| 15   | PORT BLAIR                                                       | E            | iP<br>iS                   | 10 49 47<br>50 24                                     | 330            | Slight                      |      | TOCKLAI                                                                       | E                 | eP                                                          | 00 18 40                                                                                  |                   | Slight, distant             |        |
| 15   | SHILLONG                                                         | Z            | eP                         | 10 52 53                                              |                | Slight, very distant        | 17   | CHATRA                                                                        | Z                 | iPg<br>iSg                                                  | 07 08 51<br>09 05                                                                         | 10                | Feeble                      |        |
| 15   | PORT BLAIR                                                       | E            | iP<br>Pg<br>iS             | 10 55 47<br>55 57<br>56 24                            | 330            | Slight                      | 17   | SHILLONG                                                                      | Z                 | eP                                                          | 08 14 22                                                                                  |                   | Slight, distant             |        |
| 15   | SHILLONG                                                         | Z            | eP                         | 10 57 53                                              |                | Slight, very distant        | 17   | SHILLONG                                                                      | Z                 | eP<br>Sg                                                    | 08 22 41<br>23 13                                                                         | 220               | Slight                      |        |
| 15   | DEHRA DUN                                                        | NE           | e                          | 11 40 21                                              |                | Tremor                      | 17   | CHATRA                                                                        | Z                 | iP<br>ZNE<br>i                                              | 09 43 02<br>43 30                                                                         |                   | Slight                      |        |
| 15   | PORT BLAIR                                                       | E            | iP<br>P*<br>Pg<br>S*<br>Sg | 13 09 56<br>09 58<br>10 07<br>10 40<br>10 47          | 340            | Slight                      |      | SHILLONG                                                                      | Z                 | eP                                                          | 09 43 39                                                                                  |                   | Slight, distant             |        |
|      | MADRAS                                                           | E            | e                          | 13 12 22                                              |                | Feeble                      | 17   | CHATRA                                                                        | Z                 | iP<br>i                                                     | 09 51 15<br>51 47                                                                         |                   | Slight                      |        |
|      | SHILLONG                                                         | Z            | iP                         | 13 12 59                                              |                | Slight, distant compression | 17   | CHATRA                                                                        | Z                 | iP<br>i                                                     | 10 00 55<br>01 26                                                                         |                   | Slight                      |        |
|      | CHATRA                                                           | Z            | i                          | 13 13 29                                              |                | Feeble, distant             | 17   | SHILLONG                                                                      | Z                 | eP                                                          | 10 16 47                                                                                  |                   | Slight, distant             |        |
|      | POONA                                                            | Z            | e                          | 13 13 56                                              |                | Feeble, phases not clear    | 17   | SHILLONG                                                                      | Z                 | iP                                                          | 11 33 49                                                                                  |                   | Slight, distant Compression |        |
|      | BOMBAY                                                           | E            | eP<br>eS                   | 13 14 39<br>18 25                                     | 2290           | Slight                      | 17   | SHILLONG                                                                      | Z                 | eP                                                          | 11 42 54                                                                                  |                   | Slight                      |        |
| 15   | SHILLONG                                                         | Z            | eP                         | 16 21 22                                              |                | Slight, near                | 17   | SHILLONG                                                                      | Z                 | eP                                                          | 11 59 07                                                                                  |                   | Slight, distant             |        |
| 15   | PORT BLAIR                                                       | E            | iP<br>P*<br>Pg<br>iS       | 19 55 31<br>55 35<br>55 40<br>56 07                   | 330            | Slight                      | 17   | Epc: 51°N, 171°W. Fox Islands in the Aleutians<br>H = 12h 03m 05s (U.S.C.G.S) |                   |                                                             |                                                                                           |                   |                             |        |
|      | MADRAS                                                           | E            | iP<br>Lq<br>eS             | 19 57 57<br>20 00 24<br>00 31                         | 1520           | Slight                      |      | SHILLONG                                                                      | Z<br>E            | iP<br>iS                                                    | 12 14 38<br>24 10                                                                         | 8220              | Slight, rarefaction         |        |
|      | SHILLONG                                                         | Z            | e                          | 19 58 33                                              |                | Slight, distant             |      | DEHRA DUN                                                                     | NE                | e(P)<br>i(S)                                                | 12 15 12<br>25 01                                                                         | 8570              | Slight, phases not clear    |        |
|      | CHATRA                                                           | Z<br>E       | iP<br>i                    | 19 59 03<br>20 02 38                                  |                | Slight                      |      | PORT BLAIR                                                                    | E                 | iP<br>PP<br>SKS<br>SKKS<br>iS                               | 12 15 39<br>19 09<br>25 59<br>26 14<br>26 23                                              | 9780              | Slight                      |        |
|      | BOMBAY                                                           | E            | eP<br>eS                   | 19 59 43<br>20 03 55                                  | 2620           | Slight                      |      | POONA                                                                         | Z<br>ZN<br>Z<br>N | eP<br>PP<br>PPP<br>SKS1<br>SKS2<br>S<br>PS<br>Lq<br>Lr<br>M | 12 16 08<br>19 44<br>21 41<br>25 24<br>25 34<br>27 01<br>28 15<br>41 19<br>45 46<br>53 19 | 10030             | Slight to moderate          |        |
|      | POONA                                                            | Z<br>ZN      | eP<br>e                    | 20 00 00<br>03 22                                     |                | Slight shock                |      | BOMBAY                                                                        | NE<br>N           | eP<br>e<br>eS<br>PS<br>PPS<br>M                             | 12 16 11<br>16 24<br>27 05<br>28 17<br>28 50<br>59 01                                     | 10090             | Slight                      |        |
|      | DEHRA DUN                                                        | NE           | e                          | 20 00 12<br>05 01                                     |                | Feeble                      |      |                                                                               |                   |                                                             |                                                                                           |                   | Per = 20 secs<br>Amp = 5 mm |        |

| DATE   | STATION    | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS         | DATE   | STATION                                                                    | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS           |
|--------|------------|-------|-------|----------|----------|-----------------|--------|----------------------------------------------------------------------------|-------|-------|----------|----------|-------------------|
|        |            |       |       | R. m. s. | km       | February 1959   |        |                                                                            |       |       | h. m. s. | km       |                   |
| 17     | HYDERABAD  | NE    | e     | 12 26 24 |          |                 | 20     | POONA                                                                      | Z     | eP    | 18 35 41 |          | Tremor            |
| Contd. |            | E     | e     | 51 01    |          |                 | Contd. |                                                                            |       |       |          |          |                   |
|        | COLOMBO    | E     | P     | 12 25 35 |          |                 | 20     | SHILLONG                                                                   | Z     | eP    | 18 45 31 |          | Slight, distant   |
| 17     | CHATRA     | Z     | iP    | 12 44 58 |          | Slight          | 20     | SHILLONG                                                                   | Z     | iP    | 18 47 46 |          | Slight, distant   |
|        |            | NE    | i     | 54 37    |          |                 |        |                                                                            |       |       |          |          | Compression       |
| 17     | SHILLONG   | Z     | iP    | 12 57 10 |          | Slight, distant | 20     | SHILLONG                                                                   | Z     | iP    | 22 51 02 |          | Slight, distant   |
|        |            |       |       |          |          | Compression     |        |                                                                            |       |       |          |          | Rarefaction       |
| 17     | CHATRA     | Z     | iPg   | 16 48 05 | 90       | Feeble          | 21     | SHILLONG                                                                   | Z     | iP    | 01 00 59 | 240      | Slight,           |
|        |            |       | iSg   | 48 17    |          |                 |        |                                                                            |       | Sg    | 01 34    |          | rarefaction       |
| 17     | PORT BLAIR | E     | iP    | 22 37 03 | 150      | Slight          |        | CHATRA                                                                     | Z     | iP    | 01 01 53 |          | Feeble            |
|        |            |       | eS    | 37 23    |          |                 |        |                                                                            |       | i     | 03 11    |          |                   |
| 18     | DEHRA DUN  | NE    | e     | 04 31 00 |          | Tremor          | 21     | DEHRA DUN                                                                  | NE    | e     | 02 03 09 |          | Feeble            |
|        |            |       |       |          |          |                 |        |                                                                            |       | i     | 04 13    |          |                   |
| 18     | SHILLONG   | Z     | iP    | 04 33 43 |          | Slight, distant |        | POONA                                                                      | Z     | e     | 02 07 30 |          | Slight,           |
|        |            |       |       |          |          | Compression     |        |                                                                            |       | i     | 08 23    |          | near shock        |
| 18     | SHILLONG   | Z     | eP    | 12 13 41 |          | Slight, distant |        | BOMBAY                                                                     | NE    | e     | 02 08 21 |          | Very slight,      |
|        |            |       |       |          |          |                 |        |                                                                            |       | e     | 08 49    |          | near              |
|        | POONA      | Z     | i     | 12 15 40 |          | Tremor          |        |                                                                            | E     | e     | 10 45    |          |                   |
| 18     | CHATRA     | Z     | i     | 16 38 43 |          | Slight, distant | 21     | SHILLONG                                                                   | Z     | eP    | 04 05 15 |          | Slight, distant   |
| 18     | SHILLONG   | Z     | iP    | 17 38 07 |          | Slight, distant | 21     | SHILLONG                                                                   | Z     | eP    | 08 33 23 |          | Slight, near      |
|        |            |       |       |          |          | Compression     |        |                                                                            |       |       |          |          |                   |
| 18     | SHILLONG   | Z     | iP    | 19 41 30 | 280      | Slight,         |        | CHATRA                                                                     | Z     | iP    | 08 34 02 |          | Slight            |
|        |            |       | Sg    | 42 10    |          | compression     |        |                                                                            |       | i     | 34 37    |          |                   |
| 18     | DEHRA DUN  | NE    | e     | 21 55 48 |          | Tremor          |        | POONA                                                                      | Z     | i     | 08 35 37 |          | Feeble, phases    |
|        |            |       |       |          |          |                 |        |                                                                            |       |       |          |          | not clear         |
|        | SHILLONG   | Z     | ePg   | 21 55 54 | 50       | Slight          | 21     | SHILLONG                                                                   | Z     | eP    | 13 02 30 |          | Slight, distant   |
|        |            |       | Sg    | 56 00    |          |                 |        |                                                                            |       |       |          |          |                   |
| 19     | POGNA      | Z     | e     | 05 30 04 |          | Mild, tremor    | 21     | SHILLONG                                                                   | Z     | eP    | 16 09 10 |          | Slight, near      |
| 19     | SHILLONG   | Z     | eP    | 07 41 02 |          | Slight, distant | 22     | Epc: 28°N, 91½°E. South Eastern Tibet<br>- H = 03h 30m 38s (U. S. C. G. S) |       |       |          |          |                   |
| 19     | CHATRA     | Z     | iP    | 09 34 02 |          | Feeble          |        | SHILLONG                                                                   | Z     | iP    | 03 31 37 | 350      | Slight,           |
|        |            |       | i     | 34 50    |          |                 |        |                                                                            | E     | PP    | 31 43    |          | compression       |
| 19     | SHILLONG   | Z     | eP    | 12 49 59 |          | Slight, distant |        |                                                                            |       | PPP   | 31 52    |          |                   |
| 19     | SHILLONG   | Z     | iP    | 15 03 05 | 150      | Slight,         |        |                                                                            |       | iS    | 32 15    |          |                   |
|        |            |       | Sg    | 03 24    |          | compression     |        |                                                                            |       | SS    | 32 24    |          |                   |
|        | DEHRA DUN  | NE    | e     | 15 09 39 |          | Tremor          |        |                                                                            |       | Sg    | 32 33    |          |                   |
|        |            |       |       |          |          |                 |        |                                                                            |       | SSS   | 33 39    |          |                   |
| 19     | SHILLONG   | Z     | ePg   | 17 29 34 | 40       | Slight          |        | TOCKLAI                                                                    | E     | eP    | 03 31 30 |          | Moderate, distant |
|        |            |       | Sg    | 29 39    |          |                 |        |                                                                            |       |       |          |          |                   |
| 19     | SHILLONG   | Z     | eP    | 19 16 33 | 130      | Slight          |        | CHATRA                                                                     | Z     | iP    | 03 31 59 |          | Moderate          |
|        |            |       | Sg    | 16 46    |          |                 |        |                                                                            | ZNE   | i     | 33 15    |          |                   |
| 19     | DEHRA DUNP | NE    | e     | 20 02 01 |          | Tremor          |        | BOKARO                                                                     | NE    | eP    | 03 32 30 |          | Slight, probably  |
|        |            |       |       |          |          |                 |        |                                                                            |       | i     | 35 22    |          | deep              |
|        | SHILLONG   | Z     | e     | 20 02 55 |          | Slight, very    |        | AGRA                                                                       | ZNE   | eP    | 03 33 35 |          | Slight, ground    |
|        |            |       |       |          |          | distant         |        |                                                                            |       |       |          |          | motion West       |
| 19     | SHILLONG   | Z     | e     | 21 24 59 |          | Slight, distant |        | DEHRA DUN                                                                  | NE    | eP    | 03 33 37 | 1450     | Slight            |
|        |            |       |       |          |          |                 |        |                                                                            | N     | PP    | 33 53    |          |                   |
| 20     | SHILLONG   | Z     | iP    | 01 35 59 |          | Slight, near    |        |                                                                            |       | i     | 35 30    |          |                   |
|        |            |       |       |          |          | Compression     |        |                                                                            |       | iS    | 36 03    |          |                   |
| 20     | SHILLONG   | Z     | iP    | 03 23 46 |          | Slight, distant |        |                                                                            |       | M     | 37 29    |          |                   |
|        |            |       |       |          |          | Compression     |        | MADRAS                                                                     | E     | eP    | 03 35 06 |          | Slight            |
| 20     | POONA      | Z     | eP    | 04 32 31 |          | Feeble, phases  |        |                                                                            |       | e     | 38 50    |          |                   |
|        |            |       |       |          |          | not clear       |        |                                                                            |       |       |          |          |                   |
|        | SHILLONG   | Z     | iP    | 04 32 51 |          | Slight, distant |        | POONA                                                                      | Z     | iP    | 03 35 12 | 2350     | Slight,           |
|        |            |       |       |          |          | Compression     |        |                                                                            | ZNE   | S     | 39 03    |          | rarefaction       |
| 20     | SHILLONG   | Z     | eP    | 05 23 33 |          | Slight, near    |        |                                                                            |       | i     | 40 56    |          |                   |
|        |            |       |       |          |          |                 |        |                                                                            |       | E     | 42 49    |          |                   |
| 20     | DEHRA DUN  | NE    | e     | 10 21 38 |          | Tremor          |        | BOMBAY                                                                     | NE    | eP    | 03 35 17 | 2430     | Slight            |
|        |            |       |       |          |          |                 |        |                                                                            |       | eS    | 39 15    |          |                   |
|        | SHILLONG   | Z     | eP    | 10 50 40 |          | Slight, distant |        |                                                                            |       | Lr    | 41 18    |          |                   |
|        |            |       |       |          |          |                 |        |                                                                            |       | M     | 43 53    |          |                   |
| 20     | CHATRA     | Z     | iP    | 13 00 09 |          | Slight          |        | HYDERABAD                                                                  | E     | M     | 13 40 55 |          |                   |
|        |            | ZNE   | i     | 01 30    |          |                 | 22     | KODAIKANAL                                                                 | E     | eP    | 08 05 12 |          | Tremor            |
| 20     | DEHRA DUN  | NE    | e     | 14 25 44 |          | Tremor          | 22     | DEHRA DUN                                                                  | NE    | eP    | 08 55 13 |          | Slight            |
|        |            |       |       |          |          |                 |        |                                                                            |       | i     | 56 27    |          |                   |
|        | TOCKLAI    | E     | e     | 14 27 36 |          | Tremor          |        |                                                                            |       |       |          |          |                   |
|        |            |       |       |          |          |                 |        |                                                                            |       |       |          |          |                   |
|        | SHILLONG   | Z     | eP    | 14 27 45 |          | Slight, distant |        | CHATRA                                                                     | Z     | iP    | 08 57 12 |          | Slight            |
|        |            |       |       |          |          |                 |        |                                                                            | NE    | i     | 09 01 56 |          |                   |
| 20     | SHILLONG   | Z     | iP    | 18 22 18 |          | Slight, distant |        | SHILLONG                                                                   | Z     | iP    | 08 58 02 |          | Slight, distant   |
|        |            |       |       |          |          | Compression     |        |                                                                            |       |       |          |          | Rarefaction       |
|        |            |       |       |          |          |                 |        | SEHORE                                                                     | NE    | eP    | 08 58 51 |          | Slight            |
|        |            |       |       |          |          |                 |        |                                                                            |       | i     | 59 54    |          |                   |





| DATE | STATION    | COMPT   | PHASE            | G. M. T.<br>h. m. s.                | $\Delta$<br>km | REMARKS                  | DATE | STATION                                                                                                   | COMPT     | PHASE           | G. M. T.<br>h. m. s.       | $\Delta$<br>km | REMARKS                                                    |
|------|------------|---------|------------------|-------------------------------------|----------------|--------------------------|------|-----------------------------------------------------------------------------------------------------------|-----------|-----------------|----------------------------|----------------|------------------------------------------------------------|
| 25   | DEHRA DUN  | NE      | e                | 20 17 48<br>25 40                   |                | Feeble                   | 27   | BOMBAY                                                                                                    | NE        | e               | 19 03 23                   |                |                                                            |
| 25   | SHILLONG   | Z       | eP<br>Sg         | 20 48 47<br>49 07                   | 170            | Slight                   | 27   | CHATRA                                                                                                    | Z         | iP<br>iSg       | 20 45 52<br>46 00          | 60             | Feeble                                                     |
| 25   | SHILLONG   | Z<br>NE | iP<br>S          | 21 54 08                            | 420            | Slight,<br>Rarefaction   | 27   | Epc: 27 $\frac{1}{2}$ <sup>o</sup> N, 129 <sup>o</sup> E. Ryukyu Islands<br>- H - 20h 55m 30s (U.S.C.G.S) |           |                 |                            |                |                                                            |
| 26   | SHILLONG   | Z       | eP               | 00 49 20                            |                | Slight, near             |      | CHATRA                                                                                                    | ZNE<br>NE | iP<br>iS        | 21 03 40<br>09 23          | 4060           | Slight                                                     |
| 26   | SHILLONG   | Z       | eP               | 14 18 49                            |                | Slight, near             | 27   | PORT BLAIR                                                                                                | E         | iP<br>iS<br>ScS | 21 03 45<br>09 31<br>13 55 | 4110           | Slight                                                     |
|      | CHATRA     | Z       | iP<br>i          | 14 19 47<br>21 02                   |                | Slight                   |      | BOKARO                                                                                                    | NE        | i               | 21 03 56<br>05 26          |                | Slight                                                     |
| 26   | SHILLONG   | Z       | eP               | 16 21 34                            |                | Slight, distant          |      | DEHRA DUN                                                                                                 | NE        | e(P)<br>e       | 21 04 44<br>11 07          |                | Slight                                                     |
| 26   | CHATRA     | Z       | iP<br>i          | 20 19 44<br>21 02                   |                | Feeble                   |      | POONA                                                                                                     | Z<br>NE   | iP<br>i         | 21 05 37<br>12 34          |                | Feeble, compression, Initial ground motion South and West. |
| 26   | DEHRA DUN  | NE      | e<br>i<br>i<br>i | 21 45 20<br>46 50<br>47 38<br>48 38 |                | Slight, phases not clear |      | HYDERABAD                                                                                                 | E         | e               | 21 23 50                   |                |                                                            |
|      | CHATRA     | Z       | i                | 21 46 54                            |                | Slight, distant          | 27   | BOMBAY                                                                                                    | E         | eP<br>e         | 22 22 40<br>26 46          |                | Very slight                                                |
|      | SHILLONG   | Z       | eP               | 21 47 42                            |                | Slight                   | 28   | SHILLONG                                                                                                  | Z         | eP              | 08 29 33                   |                | Slight, near                                               |
|      | POONA      | Z       | eP<br>e          | 21 48 22<br>48 55                   |                | Slight                   | 28   | SHILLONG                                                                                                  | Z         | iP              | 11 23 22                   |                | Slight, Rarefaction                                        |
|      | BOMBAY     | E       | e<br>e           | 21 49 37<br>53 22                   |                | Very slight              |      | CHATRA                                                                                                    | Z<br>ZNE  | iP<br>i         | 11 23 59<br>25 08          |                | Slight                                                     |
| 27   | SHILLONG   | Z       | eP               | 00 38 06                            |                | Slight, near             |      | BOMBAY                                                                                                    | E<br>NE   | e<br>e          | 11 31 02<br>33 17          |                | Slight                                                     |
| 27   | CHATRA     | Z<br>NE | iP<br>i          | 15 05 330<br>06 52                  |                | Slight                   | 28   | PORT BLAIR                                                                                                | E         | i               | 12 06 29                   |                | Slight                                                     |
| 27   | PORT BLAIR | E       | eP               | 16 13 42                            |                | Slight                   |      | SHILLONG                                                                                                  | Z         | iP              | 12 12 47                   |                | Slight, distant<br>Rarefaction                             |
| 27   | CHATRA     | Z       | i<br>i           | 18 55 12<br>56 22                   |                | Feeble, near             | 28   | SHILLONG                                                                                                  | Z         | eP              | 18 07 22                   |                | Slight, distant                                            |
|      | PORT BLAIR | E       | iP<br>i          | 18 58 39<br>19 02 43                |                | Slight                   | 28   | SHILLONG                                                                                                  | Z         | eP              | 19 32 47                   |                | Slight, distant                                            |
|      |            |         |                  |                                     |                |                          | 28   | SHILLONG                                                                                                  | Z         | eP              | 21 06 06                   |                | Slight, distant                                            |

### Earthquake Reports

(Non Instrumental Reports)

Following is the list of earthquakes that were reported by Voluntary Observers from different stations during the month of February, 1959

| PLACE AT WHICH FELT | DATE IN G. M. T. | TIME IN G. M. T. h. m. | NO. OF SHOCKS | DURATION OF SHOCKS IN SECS. | INTENSITY R.F. Scale | REMARKS |
|---------------------|------------------|------------------------|---------------|-----------------------------|----------------------|---------|
| SHILLONG            | 26               | 02 19                  | 1             | 3                           | IV                   |         |





III

| Station: PORT BLAIR Compt: E.W. |      |     |                                 |                              | Station: HOWRAH Compt: E.W.        |      |     |                                    |                              | Station: HOWRAH Compt: N.S. |      |     |                                    |                              |      |      |    |                                    |                              |     |
|---------------------------------|------|-----|---------------------------------|------------------------------|------------------------------------|------|-----|------------------------------------|------------------------------|-----------------------------|------|-----|------------------------------------|------------------------------|------|------|----|------------------------------------|------------------------------|-----|
| DATE                            | HOUR | K   | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs | DATE                               | HOUR | K   | MEAN<br>Ampli-<br>tude<br>(Micron) | MEAN<br>Period<br>in<br>secs | DATE                        | HOUR | K   | MEAN<br>Ampli-<br>tude<br>(Micron) | MEAN<br>Period<br>in<br>secs | DATE | HOUR | K  | MEAN<br>Ampli-<br>tude<br>(Micron) | MEAN<br>Period<br>in<br>secs |     |
| 02                              | 00   | 3   | 0.1                             | 2.0                          | 19                                 | 12   | 3   | 0.2                                | 2.0                          | 21                          | 00   |     | 1.8                                | 5.0                          | 13   | 00   |    | 1.5                                | 5.7                          |     |
|                                 | 06   | 3   | 1.0                             | 2.0                          | Contd.                             | 18   | 3   | 0.2                                | 2.0                          |                             | 06   |     | 1.5                                | 4.5                          |      | 18   |    | 1.1                                | 2.6                          |     |
|                                 | 12   | 3   | 1.0                             | 2.2                          |                                    |      |     |                                    |                              |                             | 12   |     | 1.8                                | 5.0                          |      |      |    |                                    |                              |     |
|                                 | 18   | 3   | 1.2                             | 2.2                          |                                    |      |     |                                    |                              |                             | 18   |     | 1.5                                | 4.8                          |      | 17   | 06 | 3.1                                | 2.7                          |     |
| 03                              | 00   | -   | -                               | -                            | 20                                 | 00   | -   | -                                  | -                            |                             |      |     |                                    |                              |      | 12   |    | 1.0                                | 2.7                          |     |
|                                 | 06   | 3   | 0.6                             | 3.0                          |                                    | 06   | 3   | 0.4                                | 2.0                          | 22                          | 00   |     | 1.3                                | 4.9                          |      |      |    |                                    |                              |     |
|                                 | 12   | 3   | 0.5                             | 3.0                          |                                    | 12   | 3   | 0.4                                | 2.0                          |                             | 06   |     | 1.4                                | 2.2                          |      | 19   | 18 | 1.0                                | 2.9                          |     |
|                                 | 18   | -   | -                               | -                            |                                    | 18   | -   | -                                  | -                            |                             | 12   |     | 1.1                                | 2.5                          |      |      |    |                                    |                              |     |
| 04                              | 00   | -   | -                               | -                            | 21 to 28 No microseismic movement. |      |     |                                    |                              |                             | 18   |     | 1.3                                | 4.3                          |      | 20   | 00 | 1.2                                | 2.8                          |     |
|                                 | 06   | 3   | 0.4                             | 3.0                          |                                    |      |     |                                    |                              | 23                          | 00   |     | 1.3                                | 4.1                          |      | 24   | 18 | 1.1                                | 2.6                          |     |
|                                 | 12   | 3   | 0.3                             | 3.0                          |                                    |      |     |                                    |                              |                             |      |     | 0.7                                | 2.3                          |      |      |    |                                    |                              |     |
|                                 | 18   | -   | -                               | -                            | Station: HOWRAH Compt: N.S.        |      |     |                                    |                              |                             | 12   |     | 1.7                                | 4.9                          |      | 25   | 00 | 1.2                                | 2.9                          |     |
| 05                              | 00   | 0,0 | -                               | -                            | 01                                 | 12   | 1   | 1.1                                | 4.5                          |                             | 18   |     | 1.6                                | 4.8                          |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            |                                    |      |     |                                    |                              | 24                          | 00   |     | 1.5                                | 5.0                          |      | 26   | 06 | 3.8                                | 2.8                          |     |
|                                 | 12   | 0,0 | -                               | -                            | 03                                 | 00   | (3) | 1.0                                | 4.5                          |                             |      |     | 1.1                                | 3.9                          |      | 12   |    | 2.4                                | 2.9                          |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    |      |     | 0.7                                | 3.5                          |                             | 12   |     | 1.4                                | 2.7                          |      | 18   |    | 1.1                                | 2.7                          |     |
| 06                              | 00   | 0,0 | -                               | -                            |                                    | 18   |     | 1.3                                | 4.9                          |                             | 18   | (1) | 2.4                                | 2.6                          |      | 27   | 00 | (3)                                | 2.3                          | 3.7 |
|                                 | 06   | 0,0 | -                               | -                            | 04                                 | 00   |     | 1.8                                | 5.2                          |                             |      |     | 1.7                                | 3.0                          |      |      |    | 1.1                                | 2.6                          |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 12   |     | 1.8                                | 5.2                          |                             | 06   | (1) | 1.1                                | 2.6                          |      | 18   |    |                                    |                              |     |
|                                 | 18   | 3   | 0.1                             | 2.0                          |                                    | 18   |     | 1.6                                | 5.2                          |                             | 18   |     | 1.1                                | 2.8                          |      |      |    |                                    |                              |     |
| 07                              | 00   | -   | -                               | -                            | 05                                 | 00   |     | 1.8                                | 5.2                          | 25                          | 00   |     | 0.8                                | 2.4                          |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.2                             | 2.0                          |                                    | 18   |     | 1.8                                | 5.0                          |                             | 12   |     | 2.5                                | 2.8                          |      | 27   | 00 | 1.0                                | 2.9                          |     |
|                                 | 12   | -   | -                               | -                            |                                    |      |     |                                    |                              |                             | 18   |     | 1.5                                | 2.7                          |      | 18   |    | 1.3                                | 4.3                          |     |
|                                 | 18   | 3   | 0.2                             | 2.0                          | 06                                 | 00   |     | 1.5                                | 4.9                          | 27                          | 00   |     | 1.0                                | 2.9                          |      |      |    |                                    |                              |     |
| 08                              | 00   | 0,0 | -                               | -                            |                                    | 18   |     | 1.3                                | 4.8                          |                             | 18   |     | 1.3                                | 4.3                          |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            | 07                                 | 00   |     | 1.3                                | 4.6                          | 28                          | 00   |     | 1.3                                | 4.7                          |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 18   |     | 1.7                                | 5.0                          |                             | 18   |     | 1.4                                | 4.6                          |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            | 08                                 | 00   |     | 1.7                                | 4.9                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
| 09                              | 00   | 0,0 | -                               | -                            |                                    | 06   |     | 1.7                                | 4.9                          | Component: Vertical         |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.2                             | 2.0                          |                                    | 12   |     | 1.7                                | 4.8                          | 01                          | 00   |     | 1.2                                | 4.0                          |      |      |    |                                    |                              |     |
|                                 | 12   | 3   | 0.2                             | 2.0                          |                                    | 18   |     | 1.9                                | 5.1                          |                             | 12   |     | 0.7                                | 2.9                          |      |      |    |                                    |                              |     |
|                                 | 18   | 3   | 0.2                             | 2.0                          | 09                                 | 00   |     | 1.5                                | 4.9                          |                             | 18   |     | 0.8                                | 3.5                          |      |      |    |                                    |                              |     |
| 10                              | 00   | -   | -                               | -                            |                                    | 12   |     | 2.0                                | 5.1                          | 02                          | 00   |     | 0.7                                | 3.4                          |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.3                             | 2.0                          |                                    | 18   |     | 1.5                                | 4.8                          |                             | 18   |     | 0.7                                | 3.5                          |      |      |    |                                    |                              |     |
|                                 | 12   | 3   | 0.2                             | 2.0                          | 10                                 | 00   |     | 1.4                                | 4.6                          | 03                          | 00   |     | 0.6                                | 3.5                          |      |      |    |                                    |                              |     |
|                                 | 18   | 3   | 0.2                             | 2.0                          |                                    | 12   |     | 2.0                                | 5.1                          |                             | 18   |     | 0.5                                | 3.5                          |      |      |    |                                    |                              |     |
| 11                              | 00   | -   | -                               | -                            |                                    | 18   |     | 1.6                                | 4.9                          | 07                          | 00   |     | 0.6                                | 3.6                          |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.7                             | 2.0                          | 11                                 | 00   |     | 1.6                                | 5.1                          |                             | 18   |     | 0.6                                | 3.9                          |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 06   |     | 1.4                                | 4.9                          | 08                          | 00   |     | 0.6                                | 3.7                          |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    | 18   |     | 1.6                                | 5.1                          |                             | 18   |     | 0.5                                | 3.7                          |      |      |    |                                    |                              |     |
| 12                              | 00   | 0,0 | -                               | -                            | 12                                 | 00   |     | 1.7                                | 5.0                          | 09                          | 00   |     | 0.4                                | 3.6                          |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.7                             | 2.0                          |                                    | 06   |     | 2.0                                | 5.1                          |                             | 18   |     | 0.4                                | 3.3                          |      |      |    |                                    |                              |     |
|                                 | 12   | 3   | 0.6                             | 2.0                          |                                    | 12   |     | 1.8                                | 5.2                          | 10                          | 00   |     | 0.5                                | 3.4                          |      |      |    |                                    |                              |     |
|                                 | 18   | 3   | 0.3                             | 2.0                          |                                    | 18   |     | 1.6                                | 4.9                          |                             | 18   |     | 0.5                                | 3.5                          |      |      |    |                                    |                              |     |
| 13                              | 00   | -   | -                               | -                            | 13                                 | 00   |     | 1.9                                | 5.4                          | 11                          | 00   |     | 0.6                                | 3.5                          |      |      |    |                                    |                              |     |
|                                 | 06   | 3   | 0.3                             | 2.0                          |                                    | 18   |     | 1.4                                | 2.4                          |                             | 18   |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 12   | -   | -                               | -                            | 14                                 | 00   |     | 1.1                                | 2.5                          | 17                          | 06   | (1) | 1.4                                | 2.6                          |      |      |    |                                    |                              |     |
|                                 | 18   | -   | -                               | -                            |                                    | 12   |     | 1.7                                | 4.9                          | 19                          | 18   |     | 0.5                                | 2.8                          |      |      |    |                                    |                              |     |
| 14                              | 00   | 0,0 | -                               | -                            |                                    | 18   |     | 1.7                                | 4.9                          | 20                          | 00   |     | 0.3                                | 2.5                          |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            | 15                                 | 00   |     | 1.1                                | 2.5                          | 21                          | 06   |     | 0.5                                | 3.1                          |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 12   | (3) | 2.0                                | 5.1                          | 22                          | 06   |     | 0.4                                | 2.3                          |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    | 18   |     | 0.9                                | 2.3                          | 24                          | 18   |     | 0.6                                | 2.7                          |      |      |    |                                    |                              |     |
| 15                              | 00   | 0,0 | -                               | -                            |                                    |      |     | 1.7                                | 4.8                          | 25                          | 00   |     | 0.3                                | 3.0                          |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            | 15                                 | 00   |     | 1.4                                | 4.6                          |                             | 06   |     | 0.4                                | 2.5                          |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 06   |     | 2.4                                | 4.5                          | 26                          | 06   |     | 1.8                                | 2.9                          |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    | 12   |     | 2.8                                | 4.6                          |                             | 12   |     | 0.6                                | 2.8                          |      |      |    |                                    |                              |     |
| 16                              | 00   | 0,0 | -                               | -                            | 17                                 | 00   |     | 1.4                                | 3.0                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            |                                    | 06   |     | 3.9                                | 2.6                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 12   |     | 1.9                                | 2.7                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    | 18   |     | 2.1                                | 5.5                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
| 17                              | 00   | 0,0 | -                               | -                            |                                    |      |     | 1.3                                | 2.6                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            | 18                                 | 00   |     | 1.9                                | 5.2                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 12   | 0,0 | -                               | -                            |                                    | 12   |     | 2.0                                | 5.1                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 18   | 0,0 | -                               | -                            |                                    | 18   |     | 1.4                                | 5.2                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
| 18                              | 00   | 0,0 | -                               | -                            | 19                                 | 00   |     | 1.5                                | 4.8                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            |                                    | 18   |     | 1.8                                | 2.7                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 12   | 3   | 0.1                             | 2.0                          | 20                                 | 00   |     | 1.8                                | 2.6                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 18   | 3   | 0.2                             | 2.0                          |                                    | 18   |     | 1.6                                | 4.7                          |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
| 19                              | 00   | -   | -                               | -                            |                                    |      |     |                                    |                              |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |
|                                 | 06   | 0,0 | -                               | -                            |                                    |      |     |                                    |                              |                             |      |     |                                    |                              |      |      |    |                                    |                              |     |



GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

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Shri S. Basu, M.Sc., F.N.I.,  
Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants

| STATION     | LATITUDE | LONGITUDE | HEIGHT<br>a. s. l.<br>(Metres) | LITHOGRAPHIC<br>FOUNDATION                            | INSTRUMENT           | COMPT. | PERIOD<br>IN<br>SECS.     | STATIC<br>MAGNI-<br>FICATION | DAMPING<br>RATIO | PAPER<br>SPEED<br>mm/min. |
|-------------|----------|-----------|--------------------------------|-------------------------------------------------------|----------------------|--------|---------------------------|------------------------------|------------------|---------------------------|
| BOMBAY      | 18°54'N  | 72°49'E   | 6                              | Deccan Trap                                           | Milne-Shaw           | N      | 12                        | 350                          | 13:1             | 15                        |
|             |          |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 350                          | 23:1             | 3                         |
|             |          |           |                                |                                                       | Sprengnether         | E      | To = Tg = 7 secs          |                              | 30               |                           |
| BOKARO      | 21°50'N  | 85°48'E   |                                | Rock                                                  | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 15                        |
|             |          |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 15                        |
|             |          |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 950                          | h = 0.8          | 60                        |
|             |          |           |                                |                                                       | Wood-Anderson        | N      | 0.8                       | 1000                         | h = 0.8          | 60                        |
| CALCUTTA    | 22°32'N  | 88°22'E   |                                | (1) 7 (Milne-Shaw)<br>(2) 6 (Omori-Ewing)<br>Alluvium | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
|             |          |           |                                |                                                       | Wood-Anderson        | N      | 2                         | 870                          | Critical         | 30                        |
|             |          |           |                                |                                                       | Omori-Ewing          | N      | 16                        | 32                           |                  | 25.4                      |
|             |          |           |                                |                                                       | Omori-Ewing          | E      | 21                        | 30                           |                  | 25.4                      |
|             |          |           |                                |                                                       |                      |        |                           |                              |                  |                           |
| CUTTACK     | 20°56'N  | 87°10'E   | 161                            | Sand Stone                                            | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 15                        |
|             |          |           |                                |                                                       | Wood-Anderson        | N      | 1                         | 1000                         | 30:1             | 60                        |
|             |          |           |                                |                                                       | Benioff              | Z      | To = 0.72 Tg = 0.45 secs. |                              | Critical         | 60                        |
|             |          |           |                                |                                                       |                      |        |                           |                              |                  |                           |
|             |          |           |                                |                                                       | Wenner-Accelerograph | ZNE    | -                         | -                            | -                | -                         |
| COLOMBO     | 06°54'N  | 79°52'E   | 7                              | Beach Sand                                            | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | -                         |
| DEHRA DUN   | 30°12'N  | 78°02'E   | 682                            | Gravel                                                | Wood-Anderson        | N      | 0.8                       | 950                          | Critical         | 60                        |
|             |          |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 850                          | Critical         | 60                        |
|             |          |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 3                         |
|             |          |           |                                |                                                       | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
| HYDERABAD   | 17°26'N  | 78°27'E   | 536                            | Granite                                               | Milne-Shaw           | E      | 12                        | 250                          | 20:1             | 8                         |
|             |          |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 8                         |
| KODAIKANAL  | 10°14'N  | 77°28'E   | 2346                           | Rock                                                  | Milne-Shaw           | E      | 10                        | 250                          | 20:1             | 8                         |
| MADRAS      | 13°00'N  | 80°11'E   | 15                             | -                                                     | Sprengnether         | E      | To = Tg = 72 secs         |                              | Critical         | 30                        |
| NEW DELHI   | 28°35'N  | 77°12'E   | 207                            | Massive Quartzite                                     |                      |        |                           |                              |                  |                           |
| POONA       | 18°20'N  | 73°51'E   | 560                            | Deccan Trap                                           | Sprengnether         | Z      | To = Tg = 1.6             |                              | Critical         | 30                        |
|             |          |           |                                |                                                       | Wood-Anderson        | E      | 4                         | 1000                         | 20:1             | 15                        |
|             |          |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 280                          | 20:1             | 8                         |
| PORT BLAIR  | 11°44'N  | 92°43'E   |                                |                                                       | Wood-Anderson        | N      | 2                         | 1000                         | 20:1             | 30                        |
|             |          |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | 66:1             | 30                        |
|             |          |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 350                          | 20:1             | 8                         |
|             |          |           |                                |                                                       |                      |        |                           |                              |                  |                           |
| SHILLONG    | 25°34'N  | 91°53'E   | 1600                           | (Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite))  | Wood-Anderson        | N      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|             |          |           |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|             |          |           |                                |                                                       | Milne-Shaw           | N      | 12                        | 250                          | 20:1             | 8                         |
|             |          |           |                                |                                                       | Benioff              | Z      | To = 1.0 Tg = 0.18        |                              | -                | 60                        |
|             |          |           |                                |                                                       | Sprengnether         | E      | To = Tg = 6.5             |                              | Critical         | 30                        |
|             |          |           |                                |                                                       | Wenner-Accelerograph | ZNE    | -                         | -                            | -                |                           |
| ROOPELAI    | 10°41'N  | 94°46'E   | -                              | Alluvium                                              | Wood-Anderson        | E      | 0.8                       | 970                          | h = 0.8          | 60                        |
| VIZIANAGRAM | 18°10'N  | 83°27'E   |                                |                                                       | Wood-Anderson        | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|             |          |           |                                |                                                       | Wood-Anderson        | N      | 2                         | 1000                         | 20:1             | 30                        |





| DATE       | STATION                                                                                                                                                  | COMPT              | PHASE                                                   | G. M. T.<br>h. m. s.                                                                | $\Delta$<br>km | REMARKS                                                                         | DATE | STATION   | COMPT    | PHASE                                          | G. M. T.<br>h. m. s.                                           | $\Delta$<br>km | REMARKS                              |  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------|------|-----------|----------|------------------------------------------------|----------------------------------------------------------------|----------------|--------------------------------------|--|
| March 1959 |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 |      |           |          |                                                |                                                                |                |                                      |  |
| 02         | CHATRA                                                                                                                                                   | Z                  | i                                                       | 11 54 34(?)                                                                         |                | Slight, distant                                                                 | 02   | SHILLONG  | Z        | eP                                             | 19 46 47                                                       |                | Slight, near                         |  |
| 02         | SHILLONG                                                                                                                                                 | Z                  | iP                                                      | 12 53 48                                                                            |                | Slight, distant<br>Compression                                                  | 02   | SHILLONG  | Z        | eP                                             | 21 19 35                                                       |                | Slight, distant                      |  |
| 02         | SHILLONG                                                                                                                                                 | Z                  | iP                                                      | 15 25 32                                                                            |                | Slight, distant<br>Compression                                                  | 03   | SHILLONG  | Z        | eP                                             | 02 57 23                                                       |                | Tremor                               |  |
| 02         | Epc: 37°N, 70½°E. Hindu Kush. - h about 200 km<br>- H: 15h 51m 38s GMT (U. S. C. G. S.)<br>36.8°N, 70.5°E. - h: 220 kmCa.<br>- H: 15h 51m 40s (Shillong) |                    |                                                         |                                                                                     |                |                                                                                 |      | 03        | SHILLONG | Z                                              | iP                                                             | 05 28 48       |                                      |  |
|            | DEHRA DUN                                                                                                                                                | NE<br>N            | eP<br>PP<br>PPP<br>Lq<br>iS<br>SS<br>Lr<br>SSS<br>Sg, M | 15 53 42<br>53 51<br>53 55<br>55 02<br>55 14<br>55 25<br>55 27<br>55 35<br>56 02    | 890            | Slight                                                                          |      | CHATRA    | Z<br>NEZ | iP<br>iS                                       | 08 29 17<br>30 11                                              | 500            | Slight                               |  |
|            | AGRA                                                                                                                                                     | EN                 | iP<br>iS                                                | 15 54 08<br>56 03                                                                   | 1120           | Slight, ground<br>movement North<br>and West                                    | 03   | SHILLONG  | Z        | iP                                             | 12 25 36                                                       |                | Rarefaction                          |  |
|            | SEHORE                                                                                                                                                   | NE                 | iP<br>PP<br>PPP<br>iS<br>SS<br>SSS<br>M                 | 15 54 58<br>55 08<br>55 17<br>57 26<br>57 39<br>57 49<br>58 46                      | 1460           | Moderate                                                                        | 03   | SHILLONG  | Z        | iP                                             | 20 51 45                                                       |                | Rarefaction                          |  |
| 02         | CHATRA                                                                                                                                                   | NEZ                | iP<br>iS                                                | 15 55 29<br>58 36                                                                   | 1870           | Moderate                                                                        | 03   | SHILLONG  | Z        | iP                                             | 21 38 44                                                       |                | Rarefaction                          |  |
|            | BOMBAY                                                                                                                                                   | NE                 | eP<br>SP<br>e<br>eS<br>e                                | 15 55 33<br>56 27<br>56 39<br>58 45<br>58 54                                        | 2020           | Slight                                                                          | 04   | SHILLONG  | Z        | eP                                             | 00 47 02                                                       |                | Slight, distant                      |  |
|            | POONA                                                                                                                                                    | Z<br>ZN<br>NE<br>N | iP<br>pP<br>SP<br>iS<br>i<br>SS?                        | 15 55 39<br>56 05<br>56 33<br>58 53<br>59 48<br>16 00 01                            | 2070           | Moderate, compre-<br>ssion. North and<br>West.                                  | 04   | SHILLONG  | Z        | eP                                             | 01 02 34                                                       |                | Slight, distant                      |  |
| 02         | BOKARO                                                                                                                                                   | NE                 | iP<br>iS                                                | 15 55 44<br>58 58                                                                   | 1950           | Slight, Initial<br>ground movement<br>North and West                            | 04   | SHILLONG  | Z        | eP                                             | 01 04 21                                                       |                | Tremor                               |  |
|            | HYDERABAD                                                                                                                                                | N                  | iP<br>e<br>iS<br>SS<br>Lr<br>M                          | 15 55 59<br>56 58<br>59 40<br>16 00 19<br>00 45<br>02 05                            | 2230           | Moderate, initial<br>ground movement<br>North<br><br>Per.: 8 secs<br>Amp.: 8 mm | 04   | CHATRA    | Z        | i                                              | 07 21 30                                                       |                | Slight, distant                      |  |
|            | SHILLONG                                                                                                                                                 | ZE                 | iP<br>PP<br>PPP<br>eS<br>SS<br>SSS<br>Lr<br>M           | 15 56 10<br>56 35<br>56 43<br>59 51<br>16 00 28<br>00 41<br>01 01<br>02 40          | 2460           | Moderate,<br>rarefaction                                                        | 04   | SHILLONG  | Z        | iP                                             | 07 56 12                                                       |                | Rarefaction                          |  |
|            | VIZIANAGRAM                                                                                                                                              | NE                 | eP                                                      | 15 56 14                                                                            |                | Slight                                                                          | 04   | SHILLONG  | Z        | eP                                             | 00 47 02                                                       |                | Slight, distant                      |  |
| 02         | MADRAS                                                                                                                                                   | E                  | eP<br>PPP<br>iS<br>i<br>Lq<br>SS<br>SSS<br>Lr<br>M      | 15 56 46<br>57 35<br>16 00 52<br>01 30<br>01 47<br>01 54<br>02 14<br>02 39<br>04 58 | 2700           | Moderate                                                                        | 04   | SHILLONG  | Z        | eP                                             | 01 02 34                                                       |                | Slight, distant                      |  |
|            | PORT BLAIR                                                                                                                                               | E                  | iP<br>pp<br>iS                                          | 15 57 49<br>58 32<br>15 02 42                                                       | 3250           | Slight                                                                          | 04   | SHILLONG  | Z        | eP                                             | 01 02 34                                                       |                | Slight, distant                      |  |
|            | COLOMBO                                                                                                                                                  | E                  | P<br>S<br>M<br>Gnd                                      | 15 59 29<br>16 02 24<br>07 49<br>47 --                                              |                | Amp.: 0.7 mm                                                                    | 04   | SHILLONG  | Z        | iP                                             | 20 00 38                                                       |                | Slight                               |  |
|            | KODAIKANAL                                                                                                                                               | E                  | SP                                                      | 16 01 20                                                                            |                | Slight, phases<br>not clear                                                     | 04   | SHILLONG  | Z        | iP                                             | 20 00 38                                                       |                | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | MADRAS    | E        | eP<br>PP<br>PPP<br>Lq<br>eS<br>SS<br>SSS<br>Lr | 20 00 59<br>01 08<br>01 16<br>03 03<br>03 11<br>03 24<br>03 35 | 1298           | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | MADRAS    | E        | eP<br>PP<br>PPP<br>Lq<br>eS<br>SS<br>SSS<br>Lr | 20 01 10<br>01 25<br>01 47<br>03 37<br>03 54<br>04 08<br>05 12 | 1460           | Slight,<br>compression               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | MADRAS    | E        | eP<br>PP<br>PPP<br>Lq<br>eS<br>SS<br>SSS<br>Lr | 20 01 20<br>03 30                                              |                | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | CHATRA    | Z<br>NE  | iP<br>iS(?)                                    | 20 01 41<br>04 45                                              |                | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 |      | POONA     | Z<br>NE  | iP<br>eS                                       | 20 02 30<br>06 07                                              | 2190           | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 |      | BOMBAY    | E        | eP<br>e<br>e<br>eS<br>SS<br>SSS                | 20 02 30<br>02 45<br>02 54<br>06 15<br>06 44<br>07 06          | 2270           | Slight, phases<br>not well<br>marked |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 |      | DEHRA DUN | NE       | eP<br>eS<br>SSS                                | 20 03 07<br>07 10<br>07 47                                     | 2500           | Slight, other<br>phases not<br>clear |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | POONA     | Z<br>ZE  | iPn<br>Pg<br>Sn                                | 20 05 51<br>06 06<br>06 37                                     | 420            | Mild, near                           |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 |      | MADRAS    | E        | e<br>e<br>e                                    | 20 12 46<br>13 23<br>14 06                                     |                | Slight                               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 04   | SHILLONG  | Z        | iP                                             | 23 08 17                                                       |                | Slight, distant<br>compression       |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 05   | SHILLONG  | Z        | iP                                             | 00 24 50                                                       |                | Slight,<br>compression               |  |
|            |                                                                                                                                                          |                    |                                                         |                                                                                     |                |                                                                                 | 05   | SHILLONG  | Z        | iP                                             | 05 13 00                                                       |                | Distant, slight<br>Compression.      |  |

| DATE                                                        | STATION     | COMPT        | PHASE                       | G. M. T.<br>h. m. s.                                  | $\Delta$<br>km | REMARKS                                     | DATE                                                                                             | STATION    | COMPT        | PHASE                 | G. M. T.<br>h. m. s.                | $\Delta$<br>km | REMARKS                        |
|-------------------------------------------------------------|-------------|--------------|-----------------------------|-------------------------------------------------------|----------------|---------------------------------------------|--------------------------------------------------------------------------------------------------|------------|--------------|-----------------------|-------------------------------------|----------------|--------------------------------|
|                                                             | SHILLONG    | Z            | iP                          | 07 48 04                                              |                | Slight, distant<br>Compression              | 08                                                                                               | SHILLONG   | Z            | eP                    | 11 28 20                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | eP                          | 08 05 55                                              |                | Near, slight                                | 08                                                                                               | SHILLONG   | Z            | eP                    | 14 55 41                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | eP                          | 14 18 17                                              |                | Slight, distant                             | 08                                                                                               | SHILLONG   | Z            | eP                    | 17 20 51                            |                | Distant, slight                |
|                                                             | SHILLONG    | Z            | eP                          | 17 57 21                                              |                | Near, slight                                | 08                                                                                               | SHILLONG   | Z            | eP                    | 22 46 54                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | iP                          | 23 22 46                                              |                | Slight, distant                             | 08                                                                                               | SHILLONG   | Z            | iP                    | 23 22 46                            |                | Slight, distant                |
| Epc: 2°N, 98°E. Sumatra<br>H = 22h 55m 28s GMT (U.S.C.G.S.) |             |              |                             |                                                       |                |                                             | 09                                                                                               | DEHRA DUN  | NE           | e<br>i                | 05 00 23<br>01 48                   |                | Feeble                         |
|                                                             | PORT BLAIR  | E            | iP<br>PP<br>Lq<br>iS        | 22 58 32<br>58 42<br>23 00 34<br>00 52                | 1380           | Slight                                      | 09                                                                                               | SHILLONG   | Z            | eP                    | 08 01 53                            |                | Slight, distant                |
|                                                             | MADRAS      | E            | eP<br>PPP<br>eS<br>Lq<br>SS | 23 00 15<br>00 51<br>04 08<br>04 32<br>04 48          | 2370           | Slight                                      | 09                                                                                               | SHILLONG   | Z            | eP                    | 08 36 26                            |                | Slight, near                   |
|                                                             | VIZIANAGRAM | N            | eP                          | 23 00 24                                              |                | Slight                                      | 09                                                                                               | SHILLONG   | Z            | eP                    | 09 54 03                            |                | Slight, near                   |
|                                                             | SHILLONG    | Z            | iP                          | 23 00 47                                              |                | Slight,<br>compression                      | Epc: 13½°N, 125½°E. Near North Coast of Samar,<br>Philippine Islands. H = 10h 18m 09s GMT(USCGS) |            |              |                       |                                     |                |                                |
|                                                             | BOXARO      | NE           | iP<br>iS                    | 23 00 54<br>05 13                                     | 2730           | Slight, initial<br>ground movement<br>North |                                                                                                  | SHILLONG   | Z            | i                     | 10 26 23                            | 30             | Slight                         |
|                                                             | POONA       | Z<br>N       | eP<br>eS                    | 23 01 31<br>06 18                                     | 3160           | Feeble                                      | 09                                                                                               | POONA      | Z<br>E       | iP<br>S               | 10 26 56<br>34 00                   | 5450           | Feeble                         |
|                                                             | DEHRA DUN   | NE           | eP<br>iS                    | 23 02 22<br>07 35                                     | 3580           | Feeble                                      |                                                                                                  | BOMBAY     | E<br>NE<br>E | eP<br>eS<br>PS<br>PPS | 10 27 00<br>34 14<br>34 27<br>34 33 | 5610           | Slight                         |
|                                                             | BOMBAY      | NE<br>N<br>E | e<br>e(S)<br>e<br>e<br>e    | 23 05 25<br>06 36<br>09 00<br>09 10<br>09 23<br>09 46 |                | Feeble                                      | 09                                                                                               | SHILLONG   | Z            | eP                    | 10 41 46                            |                | Near, slight                   |
|                                                             | SHILLONG    | Z            | iP                          | 04 28 00                                              |                | Distant,<br>rarefaction                     | 09                                                                                               | CHATRA     | Z            | i                     | 18 52 57                            |                | Feeble                         |
|                                                             | SHILLONG    | Z            | eP                          | 07 15 56                                              |                | Distant                                     |                                                                                                  | SHILLONG   | Z            | iP                    | 18 54 13                            |                | Slight                         |
|                                                             | SHILLONG    | Z            | eP                          | 20 40 39                                              |                | Distant                                     | 09                                                                                               | SHILLONG   | Z            | eP                    | 19 41 00                            |                | Slight, near                   |
|                                                             | SHILLONG    | Z            | eP                          | 20 53 00                                              |                | Distant                                     | 09                                                                                               | SHILLONG   | Z            | iP                    | 22 27 07                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | eP                          | 21 21 00                                              |                | Distant                                     | 09                                                                                               | SHILLONG   | Z            | iP                    | 22 42 04                            |                | Slight, distant                |
|                                                             | CHATRA      | Z<br>NE      | iP<br>e                     | 21 21 50<br>23 25                                     |                | Moderate                                    | 10                                                                                               | SHILLONG   | Z            | eP                    | 00 45 28                            |                | Feeble, near                   |
|                                                             | BOXARO      | E            | e                           | 21 22 20                                              |                | Tremor                                      | 10                                                                                               | SHILLONG   | Z            | eP                    | 02 13 08                            |                | Tremor                         |
|                                                             | DEHRA DUN   | NE           | e                           | 21 26 08                                              |                | Feeble                                      | 10                                                                                               | SHILLONG   | Z            | eP                    | 03 00 11                            |                | Feeble, near                   |
|                                                             | BOMBAY      | N            | e                           | 21 31 06                                              |                |                                             | 10                                                                                               | SHILLONG   | Z            | eP                    | 06 19 00                            |                | Slight, near                   |
|                                                             | SHILLONG    | Z            | eP                          | 01 22 02                                              |                | Tremor                                      | 10                                                                                               | SHILLONG   | Z            | iP                    | 07 06 47                            |                | Slight, distant<br>Rarefaction |
|                                                             | SHILLONG    | Z            | iP                          | 03 46 37                                              |                | Slight, distant<br>Compression              | 10                                                                                               | SHILLONG   | Z            | iP                    | 07 12 06                            |                | Slight, distant<br>Rarefaction |
|                                                             | SHILLONG    | Z            | eP                          | 09 13 44                                              |                | Slight, distant                             | 10                                                                                               | SHILLONG   | Z            | eP                    | 09 01 31                            |                | Feeble, near                   |
| Epc 3°S, 102°E. Sumatra. H = 07h 12m 26s GMT(USCGS)         |             |              |                             |                                                       |                |                                             | 10                                                                                               | SHILLONG   | Z            | eP                    | 10 29 35                            |                | Slight, distant                |
|                                                             | COLOMBO     | E            | iP<br>S<br>M                | 09 17 51<br>22 21<br>31 31                            |                | Amp. = 0.4 mm                               | 10                                                                                               | SHILLONG   | Z            | iP                    | 17 59 50                            |                | Slight, distant<br>Rarefaction |
|                                                             | SHILLONG    | Z            | eP                          | 09 18 39                                              | 30             | Slight                                      | 10                                                                                               | SHILLONG   | Z            | eP                    | 18 45 36                            |                | Slight, near                   |
|                                                             | DEHRA DUN   | NE           | e<br>e                      | 09 20 34<br>26 12                                     | 40             | Feeble, phases<br>not clear                 | 10                                                                                               | SHILLONG   | Z            | eP                    | 20 51 20                            |                | Slight, near                   |
|                                                             | BOMBAY      | NE           | eP<br>e<br>e<br>e           | 09 21 00<br>28 02<br>28 20<br>31 34                   | 40             | Slight                                      | 10                                                                                               | SHILLONG   | Z            | eP                    | 21 32 34                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | eP                          | 00 32 33                                              |                | Near                                        | 10                                                                                               | POONA      | Z            | i                     | 23 09 19                            |                | Feeble, phases<br>not clear    |
|                                                             | SHILLONG    | Z            | iP                          | 07 06 27                                              |                | Slight, distant<br>rarefaction              | 11                                                                                               | SHILLONG   | Z            | eP                    | 03 02 34                            |                | Slight, distant                |
|                                                             | SHILLONG    | Z            | eP                          | 08 46 10                                              |                | Slight, near                                | 11                                                                                               | SHILLONG   | Z            | eP                    | 06 21 15                            |                | Distant                        |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | iP                    | 06 42 40                            |                | Slight, distant                |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | eP                    | 07 15 45                            |                | Tremor, near                   |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | eP                    | 09 40 09                            |                | Slight, distant                |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | eP                    | 11 10 29                            |                | Slight, distant                |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | eP                    | 12 44 00                            |                | Feeble, near                   |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | CHATRA     | Z<br>NE      | iP<br>iS              | 14 31 32<br>31 52                   | 160            | Slight                         |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | SHILLONG   | Z            | eP                    | 14 32 16                            |                | Slight, near                   |
|                                                             |             |              |                             |                                                       |                |                                             | 11                                                                                               | PORT BLAIR | E            | e                     | 14 40 17                            |                | Slight                         |

| DATE   | STATION                                                                                            | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                   | DATE       | STATION                                                                                                                                               | COMPT     | PHASE   | G. M. T. | Δ        | REMARKS                                                    |        |
|--------|----------------------------------------------------------------------------------------------------|-------|-------|----------|------|-------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------|----------|----------|------------------------------------------------------------|--------|
|        |                                                                                                    |       |       | h. m. s. | km   |                                           | March 1959 |                                                                                                                                                       |           |         | h. m. s. | km       |                                                            |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 14 41 30 |      | Slight, distant                           | 14         | SHILLONG                                                                                                                                              | Z         | eP      | 23 39 40 |          |                                                            |        |
| Contd. |                                                                                                    |       |       |          |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 14 55 26 |      | Slight, distant                           | 15         | SHILLONG                                                                                                                                              | Z         | eP      | 09 46 37 |          | Slight, near                                               |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 16 11 29 |      | Slight, distant                           | 15         | SHILLONG                                                                                                                                              | Z         | eP      | 14 52 12 |          | Slight, near                                               |        |
| 11     | POONA                                                                                              | Z     | e     | 16 51 07 |      | Tremor                                    | 15         | SHILLONG                                                                                                                                              | Z         | iP      | 15 05 57 |          | Slight, distant<br>Compression                             |        |
|        | SHILLONG                                                                                           | Z     | eP    | 16 57 23 |      | Slight, distant                           | 15         | SHILLONG                                                                                                                                              | Z         | eP      | 19 31 23 |          | Slight, near                                               |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 18 52 32 |      | Slight, distant                           | 15         | SHILLONG                                                                                                                                              | Z         | eP      | 19 48 22 |          | Slight, distant                                            |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 19 08 38 |      | Slight, distant                           | 15         | SHILLONG                                                                                                                                              | Z         | iP      | 00 07 57 |          | Slight, distant<br>Compression                             |        |
| 11     | SHILLONG                                                                                           | Z     | eP    | 22 00 05 |      | Slight, near                              | 16         | SHILLONG                                                                                                                                              | Z         | iP      | 08 11 19 |          | Slight, distant<br>Compression                             |        |
| 12     | Epc: 17°N, 145°E. Caroline Islands<br>- H = 01h 29m 07s GMT (U. S. C. G. S)<br>Mag. = 6 (Pasadena) |       |       |          |      |                                           |            | 16                                                                                                                                                    | DEHRA DUN | NE      | e        | 09 06 04 |                                                            | Tremor |
|        | SHILLONG                                                                                           | Z     | eP    | 01 38 31 |      | Feeble, near                              | 16         | SHILLONG                                                                                                                                              | Z         | iP      | 15 28 52 |          | Slight, distant<br>Rarefaction                             |        |
| 12     | PORT BLAIR                                                                                         | E     | i     | 01 38 33 |      | Slight                                    | 16         | SHILLONG                                                                                                                                              | Z         | iP      | 17 54 17 |          | Slight, distant<br>Rarefaction                             |        |
|        |                                                                                                    |       | e     | 44 17    |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
|        | AGRA                                                                                               | NEZ   | iP    | 01 39 57 | 7360 | Slight, compression, ground movement West | 16         | PORT BLAIR                                                                                                                                            | E         | eP      | 18 58 58 | 320      | Slight                                                     |        |
|        |                                                                                                    | EN    | iS    | 48 45    |      |                                           |            |                                                                                                                                                       |           | Pg      | 59 08    |          |                                                            |        |
|        |                                                                                                    | N     | i?    | 48 54    |      |                                           |            |                                                                                                                                                       |           | Lq      | 59 20    |          |                                                            |        |
|        |                                                                                                    |       |       |          |      |                                           |            |                                                                                                                                                       |           | iS      | 59 34    |          |                                                            |        |
|        | DEHRA DUN                                                                                          | NE    | eP    | 01 40 05 | 7310 | Slight, phases not clear                  | 16         | SHILLONG                                                                                                                                              | Z         | eP      | 23 24 08 |          | Slight, near                                               |        |
|        |                                                                                                    |       | iS    | 48 51    |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
| 12     | POONA                                                                                              | Z     | P     | 01 40 21 | 7710 | Mild                                      | 16         | SHILLONG                                                                                                                                              | Z         | iP      | 23 46 29 |          | Slight, distant<br>Compression                             |        |
|        |                                                                                                    |       | S     | 49 28    |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
|        | BOMBAY                                                                                             | E     | eP    | 01 40 26 | 7800 | Slight                                    | 17         | SHILLONG                                                                                                                                              | Z         | eP      | 08 09 37 |          | Slight, near                                               |        |
|        |                                                                                                    | NE    | eS    | 49 43    |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
|        |                                                                                                    | E     | PPS   | 50 27    |      |                                           |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
| 12     | SHILLONG                                                                                           | Z     | iP    | 09 11 24 |      | Slight, near                              | 17         | Epc: 27½°N, 130°E. Ryukyu Islands<br>- H = 08h 25m 22s GMT (U. S. C. G. S)<br>28°N, 129°E. - H = 08h 25m 23s GMT (Shillong)<br>Mag. = 5½-6 (Pasadena) |           |         |          |          |                                                            |        |
| 12     | SHILLONG                                                                                           | Z     | iP    | 10 15 06 |      | Slight, near<br>Rarefaction.              |            | KODAIKANAL                                                                                                                                            | E         | e       | 08 32 01 |          | Feeble                                                     |        |
| 12     | SHILLONG                                                                                           | Z     | iP    | 15 41 28 |      | Slight, near                              | 17         | SHILLONG                                                                                                                                              | ZE        | eP      | 08 32 04 | 3700     | Moderate                                                   |        |
| 12     | SHILLONG                                                                                           | Z     | iP    | 23 08 59 |      | Distant                                   |            |                                                                                                                                                       | EN        | PP      | 33 18    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | eP    | 02 06 33 |      | Slight                                    |            |                                                                                                                                                       |           | PPP     | 33 37    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | iP    | 03 43 12 |      | Slight, distant<br>Compression            | 17         | SHILLONG                                                                                                                                              | Z         | PcP     | 34 35    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | iP    | 10 12 43 |      | Slight, distant<br>Compression            |            |                                                                                                                                                       |           | iS      | 37 25    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | eP    | 11 15 38 |      | Feeble, near                              |            |                                                                                                                                                       |           | ScP     | 38 16    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | eP    | 12 41 18 |      | Slight, distant                           |            |                                                                                                                                                       |           | SS      | 08 39 38 |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | iP    | 12 43 58 |      | Tremor                                    |            |                                                                                                                                                       |           | SSS     | 40 06    |          |                                                            |        |
| 13     | CHATRA                                                                                             | Z     | iP    | 19 54 59 | 590  | Slight                                    |            | CHATRA                                                                                                                                                | NEZ       | iP      | 08 32 40 | 4110     | Slight                                                     |        |
|        |                                                                                                    | NE    | iS    | 56 11    |      |                                           |            |                                                                                                                                                       | NE        | iS      | 38 26    |          |                                                            |        |
|        | SHILLONG                                                                                           | Z     | eP    | 19 55 47 |      | Slight, distant                           | 17         | BOKARO                                                                                                                                                | NE        | iP      | 08 32 54 | 4390     | Moderate                                                   |        |
|        | DEHRA DUN                                                                                          | Z     | e     | 19 55 48 |      | Slight, distant                           |            |                                                                                                                                                       | E         | PP      | 34 29    |          |                                                            |        |
| 13     | SHILLONG                                                                                           | Z     | eP    | 20 07 18 |      | Slight, distant                           |            |                                                                                                                                                       |           | PPP     | 35 00    |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | iP    | 03 05 33 |      | Slight, distant<br>Compression            |            |                                                                                                                                                       |           | iS      | 38 57    |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | eP    | 04 21 43 |      | Slight, distant                           |            |                                                                                                                                                       |           | Lq      | 41 56    |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | iP    | 07 09 59 |      | Slight, distant<br>Compression            |            |                                                                                                                                                       |           | Lr      | 43 42    |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | eP    | 09 31 29 |      | Slight, distant                           |            |                                                                                                                                                       |           | M       | 47 17    |          | Peri: 28 secs<br>Amp: 27 mm<br>Peri: 30 secs<br>Amp: 63 mm |        |
| 14     | SHILLONG                                                                                           | Z     | eP    | 16 39 49 |      | Slight, near                              |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | eP    | 16 47 12 |      | Slight, near                              |            |                                                                                                                                                       |           |         |          |          |                                                            |        |
| 14     | SHILLONG                                                                                           | Z     | eP    | 17 25 53 |      | Feeble, near                              | 17         | AGRA                                                                                                                                                  | ENZ       | P       | 08 33 43 | 4980     | Moderate                                                   |        |
| 14     | SHILLONG                                                                                           | Z     | iP    | 19 48 40 |      | Slight, distant<br>Compression            |            |                                                                                                                                                       | Z         | i?      | 34 01    |          |                                                            |        |
| 14     | PORT BLAIR                                                                                         | E     | eP    | 23 32 23 | 2430 | Slight, probably deep.                    |            |                                                                                                                                                       | ENZ       | iS      | 40 21    |          |                                                            |        |
|        |                                                                                                    |       | i     | 32 43    |      |                                           |            |                                                                                                                                                       | EN        | i?      | 40 45    |          |                                                            |        |
|        |                                                                                                    |       | PP    | 32 46    |      |                                           |            |                                                                                                                                                       | E         | i?      | 41 19    |          |                                                            |        |
|        |                                                                                                    |       | iS    | 36 21    |      |                                           |            |                                                                                                                                                       | ENZ       | SS, ScS | 43 37    |          |                                                            |        |
|        |                                                                                                    |       |       |          |      |                                           |            |                                                                                                                                                       | EZ        | Lq      | 44 05    |          |                                                            |        |
|        |                                                                                                    |       |       |          |      |                                           |            |                                                                                                                                                       | E         | SSS     | 44 41    |          |                                                            |        |

| DATE | STATION                                                                               | COMPT                        | PHASE                                               | G. h. | M. m. | T. s. | $\Delta$ km | REMARKS                                                         | DATE | STATION    | COMPT         | PHASE                                  | G. h.  | M. m. | T. s. | $\Delta$ km | REMARKS                           |                                |                          |
|------|---------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------|-------|-------|-------|-------------|-----------------------------------------------------------------|------|------------|---------------|----------------------------------------|--------|-------|-------|-------------|-----------------------------------|--------------------------------|--------------------------|
| 17   | MADRAS<br>Contd.                                                                      | E                            | eP<br>PP<br>PPP<br>iS<br>PPS                        | 08    | 34    | 05    | 5390        | Moderate                                                        | 18   | CHATRA     | Z<br>NE       | eP<br>iS                               | 00     | 48    | 40    | 4110        | Slight                            |                                |                          |
| 17   | HYDERABAD                                                                             | N<br>E<br>N<br>E             | eP<br>PP<br>iS<br>ScS<br>SS<br>Lr<br>M              | 08    | 34    | 06    | 5250        | Moderate                                                        |      | PORT BLAIR | E             | iP<br>PP<br>PPP<br>iS<br>SS<br>Lr<br>M | 00     | 48    | 43    | 4140        | Slight                            |                                |                          |
| 17   | POONA                                                                                 | Z<br>ZNE<br>N                | iP<br>i<br>iS<br>Lr<br>M                            | 08    | 34    | 32    | 5700        | Moderate                                                        |      | BOKARO     | NE<br>E       | iP<br>PP<br>PPP<br>iS<br>M             | 00     | 48    | 57    | 4320        | Slight                            |                                |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             | Per. = 15 secs<br>Amp. = 11 mm                                  | 18   | AGRA       | EZ<br>EN      | P<br>iS                                | 00     | 49    | 43    | 5000        | Slight                            |                                |                          |
|      | BOMBAY                                                                                | NE<br>E<br>NE<br>E<br>N<br>E | eP<br>PcP<br>eS<br>ScS<br>M<br>M                    | 08    | 34    | 41    | 5720        | Moderate                                                        |      | DEHRA DUN  | NE<br>N       | eP<br>eS<br>PPS<br>SS<br>SSS<br>M      | 00     | 49    | 45    | 4830        | Slight                            |                                |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             | Per. = 18 secs<br>Amp. = 16 mm<br>Per. = 23 secs<br>Amp. = 2 mm |      | MADRAS     | E             | eP<br>PP<br>eS                         | 00     | 50    | 05    | 5370        | Slight                            |                                |                          |
| 17   | SHILLONG                                                                              | Z                            | eP                                                  | 08    | 42    | 35    |             | Slight, near                                                    |      | COLOMBO    | E             | eP<br>S<br>M                           | 00     | 50    | 21    |             |                                   |                                |                          |
| 17   | SHILLONG                                                                              | Z                            | iP                                                  | 10    | 45    | 14    |             | Slight, distant<br>Rarefaction                                  |      | BOMBAY     | E<br>N        | eP<br>eS<br>M                          | 00     | 50    | 55    | 5930        | Slight                            |                                |                          |
| 17   | SHILLONG                                                                              | Z                            | eP                                                  | 13    | 01    | 57    |             | Slight, distant                                                 |      |            |               |                                        |        |       |       |             |                                   |                                |                          |
| 17   | POONA                                                                                 | Z<br>NE                      | eP<br>S                                             | 15    | 07    | 23    | 3020        | Feeble                                                          |      |            |               |                                        |        |       |       |             | Per. = 13 secs<br>Amp. = 3 mm     |                                |                          |
| 17   | SHILLONG                                                                              | Z                            | iP                                                  | 17    | 10    | 06    |             | Slight, distant                                                 | 18   | POONA      | Z<br>ZNE<br>N | eP<br>iS<br>Lr<br>M                    | 00     | 50    | 32    | 5720        | Slight                            |                                |                          |
| 17   | SHILLONG                                                                              | Z                            | eP                                                  | 18    | 15    | 10    |             | Slight, distant                                                 |      |            |               |                                        |        |       |       |             | Per. = 18.5 secs<br>Amp. = 6.7 mm |                                |                          |
| 17   | Epc: 3 1/2° N, 96° E. Off the east Coast of Sumatra<br>H = 19h 01m 50s GMT (Shillong) |                              |                                                     |       |       |       |             |                                                                 |      |            |               |                                        |        |       |       |             |                                   |                                |                          |
|      | PORT BLAIR                                                                            | E                            | eP<br>e<br>i<br>e<br>e                              | 19    | 04    | 13    |             | Slight                                                          |      | HYDERABAD  | E             | S<br>Lr<br>M                           | 00     | 57    | 00    |             |                                   | Per. = 15 secs<br>Amp. = 4 mm  |                          |
|      | COLOMBO                                                                               | E                            | P<br>M                                              | 19    | 05    | 35    |             | S and L not defined<br>Amp. = 0.6 mm                            | 18   | SHILLONG   | Z             | eP                                     | 03     | 01    | 57    |             |                                   | Slight, distant                |                          |
|      | MADRAS                                                                                | E                            | eP<br>eS                                            | 19    | 06    | 08    | 2060        | Slight                                                          | 18   | SHILLONG   | Z             | eP                                     | 05     | 36    | 20    |             |                                   | Slight, near                   |                          |
|      | SHILLONG                                                                              | Z                            | eP                                                  | 19    | 06    | 48    |             | Slight                                                          | 18   | SHILLONG   | Z             | eP                                     | 07     | 34    | 39    |             |                                   | Slight, distant                |                          |
| 17   | BOKARO                                                                                | NE<br>E                      | eP<br>iS                                            | 19    | 06    | 52    | 2500        | Slight, other phases not clear                                  | 18   | SHILLONG   | Z             | eP                                     | 08     | 48    | 52    |             |                                   | Slight, near                   |                          |
|      | CHATRA                                                                                | Z<br>NE                      | iP<br>iS                                            | 19    | 07    | 17    | 2840        | Slight                                                          | 18   | SHILLONG   | Z             | eP                                     | 15     | 16    | 25    |             |                                   | Slight, distant                |                          |
|      | DEHRA DUN                                                                             | NE                           | eP<br>eS                                            | 19    | 08    | 20    | 3470        | Slight, phases not well developed                               | 18   | SHILLONG   | Z             | eP                                     | 20     | 02    | 35    |             |                                   | Slight, distant                |                          |
|      | BOMBAY                                                                                | N                            | eS                                                  | 19    | 12    | 18    |             | Feeble                                                          | 19   | PORT BLAIR | E             | iPg<br>iSg                             | 00     | 02    | 55    | 30          |                                   | Slight                         |                          |
| 17   | SHILLONG                                                                              | Z                            | eP                                                  | 19    | 40    | 02    |             |                                                                 | 19   | SHILLONG   | Z             | eP                                     | 00     | 09    | 29    |             |                                   | Tremor, distant                |                          |
| 17   | SHILLONG                                                                              | Z                            | e                                                   | 19    | 51    | 28    |             |                                                                 | 19   | SHILLONG   | Z             | eP                                     | 04     | 22    | 31    |             |                                   | Slight, distant                |                          |
| 17   | SHILLONG                                                                              | Z                            | eP                                                  | 21    | 51    | 57    |             |                                                                 | 19   | SHILLONG   | Z             | eP                                     | 07     | 30    | 58    |             |                                   | Feeble, distant                |                          |
| 18   | Epc: 27° N, 129° E. Ryukyu Islands<br>H = 00h 41m 17s GMT (U.S.C.G.S)                 |                              |                                                     |       |       |       |             |                                                                 |      | 19         | DEHRA DUN     | NE                                     | e<br>e | 08    | 49    | 18          |                                   |                                | Feeble, phases not clear |
|      | SHILLONG                                                                              | ZE<br>E<br>EN                | iP<br>PP<br>PPP<br>iS<br>PcP<br>Lq<br>SS<br>Lr<br>M | 00    | 48    | 09    | 3670        | Moderate, compression                                           |      | BOMBAY     | NE            | e                                      | 08     | 49    | 38    |             |                                   | Very slight                    |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 | 19   | TOCKLAI    | E             | eP                                     | 20     | 53    | 17    |             |                                   | Slight, distant                |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 |      | SHILLONG   | Z             | iP                                     | 20     | 53    | 45    |             |                                   | Slight, distant<br>Rarefaction |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 | 19   | CHATRA     | Z<br>E        | iP<br>iS                               | 20     | 54    | 41    | 1630        |                                   | Slight                         |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 | 19   | SHILLONG   | Z             | iP                                     | 21     | 16    | 46    |             |                                   | Slight, near<br>Compression    |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 |      | CHATRA     | Z<br>E        | iP<br>iS                               | 21     | 17    | 41    | 1570        |                                   | Slight                         |                          |
|      |                                                                                       |                              |                                                     |       |       |       |             |                                                                 | 19   | SHILLONG   | Z             | iP                                     | 22     | 25    | 09    |             |                                   | Slight, distant<br>Rarefaction |                          |

| DATE | STATION   | COMPT | PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                                                                                                                                | DATE | STATION   | COMPT | PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                                                                                                                                 |
|------|-----------|-------|-------|----------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|-------|-------|----------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |           |       |       |                      |                | March 1959                                                                                                                                             |      |           |       |       |                      |                |                                                                                                                                                         |
| 20   | SHILLONG  | Z     | eP    | 01 12 24             |                | Tremor, distant                                                                                                                                        | 23   | SHILLONG  | Z     | eP    | 06 35 23             |                | Slight, distant                                                                                                                                         |
| 20   | SHILLONG  | Z     | eP    | 01 33 07             |                | Slight, distant                                                                                                                                        | 23   | SHILLONG  | Z     | eP    | 07 11 02             |                | Tremor, distant                                                                                                                                         |
| 20   | SHILLONG  | Z     | eP    | 02 57 57             |                | Slight, near                                                                                                                                           | 23   | SHILLONG  | Z     | eP    | 07 28 24             |                | Distant                                                                                                                                                 |
| 20   | SHILLONG  | Z     | eP    | 03 32 48             |                | Slight, near                                                                                                                                           | 23   | SHILLONG  | Z     | iP    | 11 57 18             |                | Slight, distant<br>Rarefaction                                                                                                                          |
| 20   | SHILLONG  | Z     | eP    | 04 09 33             |                | Slight, distant                                                                                                                                        | 23   | SHILLONG  | Z     | iP    | 12 42 35             |                | Slight, distant<br>Rarefaction                                                                                                                          |
| 20   | SHILLONG  | Z     | eP    | 04 15 42             |                | Slight, near                                                                                                                                           |      | BOKARO    | E     | e     | 12 43 29             |                | Slight; tremor                                                                                                                                          |
| 20   | SHILLONG  | Z     | eP    | 05 10 41             |                | Slight, near                                                                                                                                           | 23   | SHILLONG  | Z     | eP    | 17 49 05             |                | Slight, distant                                                                                                                                         |
| 20   | CHATRA    | Z     | i     | 15 53 07             |                | Slight, distant                                                                                                                                        | 23   | DEHRA DUN | NE    | e     | 21 30 57             |                | Feeble                                                                                                                                                  |
| 20   | POONA     | Z     | eP    | 15 54 54             |                | Mild, phases<br>not clear                                                                                                                              |      |           |       | e     | 32 17                |                |                                                                                                                                                         |
| 20   | DEHRA DUN | NE    | e     | 16 01 25             |                | Feeble                                                                                                                                                 |      | SHILLONG  | Z     | eP    | 21 32 01             |                | Slight, distant                                                                                                                                         |
| 20   | SHILLONG  | Z     | eP    | 16 47 24             |                | Slight, distant                                                                                                                                        | 23   | SHILLONG  | Z     | eP    | 22 55 49             |                | Slight, distant                                                                                                                                         |
| 20   | SHILLONG  | Z     | eP    | 16 51 41             |                | Slight, distant<br>compression                                                                                                                         | 23   | SHILLONG  | ZE    | eP    | 23 14 47             | 310            | Slight, felt                                                                                                                                            |
| 20   | CHATRA    | Z     | iP    | 16 57 01             | 180            | Feeble                                                                                                                                                 |      |           | E     | PP    | 14 54                |                |                                                                                                                                                         |
|      | SHILLONG  | Z     | eP    | 16 58 12             |                | Feeble, distant                                                                                                                                        |      |           |       | PPP   | 15 01                |                |                                                                                                                                                         |
| 20   | CHATRA    | Z     | iP    | 17 22 20             | 540            | Feeble                                                                                                                                                 |      |           |       | eS    | 15 23                |                |                                                                                                                                                         |
|      |           |       | iS    | 23 17                |                |                                                                                                                                                        |      | CHATRA    | Z     | iP    | 23 15 50             | 970            | Slight                                                                                                                                                  |
|      | SHILLONG  | Z     | eP    | 17 23 05             |                | Tremor, distant                                                                                                                                        |      |           | NEZ   | iS    | 17 30                |                |                                                                                                                                                         |
| 20   | SHILLONG  | Z     | iP    | 17 51 12             |                | Slight, distant<br>Rarefaction                                                                                                                         |      | TOCKLAI   | E     | eP    | 23 16 35             |                | Slight                                                                                                                                                  |
| 20   | SHILLONG  | Z     | eP    | 19 43 07             |                | Near                                                                                                                                                   |      | BOKARO    | E     | e     | 23 17 35             |                | Tremor                                                                                                                                                  |
| 21   | SHILLONG  | Z     | iP    | 00 01 21             |                | Slight, near<br>Rarefaction                                                                                                                            | 24   | SHILLONG  | Z     | eP    | 00 32 20             |                | Feeble, distant                                                                                                                                         |
| 21   | POONA     | Z     | iP    | 00 02 30             |                | Feeble, Phases<br>not clear                                                                                                                            | 24   | POONA     | Z     | eP    | 04 05 37             |                | Doubtful movements,<br>a loud report (Pro-<br>bably of some exp-<br>losion) heard about<br>this time by many<br>rattling of doors &<br>windows noticed. |
| 21   | SHILLONG  | Z     | eP    | 02 55 20             |                | Slight, distant                                                                                                                                        |      |           |       | eP    | 06 27                |                |                                                                                                                                                         |
| 21   | SHILLONG  | Z     | iP    | 04 40 01             |                | Slight, distant<br>Compression                                                                                                                         | 24   | DEHRA DUN | NE    | e     | 05 21 33             |                | Slight, phases<br>not clear                                                                                                                             |
| 21   | SHILLONG  | Z     | eP    | 05 11 43             |                | Feeble, distant                                                                                                                                        |      | AGRA      | ENZ   | P     | 05 21 52             |                | Feeble, short<br>period.                                                                                                                                |
| 21   | DEHRA DUN | NE    | e     | 07 04 48             |                | Feeble                                                                                                                                                 |      | CHATRA    | Z     | iP    | 05 22 49             | 1240           | Slight                                                                                                                                                  |
|      |           |       | i     | 05 18                |                |                                                                                                                                                        |      |           | NEZ   | iS    | 24 55                |                |                                                                                                                                                         |
|      | CHATRA    | Z     | iP    | 07 05 33             | 1030           | Slight                                                                                                                                                 | 24   | SHILLONG  | Z     | eP    | 05 23 44             |                | Slight, distant                                                                                                                                         |
|      |           | NE    | iS    | 07 19                |                |                                                                                                                                                        |      | BOMBAY    | E     | e     | 05 27 14             |                | Feeble, near                                                                                                                                            |
|      | SHILLONG  | Z     | eP    | 07 06 24             |                | Slight, near                                                                                                                                           |      |           | NE    | e     | 27 35                |                |                                                                                                                                                         |
|      | POONA     | Z     | eP    | 07 07 00             |                | Feeble, phases<br>not clear                                                                                                                            | 24   | SHILLONG  | Z     | eP    | 13 02 04             |                | Slight, near                                                                                                                                            |
|      |           |       | eS?   | 09 12                |                |                                                                                                                                                        | 24   | SHILLONG  | Z     | iP    | 13 24 25             |                | Slight, distant<br>Rarefaction                                                                                                                          |
|      | BOMBAY    | NE    | e     | 07 10 58             |                | Feeble, near                                                                                                                                           | 24   | SHILLONG  | Z     | iP    | 17 25 25             |                | Slight, distant<br>Rarefaction                                                                                                                          |
| 21   | SHILLONG  | Z     | iP    | 08 58 43             |                | Slight, near<br>Rarefaction                                                                                                                            | 24   | SHILLONG  | Z     | iP    | 17 25 25             |                | Slight, distant<br>Rarefaction                                                                                                                          |
| 21   | SHILLONG  | Z     | iP    | 19 49 06             |                | Slight, distant<br>Rarefaction                                                                                                                         | 24   | DEHRA DUN | NE    | e     | 17 28 35             |                | Feeble                                                                                                                                                  |
| 22   | SHILLONG  | Z     | eP    | 06 03 46             |                | Slight, distant                                                                                                                                        | 24   | SHILLONG  | Z     | eP    | 21 21 43             |                | Slight, distant                                                                                                                                         |
| 22   | SHILLONG  | Z     | eP    | 06 28 28             |                | Feeble, distant                                                                                                                                        | 24   | DEHRA DUN | NE    | e     | 21 35 47             |                | Tremor                                                                                                                                                  |
| 22   | SHILLONG  | Z     | eP    | 09 30 59             |                | Feeble, distant                                                                                                                                        | 25   | SHILLONG  | Z     | eP    | 00 31 36             |                | Slight, distant                                                                                                                                         |
| 22   | CHATRA    | Z     | iP    | 11 54 41             | 840            | Slight                                                                                                                                                 | 25   | BOKARO    | E     | eP    | 05 07 24             | 1620           | Slight                                                                                                                                                  |
|      |           | E     | iS    | 56 08                |                |                                                                                                                                                        |      |           | NE    | eS    | 10 08                |                |                                                                                                                                                         |
|      | SHILLONG  | Z     | iP    | 11 55 47             |                | Feeble, distant<br>Compression                                                                                                                         | 25   | DEHRA DUN | NE    | eP    | 06 05 37             | 730            | Slight                                                                                                                                                  |
| 22   | SHILLONG  | Z     | eP    | 14 46 09             |                | Slight, distant                                                                                                                                        |      |           |       | Lq    | 06 43                |                |                                                                                                                                                         |
| 22   | SHILLONG  | Z     | eP    | 15 24 39             |                | Feeble, distant                                                                                                                                        |      |           |       | iS    | 06 53                |                |                                                                                                                                                         |
| 22   | SHILLONG  | Z     | eP    | 17 30 54             |                | Feeble, distant                                                                                                                                        |      |           |       | Lr    | 07 00                |                |                                                                                                                                                         |
|      |           |       |       |                      |                |                                                                                                                                                        |      |           |       | SS    | 07 03                |                |                                                                                                                                                         |
|      |           |       |       |                      |                |                                                                                                                                                        |      |           |       | SSS   | 07 14                |                |                                                                                                                                                         |
|      |           |       |       |                      |                |                                                                                                                                                        |      |           |       | SG, M | 07 33                |                |                                                                                                                                                         |
| 23   | POONA     | Z     | eP    | 04 02 59             |                | Doubtful movements<br>a loud report (Pro-<br>bably of some exp-<br>losion heard about<br>this time by many<br>rattling of doors<br>and windows noticed |      | AGRA      | ENZ   | P     | 06 05 45             |                | Slight                                                                                                                                                  |
|      |           |       | eP    | 03 49                |                |                                                                                                                                                        |      | POONA     | Z     | eP    | 06 06 42             | 1630           | Slight                                                                                                                                                  |
|      |           |       |       |                      |                |                                                                                                                                                        |      |           | ZE    | (S)   | 09 26                |                |                                                                                                                                                         |
|      |           |       |       |                      |                |                                                                                                                                                        |      |           | Z     | (SS)  | 09 44                |                |                                                                                                                                                         |

| DATE | STATION                                                                           | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                    | DATE | STATION                                                                                                       | COMPT    | PHASE | G. M. T. | Δ        | REMARKS                                   |                 |
|------|-----------------------------------------------------------------------------------|-------|-------|----------|------|--------------------------------------------|------|---------------------------------------------------------------------------------------------------------------|----------|-------|----------|----------|-------------------------------------------|-----------------|
|      |                                                                                   |       |       | h. m. s. | km   |                                            |      |                                                                                                               |          |       | h. m. s. | km       |                                           |                 |
| 25   | CHATRA                                                                            | Z     | iP    | 06 07 24 |      | Slight                                     | 26   | DEHRA DUN                                                                                                     | NE       | eP    | 11 07 16 | 1170     | Feeble, phases not clear                  |                 |
|      | Contd.                                                                            | NE    | i     | 12 26    |      |                                            |      | Contd.                                                                                                        |          | eS    | 08 56    |          |                                           |                 |
|      |                                                                                   |       |       |          |      |                                            |      |                                                                                                               |          | i     | 09 16    |          |                                           |                 |
| 25   | SEHORE                                                                            | NE    | eP    | 06 07 35 | 500  | Slight, identification doubtful.           |      | CHATRA                                                                                                        | Z        | iP    | 11 08 55 | 2090     | Slight                                    |                 |
|      |                                                                                   |       | PP    | 07 44    |      |                                            |      | NE                                                                                                            | iS       | 12 22 |          |          |                                           |                 |
|      |                                                                                   |       | PPP   | 07 50    |      |                                            | 26   | POONA                                                                                                         | Z        | eP    | 11 09 22 |          | Feeble, other phases not clear            |                 |
|      |                                                                                   |       | iS    | 08 28    |      |                                            |      | SHILLONG                                                                                                      | Z        | eP    | 11 09 31 |          | Slight                                    |                 |
|      |                                                                                   |       | Lq    | 08 34    |      |                                            |      | BOMBAY                                                                                                        | E        | e     | 11 12 44 |          | Slight                                    |                 |
|      |                                                                                   |       | Lr    | 08 37    |      |                                            |      | e                                                                                                             |          | 15 34 |          |          |                                           |                 |
|      |                                                                                   |       | SS    | 08 40    |      |                                            | 26   | SHILLONG                                                                                                      | Z        | eP    | 14 26 10 |          | Slight, distant                           |                 |
|      |                                                                                   |       | SSS   | 08 48    |      |                                            | 26   | CHATRA                                                                                                        | Z        | iPg   | 14 34 47 | 100      | Feeble                                    |                 |
|      |                                                                                   |       | M     | 09 11    |      |                                            |      | iSg                                                                                                           |          | 35 00 |          |          |                                           |                 |
|      | SHILLONG                                                                          | ZE    | eP    | 06 08 18 |      | Slight, distant                            | 26   | PORT BLAIR                                                                                                    | E        | iPg   | 19 21 59 | 110      | Slight                                    |                 |
|      | BOMBAY                                                                            | NE    | e     | 06 09 47 |      | Slight,                                    |      | iSg                                                                                                           |          | 22 12 |          |          |                                           |                 |
|      |                                                                                   | E     | e     | 10 03    |      |                                            | 26   | DEHRA DUN                                                                                                     | NE       | e     | 21 52 14 |          | Feeble                                    |                 |
|      |                                                                                   | NE    | e     | 11 37    |      |                                            |      | e                                                                                                             |          | 53 43 |          |          |                                           |                 |
|      | VIZIANAGRAM                                                                       | N     | eP    | 06 11 05 |      | Slight, distant                            |      | SHILLONG                                                                                                      | Z        | iP    | 21 54 30 |          | Slight, distant rarefaction               |                 |
|      | HYDERABAD                                                                         | E     | e     | 06 11 37 |      | Per. = 9 secs<br>Amp. = 2 mm               | 27   | DEHRA DUN                                                                                                     | NE       | e     | 02 02 01 |          | Tremor                                    |                 |
|      |                                                                                   | M     | e     | 14 00    |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 03 10 14 |          | Slight, distant                           |                 |
|      | KODAIKANAL                                                                        | E     | e     | 06 13 55 |      | Tremor                                     | 27   | SHILLONG                                                                                                      | Z        | eP    | 04 00 31 |          | Slight, near                              |                 |
|      | MADRAS                                                                            | E     | e     | 06 43 55 |      | Slight                                     | 27   | SHILLONG                                                                                                      | Z        | eP    | 05 34 07 |          | Very slight, near                         |                 |
|      |                                                                                   |       | e     | 44 02    |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 06 59 23 |          | Slight, distant                           |                 |
|      |                                                                                   |       | e     | 44 17    |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 07 21 01 |          | Slight, near                              |                 |
|      |                                                                                   |       | e     | 45 22    |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 08 35 05 |          | Slight, distant                           |                 |
|      | SHILLONG                                                                          | Z     | eP    | 06 48 15 |      | Tremor, distant                            | 27   | AGRA                                                                                                          | EN       | P     | 11 07 45 |          | Slight                                    |                 |
| 25   | CHATRA                                                                            | Z     | iP    | 07 18 05 | 90   | Slight                                     | 27   | SHILLONG                                                                                                      | Z        | iP    | 11 25 17 |          | Slight, distant (compression)             |                 |
|      |                                                                                   | EZ    | iS    | 18 18    |      |                                            |      | TOCKLAI                                                                                                       | E        | eP    | 11 25 55 |          | Slight, distant                           |                 |
| 25   | CHATRA                                                                            | Z     | iP    | 07 24 34 | 100  | Slight                                     |      | CHATRA                                                                                                        | Z        | iP    | 11 25 04 | 1390     | Slight                                    |                 |
|      |                                                                                   | EZ    | iS    | 24 47    |      |                                            |      | NEZ                                                                                                           | iS       | 28 26 |          |          |                                           |                 |
| 25   | SHILLONG                                                                          | Z     | eP    | 11 21 37 |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 13 01 52 |          | Slight, distant                           |                 |
| 25   | DEHRA DUN                                                                         | NE    | e     | 16 29 54 |      | Feeble                                     | 27   | SHILLONG                                                                                                      | Z        | eP    | 19 50 37 |          | Slight, distant                           |                 |
|      | SHILLONG                                                                          | Z     | eP    | 16 30 31 |      |                                            | 27   | SHILLONG                                                                                                      | Z        | eP    | 23 17 34 |          | Slight, distant                           |                 |
| 25   | Epc: 7°S, 155°E. Solomon Islands. - h about 60 km<br>H = 02 24 12 GMT (U.S.C.G.S) |       |       |          |      |                                            |      | 28                                                                                                            | SHILLONG | Z     | iP       | 15 00 31 |                                           | Slight, distant |
|      | PORT BLAIR                                                                        | E     | eP    | 02 34 29 | 7580 | Slight                                     |      | SHILONG                                                                                                       | Z        | eP    | 17 16 53 |          | Slight, distant                           |                 |
|      |                                                                                   |       | iS    | 43 30    |      |                                            | 28   | Epc: 35°N, 71°E. Hindukush. - h about 200 km<br>H = 18h 42m 45s GMT(U.S.C.G.S)                                |          |       |          |          |                                           |                 |
| 25   | SHILLONG                                                                          | Z     | iP    | 02 35 23 |      | Slight, compression                        |      | DEHRA DUN                                                                                                     | NE       | eP    | 18 44 40 | 850      | Slight, phases not clear                  |                 |
|      | POONA                                                                             | Z     | iP    | 02 36 43 | 9210 | Feeble, compression; ground movement West. |      | iS                                                                                                            |          | 46 08 |          |          |                                           |                 |
|      |                                                                                   | E     | S     | 47 01    |      |                                            |      | CHATRA                                                                                                        | Z        | iP    | 18 46 24 | 1700     | Slight                                    |                 |
|      | BOMBAY                                                                            | NE    | eP    | 02 36 47 | 9380 | Slight and deep                            |      | NE                                                                                                            | iS       | 49 15 |          |          |                                           |                 |
|      |                                                                                   |       | eS    | 47 13    |      |                                            |      | BOKARO                                                                                                        | E        | e     | 18 46 31 |          | Tremor                                    |                 |
|      | DEHRA DUN                                                                         | NE    | e     | 02 36 57 |      | Feeble                                     |      | POONA                                                                                                         | Z        | e     | 18 46 48 |          | Very feeble, near other phases not clear. |                 |
| 25   | SHILLONG                                                                          | Z     | eP    | 04 33 24 |      | Slight, distant                            |      | SHILLONG                                                                                                      | Z        | iP    | 18 47 14 |          | Slight, distant rarefaction               |                 |
| 26   | SHILLONG                                                                          | Z     | iP    | 05 05 32 |      | Slight, distant rarefaction                | 28   | Epc: 20°S, 178°W. Fiji Islands. - h about 600 km<br>H = 19h 47m 07s GMT (U.S.C.G.S)<br>Mag. = 5.5 (Pasadena). |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 05 32 25 |      | Slight, distant                            |      | SHILLONG                                                                                                      | Z        | iP    | 19 59 48 |          | Slight, distant rarefaction               |                 |
| 26   | PORT BLAIR                                                                        | E     | i     | 05 32 53 |      | Slight                                     |      | CHATRA                                                                                                        | Z        | e     | 20 00 08 |          | Slight, distant                           |                 |
|      |                                                                                   |       | i     | 41 58    |      |                                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 05 40 41 |      | Feeble, near                               |      |                                                                                                               |          |       |          |          |                                           |                 |
| 25   | BOMBAY                                                                            | NE    | e     | 05 41 45 |      | Slight                                     |      |                                                                                                               |          |       |          |          |                                           |                 |
|      |                                                                                   | E     | e     | 43 37    |      |                                            |      |                                                                                                               |          |       |          |          |                                           |                 |
|      |                                                                                   | N     | e     | 43 59    |      |                                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 06 58 48 |      | Slight, distant                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 07 10 14 |      | Slight, distant                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 07 59 42 |      | Slight, distant                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 09 41 32 |      | Slight, distant                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | SHILLONG                                                                          | Z     | eP    | 09 48 40 |      | Slight, distant                            |      |                                                                                                               |          |       |          |          |                                           |                 |
| 26   | Epc: 39°N, 71½°E. Tadzhik S.S.R.<br>H = 11h 04m 35s GMT (U.S.C.G.S)               |       |       |          |      |                                            |      |                                                                                                               |          |       |          |          |                                           |                 |

| DATE   | STATION                                                                     | COMPT | PHASE | G. h. | M. m. | T. s. | $\Delta$ km | REMARKS                                                | DATE | STATION  | COMPT    | PHASE | G. h. | M. m. | T. s. | $\Delta$ km | REMARKS                    |                        |
|--------|-----------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------------|--------------------------------------------------------|------|----------|----------|-------|-------|-------|-------|-------------|----------------------------|------------------------|
| 28     | PORT BLAIR                                                                  | E     | eP    | 20    | 01    | 39    | 5770        | Slight                                                 | 30   | SHILLONG | Z        | eP    | 18    | 51    | 21    |             | Slight, distant            |                        |
| Contd. |                                                                             |       | PP    |       | 03    | 31    |             |                                                        |      | CHATRA   | Z        | i     | 18    | 51    | 54    |             | Feeble, distant            |                        |
|        |                                                                             |       | PPP   |       | 04    | 35    |             |                                                        |      | 30       | SHILLONG | Z     | eP    | 21    | 37    | 28          |                            | Slight, distant        |
|        |                                                                             |       | iS    |       | 09    | 01    |             |                                                        |      | 31       | SHILLONG | Z     | e     | 13    | 40    | 27          |                            | Near, phases not clear |
|        |                                                                             |       | PPS   |       | 09    | 25    |             |                                                        |      | 31       | SHILLONG | Z     | iP    | 16    | 04    | 32          |                            | Slight, distant        |
|        |                                                                             |       | SS    |       | 12    | 33    |             |                                                        |      | 31       | SHILLONG | Z     | e     | 16    | 08    | 54          |                            | Rarefaction            |
| 28     | BOMBAY                                                                      | E     | e     | 20    | 05    | 42    |             | Slight and deep                                        | 31   | SHILLONG | Z        | iP    | 16    | 41    | 02    |             | 200 Slight, rarefaction    |                        |
|        |                                                                             |       | e     |       | 10    | 20    |             |                                                        |      | E        | Pg       |       | 41    | 06    |       |             | first movement North East. |                        |
|        |                                                                             |       | e     |       | 14    | 37    |             |                                                        |      | NE       | iS       |       | 41    | 26    |       |             |                            |                        |
|        | DEHRA DUN                                                                   | NE    | e     | 20    | 12    | 19    |             | Feeble, phases not clear                               |      | E        | SS       |       | 41    | 37    |       |             |                            |                        |
|        |                                                                             |       | e     |       | 20    | 28    |             |                                                        |      |          | SSS      |       | 41    | 39    |       |             |                            |                        |
| 28     | SHILLONG                                                                    | Z     | eP    | 20    | 30    | 33    |             | Slight, distant                                        | 31   | SHILLONG | Z        | iP    | 16    | 41    | 02    |             | 200 Slight, rarefaction    |                        |
| 28     | CHATRA                                                                      | Z     | iP    | 20    | 46    | 51    | 1030        | Slight                                                 |      | E        | PP       |       | 41    | 10    |       |             | first movement North East. |                        |
|        |                                                                             | NF    | iS    |       | 48    | 37    |             |                                                        |      | NE       | iS       |       | 41    | 26    |       |             |                            |                        |
|        | SHILLONG                                                                    | Z     | eP    | 20    | 47    | 05    |             | Slight, distant                                        |      | E        | SS       |       | 41    | 37    |       |             |                            |                        |
| 28     | SHILLONG                                                                    | Z     | eP    | 21    | 14    | 00    |             | Slight, distant                                        |      |          | SSS      |       | 41    | 39    |       |             |                            |                        |
| 29     | SHILLONG                                                                    | Z     | iP    | 00    | 24    | 10    |             | Slight, distant                                        |      | TOCKLAI  | E        | eP    | 16    | 41    | 18    |             | Slight, distant            |                        |
| 29     | CHATRA                                                                      | Z     | iP    | 00    | 47    | 50    | 160         | Slight,                                                |      | CHATRA   | Z        | iP    | 16    | 41    | 28    |             | 510 Slight                 |                        |
|        |                                                                             | NEZ   | iS    |       | 48    | 10    |             |                                                        |      |          | NEZ      | iS    |       | 42    | 23    |             |                            |                        |
|        | SHILLONG                                                                    | Z     | eP    | 00    | 48    | 24    |             | Very slight, near                                      |      | BOKARO   | E        | i     | 16    | 43    | 25    |             | Very slight, local         |                        |
| 29     | CHATRA                                                                      | Z     | iPg   | 18    | 17    | 12    | 130         | Feeble                                                 |      |          |          | i     | 16    | 43    | 34    |             |                            |                        |
|        |                                                                             |       | iSg   |       | 17    | 29    |             |                                                        | 31   | SHILLONG | Z        | iP    | 16    | 53    | 16    |             | Slight, distant            |                        |
| 29     | CHATRA                                                                      | Z     | iPg   | 18    | 23    | 11    | 100         | Feeble                                                 |      |          |          | iP    | 16    | 57    | 18    |             | Slight, distant            |                        |
|        |                                                                             |       | iSg   |       | 23    | 25    |             |                                                        |      | 31       | SHILLONG | Z     | iP    | 17    | 18    | 47          |                            | Rarefaction            |
| 29     | POONA                                                                       | Z     | iP    | 19    | 19    | 01    |             | Very mild tremor, phases not clear due to microseisms. |      |          |          | iP    | 17    | 18    | 47    |             | Slight, distant            |                        |
|        |                                                                             |       |       |       |       |       |             |                                                        |      | 31       | SHILLONG | Z     | iP    | 18    | 05    | 03          |                            | Compression            |
| 30     | SHILLONG                                                                    | Z     | eP    | 02    | 52    | 30    |             | Slight, near                                           |      |          |          | iP    | 18    | 05    | 03    |             | Slight, distant            |                        |
| 30     | Epc: 25°N, 100°E. Yunnan Province, China.<br>H: 12h 41m 03s GMT (U.S.C.G.S) |       |       |       |       |       |             |                                                        |      |          |          |       |       |       |       |             |                            |                        |
|        | SHILLONG                                                                    | Z     | iP    | 12    | 43    | 04    |             | Slight, distant                                        |      |          |          | i     | 18    | 10    | 35    |             | Slight, near               |                        |
|        |                                                                             |       |       |       |       |       |             | Rarefaction                                            |      |          |          | e     | 19    | 49    | 44    |             | Slight, near               |                        |
|        | TOCKLAI                                                                     | F     | eP    | 12    | 43    | 36    |             | Slight, distant                                        |      |          |          | e     | 19    | 53    | 30    |             | Slight, near               |                        |
|        |                                                                             |       |       |       |       |       |             |                                                        |      |          |          | e     | 19    | 53    | 53    |             |                            |                        |
|        | BOKARO                                                                      | NE    | eP    | 12    | 44    | 18    |             | Slight, other phases unidentifiable.                   |      |          |          | iPg   | 21    | 44    | 02    |             | 130 Slight, rarefaction    |                        |
|        |                                                                             |       |       |       |       |       |             |                                                        |      |          | NE       | iSg   |       | 44    | 17    |             |                            |                        |
| 30     | PORT BLAIR                                                                  | E     | e     | 12    | 44    | 41    |             | Slight                                                 |      |          |          | iP    | 21    | 59    | 51    |             | 430 Feeble                 |                        |
|        |                                                                             |       | i     |       | 47    | 59    |             |                                                        |      |          |          | iS    | 22    | 00    | 38    |             |                            |                        |
|        | CHATRA                                                                      | Z     | iP    | 12    | 44    | 57    | 1310        | Slight                                                 |      |          |          | e     | 22    | 13    | 25    |             | Slight                     |                        |
|        |                                                                             | NE    | iS    |       | 47    | 11    |             |                                                        |      |          |          | e     | 23    | 53    | 08    |             | Slight, near               |                        |
|        | BOMBAY                                                                      | E     | eP    | 12    | 47    | 10    |             | Slight                                                 |      |          |          | e     | 23    | 53    | 08    |             |                            |                        |
|        |                                                                             |       | eS    |       | 51    | 58    |             |                                                        |      |          |          | e     | 53    | 31    |       |             |                            |                        |
|        |                                                                             | NE    | e     |       | 56    | 31    |             |                                                        |      |          |          |       |       |       |       |             |                            |                        |

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*Earthquake Reports*  
 (Non Instrumental Reports)

Following is the list of earthquakes that were reported by Voluntary  
 Observers from different stations during the Month of March, 1959.

| Place                | Date<br>in<br>GMT | Time<br>in<br>GMT<br>h. m. | No. of<br>shocks | Duration<br>of shock<br>in secs. | Intensity<br>in R.F.<br>scale | Remarks                                                                                     |
|----------------------|-------------------|----------------------------|------------------|----------------------------------|-------------------------------|---------------------------------------------------------------------------------------------|
| Srinagar             | 02                | 16 14                      | Two              | 30                               | II                            | Separated by 5 secs interval.                                                               |
| Upper<br>Shillong    | 13                | 12 43                      | One              | 4                                | II                            |                                                                                             |
| Jaipur               | 17                | 15 17                      | One              | T                                | III                           | From NNW to SSE                                                                             |
| Upper<br>Shillong    | 19                | 00 09                      | One              | -                                | IV                            | Slight jerk                                                                                 |
| Upper<br>Shillong    | 20                | 04 14                      | One              | 1                                | III                           |                                                                                             |
| Gauhati              | 20                | 04 15                      | One              | 10                               | IV                            |                                                                                             |
| Upper<br>Shillong    | 23                | 23 20                      | One              | 3                                | IV                            |                                                                                             |
| Mukteshwar           | 24                | 05 28                      | One              | 3                                | IV                            | West to East                                                                                |
| Upper<br>Shillong    | 27                | 04 01                      | Two              | 15                               | V                             | From SSW. Ripples appeared on the still surface of water. Separated by interval of 10 secs. |
| Gulmarg<br>(Kashmir) | 28                | 14 04                      | Two              | 3                                | IV                            |                                                                                             |
| Upper<br>Shillong    | 30                | 02 46                      | One              | 4                                | II                            |                                                                                             |
| Upper<br>Shillong    | 30                | 02 48                      | One              | 3                                | III                           |                                                                                             |
| Upper<br>Shillong    | 31                | 16 40                      | One              | 3                                | IV                            |                                                                                             |
| Gauhati              | 31                | 16 40                      | Two              | 5                                | V                             | Separated by interval of 1 sec.                                                             |
| Upper<br>Shillong    | 31                | 16 44                      | Two              | 5                                | V                             | Separated by 2 secs.                                                                        |
| Upper<br>Shillong    | 31                | 22 01                      | One              | 1                                | IV                            |                                                                                             |





II

Table with columns for DATE, HOUR, K, MEAN Amplitude (in mm), and MEAN Period (in secs). It contains seismic data for Station Colaba (Bombay) from March 1959, organized in three main sections.



## IV

| DATE                                                                             | HOUR | K | MEAN   | MEAN   | DATE   | HOUR | K | MEAN   | MEAN   | DATE | HOUR | K   | MEAN   | MEAN   | DATE | HOUR | K   | MEAN   | MEAN   |  |  |
|----------------------------------------------------------------------------------|------|---|--------|--------|--------|------|---|--------|--------|------|------|-----|--------|--------|------|------|-----|--------|--------|--|--|
|                                                                                  | GMT  |   | Ampli- | Period |        | GMT  |   | Ampli- | Period |      | GMT  |     | Ampli- | Period |      | GMT  |     | Ampli- | Period |  |  |
|                                                                                  |      |   | tude   | in     |        |      |   | tude   | in     |      |      |     | tude   | in     |      |      |     | tude   | in     |  |  |
|                                                                                  |      |   | in mm  | secs   |        |      |   | in mm  | secs   |      |      |     | in mm  | secs   |      |      |     | in mm  | secs   |  |  |
| Station: Shillong Component: E. W. March 1959 Station: Shillong Component: E. W. |      |   |        |        |        |      |   |        |        |      |      |     |        |        |      |      |     |        |        |  |  |
| 09                                                                               | 12   | 3 | 0.4    | 4.6    | 15     | 06   | - | -      | -      | 21   | 00   | 3   | 0.4    | 5.1    | 26   | 12   | 3   | 0.3    | 4.2    |  |  |
| Contd                                                                            | 18   | 3 | 0.3    | 4.7    | Contd. | 12   | 1 | 0.4    | 5.0    | 06   | 3    | 0.3 | 4.7    | Contd. | 18   | 3    | 0.4 | 5.0    |        |  |  |
|                                                                                  |      |   |        |        |        | 18   | 1 | 0.4    | 4.9    |      | 12   | 3   | 0.4    | 5.5    |      |      |     |        |        |  |  |
| 10                                                                               | 00   | 3 | 0.3    | 4.5    |        |      |   |        |        |      | 18   | 3   | 0.4    | 4.6    | 27   | 00   | 3   | 0.4    | 4.9    |  |  |
|                                                                                  | 06   | 3 | 0.3    | 4.5    | 16     | 00   | 1 | 0.4    | 5.2    |      | 06   | 3   | 0.3    | 4.8    |      | 06   | 3   | 0.4    | 5.2    |  |  |
|                                                                                  | 12   | 1 | 0.4    | 5.0    |        | 06   | 1 | 0.4    | 4.8    |      | 12   | 3   | 0.5    | 6.2    |      | 12   | 3   | 0.5    | 5.3    |  |  |
|                                                                                  | 18   | 1 | 0.4    | 5.2    |        | 12   | 1 | 0.4    | 5.0    |      | 18   | 3   | 0.4    | 4.9    |      | 18   | 3   | 0.4    | 5.0    |  |  |
| 11                                                                               | 00   | 1 | 0.4    | 5.0    |        | 18   | 1 | 0.4    | 5.0    | 22   | 00   | 3   | 0.4    | 5.5    | 28   | 00   | 3   | 0.4    | 5.1    |  |  |
|                                                                                  | 06   | 1 | 0.5    | 5.6    | 17     | 00   | 1 | 0.4    | 5.2    |      | 06   | 1   | 0.3    | 4.9    |      | 06   | 1   | 0.5    | 5.3    |  |  |
|                                                                                  | 12   | 1 | 0.4    | 5.3    |        | 06   | 1 | 0.4    | 5.0    |      | 12   | 3   | 0.7    | 6.8    |      | 12   | 1   | 0.4    | 5.0    |  |  |
|                                                                                  | 18   | 1 | 0.5    | 5.5    |        | 12   | 1 | 0.4    | 5.0    |      | 18   | 3   | 0.4    | 5.0    |      | 18   | 1   | 0.4    | 4.9    |  |  |
| 12                                                                               | 00   | 1 | 0.5    | 5.5    |        | 18   | 1 | 0.4    | 5.1    | 23   | 00   | 3   | 0.4    | 5.1    | 29   | 00   | 1   | 0.4    | 4.8    |  |  |
|                                                                                  | 06   | 3 | 0.5    | 5.8    | 18     | 00   | 1 | 0.4    | 5.3    |      | 06   | 1   | 0.4    | 5.2    |      | 06   | 1   | 0.4    | 5.2    |  |  |
|                                                                                  | 12   | 3 | 0.4    | 5.0    |        | 06   | 1 | 0.4    | 5.0    |      | 12   | 1   | 0.4    | 5.0    |      | 12   | 1   | 0.5    | 5.4    |  |  |
|                                                                                  | 18   | 3 | 0.4    | 4.9    |        | 12   | 1 | 0.4    | 5.2    |      | 18   | 1   | 0.4    | 5.2    |      | 18   | 1   | 0.4    | 5.0    |  |  |
| 13                                                                               | 00   | 3 | 0.4    | 5.0    |        | 18   | 1 | 0.4    | 4.8    | 24   | 00   | 1   | 0.4    | 5.0    | 30   | 00   | 1   | 0.4    | 4.9    |  |  |
|                                                                                  | 06   | 3 | 0.4    | 5.2    | 19     | 00   | 1 | 0.4    | 5.0    |      | 06   | 1   | 0.4    | 5.0    |      | 06   | 1   | 0.3    | 4.5    |  |  |
|                                                                                  | 12   | 3 | 0.4    | 5.0    |        | 06   | 3 | 0.4    | 5.1    |      | 12   | 1   | 0.4    | 5.0    |      | 12   | 1   | 0.4    | 4.8    |  |  |
|                                                                                  | 18   | 1 | 0.4    | 5.3    |        | 12   | 3 | 0.4    | 4.8    |      | 18   | -   | -      | -      |      | 18   | 1   | 0.4    | 5.0    |  |  |
| 14                                                                               | 00   | 1 | 0.4    | 5.0    |        | 18   | 3 | 0.3    | 4.8    | 25   | 00   | 1   | 0.4    | 5.1    | 31   | 00   | 1   | 0.3    | 4.6    |  |  |
|                                                                                  | 05   | - | -      | -      | 20     | 00   | 3 | 0.3    | 4.5    |      | 06   | 1   | 0.4    | 4.9    |      | 06   | 1   | 0.3    | 4.7    |  |  |
|                                                                                  | 12   | - | -      | -      |        | 06   | 3 | 0.3    | 4.5    |      | 12   | 1   | 0.4    | 5.1    |      | 12   | 1   | 0.4    | 5.0    |  |  |
|                                                                                  | 18   | - | -      | -      |        | 12   | 3 | 0.4    | 5.0    |      | 18   | 1   | 0.4    | 4.8    |      | 18   | 1   | 0.4    | 4.9    |  |  |
| 15                                                                               | 00   | - | -      | -      |        | 18   | 3 | 0.4    | 5.2    | 25   | 00   | 1   | 0.3    | 4.3    |      |      |     |        |        |  |  |
|                                                                                  |      |   |        |        |        |      |   |        |        | 06   | -    | -   | -      |        |      |      |     |        |        |  |  |





GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

*April, 1959*



Published under the direction of  
*Shri S. Basu, M. Sc., F.N.I.,*  
Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants

| STATION     | LATITUDE  | LONGITUDE | HEIGHT<br>a. s. l.<br>(Metres) | LITHOGRAPHIC<br>FOUNDATION                          | INSTRUMENT    | COMPT. | PERIOD<br>IN<br>SECS.     | STATIC<br>MAGNI-<br>FICATION | DAMPING<br>RATIO | PAPER<br>SPEED<br>mm/min. |
|-------------|-----------|-----------|--------------------------------|-----------------------------------------------------|---------------|--------|---------------------------|------------------------------|------------------|---------------------------|
| BOMBAY      | 18° 54' N | 72° 49' E | 6                              | Deccan Trap                                         | Milne-Shaw    | N      | 12                        | 350                          | 13:1             | 15                        |
|             |           |           |                                |                                                     | Milne-Shaw    | E      | 12                        | 350                          | 23:1             | 8                         |
|             |           |           |                                |                                                     | Sprengnether  | E      | To = Tg = 7 secs          |                              | 30               |                           |
| BOKARO      | 23° 50' N | 85° 48' E |                                | Rock                                                | Milne-Shaw    | N      | 12                        | 250                          | 20:1             | 16                        |
|             |           |           |                                |                                                     | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | 16                        |
|             |           |           |                                |                                                     | Wood-Anderson | E      | 0.8                       | 950                          | h = 0.8          | 60                        |
|             |           |           |                                |                                                     | Wood-Anderson | N      | 0.8                       | 1000                         | h = 0.8          | 60                        |
| CALCUTTA    | 22° 32' N | 88° 22' E |                                | (1) 7(Milne-Shaw)<br>(2) 6(Omori-Ewing)<br>Alluvium | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | 8                         |
|             |           |           |                                |                                                     | Wood-Anderson | N      | 2                         | 870                          | Critical         | 30                        |
|             |           |           |                                |                                                     | Omori-Ewing   | N      | 16                        | 32                           | -                | 25.4                      |
|             |           |           |                                |                                                     | Omori-Ewing   | E      | 21                        | 30                           | -                | 25.4                      |
|             |           |           |                                |                                                     |               |        |                           |                              |                  |                           |
| CHATRA      | 26° 50' N | 87° 10' E | 151                            | Sand Stone                                          | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | 15                        |
|             |           |           |                                |                                                     | Wood-Anderson | N      | 1                         | 1000                         | 30:1             | 60                        |
|             |           |           |                                |                                                     | Benioff       | Z      | To = 0.72 Tg = 0.45 secs. |                              | 60               |                           |
|             |           |           |                                | Wenner-Accelerograph                                | ZNE           | -      | -                         | -                            | -                |                           |
| COLOMBO     | 06° 54' N | 79° 52' E | 7                              | Beach Sand                                          | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | -                         |
| DEHRA DUN   | 30° 19' N | 78° 02' E | 682                            | Gravel                                              | Wood-Anderson | N      | 0.8                       | 950                          | Critical         | 60                        |
|             |           |           |                                |                                                     | Wood-Anderson | E      | 0.8                       | 850                          | Critical         | 60                        |
|             |           |           |                                |                                                     | Milne-Shaw    | N      | 12                        | 250                          | 20:1             | 8                         |
|             |           |           |                                |                                                     | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | 8                         |
| HYDERABAD   | 17° 26' N | 78° 27' E | 536                            | Granite                                             | Milne-Shaw    | E      | 12                        | 250                          | 20:1             | 8                         |
|             |           |           |                                |                                                     | Milne-Shaw    | N      | 12                        | 250                          | 20:1             | 8                         |
| KODAIKANAL  | 10° 14' N | 77° 28' E | 2346                           | Rock                                                | Milne-Shaw    | E      | 10                        | 250                          | 20:1             | 8                         |
| MADRAS      | 13° 00' N | 80° 11' E | 15                             | -                                                   | Sprengnether  | E      | To = Tg = 72 secs         |                              | Critical         | 30                        |
| NEW DELHI   | 28° 35' N | 77° 12' E | 207                            | Massive Quartzite                                   |               |        |                           |                              |                  |                           |
| POONA       | 18° 32' N | 73° 51' E | 560                            | Deccan Trap                                         | Sprengnether  | Z      | To = Tg = 1.6             |                              | Critical         | 30                        |
|             |           |           |                                |                                                     | Wood-Anderson | E      | 4                         | 1000                         | 20:1             | 16                        |
|             |           |           |                                |                                                     | Milne-Shaw    | N      | 12                        | 280                          | 20:1             | 8                         |
| PORT BLAIR  | 11° 49' N | 92° 43' E |                                |                                                     | Wood-Anderson | N      | 2                         | 1000                         | 20:1             | 30                        |
|             |           |           |                                |                                                     | Wood-Anderson | E      | 0.8                       | 1000                         | 66:1             | 30                        |
|             |           |           |                                |                                                     | Milne-Shaw    | N      | 12                        | 350                          | 20:1             | 8                         |
| SHILLONG    | 25° 34' N | 91° 53' E | 1600                           | (Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite) | Wood-Anderson | N      | 0.8                       | 1000                         | h = 0 h = 0.8    | 30                        |
|             |           |           |                                |                                                     | Wood-Anderson | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|             |           |           |                                |                                                     | Milne-Shaw    | N      | 12                        | 250                          | 20:1             | 8                         |
|             |           |           |                                |                                                     | Benioff       | Z      | To = 1.0 Tg = 0.18        |                              | 60               |                           |
|             |           |           |                                |                                                     | Sprengnether  | E      | To = Tg = 5.5             |                              | Critical         | 30                        |
|             |           |           |                                | Wenner-Accelerograph                                | ZNE           | -      | -                         | -                            | -                |                           |
| TOCKLAI     | 28° 45' N | 94° 46' E | -                              | Alluvium                                            | Wood-Anderson | E      | 0.8                       | 970                          | h = 0.8          | 60                        |
| VIZIANAGRAM | 18° 07' N | 83° 27' E |                                |                                                     | Wood-Anderson | E      | 0.8                       | 1000                         | h = 0.8          | 30                        |
|             |           |           |                                |                                                     | Wood-Anderson | N      | 2                         | 1000                         | 20:1             | 30                        |



| DATE                                                                                                                      | STATION                                                                                     | COMPT   | PHASE    | G. M. T.<br>h. m. s. | $\Delta$<br>km   | REMARKS                          | DATE                                                                                                                      | STATION                                                                                                     | COMPT   | PHASE                | G. M. T.<br>h. m. s.                | $\Delta$<br>km            | REMARKS                           |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|----------|----------------------|------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------------------------------|---------------------------|-----------------------------------|
| Epc: 27 $^{\circ}$ N, 21 $^{\circ}$ W. Canary Islands.<br>- H: 00h 34m 18s (U. S. C. G. S.)<br>Mag: 6 $\frac{1}{2}$ (Pas) |                                                                                             |         |          |                      |                  |                                  | 01                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 10 16 14                            |                           | Slight, phases not clear          |
| 01                                                                                                                        | DEHRA DUN                                                                                   | NE      | eP<br>eS | 00 46 54<br>57 13    | 922 <sup>0</sup> |                                  | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 06 39 35<br>39 52                   |                           | Slight, near<br>Phases not clear  |
|                                                                                                                           | POONA                                                                                       | Z<br>NE | iP<br>eS | 00 47 00<br>57 33    | 9530             |                                  | 02                                                                                                                        | CHATRA                                                                                                      | Z       | iP<br>iS             | 06 45 55<br>46 45                   | 460                       | Feeble                            |
|                                                                                                                           | BOMBAY                                                                                      | NE      | e        | 00 47 02<br>57 22    |                  |                                  | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 12 08 58                            |                           |                                   |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 00 48 00             |                  | Distant,<br>rarefaction          | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 12 09 42                            |                           | Slight, distant<br>Compression    |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 10 16 14<br>16 57    |                  | Slight, phases not clear         | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | eP                   | 12 28 43                            |                           | Slight, distant                   |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 11 44 47<br>44 59    |                  | Slight, phases not clear         | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | ePg<br>eSg<br>eP     | 16 04 57<br>05 07<br>17 31 07       | 90                        | Slight                            |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 12 29 23             |                  |                                  | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | eP                   | 17 31 07                            |                           | Slight, distant                   |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | iP       | 12 44 15             |                  | Slight, distant<br>Rarefaction   | Epc: 20 $^{\circ}$ N, 121 $^{\circ}$ E. Batan Islands.<br>- H: 19h 21m 34s (U. S. C. G. S.)                               |                                                                                                             |         |                      |                                     |                           |                                   |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 14 41 59<br>42 28    |                  | Slight, near<br>Phases not clear |                                                                                                                           | SHILLONG                                                                                                    | Z       | iP                   | 19 27 18                            | 2970                      | Slight                            |
| Epc: 48 $^{\circ}$ S, 98 $^{\circ}$ E. Indian Ocean.<br>- H: 14h 11m 30s (U. S. C. G. S.)                                 |                                                                                             |         |          |                      |                  |                                  |                                                                                                                           | CHATRA                                                                                                      | NE      | eP                   | 19 27 18                            |                           | Compression                       |
|                                                                                                                           | BOMBAY                                                                                      | E       | eP<br>e  | 14 23 06<br>34 52    |                  | Slight, distant                  |                                                                                                                           | CHATRA                                                                                                      | N       | eS<br>Mn             | 19 31 53<br>37 --                   |                           | Peri: 13.5                        |
|                                                                                                                           | DEHRA DUN                                                                                   | NE      | e        | 14 33 55             |                  | Feeble, phases not clear         |                                                                                                                           | TOCKLAI                                                                                                     | E       | e                    | 19 27 27                            |                           | Tremor                            |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 14 41 59<br>42 28    |                  | Slight, near<br>Phases not clear |                                                                                                                           | BOKARO                                                                                                      | E       | iP<br>i<br>S         | 19 28 08<br>29 26<br>33 24          | 3620                      | Moderate, first<br>movement East. |
| Epc: 18 $^{\circ}$ S, 169 $^{\circ}$ E. New Hebrides Islands.<br>- H: 14h 48m 28s. - h about 150 km                       |                                                                                             |         |          |                      |                  |                                  | 02                                                                                                                        | MADRAS                                                                                                      | E       | eP<br>eS             | 19 29 08<br>35 14                   | 4440                      | Slight                            |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 15 01 01             |                  | Slight, distant<br>Rarefaction   |                                                                                                                           | DEHRA DUN                                                                                                   | NE      | eP<br>i              | 19 29 18<br>35 17                   |                           | Slight, other<br>phases not clear |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | iP       | 20 28 31             |                  | Slight, distant<br>Compression   |                                                                                                                           | POONA                                                                                                       | Z<br>NE | iP<br>i              | 19 29 46<br>39 32                   |                           | Slight                            |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 20 42 25<br>42 29    |                  | Slight, near<br>phases not clear |                                                                                                                           | BOMBAY                                                                                                      | NE<br>E | eP<br>PPP<br>eS<br>e | 19 29 50<br>32 32<br>36 32<br>37 56 | 5050                      | Slight                            |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 22 43 25             |                  | Slight, near                     | 02                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 23 52 08<br>52 26                   |                           | Slight, near                      |
| 01                                                                                                                        | SHILLONG                                                                                    | Z       | i        | 22 44 12             |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 00 15 58                            |                           | Slight, distant<br>Rarefaction    |
| Epc: 17 $^{\circ}$ S, 168 $^{\circ}$ E. New Hebrides Island.<br>- H: 22h 47m 54s. - h about 100 km                        |                                                                                             |         |          |                      |                  |                                  | 03                                                                                                                        | Epc: 51 $^{\circ}$ N, 179 $^{\circ}$ E. Rat Islands, Aleutian Islands.<br>- H: 01h 27m 06s (U. S. C. G. S.) |         |                      |                                     |                           |                                   |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 23 00 28             |                  | Slight, distant<br>Rarefaction   |                                                                                                                           | SHILLONG                                                                                                    | Z       | iP                   | 01 38 13                            |                           | Slight, distant<br>compression    |
| 01                                                                                                                        | Epc: 6 $^{\circ}$ S, 154 $^{\circ}$ E. Solomon Islands<br>- H: 23h 33m 36s.                 |         |          |                      |                  |                                  | POONA                                                                                                                     | Z                                                                                                           | iP      | 01 39 44             |                                     | Feeble, phases not clear. |                                   |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 23 44 43             |                  | Slight, distant<br>Compression   | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | eP                   | 03 49 55                            |                           | Slight, distant                   |
|                                                                                                                           | POONA                                                                                       | Z<br>E  | iP<br>S  | 23 46 05<br>56 18    | 9090             | Feeble                           | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 05 17 31                            |                           |                                   |
| 02                                                                                                                        | SHILLONG                                                                                    | Z       | e        | 00 02 49<br>03 23    |                  | Slight, distant                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 05 30 13                            |                           | Slight, distant<br>Compression    |
| 02                                                                                                                        | SHILLONG                                                                                    | Z       | iP       | 00 09 03             |                  | Slight, distant<br>Compression   | Epc: 24 $^{\circ}$ N, 122 $^{\circ}$ E. Near East Coast of Formosa.<br>- H: 05h 48m 45s (U. S. C. G. S.) - h about 200 km |                                                                                                             |         |                      |                                     |                           |                                   |
| 02                                                                                                                        | SHILLONG                                                                                    | Z       | iP       | 00 12 59             |                  | Slight, distant<br>Compression   |                                                                                                                           | SHILLONG                                                                                                    | Z       | iP                   | 05 54 16                            |                           | Slight, distant<br>Compression    |
| 02                                                                                                                        | Epc: 26 $^{\circ}$ N, 125 $^{\circ}$ E. Ryukyu Islands<br>- H: 04h 02m 31s (U. S. C. G. S.) |         |          |                      |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 06 43 01                            |                           | Slight, distant                   |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 04 08 41             |                  | Slight, distant<br>Compression   | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 06 45 39                            |                           |                                   |
| 02                                                                                                                        | SHILLONG                                                                                    | Z       | iP       | 04 11 41             |                  | Slight, distant<br>Compression   | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 07 37 55                            |                           |                                   |
| 02                                                                                                                        | Epc: North Western Turkey. (U. S. C. G. S.)                                                 |         |          |                      |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 07 53 43                            |                           | Near, starting<br>not clear       |
|                                                                                                                           | SHILLONG                                                                                    | Z       | iP       | 04 43 46             |                  | Slight, distant<br>Rarefaction   | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 10 31 49                            |                           | Slight, distant<br>Rarefaction    |
|                                                                                                                           |                                                                                             |         |          |                      |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 14 08 57                            |                           |                                   |
|                                                                                                                           |                                                                                             |         |          |                      |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | iP                   | 14 35 08                            |                           | Slight, distant<br>Compression    |
|                                                                                                                           |                                                                                             |         |          |                      |                  |                                  | 03                                                                                                                        | SHILLONG                                                                                                    | Z       | e                    | 15 20 59                            |                           | Slight, near.                     |

| DATE | STATION                                                                       | COMPT    | PHASE                             | G. M. T.<br>h. m. s.                                  | $\Delta$<br>km | REMARKS                          | DATE       | STATION                                                                                                                                   | COMPT    | PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                         |  |
|------|-------------------------------------------------------------------------------|----------|-----------------------------------|-------------------------------------------------------|----------------|----------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------|-------|----------------------|----------------|---------------------------------|--|
| 03   | Epc: 8°N, 94°E. South East of Andaman Islands<br>- H: 16h 04m 20s. (Shillong) |          |                                   |                                                       |                |                                  | April 1959 | 04                                                                                                                                        | SHILLONG | Z     | e                    | 17 53 38       |                                 |  |
|      | PORT BLAIR                                                                    | E        | iP                                | 16 05 21                                              | 410            | Slight, deep                     | 04         | SHILLONG                                                                                                                                  | Z        | e     | 17 59 59             |                | Slight, near                    |  |
|      | MADRAS                                                                        | E        | eP<br>PP<br>PPP<br>Lq<br>eS<br>Lr | 16 07 47<br>07 59<br>08 06<br>10 16<br>10 23<br>10 58 | 1540           | Slight                           | 04         | SHILLONG                                                                                                                                  | Z        | iP    | 18 09 29             |                | Slight, distant<br>Compression  |  |
| 03   | SHILLONG                                                                      | Z        | e                                 | 15 08 18                                              |                |                                  | 04         | SHILLONG                                                                                                                                  | Z        | e     | 18 35 49             |                |                                 |  |
|      |                                                                               |          | i                                 | 08 21                                                 |                |                                  | 04         | SHILLONG                                                                                                                                  | Z        | iP    | 18 57 16             |                | Slight, distant<br>Rarefaction  |  |
|      | BOKARO                                                                        | E        | eP<br>iS<br>i                     | 16 08 25<br>11 31<br>11 44                            | 1850           | Slight,<br>probably deep.        | 04         | SHILLONG                                                                                                                                  | Z        | eP    | 19 04 13             |                | Slight, distant                 |  |
| 03   | SHILLONG                                                                      | Z        | iP<br>iS                          | 16 08 28<br>11 36                                     | 1880           | Slight,<br>compression           | 04         | SHILLONG                                                                                                                                  | Z        | eP    | 19 05 24             |                | Slight, near                    |  |
|      | CHATRA                                                                        | Z<br>NE  | iP<br>iS                          | 16 08 49<br>12 15                                     | 2080           | Slight                           | 04         | Epc: 54°N, 151°E. Near East Coast of Kamchatka<br>- H: 19h 04m 59s (U.S.C.G.S)                                                            |          |       |                      |                |                                 |  |
|      | TOCKLAI                                                                       | E        | e                                 | 16 08 50                                              |                | Tremor                           |            | SHILLONG                                                                                                                                  | Z        | iP    | 19 14 51             |                | Slight, distant<br>Rarefaction  |  |
| 03   | POONA                                                                         | Z        | eP                                | 15 09 18                                              |                | Very feeble,<br>phases not clear |            | POONA                                                                                                                                     | Z        | iP    | 19 16 34             |                | Tremor                          |  |
| 03   | BOMBAY                                                                        | E        | eP<br>eS                          | 16 09 32<br>13 48                                     | 2680           | Slight                           | 04         | SHILLONG                                                                                                                                  | Z        | iP    | 19 25 49             |                | Slight, distant<br>Rarefaction  |  |
|      | DEHRA DUN                                                                     | NE       | eP<br>eS                          | 16 10 05<br>14 48                                     | 3100           | Feeble, phases<br>not clear      | 04         | SHILLONG                                                                                                                                  | Z        | iP    | 19 47 27             |                | Slight, distant<br>Compression  |  |
|      | COLOMBO                                                                       | E        | L<br>M                            | 15 12 00<br>15 05                                     |                | Amp. 0.1 mm                      | 04         | SHILLONG                                                                                                                                  | Z        | e     | 20 26 56             |                | Tremor                          |  |
| 03   | SHILLONG                                                                      | Z        | e                                 | 17 02 26                                              |                |                                  | 04         | DEHRA DUN                                                                                                                                 | NE       | e     | 22 25 33             |                | Tremor                          |  |
| 03   | BOMBAY                                                                        | E<br>NE  | eP<br>eS                          | 17 27 59<br>32 03                                     | 2510           | Slight                           | 04         | SHILLONG                                                                                                                                  | Z        | e     | 23 42 07             |                | Slight, distant                 |  |
|      | SHILLONG                                                                      | Z        | eP                                | 17 30 37                                              |                | Slight, distant                  | 05         | SHILLONG                                                                                                                                  | Z        | iPg   | 00 07 46             |                | Feeble, local                   |  |
| 03   | SHILLONG                                                                      | Z        | iP                                | 17 53 34                                              |                | Slight, distant<br>Rarefaction   | 05         | SHILLONG                                                                                                                                  | Z        | e     | 03 00 31             |                |                                 |  |
| 03   | SHILLONG                                                                      | Z        | e                                 | 18 53 23                                              |                |                                  |            |                                                                                                                                           |          | i     | 00 51                |                |                                 |  |
| 03   | SHILLONG                                                                      | Z        | eP                                | 19 36 54                                              |                | Slight, near                     | 05         | SHILLONG                                                                                                                                  | Z        | iP    | 03 02 13             |                | Slight, distant<br>Compression  |  |
| 03   | SHILLONG                                                                      | Z        | e                                 | 20 53 48                                              |                | Slight, distant                  | 05         | SHILLONG                                                                                                                                  | Z        | eP    | 04 22 10             |                | Slight, distant                 |  |
|      |                                                                               |          | i                                 | 54 19                                                 |                |                                  | 05         | SHILLONG                                                                                                                                  | Z        | e     | 05 00 58             |                |                                 |  |
| 03   | SHILLONG                                                                      | Z        | e                                 | 22 11 04                                              |                |                                  | 05         | SHILLONG                                                                                                                                  | Z        | iP    | 08 05 44             |                | Slight, distant<br>Rarefaction  |  |
| 03   | SHILLONG                                                                      | Z        | iP                                | 23 55 03                                              |                | Slight, near                     | 05         | SHILLONG                                                                                                                                  | Z        | e     | 10 38 31             |                | Slight, distant                 |  |
| 04   | SHILLONG                                                                      | Z        | e                                 | 05 00 23                                              |                | Slight, near                     | 05         | Epc: 44°N, 7°E. South Eastern France<br>- H: 10h 47m 52s (U.S.C.G.S)<br>Two injured, and moderate property damage. Also<br>felt in Italy. |          |       |                      |                |                                 |  |
| 04   | SHILLONG                                                                      | Z        | e                                 | 06 17 53                                              |                | Slight, near                     |            | SHILLONG                                                                                                                                  | Z        | iP    | 10 59 00             |                | Slight, distant<br>compression  |  |
|      |                                                                               |          | i                                 | 18 01                                                 |                |                                  | 05         | SHILLONG                                                                                                                                  | Z        | iP    | 11 43 34             |                | Slight, distant<br>Rarefaction  |  |
| 04   | SHILLONG                                                                      | Z        | e                                 | 06 35 08                                              |                |                                  | 05         | SHILLONG                                                                                                                                  | Z        | e     | 12 16 49             |                |                                 |  |
| 04   | SHILLONG                                                                      | Z        | iP<br>e                           | 06 54 11<br>54 59                                     |                | Slight, near<br>Rarefaction      | 05         | SHILLONG                                                                                                                                  | Z        | e     | 15 17 37             |                | Slight, near                    |  |
| 04   | SHILLONG                                                                      | Z        | iP<br>Pa<br>iS                    | 07 13 21<br>13 22<br>13 49                            | 240            | Slight,<br>rarefaction           | 05         | SHILLONG                                                                                                                                  | Z        | iP    | 15 19 12             |                | Slight, distant<br>Rarefaction  |  |
|      | TOCKLAI                                                                       | E        | eP<br>iS                          | 07 13 22<br>13 48                                     | 220            | Slight                           | 05         | POONA                                                                                                                                     | Z        | i     | 15 20 58             |                |                                 |  |
|      | CHATRA                                                                        | Z<br>NEZ | iP<br>iS                          | 07 14 11<br>15 15                                     | 610            | Slight                           | 05         | SHILLONG                                                                                                                                  | Z        | i     | 15 24 10             |                |                                 |  |
| 04   | DEHRA DUN                                                                     | NE       | e                                 | 11 49 55                                              |                | Tremor                           | 05         | SHILLONG                                                                                                                                  | Z        | i     | 17 57 51             |                | Slight, near                    |  |
|      | SHILLONG                                                                      | Z        | e                                 | 11 50 50                                              |                | Slight, distant                  |            |                                                                                                                                           |          | i     | 58 23                |                |                                 |  |
| 04   | SHILLONG                                                                      | Z        | e                                 | 15 55 15                                              |                | Slight, near                     | 05         | SHILLONG                                                                                                                                  | Z        | iP    | 18 08 19             |                | Slight, distant                 |  |
|      |                                                                               |          | i                                 | 55 27                                                 |                |                                  |            |                                                                                                                                           |          | i     | 10 45                |                |                                 |  |
| 04   | SHILLONG                                                                      | Z        | i                                 | 16 08 44                                              |                |                                  | 05         | Epc: 46°N, 151°E. Kurile Islands<br>- H: 19h 59m 58s (U.S.C.G.S)                                                                          |          |       |                      |                |                                 |  |
| 04   | SHILLONG                                                                      | Z        | ePg<br>eSg                        | 16 17 52<br>17 57                                     | 40             | Feeble                           |            | SHILLONG                                                                                                                                  | Z        | iP    | 20 09 00             |                | Slight, distant<br>Compression  |  |
| 04   | SHILLONG                                                                      | Z        | e                                 | 17 16 37                                              |                |                                  | 05         | Epc: 8°N, 77°W. Near West Coast of Columbia<br>- H: 20h 32m 48s (U.S.C.G.S)                                                               |          |       |                      |                |                                 |  |
|      |                                                                               |          |                                   |                                                       |                |                                  |            | SHILLONG                                                                                                                                  | Z        | iPKP  | 20 52 32             |                | Slight, distant<br>Compression. |  |

| DATE | STATION                                                                                  | COMPT | PHASE                                                           | G. M. T.                                                                                           | △    | REMARKS                                                           | DATE       | STATION             | COMPT                                                                          | PHASE                                                                                            | G. M. T.                                                                                                                                        | △            | REMARKS                                                    |
|------|------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------|------------|---------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------|
|      |                                                                                          |       |                                                                 | h. m. s.                                                                                           | km   |                                                                   | April 1959 |                     |                                                                                |                                                                                                  | h. m. s.                                                                                                                                        | km           |                                                            |
| 05   | Epc: 15° S, 167° E. New Hebrides Islands.<br>H: about 150 km. H: 21h 05m 54s (U.S.C.G.S) |       |                                                                 |                                                                                                    |      |                                                                   | 06         | BOKARO<br>Contd.    | NE<br>E                                                                        | iP<br>PP<br>PPP<br>iS<br>i<br>SSS                                                                | 14 21 16<br>23 07<br>23 54<br>28 11<br>31 06<br>32 44                                                                                           | 5280         | First movement South.                                      |
|      | SHILLONG Z                                                                               |       | iP                                                              | 21 18 16                                                                                           |      | Slight, distant Compression                                       |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 05   | Epc: 5° S, 146° E. Near North Coast of New Guinea<br>H: 23h 29m 25s (U.S.C.G.S)          |       |                                                                 |                                                                                                    |      |                                                                   | 06         | CHATRA<br>HYDERABAD | ZNE<br>NE<br>EN                                                                | iP<br>iS<br>iP<br>PcP<br>PP<br>PPP<br>PcS<br>iS<br>PS<br>ScS<br>SS<br>e<br>Lr<br>M               | 14 21 28<br>28 31<br>14 21 30<br>22 33<br>23 35<br>24 20<br>26 47<br>28 37<br>29 00<br>31 21<br>32 05<br>34 11<br>35 54<br>39 53                | 5420<br>5490 | Initial ground movement towards north and west.            |
|      | SHILLONG ZE<br>E<br>ZNE<br>E<br>PPS                                                      |       | iP<br>e<br>e<br>iS<br>PPS                                       | 23 39 43<br>40 11<br>40 43<br>48 04<br>49 11                                                       | 4480 | Slight, compression. Probably deep. Initial ground movement West. |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 05   | BOKARO E                                                                                 |       | iP<br>i<br>iS                                                   | 23 40 14<br>40 42<br>49 00                                                                         | 7310 | Slight, distant first movement West.                              |            |                     | EN<br>E                                                                        | iS<br>PS<br>ScS<br>SS<br>e<br>Lr<br>M                                                            | 28 37<br>29 00<br>31 21<br>32 05<br>34 11<br>35 54<br>39 53                                                                                     |              |                                                            |
| 05   | POONA Z<br>NE                                                                            |       | eP<br>S                                                         | 23 41 09<br>50 41                                                                                  | 8220 | Feeble                                                            |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
|      | BOMBAY E<br>NE                                                                           |       | eP<br>eS                                                        | 23 41 18<br>50 59                                                                                  | 8400 | Slight                                                            |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              | Per: 18 secs<br>μ = 9<br>Per: 27 secs<br>μ = 10            |
|      | DEHRA DUN NE                                                                             |       | e<br>e                                                          | 23 41 28<br>50 36                                                                                  |      | Feeble, phases not clear                                          | 06         | POONA               | ZNE<br>N                                                                       | iP<br>iS<br>M                                                                                    | 14 22 04<br>29 34<br>43 45                                                                                                                      | 5900         | Initial ground movement N & W<br>Per: 3.7 secs<br>μ = 30.0 |
| 06   | SHILLONG Z                                                                               |       | eP                                                              | 00 08 47                                                                                           |      | Slight, distant                                                   |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 06   | SHILLONG Z                                                                               |       | iP                                                              | 02 08 37                                                                                           |      | Slight, distant Compression                                       |            | SEHORE              | NE                                                                             | e                                                                                                | 14 22 05                                                                                                                                        |              | Distant, tremor                                            |
| 06   | Epc: 50° N, 177° W. Andreanof Islands, Aleutian Islands.<br>H: 05h 24m 11s (U.S.C.G.S)   |       |                                                                 |                                                                                                    |      |                                                                   |            | AGRA                | ENZ<br>NZ<br>Z<br>NZ<br>ZNE<br>E<br>Z<br>ZNE<br>EN<br>Z<br>E<br>EN<br>Z<br>ENZ | iP<br>i<br>PcP<br>PP<br>PPP<br>PcS, ScP<br>i<br>iS<br>PS<br>PPS<br>i<br>i<br>ScS<br>SS<br>e<br>M | 14 22 12<br>22 22<br>23 22<br>24 28<br>25 37<br>26 59<br>28 07<br>29 48<br>30 00<br>30 16<br>30 54<br>31 30<br>31 54<br>33 38<br>34 44<br>42 42 | 6010         | Initial ground motion towards North, West. Compression     |
|      | SHILLONG Z                                                                               |       | iP                                                              | 05 35 34                                                                                           |      | Slight, distant Rarefaction                                       |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 06   | Epc: 24° N, 72° W. Colombia. H: 13h 52m 04s (U.S.C.G.S)                                  |       |                                                                 |                                                                                                    |      |                                                                   |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
|      | SHILLONG Z                                                                               |       | iPKP                                                            | 14 11 44                                                                                           |      | Slight, distant Rarefaction                                       |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 06   | Epc: 10° S, 120° E. Sumba Island.<br>H: 14h 12m 36s (U.S.C.G.S). Mag: 6.4 (Paw).         |       |                                                                 |                                                                                                    |      |                                                                   |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
|      | PORT BLAIR E                                                                             |       | iP<br>iS<br>ScS                                                 | 14 19 32<br>24 59<br>29 53                                                                         | 3810 |                                                                   |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              | Per: 20 secs                                               |
|      | COLOMBO E                                                                                |       | P<br>S<br>L<br>M1<br>M2                                         | 14 20 48<br>27 15<br>33 55<br>39 55<br>44 35                                                       |      |                                                                   | 06         | BOMBAY              | N<br>E<br>N<br>E<br>E<br>NE<br>E<br>N<br>E                                     | eP<br>iP<br>eC<br>iC<br>e<br>e<br>ScP<br>eS<br>PS<br>ScS<br>ScS<br>M<br>M                        | 14 22 12<br>22 23<br>23 40<br>24 54<br>27 12<br>29 49<br>29 54<br>31 52<br>31 59<br>44 39<br>47 --                                              | 6030         |                                                            |
|      | TOCKLAI E                                                                                |       | eP                                                              | 14 20 54                                                                                           |      | Slight, distant                                                   |            |                     |                                                                                |                                                                                                  |                                                                                                                                                 |              |                                                            |
| 06   | SHILLONG ZNE                                                                             |       | iP<br>i<br>i<br>PP<br>PPP<br>iS<br>PS<br>PPS<br>SS<br>Lr<br>SSS | 14 20 55<br>21 24<br>21 28<br>22 40<br>23 13<br>27 32<br>27 39<br>27 48<br>30 47<br>31 21<br>31 35 | 4970 | Compression, first ground movement towards North and West         | 06         | DEHRA DUN           | NE                                                                             | eP<br>PP<br>iS<br>SS<br>SSS<br>Lq<br>M                                                           | 14 22 27<br>24 28<br>30 20<br>33 53<br>36 10<br>36 33<br>43 26                                                                                  | 6310         |                                                            |
| 06   | VIZIANAGRAM N                                                                            |       | iP                                                              | 14 21 03                                                                                           |      | Initial ground movement North. Distant.                           | 06         | SHILLONG            | Z                                                                              | e                                                                                                | 14 41 38                                                                                                                                        |              | Slight, near                                               |
| 06   | MADRAS E                                                                                 |       | iP<br>i<br>PP<br>PPP<br>iS<br>PS<br>PPS<br>SS<br>Lq<br>M        | 14 21 03<br>21 13<br>22 49<br>23 33<br>27 42<br>27 50<br>27 56<br>30 57<br>31 39<br>37 34          | 5000 | Initial ground movement towards West.                             | 06         | SHILLONG            | Z                                                                              | e                                                                                                | 17 10 28                                                                                                                                        |              | Slight, near                                               |
|      | KODAIKANAL E                                                                             |       | iP<br>iS<br>Lq<br>Lr<br>M                                       | 14 21 11<br>27 56<br>31 05<br>33 56<br>37 44                                                       | 5110 | Initial ground movement East<br>Per: 24 secs<br>μ = 23.5          | 06         | SHILLONG            | Z                                                                              | iP                                                                                               | 00 08 09                                                                                                                                        |              | Slight, distant Rarefaction.                               |

| DATE    | STATION                                                                                                       | COMPT | PHASE | G. M. T. h. m. s. | Δ km            | REMARKS                          | DATE | STATION                                                                                                   | COMPT     | PHASE | G. M. T. h. m. s. | Δ km              | REMARKS                                                                 |                          |
|---------|---------------------------------------------------------------------------------------------------------------|-------|-------|-------------------|-----------------|----------------------------------|------|-----------------------------------------------------------------------------------------------------------|-----------|-------|-------------------|-------------------|-------------------------------------------------------------------------|--------------------------|
| 07      | CHATRA                                                                                                        | Z     | iP    | 00 08 48          |                 | Slight, distant                  | 08   | AGRA                                                                                                      | ZNE       | iPKP  | 12 04 02          |                   | Distant, very slight, ground motion towards North East and compression. |                          |
| Cont'd. | POONA                                                                                                         | Z     | iP    | 00 10 16          |                 | Mild shock                       |      |                                                                                                           |           | i     | 04 06             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 03 19 29          |                 | Slight, distant                  |      | CHATRA                                                                                                    | Z         | iPKP  | 12 04 18          | 1734 <sup>0</sup> | Slight                                                                  |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 04 37 53          |                 | Slight, distant Compression      |      | NE                                                                                                        | PP        |       | 08 23             |                   |                                                                         |                          |
| 07      | Epc: Northern Manava Islands Region<br>- H: 05h 43m 54s (U.S.C.G.S)                                           |       |       |                   |                 |                                  |      |                                                                                                           | DEHRA DUN | NE    | e                 | 12 04 22          |                                                                         | Slight, phases not clear |
|         | SHILLONG                                                                                                      | Z     | e     | 05 52 34          |                 | Slight, distant                  |      | BOHARO                                                                                                    | E         | i     | 12 05 12          |                   | Slight, distant                                                         |                          |
|         |                                                                                                               |       | iP    | 52 44             |                 | Compression                      |      |                                                                                                           |           |       |                   |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 06 57 44          |                 | Slight, distant Rarefaction      | 09   | Epc: 14°S, 167°E. New Hebrides Islands.<br>- H: 04h 43m 58s (U.S.C.G.S)<br>- h: about 10 <sup>0</sup> km. |           |       |                   |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 07 00 39          |                 | Slight, distant Rarefaction      |      | SHILLONG                                                                                                  | Z         | eP    | 04 56 22          |                   | Slight, distant                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 08 25 08          |                 | Slight, distant Rarefaction.     | 09   | Epc: 36°S, 76°E, Indian Ocean, about 1000 miles north of Kerguelen Islands. - H: 06h 18m 30s (U.S.C.G.S)  |           |       |                   |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | ePg   | 10 30 58          |                 | Slight, near                     |      | COLOMBO                                                                                                   | E         | P     | 06 26 44          | 4790              |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | eP    | 10 49 07          |                 | Slight, distant                  |      |                                                                                                           |           | S     | 33 11             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | eP    | 10 57 15          |                 | Slight, distant                  |      |                                                                                                           |           | L     | 39 51             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 12 25 23          | 36 <sup>0</sup> | Slight, Compression              |      |                                                                                                           |           | M     | 43 01             |                   |                                                                         |                          |
|         | ZE                                                                                                            | iS    |       | 26 03             |                 |                                  |      | KODAIKANAL                                                                                                | E         | eP    | 06 27 04          | 5140              | Slight, Initial ground movement towards East.                           |                          |
|         | TOCKLAI                                                                                                       | E     | eP    | 12 25 27          | 36 <sup>0</sup> | Slight                           |      |                                                                                                           |           | iS    | 33 51             |                   |                                                                         |                          |
|         |                                                                                                               |       | iS    | 26 07             |                 |                                  |      |                                                                                                           |           | SSS   | 38 18             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 12 56 45          |                 | Slight, near Compression         |      | MADRAS                                                                                                    | E         | eP    | 06 27 30          | 5490              | Moderate                                                                |                          |
| 07      | SHILLONG                                                                                                      | Z     | eP    | 13 32 46          |                 | Slight, near Rarefaction         |      |                                                                                                           |           | PPP   | 30 26             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 13 48 00          |                 | Slight, near                     | 09   | PORT BLAIR                                                                                                | E         | iP    | 06 27 31          | 5550              | Moderate                                                                |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 16 08 30          |                 | Slight, near                     |      |                                                                                                           |           | PcP   | 28 47             |                   |                                                                         |                          |
|         |                                                                                                               |       | i     | 08 43             |                 |                                  |      |                                                                                                           |           | PP    | 29 21             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | eP    | 17 16 53          |                 | Slight, near                     |      |                                                                                                           |           | PPP   | 30 15             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | iP    | 17 35 07          |                 | Slight, distant Compression      |      |                                                                                                           |           | iS    | 34 42             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 20 04 40          |                 | Slight, near                     |      |                                                                                                           |           | ScS   | 37 26             |                   |                                                                         |                          |
| 07      | SHILLONGP                                                                                                     | Z     | iP    | 20 25 26          |                 | Slight, distant Compression      |      | HYDERABAD                                                                                                 | N         | eP    | 06 27 59          | 5810              | Moderate                                                                |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 21 21 02          |                 | Slight, near                     |      |                                                                                                           | EN        | iS    | 35 24             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 23 18 57          |                 | Tremor                           |      |                                                                                                           | E         | SS    | 39 07             |                   |                                                                         |                          |
| 07      | SHILLONG                                                                                                      | Z     | e     | 23 48 00          |                 | Tremor                           | 09   | POONA                                                                                                     | Z         | iP    | 06 28 06          | 6010              | Moderate. Initial ground movement towards South and rarefaction         |                          |
| 08      | SHILLONG                                                                                                      | Z     | iP    | 00 40 58          |                 | Slight, near Rarefaction         |      |                                                                                                           | N         | iS    | 35 42             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           |           | Mn    | 47 48             |                   | Peri: 15 secs                                                           |                          |
| 08      | Epc: 32°S, 179°E. Kermadec Islands Region<br>- H: 01h 23m 26s - h about 400 km (U.S.C.G.S)<br>Mag: 5-6¼ (Pap) |       |       |                   |                 |                                  |      |                                                                                                           |           |       |                   |                   |                                                                         |                          |
|         | PORT BLAIR                                                                                                    | E     | iP    | 01 36 04          |                 | Slight                           |      | BOMBAY                                                                                                    | NE        | eP    | 06 28 10          | 6110              | Slight                                                                  |                          |
|         | SHILLONG                                                                                                      | Z     | iP    | 01 36 38          |                 | Slight, distant Compression      |      |                                                                                                           | E         | PcP   | 28 59             |                   |                                                                         |                          |
|         | POONA                                                                                                         | Z     | iPKP  | 01 41 19          |                 | Feeble, distant Phases not clear |      |                                                                                                           | NE        | PPP   | 31 30             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | N         | eS    | 35 51             |                   |                                                                         |                          |
| 08      | Epc: 50°S, 73°E. Southern Chile - Argentina Border<br>- H: 11h 44m 25s (U.S.C.G.S)                            |       |       |                   |                 |                                  |      |                                                                                                           | E         | PPS   | 36 07             |                   |                                                                         |                          |
|         | POONA                                                                                                         | Z     | iPKP  | 12 03 52          |                 | Feeble, distant Phases not clear |      |                                                                                                           | NE        | PPS   | 36 15             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | E         | SS    | 39 32             |                   |                                                                         |                          |
| 08      | BOMBAY                                                                                                        | E     | ePKP  | 12 03 55          | 15360           | Slight                           |      |                                                                                                           | E         | Lq    | 43 08             |                   |                                                                         |                          |
|         |                                                                                                               |       | e     | 04 20             |                 |                                  |      |                                                                                                           | N         | M     | 53 09             |                   | Peri: 19 secs                                                           |                          |
|         |                                                                                                               | NE    | ePP   | 06 43             |                 |                                  |      | LOKARO                                                                                                    | NE        | eP    | 06 28 51          | 6660              | Moderate                                                                |                          |
|         |                                                                                                               | E     | e     | 06 50             |                 |                                  |      |                                                                                                           |           | iS    | 37 03             |                   |                                                                         |                          |
|         |                                                                                                               | NE    | ePKS  | 07 29             |                 |                                  |      |                                                                                                           |           |       |                   |                   |                                                                         |                          |
|         | PORT BLAIR                                                                                                    | N     | iPKP  | 12 03 57          | 16340           | Slight                           |      | AGRA                                                                                                      | ENZ       | iP    | 06 29 03          | 6990              | Moderate, dilatation                                                    |                          |
|         |                                                                                                               |       | IPP   | 07 34             |                 |                                  |      |                                                                                                           | N         | iS    | 37 32             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | ZN        | PS    | 37 46             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           |           | SS    | 41 34             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           |           | Lr    | 48 06             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           |           | M     | -- --             |                   | Peri: 24 secs                                                           |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      | SHILLONG                                                                                                  | Z         | iP    | 06 29 04          | 7120              | Moderate, compression. Phases not clear.                                |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | E         | eP    |                   |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | NE        | iS    | 37 41             |                   |                                                                         |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | N         | Mn    | 56 --             |                   | Peri: 18 secs                                                           |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      | CHATRA                                                                                                    | Z         | iP    | 06 29 07          | 7210              | Slight                                                                  |                          |
|         |                                                                                                               |       |       |                   |                 |                                  |      |                                                                                                           | NE        | iS    | 37 48             |                   |                                                                         |                          |

| DATE | STATION                                                                                                      | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS                                                                   | DATE       | STATION                                                                               | COMPT  | PHASE   | G. M. T.    | $\Delta$ | REMARKS                             |            |
|------|--------------------------------------------------------------------------------------------------------------|-------|-------|----------|----------|---------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------|--------|---------|-------------|----------|-------------------------------------|------------|
|      |                                                                                                              |       |       | h. m. s. | km       |                                                                           | April 1959 |                                                                                       |        |         | h. m. s.    | km       |                                     |            |
| 09   | DEHRA DUN                                                                                                    | NE    | eP    | 06 29 27 | 7310     | Moderate                                                                  | 09         | POONA                                                                                 | Z      | Between | 17 54       |          | Tremor                              |            |
|      |                                                                                                              | N     | PP    | 31 51    |          |                                                                           |            | Conf'd.                                                                               |        | and     | 17 56       |          |                                     |            |
|      |                                                                                                              |       | iS    | 38 13    |          |                                                                           |            | CHATRA                                                                                | Z      | i       | 17 55 52    |          | Feeble, distant                     |            |
|      |                                                                                                              |       | PPS   | 38 40    |          |                                                                           | 09         | SHILLONG                                                                              | Z      | eP      | 18 55 53    |          | Slight, distant                     |            |
|      |                                                                                                              |       | SS    | 42 44    |          |                                                                           | 09         | SHILLONG                                                                              | Z      | e       | 22 16 09    |          |                                     |            |
|      |                                                                                                              |       | SSS   | 45 01    |          |                                                                           | 10         | SHILLONG                                                                              | Z      | iP      | 00 01 11    |          | Slight, distant                     |            |
|      |                                                                                                              |       | Lq    | 46 12    |          |                                                                           |            |                                                                                       |        |         |             |          | Rarefaction                         |            |
|      |                                                                                                              |       | Lr    | 49 00    |          |                                                                           | 10         | SHILLONG                                                                              | Z      | iP      | 00 04 16    |          | Slight, distant                     |            |
|      |                                                                                                              |       | M     | 54 07    |          |                                                                           |            |                                                                                       |        |         |             |          | Rarefaction                         |            |
| 09   | SHILLONG                                                                                                     | Z     | eP    | 08 41 24 |          | Slight, distant<br>Compression                                            | 10         | Epc: 25°S, 178°E. South of Fiji Islands<br>-H=05h 47m 34s (U.S.C.G.S) - h about 600km |        |         |             |          |                                     |            |
| 09   | SHILLONG                                                                                                     | Z     | eP    | 08 42 07 |          | Slight, near                                                              |            | FORT BLAIR                                                                            | N      | e       | 05 59 43    |          |                                     |            |
| 09   | SHILLONG                                                                                                     | Z     | eP    | 09 23 57 |          | Slight, distant                                                           |            |                                                                                       |        | e       | 06 09 15    |          |                                     |            |
| 09   | SHILLONG                                                                                                     | Z     | e     | 09 39 27 |          | Slight, near                                                              | 10         | SHILLONG                                                                              | Z      | e       | 06 00 11    |          |                                     |            |
| 09   | SHILLONG                                                                                                     | Z     | iP    | 11 46 56 |          | Slight, near<br>Compression                                               |            |                                                                                       |        | i       | 02 10       |          |                                     |            |
| 09   | SHILLONG                                                                                                     | Z     | eP    | 12 28 17 |          | Slight, near                                                              |            |                                                                                       |        | i       | 04 16       |          |                                     |            |
| 09   | Epc: 44°N, 149°E. Kurile Islands. - h about 60 km<br>- H=12h 24m 20s (U.S.C.G.S)                             |       |       |          |          |                                                                           |            | BOMBAY                                                                                | E      | ePKP    | 10 06 05 50 |          | Slight, distant                     |            |
|      | SHILLONG                                                                                                     | Z     | iP    | 12 33 07 |          | Slight, distant                                                           |            |                                                                                       |        | e       | 08 10       |          | Phases not clear                    |            |
| 09   | Epc: 50°N, 180° Andean of Islands, Aleutian Islands<br>- H=12h 45m 32s (U.S.C.G.S)                           |       |       |          |          |                                                                           |            |                                                                                       |        | e       | 10 56       |          |                                     |            |
|      | SHILLONG                                                                                                     | Z     | iP    | 12 56 47 |          | Slight, distant<br>Compression                                            |            |                                                                                       |        | e       | 15 51       |          |                                     |            |
|      |                                                                                                              |       |       |          |          |                                                                           | 10         | SHILLONG                                                                              | E      | i       | 06 09 50    |          |                                     |            |
| 09   | Epc: 25°N, 95°E. Indian Burma Border.<br>- H=17h 08m 30s (U.S.C.G.S)<br>Felt at Shillong, Jorhat and Imphal. |       |       |          |          |                                                                           |            | 10                                                                                    | CHATRA | Z       | iP          | 08 28 57 |                                     | 220 Slight |
|      | TOCKLAI                                                                                                      | E     | iP    | 17 09 00 |          |                                                                           |            | ZEN                                                                                   |        | iS      | 29 23       |          |                                     |            |
| 09   | SHILLONG                                                                                                     | ZE    | iP    | 17 09 16 | 240      | Moderate, compression,<br>first ground movement<br>towards South and West | 10         | SHILLONG                                                                              | Z      | e       | 09 57 48    |          |                                     |            |
|      |                                                                                                              | E     | Pg    | 09 20    |          |                                                                           | 10         | CHATRA                                                                                | Z      | iP      | 10 46 58    |          | 730 Slight                          |            |
|      |                                                                                                              | NE    | PP    | 09 25    |          |                                                                           |            | NE                                                                                    |        | iS      | 48 15       |          |                                     |            |
|      |                                                                                                              | E     | iS    | 09 44    |          |                                                                           | 10         | TOCKLAI                                                                               | E      | iP      | 12 35 30    |          | Slight, distant                     |            |
|      |                                                                                                              | N     | Sg    | 09 48    |          |                                                                           |            | SHILLONG                                                                              | E      | i       | 12 36 09    |          |                                     |            |
|      |                                                                                                              |       | i     | 09 59    |          |                                                                           | 10         | CHATRA                                                                                | Z      | iP      | 13 56 40    |          | 60 Slight                           |            |
|      | CHATRA                                                                                                       | Z     | iP    | 17 10 08 | 830      | Moderate                                                                  |            | iS                                                                                    |        | iS      | 56 49       |          |                                     |            |
|      |                                                                                                              | ZNE   | iS    | 11 34    |          |                                                                           | 10         | SHILLONG                                                                              | E      | i       | 15 23 33    |          |                                     |            |
|      | BOKARO                                                                                                       | NE    | i     | 17 11 57 |          | Slight, distant                                                           | 11         | SHILLONG                                                                              | E      | e       | 01 49 07    |          | Slight, near                        |            |
| 09   | PORT BLAIR                                                                                                   | E     | iP    | 17 11 59 | 1610     | Slight                                                                    |            | i                                                                                     |        | i       | 49 57       |          |                                     |            |
|      |                                                                                                              |       | PP    | 12 10    |          |                                                                           | 11         | TOCKLAI                                                                               | E      | iP      | 02 04 29    |          | 180 Slight                          |            |
|      |                                                                                                              |       | PP    | 12 15    |          |                                                                           |            | iS                                                                                    |        | iS      | 04 51       |          |                                     |            |
|      |                                                                                                              |       | iS    | 14 42    |          |                                                                           | 11         | SHILLONG                                                                              | Z      | iPg     | 08 03 57    |          | 150 Slight,<br>compression          |            |
|      |                                                                                                              |       | SS    | 14 59    |          |                                                                           |            | iSg                                                                                   |        | iSg     | 04 14       |          |                                     |            |
|      |                                                                                                              |       | Lr    | 15 24    |          |                                                                           | 11         | SHILLONG                                                                              | Z      | e       | 09 28 51    |          | Slight, near                        |            |
|      | DEHRA DUN                                                                                                    | NE    | eP    | 17 12 11 |          | Slight                                                                    | 11         | Epc: 9°N, 83°W. Costa Rica - Panama Border.<br>- H=09h 25m 08s (U.S.C.G.S)            |        |         |             |          |                                     |            |
|      |                                                                                                              | N     | i     | 14 45    |          |                                                                           |            | SHILLONG                                                                              | Z      | iPKP    | 09 44 45    |          | Slight, distant<br>Rarefaction      |            |
|      |                                                                                                              |       | e     | 14 58    |          |                                                                           |            |                                                                                       |        | iS      | 40 20       |          |                                     |            |
|      |                                                                                                              |       | Sc    | 15 07    |          |                                                                           | 11         | CHATRA                                                                                | Z      | iP      | 10 40 10    |          | 80 Slight                           |            |
|      |                                                                                                              |       | M     | 15 26    |          |                                                                           |            | iS                                                                                    |        | iS      | 40 20       |          |                                     |            |
|      | MADRAS                                                                                                       | E     | eP    | 17 12 49 | 2150     | Slight                                                                    | 11         | Epc: 1°S, 128°E. Spice Islands<br>- H=11h 28m 50s (U.S.C.G.S)                         |        |         |             |          |                                     |            |
|      |                                                                                                              |       | PPP   | 13 19    |          |                                                                           |            | PORT BLAIR                                                                            | E      | iP      | 11 36 11    |          | 4110 Slight                         |            |
|      |                                                                                                              |       | Lq    | 16 22    |          |                                                                           |            | PP                                                                                    |        | PP      | 37 43       |          |                                     |            |
|      |                                                                                                              |       | eS    | 16 22    |          |                                                                           |            | PPP                                                                                   |        | PPP     | 38 05       |          |                                     |            |
|      |                                                                                                              |       | SS    | 16 45    |          |                                                                           |            | PcP                                                                                   |        | PcP     | 38 43       |          |                                     |            |
|      | POONA                                                                                                        | Z     | P     | 17 13 17 |          | Slight (felt report from Imphal)                                          |            | iS                                                                                    |        | iS      | 41 57       |          |                                     |            |
|      |                                                                                                              |       |       |          |          |                                                                           |            | SS                                                                                    |        | SS      | 44 25       |          |                                     |            |
|      |                                                                                                              |       |       |          |          |                                                                           |            | Lr                                                                                    |        | Lr      | 45 19       |          |                                     |            |
| 09   | BOMBAY                                                                                                       | NE    | eP    | 17 13 26 | 2400     | Slight                                                                    |            | TOCKLAI                                                                               | E      | e       | 11 36 55    |          | Distant                             |            |
|      |                                                                                                              | E     | PP    | 13 37    |          |                                                                           |            | SHILLONG                                                                              | Z      | iP      | 11 37 03    |          | 4860 Slight, distant<br>compression |            |
|      |                                                                                                              | NE    | eS    | 17 19    |          |                                                                           |            | NE                                                                                    |        | eP      |             |          |                                     |            |
|      |                                                                                                              | N     | SS    | 17 38    |          |                                                                           |            | NE                                                                                    |        | iS      | 43 34       |          |                                     |            |
|      | AGRA                                                                                                         | EZ    | iP    | 17 14 59 | 1570     | Ground motion<br>West, compression<br>Slight                              |            | E                                                                                     |        | i       | 43 44       |          |                                     |            |
|      |                                                                                                              | ZNE   | iS    | 17 37    |          |                                                                           |            |                                                                                       |        |         |             |          |                                     |            |
|      | SEHORE                                                                                                       | N     | e     | 17 15 20 |          | Distant, tremor                                                           | 11         | CHATRA                                                                                | Z      | iP      | 11 37 38    |          | Slight                              |            |
|      |                                                                                                              | E     | c     | 15 33    |          |                                                                           |            | NE                                                                                    |        | i       | 43 04       |          |                                     |            |
|      |                                                                                                              |       | e     | 17 26    |          |                                                                           |            |                                                                                       |        |         |             |          |                                     |            |
|      |                                                                                                              |       | e     | 17 39    |          |                                                                           |            |                                                                                       |        |         |             |          |                                     |            |
|      |                                                                                                              |       | e     | 17 57    |          |                                                                           |            |                                                                                       |        |         |             |          |                                     |            |
| 09   | Epc: 7°N, 82°W. South of Panama.<br>- H=17h 36m 10s (U.S.C.G.S). Mag: 6 <sup>+</sup> -6 <sup>-</sup> (Pas)   |       |       |          |          |                                                                           |            |                                                                                       |        |         |             |          |                                     |            |





| DATE | STATION                                                                                                    | COMPT    | PHASE      | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                        | DATE | STATION                                                                         | COMPT                                                                   | PHASE             | G. M. T.<br>h. m. s.                | Δ<br>km                                      | REMARKS                        |                 |
|------|------------------------------------------------------------------------------------------------------------|----------|------------|----------------------|---------|--------------------------------|------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------|-------------------------------------|----------------------------------------------|--------------------------------|-----------------|
| 18   | CHATRA                                                                                                     | Z        | iPg<br>iSg | 16 48 38<br>48 52    | 120     | Feeble                         | 20   | SHILLONG                                                                        | Z                                                                       | e                 | 23 02 08                            |                                              | Tremor                         |                 |
| 18   | SHILLONG                                                                                                   | Z        | eP         | 18 08 07             |         | Slight, distant                | 20   | CHATRA                                                                          | Z<br>NEZ                                                                | iP<br>iS          | 23 42 54<br>46 05                   | 80                                           | Slight                         |                 |
| 18   | SHILLONG                                                                                                   | Z        | e          | 20 37 34             |         | Feeble, distant                |      | SHILLONG                                                                        | Z                                                                       | e<br>i            | 23 43 58<br>44 17                   |                                              | Feeble, near                   |                 |
| 18   | SHILLONG                                                                                                   | Z        | e<br>e     | 22 00 28<br>00 40    |         | Feeble                         | 21   | TOCKLAI                                                                         | E                                                                       | eP<br>i<br>i<br>i | 00 07 28<br>07 39<br>07 45<br>07 49 |                                              | Slight, distant                |                 |
| 18   | DEHRA DUN                                                                                                  | NE       | e          | 22 46 35             |         | Tremor                         | 21   | CHATRA                                                                          | Z<br>NEZ                                                                | iP<br>iS          | 00 08 23<br>09 34                   | 680                                          | Slight                         |                 |
| 18   | SHILLONG                                                                                                   | Z<br>E   | e<br>e     | 23 22 12<br>22 41    |         | Feeble, near                   |      | SHILLONG                                                                        | ZE<br>E                                                                 | iP<br>e           | 00 08 56<br>09 03                   |                                              | Slight, near                   |                 |
| 19   | Epc: 45°S, 82°W. Pacific Ocean.<br>- H: 07h 26m 15s (U.S.C.G.S)<br>Mag: 6 (Pas).                           |          |            |                      |         |                                |      | 21                                                                              | SHILLONG                                                                | Z                 | e<br>i                              | 05 03 07<br>03 49                            |                                | Feeble, near    |
|      | POONA                                                                                                      | Z        | ePKP       | 07 45 57             |         | Feeble, phases not clear       | 21   | SHILLONG                                                                        | Z                                                                       | e<br>i            | 05 14 05                            |                                              | Feeble, near                   |                 |
| 19   | SHILLONG                                                                                                   | Z        | eP         | 09 33 37             |         | Tremor                         | 21   | SHILLONG                                                                        | Z                                                                       | e                 | 07 38 41<br>38 50                   |                                              | Slight, distant                |                 |
| 19   | PORT BLAIR                                                                                                 | Z        | iPg<br>iSg | 10 01 31<br>01 36    | 40      | Slight                         | 21   | SHILLONG                                                                        | Z                                                                       | eP<br>i           | 07 38 47                            |                                              | Slight, distant                |                 |
| 19   | Epc: 244°N, 142°E. Volcano Islands.<br>- H: 14h 51m 03s (U.S.C.G.S)                                        |          |            |                      |         |                                |      |                                                                                 | CHATRA                                                                  | Z<br>NE           | iP<br>iS                            | 07 39 22<br>41 40                            | 1360                           | Slight          |
|      | SHILLONG                                                                                                   | Z        | eP         | 14 59 23             |         |                                | 21   | Epc: 45°N, 152°E. Kurile Islands<br>- H: 10h 02m 30s                            |                                                                         |                   |                                     |                                              |                                |                 |
|      | CHATRA                                                                                                     | Z        | iPg<br>iSg | 14 59 54<br>59 56    | 20      | Feeble                         |      | SHILLONG                                                                        | Z                                                                       | iP                | 10 11 38                            |                                              | Slight, distant<br>compression |                 |
| 19   | SHILLONG                                                                                                   | Z        | iP         | 15 04 38             |         | Tremor                         | 21   | SHILLONG                                                                        | Z                                                                       | e                 | 11 03 22                            |                                              | Slight, distant                |                 |
| 19   | Epc: 58°N, 152°W. Near Kodiak Island, Alaska<br>- H: 15h 03m 26s (U.S.C.G.S)                               |          |            |                      |         |                                |      | 21                                                                              | SHILLONG                                                                | Z                 | e<br>e                              | 11 45 55<br>45 58                            |                                | Feeble, near    |
|      | SHILLONG                                                                                                   | Z        | eP         | 15 15 40             |         | Slight, distant                | 21   | SHILLONG                                                                        | Z                                                                       | e                 | 12 17 42                            |                                              | Feeble                         |                 |
| 19   | CHATRA                                                                                                     | Z        | i          | 15 15 47             |         | Slight, distant                | 21   | SHILLONG                                                                        | Z                                                                       | ePg<br>iSg        | 20 35 09<br>35 23                   | 110                                          | Feeble, near                   |                 |
| 19   | Epc: Near West Coast of Greece.<br>- H: 17h 38m 50s (U.S.C.G.S)                                            |          |            |                      |         |                                |      |                                                                                 | CHATRA                                                                  | Z                 | iP<br>iS                            | 20 35 33<br>36 14                            | 380                            | feeble          |
|      | SHILLONG                                                                                                   | Z        | iP         | 17 48 36             |         | Slight, distant<br>Compression | 21   | SHILLONG                                                                        | Z                                                                       | e                 | 20 38 02                            |                                              | Feeble, near                   |                 |
| 19   | SHILLONG                                                                                                   | Z        | e<br>e     | 20 19 10<br>19 19    |         | Feeble, near                   | 21   | SHILLONG                                                                        | Z                                                                       | e                 | 20 51 52                            |                                              | Feeble, near                   |                 |
| 19   | PORT BLAIR                                                                                                 | E        | iPg<br>iSg | 21 06 00<br>06 09    | 80      | Slight                         | 21   | TOCKLAI                                                                         | E                                                                       | eP<br>i           | 21 45 07<br>45 33                   |                                              | Feeble                         |                 |
| 20   | SHILLONG                                                                                                   | Z        | iP         | 00 17 21             |         | Slight, distant<br>Compression | 21   | SHILLONG                                                                        | Z                                                                       | e<br>i            | 22 26 48<br>27 12                   |                                              | Feeble, near                   |                 |
| 20   | Epc: 6°S, 149°E. New Britain. - h about 100 km<br>- H: 03h 37m 52s (U.S.C.G.S)<br>Felt: Walindi, Kandrian. |          |            |                      |         |                                |      | 22                                                                              | Epc: Hindukush Region. - h about 200 km<br>- H: 03h 36m 49s (U.S.C.G.S) |                   |                                     |                                              |                                |                 |
|      | POONA                                                                                                      | Z        | eP         | 03 39 49             |         | Feeble, phases not clear       |      | CHATRA                                                                          | Z<br>NE                                                                 | iP<br>iS          | 03 40 44<br>44 28                   | 2470                                         | Slight                         |                 |
|      | SHILLONG                                                                                                   | Z        | i          | 03 40 04             |         | Slight, distant                |      | POONA                                                                           | Z                                                                       | e                 | 03 40 55                            |                                              | Feeble, phases not clear       |                 |
| 20   | Epc: 84°N, 83°W. Costa Rica<br>- H: 04h 21m 10s (U.S.C.G.S)                                                |          |            |                      |         |                                |      |                                                                                 | SHILLONG                                                                | Z                 | eP                                  | 03 41 29                                     |                                | Slight, distant |
|      | POONA                                                                                                      | Z        | iPKP       | 04 42 37             |         | Slight, distant                |      | MADRAS                                                                          | E                                                                       | e<br>e<br>e       | 03 48 45<br>49 41<br>50 10          |                                              | Slight, phases not clear       |                 |
| 20   | SHILLONG                                                                                                   | Z        | e<br>i     | 06 58 51<br>59 05    |         | Feeble, near                   | 22   | DEHRA DUN                                                                       | NE                                                                      | e<br>i            | 07 07 17<br>07 48                   |                                              | Feeble                         |                 |
| 20   | SHILLONG                                                                                                   | Z        | e          | 09 03 36             |         | Tremor                         | 22   | SHILLONG                                                                        | Z                                                                       | e                 | 07 09 49                            |                                              | Distant, slight                |                 |
| 20   | SHILLONG                                                                                                   | Z        | e          | 11 55 00             |         | Tremor                         | 22   | Epc: 04°N, 99°E. Off North East Coast of Sumatra<br>- H: 07h 31m 24s (Shillong) |                                                                         |                   |                                     |                                              |                                |                 |
| 20   | Earthquake shock felt at Diphu (Assam)                                                                     |          |            |                      |         |                                |      |                                                                                 | PORT BLAIR                                                              | E                 | iP<br>PP<br>PP<br>iS<br>SS          | 07 34 13<br>34 21<br>34 41<br>36 29<br>36 48 | 1330                           | Slight          |
|      | TOCKLAI                                                                                                    | E        | iP<br>iS   | 13 38 10<br>38 25    | 110     | Slight, near                   |      | MADRAS                                                                          | E                                                                       | eP<br>e<br>e      | 07 36 05<br>36 28<br>40 03<br>40 25 | 2380                                         | Slight                         |                 |
|      | CHATRA                                                                                                     | Z<br>NEZ | iP<br>iS   | 13 39 14<br>41 00    | 1030    | Slight                         |      |                                                                                 |                                                                         |                   |                                     |                                              |                                |                 |
| 20   | SHILLONG                                                                                                   | ZNE      | iPg<br>iSg | 14 39 59<br>40 02    | 230     | Slight,<br>compression         |      |                                                                                 |                                                                         |                   |                                     |                                              |                                |                 |
| 20   | Epc: 54°N, 157°E. Near East Coast of Kamchatka<br>- H: 19h 26m 01s (U.S.C.G.S)                             |          |            |                      |         |                                |      |                                                                                 |                                                                         |                   |                                     |                                              |                                |                 |
|      | SHILLONG                                                                                                   | Z        | PP         | 19 37 41             |         | Tremor                         |      |                                                                                 |                                                                         |                   |                                     |                                              |                                |                 |
| 20   | SHILLONG                                                                                                   | Z        | i          | 19 44 24             |         | Tremor                         |      |                                                                                 |                                                                         |                   |                                     |                                              |                                |                 |



| DATE | STATION                                                                                    | COMPT | PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                        | DATE    | STATION                                                                                       | COMPT                                                                                             | PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                             |  |
|------|--------------------------------------------------------------------------------------------|-------|-------|----------------------|----------------|--------------------------------|---------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------|----------------------|----------------|-----------------------------------------------------|--|
|      |                                                                                            |       |       |                      |                | April 1959                     |         |                                                                                               |                                                                                                   |       |                      |                |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | iP    | 07 36 29             | 2490           | Slight, distant                | 23      | DEHRA DUN                                                                                     | NE                                                                                                | e     | 22 45 39             |                | Tremor                                              |  |
|      |                                                                                            | E     | eS    | 40 31                |                | Rarefaction                    | Cont'd. |                                                                                               |                                                                                                   |       |                      |                |                                                     |  |
|      | CHATRA                                                                                     | Z     | iP    | 07 36 57             | 2780           | Slight                         | 23      | CHATRA                                                                                        | Z                                                                                                 | iP    | 23 12 45             | 160            | Slight                                              |  |
|      |                                                                                            | NE    | iS    | 41 19                |                |                                |         |                                                                                               | NEZ                                                                                               | iS    | 13 05                |                |                                                     |  |
| 22   | CHATRA                                                                                     | Z     | i     | 07 43 37             |                | Feeble, very near              |         | SHILLONG                                                                                      | Z                                                                                                 | e     | 23 13 22             |                | Slight, distant                                     |  |
|      | DEHRA DUN                                                                                  | NE    | e     | 09 55 52             |                | Tremor                         | 24      | DEHRA DUN                                                                                     | NE                                                                                                | e     | 00 31 18             |                | Feeble                                              |  |
| 22   | Epc: 54°N, 167°W. Fox Islands, Aleutian Islands<br>H: 10h 58m 05s (U.S.C.G.S)              |       |       |                      |                |                                |         | POONA                                                                                         | Z                                                                                                 | iP    | 00 34 47             | 4860           | Slight                                              |  |
|      | SHILLONG                                                                                   | Z     | iP    | 11 06 54             |                | Slight, distant<br>compression |         |                                                                                               | NE                                                                                                | S     | 41 17                |                |                                                     |  |
|      | CHATRA                                                                                     | Z     | i     | 11 07 03             |                | Slight, distant                | 24      | Epc: 114°N, 86°W. Near Coast of Nicaragua<br>H: 09h 31m 33s (U.S.C.G.S)<br>Mag: 6M - 6M (Pas) |                                                                                                   |       |                      |                |                                                     |  |
|      | DEHRA DUN                                                                                  | NE    | e     | 11 07 09             |                | Tremor                         |         | SHILLONG                                                                                      | Z                                                                                                 | ePKP  | 09 51 03             |                | Slight, distant                                     |  |
|      | POONA                                                                                      | Z     | iP    | 11 08 12             |                | Feeble, phases<br>not clear    | 24      | SHILLONG                                                                                      | Z                                                                                                 | iP    | 11 01 39             |                | Slight, distant<br>Compression                      |  |
| 22   | SHILLONG                                                                                   | Z     | iP    | 15 26 53             |                | Slight, distant<br>compression | 24      | SHILLONG                                                                                      | Z                                                                                                 | eP    | 12 17 08             |                | Slight, near                                        |  |
| 22   | Epc: 74°N, 72°W. Venezuela-Columbia Border<br>H: 17h 14m 05s (U.S.C.G.S)                   |       |       |                      |                |                                |         | 24                                                                                            | Epc: 31°S, 178°W. Kermadec Islands<br>H: 17h 57m 58s (U.S.C.G.S)<br>Mag: 6M-6M (Berk), 6M-7 (Pas) |       |                      |                |                                                     |  |
|      | SHILLONG                                                                                   | Z     | iPKP2 | 17 43 45             |                | Slight, distant<br>rarefaction |         | PORT BLAIR                                                                                    | E                                                                                                 | iP    | 18 11 23             | 9920           |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | e     | 19 02 44             |                | Slight, distant                |         |                                                                                               |                                                                                                   | PP    | 15 15                |                |                                                     |  |
| 22   | CHATRA                                                                                     | Z     | i     | 19 03 01             |                | Slight, distant                |         |                                                                                               |                                                                                                   | PPP   | 17 01                |                |                                                     |  |
| 22   | Epc: 114°N, 86°W. Near Coast of Nicaragua<br>H: 19h 01m 41s                                |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 18 45                |                |                                                     |  |
|      | SHILLONG                                                                                   | Z     | ePKP  | 19 21 13             |                | Slight, distant                | 24      | CHATRA                                                                                        | Z                                                                                                 | eP    | 18 15 53             |                |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | iP    | 19 34 49             |                | Slight, distant<br>Compression |         |                                                                                               | NE                                                                                                | i     | 23 19                |                |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | iP    | 20 07 33             |                | Slight, near<br>compression    |         | SHILLONG                                                                                      | Z                                                                                                 | e     | 18 12 00             |                |                                                     |  |
| 22   | Epc: 36°S, 97°W. Pacific Ocean<br>H: 20h 26m 46s (U.S.C.G.S)<br>Mag: 5M - 6 (Pas)          |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | e     | 22 57                |                |                                                     |  |
|      | SHILLONG                                                                                   | Z     | e     | 20 45 57             |                | Slight, distant                |         | COLOMBO                                                                                       | K                                                                                                 | e     | 18 16 23             |                |                                                     |  |
|      | CHATRA                                                                                     | Z     | e     | 20 46 57             |                | Slight, distant                |         |                                                                                               |                                                                                                   | e     | 25 32                |                |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | iP    | 21 00 21             |                | Slight, distant<br>Compression |         |                                                                                               |                                                                                                   | e     | 54 35                |                |                                                     |  |
| 22   | SHILLONG                                                                                   | Z     | eP    | 22 48 13             |                | Slight, near                   |         |                                                                                               |                                                                                                   | e     | 19 00 50             |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | iP    | 04 15 13             |                | Slight, near                   |         | MADRAS                                                                                        | E                                                                                                 | PP    | 18 16 37             | 12270          | Slight, other<br>phases could not<br>be identified. |  |
| 23   | SHILLONG                                                                                   | Z     | iP    | 04 53 21             |                | Slight, near<br>Rarefaction    |         |                                                                                               |                                                                                                   | i     | 16 52                |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | eP    | 14 07 33             |                | Slight, distant                |         |                                                                                               |                                                                                                   | PS    | 26 02                |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | e     | 17 53 29             |                | Slight, distant                |         |                                                                                               |                                                                                                   | PPS   | 26 34                |                |                                                     |  |
| 23   | CHATRA                                                                                     | Z     | iPg   | 18 25 57             | 30             | Feeble                         |         | KODAIKANAL                                                                                    | Z                                                                                                 | e     | 18 16 43             |                | Slight                                              |  |
|      |                                                                                            |       | iSg   | 26 00                |                |                                |         |                                                                                               |                                                                                                   | e     | 23 19                |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | eP    | 18 55 32             |                | Slight, distant                |         |                                                                                               |                                                                                                   | e     | 26 34                |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | eP    | 19 22 29             |                | Slight, distant                |         |                                                                                               |                                                                                                   | e     | 33 01                |                |                                                     |  |
| 23   | SHILLONG                                                                                   | Z     | iP    | 21 44 58             |                | Slight, near<br>Compression    | 24      | HYDERABAD                                                                                     | E                                                                                                 | ePP   | 18 17 00             | 12710          | Slight                                              |  |
| 23   | TOCKLAI                                                                                    | E     | eP    | 21 45 07             |                | Feeble                         |         |                                                                                               |                                                                                                   | i     | 19 11                |                |                                                     |  |
|      |                                                                                            |       | i     | 45 33                |                |                                |         |                                                                                               |                                                                                                   | PS    | 26 42                |                |                                                     |  |
|      | CHATRA                                                                                     | Z     | iPg   | 21 45 57             | 20             | Feeble, distant                |         |                                                                                               |                                                                                                   | i     | 27 42                |                |                                                     |  |
|      |                                                                                            |       | iSg   | 46 00                |                |                                |         |                                                                                               |                                                                                                   | SS    | 32 51                |                |                                                     |  |
| 23   | CHATRA                                                                                     | Z     | i     | 21 47 13             |                | Slight, distant                |         |                                                                                               |                                                                                                   | Lr    | 52 06                |                |                                                     |  |
| 23   | CHATRA                                                                                     | NEZ   | iP    | 22 42 06             | 130            | Moderate                       |         |                                                                                               |                                                                                                   | M     | 19 01 03             |                | Per: 15 secs<br>Amp: 4 mm                           |  |
|      |                                                                                            |       | iS    | 42 23                |                |                                |         | DEHRA DUN                                                                                     | NE                                                                                                | e     | 18 17 32             |                | Slight                                              |  |
| 23   | SHILLONG                                                                                   | Z     | iP    | 22 42 45             |                | Slight, near<br>Compression    |         |                                                                                               | N                                                                                                 | i     | 20 39                |                |                                                     |  |
| 23   | TOCKLAI                                                                                    | E     | e     | 22 44 43             |                | Distant                        |         |                                                                                               |                                                                                                   | i     | 22 36                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 27 37                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 33 10                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 36 08                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 39 37                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | i     | 50 14                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         | BOMBAY                                                                                        | E                                                                                                 | e     | 18 17 35             |                | Slight                                              |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | e     | 18 53                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | e     | 20 24                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               |                                                                                                   | e     | 23 51                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               | NE                                                                                                | e     | 25 03                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               | E                                                                                                 | e     | 27 28                |                |                                                     |  |
|      |                                                                                            |       |       |                      |                |                                |         |                                                                                               | N                                                                                                 | M     | 19 08 52             |                | Per: 18 secs<br>Amp: 2.5                            |  |
| 24   | SHILLONG                                                                                   | Z     | eP    | 18 32 01             |                | Slight, distant                | 24      | SHILLONG                                                                                      | Z                                                                                                 | eP    | 18 32 01             |                | Slight, distant                                     |  |
| 24   | SHILLONG                                                                                   | Z     | e     | 21 02 45             |                | Slight, distant                | 24      | SHILLONG                                                                                      | Z                                                                                                 | e     | 21 02 45             |                | Slight, distant                                     |  |
| 24   | SHILLONG                                                                                   | Z     | e     | 23 53 50             |                | Slight, near                   | 24      | SHILLONG                                                                                      | Z                                                                                                 | e     | 23 53 50             |                | Slight, near                                        |  |
| 25   | Epc: 37°N, 28°E. Turkey. Extensive damage in Mugla<br>Province. H: 00h 26m 40s (U.S.C.G.S) |       |       |                      |                |                                |         |                                                                                               |                                                                                                   |       |                      |                |                                                     |  |





| DATE | STATION                                                                                                 | COMPT | PHASE                            | G. M. T. h. m. s.                                           | $\Delta$ km | REMARKS                         | DATE | STATION                                                                 | COMPT    | PHASE      | G. M. T. h. m. s. | $\Delta$ km       | REMARKS                     |                          |
|------|---------------------------------------------------------------------------------------------------------|-------|----------------------------------|-------------------------------------------------------------|-------------|---------------------------------|------|-------------------------------------------------------------------------|----------|------------|-------------------|-------------------|-----------------------------|--------------------------|
| 28   | POONA                                                                                                   | Z     | iPKP                             | 11 29 06                                                    |             | Distant, Other phases not clear | 30   | SHILLONG                                                                | Z        | iP         | 02 19 06          |                   | Slight, near Compression    |                          |
|      | VIZIANAGRAM                                                                                             | N     | e                                | 11 29 14                                                    |             | Slight, distant                 | 30   | CHATRA                                                                  | Z        | iP         | 05 47 36          | 100               | Slight                      |                          |
|      | HYDERABAD                                                                                               | E     | ePKP<br>M                        | 11 29 15<br>32 45                                           |             | Per. = 21 secs<br>Amp: 8 mm     | 30   | SHILLONG                                                                | Z        | iP         | 05 53 10          |                   | Slight, distant Compression |                          |
|      | PORT BLAIR                                                                                              | E     | iPKP                             | 11 29 25                                                    |             | Slight                          | 30   | SHILLONG                                                                | Z        | eP         | 06 34 03          |                   | Slight, distant             |                          |
|      | COLOMBO                                                                                                 | E     | PKP<br>e<br>e<br>M1<br>M2<br>End | 11 29 27<br>40 38<br>12 38 52<br>44 10<br>52 58<br>13 47 -- |             | Amp: 0.2<br>Amp: 0.6            | 30   | SHILLONG                                                                | Z        | iP         | 07 08 38          |                   | Slight, distant Compression |                          |
| 28   | MADRAS                                                                                                  | E     | PKP                              | 11 29 28                                                    |             |                                 | 30   | SHILLONG                                                                | Z        | iP         | 11 32 16          |                   | Slight, distant Compression |                          |
| 28   | CHATRA                                                                                                  | Z     | iP                               | 12 25 01                                                    | 230         | Slight                          | 30   | Epc: 55°S, 26°W. Sandwich Islands<br>- H: 13h 25m 35s (U.S.C.G.S)       |          |            |                   |                   |                             |                          |
|      |                                                                                                         | E     | iS                               | 25 28                                                       |             |                                 |      | CHCHATRA                                                                | Z        | i          | 13 44 36          |                   | Feeble, distant             |                          |
| 28   | Epc: 5°S, 152°E. New Britain. h about 100 km<br>Felt: Rabaul and Karial<br>- H: 13h 00m 57s (U.S.C.G.S) |       |                                  |                                                             |             |                                 |      | SHILLONG                                                                | Z        | e          | 13 45 41          |                   | Slight, distant             |                          |
|      | SHILLONG                                                                                                | Z     | iP                               | 13 11 38                                                    |             | Slight, distant Compression     | 30   | SHILLONG                                                                | Z        | eP<br>Sg   | 14 21 11<br>21 29 | 149               |                             |                          |
| 28   | Epc: Rat Islands, Aleutian Islands.<br>- H: 14h 18m 10s (U.S.C.G.S)                                     |       |                                  |                                                             |             |                                 |      | 30                                                                      | SHILLONG | Z          | iP                | 16 43 20          |                             | Slight, near Rarefaction |
|      | SHILLONG                                                                                                | Z     | iP                               | 14 29 19                                                    |             | Slight, distant Rarefaction     | 30   | CHATRA                                                                  | Z        | iP<br>iS   | 16 43 34<br>46 56 | 2080              | Slight                      |                          |
| 28   | SHILLONG                                                                                                | Z     | e                                | 16 00 38                                                    |             | Tremor                          |      | SHILLONG                                                                | Z        | eP<br>e    | 16 44 47<br>45 59 |                   | Slight, distant             |                          |
| 28   | Epc: 6°S, 150°E. Near South Coast of New Britain.<br>- H: 15h 58m 13s (U.S.C.G.S)                       |       |                                  |                                                             |             |                                 |      | TOCKLAI                                                                 | E        | e          | 16 45 21          |                   | Slight, distant             |                          |
|      | SHILLONG                                                                                                | Z     | iP                               | 16 08 31                                                    |             | Slight, distant Compression     | 30   | SHILLONG                                                                | Z        | i<br>i     | 16 50 21<br>51 06 |                   | Slight, near                |                          |
| 28   | Epc: 32°N, 173°W. Andreanof Islands, Aleutian Islands<br>- H: 17h 11m 15s (U.S.C.G.S)                   |       |                                  |                                                             |             |                                 |      | 30                                                                      | SHILLONG | Z          | eP<br>Sg          | 18 58 14<br>58 42 | 240                         | Slight                   |
|      | SHILLONG                                                                                                | Z     | iP                               | 17 22 43                                                    |             | Slight, distant Compression     | 30   | SHILLONG                                                                | Z        | eP<br>Sg   | 20 51 41<br>52 02 | 160               | Slight, compression         |                          |
|      | POONA                                                                                                   | Z     | eP                               | 17 24 08                                                    |             | Feeble, phases not clear        | 30   | Epc: Arctic Ocean, West of Spitzbergen.<br>- H: 22h 40m 20s (U.S.C.G.S) |          |            |                   |                   |                             |                          |
|      | CHATRA                                                                                                  | Z     | iPg<br>iSg                       | 17 22 52<br>23 01                                           | 70          | Feeble                          |      | CHATRA                                                                  | Z        | i          | 22 50 41          |                   | Feeble, distant             |                          |
| 28   | Epc: 36°N, 141°E. Near East Coast of Honshu, Japan Felt: - H: 22h 01m 04s (U.S.C.G.S)                   |       |                                  |                                                             |             |                                 |      | SHILLONG                                                                | Z        | e          | 22 51 04          |                   | Slight, near                |                          |
|      | SHILLONG                                                                                                | Z     | iP                               | 22 08 51                                                    |             | Slight, distant compression     | 30   | CHATRA                                                                  | Z        | iPg<br>iSg | 22 53 27<br>53 29 | 10                | Feeble                      |                          |
| 29   | CHATRA                                                                                                  | Z     | iP                               | 07 17 45                                                    | 200         | Moderate                        | 30   | SHILLONG                                                                | Z        | iP         | 22 54 01          |                   | Slight, distant Rarefaction |                          |
|      |                                                                                                         | NEZ   | iS                               | 18 09                                                       |             |                                 |      |                                                                         |          |            |                   |                   |                             |                          |
|      | SHILLONG                                                                                                | Z     | iP                               | 07 18 42                                                    |             | Slight, distant Compression     |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | Epc: 16°N, 145°E. Mariana Islands.<br>- H: 15h 35m 45s (U.S.C.G.S)                                      |       |                                  |                                                             |             |                                 |      |                                                                         |          |            |                   |                   |                             |                          |
|      | SHILLONG                                                                                                | Z     | iP                               | 15 44 59                                                    |             | Slight, distant Compression     |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | CHATRA                                                                                                  | Z     | i                                | 15 45 41                                                    |             | Feeble, distant                 |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | SHILLONG                                                                                                | Z     | iP                               | 17 01 36                                                    |             | Slight, distant Compression     |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | SHILLONG                                                                                                | Z     | iP                               | 17 14 44                                                    |             | Slight, near Compression        |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | SHILLONG                                                                                                | Z     | iP                               | 20 54 35                                                    |             | Slight, distant Rarefaction     |      |                                                                         |          |            |                   |                   |                             |                          |
| 29   | SHILLONG                                                                                                | Z     | e                                | 22 17 47                                                    |             | Slight, distant                 |      |                                                                         |          |            |                   |                   |                             |                          |

*Earthquakes Reports*  
(Non Instrumental Reports)

The following is the list of Earthquakes that were reported by Voluntary Observers from different stations during the month of April, 1959.

| Place at which felt | Date in | Time in | No. of shocks | Duration of shock | Intensity in R.F. scale. | Remarks |
|---------------------|---------|---------|---------------|-------------------|--------------------------|---------|
|                     | GMT     | GMT     |               |                   |                          |         |
|                     |         | h. m.   |               |                   |                          |         |
| Qazigund (Kashmir)  | 04      | 04 28   | One           | 2 secs            | IV                       |         |
| Upper Shillong      | 09      | 17 08   | One           | 30 secs           | IV                       |         |
| North Lakshimpur    | 09      | 17 10   | One           | 3 secs            | IV                       |         |
| Imphal              | 09      | 17 10   | Two           | 5 secs            | II                       |         |
| Dibrugarh           | 09      | 17 12   | One           | 1 sec             | II                       |         |
| Jorhat              | 09      | 17 12   | N/A           | 25 secs           | II                       |         |
| Upper Shillong      | 20      | 13 39   | One           | 3 secs            | IV                       |         |









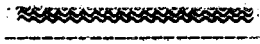


IV

| DATE | HOUR | K | MEAN   | MEAN   | DATE | HOUR | K | MEAN   | MEAN   | DATE | HOUR | K | MEAN   | MEAN   |
|------|------|---|--------|--------|------|------|---|--------|--------|------|------|---|--------|--------|
|      | GMT  |   | Ampli- | Period |      | GMT  |   | Ampli- | Period |      | GMT  |   | Ampli- | Period |
|      |      |   | tude   | in     |      |      |   | tude   | in     |      |      |   | tude   | in     |
|      |      |   | in mm  | secs   |      |      |   | in mm  | secs   |      |      |   | in mm  | secs   |

Station: PORT BLAIR (Contd.)

|        |    |   |     |     |        |    |   |     |     |        |    |   |     |     |
|--------|----|---|-----|-----|--------|----|---|-----|-----|--------|----|---|-----|-----|
| 26     | 06 | 3 | 1.1 | 8.0 | 27     | 12 | 3 | 0.2 | 2.0 | 29     | 06 | 3 | 0.4 | 3.0 |
| Contd. |    |   | 0.2 | 2.0 | Contd. | 18 | 3 | 0.2 | 2.0 | Contd. | 12 | 3 | 0.4 | 3.0 |
|        | 12 | 3 | 1.1 | 8.0 |        |    |   |     |     |        | 18 | 3 | 0.3 | 3.0 |
|        | 18 | 3 | 1.1 | 8.0 | 28     | 00 | 3 | 0.2 | 2.0 | 30     | 00 |   |     |     |
|        |    |   | 0.2 | 2.0 |        | 06 | 3 | 0.7 | 8.0 |        | 06 | 3 | 0.2 | 3.0 |
|        |    |   |     |     |        | 12 |   |     |     |        | 12 | 3 | 0.7 | 7.0 |
| 27     | 00 |   |     |     |        | 18 | 3 | 0.2 | 2.0 |        | 18 | 3 | 1.1 | 2.0 |
|        | 06 | 3 | 0.2 | 2.0 | 29     | 00 |   |     |     |        |    |   |     |     |





GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

*May, 1959*



Published under the direction of  
Shri S. Bosu, M.Sc. F.N.I.,  
Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants

| STATION      | LATITUDE  | LONGITUDE | HEIGHT<br>a. s. l.<br>(Metres) | LITHOGRAPHIC<br>FOUNDATION                            | INSTRUMENT    | COMPT. | PERIOD<br>IN<br>SECS.     | STATIC<br>MAGNI-<br>FICATION | DAMPING<br>RATIO     | PAPER<br>SPEED<br>mm/min. |
|--------------|-----------|-----------|--------------------------------|-------------------------------------------------------|---------------|--------|---------------------------|------------------------------|----------------------|---------------------------|
| BOMBAY       | 18° 54' N | 72° 49' E | 5                              | Deccan Trap                                           | Milne-Shaw    | N      | 12                        | 350                          | 13:1                 | 16                        |
|              |           |           |                                |                                                       | Milne-Shaw    | E      | 12                        | 350                          | 23:1                 | 8                         |
|              |           |           |                                |                                                       | Sprengnether  | E      | To = Tg = 7 secs          |                              |                      | 30                        |
| BOKARO       | 23° 50' N | 85° 48' E |                                | Rock                                                  | Milne-Shaw    | N      | 12                        | 250                          | 20:1                 | 16                        |
|              |           |           |                                |                                                       | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | 16                        |
|              |           |           |                                |                                                       | Wood-Anderson | E      | 0.8                       | 950                          | h = 0.8              | 60                        |
|              |           |           |                                |                                                       | Wood-Anderson | N      | 0.8                       | 1000                         | h = 0.8              | 60                        |
| CALCUTTA     | 22° 32' N | 88° 22' E |                                | (1) 7 (Milne-Shaw)<br>(2) 6 (Omori-Ewing)<br>Alluvium | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | 8                         |
|              |           |           |                                |                                                       | Wood-Anderson | N      | 2                         | 870                          | Critical             | 30                        |
|              |           |           |                                |                                                       | Omori-Ewing   | N      | 16                        | 32                           |                      | 25.4                      |
|              |           |           |                                |                                                       | Omori-Ewing   | E      | 21                        | 30                           |                      | 25.4                      |
|              |           |           |                                |                                                       |               |        |                           |                              |                      |                           |
| CHATRA       | 26° 50' N | 87° 10' E | 161                            | Sand Stone                                            | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | 16                        |
|              |           |           |                                |                                                       | Wood-Anderson | N      | 1                         | 1000                         | 30:1                 | 60                        |
|              |           |           |                                |                                                       | Benioff       | Z      | To = 0.72 Tg = 0.45 secs. |                              |                      | 60                        |
|              |           |           |                                | Wenner Accelerograph                                  | ZNE           |        |                           |                              |                      |                           |
| COLOMBO      | 06° 54' N | 79° 52' E | 7                              | Beach Sand                                            | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | -                         |
| DEHKA DUN    | 30° 19' N | 78° 02' E | 682                            | Gravel                                                | Wood-Anderson | N      | 0.8                       | 950                          | Critical             | 60                        |
|              |           |           |                                |                                                       | Wood-Anderson | E      | 0.8                       | 850                          | Critical             | 60                        |
|              |           |           |                                |                                                       | Milne-Shaw    | N      | 12                        | 250                          | 20:1                 | 8                         |
|              |           |           |                                |                                                       | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | 8                         |
| HYDERABAD    | 17° 26' N | 78° 27' E | 536                            | Granite                                               | Milne-Shaw    | E      | 12                        | 250                          | 20:1                 | 8                         |
|              |           |           |                                |                                                       | Milne-Shaw    | N      | 12                        | 250                          | 20:1                 | 8                         |
| KODAIKANAL   | 10° 14' N | 77° 28' E | 2346                           | Rock                                                  | Milne-Shaw    | E      | 10                        | 250                          | 20:1                 | 8                         |
| MADRAS       | 13° 00' N | 80° 11' E | 15                             |                                                       | Sprengnether  | E      | To = Tg = 72 secs         |                              | Critical             | 30                        |
| NEW DELHI    | 28° 35' N | 77° 12' E | 207                            | Massive Quartzite                                     |               |        |                           |                              |                      |                           |
| POONA        | 18° 32' N | 73° 51' E | 560                            | Deccan Trap                                           | Sprengnether  | Z      | To = Tg = 1.6             |                              | Critical             | 30                        |
|              |           |           |                                |                                                       | Wood-Anderson | E      | 4                         | 1000                         | 20:1                 | 16                        |
|              |           |           |                                |                                                       | Milne-Shaw    | N      | 12                        | 280                          | 20:1                 | 8                         |
| FORT BLAIR   | 11° 49' N | 92° 43' E |                                |                                                       | Wood-Anderson | N      | 2                         | 1000                         | 20:1                 | 30                        |
|              |           |           |                                |                                                       | Wood-Anderson | E      | 0.8                       | 1000                         | 55:1                 | 30                        |
|              |           |           |                                |                                                       | Milne-Shaw    | N      | 12                        | 350                          | 20:1                 | 8                         |
| SHILLONG     | 25° 34' N | 91° 53' E | 1600                           | Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite)    | Wood-Anderson | N      | 0.8                       | 1000                         | h = 0.8              | 30                        |
|              |           |           |                                |                                                       | Wood-Anderson | E      | 0.8                       | 1000                         | h = 0.8              | 30                        |
|              |           |           |                                |                                                       | Milne-Shaw    | N      | 12                        | 250                          | 20:1                 | 8                         |
|              |           |           |                                |                                                       | Benioff       | Z      | To = 1.0 Tg = 0.18        |                              |                      | 60                        |
|              |           |           |                                |                                                       | Sprengnether  | E      | To = Tg = 6.5             |                              | Critical             | 30                        |
|              |           |           |                                |                                                       |               |        |                           |                              | Wenner Accelerograph | ZNE                       |
| TOCKLAI      | 28° 45' N | 94° 46' E | -                              | Alluvium                                              | Wood-Anderson | E      | 0.8                       | 970                          | h = 0.8              | 50                        |
| VI ZIANAGRAM | 18° 07' N | 83° 27' E |                                |                                                       | Wood-Anderson | E      | 0.8                       | 1000                         | h = 0.8              | 30                        |
|              |           |           |                                |                                                       | Wood-Anderson | N      | 2                         | 1000                         | 20:1                 | 30                        |
|              |           |           |                                |                                                       |               |        |                           |                              |                      |                           |

| DATE | STATION                                                                                   | COMPT        | PHASE                   | G. M. T. Δ                                 | REMARKS                                                                                               | DATE       | STATION                                                                                                                                                 | COMPT                                               | PHASE                                                                            | G. M. T. Δ                                                   | REMARKS                           |
|------|-------------------------------------------------------------------------------------------|--------------|-------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------|
|      |                                                                                           |              |                         | h. m. s. km                                | May 1959                                                                                              |            |                                                                                                                                                         |                                                     |                                                                                  |                                                              |                                   |
| 01   | Epc: 45°N, 104°E. Outer Mongolia<br>- H = 05h 53m 26s (U.S.C.G.S)                         |              |                         |                                            |                                                                                                       | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 05 04 27                                                     | Slight, distant                   |
|      | SHILLONG                                                                                  | Z            | iP                      | 05 58 12<br>i? 58 17                       | Slight, distant<br>Compression                                                                        | 03         | Epc: About 100 kms. Off East coast of Honshu, Japan<br>- H = 07h 26m 08s (U.S.C.G.S)                                                                    |                                                     |                                                                                  |                                                              |                                   |
|      | SHILLONG                                                                                  | Z            | iP                      | 07 34 19                                   | Slight, distant<br>Compression                                                                        | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 07 56 29                                                     | Slight, near                      |
| 01   | Epc: 3½°S, 135½°E. Western New Guinea<br>- H = 07h 19m 16s (U.S.C.G.S)                    |              |                         |                                            |                                                                                                       | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 11 16 59                                                     | Slight, distant                   |
|      | SHILLONG                                                                                  | Z            | eP                      | 07 28 26                                   | Slight, distant                                                                                       | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 11 20 32                                                     | Slight, distant                   |
| 01   | Epc: 36½°N, 52°E. Near North Coast of Iran.<br>- H = 08h 23m 57s (U.S.C.G.S)              |              |                         |                                            |                                                                                                       | 03         | DEHRA DUN                                                                                                                                               | NE                                                  | e                                                                                | 11 46 41                                                     | Tremor                            |
|      | DEHRA DUN                                                                                 | NE<br>N      | eP<br>iS<br>SSS<br>M    | 08 29 12<br>33 14<br>34 29<br>36 27        | 2500 Slight                                                                                           | 03         | BOMBAY                                                                                                                                                  | NE                                                  | e<br>e                                                                           | 13 31 10<br>34 40                                            | Slight                            |
| 01   | AGRA                                                                                      | ENZ          | eP<br>i<br>eS<br>i<br>M | 08 29 15<br>29 20<br>33 35<br>33 42<br>--- | 2740 Initial ground motion toward East, North, Dilation; slight intensify. Period = 14 sec Amp = 5 mm | POONA      | Z                                                                                                                                                       | eP                                                  | 13 31 21                                                                         | Feeble, phases not clear                                     |                                   |
|      | POONA                                                                                     | Z            | eP                      | 08 29 37                                   | Feeble, phases not clear                                                                              | SHILLONG   | Z                                                                                                                                                       | iP                                                  | 13 34 00                                                                         | Slight, distant<br>Rarefaction                               |                                   |
|      | BOMBAY                                                                                    | NE<br>N<br>E | eP<br>eS<br>e           | 08 29 38<br>34 04<br>34 27                 | 2840 Very slight                                                                                      | KODAIKANAL | E                                                                                                                                                       | e                                                   | 13 36 01                                                                         | Tremor                                                       |                                   |
|      | CHATRA                                                                                    | Z<br>NE      | iP<br>iS                | 08 30 21<br>35 32                          | 3540 Slight                                                                                           | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 17 14 22                                                     | Slight, distant                   |
|      | SHILLONG                                                                                  | Z            | eP                      | 08 31 01                                   | Slight, distant                                                                                       | 03         | SHILLONG                                                                                                                                                | Z                                                   | iP                                                                               | 17 25 45                                                     | Slight, distant<br>Rarefaction    |
| 01   | SHILLONG                                                                                  | Z            | iP                      | 08 54 27                                   | Slight, distant<br>Compression                                                                        | 03         | Epc: Sundra Strait<br>- H = 18h 32m 58s (U.S.C.G.S)                                                                                                     |                                                     |                                                                                  |                                                              |                                   |
| 01   | Epc: 5°S, 154°E. Solomon Islands Region.<br>- H = 14h 56m 57s (U.S.C.G.S) - h about 60 km |              |                         |                                            |                                                                                                       | SHILLONG   | Z                                                                                                                                                       | eP                                                  | 18 39 45                                                                         | Slight, distant                                              |                                   |
|      | SHILLONG                                                                                  | Z            | iP                      | 15 07 47                                   | Slight, distant<br>Compression                                                                        | 03         | CHATRA                                                                                                                                                  | Z                                                   | iPg<br>iSg                                                                       | 18 40 09<br>40 11                                            | 20 Feeble                         |
| 02   | CHATRA                                                                                    | Z<br>ZNE     | iP<br>iS                | 00 14 40<br>15 09                          | 250 Slight                                                                                            | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 21 10 57                                                     | Slight, distant                   |
| 02   | SHILLONG                                                                                  | Z            | iP                      | 00 15 34                                   | Slight, distant<br>Rarefaction                                                                        | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 22 20 42                                                     | Slight, distant                   |
| 02   | SHI LONG                                                                                  | Z            | iP                      | 11 42 49                                   | Slight, distant<br>Rarefaction                                                                        | 03         | SHILLONG                                                                                                                                                | Z                                                   | eP<br>Sg                                                                         | 23 29 38<br>29 47                                            | 80 Slight                         |
| 02   | SHILLONG                                                                                  | Z            | eP<br>Sg                | 13 55 52<br>55 57                          | 40 Slight                                                                                             | 04         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 00 21 44                                                     | Slight, near                      |
|      | CHATRA                                                                                    | Z<br>NEZ     | iP<br>iS                | 13 56 41<br>57 30                          | 450 Slight                                                                                            | 04         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 02 52 04                                                     | Slight.                           |
| 02   | SHILLONG                                                                                  | Z            | eP                      | 18 26 26                                   | Slight, near                                                                                          | 04         | Epc: 23½°N, 123°E. Off East Coast of Formosa<br>- H = 03h 17m 34s (U.S.C.G.S)                                                                           |                                                     |                                                                                  |                                                              |                                   |
|      | TOCKLAI                                                                                   | E            | eP<br>i                 | 18 26 50<br>27 19                          | Slight, distant                                                                                       | SHILLONG   | Z                                                                                                                                                       | iP                                                  | 03 23 32                                                                         | Slight, distant<br>Rarefaction                               |                                   |
|      | CHATRA                                                                                    | Z<br>NEZ     | iP<br>iS                | 18 27 22<br>28 46                          | 810 Slight                                                                                            | 04         | SHILLONG                                                                                                                                                | Z                                                   | eP                                                                               | 07 23 05                                                     | Slight, distant                   |
| 02   | SHILLONG                                                                                  | Z            | e                       | 18 33 28                                   | Tremor                                                                                                | 04         | Epc: 52½°N, 159½°E. Near East Coast of Kamchatka.<br>- H = 07h 15m 42s (U.S.C.G.S) - h about 60 km<br>Mag: 8 (Pas), 8½ (Berk). 1 killed and 13 injured. |                                                     |                                                                                  |                                                              |                                   |
| 02   | PORT BLAIR                                                                                | E            | iPg<br>iSg              | 19 17 28<br>17 33                          | 40 Slight                                                                                             | 04         | TOCKLAI                                                                                                                                                 | E                                                   | iP                                                                               | 07 25 12                                                     | Distant                           |
| 02   | SHILLONG                                                                                  | Z            | eP                      | 21 41 11                                   | Slight, distant                                                                                       | SHILLONG   | Z<br>N                                                                                                                                                  | iP<br>PP<br>PPP<br>iS<br>PPS<br>SS                  | 07 25 28<br>27 24<br>28 28<br>33 09<br>33 17<br>36 32                            | 6110 Compression                                             |                                   |
| 03   | SHI LONG                                                                                  | Z            | eP                      | 00 53 03                                   | Slight, near                                                                                          | 04         | CHATRA                                                                                                                                                  | Z<br>NE                                             | iP<br>iS                                                                         | 07 25 39<br>33 34                                            | 6350                              |
| 03   | Epc: 10½°S, 161½°E. Solomon Islands<br>- H = 03h 01m 38s (U.S.C.G.S)                      |              |                         |                                            |                                                                                                       | 04         | CALCUTTA                                                                                                                                                | E                                                   | iP<br>iS<br>ScS<br>SSS<br>Lr<br>M                                                | 07 25 55<br>33 55<br>35 53<br>39 53<br>43 21<br>48 08        | 6450 Initial ground movement West |
|      | SHILLONG                                                                                  | Z            | iP                      | 03 13 30                                   | Slight, distant<br>Rarefaction                                                                        | DEHRA DUN  | NE<br>N                                                                                                                                                 | eP<br>PP<br>PPP<br>iS<br>SS<br>SSS<br>Lq<br>Lr<br>M | 07 26 01<br>28 02<br>29 26<br>34 08<br>38 13<br>40 05<br>40 17<br>43 00<br>47 22 | 6570                                                         |                                   |
| 03   | SHILLONG                                                                                  | Z            | eP                      | 03 24 36                                   | Slight, near                                                                                          |            |                                                                                                                                                         |                                                     |                                                                                  |                                                              | Period 17 secs<br>μ = 125         |
| 03   | SHILLONG                                                                                  | Z            | eP                      | 04 32 26                                   | Tremor                                                                                                | AGRA       | ZNE                                                                                                                                                     | iP<br>i<br>PcP<br>i                                 | 07 26 13<br>26 27<br>25 51<br>27 27                                              | 6870 Initial ground motion towards South, West, Compression. |                                   |



| DATE | STATION                                                                              | COMPT | PHASE   | G. M. T. | $\Delta$ | REMARKS                             | DATE | STATION                                                                        | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS                                  |
|------|--------------------------------------------------------------------------------------|-------|---------|----------|----------|-------------------------------------|------|--------------------------------------------------------------------------------|-------|-------|----------|----------|------------------------------------------|
|      |                                                                                      |       |         | h. m. s. | km       | May 1959                            |      |                                                                                |       |       | h. m. s. | km       |                                          |
| 04   | Epc: Fiji Islands. - H: 22h 44m 00s (U.S.C.G.S)                                      |       |         |          |          |                                     | 05   | SHILLONG                                                                       | Z     | eP    | 20 44 58 |          | Slight, very near.                       |
|      | SHILLONG                                                                             | Z     | eP      | 22 54 59 |          | Slight, distant                     | 05   | SHILLONG                                                                       | Z     | eP    | 21 00 08 |          | Slight, tremor                           |
| 04   | SHILLONG                                                                             | Z     | eP      | 23 44 31 |          | Slight, distant                     | 05   | SHILLONG                                                                       | Z     | eP    | 00 10 10 |          | Slight, distant                          |
| 04   | SHILLONG                                                                             | Z     | iP      | 23 59 39 |          | Slight, distant Compression         | 05   | TOCKLAI                                                                        | E     | eP    | 03 38 22 |          | Slight, distant                          |
| 05   | SHILLONG                                                                             | Z     | eP      | 00 02 17 |          | Slight, distant                     |      | SHILLONG                                                                       | Z     | iP    | 03 38 23 | 420      | Slight                                   |
| 05   | SHILLONG                                                                             | Z     | eP      | 00 04 21 |          | Slight, distant                     |      |                                                                                | E     | iS    | 39 09    |          |                                          |
| 05   | SHILLONG                                                                             | Z     | iP      | 00 34 55 |          | Slight, distant Compression         |      | CHATRA                                                                         | Z     | iP    | 03 38 45 | 800      | Slight                                   |
| 05   | SHILLONG                                                                             | Z     | eP      | 03 03 22 |          | Slight, near                        |      |                                                                                | NEZ   | iS    | 40 08    |          |                                          |
| 05   | SHILLONG                                                                             | Z     | eP      | 05 30 48 |          | Slight, near                        | 05   | SHILLONG                                                                       | Z     | eP    | 06 13 59 |          | Slight, distant                          |
| 05   | SHILLONG                                                                             | Z     | eP      | 07 43 27 | 140      | Slight                              | 05   | SHILLONG                                                                       | Z     | eP    | 07 16 58 |          | Slight, distant                          |
|      |                                                                                      |       | Sg      | 43 43    |          |                                     | 06   | SHILLONG                                                                       | Z     | e     | 08 15 42 |          |                                          |
| 05   | SHILLONG                                                                             | Z     | eP      | 08 25 01 |          | Slight, distant                     | 06   | SHILLONG                                                                       | Z     | e     | 08 16 37 |          |                                          |
|      | POONA                                                                                | Z     | eP      | 10 44 20 |          | Feeble, phases not clear            | 06   | SHILLONG                                                                       | Z     | iP    | 13 13 00 |          | Slight, distant Rarefaction              |
| 05   | Epc: 34°N, 71½°E. Afghanistan - H: 11h 40m 08s (U.S.C.G.S)                           |       |         |          |          |                                     | 06   | SHILLONG                                                                       | Z     | eP    | 14 00 38 |          | Slight, distant                          |
|      | DEHRA DUN                                                                            | NE    | eP      | 11 42 11 | 710      | Slight                              | 06   | SHILLONG                                                                       | Z     | e     | 14 01 19 |          |                                          |
|      |                                                                                      | N     | PP      | 42 20    |          |                                     | 06   | SHILLONG                                                                       | Z     | eP    | 14 04 53 |          | Slight, distant                          |
|      |                                                                                      |       | PPP     | 42 24    |          |                                     | 06   | SHILLONG                                                                       | Z     | eP    | 14 14 46 |          | Slight, distant                          |
|      |                                                                                      |       | iS      | 43 25    |          |                                     | 06   | SHILLONG                                                                       | Z     | e     | 14 42 01 |          | Tremor                                   |
|      |                                                                                      |       | Lr      | 43 32    |          |                                     | 06   | SHILLONG                                                                       | Z     | eP    | 15 42 13 |          | Slight, distant                          |
|      |                                                                                      |       | SS      | 43 37    |          |                                     |      |                                                                                |       | e     | 42 50    |          |                                          |
|      |                                                                                      |       | SSS     | 43 48    |          |                                     | 06   | SHILLONG                                                                       | Z     | iP    | 17 39 31 |          | Slight, distant Rarefaction              |
|      |                                                                                      |       | Sg, M   | 44 02    |          |                                     |      |                                                                                |       |       |          |          |                                          |
|      | CHATRA                                                                               | Z     | iP      | 11 43 43 | 1770     | Slight                              | 06   | SHILLONG                                                                       | Z     | iP    | 18 48 39 |          | Slight, distant Rarefaction              |
|      |                                                                                      | NE    | iS      | 45 40    |          |                                     |      |                                                                                |       |       |          |          |                                          |
|      | SHILLONG                                                                             | Z     | iP      | 11 44 43 |          | Slight, distant Rarefaction         | 06   | Epc: 3°S, 128°E. Ceram Island. - H: 18h 52m 22s (U.S.C.G.S)                    |       |       |          |          |                                          |
|      | BOMBAY                                                                               | E     | e       | 11 47 53 |          | Very slight                         |      | PORT BLAIR                                                                     | E     | eP    | 19 00 25 |          | Slight                                   |
| 05   | DEHRA DUN                                                                            | NE    | e       | 13 04 04 |          | Feeble                              |      |                                                                                |       | e     | 05 40    |          |                                          |
|      |                                                                                      |       | i       | 05 15    |          |                                     |      |                                                                                |       | e     | 09 55    |          |                                          |
|      | SHILLONG                                                                             | Z     | eP      | 13 06 01 |          | Slight, distant                     |      | SHILLONG                                                                       | Z     | iP    | 19 00 43 | 50 10    | Slight                                   |
| 05   | SHILLONG                                                                             | Z     | eP      | 17 16 27 |          | Slight, distant                     |      |                                                                                | E     | iS    | 07 23    |          |                                          |
| 05   | SHILLONG                                                                             | Z     | eP      | 17 18 49 |          | Slight, near                        |      | CHATRA                                                                         | Z     | iP    | 19 01 15 | 5440     | Slight                                   |
| 05   | DEHRA DUN                                                                            | NE    | e       | 18 36 44 |          | Tremor                              |      |                                                                                | NE    | iS    | 08 19    |          |                                          |
|      | CHATRA                                                                               | Z     | iP      | 18 37 58 | 3740     | Slight                              |      | AGRA                                                                           | E     | iP    | 19 02 18 | 6110     | Very slight, initial ground motion East. |
|      |                                                                                      | E     | iS      | 43 21    |          |                                     |      |                                                                                | ZNE   | iS    | 09 59    |          |                                          |
|      | SHILLONG                                                                             | Z     | iP      | 18 38 49 |          | Slight, distant Rarefaction         | 06   | DEHRA DUN                                                                      | NE    | eP    | 19 02 22 | 6310     | Feeble, phases not clear                 |
|      |                                                                                      |       |         |          |          |                                     |      |                                                                                |       | iS    | 10 15    |          |                                          |
|      | POONA                                                                                | Z     | Between | 18 39    |          | Very feeble, phases not clear       |      | BOMBAY                                                                         | N     | e     | 19 10 23 |          | Very slight                              |
|      |                                                                                      |       | and     | 18 41    |          |                                     |      | COLOMBO                                                                        | E     | e     | 19 22 02 |          | 0.5 mm                                   |
| 05   | Epc: 53°N, 159°E. Kamchatka after shock. - H: 19h 04m 15s (U.S.C.G.S). Mag: 6 (Pas). |       |         |          |          |                                     |      |                                                                                |       | M     | 24 55    |          |                                          |
|      | SHILLONG                                                                             | Z     | eP      | 19 13 58 | 6150     |                                     |      | KODAIKANAL                                                                     | E     | e     | 19 22 03 |          | Tremor                                   |
|      |                                                                                      |       | eS      | 21 42    |          |                                     | 06   | SHILLONG                                                                       | Z     | iP    | 20 02 26 |          | Slight, distant Rarefaction              |
| 05   | CHATRA                                                                               | Z     | iP      | 19 14 08 | 6530     |                                     | 06   | DEHRA DUN                                                                      | NE    | e     | 21 39 47 |          | Tremor                                   |
|      |                                                                                      | NE    | iS      | 22 13    |          |                                     | 06   | SHILLONG                                                                       | Z     | e     | 22 44 12 |          | Tremor                                   |
|      | DEHRA DUN                                                                            | NE    | eP      | 19 14 45 | 6590     | Feeble                              | 06   | SHILLONG                                                                       | Z     | e     | 23 06 30 |          | Tremor                                   |
|      |                                                                                      |       | eS      | 22 53    |          |                                     | 07   | Epc: 3°S, 148½°E. Bismarck Sea. - H: 00h 03m 24s (U.S.C.G.S). Mag: 6-6½ (Pas). |       |       |          |          |                                          |
|      | POONA                                                                                | Z     | P       | 19 15 47 |          | Slight                              |      | COLOMBO                                                                        | E     | e     | 00 13 08 |          |                                          |
|      | PORT BLAIR                                                                           | E     | e       | 19 23 58 |          | Slight                              |      |                                                                                |       | e     | 23 38    |          |                                          |
|      | BOMBAY                                                                               | NE    | e       | 19 26 00 |          | Slight, beginning of the shock lost | 07   | PORT BLAIR                                                                     | E     | iP    | 00 13 19 |          |                                          |
|      | KODAIKANAL                                                                           | E     | e       | 19 44 30 |          | Tremor                              |      | SHILLONG                                                                       | Z     | iP    | 00 13 46 |          | Distant                                  |
| 05   | SHILLONG                                                                             | Z     | eP      | 20 13 48 |          | Slight, distant                     |      |                                                                                |       |       |          |          |                                          |

| DATE   | STATION                                                                               | COMPT     | PHASE                       | G. M. T.                                     | $\Delta$ | REMARKS                        | DATE | STATION                                                                               | COMPT        | PHASE               | G. M. T.                            | $\Delta$          | REMARKS                                               |                 |
|--------|---------------------------------------------------------------------------------------|-----------|-----------------------------|----------------------------------------------|----------|--------------------------------|------|---------------------------------------------------------------------------------------|--------------|---------------------|-------------------------------------|-------------------|-------------------------------------------------------|-----------------|
|        |                                                                                       |           |                             | h. m. s.                                     | km       |                                |      |                                                                                       |              |                     | h. m. s.                            | km                |                                                       |                 |
| 07     | CHATRA                                                                                | Z         | iP                          | 00 14 14                                     |          |                                |      |                                                                                       |              |                     |                                     |                   |                                                       |                 |
| Contd. | MADRAS                                                                                | E         | eP<br>eS                    | 00 14 40<br>24 04                            | 8050     | Other phases not clear         | 08   | SHILLONG                                                                              | Z            | eP                  | 05 24 24                            |                   | Slight, distant                                       |                 |
|        | AGRA                                                                                  | EZ<br>ZNE | iP<br>iS<br>M               | 00 15 04<br>24 34<br>-- --                   | 8180     | Ground motion West, dilatation | 08   | BOMBAY                                                                                | N            | e                   | 06 53 17                            |                   | Very slight                                           |                 |
|        | DEHRA DUN                                                                             | E         | eP<br>PP<br>iS<br>PPS<br>SS | 00 15 11<br>18 01<br>24 49<br>25 34<br>29 37 | 8330     |                                | 08   | SHILLONG                                                                              | Z            | iP<br>eS            | 11 44 34<br>52 24                   | 6250              | Slight, focal                                         |                 |
| 07     | POONA                                                                                 | Z<br>N    | iP<br>S                     | 00 15 18<br>25 04                            | 8510     |                                |      | CHATRA                                                                                | ZNE<br>NE    | iP<br>iS            | 11 44 48<br>52 52                   | 6520              |                                                       |                 |
|        | KODAIKANAL                                                                            | E         | e                           | 00 24 30                                     |          |                                | 08   | DEHRA DUN                                                                             | NE           | eP<br>ep            | 11 45 06<br>54 50                   |                   | Other phases not clear                                |                 |
| 07     | SHILLONG                                                                              | Z         | e                           | 04 49 27                                     |          | Tremor                         |      | AGRA                                                                                  | ZNE          | iP<br>M             | 11 45 21<br>-- --                   |                   | Initial ground motion towards South, West, dilatation |                 |
| 07     | DEHRA DUN                                                                             | NE        | e                           | 05 32 03                                     |          | Tremor                         |      | PORT BLAIR                                                                            | E            | iP<br>iS            | 11 45 45<br>54 36                   | 7410              | Slight                                                |                 |
| 07     | DEHRA DUN                                                                             | NE        | e                           | 07 15 12                                     |          | Tremor                         |      | POONA                                                                                 | Z            | iP                  | 11 45 55                            |                   |                                                       |                 |
| 07     | VIZIANAGRAM                                                                           | N         | e                           | 08 38 47                                     |          | Slight, distant                |      | BOMBAY                                                                                | NE<br>E<br>N | eP<br>eS<br>PS      | 11 46 20<br>55 46<br>56 29          | 8090              |                                                       |                 |
| 07     | Epc: 3 $^{\circ}$ S, 149 $^{\circ}$ E. Bismarck Sea<br>H = 09h 03m 46s (U.S.C.G.S)    |           |                             |                                              |          |                                |      | 08                                                                                    | PORT BLAIR   | E                   | iPg                                 | 13 23 33          |                                                       | Slight          |
|        | SHILLONG                                                                              | Z         | iP                          | 09 14 17                                     |          | Slight, distant<br>Rarefaction | 08   | CHATRA                                                                                | Z            | iP<br>iS            | 13 37 39<br>38 14                   | 310               | Feeble                                                |                 |
| 07     | SHILLONG                                                                              | Z         | e                           | 10 25 23                                     |          | Slight, distant                | 08   | PORT BLAIR                                                                            | E            | iP<br>Lq<br>eS<br>M | 14 04 08<br>05 30<br>05 40<br>06 30 | 890               | Slight                                                |                 |
| 07     | TOCKLAI                                                                               | E         | eP                          | 11 01 39                                     |          | Slight, distant                | 08   | SHILLONG                                                                              | Z            | eP                  | 14 04 39                            |                   | Slight, distant                                       |                 |
|        | SHILLONG                                                                              | Z         | eP                          | 11 02 06                                     |          | Slight, distant                |      | CHATRA                                                                                | Z            | i                   | 14 06 31                            |                   | Slight, distant                                       |                 |
| 07     | Epc: 3 $^{\circ}$ S, 150 $^{\circ}$ E. Bismarck Sea<br>H = 11h 17m 16s (U.S.C.G.S)    |           |                             |                                              |          |                                |      | 08                                                                                    | CHATRA       | Z                   | iPg<br>iSg                          | 14 20 00<br>20 10 | 80                                                    | Feeble          |
|        | SHILLONG                                                                              | Z         | iP                          | 11 27 48                                     |          | Slight, distant<br>Compression | 08   | Epc: 45 $^{\circ}$ N, 150 $^{\circ}$ E. Kurile Islands<br>H = 15h 28m 58s (U.S.C.G.S) |              |                     |                                     |                   |                                                       |                 |
|        | CHATRA                                                                                | Z         | i                           | 11 28 16                                     |          | Slight, distant                |      | SHILLONG                                                                              | Z            | iP                  | 15 37 59                            |                   | Slight, distant<br>Compression                        |                 |
|        | POONA                                                                                 | Z         | e                           | 11 29 23                                     |          | Tremor                         | 08   | SHILLONG                                                                              | Z            | eP<br>eSg           | 16 25 02<br>25 29                   |                   | Slight                                                |                 |
|        | DEHRA DUN                                                                             | NE        | e                           | 11 38 56                                     |          | Feeble                         |      | CHATRA                                                                                | Z            | i                   | 16 25 40                            |                   | Slight, distant                                       |                 |
| 07     | SHILLONG                                                                              | Z         | eP                          | 12 08 20                                     |          | Slight, distant                |      | SEHORE                                                                                | NE           | e                   | 16 32 30                            |                   |                                                       |                 |
| 07     | SHILLONG                                                                              | Z         | eP                          | 17 57 13                                     |          | Slight, distant                | 08   | SHILLONG                                                                              | Z            | e                   | 17 11 09                            |                   | Slight, distant                                       |                 |
| 07     | Epc: 8 $^{\circ}$ S, 123 $^{\circ}$ E. Flores Islands<br>H = 20h 22m 41s (U.S.C.G.S)  |           |                             |                                              |          |                                |      | 08                                                                                    | SHILLONG     | Z                   | e                                   | 17 11 36          |                                                       | Slight, distant |
|        | SHILLONG                                                                              | Z         | iP                          | 20 31 14                                     |          | Slight, distant<br>Rarefaction | 08   | SHILLONG                                                                              | Z            | e                   | 17 51 38                            |                   | Slight, distant                                       |                 |
|        | CHATRA                                                                                | Z<br>E    | iP<br>iS                    | 20 31 42<br>38 38                            | 5300     | Slight                         | 08   | SHILLONG                                                                              | Z            | iP                  | 21 14 52                            |                   | Slight, distant<br>Rarefaction                        |                 |
| 07     | DEHRA DUN                                                                             | NE        | e                           | 20 32 37                                     |          | Feeble                         | 08   | SHILLONG                                                                              | Z            | eP                  | 21 51 54                            |                   | Slight, distant                                       |                 |
|        | PORT BLAIR                                                                            | E         | i                           | 20 38 39                                     |          | Slight                         | 09   | SHILLONG                                                                              | Z            | eP<br>iSg           | 02 05 59<br>06 20                   | 180               | Slight                                                |                 |
| 07     | CHATRA                                                                                | Z         | iPg<br>iSg                  | 21 18 39<br>18 50                            | 80       | Feeble                         | 09   | SHILLONG                                                                              | Z            | eP                  | 05 58 11                            |                   | Slight, near                                          |                 |
| 07     | SHILLONG                                                                              | Z         | eP                          | 23 45 31                                     |          | Slight, distant                | 09   | SHILLONG                                                                              | Z            | eP                  | 07 31 24                            |                   | Slight, distant                                       |                 |
| 08     | SHILLONG                                                                              | Z         | eP                          | 01 01 22                                     |          | Slight, distant                | 09   | SHILLONG                                                                              | Z            | e                   | 08 19 23                            |                   | Near                                                  |                 |
| 08     | SHILLONG                                                                              | Z         | e                           | 03 27 05                                     |          | Tremor                         | 09   | SHILLONG                                                                              | Z            | e                   | 08 19 52                            |                   | Slight, distant                                       |                 |
| 08     | SHILLONG                                                                              | Z         | e                           | 03 35 24                                     |          | Tremor                         | 09   | SHILLONG                                                                              | Z            | eP                  | 08 52 25                            |                   | Slight, distant                                       |                 |
| 08     | SHILLONG                                                                              | Z         | eP                          | 04 14 22                                     |          | Slight, distant                |      | DEHRA DUN                                                                             | NE           | e                   | 08 53 08                            |                   | Tremor                                                |                 |
| 08     | SHILLONG                                                                              | Z         | iP<br>iSg                   | 05 12 53<br>13 44                            | 440      | Slight, rarefaction            | 09   | SHILLONG                                                                              | Z            | eP                  | 10 35 24                            |                   | Slight, distant                                       |                 |
|        | CHATRA                                                                                | Z<br>NEZ  | iP<br>iS                    | 05 13 20<br>14 20                            | 560      | Slight                         | 09   | SHILLONG                                                                              | Z            | iP                  | 15 20 06                            |                   | Slight, distant<br>Rarefaction                        |                 |
| 08     | Epc: 26 $^{\circ}$ N, 127 $^{\circ}$ E. Ryukyu Islands<br>H = 05h 15m 17s (U.S.C.G.S) |           |                             |                                              |          |                                |      |                                                                                       |              |                     |                                     |                   |                                                       |                 |
|        | SHILLONG                                                                              | Z         | iP                          | 05 21 45                                     |          | Slight, distant<br>Rarefaction |      |                                                                                       |              |                     |                                     |                   |                                                       |                 |



| DATE | STATION                                                                                 | COMPT | PHASE      | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                        | DATE | STATION                                                                                              | COMPT | PHASE    | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                              |        |
|------|-----------------------------------------------------------------------------------------|-------|------------|----------------------|----------------|--------------------------------|------|------------------------------------------------------------------------------------------------------|-------|----------|----------------------|----------------|------------------------------------------------------|--------|
| 09   | TOCKLAI                                                                                 | E     | eP         | 15 24 44             |                | Slight, distant                | 11   | TOCKLAI                                                                                              | E     | eP       | 23 16 23             |                | Slight, distant                                      |        |
| 09   | SHILLONG                                                                                | Z     | iP         | 15 43 30             |                | Slight, distant<br>Rarefaction |      | SHILLONG                                                                                             | Z     | eP       | 23 16 32             | 330            | Slight                                               |        |
| 09   | SHILLONG                                                                                | Z     | iP         | 16 17 50             |                | Slight, distant<br>Rarefaction |      | CHATRA                                                                                               | Z     | iP       | 23 17 30             | 950            | Slight                                               |        |
| 09   | SHILLONG                                                                                | Z     | iP         | 16 34 51             |                | Slight, distant<br>Rarefaction | 12   | Epc: 32°N, 79°E. Tibet - India Border<br>H: 00h 35m 46s (U.S.C.G.S)                                  |       |          |                      |                |                                                      |        |
| 09   | SHILLONG                                                                                | Z     | eP         | 18 51 08             |                | Slight, distant                |      | DEHRA DUN                                                                                            | NE    | eP       | 00 36 29             | 270            | Slight                                               |        |
| 09   | SHILLONG                                                                                | Z     | eP         | 19 21 53             |                | Slight, distant                |      |                                                                                                      | N     | PP       | 36 34                |                |                                                      |        |
| 09   | SHILLONG                                                                                | Z     | eP         | 19 27 04             |                | Slight, distant                |      |                                                                                                      |       | PPP      | 36 42                |                |                                                      |        |
| 09   | TOCKLAI                                                                                 | E     | eP         | 19 31 16             |                | Slight, distant                |      |                                                                                                      |       | Lq       | 36 50                |                |                                                      |        |
| 09   | SHILLONG                                                                                | Z     | iP         | 20 08 17             |                | Slight, distant<br>Rarefaction |      |                                                                                                      |       | iS       | 37 00                |                |                                                      |        |
| 09   | SHILLONG                                                                                | Z     | eP         | 20 56 21             |                | Slight, distant                |      |                                                                                                      |       | SS       | 37 11                |                |                                                      |        |
| 09   | Epc: 45°N, 149°E. Kurile Islands<br>H: 23h 57m 03s (U.S.C.G.S)                          |       |            |                      |                |                                |      | AGRA                                                                                                 | N     | iP       | 00 37 10             |                | Slight, distant,<br>initial ground<br>motion South   |        |
| 10   | POONA                                                                                   | Z     | iP         | 00 07 58             |                | Tremor                         |      |                                                                                                      | EN    | i        | 37 31                |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 03 32 40             |                | Tremor                         |      |                                                                                                      | E     | i        | 38 23                |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 06 54 14             |                | Slight, distant                |      | CHATRA                                                                                               | Z     | iP       | 00 38 06             |                | Slight                                               |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 07 55 18             |                | Slight, distant                |      |                                                                                                      | E     | e        | 40 52                |                |                                                      |        |
| 10   | COLOMBO                                                                                 | E     | e          | 07 55 39             |                | Amp: 0.2 mm                    | 12   | SHILLONG                                                                                             | Z     | iP       | 00 38 56             | 1370           | Slight,<br>Rarefaction                               |        |
| 10   | Epc: 48°N, 148°E. Sea of Okhotsk<br>H: 09h 44m 02s (U.S.C.G.S)                          |       |            |                      |                |                                |      |                                                                                                      | E     | eS       | 41 15                |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | iP         | 09 52 16             |                | Slight, distant<br>Rarefaction |      | BOMBAY                                                                                               | N     | eP       | 00 39 05             |                | Slight                                               |        |
| 10   | CHATRA                                                                                  | Z     | iPg<br>iSg | 09 52 31<br>52 32    |                | 10 Feeble                      |      |                                                                                                      | NE    | e        | 41 45                |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 10 36 44             |                | Slight, distant                |      |                                                                                                      | N     | e        | 43 22                |                |                                                      |        |
| 10   | Epc: 44°N, 150°E. Kurile Islands<br>H: 10h 49m 08s (U.S.C.G.S)                          |       |            |                      |                |                                |      | 12                                                                                                   | POONA | Z        | P                    | 00 39 11       | 1510                                                 | Slight |
| 10   | SHILLONG                                                                                | Z     | iP         | 10 58 07             |                | Slight, distant<br>Compression |      |                                                                                                      | ZE    | S        | 41 44                |                |                                                      |        |
| 10   | SHULLONG                                                                                | Z     | eP         | 11 59 47             |                | Slight, near                   |      | HYDERABAD                                                                                            | N     | eP       | 00 39 16             | 1540           | Slight                                               |        |
| 10   | SHILLONG                                                                                | Z     | eP<br>iSg  | 14 50 08<br>50 10    |                | 20 Slight                      |      |                                                                                                      | E     | eS       | 41 52                |                | Per: 6 secs<br>Amp: 5 mm                             |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 15 44 10             |                | Slight, distant                |      |                                                                                                      | M     | M        | 43 43                |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | e          | 15 44 49             |                | Slight, distant                |      | VIZIANAHAM                                                                                           | N     | e        | 00 39 27             |                | Slight, distant                                      |        |
| 10   | SHILLONG                                                                                | Z     | e          | 18 29 37             |                | Slight, very<br>distant        |      | CALCUTTA                                                                                             | E     | e        | 00 41 06             |                |                                                      |        |
| 10   | SHILLONG                                                                                | Z     | eP         | 22 01 54             |                | Slight, distant                |      |                                                                                                      | E     | e        | 43 11                |                |                                                      |        |
| 11   | SHILLONG                                                                                | Z     | eP         | 00 34 00             |                | Slight, near                   | 12   | MADRAS                                                                                               | E     | e        | 00 43 39             |                | Slight                                               |        |
| 11   | SHILLONG                                                                                | Z     | e          | 09 11 18             |                | Slight, distant                |      |                                                                                                      |       | e        | 44 07                |                |                                                      |        |
| 11   | SHILLONG                                                                                | Z     | e          | 12 23 12             |                | Tremor                         |      |                                                                                                      |       | e        | 45 58                |                |                                                      |        |
| 11   | Epc: 53°N, 160°E. Kamchatka, slightly deeper<br>than normal. H: 16h 28m 49s (U.S.C.G.S) |       |            |                      |                |                                |      |                                                                                                      |       | e        | 46 15                |                |                                                      |        |
| 11   | SHILLONG                                                                                | Z     | iP         | 16 38 33             |                | Slight, distant<br>Compression |      | KODAIKANAL                                                                                           | E     | e        | 00 44 58             |                | Tremor                                               |        |
| 11   | SHILLONG                                                                                | Z     | eP         | 17 15 22             |                | Slight, distant                | 12   | DEHRA DUN                                                                                            | NE    | e        | 01 12 52             |                | Feeble                                               |        |
| 11   | TOCKLAI                                                                                 | E     | iP         | 18 31 11             |                | Slight, distant                |      |                                                                                                      |       | e        | 13 22                |                |                                                      |        |
| 11   | SHILLONG                                                                                | Z     | iP         | 18 31 39             | 540            | Slight,<br>Rarefaction         | 12   | DEHRA DUN                                                                                            | NE    | e        | 01 36 27             |                | Tremor                                               |        |
| 11   | CHATRA                                                                                  | Z     | iP         | 18 32 25             | 1490           | Slight                         | 12   | SHILLONG                                                                                             | Z     | iP       | 02 03 23             | 100            | Slight                                               |        |
| 11   | CHATRA                                                                                  | Z     | iPg<br>iSg | 22 00 01<br>00 05    | 30             | Feeble                         |      |                                                                                                      |       | iSg      | 03 34                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                | 12   | Epc: 7°N, 77°W. Panama - Colombia Border<br>H: 03h 42m 47s (U.S.C.G.S)                               |       |          |                      |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      | SHILLONG                                                                                             | Z     | iPKP     | 04 02 06             |                | Slight, distant<br>Compression                       |        |
|      |                                                                                         |       |            |                      |                |                                | 12   | SHILLONG                                                                                             | Z     | i        | 04 26 39             |                | Slight, distant                                      |        |
|      |                                                                                         |       |            |                      |                |                                | 12   | Epc: 54°N, 168°E. Komandorskie Islands<br>H: 04h 57m 35s (U.S.C.G.S)<br>Mag: 6% (Pas), 6%-6% (Berk). |       |          |                      |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      | SHILLONG                                                                                             | Z     | iP       | 05 07 55             | 6860           |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | E     | iS       | 16 17                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      | DEHRA DUN                                                                                            | NE    | eP       | 05 08 25             | 7140           |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | N     | PPP      | 12 24                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | iS       | 17 03                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | SS       | 21 31                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | SSS      | 24 05                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | Lq       | 24 46                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | M        | 33 39                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                | 12   | AGRA                                                                                                 | ZNE   | iP       | 05 08 36             | 7500           | Initial ground<br>motion North,<br>East, rarefaction |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | Z     | PcP      | 09 06                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | PP       | 11 07                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | ZNE   | iS       | 17 32                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | pg       | 17 54                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      |       | PPS      | 18 14                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | NE    | SKS, ScS | 18 36                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | E     | i        | 19 38                |                |                                                      |        |
|      |                                                                                         |       |            |                      |                |                                |      |                                                                                                      | EZ    | SS       | 22 10                |                |                                                      |        |



| DATE | STATION                                                                                                               | COMPT | PHASE | G. M. T.<br>h m s. | $\Delta$<br>km | REMARKS                        | DATE | STATION                                      | COMPT      | PHASE | G. M. T.<br>h m s. | $\Delta$<br>km | REMARKS                                           |                        |
|------|-----------------------------------------------------------------------------------------------------------------------|-------|-------|--------------------|----------------|--------------------------------|------|----------------------------------------------|------------|-------|--------------------|----------------|---------------------------------------------------|------------------------|
| 12   | BOMBAY                                                                                                                | N     | eP    | 21 53 11           | 10090          | Slight                         | 14   | Epc: Crete foreshock                         | H          |       | 06h 27m 02s        |                | (USCGS)                                           |                        |
|      | Cont'd.                                                                                                               |       | eS    | 22 04 06           |                |                                |      | SHILLONG                                     | Z          | iP    | 06 36 52           |                | Slight, distant<br>Rarefaction                    |                        |
| 12   | POONA                                                                                                                 | Z     | iP    | 21 53 12           |                | Slight, other phases not clear | 14   | Epc: 35 $^{\circ}$ N, 24 $^{\circ}$ E. Crete |            |       | 06h 56m 57s        |                | (U.S.C.G.S) Mag: 6-6 $\frac{1}{2}$ (Pas.)         |                        |
| 12   | CHATRA                                                                                                                | Z     | e     | 22 01 22           |                | Slight, distant                |      | DEHRA DUN                                    | NE         | eP    | 06 45 13           | 4840           |                                                   |                        |
|      | PORT BLAIR                                                                                                            | E     | i     | 22 02 43           |                | Slight                         |      |                                              | N          | PP    | 47 01              |                |                                                   |                        |
| 12   | Epc: 51 $^{\circ}$ N, 177 $^{\circ}$ W. Andeanof Islands, Aleutian Islands. H = 21h 59m 56s (U.S.C.G.S) Mag: 6 (Pas.) |       |       |                    |                |                                |      |                                              |            |       | iS                 | 51 43          |                                                   |                        |
|      | SHILLONG                                                                                                              | Z     | iP    | 22 11 18           | 7890           | Compression                    |      |                                              |            | SS    | 55 04              |                |                                                   |                        |
|      |                                                                                                                       | E     | eS    | 20 34              |                |                                |      |                                              |            | Lq    | 55 25              |                |                                                   |                        |
| 12   | CHATRA                                                                                                                | Z     | i     | 22 11 29           |                | Distant                        |      | BOMBAY                                       | NE         | eP    | 06 45 15           | 5070           |                                                   |                        |
|      | TOCKLAI                                                                                                               | E     | e     | 22 11 33           |                | Distant                        |      |                                              |            | PP    | 47 07              |                |                                                   |                        |
|      | PORT BLAIR                                                                                                            | E     | i     | 22 12 19           |                |                                |      |                                              | N          | PPP   | 47 41              |                |                                                   |                        |
|      | POONA                                                                                                                 | Z     | iP    | 22 12 45           |                | Other phases not clear         |      |                                              | NE         | eS    | 51 58              |                |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              | E          | SS    | 55 13              |                |                                                   |                        |
|      | BOMBAY                                                                                                                | NE    | eP    | 22 12 47           | 10020          |                                |      |                                              | N          | SSS   | 55 46              |                |                                                   |                        |
|      |                                                                                                                       |       | SKS1  | 23 26              |                |                                |      | AGRA                                         | ZNE        | iP    | 16 45 17           | 5060           | Initial ground motion North, West and compression |                        |
|      |                                                                                                                       |       | eS    | 23 40              |                |                                |      |                                              | ZE         | i     | 45 25              |                |                                                   |                        |
| 12   | SHILLONG                                                                                                              | Z     | iP    | 22 19 13           |                | Slight, distant<br>Compression |      |                                              |            | PP    | 47 17              |                |                                                   |                        |
|      | PORT BLAIR                                                                                                            | E     | i     | 22 22 19           |                | Slight                         |      |                                              | ZNE        | iS    | 51 59              |                |                                                   |                        |
| 12   | SHILLONG                                                                                                              | Z     | e     | 22 32 19           |                | Tremor                         |      |                                              | NE         | PS    | 52 11              |                |                                                   |                        |
| 12   | SHILLONG                                                                                                              | Z     | iP    | 22 42 19           |                | Slight, distant<br>Rarefaction |      |                                              |            | PPS   | 52 25              |                |                                                   |                        |
| 12   | HYDERABAD                                                                                                             | E     | M     | 22 52 45           |                |                                |      |                                              |            | i     | 52 39              |                |                                                   |                        |
| 12   | SHILLONG                                                                                                              | Z     | eP    | 23 18 16           |                | Slight, near                   |      |                                              | E          | SS    | 55 34              |                |                                                   |                        |
| 12   | SHILLONG                                                                                                              | Z     | i     | 23 18 51           |                | Slight, near                   |      |                                              | ZNE        | M     | 17 02 36           |                | Per: 24 secs<br>Amp: 2.13 mm                      |                        |
| 12   | SHILLONG                                                                                                              | Z     | eP    | 00 01 09           |                | Slight, distant                | 14   | POONA                                        | Z          | eP    | 06 45 24           | 5160           |                                                   |                        |
| 13   | DEHRA DUN                                                                                                             | NE    | e     | 00 35 25           |                | Tremor                         |      |                                              | NE         | S     | 52 12              |                |                                                   |                        |
| 13   | DEHRA DUN                                                                                                             | NE    | e     | 01 37 50           |                | Tremor                         |      | HYDERABAD                                    | E          | eP    | 06 45 55           | 5630           |                                                   |                        |
| 13   | SHILLONG                                                                                                              | Z     | eP    | 06 07 22           |                | Slight, distant                |      |                                              |            | PP    | 48 04              |                |                                                   |                        |
| 13   | SHILLONG                                                                                                              | Z     | eP    | 06 54 57           | 110            | Slight                         |      |                                              |            | PPP   | 49 01              |                |                                                   |                        |
|      |                                                                                                                       |       | iSg   | 55 09              |                |                                |      |                                              |            | iS    | 53 10              |                |                                                   |                        |
| 13   | CALCUTTA                                                                                                              | E     | e     | 13 36 49           |                | Slight                         |      |                                              |            | PS    | 53 23              |                |                                                   |                        |
|      |                                                                                                                       |       | iS    | 37 03              |                |                                |      |                                              |            | SS    | 56 25              |                |                                                   |                        |
|      | SHILLONG                                                                                                              | Z     | eP    | 13 37 08           | 600            | Slight                         |      |                                              |            | Lq    | 58 00              |                |                                                   |                        |
|      |                                                                                                                       | E     | eS    | 38 10              |                |                                |      |                                              |            | Lr    | 07 00 19           |                |                                                   |                        |
|      | CHATRA                                                                                                                | Z     | iP    | 13 37 31           | 1220           | Slight                         |      |                                              |            | M     | 06 13              |                | Per: 21 secs<br>Amp: 6                            |                        |
|      |                                                                                                                       | ZNE   | iS    | 39 36              |                |                                |      | CHATRA                                       | Z          | iP    | 06 46 17           | 5870           |                                                   |                        |
| 13   | TOCKLAI                                                                                                               | E     | i     | 13 38 55           |                | Slight, distant                |      |                                              | NE         | iS    | 53 45              |                |                                                   |                        |
|      | DEHRA DUN                                                                                                             | NE    | e     | 13 41 42           |                | Tremor                         |      | 14                                           | KODAIKANAL | E     | e                  | 06 46 17       |                                                   | Other phases not clear |
|      | POONA                                                                                                                 | Z     | eP    | 13 42 00           |                | Feeble, phases not clear       |      |                                              |            | eS    | 53 59              |                |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            | SS    | 57 39              |                |                                                   |                        |
| 13   | DEHRA DUN                                                                                                             | NE    | e     | 17 40 14           |                | Tremor                         |      |                                              |            | Lr    | 02 29              |                |                                                   |                        |
| 14   | PORT BLAIR                                                                                                            | E     | eP    | 00 51 59           | 1720           | Slight                         |      |                                              |            | M     | 06 54              |                |                                                   |                        |
|      |                                                                                                                       |       | iS    | 54 52              |                |                                |      | BOKARO                                       | NE         | eP    | 06 46 19           | 5880           | Other phases not clear                            |                        |
|      |                                                                                                                       |       | SS    | 55 08              |                |                                |      |                                              |            | PPP   | 49 39              |                |                                                   |                        |
|      | TOCKLAI                                                                                                               | E     | eP    | 00 53 55           |                | Slight, distant                |      |                                              |            | iS    | 53 47              |                |                                                   |                        |
|      | SHILLONG                                                                                                              | Z     | eP    | 00 54 24           | 2970           | Slight                         |      | MADFAS                                       | E          | eP    | 06 46 27           | 6030           |                                                   |                        |
|      |                                                                                                                       | E     | eS    | 58 59              |                |                                |      |                                              |            | PP    | 48 36              |                |                                                   |                        |
| 14   | POONA                                                                                                                 | Z     | eP    | 00 55 01           |                | Feeble, phases not clear       |      |                                              |            | PPP   | 49 44              |                |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            | eS    | 54 12              |                |                                                   |                        |
|      | KODAIKANAL                                                                                                            | E     | e     | 00 58 17           |                | Light, tremor                  |      |                                              |            | PPS   | 54 23              |                |                                                   |                        |
|      | BOMBAY                                                                                                                | NE    | e     | 01 00 20           |                | Very slight                    |      |                                              |            | ScS   | 56 15              |                |                                                   |                        |
|      | DEHRA DUN                                                                                                             | NE    | e     | 01 01 50           |                | Feeble, phases not clear       |      | CALCUTTA                                     | E          | eP    | 06 46 46           | 6090           |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            | PPP   | 50 11              |                |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            | iS    | 54 26              |                |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      | 14                                           | SHILLONG   | Z     | eP                 | 06 46 47       | 6370                                              |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            | E     | PcP                | 47 23          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | PP                 | 48 57          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | PPP                | 50 22          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | PcS, ScP           | 51 19          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | eS                 | 54 43          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | PS                 | 54 57          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | PPS                | 55 06          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | ScS/SKS            | 56 14          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | SE                 | 58 36          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      | 14                                           | COLOMBO    | E     | e                  | 06 46 54       |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | S                  | 54 44          |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | L                  | 07 09 52       |                                                   |                        |
|      |                                                                                                                       |       |       |                    |                |                                |      |                                              |            |       | M                  | 14 00          |                                                   | Amp: 1.0 mm            |
|      |                                                                                                                       |       |       |                    |                |                                |      | 14                                           | TOCKLAI    | E     | eP                 | 06 47 07       |                                                   | Slight, distant        |



| DATE | STATION                                                                                 | COMPT   | PHASE                             | G. M. T.                                              | Δ  | REMARKS                        | DATE | STATION                                                                 | COMPT   | PHASE                                          | G. M. T.                                                                         | Δ    | REMARKS                                       |
|------|-----------------------------------------------------------------------------------------|---------|-----------------------------------|-------------------------------------------------------|----|--------------------------------|------|-------------------------------------------------------------------------|---------|------------------------------------------------|----------------------------------------------------------------------------------|------|-----------------------------------------------|
|      |                                                                                         |         |                                   | h. m. s.                                              | km |                                |      |                                                                         |         |                                                | h. m. s.                                                                         | km   |                                               |
| 17   | Epc: 54°N, 159°E. Near East Coast of Kamchatka.<br>H = 19h 15m 42s (U.S.C.G.S)          |         |                                   |                                                       |    |                                | 19   | BOMBAY                                                                  | N       | Lr                                             | 15 25 38                                                                         |      | Per. 9 secs<br>L = 5                          |
|      | SHILLONG                                                                                | Z       | iP                                | 19 25 27                                              |    | Slight, distant<br>Compression |      | BOKARO                                                                  | NE<br>E | iP<br>PP<br>iS<br>Lr<br>M                      | 15 21 52<br>22 04<br>22 08<br>25 24<br>26 33<br>29 09                            | 2140 | Slight                                        |
| 18   | SHILLONG                                                                                | Z       | i                                 | 00 08 23                                              |    | Slight, near                   |      |                                                                         |         |                                                |                                                                                  |      |                                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 05 30 40                                              |    | Slight, distant                |      |                                                                         |         |                                                |                                                                                  |      | Per. 18 secs<br>L = 29                        |
|      | CHATRA                                                                                  | Z       | iP<br>iS                          | 05 31 36<br>33 00                                     |    | 810 Feeble                     |      | HYDERABAD                                                               | E<br>N  | eP<br>iS<br>Lr<br>M<br>M                       | 15 21 53<br>25 22<br>26 34<br>27 38<br>27 40                                     | 2110 | Slight                                        |
| 18   | Epc: 4°S, 153°E. New Britain Region.<br>H = 05h 40m 09s (U.S.C.G.S) h about 100 km      |         |                                   |                                                       |    |                                |      | CHATRA                                                                  | Z<br>NE | iP<br>iS                                       | 15 21 53<br>25 34                                                                | 2230 | Slight                                        |
|      | SHILLONG                                                                                | Z       | eP                                | 05 52 01                                              |    | Slight, distant                | 19   | KODAIKANAL                                                              | E       | e<br>e<br>e<br>e                               | 15 22 09<br>27 34<br>31 34<br>34 31                                              |      |                                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 06 25 17                                              |    | Slight                         |      | VIZIANAGRAM                                                             | N       | e                                              | 15 22 33                                                                         |      | Slight, distant                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 07 40 20                                              |    | Slight, distant                |      | SHILLONG                                                                | Z<br>E  | iP<br>PP<br>PPP<br>PcP<br>iS<br>Lq<br>SS<br>Lr | 15 22 39<br>23 08<br>23 18<br>26 21<br>26 47<br>27 17<br>27 30<br>27 49<br>28 17 | 2570 | Moderate                                      |
| 18   | SHILLONG                                                                                | Z       | iP                                | 08 34 55                                              |    | Slight, distant<br>Compression |      | MADRAS                                                                  | E       | eP<br>eS<br>Lr<br>M                            | 15 22 50<br>27 02<br>28 33<br>30 16                                              | 2620 | Moderate                                      |
| 18   | SHILLONG                                                                                | Z       | e                                 | 09 01 43                                              |    | Tremor                         |      | TOCKLAI                                                                 | E       | eP                                             | 15 22 56                                                                         |      | Slight, distant                               |
| 18   | SHILLONG                                                                                | Z       | i                                 | 09 45 22                                              |    | Slight                         |      | SEHORE                                                                  | N       | e<br>e                                         | 15 23 03<br>24 53                                                                |      | Moderate, distant                             |
| 18   | SHILLONG                                                                                | Z       | eP                                | 09 59 02                                              |    | Slight, distant                |      | CALCUTTA                                                                | E       | iP<br>iS<br>Lr<br>M                            | 15 23 11<br>27 10<br>28 50<br>30 10                                              | 2450 | Moderate, initial<br>ground movement<br>West. |
| 18   | SHILLONG                                                                                | Z       | eP                                | 11 05 49                                              |    | Slight, distant                |      | PORT BLAIR                                                              | E       | i<br>i<br>e<br>i                               | 15 24 04<br>25 45<br>29 56<br>32 00                                              |      | Slight                                        |
| 18   | TOCKLAI                                                                                 | E       | eP                                | 11 05 51                                              |    | Slight, distant                | 19   | SHILLONG                                                                | Z       | eP                                             | 15 46 04                                                                         |      | Slight, distant                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 14 20 55                                              |    | Slight, local                  | 19   | SHILLONG                                                                | Z       | eP                                             | 17 52 56                                                                         |      | Slight, near                                  |
| 18   | SHILLONG                                                                                | Z       | iP                                | 17 11 24                                              |    | Slight, distant<br>Compression | 19   | Epc: 23°N, 142°E. Volcano Islands Region<br>H = 18h 51m 27s (U.S.C.G.S) |         |                                                |                                                                                  |      |                                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 18 01 25                                              |    | Slight, near                   |      | SHILLONG                                                                | Z       | eP                                             | 18 59 56                                                                         |      | Slight, distant                               |
| 18   | SHILLONG                                                                                | Z       | eP                                | 22 30 16                                              |    | Slight, near                   | 19   | DEHRA DUN                                                               | NE      | e                                              | 20 53 43                                                                         |      | Tremor                                        |
| 19   | SHILLONG                                                                                | Z       | eP                                | 02 48 42                                              |    | Slight, near                   |      | SHILLONG                                                                | Z       | iP                                             | 20 54 53                                                                         |      | Slight, distant<br>Compression                |
| 19   | Epc: 5°S, 153°E. Off Coast of New Britain<br>H = 02h 52m 15s (U.S.C.G.S) h about 100 km |         |                                   |                                                       |    |                                | 19   | DEHRA DUN                                                               | NE      | e                                              | 23 22 50                                                                         |      | Tremor                                        |
|      | SHILLONG                                                                                | Z       | eP                                | 03 03 02                                              |    | Slight, distant                |      | SHILLONG                                                                | Z       | eP                                             | 23 23 42                                                                         |      | Slight, distant                               |
| 19   | SHILLONG                                                                                | Z       | eP                                | 04 59 28                                              |    | Slight, distant                | 19   | CHATRA                                                                  | Z       | iP<br>iS                                       | 23 46 27<br>47 10                                                                | 390  | Slight                                        |
| 19   | SHILLONG                                                                                | Z       | eP                                | 07 08 41                                              |    | Slight, distant                |      | SHILLONG                                                                | Z       | eP                                             | 23 48 34                                                                         |      | Slight, distant                               |
| 19   | Epc: 13°N, 120°E. Mondoro, Philippine Islands.<br>H = 07h 50m 38s (U.S.C.G.S)           |         |                                   |                                                       |    |                                | 20   | SHILLONG                                                                | Z       | iP                                             | 00 54 10                                                                         |      | Slight, distant<br>Rarefaction                |
|      | SHILLONG                                                                                | Z       | eP                                | 07 56 47                                              |    | Slight, distant                | 20   | Epc: 23°S, 114°W. South Pacific Ocean<br>H = 00h 50m 03s (U.S.C.G.S)    |         |                                                |                                                                                  |      |                                               |
|      | PORT BLAIR                                                                              | E       | e                                 | 08 04 16                                              |    | Slight                         |      | SHILLONG                                                                | Z       | eP                                             | 01 10 01                                                                         |      | Slight, distant                               |
| 19   | SHILLONG                                                                                | Z       | eP                                | 09 34 10                                              |    | Slight, distant                | 20   | SHILLONG                                                                | Z       | eP                                             | 02 03 26                                                                         |      | Tremor                                        |
| 19   | SHILLONG                                                                                | Z       | iP                                | 10 26 24                                              |    | Slight, distant<br>rarefaction | 20   | SHILLONG                                                                | Z       | eP                                             | 06 16 41                                                                         |      | Slight, distant                               |
| 19   | SHILLONG                                                                                | Z       | iP                                | 10 49 33                                              |    | Slight, distant<br>Rarefaction | 20   | DEHRA DUN                                                               | NE      | e<br>i                                         | 08 05 34<br>06 45                                                                |      | Feeble, phases<br>not clear                   |
| 19   | SHILLONG                                                                                | Z       | eP                                | 11 45 53                                              |    | Slight, near                   |      |                                                                         |         |                                                |                                                                                  |      |                                               |
| 19   | Epc: 83°N, 68°E. Eastern Afghanistan.<br>H = 15h 17m 44s (U.S.C.G.S)                    |         |                                   |                                                       |    |                                |      |                                                                         |         |                                                |                                                                                  |      |                                               |
|      | DEHRA DUN                                                                               | NE<br>N | eP<br>PPP<br>iS<br>SS<br>SSS<br>M | 15 19 55<br>20 18<br>21 29<br>21 42<br>22 01<br>22 33 |    | 910 Slight                     |      |                                                                         |         |                                                |                                                                                  |      |                                               |
| 19   | AGRA                                                                                    | ZNE     | iP                                | 15 20 09                                              |    | Slight, near<br>shock          |      |                                                                         |         |                                                |                                                                                  |      |                                               |
|      | POONA                                                                                   | Z<br>ZE | eP<br>S                           | 15 21 19<br>24 13                                     |    | 1730 Slight                    |      |                                                                         |         |                                                |                                                                                  |      |                                               |
|      | BOMBAY                                                                                  | N       | eP<br>eS                          | 15 21 34<br>24 38                                     |    | 1840 Slight                    |      |                                                                         |         |                                                |                                                                                  |      |                                               |

| DATE | STATION                                                                                               | COMPT | PHASE | G. M. T. | Δ    | REMARKS                        | DATE | STATION                                                                                                                           | COMPT | PHASE | G. M. T. | Δ    | REMARKS                        |
|------|-------------------------------------------------------------------------------------------------------|-------|-------|----------|------|--------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|------|--------------------------------|
|      |                                                                                                       |       |       | h. m. s. | km   |                                |      |                                                                                                                                   |       |       | h. m. s. | km   |                                |
| 20   | SHILLONG                                                                                              | Z     | iP    | 10 22 27 |      | Slight, distant<br>Compression | 21   | SHILLONG                                                                                                                          | Z     | eP    | 21 39 12 |      | Slight, near                   |
| 20   | Epc: 32°N, 136°E. South of Honshu, Japan<br>- H: 11h 26m 28s (U.S.C.G.S.) - h about 450 kms.          |       |       |          |      |                                | 21   | SHILLONG                                                                                                                          | Z     | eP    | 22 16 10 |      | Slight, distant                |
|      | SHILLONG                                                                                              | Z     | iP    | 11 33 22 |      | Slight, distant<br>Rarefaction |      | SHILLONG                                                                                                                          | Z     | eP    | 22 43 39 |      | Slight, distant                |
|      | POONA                                                                                                 | Z     | i     | 11 35 39 |      | Tremor                         | 22   | DEHRA DUN                                                                                                                         | NE    | e     | 00 28 03 |      | Tremor                         |
| 20   | SHILLONG                                                                                              | Z     | iP    | 11 38 27 |      | Slight, distant<br>Rarefaction | 22   | DEHRA DUN                                                                                                                         | NE    | e     | 01 24 41 |      | Feeble, phases<br>not clear    |
| 20   | Epc: 37°N, 26°E. Dodecanese Islands<br>- H: 16h 36m 51s (U.S.C.G.S)                                   |       |       |          |      |                                | 22   | SHILLONG                                                                                                                          | Z     | eP    | 03 10 48 |      | Slight, near                   |
|      | SHILLONG                                                                                              | Z     | eP    | 16 46 32 |      | Slight, distant                | 22   | SHILLONG                                                                                                                          | Z     | eP    | 04 24 53 |      | Slight, distant                |
| 20   | SHILLONG                                                                                              | Z     | eP    | 17 50 58 |      | Tremor                         | 22   | SHILLONG                                                                                                                          | Z     | eP    | 04 27 57 |      | Slight, distant                |
| 20   | SHILLONG                                                                                              | Z     | eP    | 18 36 56 |      | Slight, near                   | 22   | Epc: 51°N, 159°E. Off South East Coast of Kamchatka<br>- H: 04h 41m 57s (U.S.C.G.S)                                               |       |       |          |      |                                |
| 20   | Epc: 44°N, 149°E. Kurile Islands<br>- H: 19h 35m 03s (U.S.C.G.S)                                      |       |       |          |      |                                |      | SHILLONG                                                                                                                          | Z     | eP    | 04 51 41 |      | Slight, distant                |
|      | SHILLONG                                                                                              | Z     | iP    | 19 43 08 |      | Slight, distant<br>Compression | 22   | SHILLONG                                                                                                                          | Z     | eP    | 05 36 08 |      | Slight, near                   |
| 20   | CHATRA                                                                                                | Z     | i     | 19 44 18 |      | Slight, distant                | 22   | Epc: 40°S, 176°E. North Islands, New Zealand. Minor<br>damage at Wellington, Picton and Blenteim.<br>- H: 06h 57m 00s (U.S.C.G.S) |       |       |          |      |                                |
| 20   | DEHRA DUN                                                                                             | NE    | e     | 19 44 52 |      | Feeble                         |      | SHILLONG                                                                                                                          | Z     | eP    | 07 10 55 |      | Slight, distant                |
|      | POONA                                                                                                 | Z     | eP    | 19 46 07 | 7290 | Slight                         | 22   | SHILLONG                                                                                                                          | Z     | eP    | 07 14 22 |      | Slight, distant                |
|      |                                                                                                       | N     | eS    | 54 52    |      |                                | 22   | Epc: 25°N, 95°E. Northern Burma<br>- H: 08h 31m 06s (U.S.C.G.S)                                                                   |       |       |          |      |                                |
| 20   | Epc: 41°N, 42°E. Georgia (S.S.R)                                                                      |       |       |          |      |                                |      | TOCKLAI                                                                                                                           | EP    | iP    | 08 31 51 |      | Slight, distant                |
|      | CHATRA                                                                                                | Z     | i     | 19 55 49 |      | Slight, distant                |      | SHILLONG                                                                                                                          | Z     | iP    | 08 32 14 | 490  | Slight                         |
|      | SHILLONG                                                                                              | Z     | iP    | 19 57 23 |      | Slight, distant<br>Compression |      |                                                                                                                                   | E     | iS    | 33 06    |      |                                |
| 20   | SHILLONG                                                                                              | Z     | eP    | 20 04 23 |      | Slight, near                   |      | CHATRA                                                                                                                            | Z     | iP    | 08 33 10 |      | Slight                         |
| 20   | SHILLONG                                                                                              | Z     | eP    | 20 19 32 |      | Slight, distant                |      |                                                                                                                                   | ZNE   | i     | 35 39    |      |                                |
| 20   | SHILLONG                                                                                              | Z     | iP    | 21 00 31 |      | Slight, distant<br>Rarefaction |      | CALCUTTA                                                                                                                          | E     | e     | 08 34 07 |      | Slight                         |
| 20   | SHILLONG                                                                                              | Z     | eP    | 21 33 44 | 20   | Slight                         |      |                                                                                                                                   | iS    | 36 47 |          |      |                                |
|      |                                                                                                       |       | iSg   | 33 46    |      |                                |      | DEHRA DUN                                                                                                                         | NE    | eP    | 08 35 10 | 1900 | Feeble                         |
| 20   | SHILLONG                                                                                              | Z     | iP    | 21 40 35 |      | Slight, distant<br>Rarefaction |      |                                                                                                                                   | iS    | 38 20 |          |      |                                |
| 20   | SHILLONG                                                                                              | Z     | eP    | 22 14 34 |      | Slight, distant                |      | POONA                                                                                                                             | Z     | eP    | 08 38 03 |      | Feeble, phases<br>not clear    |
| 20   | SHILLONG                                                                                              | Z     | eP    | 22 52 27 |      | Tremor                         | 22   | PORT BLAIR                                                                                                                        | E     | i     | 08 36 13 |      | Slight                         |
| 21   | Epc: 18°N, 121°E. Near North Coast of Luzon<br>Philippine Islands. - H: 02h 22m 56s (U.S.C.G.S)       |       |       |          |      |                                |      | BOMBAY                                                                                                                            | N     | e     | 08 41 03 |      | Very slight                    |
|      | SHILLONG                                                                                              | Z     | eP    | 02 28 47 |      | Slight, distant                |      | VIZIANAGRAM                                                                                                                       | N     | e     | 09 00 06 |      | Slight, very<br>distant        |
| 21   | Epc: 52°N, 170°W. Fox Islands, Aleutian Islands.<br>- H: 06h 51m 40s (U.S.C.G.S)                      |       |       |          |      |                                | 22   | SHILLONG                                                                                                                          | Z     | eP    | 15 12 00 |      | Slight, near                   |
|      | SHILLONG                                                                                              | Z     | iP    | 07 03 18 |      | Slight, distant<br>Rarefaction | 22   | SHILLONG                                                                                                                          | Z     | eP    | 17 10 12 |      | Slight, distant                |
| 21   | Epc: Chile-Argentina Border. - h about 50 km<br>- E: 11h 34m 23s (U.S.C.G.S)<br>Mag: 6 (Par), 5 (Ber) |       |       |          |      |                                | 22   | SHILLONG                                                                                                                          | Z     | eP    | 17 22 49 |      | Slight, distant                |
|      | DEHRA DUN                                                                                             | NE    | e     | 11 53 25 |      | Tremor                         | 22   | SHILLONG                                                                                                                          | Z     | e     | 18 15 49 |      | Tremor                         |
|      | POONA                                                                                                 | Z     | iPKP  | 11 53 58 |      | Slight, phases<br>not clear    | 22   | SHILLONG                                                                                                                          | Z     | e     | 18 57 41 |      | Tremor                         |
|      | SHILLONG                                                                                              | Z     | iPKP  | 11 53 58 |      | Slight, phases<br>not clear    | 22   | SHILLONG                                                                                                                          | Z     | iP    | 19 19 28 |      | Slight, distant<br>Compression |
| 21   | SHILLONG                                                                                              | Z     | iPKP  | 11 54 26 |      | Slight, distant<br>Rarefaction | 22   | SHILLONG                                                                                                                          | Z     | e     | 23 30 34 |      | Tremor                         |
| 21   | SHILLONG                                                                                              | Z     | i     | 11 59 04 |      | Slight, distant                | 22   | SHILLONG                                                                                                                          | Z     | eP    | 23 53 46 |      | Slight, near                   |
| 21   | SHILLONG                                                                                              | Z     | iP    | 12 22 49 |      | Slight, distant<br>Rarefaction | 23   | SHILLONG                                                                                                                          | Z     | eP    | 04 04 00 |      | Slight, distant                |
| 21   | SHILLONG                                                                                              | Z     | eP    | 18 27 19 |      | Slight, distant                | 23   | SHILLONG                                                                                                                          | Z     | eP    | 04 05 53 |      | Slight, distant                |
| 21   | SHILLONG                                                                                              | Z     | eP    | 21 05 28 |      | Slight, near                   | 23   | SHILLONG                                                                                                                          | Z     | eP    | 04 06 50 | 40   | Slight                         |
|      |                                                                                                       |       |       |          |      |                                |      |                                                                                                                                   | iS    | 05 55 |          |      |                                |
|      |                                                                                                       |       |       |          |      |                                | 23   | SHILLONG                                                                                                                          | Z     | eP    | 04 50 06 |      | Slight, distant                |
|      |                                                                                                       |       |       |          |      |                                | 23   | SHILLONG                                                                                                                          | Z     | eP    | 05 21 00 |      | Slight, distant                |
|      |                                                                                                       |       |       |          |      |                                |      | TOCKLAI                                                                                                                           | E     | eP    | 05 22 36 |      | Slight, distant                |
|      |                                                                                                       |       |       |          |      |                                | 23   | SHILLONG                                                                                                                          | Z     | e     | 08 58 45 |      | Tremor                         |







| DATE | STATION                                                                                                  | COMPT | PHASE | G. M. T. | Δ   | REMARKS                             | DATE | STATION                                                                         | COMPT    | PHASE | G. M. T. | Δ        | REMARKS                        |                                |
|------|----------------------------------------------------------------------------------------------------------|-------|-------|----------|-----|-------------------------------------|------|---------------------------------------------------------------------------------|----------|-------|----------|----------|--------------------------------|--------------------------------|
|      |                                                                                                          |       |       | h. m. s. | km  |                                     |      |                                                                                 |          |       | h. m. s. | km       |                                |                                |
|      |                                                                                                          |       |       |          |     | May 1959                            |      |                                                                                 |          |       |          |          |                                |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 14 52 20 |     | Slight, near                        | 29   | SHILLONG                                                                        | Z        | iP    | 17 22 46 |          | Slight, distant<br>Rarefaction |                                |
| 28   | Epc: 13°N, 124°E. Luzon Island, Philippine Islands<br>- H: 15h 14m 29s (U.S.C.G.S)                       |       |       |          |     |                                     |      | Contd.                                                                          | CHATRA   | Z     | iP       | 17 23 33 | 890                            | Feeble                         |
|      | SHILLONG                                                                                                 | Z     | iP    | 15 21 10 |     | Slight, distant<br>Compression      |      |                                                                                 |          | iS    | 25 05    |          |                                |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 15 49 31 | 50  | Slight                              | 29   | SHILLONG                                                                        | Z        | i     | 18 23 24 |          | Slight, near                   |                                |
|      |                                                                                                          |       | iSg   | 49 37    |     |                                     | 29   | Epc: 50°N, 157°E, Near South Coast of Kamchatka<br>- H: 18h 29m 27s (U.S.C.G.S) |          |       |          |          |                                |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 17 11 03 | 120 | Slight, near                        |      | SHILLONG                                                                        | Z        | iP    | 18 39 03 |          | Slight, distant                |                                |
|      |                                                                                                          |       | iSg   | 11 17    |     |                                     | 29   | SHILLONG                                                                        | Z        | eP    | 18 46 18 |          | Slight, near                   |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 18 33 12 |     | Slight, near                        | 29   | CHATRA                                                                          | Z        | iP    | 19 43 23 | 140      | Slight                         |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 18 41 02 |     | Slight, distant                     |      |                                                                                 | EZ       | iS    | 43 41    |          |                                |                                |
| 28   | SHILLONG                                                                                                 | Z     | eP    | 19 37 56 | 110 | Slight                              | 29   | SHILLONG                                                                        | Z        | eP    | 20 50 00 | 70       | Slight                         |                                |
|      |                                                                                                          |       | iSg   | 38 09    |     |                                     |      |                                                                                 |          | iSg   | 50 08    |          |                                |                                |
| 28   | TOCKLAI                                                                                                  | E     | eP    | 19 43 15 |     | Slight, distant                     | 30   | SHILLONG                                                                        | Z        | eP    | 04 06 51 |          | Slight, distant                |                                |
|      | SHILLONG                                                                                                 | Z     | iP    | 19 43 33 |     | Slight, distant<br>Rarefaction      | 30   | DEHRA DUN                                                                       | NE       | eP    | 12 25 03 | 830      | Slight, phases<br>not clear    |                                |
| 28   | Epc: 4°S, 141°E. New Guinea. Felt at Ambunti<br>- h about 100 km                                         |       |       |          |     |                                     |      |                                                                                 | SHILLONG | Z     | iP       | 12 27 30 |                                | Slight, distant<br>Rarefaction |
|      | SHILLONG                                                                                                 | Z     | iP    | 22 36 58 |     | Slight, distant<br>Compression      | 30   | SHILLONG                                                                        | Z        | iP    | 12 56 14 |          | Slight, distant<br>Rarefaction |                                |
| 28   | SHILLONG                                                                                                 | Z     | iP    | 22 44 36 |     | Slight, distant<br>Compression      |      | TOCKLAI                                                                         | E        | eP    | 12 56 58 |          | Slight, distant                |                                |
|      | CHATRA                                                                                                   | Z     | iP    | 22 45 02 | 260 | Feeble                              | 30   | SHILLONG                                                                        | Z        | eP    | 21 08 51 | 120      | Slight                         |                                |
|      |                                                                                                          |       | iS    | 45 32    |     |                                     |      |                                                                                 |          | iSg   | 09 05    |          |                                |                                |
| 29   | CHATRA                                                                                                   | Z     | iP    | 04 53 00 | 160 | Slight                              | 31   | SHILLONG                                                                        | ZE       | iP    | 09 39 24 | 810      | Slight<br>Compression          |                                |
|      |                                                                                                          | EZ    | iS    | 53 19    |     |                                     |      |                                                                                 | E        | PP    | 42 21    |          |                                |                                |
| 29   | DEHRA DUN                                                                                                | NE    | e     | 05 54 24 |     | Feeble                              |      |                                                                                 |          | PPP   | 43 47    |          |                                |                                |
|      |                                                                                                          |       | i     | 54 43    |     |                                     |      |                                                                                 |          | iS    | 48 51    |          |                                |                                |
| 29   | Epc: 19°S, 169°E. New Hebrides Islands.<br>- H: 10h 42m 48s (U.S.C.G.S). - h c. 100 km<br>Mag: 6% (Paw). |       |       |          |     |                                     |      |                                                                                 |          |       | PPS      | 49 43    |                                |                                |
|      | SHILLONG                                                                                                 | Z     | eP    | 10 55 31 |     | Distant                             |      |                                                                                 |          |       | SS       | 53 37    |                                |                                |
| 29   | TOCKLAI                                                                                                  | E     | eP    | 10 55 48 |     | Slight, distant                     |      | BOKARO                                                                          | E        | e     | 09 39 53 |          | Tremor                         |                                |
|      | CHATRA                                                                                                   | Z     | iP    | 10 55 52 |     | Slight, distant                     |      | AGRA                                                                            | Z        | iP    | 09 40 33 |          | Dilatation,<br>slight, distant |                                |
|      | BOKARO                                                                                                   | NE    | i     | 10 56 26 |     | Slight, phases<br>not clear         |      | BOMBAY                                                                          | E        | eP    | 09 42 43 | 6910     | Slight                         |                                |
|      |                                                                                                          |       | i     | 06 23    |     |                                     |      |                                                                                 |          | eS    | 51 08    |          |                                |                                |
|      | AGRA                                                                                                     | Z     | iP    | 10 56 46 |     | Dilatation, very<br>slight, distant |      |                                                                                 |          | e     | 52 29    |          |                                |                                |
|      | BOMBAY                                                                                                   | N     | e     | 10 57 49 |     | Slight                              | 31   | Epc: 46°N, 27°E, Roumania.<br>- H: 12h 15m 51s (U.S.C.G.S)                      |          |       |          |          |                                |                                |
|      |                                                                                                          | NE    | e     | 11 07 07 |     |                                     |      | CHATRA                                                                          | Z        | i     | 12 24 48 |          | Feeble, distant                |                                |
|      |                                                                                                          |       | e     | 07 43    |     |                                     |      |                                                                                 |          |       |          |          |                                |                                |
| 29   | DEHRA DUN                                                                                                | NE    | e     | 11 00 53 |     | Feeble, phases<br>not clear         | 31   | SHILLONG                                                                        | Z        | iP    | 12 25 15 |          | Slight,<br>Rarefaction         |                                |
|      |                                                                                                          |       | i     | 07 06    |     |                                     |      |                                                                                 |          |       |          |          |                                |                                |
|      | COLOMBO                                                                                                  | E     | e     | 11 06 13 |     |                                     | 31   | Epc: 37°N, 49°E. North Western Iran<br>- H: 13h 01m 44s (U.S.C.G.S)             |          |       |          |          |                                |                                |
|      |                                                                                                          |       | e     | 07 26    |     |                                     |      | SHILLONG                                                                        | Z        | i     | 13 09 04 |          | Slight,<br>Compression         |                                |
| 29   | TOCKLAI                                                                                                  | Z     | eP    | 13 27 26 |     | Slight, near                        |      |                                                                                 |          | iP    | 09 07    |          |                                |                                |
|      | SHILLONG                                                                                                 | Z     | eP    | 13 27 33 |     | Slight, near                        | 31   | SHILLONG                                                                        | Z        | i     | 23 31 40 |          | Slight, near                   |                                |
| 29   | TOCKLAI                                                                                                  | E     | eP    | 17 22 27 |     | Slight, distant                     |      |                                                                                 |          | i     | 31 52    |          |                                |                                |

Following is the list of Earthquakes that were reported by Voluntary Observers from different stations during the month of May 1959

| Station        | Date in GMT | Time in GMT<br>h. m. | No. of shocks | Duration of shocks<br>in secs. | Inten- sity in<br>RF Scale | Remarks                        |
|----------------|-------------|----------------------|---------------|--------------------------------|----------------------------|--------------------------------|
| Upper Shillong | 18          | 14 21                | 1             | 1                              | V                          |                                |
| Rupsi          | 24          | 11 28                | 1             | 10-12                          | V                          | East to West                   |
| Gauhati        | 24          | 11 29                | 1             | 15                             | V                          | -                              |
| Bagdogra       | 24          | 11 29                | 1             | 3                              | V                          | North to South                 |
| Cooch Bihar    | 24          | 11 29                | 1             | 20                             | V                          | Seemed to come from North East |
| Upper Shillong | 24          | 11 30                | 1             | 3                              | V                          |                                |
| Upper Shillong | 25          | 19 22                | 1             | 8-10                           | V                          | -                              |

| Station: | SHILLONG | Component: | E-W | May 1959 | Station: | BOMBAY (Colaba) | Component: | E-W |     |
|----------|----------|------------|-----|----------|----------|-----------------|------------|-----|-----|
| 01       | 00       |            |     | 19       | 00       |                 |            |     |     |
| 06       |          |            |     | 06       |          |                 |            |     |     |
| 12       | 3        | 0.4        | 4.9 | 12       | 1        | 0.3             | 4.2        |     |     |
| 18       | 3        | 0.4        | 5.0 | 18       |          |                 |            |     |     |
| 02       | 00       | 3          | 0.4 | 4.8      | 20       | 00              | 1          | 0.3 | 4.3 |
| 06       |          |            |     | 06       | 1        | 0.4             | 4.8        |     |     |
| 12       | 3        | 0.4        | 4.7 | 12       | 1        | 0.3             | 4.2        |     |     |
| 18       | 3        | 0.3        | 4.2 | 18       | 1        | 0.3             | 4.1        |     |     |
| 03       | 00       | 3          | 0.4 | 5.1      | 21       | 00              | 1          | 0.3 | 4.0 |
| 06       | 3        | 0.3        | 4.3 | 06       | 3        | 0.3             | 4.2        |     |     |
| 12       | 3        | 0.4        | 5.0 | 12       |          |                 |            |     |     |
| 18       | 3        | 0.4        | 5.1 | 18       | 1        | 0.4             | 4.7        |     |     |
| 04       | 00       | 3          | 0.4 | 5.2      | 22       | 00              | 1          | 0.4 | 4.8 |
| 06       | 3        | 0.4        | 4.9 | 06       | 1        | 0.4             | 5.3        |     |     |
| 12       | 3        | 0.3        | 4.3 | 12       | 1        | 0.4             | 4.9        |     |     |
| 18       |          |            |     | 18       | 1        | 0.4             | 5.1        |     |     |
| 05       | 00       | 3          | 0.4 | 4.8      | 23       | 00              | 1          | 0.4 | 5.0 |
| 06       | 3        | 0.3        | 4.3 | 06       | 1        | 0.5             | 5.1        |     |     |
| 12       |          |            |     | 12       | 1        | 0.4             | 4.9        |     |     |
| 18       | 3        | 0.3        | 4.1 | 18       | 1        | 0.5             | 5.2        |     |     |
| 06       | 00       | 3          | 0.4 | 4.0      | 24       | 00              | 1          | 0.4 | 5.3 |
| 06       | 3        | 0.3        | 4.9 | 00       |          |                 |            |     |     |
| 12       | 3        | 0.5        | 4.0 | 12       |          |                 |            |     |     |
| 18       | 3        | 0.3        | 3.9 | 18       | 3        | 0.4             | 5.0        |     |     |
| 07       | 00       | 3          | 0.3 | 4.1      | 25       | 00              | 3          | 0.4 | 4.9 |
| 06       | 3        | 0.3        | 4.4 | 06       | 3        | 0.5             | 5.2        |     |     |
| 12       | 1        | 0.3        | 4.2 | 12       | 3        | 0.4             | 4.9        |     |     |
| 18       | 1        | 0.4        | 4.7 | 18       | 3        | 0.4             | 4.7        |     |     |
| 08       | 00       | 1          | 0.3 | 4.3      | 26       | 00              | 3          | 0.4 | 4.8 |
| 06       | 3        | 0.3        | 4.3 | 06       |          |                 |            |     |     |
| 12       |          |            |     | 12       | 3        | 0.3             | 5.4        |     |     |
| 18       | 3        | 0.4        | 4.9 | 18       | 3        | 0.4             | 5.0        |     |     |
| 09       | 00       | 3          | 0.4 | 4.9      | 27       | 00              | 3          | 0.4 | 4.8 |
| 06       | 3        | 0.3        | 4.5 | 06       | 3        | 0.3             | 4.3        |     |     |
| 12       | 3        | 0.3        | 4.3 | 12       | 3        | 0.3             | 4.1        |     |     |
| 18       | 3        | 0.3        | 4.2 | 18       | 3        | 0.3             | 4.0        |     |     |
| 10       | 00       | 3          | 0.3 | 4.4      | 28       | 00              | 3          | 0.3 | 4.3 |
| 06       | 3        | 0.3        | 4.1 | 06       | 3        | 0.4             | 4.1        |     |     |
| 12       |          |            |     | 12       | 3        | 0.4             | 4.3        |     |     |
| 18       | 1        | 0.3        | 4.3 | 18       | 3        | 0.4             | 4.2        |     |     |
| 11       | 00       | 1          | 0.3 | 4.4      | 29       | 00              | 3          | 0.4 | 4.1 |
| 06       | 3        | 0.4        | 4.7 | 06       | 3        | 0.4             | 4.6        |     |     |
| 12       | 1        | 0.3        | 4.2 | 12       | 3        | 0.4             | 4.3        |     |     |
| 18       | 1        | 0.3        | 4.4 | 18       | 3        | 0.3             | 3.9        |     |     |
| 12       | 00       | 1          | 0.4 | 5.0      | 30       | 00              | 3          | 0.4 | 4.3 |
| 06       |          |            |     | 06       | 1        | 0.4             | 4.5        |     |     |
| 12       |          |            |     | 12       | 1        | 0.4             | 4.4        |     |     |
| 18       | 1        | 0.3        | 4.7 | 18       | 3        | 0.4             | 4.7        |     |     |
| 13       | 00       | 1          | 0.2 | 4.2      | 31       | 00              | 1          | 0.3 | 4.2 |
| 06       | 1        | 0.3        | 4.5 | 06       | 1        | 0.4             | 4.5        |     |     |
| 12       | 1        | 0.3        | 4.4 | 12       | 1        | 0.4             | 4.3        |     |     |
| 18       | 1        | 0.4        | 4.8 | 18       | 1        | 0.4             | 4.2        |     |     |
| 14       | 00       | 1          | 0.4 | 4.7      |          |                 |            |     |     |
| 06       | 1        | 0.4        | 4.9 |          |          |                 |            |     |     |
| 12       | 1        | 0.5        | 5.2 |          |          |                 |            |     |     |
| 18       | 3        | 0.4        | 4.5 |          |          |                 |            |     |     |
| 15       | 00       | 3          | 0.3 | 5.1      |          |                 |            |     |     |
| 06       |          |            |     |          |          |                 |            |     |     |
| 12       |          |            |     |          |          |                 |            |     |     |
| 18       |          |            |     |          |          |                 |            |     |     |
| 16       | 00       |            |     |          |          |                 |            |     |     |
| 06       | 3        | 0.3        | 4.3 |          |          |                 |            |     |     |
| 12       | 3        | 0.4        | 5.0 |          |          |                 |            |     |     |
| 18       | 3        | 0.4        | 5.1 |          |          |                 |            |     |     |
| 17       | 00       | 3          | 0.4 | 4.9      |          |                 |            |     |     |
| 06       | 1        | 0.3        | 4.5 |          |          |                 |            |     |     |
| 12       | 1        | 0.4        | 5.0 |          |          |                 |            |     |     |
| 18       | 1        | 0.4        | 4.9 |          |          |                 |            |     |     |
| 18       | 00       | 1          | 0.3 | 4.3      |          |                 |            |     |     |
| 06       |          |            |     |          |          |                 |            |     |     |
| 12       |          |            |     |          |          |                 |            |     |     |
| 18       |          |            |     |          |          |                 |            |     |     |





## III

| DATE                | HOUR | K | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs | DATE     | HOUR | K | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs | DATE           | HOUR | K   | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs |
|---------------------|------|---|---------------------------------|------------------------------|----------|------|---|---------------------------------|------------------------------|----------------|------|-----|---------------------------------|------------------------------|
| Station: PORT BLAIR |      |   |                                 |                              | May 1959 |      |   |                                 |                              | Component: E-W |      |     |                                 |                              |
| 01                  | 00   | 3 | 1.1                             | 7.0                          | 11       | 12   | 3 | 0.2                             | 1.8                          | 22             | 00   |     | -                               | -                            |
|                     | 06   |   | -                               | -                            | Contd.   | 15   | 2 | 0.4                             | 2.0                          |                | 06   | 3   | 0.2                             | 3.0                          |
|                     | 12   |   | -                               | -                            |          | 18   | 2 | 0.5                             | 2.0                          |                | 12   |     | -                               | -                            |
|                     | 18   |   | -                               | -                            |          |      |   |                                 |                              |                | 18   |     | -                               | -                            |
| 02                  | 00   |   | -                               | -                            | 12       | 00   | 2 | 0.4                             | 2.0                          | 23             | 00   |     | -                               | -                            |
|                     | 06   | 3 | 1.3                             | 7.0                          |          | 06   |   | -                               | -                            |                | 06   | 3   | 0.3                             | 3.0                          |
|                     | 12   | 3 | 1.1                             | 7.0                          |          | 12   |   | -                               | -                            |                | 12   | 3   | 0.3                             | 3.0                          |
|                     | 18   | 3 | 1.1                             | 7.0                          |          | 18   |   | -                               | -                            |                | 18   |     | -                               | -                            |
| 03                  | 00   | 3 | 1.1                             | 7.0                          | 13       | 00   | 3 | 0.1                             | 2.0                          | 24             | 00   |     | -                               | -                            |
|                     | 06   | 3 | 0.9                             | 6.0                          |          | 06   | 3 | 0.1                             | 2.0                          |                | 06   | 3   | 0.2                             | 3.0                          |
|                     | 12   | 3 | 0.9                             | 6.0                          |          | 12   | 3 | 0.1                             | 2.0                          |                | 12   |     | -                               | -                            |
|                     | 18   | 3 | 0.7                             | 6.0                          |          | 18   | 3 | 0.1                             | 2.0                          |                | 18   |     | -                               | -                            |
| 04                  | 00   | 3 | 0.9                             | 7.0                          | 14       | 00   | 3 | 0.1                             | 2.0                          | 25             | 00   |     | -                               | -                            |
|                     | 06   |   | -                               | -                            |          | 06   | 3 | 0.4                             | 7.0                          |                | 06   | 2   | 0.5                             | 3.0                          |
|                     | 12   | 3 | 0.9                             | 6.0                          |          | 12   | 3 | 0.9                             | 7.0                          |                | 12   | 2   | 0.8                             | 3.0                          |
|                     | 18   |   | -                               | -                            |          | 18   | 3 | 0.9                             | 7.0                          |                | 18   | 2   | 0.9                             | 3.0                          |
| 05                  | 00   |   | -                               | -                            | 15       | 00   | 3 | 0.7                             | 3.0                          | 26             | 00   | 2   | 0.7                             | 3.0                          |
|                     | 06   |   | -                               | -                            |          | 06   | 3 | 0.9                             | 7.0                          |                | 06   | 2   | 0.5                             | 3.0                          |
|                     | 12   |   | -                               | -                            |          | 12   | 3 | 1.1                             | 7.0                          |                | 12   | 2   | 0.7                             | 3.0                          |
|                     | 18   |   | -                               | -                            |          | 18   | 3 | 1.1                             | 7.0                          |                | 18   |     | -                               | -                            |
| 06                  | 00   |   | -                               | -                            | 16       | 00   | 3 | 0.7                             | 7.0                          | 27             | 00   |     | -                               | -                            |
|                     | 06   |   | -                               | -                            |          | 06   | 3 | 0.7                             | 7.0                          |                | 06   |     | -                               | -                            |
|                     | 12   |   | -                               | -                            |          | 12   | 3 | 0.9                             | 7.0                          |                | 12   |     | -                               | -                            |
|                     | 18   |   | -                               | -                            |          | 18   |   | -                               | -                            |                | 18   |     | -                               | -                            |
| 07                  | 00   |   | -                               | -                            | 17       | 00   |   | -                               | -                            | 28             | 00   |     | -                               | -                            |
|                     | 06   |   | -                               | -                            |          | 06   | 3 | 0.4                             | 7.0                          |                | 06   | 2   | 1.7                             | 3.0                          |
|                     | 12   |   | -                               | -                            |          | 12   | 3 | 0.2                             | 2.0                          |                | 09   | 2   | 1.7                             | 3.0                          |
|                     | 18   |   | -                               | -                            |          | 18   |   | -                               | -                            |                | 12   | 2   | 2.2                             | 3.0                          |
| 08                  | 00   |   | -                               | -                            |          |      |   | -                               | -                            |                | 15   | 2   | 2.7                             | 3.0                          |
|                     | 06   |   | -                               | -                            |          |      |   | -                               | -                            |                | 18   | 2   | 2.7                             | 3.0                          |
|                     | 12   |   | -                               | -                            |          |      |   | -                               | -                            |                | 21   | 2   | 2.7                             | 3.0                          |
|                     | 18   |   | -                               | -                            | 18       | 00   |   | -                               | -                            | 29             | 00   | 2.7 | 2.7                             | 3.0                          |
| 09                  | 00   |   | -                               | -                            |          | 06   | 3 | 0.2                             | 3.0                          |                | 06   |     | -                               | -                            |
|                     | 06   | 1 | 1.5                             | 6.0                          |          | 12   | 3 | 0.2                             | 3.0                          |                | 12   | 2   | 2.2                             | 3.0                          |
|                     | 12   | 1 | 1.1                             | 6.0                          |          | 18   | 3 | 0.2                             | 3.0                          |                | 18   | 2   | 2.2                             | 3.0                          |
|                     | 18   | 1 | 1.1                             | 6.0                          | 19       | 00   | 3 | 0.3                             | 3.0                          | 30             | 00   | 2   | 2.0                             | 3.0                          |
| 10                  | 00   | 1 | 1.1                             | 6.0                          |          | 06   | 3 | 0.3                             | 3.0                          |                | 06   | 2   | 2.0                             | 3.0                          |
|                     | 06   | 3 | 1.1                             | 6.0                          |          | 12   | 3 | 0.4                             | 3.0                          |                | 12   | 2   | 2.2                             | 3.0                          |
|                     | 12   | 3 | 1.1                             | 6.0                          |          | 18   | 3 | 0.4                             | 3.0                          |                | 18   | 2   | 2.2                             | 3.0                          |
|                     | 18   | 3 | 0.1                             | 2.0                          | 20       | 00   | 3 | 0.2                             | 3.0                          | 31             | 00   | 2   | 2.2                             | 3.0                          |
|                     |      |   | 0.1                             | 2.0                          |          | 06   | 3 | 0.5                             | 3.0                          |                | 06   |     | -                               | -                            |
|                     |      |   | 1.0                             | 6.0                          |          | 12   | 3 | 0.5                             | 3.0                          |                | 12   |     | -                               | -                            |
|                     |      |   | 0.1                             | 1.8                          |          | 18   | 3 | 0.7                             | 3.0                          |                | 18   |     | -                               | -                            |
| 11                  | 00   | 3 | 0.1                             | 1.8                          | 21       | 00   |   | -                               | -                            |                | 06   |     | -                               | -                            |
|                     | 06   | 3 | 0.9                             | 6.0                          |          | 06   | 3 | 0.2                             | 3.0                          |                | 12   |     | -                               | -                            |
|                     |      |   | -                               | -                            |          | 12   |   | -                               | -                            |                | 18   |     | -                               | -                            |
|                     |      |   | -                               | -                            |          | 18   |   | -                               | -                            |                |      |     | -                               | -                            |





GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

*June, 1959*



Published under the direction of  
*Shri S. Basu, M.Sc. F.N.I.*  
Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants

| STATION     | LATITUDE  | LONGITUDE | HEIGHT<br>a. s. l.<br>(Metres)            | LITHOGRAPHIC<br>FOUNDATION                         | INSTRUMENT           | COMPT. | PERIOD<br>IN<br>SECS. | STATIC<br>MAGNI-<br>FICATION | DAMPING<br>RATIO | PAPER<br>SPEED<br>mm/min. |
|-------------|-----------|-----------|-------------------------------------------|----------------------------------------------------|----------------------|--------|-----------------------|------------------------------|------------------|---------------------------|
| BOMBAY      | 18° 54' N | 72° 49' E | 6                                         | Deccan Trap                                        | Milne-Shaw           | N      | 12                    | 350                          | 13:1             | 16                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | E      | 12                    | 350                          | 23:1             | 8                         |
|             |           |           |                                           |                                                    | Sprengnether         | E      | To = Tg = 7 secs      |                              | 30               |                           |
| BOKARO      | 23° 50' N | 85° 48' E | -                                         | Rock                                               | Milne-Shaw           | N      | 12                    | 250                          | 20:1             | 16                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | 16                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | E      | 0.8                   | 950                          | h = 0.8          | 60                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | N      | 0.8                   | 1000                         | h = 0.8          | 60                        |
| CALCUTTA    | 22° 32' N | 88° 22' E | (1) 7 (Milne-Shaw)<br>(2) 6 (Omori-Ewing) | Alluvium                                           | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | 8                         |
|             |           |           |                                           |                                                    | Wood-Anderson        | N      | 2                     | 870                          | Critical         | 30                        |
|             |           |           |                                           |                                                    | Omori-Ewing          | N      | 16                    | 32                           | -                | 25.4                      |
|             |           |           |                                           |                                                    | Omori-Ewing          | E      | 21                    | 30                           | -                | 25.4                      |
|             |           |           |                                           |                                                    |                      |        |                       |                              |                  |                           |
| CHATRA      | 26° 50' N | 87° 10' E | 151                                       | Sand Stone                                         | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | 16                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | N      | 1                     | 1000                         | 30:1             | 60                        |
|             |           |           |                                           |                                                    | Benioff              | Z      | To=0.72 Tg=0.45 secs. |                              | Critical         | 60                        |
|             |           |           |                                           |                                                    | Wenner-Accelerograph | ZNE    | -                     | -                            | -                | -                         |
| COLOMBO     | 06° 54' N | 79° 52' E | 7                                         | Beach Sand                                         | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | -                         |
| DEHRA DUN   | 30° 19' N | 78° 02' E | 682                                       | Gravel                                             | Wood-Anderson        | N      | 0.8                   | 950                          | Critical         | 60                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | E      | 0.8                   | 850                          | Critical         | 60                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | N      | 12                    | 250                          | 20:1             | 8                         |
|             |           |           |                                           |                                                    | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | 8                         |
| HYDERABAD   | 17° 26' N | 78° 27' E | 536                                       | Granite                                            | Milne-Shaw           | E      | 12                    | 250                          | 20:1             | 8                         |
|             |           |           |                                           |                                                    | Milne-Shaw           | N      | 12                    | 250                          | 20:1             | 8                         |
| KODAIKANAL  | 10° 14' N | 77° 28' E | 2346                                      | Rock                                               | Milne-Shaw           | E      | 10                    | 250                          | 20:1             | 8                         |
| MADRAS      | 13° 00' N | 80° 11' E | 15                                        | -                                                  | Sprengnether         | E      | To=Tg=72 secs         |                              | Critical         | 30                        |
| NEW DELHI   | 28° 35' N | 77° 12' E | 207                                       | Massive Quartzite                                  |                      |        |                       |                              |                  |                           |
| POONA       | 18° 32' N | 73° 51' E | 560                                       | Deccan Trap                                        | Sprengnether         | Z      | To=Tg=1.6             |                              | Critical         | 30                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | E      | 4                     | 1000                         | 20:1             | 16                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | N      | 12                    | 280                          | 20:1             | 8                         |
| PORT BLAIR  | 11° 49' N | 92° 43' E | -                                         | -                                                  | Wood-Anderson        | N      | 2                     | 1000                         | 20:1             | 30                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | E      | 0.8                   | 1000                         | 56:1             | 30                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | N      | 12                    | 350                          | 20:1             | 8                         |
| SHILLONG    | 25° 34' N | 91° 53' E | 1600                                      | Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N      | 0.8                   | 1000                         | h=0 h=0.8        | 30                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | E      | 0.8                   | 1000                         | h = 0.8          | 30                        |
|             |           |           |                                           |                                                    | Milne-Shaw           | N      | 12                    | 250                          | 20:1             | 8                         |
|             |           |           |                                           |                                                    | Benioff              | Z      | To = 1.0 Tg = 0.18    |                              | -                | 60                        |
|             |           |           |                                           |                                                    | Sprengnether         | E      | To = Tg = 6.5         |                              | Critical         | 30                        |
|             |           |           |                                           |                                                    |                      |        |                       |                              |                  |                           |
|             |           |           |                                           |                                                    |                      |        |                       |                              |                  |                           |
| TOCKLAI     | 28° 45' N | 94° 46' E | -                                         | Alluvium                                           | Wood-Anderson        | E      | 0.8                   | 970                          | h = 0.8          | 50                        |
|             |           |           |                                           |                                                    |                      |        |                       |                              |                  |                           |
| VIZIANAGRAM | 18° 07' N | 83° 27' E | -                                         | -                                                  | Wood-Anderson        | E      | 0.8                   | 1000                         | h = 0.8          | 30                        |
|             |           |           |                                           |                                                    | Wood-Anderson        | N      | 2                     | 1000                         | 20:1             | 30                        |

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| DATE | STATION                                                                                         | COMPT | PHASE | G. M. T. Δ  | REMARKS                                      | DATE      | STATION                                                                                      | COMPT | PHASE    | G. M. T. Δ  | REMARKS                                                      |
|------|-------------------------------------------------------------------------------------------------|-------|-------|-------------|----------------------------------------------|-----------|----------------------------------------------------------------------------------------------|-------|----------|-------------|--------------------------------------------------------------|
|      |                                                                                                 |       |       | h. m. s. km |                                              | June 1959 |                                                                                              |       |          | h. m. s. km |                                                              |
| 01   | SHILLONG                                                                                        | E     | eP    | 02 39 06    | 270 Slight                                   | 02        | DEHRA DUN                                                                                    | N     | PPP      | 02 47 23    |                                                              |
|      |                                                                                                 |       | P*    | 39 10       |                                              |           | Contd.                                                                                       |       | iS       | 51 21       |                                                              |
|      |                                                                                                 |       | Pg    | 39 12       |                                              |           |                                                                                              |       | SS       | 53 45       |                                                              |
|      |                                                                                                 |       | iS    | 39 38       |                                              |           |                                                                                              |       | SSS      | 54 22       |                                                              |
|      |                                                                                                 |       | S*    | 39 40       |                                              |           |                                                                                              |       | Lr       | 55 42       |                                                              |
|      |                                                                                                 |       | Sg    | 39 45       |                                              |           |                                                                                              |       | M        | 58 50       |                                                              |
| 01   | Epc: 4°S, 153°E. New Britain. - h about 400 kms<br>- H = 05h 31m 30s (U.S.C.G.S)                |       |       |             |                                              | BOMBAY    | N                                                                                            | PS    | 02 52 46 |             | Slight                                                       |
|      | SHILLONG                                                                                        | Z     | iP    | 05 41 50    | Slight, compression                          |           |                                                                                              | SS    | 56 01    |             | Per: 13 secs<br>μ = 4                                        |
|      |                                                                                                 |       |       |             |                                              | 02        | HYDERABAD                                                                                    | E     | M        | 03 02 46    | Per: 12 secs<br>μ = 3                                        |
| 01   | VIZIANAGRAM                                                                                     | N     | e     | 07 06 23    | Slight, distant                              |           |                                                                                              |       |          |             |                                                              |
| 01   | SHILLONG                                                                                        | Z     | iP    | 07 27 55    | Slight, rarefaction                          |           | COLOMBO                                                                                      | E     | e        | 03 05 28    |                                                              |
| 01   | Epc: 6°S, 154°E. Solomon Islands Region.<br>- h about 400 kms.<br>- H = 12h 32m 25s (U.S.C.G.S) |       |       |             |                                              | 02        | Epc: 21°N, 121°E. Batan Islands Region<br>- H = 04h 57m 18s (U.S.C.G.S)                      |       |          |             |                                                              |
|      | SHILLONG                                                                                        | Z     | iP    | 12 42 56    | 7000 Slight, rarefaction                     |           | SHILLONG                                                                                     | ZE    | iP       | 05 03 04    | Moderate, compression, initial ground movement towards East. |
|      |                                                                                                 | E     | iS    | 51 26       |                                              |           |                                                                                              |       |          |             |                                                              |
|      | CHATRA                                                                                          | Z     | iP    | 12 43 19    | Feeble, distant                              |           | CHATRA                                                                                       | Z     | iP       | 05 03 44    | Slight, distant                                              |
|      | POONA                                                                                           | Z     | eP    | 12 44 15    | Feeble, phases not clear                     | 02        | BOKARO                                                                                       | NE    | iP       | 05 04 00    | 3880 Moderate                                                |
| 01   | DEHRA DUN                                                                                       | NE    | e     | 15 02 59    | Tremor                                       |           |                                                                                              | E     | PP       | 05 22       |                                                              |
| 01   | Epc: 28°N, 89°E. Nepal-Tibet Border.<br>- H = 15h 50m 48s (Shillong)<br>Felt at Darjeeling      |       |       |             |                                              |           |                                                                                              |       | PP       | 05 42       |                                                              |
|      | CHATRA                                                                                          | Z     | iP    | 15 51 17    | 170 Moderate                                 |           |                                                                                              |       | iS       | 09 31       |                                                              |
|      |                                                                                                 | NEZ   | iS    | 51 38       |                                              |           | DEHRA DUN                                                                                    | NE    | eP       | 05 04 58    | 4180 Slight                                                  |
| 01   | SHILLONG                                                                                        | ZE    | iP    | 15 51 43    | 380 Slight, compression                      |           |                                                                                              | N     | iS       | 10 48       |                                                              |
|      |                                                                                                 | E     | P*    | 51 50       |                                              |           |                                                                                              |       | SSS      | 13 48       |                                                              |
|      |                                                                                                 |       | Pg    | 51 55       |                                              |           | PORT BLAIR                                                                                   | E     | e        | 05 08 25    | Slight                                                       |
|      |                                                                                                 |       | Lq    | 52 20       |                                              |           |                                                                                              |       | i        | 15 51       |                                                              |
|      |                                                                                                 |       | S     | 52 25       |                                              |           | BOMBAY                                                                                       | NE    | PS       | 05 12 20    | Slight, phases not clear due to microseisms                  |
|      |                                                                                                 |       | S*    | 52 34       |                                              |           |                                                                                              | N     | SS       | 15 37       | Per: 13 secs<br>μ = 10                                       |
|      |                                                                                                 |       | Sg    | 52 39       |                                              |           |                                                                                              |       | M        | 27 50       | Amp: 0.8 mm                                                  |
| 01   | TOCKLAI                                                                                         | E     | eP    | 15 52 03    | 520 Slight                                   |           | COLOMBO                                                                                      | E     | e        | 05 19 19    |                                                              |
|      |                                                                                                 |       | iS    | 53 00       |                                              |           |                                                                                              |       | M        | 25 41       | Per: 15 secs<br>μ = 7                                        |
|      | DEHRA DUN                                                                                       | NE    | e     | 15 53 20    | Feeble                                       |           | HYDERABAD                                                                                    | E     | M        | 05 22 26    |                                                              |
|      |                                                                                                 |       | e     | 54 56       |                                              | 02        | Epc: 21°N, 121°E. Batan Island Region<br>- H = 05h 42m 34s (U.S.C.G.S)                       |       |          |             |                                                              |
|      | SEHORE                                                                                          | NE    | e     | 15 56 35    | Feeble, distant                              |           | SHILLONG                                                                                     | Z     | e        | 05 48 20    | Slight, compression, other phases not clear                  |
|      |                                                                                                 |       | e     | 57 03       |                                              |           |                                                                                              |       | iP       | 48 25       |                                                              |
|      |                                                                                                 |       | e     | 57 19       |                                              |           |                                                                                              |       |          |             |                                                              |
| 01   | Epc: 6°S, 155°E. Solomon Islands.<br>- h about 100 kms. - H = 17h 07m 23s (U.S.C.G.S)           |       |       |             |                                              | 02        | Epc: 43°S, 72°W. Chile-Argentina Border.<br>- h about 150 kms. - H = 05h 42m 26s (U.S.C.G.S) |       |          |             |                                                              |
|      | SHILLONG                                                                                        | Z     | eP    | 17 18 13    | Slight, rarefaction, other phases not clear. |           | SHILLONG                                                                                     | Z     | iPKP     | 06 02 15    | Feeble, distant                                              |
| 02   | Epc: 32°N, 131°E. Kyushu, Japan<br>- H = 00h 47m 20s (U.S.C.G.S)                                |       |       |             |                                              |           | BOMBAY                                                                                       | N     | e        | 06 09 04    | Slight                                                       |
|      | SHILLONG                                                                                        | Z     | eP    | 00 54 13    |                                              | 02        | SHILLONG                                                                                     | Z     | iPg      | 06 53 12    | Slight, local                                                |
|      | DEHRA DUN                                                                                       | NE    | e     | 01 06 29    | Feeble                                       |           |                                                                                              |       | iSg      | 53 19       |                                                              |
| 02   | DEHRA DUN                                                                                       | NE    | e     | 02 05 34    | Tremor                                       | 02        | VIZIANAGRAM                                                                                  | N     | e        | 07 56 49    | Slight, distant                                              |
| 02   | Epc: 21°N, 121°E. Batan Islands Region.<br>- H = 02h 37m 46s (U.S.C.G.S)                        |       |       |             |                                              | 02        | Epc: 23°N, 121°E. Near East Coast of Formosa.<br>- H = 19h 13m 30s (U.S.C.G.S)               |       |          |             |                                                              |
|      | SHILLONG                                                                                        | ZE    | iP    | 02 43 31    | 3140 Slight, compression                     |           | SHILLONG                                                                                     | Z     | eP       | 19 19 19    |                                                              |
|      |                                                                                                 |       | PP    | 44 17       |                                              | 02        | SHILLONG                                                                                     | Z     | iP       | 20 34 26    | Slight, compression                                          |
|      |                                                                                                 |       | PPP   | 44 38       |                                              | 03        | SHILLONG                                                                                     | Z     | iP       | 04 00 07    | 1580 Slight, compression                                     |
|      |                                                                                                 |       | PcP   | 46 27       |                                              |           |                                                                                              | E     | Lq       | 02 40       |                                                              |
|      |                                                                                                 |       | iS    | 48 17       |                                              |           |                                                                                              |       | iS       | 02 46       |                                                              |
|      |                                                                                                 |       | SS    | 49 50       |                                              |           |                                                                                              |       | SS       | 03 03       |                                                              |
|      |                                                                                                 |       | SSS   | 50 08       |                                              |           |                                                                                              |       | SSS      | 03 17       |                                                              |
|      |                                                                                                 |       | Lr    | 50 56       |                                              |           |                                                                                              |       | M        | 04 32       |                                                              |
|      |                                                                                                 |       | M     | 52 46       |                                              |           | TOCKLAI                                                                                      | E     | eP       | 04 01 09    | Slight, distant                                              |
|      | CHATRA                                                                                          | Z     | iP    | 02 44 10    | Slight, distant                              | 03        | Epc: 52°N, 170°W. Fox Islands, Aleutian Islands<br>- H = 05h 43m 28s (U.S.C.G.S)             |       |          |             |                                                              |
|      | DEHRA DUN                                                                                       | NE    | e     | 02 45 33    | Slight                                       |           | SHILLONG                                                                                     | Z     | eP       | 05 55 08    | Slight                                                       |
|      |                                                                                                 | N     | PP    | 46 53       |                                              |           |                                                                                              |       |          |             |                                                              |

| DATE | STATION                                                                                   | COMPT    | PHASE    | G. M. T. h. m. s. km | REMARKS                                           | DATE | STATION                                                                             | COMPT    | PHASE               | G. M. T. h. m. s. km                | REMARKS                                         |
|------|-------------------------------------------------------------------------------------------|----------|----------|----------------------|---------------------------------------------------|------|-------------------------------------------------------------------------------------|----------|---------------------|-------------------------------------|-------------------------------------------------|
| 03   | SHILLONG                                                                                  | Z        | iP       | 07 05 51             | Slight; compression; other phases not clear       | 06   | CHATRA                                                                              | Z        | iP<br>iS            | 23 00 51<br>01 07                   | 120 Feeble                                      |
|      | TOCKLAI                                                                                   | E        | eP       | 07 06 14             | Slight, near                                      | 07   | TOCKLAI                                                                             | Z        | eP                  | 00 10 57                            | Slight, distant                                 |
|      | CHATRA                                                                                    | Z        | i        | 07 06 52             | Feeble, distant                                   | 07   | Epc: 10°N, 126°E. Samar Islands, Philippine Islands.<br>H: 03h 45m 21s (U.S.C.G.S)  |          |                     |                                     |                                                 |
| 03   | SHILLONG                                                                                  | Z        | e        | 07 47 15             | Slight                                            |      | SHILLONG                                                                            | Z        | iP                  | 03 52 22                            | Slight, rarefaction                             |
| 03   | SHILLONG                                                                                  | Z        | iP       | 11 59 47             | Slight; rarefaction; distant                      | 07   | SHILLONG                                                                            | Z        | e                   | 05 37 52                            | Tremor, near                                    |
| 03   | Felt at Dhubri                                                                            |          |          |                      |                                                   | 07   | TOCKLAI                                                                             | E        | eP                  | 05 38 16                            | Slight, distant                                 |
|      | SHILLONG                                                                                  | Z        | i        | 17 57 37             | Slight, near                                      | 07   | SHILLONG                                                                            | Z        | iP                  | 06 50 15                            | Slight, compression                             |
| 03   | CHATRA                                                                                    | Z<br>ZNE | iP<br>iS | 18 57 57<br>58 49    | 480 Slight                                        | 07   | SHILLONG                                                                            | Z        | iP                  | 06 57 15                            | Slight, rarefaction                             |
| 04   | DEHRA DUN NE                                                                              |          | e<br>i   | 18 15 47<br>17 10    | Feeble                                            | 07   | SHILLONG                                                                            | Z        | iP                  | 07 28 10                            | Slight, compression                             |
| 04   | SHILLONG                                                                                  | Z        | iP       | 20 40 02             | Slight, compression                               | 07   | Epc: 24°N, 94°E. South East Assam (India)<br>H: 08h 33m 24s. Mag: 5 1/2 (Shillong). |          |                     |                                     |                                                 |
| 04   | SHILLONG                                                                                  | Z        | eP       | 22 29 23             | Slight, distant                                   |      | SHILLONG                                                                            | ZE<br>E  | iP<br>Pg<br>S<br>Sg | 08 34 02<br>34 11<br>34 31<br>34 34 | 240 Compression                                 |
| 05   | SHILLONG                                                                                  | Z        | iP       | 03 30 07             | Slight, rarefaction                               |      | TOCKLAI                                                                             | E        | eP<br>iSg           | 08 34 21<br>34 32                   | 100                                             |
| 05   | SHILLONG                                                                                  | Z        | iP       | 05 56 21             | Slight, rarefaction                               |      | CHATRA                                                                              | Z<br>ZNE | iP<br>iS            | 08 35 02<br>36 21                   | 150                                             |
| 05   | Epc: 7°S, 155°E. Solomon Islands. H: 150 km<br>H: 05h 58m 40s (U.S.C.G.S)                 |          |          |                      |                                                   | 07   | BOMBAY                                                                              | E        | e                   | 09 08 08                            | Slight, phases lost in microseisms.             |
|      | SHILLONG                                                                                  | Z        | iP       | 06 09 41             | Slight, compression                               | 07   | CHATRA                                                                              | Z        | iPg<br>iSg          | 14 18 09<br>18 15                   | 40 Feeble                                       |
| 05   | CHATRA                                                                                    | Z        | iP       | 10 15 35             | Feeble                                            | 07   | DEHRA DUN                                                                           | NE       | e<br>e<br>i         | 16 14 09<br>15 52<br>16 52          | Feeble, phases not clear                        |
| 05   | Epc: 3 1/2°N, 126°E. Molucca Passage. H: 18h 28m 57s (U.S.C.G.S)                          |          |          |                      |                                                   |      | SHILLONG                                                                            | Z        | ip                  | 16 16 53                            | Slight, distant compression                     |
|      | SHILLONG                                                                                  | Z        | iP       | 18 36 35             | Slight, compression                               |      | BOMBAY                                                                              | E        | e                   | 16 20 17                            | Slight, phases lost in microseisms              |
| 05   | SHILLONG                                                                                  | Z        | iP       | 19 48 51             | Slight, compression                               | 08   | SHILLONG                                                                            | Z        | iP                  | 07 36 40                            | Slight, compression                             |
| 05   | Epc: 12°N, 86 1/2°W. Near Coast of Nicaragua. H: about 100 km. H: 20h 37m 15s (U.S.C.G.S) |          |          |                      |                                                   |      | CHATRA                                                                              | Z        | iP<br>iS            | 07 37 07<br>37 47                   | 360 Feeble                                      |
|      | SHILLONG                                                                                  | Z        | ePKP     | 20 56 42             | Slight                                            | 08   | SHILLONG                                                                            | Z        | iP                  | 07 47 08                            | Slight, compression                             |
| 05   | SHILLONG                                                                                  | Z        | e        | 21 41 41             | Tremor                                            | 08   | VIZIANAGRAM N                                                                       |          | e                   | 08 22 09                            | Slight, distant                                 |
| 06   | SHILLONG                                                                                  | Z        | iP       | 04 59 30             | Slight, rarefaction                               | 08   | Epc: About 150 miles south of East Java. H: 09h 44m 25s (U.S.C.G.S)                 |          |                     |                                     |                                                 |
| 06   | SHILLONG                                                                                  | Z        | e        | 08 34 52             | Tremor                                            |      | SHILLONG                                                                            | Z        | eP                  | 09 52 14                            | Slight                                          |
| 06   | SHILLONG                                                                                  | Z        | i        | 08 38 35             | Near, slight                                      | 08   | SHILLONG                                                                            | Z        | iP                  | 11 00 37                            | Slight, rarefaction                             |
| 06   | TOCKLAI                                                                                   | E        | iP       | 11 34 51             | 210 Slight, initial ground movement towards East. | 08   | SHILLONG                                                                            | Z        | iP                  | 11 37 48                            | Slight                                          |
|      | SHILLONG                                                                                  | Z        | iP       | 11 35 11             | Slight, near other phases not clear.              | 08   | DEHRA DUN                                                                           | NE       | e                   | 11 48 52                            | Tremor                                          |
|      | CHATRA                                                                                    | Z        | iP<br>iS | 11 36 07<br>38 08    | 1180 Slight                                       | 08   | CHATRA                                                                              | Z        | iPg<br>iSg          | 13 15 17<br>15 30                   | 100 Feeble                                      |
| 06   | SHILLONG                                                                                  | Z        | e        | 18 39 12             | Slight, near                                      | 08   | SHILLONG                                                                            | Z        | iP                  | 14 54 26                            | Slight, near phases not clear due to large Amp. |
| 06   | SHILLONG                                                                                  | Z        | e        | 20 39 04             | Slight, near                                      | 08   | CHATRA                                                                              | Z        | i                   | 14 54 53                            | Feeble, distant                                 |
| 06   | Epc: 6 1/2°S, 155°E. Solomon Islands. H: 20h 51m 19s (U.S.C.G.S)                          |          |          |                      |                                                   | 09   | POONA                                                                               | Z        | iP                  | 04 24 42                            | Feeble, phases not clear                        |
|      | SHILLONG                                                                                  | Z        | iP       | 21 02 32             | Slight, rarefaction                               | 09   | POONA                                                                               | Z        | e                   | 04 29 50                            |                                                 |
| 06   | SHILLONG                                                                                  | Z        | e        | 22 01 33             | Slight, near                                      |      | CHATRA                                                                              | Z        | iPg<br>iSg          | 17 26 16<br>26 31                   | 110 Feeble                                      |
| 06   | CHATRA                                                                                    | Z        | iP<br>iS | 22 38 47<br>39 03    | 120 Feeble                                        |      |                                                                                     |          |                     |                                     |                                                 |
| 06   | CHATRA                                                                                    | Z        | iP<br>i  | 22 56 39<br>56 48    | Feeble                                            |      |                                                                                     |          |                     |                                     |                                                 |

| DATE | STATION                                                       | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                               | DATE      | STATION                                                                                                                                                              | COMPT | PHASE | G. M. T. | Δ     | REMARKS                                                   |  |
|------|---------------------------------------------------------------|-------|-------|----------|------|-------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|-------|-----------------------------------------------------------|--|
|      |                                                               |       |       | h. m. s. | km   |                                                       | June 1959 |                                                                                                                                                                      |       |       | h. m. s. | km    |                                                           |  |
| 09   | SHILLONG                                                      | Z     | IP    | 17 31 41 |      | Slight, compression                                   | 11        | DEHRA DUN                                                                                                                                                            | NE    | e     | 08 26 28 |       | Feeble                                                    |  |
| 09   | SHILLONG                                                      | E     | IP    | 23 29 04 |      | Slight, compression                                   |           | SHILLONG                                                                                                                                                             | Z     | IP    | 08 28 50 |       | Slight, rarefaction                                       |  |
|      | TOCKLAI                                                       | E     | IP    | 23 29 26 | 100  | Slight, ground motion East                            | 11        | VIZIANAGRAM                                                                                                                                                          | Z     | IP    | 11 11 10 |       | Slight, distant                                           |  |
|      |                                                               |       | iSg   | 29 38    |      |                                                       | 12        | CHATRA                                                                                                                                                               | Z     | IP    | 18 29 36 | 670   | Feeble                                                    |  |
| 10   | Epc: 30°N, 91°E. Tibet. H = 04h 25m 15s<br>Mag: 5% (Shillong) |       |       |          |      |                                                       |           |                                                                                                                                                                      |       |       | iS       | 30 44 |                                                           |  |
|      | DEHRA DUN                                                     | NE    | e     | 04 24 25 |      | Tremor                                                | 12        | CHATRA                                                                                                                                                               | Z     | IP    | 19 16 39 | 610   | Feeble                                                    |  |
|      | AGRA                                                          | E     | eP    | 04 24 35 |      | Slight, near shock.                                   |           |                                                                                                                                                                      |       | iS    | 17 44    |       |                                                           |  |
|      | CHATRA                                                        | Z     | IP    | 04 25 32 |      |                                                       | 13        | TOCKLAI                                                                                                                                                              | E     | eP    | 05 35 42 | 150   | Slight                                                    |  |
|      |                                                               | ZNE   | i     | 27 48    |      |                                                       | 13        | CHATRA                                                                                                                                                               | Z     | IP    | 05 36 45 | 1320  | Slight                                                    |  |
|      | TOCKLAI                                                       | E     | eP    | 04 26 02 |      | Great, distant                                        |           |                                                                                                                                                                      |       | iS    | 39 10    |       |                                                           |  |
|      | SHILLONG                                                      | ZE    | IP    | 04 26 03 | 430  | Rarefaction, initial ground movement towards West.    | 13        | CHATRA                                                                                                                                                               | Z     | IPg   | 08 04 44 | 90    | Feeble                                                    |  |
|      |                                                               | E     | P/PP  | 26 12    |      |                                                       |           |                                                                                                                                                                      |       | iSg   | 04 54    |       |                                                           |  |
|      |                                                               |       | PPP   | 26 17    |      |                                                       | 13        | CHATRA                                                                                                                                                               | Z     | IPg   | 08 05 42 | 100   | Feeble                                                    |  |
|      |                                                               |       | Pg    | 26 23    |      |                                                       |           |                                                                                                                                                                      |       | iSg   | 05 55    |       |                                                           |  |
| 10   | SHILLONG                                                      | E     | Lq    | 04 26 38 |      |                                                       | 13        | CHATRA                                                                                                                                                               | Z     | i     | 12 10 23 |       | Feeble, distant                                           |  |
|      |                                                               |       | iS    | 26 50    |      |                                                       | 13        | CHATRA                                                                                                                                                               | Z     | IP    | 16 08 28 | 2180  | Slight                                                    |  |
|      |                                                               |       | Lr    | 26 52    |      |                                                       |           |                                                                                                                                                                      |       | iS    | 12 04    |       |                                                           |  |
|      |                                                               |       | Sg    | 27 09    |      |                                                       | 14        | Epc: 20°S, 68°W. South Western Bolivia. 1 killed and minor damage in Northern Chile.<br>H = 00h 11m 57s (U.S.C.G.S.) - h about 100 km<br>Mag: 7-8-7-4 (Pas) 7 (Berk) |       |       |          |       |                                                           |  |
|      | BOKARO                                                        | E     | eP    | 04 27 05 | 780  |                                                       |           | BOMBAY                                                                                                                                                               | NE    | ePKP1 | 00 31 28 | 15870 |                                                           |  |
|      |                                                               |       | PPP   | 27 16    |      | Per: 15 secs<br>μ = 18                                |           |                                                                                                                                                                      | E     | PP    | 34 43    |       |                                                           |  |
|      |                                                               |       | Lq    | 28 14    |      |                                                       |           |                                                                                                                                                                      |       | PKS1  | 35 32    |       |                                                           |  |
|      |                                                               | NE    | iS    | 28 26    |      |                                                       |           |                                                                                                                                                                      |       | eSS   | 53 16    |       |                                                           |  |
|      |                                                               | N     | M     | 29 05    |      |                                                       |           |                                                                                                                                                                      |       | e     | 56 32    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | SSS   | 58 44    |       |                                                           |  |
|      | CALCUTTA                                                      | E     | e     | 04 27 41 |      |                                                       |           |                                                                                                                                                                      |       | M 01  | 34 51    |       | Per: 20 secs<br>μ = 12<br>Per: 18 secs<br>μ = 20          |  |
|      |                                                               |       | i     | 28 41    |      |                                                       |           |                                                                                                                                                                      |       | N     | M        | 35 05 |                                                           |  |
|      | DEHRA DUN                                                     | NE    | eP    | 04 28 13 | 1260 |                                                       |           | POONA                                                                                                                                                                | Z     | IPKP1 | 00 31 29 |       |                                                           |  |
|      |                                                               | N     | PPP   | 28 26    |      |                                                       |           |                                                                                                                                                                      |       | ePP   | 34 54    |       |                                                           |  |
|      |                                                               |       | iS    | 30 22    |      |                                                       |           | AGRA                                                                                                                                                                 | ZNE   | IPKP  | 00 31 40 |       | Initial ground motion towards South, East and compression |  |
|      |                                                               |       | SS    | 30 36    |      |                                                       |           |                                                                                                                                                                      |       | i     | 32 16    |       |                                                           |  |
|      |                                                               |       | M     | 31 48    |      |                                                       |           |                                                                                                                                                                      |       | i     | 32 48    |       |                                                           |  |
| 10   | BOMBAY                                                        | E     | eP    | 04 29 52 | 2370 |                                                       |           |                                                                                                                                                                      |       | PP    | 35 12    |       |                                                           |  |
|      |                                                               | NE    | eS    | 33 45    |      |                                                       |           |                                                                                                                                                                      |       | i     | 35 42    |       |                                                           |  |
|      |                                                               | E     | SS    | 34 21    |      |                                                       |           |                                                                                                                                                                      |       | i     | 35 58    |       |                                                           |  |
|      |                                                               |       | SSS   | 34 40    |      |                                                       |           |                                                                                                                                                                      |       | i     | 36 25    |       |                                                           |  |
|      |                                                               |       | Lr    | 35 04    |      |                                                       |           |                                                                                                                                                                      |       |       |          |       |                                                           |  |
| 10   | VIZIANAGRAM                                                   | N     | eP    | 04 30 52 |      | Distant                                               | 14        | AGRA                                                                                                                                                                 | E     | i     | 00 45 30 |       |                                                           |  |
|      | HYDERABAD                                                     | E     | e     | 04 32 27 |      | Per: 4 secs<br>μ = 2                                  |           |                                                                                                                                                                      | EZ    | i     | 49 34    |       |                                                           |  |
|      |                                                               | N     | eS    | 33 48    |      | Per: 8 secs<br>μ = 4                                  |           |                                                                                                                                                                      | Z     | i     | 56 56    |       |                                                           |  |
|      |                                                               |       | M     | 34 30    |      |                                                       |           | KODAIKANAL                                                                                                                                                           | E     | PKP   | 00 31 42 | 16400 | Initial ground movement towards West.                     |  |
|      |                                                               | E     | Lr    | 34 36    |      |                                                       |           |                                                                                                                                                                      |       | PP    | 34 57    |       |                                                           |  |
|      |                                                               |       | M     | 35 12    |      |                                                       |           |                                                                                                                                                                      |       | SKKS  | 41 45    |       |                                                           |  |
| 10   | Epc: 24°N, 96°E. Burma<br>H = 05h 13m 00s (Shillong)          |       |       |          |      |                                                       |           |                                                                                                                                                                      |       |       | PS       | 45 53 |                                                           |  |
|      | TOCKLAI                                                       | E     | IP    | 05 13 47 |      | Moderate, distant initial ground motion towards West. |           |                                                                                                                                                                      |       | PPS   | 47 30    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | e     | 53 33    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | SS    | 54 18    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | e     | 59 00    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | M     | 29 57    |       | Per: 22 secs<br>μ = 39                                    |  |
|      | SHILLONG                                                      | ZE    | eP    | 05 15 06 | 440  | Slight                                                | 14        | HYDERABAD                                                                                                                                                            | E     | IPKP1 | 00 31 42 |       |                                                           |  |
|      |                                                               | E     | P/PP  | 14 14    |      |                                                       |           |                                                                                                                                                                      |       | PKP2  | 32 18    |       |                                                           |  |
|      |                                                               |       | Pg    | 14 23    |      |                                                       |           |                                                                                                                                                                      |       | e     | 32 41    |       |                                                           |  |
|      |                                                               |       | Lq    | 14 42    |      |                                                       |           |                                                                                                                                                                      |       | PKS   | 35 12    |       |                                                           |  |
|      |                                                               |       | iS    | 14 54    |      |                                                       |           |                                                                                                                                                                      |       | PPP   | 38 30    |       |                                                           |  |
|      |                                                               |       | Lr    | 14 57    |      |                                                       |           |                                                                                                                                                                      |       | i     | 41 58    |       |                                                           |  |
|      |                                                               |       | S*    | 14 59    |      |                                                       |           |                                                                                                                                                                      |       | i     | 42 30    |       |                                                           |  |
|      |                                                               |       | Sg    | 15 11    |      |                                                       |           |                                                                                                                                                                      |       | e     | 43 30    |       |                                                           |  |
|      | CHATRA                                                        | Z     | IP    | 05 15 06 | 990  | Slight                                                |           |                                                                                                                                                                      |       | i     | 45 33    |       |                                                           |  |
|      |                                                               | NE    | iS    | 16 48    |      |                                                       |           |                                                                                                                                                                      |       | e     | 49 28    |       |                                                           |  |
|      | DEHRA DUN                                                     | NE    | e     | 05 19 58 |      | Tremor                                                |           |                                                                                                                                                                      |       | SSP   | 55 24    |       |                                                           |  |
| 10   | SHILLONG                                                      | Z     | i     | 06 27 48 |      | Slight, near                                          |           |                                                                                                                                                                      |       | Lr 01 | 15 30    |       |                                                           |  |
|      |                                                               |       | i     | 28 31    |      |                                                       |           |                                                                                                                                                                      |       | M     | 27 33    |       | Per: 15 secs<br>μ = 14                                    |  |
| 10   | SHILLONG                                                      | Z     | i     | 06 49 33 |      | Slight, near                                          | 14        | DEHRA DUN                                                                                                                                                            | NE    | ePKP  | 00 31 45 |       |                                                           |  |
|      |                                                               |       | i     | 50 15    |      |                                                       |           |                                                                                                                                                                      |       | e     | 34 51    |       |                                                           |  |
| 10   | SHILLONG                                                      | Z     | i     | 12 53 32 |      | Slight                                                |           |                                                                                                                                                                      |       | e     | 36 55    |       |                                                           |  |
|      |                                                               |       | i     | 54 13    |      |                                                       |           |                                                                                                                                                                      |       | e     | 41 55    |       |                                                           |  |
|      |                                                               |       |       |          |      |                                                       |           |                                                                                                                                                                      |       | e     | 42 51    |       |                                                           |  |





| DATE | STATION                                                                    | COMPT   | PHASE                      | G. M. T. h. m. s.                                     | $\Delta$ km | REMARKS                              | DATE | STATION                                                                                      | COMPT   | PHASE                                          | G. M. T. h. m. s.                                              | $\Delta$ km | REMARKS                                                             |
|------|----------------------------------------------------------------------------|---------|----------------------------|-------------------------------------------------------|-------------|--------------------------------------|------|----------------------------------------------------------------------------------------------|---------|------------------------------------------------|----------------------------------------------------------------|-------------|---------------------------------------------------------------------|
| 21   | CHATRA                                                                     | Z       | i                          | 16 14 03                                              |             | Feeble, distant                      | 24   | SHILLONG                                                                                     | Z       | iP                                             | 19 45 47                                                       |             | Slight, near                                                        |
| 21   | SHILLONG                                                                   | Z       | iP                         | 16 49 55                                              |             | Slight, rarefaction, near            | 24   | SHILLONG                                                                                     | Z       | iPg<br>iSg                                     | 21 02 33<br>03 12                                              |             | Slight                                                              |
|      | CHATRA                                                                     | Z<br>EZ | iP<br>iS                   | 16 50 44<br>51 31                                     | 430         | Slight                               | 24   | TOCKLAI                                                                                      | E       | e<br>e                                         | 23 01 46<br>02 21                                              |             | Slight, distant                                                     |
| 21   | SHILLONG                                                                   | Z       | iP                         | 16 56 09                                              |             |                                      |      | SHILLONG                                                                                     | Z       | eP<br>Pe<br>Pg<br>S<br>Ss<br>Sg                | 23 01 50<br>01 52<br>01 58<br>02 18<br>02 27<br>02 30          | 240         | Slight                                                              |
| 21   | SHILLONG                                                                   | Z       | eP                         | 17 04 37                                              |             | Feeble                               |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
| 21   | CHATRA                                                                     | Z<br>ZE | iP<br>iS                   | 17 33 23<br>33 36                                     | 100         | Slight                               |      | CHATRA                                                                                       | Z       | iP<br>iS                                       | 23 02 26<br>03 33                                              | 640         | Feeble                                                              |
|      | SHILLONG                                                                   | Z       | eP                         | 17 34 13                                              |             | Slight                               |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
| 21   | SHILLONG                                                                   | Z       | eP                         | 20 08 37                                              |             | Slight, near                         | 25   | Epc: Hindu Kush                                                                              |         | H = 03h 12m 28s (U.S.C.G.S)                    |                                                                |             |                                                                     |
|      | CHATRA                                                                     | Z       | eP                         | 20 09 31                                              |             | Feeble, distant                      |      | DEHRA DUN                                                                                    | NE<br>N | eP<br>PPP<br>Lq<br>iS<br>SS/Lr<br>SSS<br>Sg, M | 03 14 44<br>14 57<br>15 58<br>16 12<br>16 23<br>16 34<br>17 00 | 850         | Slight                                                              |
|      | TOCKLAI                                                                    | E       | eP                         | 20 09 35                                              |             | Slight, distant                      |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
| 21   | CHATRA                                                                     | Z       | i                          | 22 09 34                                              |             | Feeble, distant                      |      | CHATRA                                                                                       | Z<br>E  | iP<br>iS                                       | 03 16 30<br>19 26                                              | 1760        | Slight                                                              |
| 21   | Epc: 114°S, 167°E. Santa Cruz Islands.<br>H = 22h 11m 51s (U.S.C.G.S)      |         |                            |                                                       |             |                                      |      | SHILLONG                                                                                     | Z       | iP                                             | 03 18 19                                                       |             | Slight, compression                                                 |
|      | SHILLONG                                                                   | Z       | iP                         | 22 24 10                                              |             | Slight, compression                  |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
| 22   | SHILLONG                                                                   | Z       | eP                         | 12 46 16                                              |             | Slight                               | 25   | Epc: 62°N, 274°W. South of Ice Land<br>H = 06h 46m 55s (U.S.C.G.S)                           |         |                                                |                                                                |             |                                                                     |
| 22   | SHILLONG                                                                   | Z       | eP                         | 19 06 19                                              |             | Slight                               |      | SHILLONG                                                                                     | Z       | iP                                             | 06 59 05                                                       |             | Slight, rarefaction                                                 |
| 23   | CHATRA                                                                     | Z       | iPg<br>iSg                 | 07 33 28<br>33 41                                     | 90          | Feeble                               | 25   | SHILLONG                                                                                     | Z       | iP                                             | 11 30 16<br>30 46                                              |             | Slight, rarefaction                                                 |
| 23   | SHILLONG                                                                   | Z       | i<br>i                     | 10 42 48<br>43 15                                     |             | Slight, near phases not clear        |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
| 23   | TOCKLAI                                                                    | E       | eP                         | 10 43 23                                              |             | Slight, distant                      | 25   | Epc: 304°N, 131°E. Ryukyu Islands<br>H = 13h 37m 10s (U.S.C.G.S)                             |         |                                                |                                                                |             |                                                                     |
|      | CHATRA                                                                     | Z       | i                          | 10 45 00                                              |             | Feeble, distant                      |      | SHILLONG                                                                                     | Z       | iP                                             | 13 44 02                                                       |             | Slight, compression                                                 |
| 23   | Epc: 414°N, 82°E. Sinkiang Province, China.<br>H = 10h 44m 55s (U.S.C.G.S) |         |                            |                                                       |             |                                      |      |                                                                                              |         |                                                |                                                                |             |                                                                     |
|      | DEHRA DUN                                                                  | NE      | eP<br>eS<br>i              | 10 47 51<br>50 01<br>51 53                            |             | Feeble                               | 25   | Epc: 5°S, 152°E. New Britain, Felt Rabaul.<br>H = about 150 kms. H = 14h 34m 57s (U.S.C.G.S) |         |                                                |                                                                |             |                                                                     |
|      | CHATRA                                                                     | Z       | i                          | 10 48 36                                              |             | Feeble, distant                      |      | SHILLONG                                                                                     | Z       | iP                                             | 14 45 30                                                       |             | Feeble, compression                                                 |
|      | SHILLONG                                                                   | Z       | iP                         | 10 49 08                                              |             | Slight, compression                  | 25   | SHILLONG                                                                                     | Z       | iPg                                            | 16 33 22                                                       |             | Slight, local other phases not clear.                               |
| 23   | CHATRA                                                                     | Z       | iPg<br>iSg                 | 13 05 29<br>05 40                                     | 80          | Feeble                               | 25   | CHATRA                                                                                       | Z       | iPg<br>iSg                                     | 17 46 00<br>46 12                                              | 90          | Feeble                                                              |
| 23   | SHILLONG                                                                   | Z       | e<br>i<br>i<br>i<br>i<br>i | 19 40 52<br>40 54<br>40 58<br>41 04<br>41 11<br>41 33 |             | Slight, near                         | 25   | SHILLONG                                                                                     | Z       | eP<br>i                                        | 19 41 13<br>41 34                                              |             | Slight, near                                                        |
| 23   | SHILLONG                                                                   | Z       | e<br>i                     | 23 01 45<br>02 14                                     |             | Slight, near other phases not clear  | 26   | SHILLONG                                                                                     | Z       | iP<br>Pg<br>S<br>Sg                            | 08 44 52<br>13 00 19<br>00 21<br>00 29<br>00 31                |             | Slight, rarefaction                                                 |
| 24   | SHILLONG                                                                   | Z<br>E  | iPg<br>iSg                 | 00 24 04<br>24 05                                     |             | Slight, local felt phases not clear  | 26   | SHILLONG                                                                                     | Z       | eP                                             | 13 00 19                                                       | 90          | Slight                                                              |
| 24   | SHILLONG                                                                   | Z       | e<br>iP                    | 04 36 20<br>36 23                                     |             | Slight                               | 26   | DEHRA DUN                                                                                    | NE      | e(P)<br>i(S)                                   | 20 18 11                                                       | 860         | Feeble, phases not clear                                            |
| 24   | CHATRA                                                                     | Z<br>ZE | iP<br>iS                   | 08 25 18<br>25 33                                     | 110         | Slight                               |      | CHATRA                                                                                       | Z       | i                                              | 20 19 47                                                       |             | Feeble, distant                                                     |
|      | SHILLONG                                                                   | Z       | e                          | 08 26 11                                              |             | Tremor                               |      | SHILLONG                                                                                     | Z       | iP                                             | 20 20 26                                                       |             | Slight, rarefaction                                                 |
| 24   | SHILLONG                                                                   | Z       | iP                         | 11 17 56                                              |             | Slight, compression                  | 27   | CHATRA                                                                                       | Z       | iP<br>iS                                       | 00 01 35<br>02 16                                              | 380         | Feeble                                                              |
| 24   | SHILLONG                                                                   | Z       | iPg                        | 14 10 30                                              |             | Slight, local other phases not clear | 27   | DEHRA DUN                                                                                    | NE      | e                                              | 07 28 02                                                       |             | Tremor                                                              |
| 24   | SHILLONG                                                                   | Z       | iP                         | 16 09 41                                              |             | Slight, rarefaction                  | 27   | SHILLONG                                                                                     | Z       | i                                              | 17 24 53                                                       |             | Slight, near other phases not clear.                                |
|      |                                                                            |         |                            |                                                       |             |                                      | 27   | MADRAS                                                                                       | E       | e<br>e                                         | 18 22 19<br>24 08                                              |             | Phases could not be identified due to strong microseismic activity. |

| DATE | STATION                                                                   | COMPT | PHASE  | G. M. T. | $\Delta$ | REMARKS                                                  | DATE | STATION                                                                                                  | COMPT    | PHASE | G. M. T. | $\Delta$ | REMARKS                            |                                |
|------|---------------------------------------------------------------------------|-------|--------|----------|----------|----------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------|----------|-------|----------|----------|------------------------------------|--------------------------------|
|      |                                                                           |       |        | h m s    | km       |                                                          |      |                                                                                                          |          |       | h m s    | km       |                                    |                                |
| 27   | Epc: 42°N, 80°E. China - U.S.S.R. border<br>- H = 19h 11m 23s (U.S.C.G.S) |       |        |          |          |                                                          |      | 28                                                                                                       | COLOMBO  | E     | P        | 19 51 45 | 4870                               |                                |
|      | DEHRA DUN                                                                 | NE    | eP     | 19 14 14 | 1210     | Slight                                                   |      |                                                                                                          |          | S     | 58 17    |          |                                    |                                |
|      |                                                                           | N     | PP     | 14 23    |          |                                                          |      |                                                                                                          |          | L     | 20 09 10 |          | Amp: 0.6 mm                        |                                |
|      |                                                                           |       | PPP    | 14 30    |          |                                                          |      | CHATRA                                                                                                   | Z        | iP    | 19 52 20 | 5440     | Slight                             |                                |
|      |                                                                           |       | Lq     | 16 09    |          |                                                          |      |                                                                                                          | E        | iS    | 59 24    |          |                                    |                                |
|      |                                                                           |       | iS     | 16 18    |          |                                                          |      | POONA                                                                                                    | Z        | eP    | 19 53 00 | 5940     | Slight                             |                                |
|      |                                                                           |       | SS     | 16 29    |          |                                                          |      |                                                                                                          | NE       | S     | 20 00 32 |          |                                    |                                |
|      |                                                                           |       | SSS    | 16 41    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | Sg,M   | 17 33    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
| 27   | AGRA                                                                      | ZNE   | iP     | 19 14 57 | 1500     | Slight, initial ground motion towards North, Compression | 28   | AGRA                                                                                                     | Z        | iP    | 19 53 05 | 6080     | Compression, slight                |                                |
|      |                                                                           |       | PPP    | 15 19    |          |                                                          |      |                                                                                                          |          | i     | 53 29    |          |                                    |                                |
|      |                                                                           | N     | i      | 16 15    |          |                                                          |      |                                                                                                          | ENZ      | iS    | 20 00 44 |          |                                    |                                |
|      |                                                                           | ZNE   | iS     | 17 29    |          |                                                          |      |                                                                                                          | Z        | i     | 01 36    |          |                                    |                                |
|      |                                                                           |       | SSS,Lr | 17 53    |          |                                                          |      |                                                                                                          | NE       | ScS   | 02 44    |          |                                    |                                |
|      |                                                                           | Z     | i      | 18 17    |          |                                                          |      |                                                                                                          | ZN       | i     | 05 36    |          |                                    |                                |
|      |                                                                           | ZNE   | M      | 19 07    |          | Per = 12 secs<br>u = 13.5                                |      |                                                                                                          | NE       | Lq    | 07 16    |          |                                    |                                |
| 27   | CHATRA                                                                    | Z     | iP     | 19 15 15 | 1950     | Slight                                                   | 28   | DEHRA DUN                                                                                                | NE       | eP    | 19 53 18 | 6300     | Slight, phases not clear           |                                |
|      |                                                                           | E     | iS     | 18 30    |          |                                                          |      |                                                                                                          |          | iS    | 20 01 10 |          |                                    |                                |
|      |                                                                           |       |        |          |          |                                                          |      |                                                                                                          |          | PPS   | 03 44    |          |                                    |                                |
|      | SHILLONG                                                                  | ZE    | iP     | 19 15 48 | 2120     | Moderate, compression                                    |      | BOKARO                                                                                                   | NE       | i     | 19 59 03 |          | Tremor                             |                                |
|      |                                                                           | E     | PP     | 16 08    |          |                                                          |      | BOMBAY                                                                                                   | NE       | e     | 20 00 51 |          | Slight, phases lost in microseisms |                                |
|      |                                                                           |       | PPP    | 16 17    |          |                                                          |      |                                                                                                          | N        | e     | 03 26    |          |                                    |                                |
|      |                                                                           |       | iS     | 19 18    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | Lq     | 19 25    |          |                                                          |      | 28                                                                                                       | TOCKLAI  | E     | eP       | 19 58 15 |                                    | Slight, distant                |
|      |                                                                           |       | SS     | 19 39    |          |                                                          |      | 28                                                                                                       | SHILLONG | Z     | eP       | 21 51 40 |                                    | Slight                         |
|      |                                                                           |       | SSS    | 19 54    |          |                                                          |      |                                                                                                          | TOCKLAI  | E     | e        | 21 51 40 |                                    | Slight, distant                |
|      |                                                                           |       | Lr     | 20 15    |          |                                                          |      |                                                                                                          |          | eP    | 52 10    |          |                                    |                                |
|      |                                                                           |       | M      | 21 41    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
| 27   | TOCKLAI                                                                   | E     | eP     | 19 15 55 |          | Slight, distant                                          | 29   | Epc: 7°S, 155°E. Solomon Islands<br>- H = 07h 16m 07s (U.S.C.G.S)<br>Mag: 6-6½ (Pas)                     |          |       |          |          |                                    |                                |
|      | SEHORE                                                                    | NE    | ePP    | 19 16 01 | 2150     | Slight                                                   |      | SHILLONG                                                                                                 | Z        | eP    | 07 27 18 |          | Slight, distant                    |                                |
|      |                                                                           |       | iS     | 16 17    |          |                                                          |      | AGRA                                                                                                     | N        | i     | 07 38 29 |          |                                    |                                |
|      |                                                                           |       | SS     | 19 37    |          |                                                          |      | 29                                                                                                       | SHILLONG | Z     | iP       | 09 32 52 |                                    | Slight, distant<br>Compression |
|      |                                                                           |       | SSS    | 19 52    |          | $\Delta$ from (S-PP)                                     |      |                                                                                                          |          |       |          |          |                                    |                                |
|      | CALCUTTA                                                                  | E     | iP     | 19 16 19 | 2250     | Slight, initial ground movement towards West.            | 29   | Epc: 6°N, 124°E. Near South Coast of Mindanao, P. I.<br>- h about 150 kms. - H = 13h 19m 47s (U.S.C.G.S) |          |       |          |          |                                    |                                |
|      |                                                                           |       | iS     | 20 02    |          |                                                          |      | SHILLONG                                                                                                 | Z        | eP    | 13 26 29 |          | Slight, distant                    |                                |
|      | POONA                                                                     | Z     | iP     | 19 16 42 | 2660     | Moderate                                                 |      | CHATRA                                                                                                   | Z        | iP    | 13 27 36 |          | Feeble, distant                    |                                |
|      |                                                                           | NE    | iS     | 20 57    |          |                                                          |      | 29                                                                                                       | CHATRA   | Z     | iPg      | 14 51 24 | 70                                 | Feeble                         |
|      | BOMBAY                                                                    | NE    | eP     | 19 16 50 | 2600     | Slight                                                   |      |                                                                                                          |          | iSg   | 51 34    |          |                                    |                                |
|      |                                                                           | N     | PPP    | 17 45    |          |                                                          |      | 30                                                                                                       | CHATRA   | Z     | i        | 07 35 28 |                                    | Feeble,<br>very near           |
|      |                                                                           | NE    | eS     | 21 00    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
| 27   | BOMBAY                                                                    | NE    | e      | 19 21 42 |          | Slight, phases mixed up with the preceding shock         |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           | N     | e      | 27 08    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      | COLOMBO                                                                   | E     | P      | 19 22 02 | 4220     |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | S      | 27 55    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | L      | 34 15    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | M      | 38 18    |          | Amp: 1.2 mm                                              |      |                                                                                                          |          |       |          |          |                                    |                                |
|      | KODAIKANAL                                                                | E     | P      | 19 23 02 | 2900     | Slight, shock of short distance.                         |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | S      | 27 32    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
| 27   | PORT BLAIR                                                                | N     | iPg    | 22 03 48 | 60       | Slight                                                   |      |                                                                                                          |          |       |          |          |                                    |                                |
|      |                                                                           |       | iSg    | 03 56    |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
| 28   | SHILLONG                                                                  | Z     | iP     | 15 28 21 |          | Slight, rarefaction                                      |      |                                                                                                          |          |       |          |          |                                    |                                |
| 28   | Epc: 9°S, 122°E. Sawa Sea.<br>- H = 19h 43m 22s (U.S.C.G.S)               |       |        |          |          |                                                          |      |                                                                                                          |          |       |          |          |                                    |                                |
|      | SHILLONG                                                                  | ZE    | iP     | 19 51 38 |          | Slight                                                   |      |                                                                                                          |          |       |          |          |                                    |                                |
|      | TOCKLAI                                                                   | E     | eP     | 19 51 44 |          | Slight, distant                                          |      |                                                                                                          |          |       |          |          |                                    |                                |

Following is the list of Earthquakes that were reported by Voluntary Observer from different stations during the month of June, 1959

| STATION        | DATE IN GMT | TIME IN GMT h. m. | NO. OF Shocks                               | DURATION OF shock in secs | INTENSITY in R. F. scale | REMARKS                                                |
|----------------|-------------|-------------------|---------------------------------------------|---------------------------|--------------------------|--------------------------------------------------------|
| GANGTOK        | 01          | 15 50             | 3 1st interval 2 secs, 2nd interval 4 mt's. | 2,3,2 sec respectively    | V                        |                                                        |
| RUPSI          | 03          | 17 59             | 1                                           | 5-7 secs                  | V                        | Appeared coming from approximately Easterly direction. |
| UPPER SHILLONG | 24          | 00 15             | 1                                           | 1                         | II                       |                                                        |
| UPPER SHILLONG | 25          | 16 34             | Very feeble jerk.                           | 1                         | V                        | Booming sound heard just before the shock.             |











## IV

| DATE                            | HOUR | K | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs | DATE      | HOUR | K | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs | DATE            | HOUR | K | MEAN<br>Ampli-<br>tude<br>in mm | MEAN<br>Period<br>in<br>secs |
|---------------------------------|------|---|---------------------------------|------------------------------|-----------|------|---|---------------------------------|------------------------------|-----------------|------|---|---------------------------------|------------------------------|
| Station: COLABA (Bombay) Contd. |      |   |                                 |                              | June 1959 |      |   |                                 |                              | Component: E-W. |      |   |                                 |                              |
| 18                              | 14   | 2 | 0.9                             | 4.4                          | 23        | 09   | 1 | 2.4                             | 5.7                          | 27              | 06   | 3 | 4.0                             | 4.5                          |
| Contd.                          | 15   | 2 | 0.9                             | 4.3                          | Contd.    | 12   | 1 | 2.3                             | 5.0                          | Contd.          |      |   | 1.6                             | 2.6                          |
|                                 | 16   |   |                                 |                              |           | 15   | 1 | 2.4                             | 5.2                          |                 | 12   | 3 | 4.7                             | 5.0                          |
|                                 | 17   |   |                                 |                              |           | 18   | 1 | 2.5                             | 5.3                          |                 | 18   | 3 | 2.1                             | 2.0                          |
|                                 | 18   |   |                                 |                              |           | 21   | 1 | 2.4                             | 5.3                          |                 |      |   | 4.8                             | 4.9                          |
|                                 | 19   |   |                                 |                              |           |      |   |                                 |                              |                 |      |   | 1.7                             | 2.2                          |
|                                 | 20   | 2 | 0.9                             | 4.6                          | 24        | 00   | 1 | 2.7                             | 5.4                          | 28              | 00   | 3 | 4.4                             | 4.8                          |
|                                 | 21   | 2 | 1.1                             | 4.9                          |           | 03   | 1 | 2.6                             | 5.2                          |                 |      |   | 1.4                             | 2.0                          |
|                                 | 22   | 2 | 0.9                             | 4.5                          |           | 06   | 1 | 2.5                             | 5.3                          |                 | 06   | 3 | 4.7                             | 5.7                          |
|                                 | 23   | 2 | 0.9                             | 4.6                          |           | 09   | 1 | 2.7                             | 5.5                          |                 |      |   | 2.0                             | 2.2                          |
| 19                              | 00   | 2 | 0.9                             | 4.3                          |           | 12   | 1 | 2.7                             | 5.4                          |                 | 12   | 3 | 4.3                             | 4.5                          |
|                                 | 06   | 2 | 1.1                             | 4.5                          |           | 15   | 1 | 2.7                             | 4.8                          |                 |      |   | 1.4                             | 2.3                          |
|                                 | 12   | 2 | 0.9                             | 4.4                          |           | 18   | 3 | 2.7                             | 5.6                          |                 | 18   | 3 | 4.9                             | 5.1                          |
|                                 | 18   | 2 | 1.1                             | 4.3                          |           |      |   | 1.5                             | 2.3                          |                 |      |   | 1.3                             | 2.2                          |
| 20                              | 00   | 2 | 0.9                             | 4.2                          | 25        | 00   | 3 | 2.6                             | 5.6                          | 29              | 00   | 3 | 5.0                             | 4.9                          |
|                                 | 06   | 2 | 1.5                             | 4.8                          |           |      |   | 0.5                             | 2.2                          |                 |      |   | 1.7                             | 2.2                          |
|                                 | 12   | 2 | 1.5                             | 4.8                          |           | 06   | 3 | 3.2                             | 5.3                          |                 | 06   | 3 | 5.0                             | 5.1                          |
|                                 | 18   | 2 | 1.3                             | 4.5                          |           |      |   | 1.5                             | 2.4                          |                 |      |   | 1.3                             | 2.2                          |
| 21                              | 00   | 2 | 1.3                             | 4.9                          |           | 12   | 3 | 3.3                             | 5.3                          |                 | 12   | 3 | 5.7                             | 5.1                          |
|                                 | 06   | 2 | 1.5                             | 4.6                          |           |      |   | 1.7                             | 2.5                          |                 |      |   | 1.0                             | 2.0                          |
|                                 | 12   | 2 | 1.5                             | 4.8                          |           | 18   | 3 | 3.9                             | 5.5                          |                 | 18   | 3 | 4.2                             | 4.6                          |
|                                 | 18   | 2 | 1.7                             | 4.9                          |           |      |   | 1.8                             | 2.0                          |                 |      |   | 1.3                             | 2.0                          |
| 22                              | 00   | 2 | 1.9                             | 4.5                          | 26        | 00   | 3 | 4.7                             | 5.1                          | 30              | 00   | 3 | 4.1                             | 4.7                          |
|                                 | 06   | 2 | 1.9                             | 4.8                          |           |      |   | 1.5                             | 2.2                          |                 |      |   | 1.8                             | 2.3                          |
|                                 | 12   | 2 | 1.7                             | 5.0                          |           | 06   | 3 | 4.7                             | 5.1                          |                 | 06   | 3 | 4.7                             | 4.9                          |
|                                 | 18   | 2 | 1.9                             | 5.1                          |           |      |   | 1.7                             | 2.3                          |                 |      |   | 1.4                             | 2.0                          |
| 23                              | 00   | 1 | 1.9                             | 4.6                          |           | 12   | 3 | 5.3                             | 5.0                          |                 | 12   | 3 | 4.1                             | 4.7                          |
|                                 | 03   | 1 | 1.9                             | 5.1                          |           |      |   | 2.5                             | 2.6                          |                 |      |   | 1.5                             | 2.0                          |
|                                 | 06   | 1 | 2.1                             | 5.0                          |           | 18   | 3 | 4.1                             | 4.8                          |                 | 18   | 3 | 4.0                             | 4.7                          |
|                                 |      |   |                                 |                              | 27        | 00   | 3 | 2.0                             | 2.5                          |                 |      |   | 1.3                             | 2.0                          |
|                                 |      |   |                                 |                              |           |      |   | 4.1                             | 4.3                          |                 |      |   |                                 |                              |
|                                 |      |   |                                 |                              |           |      |   | 1.7                             | 2.4                          |                 |      |   |                                 |                              |

GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

July, 1959.



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Shri S. Basu, M.Sc., F.N.I.,  
Director General of Observatories

## List of Seismograph stations with their Instruments and Constants

| Station              | Latitude | Longitude | Height<br>a.s.l.<br>(Metres) | Lithographic<br>Foundation                         | Instrument           | Compt.        | Period<br>in<br>secs | Static<br>Magri-<br>fication | Damping<br>ratio | Paper<br>speed<br>mm/min. |      |
|----------------------|----------|-----------|------------------------------|----------------------------------------------------|----------------------|---------------|----------------------|------------------------------|------------------|---------------------------|------|
| Agra                 |          |           |                              |                                                    | Columbia             | E             | To=15                | Tg=100                       |                  | 15                        |      |
|                      |          |           |                              |                                                    | do -                 | N             | To=15                | Tg=85                        |                  | 15                        |      |
|                      |          |           |                              |                                                    | do -                 | Z             | To=15                | Tg=70                        |                  | 15                        |      |
| Bombay               | 18°54'N  | 72°40'E   | 6                            | Deccan Trap                                        | Milne-Shaw           | N             | 12                   | 350                          | 13:1             | 16                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 350                          | 23:1             | 8                         |      |
|                      |          |           |                              |                                                    | Sprengnether         | E             | To=Tg=7              | secs                         |                  | 30                        |      |
| Bokaro               | 23°50'N  | 85°48'E   |                              | Rock                                               | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 950                          | h = 0.8          | 60                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 1000                         | h = 0.8          | 60                        |      |
| Calcutta             | 22°32'N  | 88°22'E   | (1) 7                        | (Milne-Shaw)                                       | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                                                    | (2) 6 (Omori-Ewing)  | Wood-Anderson | N                    | 2                            | 870              | Critical                  | 30   |
|                      |          |           |                              |                                                    | Alluvium             | Omori-Ewing   | N                    | 16                           | 32               |                           | 25.4 |
|                      |          |           |                              |                                                    | Omori-Ewing          | E             | 21                   | 30                           |                  | 25.4                      |      |
| Chatra               | 25°50'N  | 87°10'E   | 151                          | Sand Stone                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | N             | 1                    | 1000                         | 30:1             | 60                        |      |
|                      |          |           |                              |                                                    | Benioff              | Z             | To=0                 | Tg=0.45                      | Critical         | 60                        |      |
|                      |          |           |                              |                                                    | Wenner-Accelerograph | ZNE           |                      |                              |                  |                           |      |
| Colombo              | 06°54'N  | 79°52'E   | 7                            | Beach Sand                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             |                           |      |
| Dehra Dun            | 30°19'N  | 78°02'E   | 682                          | Gravel                                             | Wood-Anderson        | N             | 0.8                  | 950                          | Critical         | 60                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 850                          | Critical         | 60                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
| Hyderabad            | 17°25'N  | 78°27'E   | 535                          | Granite                                            | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
| Kodaikanal           | 10°14'N  | 77°28'E   | 2345                         | Rock                                               | Milne-Shaw           | E             | 10                   | 250                          | 20:1             | 8                         |      |
| Madras               | 13°00'N  | 80°11'E   | 15                           |                                                    | Sprengnether         | E             | To=Tg=72             | secs                         | Critical         | 30                        |      |
| New Delhi            | 28°35'N  | 77°12'E   | 207                          | Massive Quartzite                                  |                      |               |                      |                              |                  |                           |      |
| Poona                | 18°32'N  | 73°51'E   | 560                          | Deccan Trap                                        | Sprengnether         | Z             | To=Tg=1.6            |                              | Critical         | 30                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | E             | 4                    | 1000                         | 20:1             | 16                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 280                          | 20:1             | 8                         |      |
| Port Blair           | 11°49'N  | 92°43'E   |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | 65:1             | 30                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 350                          | 20:1             | 8                         |      |
| Sehore               |          |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 980                          | Critical         | 30                        |      |
| Shillong             | 25°34'N  | 91°53'E   | 1500                         | Quartzite<br>Sand stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N             | 0.8                  | 1000                         | h=0              | h=0.8                     | 30   |
|                      |          |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |          |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                                                    | Benioff              | Z             | To=1.0               | Tg=0.18                      |                  | 60                        |      |
|                      |          |           |                              |                                                    | Sprengnether         | E             | To= Tg= 6.3          |                              | Critical         | 30                        |      |
| Wenner Accelerograph | ZNE      |           |                              |                                                    |                      |               |                      |                              |                  |                           |      |
| Tocklai              | 28°45'N  | 94°45'E   |                              | Alluvium                                           | Wood-Anderson        | E             | 0.8                  | 970                          | h=0.8            | 60                        |      |
| Vizianagram          | 18°07'N  | 83°27'E   |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |          |           |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |



| DATE | STATION                                                                                                                    | COMPT | PHASE | G. M. T. h. m. s. km   | REMARKS                                   | DATE | STATION                                                                                                                  | COMPT | PH.  | Time           | Remarks          |             |
|------|----------------------------------------------------------------------------------------------------------------------------|-------|-------|------------------------|-------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------|-------|------|----------------|------------------|-------------|
| 01   | Epc: 28°N, 139°E. Bonin Islands Region<br>H: 02h 27m 46s (U.S.C.G.S)<br>Mag: 6 (Pas). -h about 550 kms.                    |       |       |                        |                                           | 05   | SHILLONG                                                                                                                 | Z     | iPg  | 04 17 37       |                  |             |
|      | DEHRA DUN                                                                                                                  | NE    | eP    | 02 35 16 5980<br>43 06 |                                           | 05   | TOCKLAI                                                                                                                  | E     | e    | 07 15 09       | Slight           |             |
|      |                                                                                                                            |       | eS    |                        |                                           |      | SHILLONG                                                                                                                 | Z     | i    | 15 29          |                  |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | e    | 07 15 37       | Slight, distant  |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | e    | 16 21          |                  |             |
| 01   | TOCKLAI                                                                                                                    | E     | e     | 05 33 13               | Slight, distant                           | 05   | SHILLONG                                                                                                                 | Z     | ePg  | 17 17 32       |                  |             |
| 01   | PORT BLAIR                                                                                                                 | NE    | iP    | 11 32 55 150           | Slight                                    | 05   | SHILLONG                                                                                                                 | Z     | iPg  | 21 31 21       |                  |             |
|      |                                                                                                                            |       | iSg   | 33 15                  |                                           |      | TOCKLAI                                                                                                                  | E     | e    | 21 31 28       | Slight; ground   |             |
| 01   | VIZIANAGRAM                                                                                                                | N     | e     | 11 37 17               | Tremor                                    |      |                                                                                                                          |       | eP   | 31 36          | movement East    |             |
| 01   | TOCKLAI                                                                                                                    | E     | e     | 11 39 30               | Slight                                    | 06   | Epc: 26°S, 61°W. Chaco Province, Argentina.<br>H: 09h 10m 17s (U.S.C.G.S)<br>Mag: 6% (Pas), 6% (Berk). -h about 600 kms. |       |      |                |                  |             |
| 01   | TOCKLAI                                                                                                                    | E     | i     | 19 12 29 280           | Slight                                    |      | POONA                                                                                                                    | Z     | iPKP | 09 28 42 15340 | Several shocks   |             |
|      |                                                                                                                            |       | iP    | 12 33                  |                                           |      |                                                                                                                          |       | i    | 36 19          | phases not clear |             |
|      |                                                                                                                            |       | eS    | 13 05                  |                                           |      |                                                                                                                          |       | PS   | 41 53          | due to           |             |
| 02   | TOCKLAI                                                                                                                    | E     | eP    | 17 22 21               | Slight                                    |      |                                                                                                                          |       | i    | 44 30          | microseisms.     |             |
| 03   | SHILLONG                                                                                                                   | Z     | ePg   | 05 32 13               |                                           |      | MADRAS                                                                                                                   | E     | ePKP | 09 28 45       | Phases not clear |             |
| 03   | DEHRA DUN                                                                                                                  | NE    | e     | 08 06 38               | Tremor                                    |      |                                                                                                                          |       | e    | 37 49          | due to           |             |
| 03   | SHILLONG                                                                                                                   | Z     | iPg   | 13 39 01 420           | Slight                                    |      |                                                                                                                          |       | e    | 38 27          | microseisms      |             |
|      |                                                                                                                            |       | eSg   | 39 51                  |                                           |      | SEHORE                                                                                                                   | NE    | e    | 09 28 46       |                  |             |
| 03   | HYDERABAD                                                                                                                  | E     | eP    | 15 15 43               |                                           |      | AGRA                                                                                                                     | ZNE   | iPKP | 09 28 51 16110 | Initial ground   |             |
|      |                                                                                                                            |       | iS    | 19 40                  |                                           |      |                                                                                                                          | Z     | iP   | 31 13          | motion South,    |             |
|      |                                                                                                                            |       | SS    | 20 21                  |                                           |      |                                                                                                                          |       | SKS  | 34 53          | West, dilatation |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | PPP  | 35 35          |                  |             |
| 03   | Epc: 16°S, 172°E. New Hebrides Islands Region<br>H: 17h 55m 29s (U.S.C.G.S)<br>Mag: 6% (Pas), 6% (Berk). -h about 200 kms. |       |       |                        |                                           |      |                                                                                                                          |       | NE   | i              | 37 59            |             |
|      | TOCKLAI                                                                                                                    | E     | e     | 18 08 04               | Distant                                   |      |                                                                                                                          |       | ZNE  | e              | 41 55            |             |
|      | SHILLONG                                                                                                                   | ZNE   | iP    | 18 08 08               | Rarefaction                               |      |                                                                                                                          |       | Z    | i              | 44 15            |             |
|      |                                                                                                                            | Z     | e     | 08 49                  |                                           |      |                                                                                                                          |       | E    | e              | 47 52            |             |
|      |                                                                                                                            | E     | e     | 08 52                  |                                           |      |                                                                                                                          |       | ee   | 51 04          |                  |             |
|      |                                                                                                                            |       | e     | 11 59                  |                                           |      | DEHRA DUN                                                                                                                | NE    | ePKP | 09 28 56       | Slight, phases   |             |
|      |                                                                                                                            |       | i     | 18 41                  |                                           |      |                                                                                                                          |       | i    | 38 07          | not clear        |             |
|      |                                                                                                                            |       | i     | 19 25                  |                                           |      |                                                                                                                          |       | i    | 42 07          |                  |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | i    | 44 34          |                  |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | i    | 50 21          |                  |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | i    | 10 03 34       |                  |             |
|      | PORT BLAIR                                                                                                                 | EW    | i     | 18 08 31               |                                           |      | VIZIANAGRAM                                                                                                              | N     | e    | 09 29 00       |                  |             |
|      |                                                                                                                            |       | i     | 18 58                  |                                           |      | PORT BLAIR                                                                                                               | EW    | iPKP | 09 29 07       |                  |             |
|      | COLOMBO                                                                                                                    | E     | e     | 18 09 23               |                                           |      |                                                                                                                          |       | i    | 31 36          |                  |             |
|      |                                                                                                                            |       | i     | 19 41                  |                                           |      | BOKARO                                                                                                                   | NE    | iPKP | 09 29 09 16890 |                  |             |
|      |                                                                                                                            |       | e     | 45 29                  |                                           |      |                                                                                                                          |       | i    | 29 20          |                  |             |
|      |                                                                                                                            |       | M     | 50 26                  |                                           |      |                                                                                                                          |       | i    | 31 29          |                  |             |
|      | DEHRA DUN                                                                                                                  | NE    | eP    | 18 13 16 11270         |                                           |      |                                                                                                                          |       | PP   | 32 46          |                  |             |
|      |                                                                                                                            | N     | e     | 15 00                  |                                           |      |                                                                                                                          |       | iSKS | 35 03          |                  |             |
|      |                                                                                                                            |       | iS    | 20 31                  |                                           |      |                                                                                                                          |       | i    | 38 39          |                  |             |
|      |                                                                                                                            |       | e     | 24 04                  |                                           |      | SHILLONG                                                                                                                 | ZE    | iPKP | 09 29 10 17440 |                  |             |
|      |                                                                                                                            |       | e     | 27 48                  |                                           |      |                                                                                                                          |       | i    | 39 10          |                  |             |
|      |                                                                                                                            |       | M     | 31 55                  |                                           |      |                                                                                                                          |       | i    | 39 57          |                  |             |
| 03   | BOKARO                                                                                                                     | NE    | i     | 18 13 47               |                                           |      |                                                                                                                          |       | SS   | 52 21          |                  |             |
|      |                                                                                                                            | E     | i     | 19 55                  |                                           |      | BOMBAY                                                                                                                   | E     | e    | 09 31 20       | Deep focus,      |             |
|      | KODAIKANAL                                                                                                                 | EW    | e     | 18 20 20               | Initial ground movement East. Tremor      |      |                                                                                                                          |       | NE   | e              | 45 28            | phases lost |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | e    | 47 50          | in microseisms   |             |
|      |                                                                                                                            |       |       |                        |                                           |      |                                                                                                                          |       | N    | e              | 10 02 07         |             |
| 03   | AGRA                                                                                                                       | E     | iS    | 18 20 24 11220         |                                           | 06   | VIZIANAGRAM                                                                                                              | N     | e    | 09 42 10       | Slight           |             |
|      |                                                                                                                            |       | PPS   | 23 00                  |                                           | 06   | Epc: 26°S, 61°W. Chaco Province, Argentina<br>H: 09h 23m 27s (U.S.C.G.S)<br>Mag: 6% (Pas), 6% (Berk). -h about 600 kms.  |       |      |                |                  |             |
|      | BOMBAY                                                                                                                     | NE    | e     | 18 20 50               | Slight, phases mixed up with microseisms. |      | BOKARO                                                                                                                   | NE    | iPKP | 09 42 15 16890 |                  |             |
|      |                                                                                                                            | E     | e     | 21 13                  |                                           |      |                                                                                                                          |       | i    | 42 21          |                  |             |
|      |                                                                                                                            | N     | e     | 21 59                  |                                           |      |                                                                                                                          |       | i    | 44 37          |                  |             |
| 03   | DEHRA DUN                                                                                                                  | NE    | e     | 19 46 03               | Tremor                                    |      |                                                                                                                          |       | PP   | 45 57          |                  |             |
| 03   | SHILLONG                                                                                                                   | Z     | e     | 23 35 15               | Slight, distant                           |      |                                                                                                                          |       | iSKS | 48 13          |                  |             |
|      |                                                                                                                            |       | e     | 35 59                  |                                           |      |                                                                                                                          |       | i    | 51 52          |                  |             |
| 04   | SHILLONG                                                                                                                   | Z     | iPg   | 04 29 29 310           | Slight                                    |      | PORT BLAIR                                                                                                               | EW    | iPKP | 09 42 22       |                  |             |
|      |                                                                                                                            |       | eSg   | 30 05                  |                                           |      |                                                                                                                          |       | i    | 44 46          |                  |             |
| 04   | SHILLONG                                                                                                                   | Z     | e     | 11 36 43               | Slight, distant                           |      | SHILLONG                                                                                                                 | Z     | e    | 09 44 50       | Slight, distant  |             |
|      | TOCKLAI                                                                                                                    | E     | e     | 11 36 45               | Slight, distant                           | 05   | TOCKLAI                                                                                                                  | E     | e    | 13 10 37       | Slight, distant  |             |
| 04   | SHILLONG                                                                                                                   | Z     | e     | 14 35 54               | Slight, distant                           |      | SHILLONG                                                                                                                 | Z     | e    | 13 13 08       | Slight, distant  |             |
|      |                                                                                                                            |       | e     | 36 04                  |                                           |      |                                                                                                                          |       | e    | 14 19          |                  |             |
| 04   | SHILLONG                                                                                                                   | Z     | e     | 16 19 12               | Slight, distant                           | 05   | TOCKLAI                                                                                                                  | E     | e    | 16 16 09       | Slight, near     |             |
| 04   | SHILLONG                                                                                                                   | Z     | iPg   | 19 17 36 80            | Slight                                    |      |                                                                                                                          |       |      |                |                  |             |
|      |                                                                                                                            |       | iSg   | 17 45                  |                                           |      |                                                                                                                          |       |      |                |                  |             |





| DATE   | STATION                                                                                                | COMPT    | PHASE                           | G. M. T.                                                          | Δ     | REMARKS                                                                                     | DATE        | STATION                                                                         | COMPT                                                                  | PHASE              | G. M. T.                                                                                  | Δ                                            | REMARKS                                                     |                                                           |
|--------|--------------------------------------------------------------------------------------------------------|----------|---------------------------------|-------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|
|        |                                                                                                        |          |                                 | h. m. s.                                                          | km    |                                                                                             |             |                                                                                 |                                                                        |                    | h. m. s.                                                                                  | km                                           |                                                             |                                                           |
| 13     | DEHRA DUN                                                                                              | NE       | e(P)<br>i(S)                    | 12 40 45<br>50 55                                                 | 9040  | Phases not clear                                                                            | 16          | SHILLONG                                                                        | Z                                                                      | iP                 | 19 26 46                                                                                  |                                              | Slight, distant rarefaction                                 |                                                           |
| Contd. | BOKARO                                                                                                 | NE       | iP<br>i                         | 12 40 51<br>50 48                                                 |       | Direction of the initial ground motion towards South and West, other phases unidentifiable. | 16          | SHILLONG                                                                        | Z                                                                      | eP                 | 20 03 34                                                                                  |                                              | Slight, distant                                             |                                                           |
|        | POONA                                                                                                  | Z<br>NE  | iP<br>e                         | 12 41 46<br>52 11                                                 |       |                                                                                             | 17          | SHILLONG                                                                        | Z                                                                      | eP                 | 11 29 37                                                                                  |                                              | Slight, distant                                             |                                                           |
|        | BOMBAY                                                                                                 | NE<br>NE | eP<br>SKS1<br>eS                | 12 41 47<br>52 12<br>52 41                                        | 10050 |                                                                                             | 17          | Epc: 7½°N, 7½°W. Columbia Venezuela Border<br>- H: 22h 52m 08s (U. S. C. G. S)  |                                                                        |                    |                                                                                           |                                              |                                                             |                                                           |
|        | CALCUTTA                                                                                               | E<br>i   | e<br>i                          | 12 44 49<br>50 31                                                 |       |                                                                                             | SHILLONG    | Z                                                                               | iPKP                                                                   |                    | 23 11 45                                                                                  |                                              | Slight, distant compression                                 |                                                           |
|        | HYDERABAD                                                                                              | E        | e<br>e<br>e<br>e<br>e<br>N<br>E | 12 48 43<br>52 00<br>59 42<br>13 13 06<br>17 42<br>22 45<br>23 04 |       | Per. 18 secs<br>L = 4<br>Per. 18 secs<br>L = 7                                              | 18          | SHILLONG                                                                        | Z                                                                      | iP                 | 03 58 56                                                                                  |                                              | Slight, distant compression                                 |                                                           |
|        | VIZIANAGRAM                                                                                            | N        | e                               | 12 51 42                                                          |       | Distant                                                                                     | 18          | SHILLONG                                                                        | Z                                                                      | eP                 | 09 54 57                                                                                  |                                              | Slight, distant                                             |                                                           |
|        | COLOMBO                                                                                                | E        | e<br>e<br>M                     | 12 52 56<br>13 25 13<br>32 31                                     |       |                                                                                             | 18          | SHILLONG                                                                        | Z                                                                      | eP                 | 10 03 49                                                                                  |                                              | Slight, distant                                             |                                                           |
| 13     | TOCKLAI                                                                                                | E        | eP                              | 13 40 12                                                          |       | Slight, distant                                                                             | 18          | SHILLONG                                                                        | Z                                                                      | eP                 | 12 27 26                                                                                  |                                              | Slight, distant                                             |                                                           |
| 13     | SHILLONG                                                                                               | Z        | iP                              | 14 55 45                                                          |       | Slight, distant, compression                                                                | 18          | TOCKLAI                                                                         | E                                                                      | iP<br>iS           | 16 24 24<br>24 52                                                                         | 240                                          |                                                             |                                                           |
| 14     | Epc: 51½°N, 172°W. Fox Islands, Aleutian Islands.<br>- H: 08h 40m 48s (U. S. C. G. S)                  |          |                                 |                                                                   |       |                                                                                             |             | 18                                                                              | SHILLONG                                                               | Z                  | eP                                                                                        | 16 24 57                                     |                                                             | Slight, distant                                           |
|        | SHILLONG                                                                                               | Z        | iP                              | 08 52 35                                                          |       | Slight, distant rarefaction                                                                 | 18          | SHILLONG                                                                        | Z                                                                      | iP                 | 18 34 45                                                                                  |                                              | Slight, distant                                             |                                                           |
| 14     | DEHRA DUN                                                                                              | NE       | e                               | 11 45 07                                                          |       | Tremor                                                                                      | 18          | TOCKLAI                                                                         | E                                                                      | iP                 | 19 45 28                                                                                  |                                              | Slight, distant ground motion East.                         |                                                           |
| 14     | Epc: 16½°S, 173°E. New Hebrides Islands Region<br>- H: about 100 kms. - H: 13h 00m 24s (U. S. C. G. S) |          |                                 |                                                                   |       |                                                                                             |             | 18                                                                              | Epc: 19°N, 120°E. Luzon. - H: 19h 54m 45s (USCGS)<br>Mag: 6½-6¾ (Pa's) |                    |                                                                                           |                                              |                                                             |                                                           |
|        | SHILLONG                                                                                               | Z        | iP                              | 13 13 15                                                          |       | Slight, distant rarefaction                                                                 | PORT BLAIR  | E                                                                               | iP<br>PP<br>PcP<br>iS<br>Lr                                            |                    | 20 00 35<br>01 15<br>03 57<br>05 05<br>07 35                                              | 2900                                         |                                                             |                                                           |
| 14     | SHILLONG                                                                                               | Z        | ePg                             | 15 02 03                                                          |       | Slight, near                                                                                | SHILLONG    | ZNE<br>N                                                                        | iP<br>PP<br>eS<br>e                                                    |                    | 20 00 44<br>01 29<br>05 16<br>07 01                                                       | 2930                                         | Initial ground movement towards South, East and rarefaction |                                                           |
| 14     | SHILLONG                                                                                               | Z        | eP                              | 18 16 57                                                          |       | Slight, distant                                                                             | CALCUTTA    | E                                                                               | iP<br>iS                                                               |                    | 20 01 06<br>06 05                                                                         | 3340                                         | Initial ground movement towards West.                       |                                                           |
| 14     | SHILLONG                                                                                               | Z        | eP                              | 21 16 45                                                          |       | Slight                                                                                      | BOKARO      | NE<br>N                                                                         | iP<br>i<br>PP<br>SP<br>iS<br>SS<br>Lq<br>ScS                           |                    | 20 01 20<br>01 44<br>02 35<br>02 59<br>06 44<br>08 22<br>08 46<br>11 44                   | 3760                                         | Initial ground motion towards South and East                |                                                           |
| 14     | SHILLONG                                                                                               | Z        | eP                              | 21 17 53                                                          |       | Slight, distant                                                                             | VIZIANAGRAM | NE                                                                              | iP                                                                     |                    | 20 01 48                                                                                  |                                              | Initial ground movement towards East                        |                                                           |
| 14     | SHILLONG                                                                                               | Z        | iP                              | 22 05 23                                                          |       | Slight, distant compression                                                                 | MADRAS      | E                                                                               | iP<br>PP<br>PPP<br>iS<br>Lq<br>SSS<br>Lr                               |                    | 20 02 17<br>03 51<br>04 14<br>08 04<br>11 03<br>11 27<br>12 56                            | 4120                                         | Initial ground movement towards East.                       |                                                           |
| 14     | SHILLONG                                                                                               | Z        | iP                              | 22 38 34                                                          |       | Slight, distant rarefaction                                                                 | COLOMBO     | E                                                                               | P<br>S<br>L<br>Max                                                     |                    | 20 02 27<br>08 22<br>11 47<br>16 09                                                       | 4250                                         | Amp: 17 mm                                                  |                                                           |
| 15     | SHILLONG                                                                                               | Z        | iP                              | 08 28 17                                                          |       | Slight, distant compression                                                                 | HYDERABAD   | E<br>N                                                                          | iP<br>PP<br>PcP<br>iS<br>PS<br>SS<br>ScS<br>Lr<br>Lr<br>M              |                    | 20 02 31<br>03 48<br>04 18<br>08 27<br>08 46<br>11 06<br>12 17<br>13 06<br>13 26<br>19 34 | 4270                                         | Initial ground motion towards East                          |                                                           |
| 15     | SHILLONG                                                                                               | Z        | eP                              | 11 32 47                                                          |       | Slight, distant                                                                             | SHILLONG    | Z                                                                               | iP                                                                     |                    | 16 46 48                                                                                  |                                              | Slight, distant Compression                                 |                                                           |
| 15     | SHILLONG                                                                                               | Z        | eP                              | 12 00 08                                                          |       | Slight, distant                                                                             | DEHRA DUN   | ZE                                                                              | e                                                                      |                    | 21 38 40                                                                                  |                                              | Tremor                                                      |                                                           |
| 15     | DEHRA DUN                                                                                              | NE       | e<br>i                          | 16 44 14<br>45 42                                                 |       | Feeble                                                                                      | 15          | DEHRA DUN                                                                       | NE                                                                     | e                  | 16 44 14<br>45 42                                                                         |                                              | Feeble                                                      |                                                           |
|        | SHILLONG                                                                                               | Z        | iP                              | 16 46 48                                                          |       | Slight, distant rarefaction                                                                 | 16          | Epc: 50½°N, 177°W. Andreanof Islands Region<br>- H: 15h 17m 27s (U. S. C. G. S) |                                                                        |                    |                                                                                           |                                              |                                                             |                                                           |
| 15     | DEHRA DUN                                                                                              | ZE       | e                               | 21 38 40                                                          |       | Tremor                                                                                      | SHILLONG    | Z                                                                               | iP                                                                     |                    | 15 28 45                                                                                  |                                              | Slight, distant rarefaction                                 |                                                           |
| 16     | SHILLONG                                                                                               | Z        | eP                              | 17 48 44                                                          |       | Slight, distant                                                                             | 16          | SHILLONG                                                                        | Z                                                                      | eP                 | 17 48 44                                                                                  |                                              | Slight, distant                                             |                                                           |
|        | TOCKLAI                                                                                                | E        | e                               | 17 50 14                                                          |       | Slight, distant                                                                             | 18          | AGRA                                                                            | ZNE<br>ZE<br>PPP<br>Z                                                  | iP<br>i<br>PP<br>i |                                                                                           | 20 02 35<br>02 43<br>04 27<br>04 37<br>05 15 | 4430                                                        | Initial ground motion towards South, East and Dilatation. |

| DATE    | STATION                                                                               | COMPT | PHASE | G. M. T. h. m. s. | $\Delta$ km | REMARKS                                                                                  | DATE    | STATION    | COMPT                                                   | PHASE | G. M. T. h. m. s. | $\Delta$ km | REMARKS                                                                            |                                                     |
|---------|---------------------------------------------------------------------------------------|-------|-------|-------------------|-------------|------------------------------------------------------------------------------------------|---------|------------|---------------------------------------------------------|-------|-------------------|-------------|------------------------------------------------------------------------------------|-----------------------------------------------------|
| 18      | AGRA                                                                                  | ZNE   | iS    | 20 08 40          |             |                                                                                          | 19      | HYDERABAD  | E                                                       | e     | 15 48 16          |             |                                                                                    |                                                     |
| Cont'd. | Cont'd.                                                                               | ZE    | SS    | 11 39             |             |                                                                                          | Cont'd. | Cont'd.    | e                                                       | e     | 16 09 00          |             |                                                                                    |                                                     |
|         |                                                                                       | N     | i     | 12 17             |             |                                                                                          |         |            | M                                                       |       | 21 26             |             | Per: 18 secs<br>L: 5                                                               |                                                     |
|         | DEHRA DUN                                                                             | NE    | eP    | 20 02 38          | 4310        |                                                                                          |         | MADRAS     | E                                                       | ePKP  | 15 25 48          | 1700        |                                                                                    |                                                     |
|         |                                                                                       | N     | PP    | 04 15             |             |                                                                                          |         |            | e                                                       |       | 26 28             |             |                                                                                    |                                                     |
|         |                                                                                       |       | PPP   | 04 31             |             |                                                                                          |         |            | PP                                                      |       | 29 27             |             |                                                                                    |                                                     |
|         |                                                                                       |       | iS    | 08 36             |             |                                                                                          |         |            | PcS                                                     |       | 30 15             |             |                                                                                    |                                                     |
|         |                                                                                       |       | SS    | 10 29             |             |                                                                                          |         |            | CS                                                      |       | 33 44             |             |                                                                                    |                                                     |
|         |                                                                                       |       | SSS   | 11 38             |             |                                                                                          |         |            | PS                                                      |       | 34 03             |             |                                                                                    |                                                     |
|         |                                                                                       |       | Lr    | 12 53             |             |                                                                                          |         |            | PPS                                                     |       | 34 13             |             |                                                                                    |                                                     |
|         |                                                                                       |       | M     | 16 23             |             |                                                                                          |         |            | SeS                                                     |       | 35 07             |             |                                                                                    |                                                     |
|         | KODAIKANAL                                                                            | EW    | P     | 20 02 47          |             | Initial ground movement towards East.                                                    |         |            | i                                                       |       | 36 01             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 04 51             |             |                                                                                          |         |            | Lq                                                      |       | 40 45             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 09 53             |             |                                                                                          |         | BOKARO     | NE                                                      | ePKP  | 15 25 48          | 17620       |                                                                                    |                                                     |
|         | POONA                                                                                 | Z     | iP    | 20 03 01          | 47 10       |                                                                                          |         | E          | i                                                       |       | 27 11             |             |                                                                                    |                                                     |
|         |                                                                                       | E     | PP    | 04 51             |             |                                                                                          |         |            | PP                                                      |       | 29 52             |             |                                                                                    |                                                     |
|         |                                                                                       | NE    | S     | 09 23             |             |                                                                                          |         |            | e                                                       |       | 30 44             |             |                                                                                    |                                                     |
|         |                                                                                       |       | Lr    | 15 05             |             |                                                                                          |         |            | e                                                       |       | 36 22             |             |                                                                                    |                                                     |
|         |                                                                                       |       |       |                   |             |                                                                                          |         |            | e                                                       |       | 37 40             |             |                                                                                    |                                                     |
|         | BOMBAY                                                                                | N     | eP    | 20 03 09          | 49 10       |                                                                                          |         |            | e                                                       |       | 39 54             |             |                                                                                    |                                                     |
|         |                                                                                       | E     | iP    |                   |             |                                                                                          |         |            | e                                                       |       | 40 35             |             |                                                                                    |                                                     |
|         |                                                                                       | NE    | PP    | 05 00             |             |                                                                                          |         | SHILLONG   | ZNE                                                     | iPKP  | 15 25 50          | 18 330      |                                                                                    |                                                     |
|         |                                                                                       |       | iS    | 09 43             |             |                                                                                          |         | N          | PP                                                      |       | 30 50             |             |                                                                                    |                                                     |
| 18      | SHILLONG                                                                              | Z     | eP    | 21 33 33          |             | Feeble, near                                                                             |         | NE         | PPP                                                     |       | 36 38             |             |                                                                                    |                                                     |
| 18      | SHILLONG                                                                              | Z     | iP    | 22 46 59          |             | Slight, distant compression                                                              |         | N          | e                                                       |       | 37 15             |             |                                                                                    |                                                     |
| 19      | SHILLONG                                                                              | Z     | eP    | 01 06 48          |             | Slight, distant                                                                          |         |            | PPS                                                     |       | 38 37             |             |                                                                                    |                                                     |
| 19      | SHILLONG                                                                              | Z     | eP    | 03 31 29          |             | Slight, distant                                                                          |         |            | SS                                                      |       | 51 13             |             |                                                                                    |                                                     |
| 19      | Epc: 6°S, 105°E. Sunda Strait<br>H: 03h 42m 02s (U.S.C.G.S)                           |       |       |                   |             |                                                                                          |         |            | SSP                                                     |       | 52 28             |             |                                                                                    |                                                     |
|         | SHILLONG                                                                              | Z     | iP    | 03 48 55          |             | Slight, distant compression                                                              |         | TOCKLAI    | E                                                       | e     | 15 25 56          |             | Slight, distant                                                                    |                                                     |
|         | POONA                                                                                 | Z     | iP    | 03 49 42          |             | Feeble, slight phases not clear                                                          |         | PORT BLAIR | EW                                                      | e     | 15 31 25          |             | Slight                                                                             |                                                     |
|         | AGRA                                                                                  | ZNE   | iP    | 03 50 02          | 4530        | Slight, initial ground motion towards North, West and compression. Per: 24 secs Amp: 0.7 |         |            | i                                                       |       | 37 03             |             |                                                                                    |                                                     |
|         |                                                                                       |       | iS    | 56 20             |             |                                                                                          |         |            | i                                                       |       | 50 52             |             |                                                                                    |                                                     |
| 19      | SHILLONG                                                                              | Z     | eP    | 12 02 26          |             | Slight                                                                                   |         | COLOMBO    | E                                                       | e     | 15 35 50          |             |                                                                                    |                                                     |
| 19      | Epc: 15°S, 70°W. Peru... h about 200 km<br>H: 15h 06m 10s (U.S.C.G.S)<br>Mag: 7 (Pas) |       |       |                   |             |                                                                                          |         |            | e                                                       |       | 16 25 12          |             |                                                                                    |                                                     |
|         | POONA                                                                                 | Z     | iPKP  | 15 25 31          |             |                                                                                          |         | KODAIKANAL | EW                                                      | e     | 16 27 01          |             | Phases not clear                                                                   |                                                     |
|         |                                                                                       | E     | e     | 35 41             |             |                                                                                          |         |            | e                                                       |       | 35 01             |             |                                                                                    |                                                     |
| 19      | BOMBAY                                                                                | NE    | ePKP  | 15 25 31          | 16220       |                                                                                          |         | 19         | SHILLONG                                                | Z     | eP                | 16 44 53    |                                                                                    | Slight, distant                                     |
|         |                                                                                       | N     | e     | 30 32             |             |                                                                                          |         | 20         | Epc: 6°S, 110°E. Java Sea<br>H: 02h 40m 13s (U.S.C.G.S) |       |                   |             |                                                                                    |                                                     |
|         |                                                                                       | NE    | e     | 35 22             |             |                                                                                          |         | MADRAS     | E                                                       | e     | 02 47 31          |             | Moderate                                                                           |                                                     |
|         |                                                                                       | N     | e     | 47 14             |             |                                                                                          |         |            | PP                                                      |       | 48 28             |             |                                                                                    |                                                     |
|         | AGRA                                                                                  | ZNE   | iPKP  | 15 25 34          | 16780       | Ground motion South West, Dilatation. Moderate.                                          |         |            | iS                                                      |       | 52 32             |             |                                                                                    |                                                     |
|         |                                                                                       | ZE    | e     | 25 42             |             |                                                                                          |         |            | Lr                                                      |       | 55 48             |             |                                                                                    |                                                     |
|         |                                                                                       | ZNE   | e     | 28 50             |             |                                                                                          |         | TOCKLAI    | E                                                       | iP    | 02 47 31          |             | Slight, distant initial ground motion towards West.                                |                                                     |
|         |                                                                                       | NE    | PP    | 29 56             |             |                                                                                          |         |            |                                                         |       |                   |             |                                                                                    |                                                     |
|         |                                                                                       | EZ    | i     | 35 32             |             |                                                                                          |         | SHILLONG   | ZNE                                                     | iP    | 02 47 32          | 3440        | Slight, initial ground movement towards North West and compression. Probably deep. |                                                     |
|         |                                                                                       |       | e     | 35 48             |             |                                                                                          |         |            | NE                                                      | iS    | 52 37             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 47 54             |             |                                                                                          |         |            |                                                         |       |                   |             |                                                                                    |                                                     |
|         | DEHRA DUN                                                                             | NE    | ePKP  | 15 25 36          |             |                                                                                          |         | POONA      | Z                                                       | i     | 02 48 32          |             |                                                                                    |                                                     |
|         |                                                                                       | N     | e     | 28 45             |             |                                                                                          |         |            | i                                                       |       | 50 07             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 30 19             |             |                                                                                          |         |            | i                                                       |       | 51 12             |             |                                                                                    |                                                     |
|         |                                                                                       |       | i     | 35 34             |             |                                                                                          |         |            | i                                                       |       | 54 02             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 40 47             |             |                                                                                          |         | DEHRA DUN  | NE                                                      | eP    | 02 49 03          |             | Slight                                                                             |                                                     |
|         |                                                                                       |       | e     | 44 10             |             |                                                                                          |         |            | N                                                       | PP    | 50 31             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 47 19             |             |                                                                                          |         |            |                                                         | i     | 55 17             |             |                                                                                    |                                                     |
|         |                                                                                       |       | M     | 58 00             |             |                                                                                          |         |            |                                                         | e     | 57 55             |             |                                                                                    |                                                     |
|         | SEHORE                                                                                | E     | i     | 15 25 43          |             |                                                                                          |         |            |                                                         | M     | 03 04 11          |             |                                                                                    |                                                     |
|         | HYDERABAD                                                                             | E     | PKP   | 15 25 44          |             |                                                                                          |         | PORT BLAIR | E                                                       | i     | 02 49 46          |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 26 34             |             |                                                                                          |         |            | i                                                       |       | 55 56             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 30 12             |             |                                                                                          |         | BOM. BAY   | NE                                                      | e     | 02 54 40          |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 35 30             |             |                                                                                          |         |            | e                                                       |       | 57 34             |             |                                                                                    |                                                     |
|         |                                                                                       |       | e     | 44 15             |             |                                                                                          |         | AGRA       | ZNE                                                     | i     | 02 54 49          |             |                                                                                    |                                                     |
|         |                                                                                       |       |       |                   |             |                                                                                          |         |            | EN                                                      | i     | 57 43             |             |                                                                                    |                                                     |
|         |                                                                                       |       |       |                   |             |                                                                                          |         | 20         | TOCKLAI                                                 | E     | iP                | 02 51 32    |                                                                                    | Slight, distant initial ground motion towards East. |

| DATE | STATION                                                                        | COMPT | PHASE        | G. M. T. h. m. s. | $\Delta$ km | REMARKS                                                                              | DATE | STATION                                                           | COMPT    | PHASE        | G. M. T. h. m. s. | $\Delta$ km | REMARKS                                                |                             |
|------|--------------------------------------------------------------------------------|-------|--------------|-------------------|-------------|--------------------------------------------------------------------------------------|------|-------------------------------------------------------------------|----------|--------------|-------------------|-------------|--------------------------------------------------------|-----------------------------|
| 20   | SHILLONG                                                                       | Z     | iP           | 06 15 53          |             | Slight, distant compression                                                          | 22   | AGRA                                                              | E        | PS           | 23 24 54          |             | Per. 24 secs<br>Amp: 7.5 mm                            |                             |
|      |                                                                                |       |              |                   |             |                                                                                      |      | Cont'd.                                                           | ZNE      | PPS          | 25 04             |             |                                                        |                             |
| 20   | SHILLONG                                                                       | Z     | eP           | 11 04 42          |             | Slight, distant                                                                      |      |                                                                   |          |              |                   |             |                                                        |                             |
| 20   | SHILLONG                                                                       | Z     | iP           | 16 26 26          |             | Slight, distant compression                                                          |      | DEHRA DUN                                                         | NE       | e(P)<br>i(S) | 23 14 34<br>24 28 | 8670        | Slight, other phases not clear                         |                             |
| 21   | SHILLONG                                                                       | Z     | iP           | 04 24 52          |             | Slight, distant compression                                                          |      | POONA                                                             | Z        | eP           | 23 14 35          | 8560        | Slight                                                 |                             |
| 21   | SHILLONG                                                                       | Z     | eP           | 05 37 36          |             | Slight, distant                                                                      |      | BOMBAY                                                            | NE       | S            | 24 23             |             |                                                        |                             |
| 21   | SHILLONG                                                                       | Z     | eP           | 05 37 36          |             | Slight, distant                                                                      |      | BOMBAY                                                            | N        | e            | 23 25 03          |             | Moderate, distant                                      |                             |
| 21   | Epc: 14°N, 167°E. New Hebrides Island<br>H: 07h 43m 13s Mag: 6.4 (Pas).        |       |              |                   |             |                                                                                      |      | 23                                                                | SHILLONG | Z            | iP                | 00 15 40    |                                                        | Slight, distant compression |
|      | SHILLONG                                                                       | Z     | iP           | 07 55 46          |             | Slight, distant compression                                                          | 23   | SHILLONG                                                          | ZE       | eP           | 02 17 17          |             |                                                        |                             |
| 21   | SHILLONG                                                                       | Z     | eP           | 12 44 13          |             | Slight, distant                                                                      | 23   | TOCKLAI                                                           | E        | eP           | 03 18 02          |             | Slight, distant                                        |                             |
| 21   | TOCKLAI                                                                        | E     | eP           | 18 26 18          |             | Slight, distant                                                                      | 23   | SHILLONG                                                          | Z        | iP           | 13 53 19          |             | Slight, distant compression                            |                             |
|      | SHILLONG                                                                       | Z     | eP           | 18 26 37          |             | Slight, distant                                                                      | 23   | SHILLONG                                                          | Z        | iP           | 14 11 38          |             |                                                        |                             |
|      |                                                                                | E     | e            | 26 56             |             |                                                                                      | 23   | SHILLONG                                                          | Z        | eP           | 23 10 45          |             |                                                        |                             |
|      |                                                                                | N     | e            | 27 44             |             |                                                                                      | 24   | SHILLONG                                                          | Z        | eP           | 00 44 55          |             |                                                        |                             |
| 21   | SHILLONG                                                                       | Z     | e            | 22 46 29          |             | Tremor                                                                               | 24   | Epc: 24°N, 94°E. India-Burma Border<br>H: 16h 17m 30s (U.S.C.G.S) |          |              |                   |             |                                                        |                             |
| 22   | SHILLONG                                                                       | Z     | e            | 00 09 26          |             | Tremor                                                                               |      | TOCKLAI                                                           | E        | eP           | 16 18 32          | 330         | Moderate                                               |                             |
| 22   | SHILLONG                                                                       | Z     | eP           | 09 03 12          |             | Slight, distant                                                                      |      |                                                                   | iS       | 19 09        |                   |             |                                                        |                             |
| 22   | Epc: 2°N, 126°E. Molluca Passage<br>H: 1h 15m 33s (U.S.C.G.S)                  |       |              |                   |             |                                                                                      |      | SHILLONG                                                          | Z        | eP           | 16 18 36          | 340         | Slight, initial ground movement towards North and West |                             |
|      | SHILLONG                                                                       | Z     | eP           | 11 23 15          |             | Slight, distant                                                                      |      | NE                                                                | iP       | 19 14        |                   |             |                                                        |                             |
|      |                                                                                | ZE    | i            | 25 19             |             | Compression                                                                          |      | NE                                                                | iS       |              |                   |             |                                                        |                             |
|      |                                                                                | Z     | i            | 28 59             |             |                                                                                      |      | BOKARO                                                            | NE       | iP           | 16 19 42          | 860         | Slight                                                 |                             |
|      |                                                                                | E     | i            | 29 12             |             |                                                                                      |      | E                                                                 | PP       | 19 51        |                   |             |                                                        |                             |
| 22   | Epc: 53°N, 153°E. Sea of Okhotsk. h about 650 km<br>H: 19h 24m 17s (U.S.C.G.S) |       |              |                   |             |                                                                                      |      |                                                                   | Pg       | 20 19        |                   |             |                                                        |                             |
|      | TOCKLAI                                                                        | E     | eP           | 19 32 21          |             | Slight, distant                                                                      |      | Lq                                                                | 21 00    |              |                   |             |                                                        |                             |
|      | SHILLONG                                                                       | ZNE   | iP           | 19 32 38          | 5780        | Slight, initial ground movement towards North and East                               |      | iS                                                                | 21 11    |              |                   |             |                                                        |                             |
|      |                                                                                | iS    | i            | 39 17             |             |                                                                                      |      | Lr/SS                                                             | 21 21    |              |                   |             |                                                        |                             |
|      |                                                                                | Z     | i            | 41 55             |             |                                                                                      |      | S*                                                                | 21 39    |              |                   |             |                                                        |                             |
|      | DEHRA DUN                                                                      | NE    | e(P)<br>i(S) | 19 33 09<br>40 16 | 6300        | Slight                                                                               | 24   | PORT BLAIR                                                        | EW       | iP           | 16 20 39          | 1390        | Slight                                                 |                             |
|      |                                                                                |       |              |                   |             |                                                                                      |      | iS                                                                | 23 01    |              |                   |             |                                                        |                             |
| 22   | BOKARO                                                                         | NE    | iP           | 19 33 10          | 6340        | Moderate, initial ground movement towards North & East. Other phases unidentifiable. | 24   | VIZIANAGRAM                                                       | E        | iP           | 16 20 40          | 1250        | Slight                                                 |                             |
|      |                                                                                |       | iS           | 40 20             |             |                                                                                      |      | iS                                                                | 22 48    |              |                   |             |                                                        |                             |
|      | AGRA                                                                           | ZNE   | iP           | 19 33 22          | 5580        | Slight, initial ground movement towards North, East and Dilatation.                  | 24   | DEHRA DUN                                                         | NE       | eP           | 16 21 33          | 1670        | Slight                                                 |                             |
|      |                                                                                | PP    | e            | 35 28<br>35 30    |             |                                                                                      |      | N                                                                 | iS       | 24 21        |                   |             |                                                        |                             |
|      |                                                                                | PPP   |              | 37 28             |             |                                                                                      |      | SS                                                                | 24 36    |              |                   |             |                                                        |                             |
|      |                                                                                | iS    |              | 40 44             |             |                                                                                      |      | SSS                                                               | 24 50    |              |                   |             |                                                        |                             |
|      |                                                                                | E     | SS           | 44 25             |             |                                                                                      |      | Lr                                                                | 24 59    |              |                   |             |                                                        |                             |
|      | SEHORE                                                                         | NE    | i            | 19 33 47          |             | Feeble                                                                               |      | M                                                                 | 26 09    |              |                   |             |                                                        |                             |
|      | POONA                                                                          | Z     | iP           | 19 34 21          | 7580        | Slight                                                                               |      | POONA                                                             | Z        | eP           | 16 22 15          | 2240        | Slight                                                 |                             |
|      |                                                                                | NE    | S            | 42 34             |             |                                                                                      |      | ZNE                                                               | eS       | 25 57        |                   |             |                                                        |                             |
|      | BOMBAY                                                                         | N     | e            | 19 34 35          |             | Slight. Strong microseisms                                                           |      | NE                                                                | e        | 16 23 52     |                   |             | Slight, distant                                        |                             |
|      |                                                                                | eS    |              | 42 39             |             |                                                                                      |      |                                                                   | e        | 24 28        |                   |             |                                                        |                             |
| 22   | Epc: 5°S, 152°E. New Britain Felt. h about 60 km<br>H: 23h 02m 27s (U.S.C.G.S) |       |              |                   |             |                                                                                      |      | BOMBAY                                                            | NE       | e            | 16 26 17          |             | Slight                                                 |                             |
|      |                                                                                |       |              |                   |             |                                                                                      |      | e                                                                 | 28 05    |              |                   |             |                                                        |                             |
|      | TOCKLAI                                                                        | E     | e            | 23 13 08          |             | Slight                                                                               | 24   | SHILLONG                                                          | Z        | eP           | 16 35 40          |             | Slight, distant                                        |                             |
|      | SHILLONG                                                                       | ZE    | iP           | 23 13 16          | 7370        | Slight, initial ground movement towards West.                                        | 24   | SHILLONG                                                          | Z        | iP           | 16 35 49          |             | Slight, distant                                        |                             |
|      |                                                                                | N     | eP           | 22 05             |             |                                                                                      | 24   | TOCKLAI                                                           | E        | eP           | 16 38 21          | 150         |                                                        |                             |
|      |                                                                                | EN    | eS           |                   |             |                                                                                      |      | eS                                                                | 38 44    |              |                   |             |                                                        |                             |
|      | BOKARO                                                                         | NE    | eP           | 23 13 45          | 7910        | Moderate, other phases unidentifiable                                                | 24   | SHILLONG                                                          | Z        | eP           | 18 23 12          |             | Slight, distant                                        |                             |
|      |                                                                                |       | eS           | 23 02             |             |                                                                                      | 24   | SHILLONG                                                          | Z        | eP           | 19 29 01          |             | Slight, distant                                        |                             |
|      | AGRA                                                                           | ZE    | iP           | 23 14 25          | 8640        | Moderate, initial ground movement towards West. Compression                          | 24   | SHILLONG                                                          | Z        | iP           | 19 30 55          |             | Slight, distant                                        |                             |
|      |                                                                                | Z     | PcP          | 14 49             |             |                                                                                      | 24   | SHILLONG                                                          | Z        | eP           | 20 42 53          |             | Slight, distant                                        |                             |
|      |                                                                                | N     | PP           | 17 15             |             |                                                                                      | 24   | SHILLONG                                                          | Z        | iP           | 22 14 48          |             | Slight, distant rarefaction                            |                             |
|      |                                                                                | NE    | iS           | 24 18             |             |                                                                                      | 25   | TOCKLAI                                                           | E        | e            | 11 26 20          |             | Slight                                                 |                             |
|      |                                                                                |       | SKS          | 24 28             |             |                                                                                      | 25   | SHILLONG                                                          | Z        | iP           | 19 33 24          |             | Tremor                                                 |                             |

| DATE | STATION                                                                          | COMPT   | PHASE                      | G. M. T. $\Delta$                            | REMARKS                               | DATE      | STATION                                                                       | COMPT               | PHASE                                               | G. M. T. $\Delta$                                                                   | REMARKS                                               |
|------|----------------------------------------------------------------------------------|---------|----------------------------|----------------------------------------------|---------------------------------------|-----------|-------------------------------------------------------------------------------|---------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------|
|      |                                                                                  |         |                            | h. m. s. km                                  |                                       | July 1959 |                                                                               |                     |                                                     | h. m. s. km                                                                         |                                                       |
| 25   | Epc: 37°N, 140°E. Honshu, Japan. h about 100 kms<br>- H = 2h 20m 35s (U.S.C.G.S) |         |                            |                                              |                                       | 30        | SHILLONG                                                                      | Z                   | eP                                                  | 15 50 30                                                                            | 280 Slight                                            |
|      | SHILLONG                                                                         | Z       | eP                         | 21 28 24                                     | Slight, distant                       |           | SHILLONG                                                                      | E                   | eP                                                  | 50 34                                                                               |                                                       |
| 26   | DEHRA DUN                                                                        | NE      | e                          | 00 23 35                                     | Tremor                                |           | SHILLONG                                                                      | E                   | iS <sub>0</sub>                                     | 51 06                                                                               |                                                       |
| 26   | SHILLONG                                                                         | Z       | e                          | 00 25 22                                     |                                       |           | SHILLONG                                                                      | N                   | eS <sub>0</sub>                                     |                                                                                     |                                                       |
| 26   | TOCKLAI                                                                          | E       | e                          | 03 26 40                                     |                                       | 30        | Epc: 36°N, 70°E. Hindukush. h about 200 kms.<br>- H = 16h 45m 55s (U.S.C.G.S) |                     |                                                     |                                                                                     |                                                       |
|      | SHILLONG                                                                         | Z       | e                          | 03 27 02                                     |                                       |           | DEHRA DUN                                                                     | NE                  | e(P)<br>i(S)                                        | 16 48 03<br>49 32                                                                   | 880 Feeble, phases not clear                          |
| 26   | DEHRA DUN                                                                        | NE      | e                          | 05 02 28                                     | Tremor                                |           | SHILLONG                                                                      | Z                   | iP                                                  | 16 50 28                                                                            | Slight, distant compression                           |
| 26   | TOCKLAI                                                                          | E       | eP<br>iS                   | 14 55 45<br>56 09                            | 200 Slight                            |           | POONA                                                                         | Z                   | e                                                   | 16 53 53                                                                            | Feeble, phases not clear                              |
|      | SHILLONG                                                                         | ZE      | eP                         | 14 55 49                                     | Slight, distant                       | 30        | SHILLONG                                                                      | Z                   | eP                                                  | 17 58 07                                                                            | Slight, distant                                       |
| 26   | DEHRA DUN                                                                        | NE      | e                          | 15 25 12                                     | Tremor                                | 30        | SHILLONG                                                                      | Z                   | eP                                                  | 19 06 57                                                                            | Slight, distant                                       |
| 26   | SHILLONG                                                                         | Z       | iP                         | 17 16 34                                     | Tremor                                | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 21 40 11                                                                            | Slight, distant rarefaction                           |
| 26   | SHILLONG                                                                         | Z       | eP                         | 20 47 56                                     |                                       | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 23 49 23                                                                            | Slight, distant compression                           |
| 26   | SHILLONG                                                                         | Z       | eP                         | 23 56 57                                     | Slight, distant                       | 31        | SHILLONG                                                                      | Z                   | iP                                                  | 02 47 39                                                                            | Slight, distant rarefaction                           |
| 27   | SHILLONG                                                                         | Z       | eP                         | 04 32 25                                     | Slight, distant                       | 31        | SHILLONG                                                                      | Z                   | iP                                                  | 03 19 14                                                                            | Slight, distant rarefaction                           |
| 27   | SHILLONG                                                                         | Z       | eP                         | 12 49 18                                     | Slight, distant                       | 31        | SHILLONG                                                                      | Z                   | iP                                                  | 05 10 16                                                                            | Tremor                                                |
| 27   | Shock felt at Tellicherry, Cannanore.                                            |         |                            |                                              |                                       | 31        | SHILLONG                                                                      | Z                   | eP<br>iSg                                           | 09 12 35<br>12 49                                                                   | Slight, near                                          |
|      | MADRAS                                                                           | E       | eP<br>PPP<br>eS<br>SS<br>M | 15 28 33<br>28 45<br>29 28<br>29 38<br>29 50 | 510 Feeble, tremor 0-time 15h 27m 21s | 31        | SHILLONG                                                                      | Z                   | iP                                                  | 18 27 48                                                                            | Tremor                                                |
|      | POONA                                                                            | Z       | i<br>e<br>i                | 15 29 02<br>29 53<br>30 12                   | Feeble, near                          | 31        | SHILLONG                                                                      | Z                   | iP                                                  | 18 46 19                                                                            | Tremor                                                |
|      | HYDERABAD                                                                        | NE<br>E | i<br>i                     | 15 30 17<br>30 21                            |                                       | 31        | Epc: 38°N, 70°E. Tadzhik, S.S.R.<br>- H = 19h 53m 02s (U.S.C.G.S)             |                     |                                                     |                                                                                     |                                                       |
|      | VIZIANAGRAM                                                                      | N       | e                          | 15 30 48                                     | Tremor                                | 31        | DEHRA DUN                                                                     | NE<br>N             | e(P)<br>iS<br>SS<br>Lr<br>SSS<br>Sg, M              | 19 55 39<br>57 35<br>57 47<br>57 45<br>57 59<br>58 45                               | 1130 Slight                                           |
|      | BOMBAY                                                                           | E       | e                          | 15 30 49                                     | Very slight, near.                    |           | AGRA                                                                          | ZNE                 | eP                                                  | 19 56 08                                                                            | Slight                                                |
| 27   | SHILLONG                                                                         | Z       | eP                         | 15 35 28                                     | Tremor                                |           | BOKARO                                                                        | NE<br>E<br>NE<br>E  | iP<br>PP<br>PPP<br>iS<br>Lq<br>SS<br>SSS<br>Lr<br>M | 19 57 37<br>57 58<br>58 07<br>20 01 17<br>01 33<br>01 52<br>02 05<br>02 30<br>03 59 | 2220 Moderate, initial ground movement towards North. |
| 27   | TOCKLAI                                                                          | E       | eP                         | 16 56 09                                     | Slight, distant                       |           | BOMBAY                                                                        | N<br>NE             | eP<br>e                                             | 19 57 40<br>20 01 38                                                                | Slight                                                |
|      | SHILLONG                                                                         | Z       | eP<br>i                    | 16 56 38<br>57 30                            | Slight, distant                       | 31        | POONA                                                                         | Z                   | eP<br>S                                             | 19 57 43<br>20 01 38                                                                | 2390 Slight                                           |
| 27   | SHILLONG                                                                         | Z       | eP                         | 17 08 24                                     | Tremor                                |           | CALCUTTA                                                                      | E                   | i<br>iS                                             | 19 57 53<br>20 02 08                                                                |                                                       |
| 28   | SHILLONG                                                                         | Z       | eP                         | 08 46 57                                     | Slight, distant                       |           | SHILLONG                                                                      | ZNE<br>E<br>EN<br>E | iP<br>PP<br>iS<br>SS<br>M                           | 19 58 03<br>58 37<br>20 02 13<br>02 55<br>05 51                                     | 2500 Slight, initial ground movement towards East.    |
| 28   | SHILLONG                                                                         | Z       | eP                         | 16 13 00                                     | Slight, distant                       |           | HYDERABAD                                                                     | N                   | eP<br>eS<br>Lq<br>Lr<br>M                           | 19 58 08<br>20 02 17<br>03 44<br>04 47<br>06 44                                     | 2510 Slight                                           |
| 29   | SHILLONG                                                                         | Z       | iP                         | 04 07 50                                     | Tremor                                |           | TOCKLAI                                                                       | E                   | e                                                   | 19 58 18                                                                            | Slight, distant                                       |
| 29   | SHILLONG                                                                         | Z       | iPg<br>iSg                 | 06 20 40<br>21 01                            | 180                                   |           | MADRAS                                                                        | E                   | eP<br>PPP<br>eS<br>Lq                               | 19 59 08<br>20 00 26<br>04 09<br>05 45                                              | 3380 Slight                                           |
| 29   | DEHRA DUN                                                                        | NE      | e<br>i<br>i                | 09 56 12<br>58 06<br>10 00 20                | Feeble                                | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 02 55 41                                                                            | Tremor                                                |
| 29   | SHILLONG                                                                         | Z       | iP                         | 09 58 27                                     | Slight, distant Rarefaction           | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 06 24 20                                                                            | Slight, distant                                       |
| 29   | Epc: 5°S, 154°E. Solomon Islands Region<br>- H = 18h 54m 03s (U.S.C.G.S)         |         |                            |                                              |                                       | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 07 41 05                                                                            | Slight, distant compression                           |
|      | SHILLONG                                                                         | Z       | iP                         | 19 05 03                                     | Slight, distant compression           | 30        | SHILLONG                                                                      | Z                   | iP                                                  | 14 54 07                                                                            | Tremor                                                |
| 30   | SHILLONG                                                                         | Z       | iP                         | 02 55 41                                     | Tremor                                | 30        | TOCKLAI                                                                       | E                   | eP<br>iS                                            | 15 50 26<br>50 52                                                                   | 220 Slight, distant                                   |

| DATE   | STATION | COMPT | PHASE | G. M. T. )<br>h. m. s. ) km | Δ | REMARKS         | DATE      | STATION | COMPT    | PHASE | G. M. T. )<br>h. m. s. ) km | Δ        | REMARKS |      |
|--------|---------|-------|-------|-----------------------------|---|-----------------|-----------|---------|----------|-------|-----------------------------|----------|---------|------|
| 31     | MADRAS  | E     | SSS   | 20 05 20                    |   |                 | July 1959 | 31      | SEHORE   | NE    | e                           | 20 01 45 |         |      |
| Contd. | Contd.  |       | Lq    | 08 00 00                    |   |                 |           | Contd.  | Contd.   |       | i                           | 02 17    |         |      |
|        |         |       | M     | 09 20                       |   |                 |           |         |          |       |                             |          |         |      |
|        | SEHORE  | NE    | e     | 19 59 46                    |   | Distant; slight |           | 31      | SHILLONG | Z     | eP                          | 23 21 35 |         | Near |
|        |         |       |       |                             |   |                 |           |         |          |       | iSg                         | 21 46    |         |      |

### Earthquake Reports

#### (Non Instrumental Reports)

Following is the list of Earthquakes that were reported by the Voluntary Observers from different stations during the month of July 1959

| STATION           | DATE IN<br>G.M.T. | TIME IN<br>G.M.T.<br>h. m. | NO. OF<br>SHOCKS | DURATION<br>OF SHOCK<br>in secs. | INTENSITY IN<br>R.F. SCALE | REMARKS |
|-------------------|-------------------|----------------------------|------------------|----------------------------------|----------------------------|---------|
| Upper<br>Shillong | 18                | 21 33                      | 2                | 5                                | IV                         |         |
| Shillong          | 19                | 12 03                      | 1                | 2                                | IV                         |         |
| Silchar           | 24                | 15 15                      | 1                | 2                                | III                        |         |
| Shillong          | 24                | 15 20                      | 2 Jerks          | 50                               | V                          |         |
| Kumbhirgram       | 24                | 15 25                      | 3                | 5                                | IV                         |         |
| Kailashahar       | 24                | 16 45                      | 1                | 1                                | III                        |         |













DATE HOUR K MEAN MEAN DATE HOUR K MEAN MEAN DATE HOUR K MEAN MEAN DATE HOUR K MEAN MEAN
GMT tude in. in GMT tude in. in GMT tude in. in GMT tude in. in GMT tude in. in
in mm secs in mm secs in mm secs in mm secs in mm secs

Table with 15 columns: DATE, HOUR, K, MEAN Amplitude, MEAN Period, and four sets of these columns for different dates. Station: PORT BLAIR, Component: E-W, July 1959. Data rows include dates 15-23, 17-23, 18-23, 19-23, 20-23, 21-23, 24-24.



GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

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Shri S. Basu, M.Sc., F.N.I.,  
Director General of Observatories

## List of Seismograph stations with their Instruments and Constants

| Station              | Latitude | Longitude | Height<br>a.s.l.<br>(Metres) | Lithographic<br>Foundation                          | Instrument           | Compt.        | Period<br>in<br>secs | Static<br>Magni-<br>fication | Damping<br>ratio | Paper<br>speed<br>mm/min. |          |      |
|----------------------|----------|-----------|------------------------------|-----------------------------------------------------|----------------------|---------------|----------------------|------------------------------|------------------|---------------------------|----------|------|
| Agra                 |          |           |                              |                                                     | Columbia             | E             | To=15                | Tg=100                       |                  | 15                        |          |      |
|                      |          |           |                              |                                                     | Long Period          | N             | To=15                | Tg=95                        |                  | 15                        |          |      |
|                      |          |           |                              |                                                     | do                   | Z             | To=15                | Tg=70                        |                  | 15                        |          |      |
| Bombay               | 18°54'N  | 72°40'E   | 6                            | Deccan Trap                                         | Milne-Shaw           | N             | 12                   | 350                          | 13:1             | 16                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | E             | 12                   | 350                          | 23:1             | 8                         |          |      |
|                      |          |           |                              |                                                     | Sprengnether         | E             | To=Tg=7 secs         |                              | 30               |                           |          |      |
| Bokaro               | 23°50'N  | 85°48'E   |                              | Rock                                                | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 16                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | E             | 0.8                  | 950                          | h = 0.8          | 60                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | N             | 0.8                  | 1000                         | h = 0.8          | 60                        |          |      |
| Calcutta             | 22°32'N  | 88°22'E   | (1) 7                        | (Milne-Shaw)                                        | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |          |      |
|                      |          |           |                              |                                                     | (2) 6                | (Omori-Ewing) | Wood-Anderson        | N                            | 2                | 870                       | Critical | 30   |
|                      |          |           |                              |                                                     | Alluvium             |               | Omori-Ewing          | N                            | 16               | 32                        | -        | 25.4 |
| Chatra               | 25°50'N  | 87°10'E   | 151                          | Sand Stone                                          | Omori-Ewing          | E             | 21                   | 30                           | -                | 25.4                      |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | N             | 1                    | 1000                         | 30:1             | 60                        |          |      |
|                      |          |           |                              |                                                     | Benioff              | Z             | To=0                 | Tg=0.45<br>secs.             | Critical         | 50                        |          |      |
|                      |          |           |                              |                                                     | Wenner-Accelerograph | ZNE           |                      |                              |                  |                           |          |      |
|                      |          |           |                              |                                                     |                      |               |                      |                              |                  |                           |          |      |
| Colombo              | 06°54'N  | 79°52'E   | 7                            | Beach Sand                                          | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | -                         |          |      |
| Dehra Dun            | 30°19'N  | 78°02'E   | 682                          | Gravel                                              | Wood-Anderson        | N             | 0.8                  | 950                          | Critical         | 60                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | E             | 0.8                  | 850                          | Critical         | 60                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |          |      |
| Hyderabad            | 17°25'N  | 78°27'E   | 535                          | Granite                                             | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |          |      |
| Kodaikanal           | 10°14'N  | 77°28'E   | 2345                         | Rock                                                | Milne-Shaw           | E             | 10                   | 250                          | 20:1             | 8                         |          |      |
| Madras               | 13°00'N  | 80°11'E   | 15                           | -                                                   | Sprengnether         | E             | To=Tg=72 secs        |                              | Critical         | 30                        |          |      |
| New Delhi            | 28°35'N  | 77°12'E   | 207                          | Massive Quartzite                                   |                      |               |                      |                              |                  |                           |          |      |
| Poona                | 18°32'N  | 73°51'E   | 560                          | Deccan Trap                                         | Sprengnether         | Z             | To=Tg=1.6            |                              | Critical         | 30                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | E             | 4                    | 1000                         | 20:1             | 16                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | N             | 12                   | 280                          | 20:1             | 8                         |          |      |
| Port Blair           | 11°49'N  | 92°43'E   |                              |                                                     | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | E             | 0.8                  | 1000                         | 66:1             | 30                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | N             | 12                   | 350                          | 20:1             | 8                         |          |      |
| Shore                |          |           |                              |                                                     | Wood-Anderson        | N             | 0.8                  | 980                          | Critical         | 30                        |          |      |
| Shillong             | 25°34'N  | 91°53'E   | 1500                         | (Quartzite<br>Sand stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N             | 0.8                  | 1000                         | h=0              | h=0.8                     | 30       |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |          |      |
|                      |          |           |                              |                                                     | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |          |      |
|                      |          |           |                              |                                                     | Benioff              | Z             | To=1.0               | Tg=0.18                      |                  | 60                        |          |      |
|                      |          |           |                              |                                                     | Sprengnether         | E             | To=Tg=6.3            |                              | Critical         | 30                        |          |      |
| Wenner Accelerograph | ZNE      |           |                              |                                                     |                      |               |                      |                              |                  |                           |          |      |
| Tocklai              | 28°45'N  | 94°45'E   |                              | Alluvium                                            | Wood-Anderson        | E             | 0.8                  | 970                          | h=0.8            | 60                        |          |      |
| Vizianagram          | 18°07'N  | 83°27'E   |                              |                                                     | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |          |      |
|                      |          |           |                              |                                                     | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |          |      |

| DATE                                                                                                | STATION   | COMPT | PHASE | G. M. T. | h. m. s. | km   | REMARKS                                      |
|-----------------------------------------------------------------------------------------------------|-----------|-------|-------|----------|----------|------|----------------------------------------------|
| 01                                                                                                  | SHILLONG  | Z     | eP    |          | 11 21 58 |      | Slight, near                                 |
| 01                                                                                                  | SHILLONG  | Z     | eP    |          | 11 23 44 |      | Slight, distant                              |
| 02                                                                                                  | SHILLONG  | Z     | eP    |          | 03 48 40 |      | Slight, distant                              |
| 02                                                                                                  | TACKLAI   | E     | eP    |          | 09 15 05 |      | Slight, near                                 |
| 03                                                                                                  | SHILLONG  | Z     | eP    |          | 19 37 41 |      | Slight, near                                 |
| 03                                                                                                  | DEHRA DUN | NE    | e     |          | 07 52 51 |      | Slight, distant                              |
| 03                                                                                                  | TACKLAI   | E     | eP    |          | 11 27 08 |      | Tremor                                       |
| 03                                                                                                  | SHILLONG  | Z     | eP    |          | 13 20 26 | 140  | Slight                                       |
| 03                                                                                                  | CHATRA    | Z     | eP    |          | 13 19 54 |      | Slight, distant                              |
| 03                                                                                                  | CHATRA    | Z     | eP    |          | 13 22 23 |      | Foefie, distant                              |
| 04                                                                                                  | SHILLONG  | Z     | IP    |          | 19 17 37 | 90   | Foefie                                       |
| 04                                                                                                  | SHILLONG  | Z     | IP    |          | 17 30    |      |                                              |
| 04                                                                                                  | SHILLONG  | Z     | eP    |          | 02 01 13 | 110  | Slight                                       |
| 04                                                                                                  | SHILLONG  | Z     | eS    |          | 01 27    |      |                                              |
| Epc: 204°S, 178°W. Fiji Islands Region.<br>- h about 600 kms<br>- H: 05h 02m 17s (U.S.C.G.S)        |           |       |       |          |          |      |                                              |
| 04                                                                                                  | SHILLONG  | Z     | e     |          | 08 14 49 |      |                                              |
| 04                                                                                                  | SHILLONG  | Z     | eP    |          | 09 03 57 | 90   | Near, slight                                 |
| 04                                                                                                  | SHILLONG  | Z     | eS    |          | 04 07    |      |                                              |
| 05                                                                                                  | SHILLONG  | Z     | eP    |          | 13 04 29 |      | Distant, tremor                              |
| Epc: 128°N, 125°E. Near Philippine Islands.<br>- H: 05h 16m 39s (U.S.C.G.S)                         |           |       |       |          |          |      |                                              |
| 05                                                                                                  | SHILLONG  | Z     | IP    |          | 05 23 27 |      | Slight, distant                              |
| 05                                                                                                  | CHATRA    | Z     | IP    |          | 05 24 08 |      | rarefaction                                  |
| 05                                                                                                  | TACKLAI   | E     | e     |          | 10 16 41 |      | Slight, distant                              |
| 05                                                                                                  | TACKLAI   | E     | e     |          | 10 16 41 |      | Slight                                       |
| Epc: 34°N, 125°E. Near South Coast of Mindanao, Philippine Islands.<br>- H: 13h 48m 42s (U.S.C.G.S) |           |       |       |          |          |      |                                              |
| 05                                                                                                  | SHILLONG  | Z     | eP    |          | 13 56 08 |      | Slight, distant                              |
| 05                                                                                                  | CHATRA    | Z     | IP    |          | 13 56 47 |      | Slight, distant                              |
| 05                                                                                                  | SHILLONG  | Z     | eP    |          | 14 01 37 |      | Tremor                                       |
| 05                                                                                                  | SHILLONG  | Z     | eP    |          | 19 45 13 |      | Tremor                                       |
| Epc: 14°N, 142°E. Mariana Islands<br>- H: 19h 12m 54s (U.S.C.G.S)                                   |           |       |       |          |          |      |                                              |
| 05                                                                                                  | SHILLONG  | Z     | eP    |          | 20 01 07 |      | Tremor                                       |
| 06                                                                                                  | SHILLONG  | Z     | IP    |          | 02 33 05 |      | Slight, distant                              |
| 06                                                                                                  | SHILLONG  | Z     | IP    |          | 02 37 58 |      | rarefaction                                  |
| 06                                                                                                  | SHILLONG  | Z     | IP    |          | 03 00 33 |      | Tremor                                       |
| 07                                                                                                  | SHILLONG  | Z     | eP    |          | 00 02 26 | 110  | Slight, distant                              |
| 07                                                                                                  | SHILLONG  | Z     | eP    |          | 00 02 26 |      | compression                                  |
| 07                                                                                                  | Madras    | E     | e     |          | 00 02 26 |      | Slight                                       |
| 07                                                                                                  | DEHRA DUN | NE    | e     |          | 00 02 26 |      | Tremor                                       |
| 07                                                                                                  | TACKLAI   | E     | eP    |          | 04 23 01 | 120  | Slight                                       |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 04 23 01 |      |                                              |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 04 23 01 |      |                                              |
| 07                                                                                                  | CHATRA    | Z     | eP    |          | 08 53 42 |      | Slight                                       |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 08 54 30 |      | Slight                                       |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 08 54 30 |      | Slight                                       |
| 07                                                                                                  | SHILLONG  | Z     | eP    |          | 10 00 00 |      | Tremor                                       |
| 07                                                                                                  | SHILLONG  | Z     | eP    |          | 10 00 00 |      | Tremor                                       |
| Epc: 20°N, 150°E. South East China<br>- H: 10h 42m 10s (U.S.C.G.S)<br>Mag: 5 (Bart), 5.5 (Paw)      |           |       |       |          |          |      |                                              |
| 07                                                                                                  | DEHRA DUN | NE    | e     |          | 11 06 20 |      | Foefie                                       |
| 07                                                                                                  | AGRA      | N     | i     |          | 11 06 33 |      | Slight                                       |
| 07                                                                                                  | BOKARO    | N     | e     |          | 11 06 35 |      | Tremor                                       |
| 07                                                                                                  | HYDERABAD | N     | M     |          | 11 44 43 |      | Peri: 14<br>U = 4                            |
| 07                                                                                                  | CHATRA    | Z     | IP    |          | 14 06 00 | 440  | Foefie                                       |
| 07                                                                                                  | SHILLONG  | Z     | eP    |          | 17 53 36 |      | Slight, near                                 |
| Epc: 104°E, 162°E. Solomon Islands<br>- H: 19h 10m 59s (U.S.C.G.S)                                  |           |       |       |          |          |      |                                              |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 19 22 54 |      | Slight, distant                              |
| Epc: 50°N, 154°E. Kodaiak Island<br>- H: 21h 48m 26s (U.S.C.G.S)                                    |           |       |       |          |          |      |                                              |
| 07                                                                                                  | SHILLONG  | Z     | IP    |          | 21 57 45 |      | Slight, distant                              |
| 07                                                                                                  | CHATRA    | Z     | IP    |          | 21 57 52 |      | compression                                  |
| 07                                                                                                  | DEHRA DUN | NE    | eP    |          | 21 58 07 | 8980 | Foefie                                       |
| 07                                                                                                  | AGRA      | N     | e     |          | 22 08 15 |      | Slight, distant                              |
| 07                                                                                                  | BOKARO    | N     | e     |          | 22 08 27 |      | Slight                                       |
| 07                                                                                                  | HYDERABAD | N     | e     |          | 22 08 21 |      | Tremor                                       |
| 07                                                                                                  | SHILLONG  | Z     | M     |          | 22 45 35 |      | Peri: 18<br>U = 6                            |
| 07                                                                                                  | TACKLAI   | E     | eP    |          | 22 03 18 |      | Slight, distant                              |
| 08                                                                                                  | SHILLONG  | Z     | eP    |          | 22 03 48 |      | Slight, distant                              |
| Epc: 55°N, 152°E. Near East Coast of Kamchatka<br>- H: 00h 47m 38s (U.S.C.G.S)<br>Mag: 6.4 (Paw)    |           |       |       |          |          |      |                                              |
| 08                                                                                                  | SHILLONG  | Z     | IP    |          | 00 57 36 |      | Distant, compression                         |
| 08                                                                                                  | CHATRA    | Z     | IP    |          | 00 57 48 |      | Distant                                      |
| 08                                                                                                  | DEHRA DUN | N     | eP    |          | 00 58 07 | 6970 | compression                                  |
| 08                                                                                                  | BOKARO    | NE    | IP    |          | 00 58 11 | 7030 | Other phases                                 |
| 08                                                                                                  | POONA     | Z     | IP    |          | 01 06 43 |      | 7030                                         |
| 08                                                                                                  | POONA     | NE    | IP    |          | 00 59 11 |      | 8400 Initial ground                          |
| 08                                                                                                  | POONA     | NE    | S     |          | 01 08 52 |      | movement towards West and compression.       |
| 08                                                                                                  | AGRA      | N     | eP    |          | 01 06 55 |      | Distant, initial ground motion towards South |
| 08                                                                                                  | HYDERABAD | N     | e     |          | 01 08 27 |      |                                              |
| 08                                                                                                  | HYDERABAD | N     | M     |          | 01 08 31 |      |                                              |
| 08                                                                                                  | COLOMBO   | E     | e     |          | 01 35 00 |      | Peri: 16 U = 5                               |
| 08                                                                                                  | SHILLONG  | Z     | M     |          | 01 41 28 |      | Amp: 0.2 ms                                  |
| 08                                                                                                  | CHATRA    | Z     | eP    |          | 03 26 24 |      | Slight, distant                              |
| 08                                                                                                  | SHILLONG  | Z     | IP    |          | 04 01 40 | 310  | Slight                                       |
| 08                                                                                                  | SHILLONG  | Z     | IP    |          | 04 01 35 |      |                                              |
| 08                                                                                                  | SHILLONG  | Z     | eP    |          | 04 01 29 |      | Tremor                                       |
| 08                                                                                                  | SHILLONG  | Z     | eP    |          | 07 16 40 |      | Slight, near                                 |
| 08                                                                                                  | SHILLONG  | Z     | IP    |          | 07 20 05 |      | Slight, distant                              |
| 08                                                                                                  | DEHRA DUN | NE    | e     |          | 12 46 39 |      | rarefaction                                  |
| 08                                                                                                  | SHILLONG  | Z     | i     |          | 48 19    |      | Foefie                                       |
| 08                                                                                                  | SHILLONG  | Z     | e     |          | 03 40 40 |      | Tremor                                       |
| Epc: 20°N, 150°E. South East China<br>- H: 10h 42m 10s (U.S.C.G.S)<br>Mag: 5 (Bart), 5.5 (Paw)      |           |       |       |          |          |      |                                              |

| DATE | STATION                                                                              | COMPT                      | PHASE                                | G. M. T.<br>h. m. s.                                              | $\Delta$<br>km | REMARKS                                                                                | DATE | STATION                                                                                         | COMPT    | PHASE      | G. M. T.<br>h. m. s. | $\Delta$<br>km    | REMARKS                     |                     |
|------|--------------------------------------------------------------------------------------|----------------------------|--------------------------------------|-------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------|----------|------------|----------------------|-------------------|-----------------------------|---------------------|
| 08   | TOCKLAI<br>Contd.                                                                    | E                          | iP                                   | 13 58 50                                                          |                | Moderate, initial ground movement towards, West.                                       | 09   | CHATRA                                                                                          | Z        | i          | 07 00 38             |                   | Slight, distant             |                     |
|      | SHILLONG                                                                             | ZE<br>E                    | eP<br>eS                             | 13 59 16<br>14 00 28                                              | 690            | Slight                                                                                 | 09   | SHILLONG                                                                                        | Z        | eP         | 08 10 54             |                   | Slight, near                |                     |
|      | CHATRA                                                                               | Z<br>ZNE                   | iP<br>i                              | 14 00 12<br>02 45                                                 |                | Slight                                                                                 | 09   | SHILLONG                                                                                        | Z        | eP         | 08 18 36             |                   | Tremor                      |                     |
| 08   | CHATRA                                                                               | Z                          | iPg<br>iSg                           | 17 38 17<br>38 26                                                 | 70             | Feeble                                                                                 | 09   | SHILLONG                                                                                        | Z        | eP         | 08 19 46             |                   | Tremor                      |                     |
| 08   | CHATRA                                                                               | Z                          | i                                    | 19 55 00                                                          |                | Feeble, distant                                                                        | 09   | SHILLONG                                                                                        | Z        | iP         | 23 59 10             |                   | Slight, distant compression |                     |
|      | DEHRA DUN                                                                            | NE                         | e                                    | 19 55 21                                                          |                | Tremor                                                                                 |      | TOCKLAI                                                                                         | E        | e          | 23 59 30             |                   | Slight, distant             |                     |
|      | SHILLONG                                                                             | Z                          | iP                                   | 19 55 45                                                          |                | Tremor, compression                                                                    | 10   | SHILLONG                                                                                        | Z        | ePg<br>eSg | 00 56 57<br>57 11    | 110               | Slight                      |                     |
| 08   | TOCKLAI                                                                              | E                          | e                                    | 21 49 35                                                          |                | Slight, distant                                                                        | 10   | SHILLONG                                                                                        | Z        | iPg<br>iSg | 01 57 41<br>57 48    | 50                | Slight                      |                     |
|      | SHILLONG                                                                             | Z                          | iP                                   | 21 49 36                                                          |                | Slight, distant rarefaction                                                            | 10   | SHILLONG                                                                                        | Z        | eP         | 08 09 32             |                   | Slight, distant             |                     |
| 08   | CHATRA                                                                               | Z<br>NE                    | iP<br>iS                             | 21 50 14<br>51 26                                                 | 590            | Slight                                                                                 | 10   | SHILLONG                                                                                        | Z        | eP         | 08 15 12             |                   | Slight, distant             |                     |
| 08   | SHILLONG                                                                             | Z                          | ePg<br>eSg                           | 23 00 47<br>00 58                                                 | 90             | Slight                                                                                 | 10   | CHATRA                                                                                          | Z        | iP<br>iS   | 13 20 54<br>21 15    | 180               | Slight                      |                     |
| 08   | SHILLONG                                                                             | Z                          | eP                                   | 23-26 28                                                          |                | Slight, near                                                                           |      | SHILLONG                                                                                        | Z        | eP         | 13 21 16             |                   | Tremor                      |                     |
| 08   | Ept: 6°S, 155°E. Solomon Islands. - h about 100 kms<br>- H = 23h 56m 05s (U.S.C.G.S) |                            |                                      |                                                                   |                |                                                                                        |      | 10                                                                                              | SHILLONG | Z          | eP                   | 14 26 58          |                             | Tremor              |
| 09   | SHILLONG                                                                             | Z                          | iP                                   | 00 07 02                                                          |                | Slight, distant compression                                                            | 10   | SHILLONG                                                                                        | Z        | eP         | 15 17 18             |                   | Tremor                      |                     |
| 09   | Ept: 2°N, 128°E. Halmahera.<br>- H = 02h 34m 43s (U.S.C.G.S)                         |                            |                                      |                                                                   |                |                                                                                        |      | 10                                                                                              | SHILLONG | Z          | eP                   | 19 04 23          |                             | Slight, distant     |
|      | SHILLONG                                                                             | Z                          | eP                                   | 02 42 31                                                          |                | Slight, distant                                                                        | 10   | SHILLONG                                                                                        | Z        | eP         | 20 23 50             |                   | Tremor                      |                     |
| 09   | Ept: 2°S, 68°E. Indian Ocean. - H = 04h 48m 12s<br>(Shillong).                       |                            |                                      |                                                                   |                |                                                                                        |      | 10                                                                                              | SHILLONG | ZE<br>E    | iP<br>e              | 23 11 54<br>15 59 |                             | Slight, compression |
|      | KODAIKANAL                                                                           | E                          | eP<br>iS<br>SS<br>Lr<br>M            | 04 52 02<br>54 59<br>55 20<br>55 50<br>57 11                      | 1760           | Moderate, initial ground movement towards West.<br>Per. = 10 $\mu$ = 38                | 10   | CHATRA                                                                                          | Z<br>NE  | iP<br>iS   | 23 12 30<br>16 37    | 2550              | Slight                      |                     |
|      | MADRAS                                                                               | E                          | eP<br>PP<br>eS<br>Lq<br>SSS<br>Lr    | 04 52 43<br>53 06<br>55 21<br>55 34<br>57 08<br>57 33             | 2200           | Moderate                                                                               |      | DEHRA DUN                                                                                       | NE       | e          | 23 23 37             |                   | Tremor                      |                     |
| 09   | POONA                                                                                | Z<br>NE<br>N               | iP<br>S<br>Mn                        | 04 53 05<br>57 00<br>05 00 01                                     | 2400           | Slight, initial ground movement South, West rarefaction.<br>Per. = 12 sec<br>$\mu$ = 9 | 11   | SHILLONG                                                                                        | Z        | iP         | 00 23 07             |                   | Slight, distant rarefaction |                     |
|      | BOMBAY                                                                               | N<br>NE<br>N               | eP<br>iS<br>Lq<br>M                  | 04 53 08<br>57 04<br>57 29<br>05 00 11                            | 2410           | Slight<br>Per. = 11 $\mu$ = 4                                                          | 11   | SHILLONG                                                                                        | Z        | iP         | 00 45 46             |                   | Slight, near compression    |                     |
|      | HYDERABAD                                                                            | N<br>E<br>N<br>E<br>N<br>E | eP<br>iS<br>SS<br>Lr<br>Lr<br>M<br>M | 04 53 15<br>57 11<br>58 08<br>58 26<br>58 35<br>59 41<br>05 00 20 | 2410           | Moderate<br>Per. = 12 $\mu$ = 11<br>Per. = 11 $\mu$ = 8                                | 11   | SHILLONG                                                                                        | Z        | eP         | 03 04 04             |                   | Slight, distant             |                     |
|      | CHATRA                                                                               | Z                          | iP                                   | 04 55 05                                                          |                | Feeble, distant                                                                        | 11   | SHILLONG                                                                                        | Z        | eP         | 10 39 49             |                   | Slight, distant             |                     |
|      | DEHRA DUN                                                                            | NE                         | e<br>i                               | 04 55 10<br>05 02 27                                              |                | Feeble                                                                                 | 11   | SHILLONG                                                                                        | Z        | eP         | 11 55 44             |                   | Tremor                      |                     |
|      | SHILLONG                                                                             | Z                          | iP                                   | 04 55 30                                                          |                | Slight, distant compression                                                            | 11   | SHILLONG                                                                                        | Z        | iP         | 15 33 19             |                   | Slight, distant compression |                     |
|      | PORT BLAIR                                                                           | E                          | e                                    | 04 58 14                                                          |                | Slight                                                                                 | 11   | PORT BLAIR                                                                                      | E        | eP<br>iS   | 16 38 08<br>38 39    | 270               | Slight                      |                     |
|      | BOKARO                                                                               | NE<br>N                    | e<br>iS<br>M                         | 04 58 21<br>05 01 49<br>04 49                                     |                | Slight, other phases not well developed.                                               |      | MADRAS                                                                                          | E        | e          | 16 40 35             | 270               | Feeble                      |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | SHILLONG                                                                                        | Z        | iP         | 16 41 10             |                   | Slight, distant compression |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | CHATRA                                                                                          | Z        | i          | 16 41 39             |                   | Feeble, distant             |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | PORT BLAIR                                                                                      | E        | eP<br>iS   | 17 01 20<br>01 51    | 270               | Slight                      |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | MADRAS                                                                                          | E        | e          | 17 03 47             |                   | Feeble                      |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | SHILLONG                                                                                        | Z        | iP         | 17 04 21             |                   | Slight, distant compression |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        |      | SHILLONG                                                                                        | Z        | iP         | 22 04 47             |                   | Tremor, rarefaction         |                     |
|      |                                                                                      |                            |                                      |                                                                   |                |                                                                                        | 12   | Ept: 15°S, 28°E. Northern Rhodesia. Felt: Transval and Phodesia. - H = 04h 05m 20s (U.S.C.G.S). |          |            |                      |                   |                             |                     |



| DATE    | STATION                                                                                                                               | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS                                             | DATE        | STATION    | COMPT | PHASE    | G. M. T. | $\Delta$ | REMARKS                                                   |  |
|---------|---------------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|----------|-----------------------------------------------------|-------------|------------|-------|----------|----------|----------|-----------------------------------------------------------|--|
|         |                                                                                                                                       |       |       | h. m. s. | km       |                                                     | August 1959 |            |       |          | h. m. s. | km       |                                                           |  |
| 12      | SHILLONG                                                                                                                              | Z     | iP    | 04 17 03 |          | Very slight, rarefaction                            | 15          | SHILLONG   | N     | Lq       | 09 08 29 |          |                                                           |  |
| Cont'd. |                                                                                                                                       |       |       |          |          |                                                     | Cont'd.     | Cont'd.    |       | SSS      | 08 59    |          |                                                           |  |
|         | KODAIKANAL                                                                                                                            | E     | e     | 04 35 23 |          | Tremor                                              |             |            |       | Lr       | 10 04    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | M        | 11 31    |          |                                                           |  |
| 12      | PORT BLAIR                                                                                                                            | E     | i     | 06 45 10 |          | Slight                                              |             | PORT BLAIR | E     | eP       | 09 03 05 | 3370     |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | PP       | 04 07    |          |                                                           |  |
| 12      | Epic: 16°S, 177°W. Fiji Islands Region<br>H = 09h 58m 22s (U.S.C.G.S)<br>Mag. 6½ (Pas), (Berk).                                       |       |       |          |          |                                                     |             |            |       |          | iS       | 08 05    |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | Lq       | 09 05    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | M        | 13 45    |          |                                                           |  |
|         | CHATRA                                                                                                                                | Z     | i     | 10 16 00 |          |                                                     | 15          | CALCUTTA   | E     | iP       | 09 03 19 | 3850     | Initial ground movement towards West.                     |  |
|         |                                                                                                                                       | E     | i     | 25 00    |          |                                                     |             |            |       | PP       | 04 36    |          |                                                           |  |
|         | AGRA                                                                                                                                  | Z     | e     | 10 17 24 |          |                                                     |             |            |       | iS       | 08 49    |          |                                                           |  |
|         |                                                                                                                                       |       | e     | 27 01    |          |                                                     |             |            |       | SS       | 10 56    |          |                                                           |  |
|         |                                                                                                                                       | N     | i     | 33 01    |          |                                                     |             |            |       | Lr       | 12 51    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | M        | 15 34    |          |                                                           |  |
|         | DEHRA DUN                                                                                                                             | NE    | e     | 10 18 19 |          | Phases not clear                                    |             | CHATRA     | ZNE   | iP       | 09 03 23 | 3660     |                                                           |  |
|         |                                                                                                                                       |       | i     | 26 24    |          |                                                     |             |            |       | iS       | 08 41    |          |                                                           |  |
|         | SHILLONG                                                                                                                              | N     | e     | 10 18 28 |          | Phases not clear                                    |             | TOCKLAI    | E     | eP       | 09 03 27 |          | Distant                                                   |  |
|         |                                                                                                                                       |       | e     | 23 41    |          |                                                     |             |            |       |          |          |          |                                                           |  |
|         | POONA                                                                                                                                 | Z     | e     | 10 18 29 |          | Phases not clear surface waves seen.                |             | BORAKO     | NE    | iP       | 09 03 43 | 3670     | Other phases unidentifiable due to overlapping of phases. |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             | N          |       | iS       | 09 01    |          |                                                           |  |
|         | KODAIKANAL                                                                                                                            | E     | e     | 10 20 10 |          | Tremor                                              |             | AGRA       | ZNE   | iP       | 09 04 25 |          | Initial ground motion towards West and compression.       |  |
|         | COLOMBO                                                                                                                               | E     | e     | 10 26 00 |          |                                                     |             |            | E     | i        | 04 46    |          |                                                           |  |
|         |                                                                                                                                       |       | e     | 53 15    |          |                                                     |             |            |       | i        | 04 58    |          |                                                           |  |
|         |                                                                                                                                       |       | e     | 59 05    |          |                                                     |             |            | EZ    | i        | 05 18    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | PP       | 05 54    |          |                                                           |  |
|         | BOMBAY                                                                                                                                | N     | e     | 10 27 40 |          | Distant                                             |             |            | ZNE   | PPP      | 06 20    |          |                                                           |  |
|         |                                                                                                                                       |       | e     | 34 03    |          |                                                     |             |            | E     | PcP      | 06 38    |          |                                                           |  |
| 12      | SHILLONG                                                                                                                              | Z     | eP    | 18 11 51 |          | Slight, distant                                     |             |            | ZNE   | i?       | 08 18    |          |                                                           |  |
| 12      | TOCKLAI                                                                                                                               | E     | e     | 19 00 08 |          | Tremor, distant                                     |             |            |       | iS, Scp, |          |          |                                                           |  |
| 12      | SHILLONG                                                                                                                              | Z     | eP    | 23 47 58 |          | Slight, distant                                     |             |            |       | PcS      | 10 22    |          |                                                           |  |
| 13      | SHILLONG                                                                                                                              | Z     | eP    | 00 02 34 |          | Slight, distant                                     |             |            |       | EZ       | i        | 10 42    |                                                           |  |
| 13      | Epic: Caspian Sea. H = 00h 32m 55s (U.S.C.G.S)                                                                                        |       |       |          |          |                                                     |             |            |       | NZ       | i        | 11 06    |                                                           |  |
|         | DEHRA DUN                                                                                                                             | NE    | eP    | 00 38 49 | 2990     | Feeble                                              |             | DEHRA DUN  | NE    | eP       | 09 04 34 | 4410     |                                                           |  |
|         |                                                                                                                                       |       | iS    | 43 25    |          |                                                     |             | N          |       | PP       | 05 11    |          |                                                           |  |
|         | CHATRA                                                                                                                                | Z     | iP    | 00 40 01 |          | Feeble, distant                                     |             |            |       | PPP      | 06 39    |          |                                                           |  |
|         | SHILLONG                                                                                                                              | Z     | iP    | 00 40 35 |          | Slight, distant rarefaction                         |             |            |       | iS       | 10 38    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | SS       | 13 18    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | SSS      | 14 09    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | Lr       | 15 37    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | M        | 18 23    |          | Peri = 13 $\mu$ = 16                                      |  |
| 13      | Epic: 51°N, 176°W. Aleutian Islands.<br>H = 15h 30m 42s (U.S.C.G.S)                                                                   |       |       |          |          |                                                     |             | MADRAS     | E     | iP       | 09 04 39 | 4480     | Initial ground movement towards East.                     |  |
|         | SHILLONG                                                                                                                              | Z     | eP    | 15 42 06 |          | Tremor                                              |             |            |       | PP       | 05 16    |          |                                                           |  |
| 13      | CHATRA                                                                                                                                | Z     | iP    | 22 29 40 | 210      | Feeble                                              |             |            |       | PPP      | 06 49    |          |                                                           |  |
|         | SHILLONG                                                                                                                              | Z     | eP    | 22 29 58 |          | Slight, near                                        |             |            |       | iS       | 10 47    |          |                                                           |  |
| 14      | CHATRA                                                                                                                                | Z     | i     | 04 47 29 |          | Slight, distant                                     |             |            |       | e        | 10 52    |          |                                                           |  |
| 14      | SHILLONG                                                                                                                              | Z     | eP    | 07 52 19 |          | Near, slight                                        |             |            |       | e        | 11 00    |          |                                                           |  |
| 14      | SHILLONG                                                                                                                              | Z     | eP    | 11 39 33 |          | Distant, slight                                     |             | SEHORE     | NE    | e        | 09 04 43 |          | Very distant, phases not clear                            |  |
| 14      | SHILLONG                                                                                                                              | Z     | eP    | 13 01 53 |          | Near, slight                                        |             |            |       | i        | 11 32    |          |                                                           |  |
| 14      | SHILLONG                                                                                                                              | Z     | iP    | 19 39 53 |          | Slight, distant rarefaction                         | 15          | HYDERABAD  | NE    | iP       | 09 04 46 | 4460     | Initial ground movement towards North and East.           |  |
|         | TOCKLAI                                                                                                                               | E     | eP    | 19 40 23 |          | Slight, near                                        |             |            |       | PP       | 06 18    |          |                                                           |  |
| 15      | DEHRA DUN                                                                                                                             | NE    | e     | 00 52 53 |          | Tremor                                              |             |            |       | PPP      | 06 58    |          |                                                           |  |
| 15      | SHILLONG                                                                                                                              | Z     | ePg   | 05 13 15 |          | Slight, near                                        |             |            |       | iS       | 10 53    |          |                                                           |  |
|         |                                                                                                                                       |       | eSg   | 14 21    |          |                                                     |             |            |       | e        | 11 16    |          |                                                           |  |
|         | TOCKLAI                                                                                                                               | E     | e     | 05 14 23 |          | Slight, near                                        |             |            |       | SS       | 13 45    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | N        | SSS      | 14 44    |                                                           |  |
| 15      | Epic: 23°N, 121°E. Formosa. 16 killed, many injured and extensive property damage.<br>H = 08h 57m 04s (U.S.C.G.S)<br>Mag: 6½-7 (Pas). |       |       |          |          |                                                     |             | COLOMBO    | E     | i        | 09 04 57 |          |                                                           |  |
|         | SHILLONG                                                                                                                              | ZE    | iP    | 09 02 44 | 3000     | Ground movement towards North, West and compression |             |            |       | iS       | 11 28    |          |                                                           |  |
|         |                                                                                                                                       | N     | eP    | 02 48    |          |                                                     |             |            |       | L        | 17 52    |          |                                                           |  |
|         |                                                                                                                                       |       | PP    | 03 18    |          |                                                     |             |            |       |          |          |          |                                                           |  |
|         |                                                                                                                                       | NE    | iS    | 07 21    |          |                                                     |             |            |       |          |          |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             | POONA      | Z     | eP       | 09 05 12 | 5030     | Peri = 20 $\mu$ = 30 S.                                   |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            | NE    | iS       | 11 53    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            | N     | iSS      | 15 06    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | Lr       | 17 56    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | Mn       | 24 25    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             | KODAIKANAL | E     | iP       | 09 05 18 | 5050     | Initial ground movement towards West.                     |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | PP       | 07 03    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | PPP      | 07 51    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | iS       | 12 00    |          |                                                           |  |
|         |                                                                                                                                       |       |       |          |          |                                                     |             |            |       | SS       | 15 15    |          |                                                           |  |



| DATE | STATION                                                                                    | COMPT | PHASE | G. M. T. | Δ    | REMARKS                       | DATE        | STATION    | COMPT    | PHASE | G. M. T. | Δ        | REMARKS                                |         |
|------|--------------------------------------------------------------------------------------------|-------|-------|----------|------|-------------------------------|-------------|------------|----------|-------|----------|----------|----------------------------------------|---------|
|      |                                                                                            |       |       | h. m. s. | km   |                               | August 1959 |            |          |       | h. m. s. | km       |                                        |         |
| 15   | KODAIKANAL                                                                                 | E     | Lr    | 09 18 15 |      |                               | 17          | BOMBAY     | N        | e     | 01 30 02 |          | Slight                                 |         |
|      | Contd.                                                                                     |       | M     | 22 12    |      | Peri. = 15 secs<br>Δ = 18     |             | Contd.     | NE       | e     | 44 14    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            | N        | e     | 49 20    |          |                                        |         |
|      | BOMBAY                                                                                     | NE    | eP    | 09 05 24 | 5050 |                               | 17          | POONA      | Z        | eP    | 01 42 19 |          | Slight, phases not clear.              |         |
|      |                                                                                            |       | PP    | 07 15    |      |                               |             |            |          |       |          |          |                                        |         |
|      |                                                                                            | E     | PPP   | 08 06    |      |                               |             |            |          |       |          |          |                                        |         |
|      |                                                                                            | NE    | iS    | 12 06    |      |                               | 17          | SHILLONG   | Z        | eP    | 04 33 04 |          | Slight, distant                        |         |
|      |                                                                                            | E     | PPS   | 12 36    |      |                               |             |            |          |       |          |          |                                        |         |
|      |                                                                                            | N     | SS    | 15 16    |      |                               | 17          | SHILLONG   | Z        | iP    | 04 39 12 |          | Distant, compression very slight       |         |
|      |                                                                                            | E     | Lq    | 15 46    |      |                               |             |            |          |       |          |          |                                        |         |
|      |                                                                                            | N     | Lr    | 17 14    |      |                               | 17          | SHILLONG   | Z        | eP    | 08 03 47 |          | Distant, slight                        |         |
|      |                                                                                            |       | M     | 24 29    |      | Peri. = 19, Δ = 249           |             |            |          |       |          |          |                                        |         |
|      |                                                                                            | E     | M     | 28 38    |      | Peri. = 17, Δ = 65            | 17          | DEHRA DUN  | NE       | i     | 08 11 33 |          | Feeble                                 |         |
| 15   | SHILLONG                                                                                   | Z     | iP    | 11 00 59 |      | Slight, compression, distant. | 17          | POONA      | Z        | iP    | 08 33 28 |          | Mild doubtful                          |         |
| 15   | SHILLONG                                                                                   | Z     | iP    | 12 14 28 |      | Slight, compression, distant. | 17          | SHILLONG   | Z        | eP    | 09 17 03 |          | Near, very slight                      |         |
| 15   | SHILLONG                                                                                   | Z     | ePg   | 13 28 42 | 110  | Slight, near                  | 17          | SHILLONG   | Z        | eP    | 11 03 42 |          | Tremor                                 |         |
|      |                                                                                            |       | eSg   | 28 56    |      |                               | 17          | SHILLONG   | Z        | eP    | 12 46 42 |          | Slight, distant                        |         |
| 15   | SHILLONG                                                                                   | Z     | eP    | 17 46 59 |      | Slight, near                  | 17          | SHILLONG   | Z        | eP    | 17 46 09 |          | Slight, near.                          |         |
| 15   | Epc: 55°N, 162°E. Near East Coast of Kamchatka.<br>H = 18h 41m 56s (U.S.C.G.S)             |       |       |          |      |                               |             | 17         | SHILLONG | ZE    | i        | 21 15 42 |                                        | Distant |
|      | SHILLONG                                                                                   | Z     | iP    | 18 51 54 |      | Slight, distant rarefaction   |             |            |          |       |          |          |                                        |         |
|      | POONA                                                                                      | Z     | e     | 18 53 29 |      | Feeble, phases not clear.     |             | TOCKLAI    | E        | eP    | 21 15 55 |          | Distant                                |         |
| 15   | SHILLONG                                                                                   | Z     | ePg   | 23 34 49 | 50   | Slight                        |             | SHILLONG   | ZNE      | eP    | 21 16 07 | 7660     |                                        |         |
|      |                                                                                            |       | eSg   | 34 54    |      |                               |             |            | N        | PP    | 18 45    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | PPP   | 20 22    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | PcS   | 20 22    |          |                                        |         |
| 16   | Epc: 21°S, 169°E. Loyalty Islands Region.<br>H = 00h 51m 40s (U.S.C.G.S)<br>Mag: 6 (Berk). |       |       |          |      |                               |             |            | NE       | iS    | 25 12    |          |                                        |         |
|      | SHILLONG                                                                                   | ZE    | eP    | 01 04 38 | 9530 |                               |             | N          | SKSI     | 26 13 |          |          |                                        |         |
|      |                                                                                            |       | eS    | 15 11    |      |                               |             |            | e        | 29 59 |          |          |                                        |         |
|      | DEHRA DUN                                                                                  | NE    | i     | 01 15 19 |      |                               |             |            | SSS      | 33 06 |          |          |                                        |         |
|      |                                                                                            |       | i     | 28 42    |      |                               |             |            | Lq       | 34 43 |          |          |                                        |         |
|      | COLOMBO                                                                                    | E     | e     | 01 15 28 |      |                               |             | PORT BLAIR | E        | e     | 21 16 11 |          |                                        |         |
|      |                                                                                            |       | e     | 42 52    |      |                               |             |            |          | e     | 19 46    |          |                                        |         |
|      |                                                                                            |       | M1    | 48 30    |      |                               |             |            |          | i     | 24 25    |          |                                        |         |
|      |                                                                                            |       | M2    | 53 05    |      | Amp.: 0.4 mm                  |             |            |          | e     | 24 47    |          |                                        |         |
|      | HYDERABAD                                                                                  | N     | e     | 01 15 57 |      |                               |             |            |          | e     | 26 00    |          |                                        |         |
|      |                                                                                            |       | M     | 45 36    |      | Peri. = 18, Δ = 8             |             | BOKARO     | N        | iP    | 21 16 34 | 8350     | Initial ground movement towards South. |         |
|      | BOMBAY                                                                                     | NE    | e     | 01 16 23 |      |                               |             |            | PcP      | 16 49 |          |          |                                        |         |
|      |                                                                                            | N     | e     | 28 30    |      |                               |             |            | PP       | 19 25 |          |          |                                        |         |
|      |                                                                                            |       | M     | 50 22    |      | Peri. = 15, Δ = 2             |             |            | iS       | 26 13 |          |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            | Lq       | 36 19 |          |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            | Lr       | 39 58 |          |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            | M        | 46 19 |          |          | Peri. = 30, Δ = 63                     |         |
| 16   | Epc: 22°N, 121°E. Formosa Felt.<br>H = 01h 21m 05s (U.S.C.G.S)                             |       |       |          |      |                               |             | CHATRA     | Z        | iP    | 21 16 39 | 8610     |                                        |         |
|      | SHILLONG                                                                                   | ZE    | iP    | 01 26 52 |      | Slight, distant compression   |             |            | NE       | iS    | 26 30    |          |                                        |         |
|      | POONA                                                                                      | Z     | i     | 01 29 18 |      |                               |             | COLOMBO    | E        | e     | 21 16 44 |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | e     | 26 42    |          |                                        |         |
| 16   | TOCKLAI                                                                                    | E     | eP    | 02 02 00 |      | Slight, near                  |             |            |          | e     | 41 25    |          |                                        |         |
|      | SHILLONG                                                                                   | Z     | ePg   | 02 02 06 | 410  | Slight                        |             | MADRAS     | E        | eP    | 21 16 45 | 8560     |                                        |         |
|      |                                                                                            |       | eSg   | 02 50    |      |                               |             |            |          | PcP   | 16 52    |          |                                        |         |
|      | CHATRA                                                                                     | Z     | iP    | 02 02 37 |      |                               |             |            |          | PP    | 19 44    |          |                                        |         |
|      |                                                                                            | NE    | iS    | 03 45    |      |                               |             |            |          | PPP   | 21 35    |          |                                        |         |
| 16   | SHILLONG                                                                                   | Z     | eP    | 03 21 56 |      | Slight, near                  |             |            |          | eS    | 26 34    |          |                                        |         |
| 16   | SHILLONG                                                                                   | Z     | eP    | 08 12 43 |      | Slight, distant               |             |            |          | ScS   | 26 53    |          |                                        |         |
| 16   | SHILLONG                                                                                   | Z     | iPg   | 13 12 42 | 150  | Slight, rarefaction           |             |            |          | PS    | 27 12    |          |                                        |         |
|      |                                                                                            |       | Sg    | 13 01    |      |                               |             |            |          | PPS   | 27 32    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | SS    | 31 33    |          |                                        |         |
| 17   | Epc: 22°N, 121°E. Formosa Felt.<br>H = 01h 02m 37s (U.S.C.G.S)                             |       |       |          |      |                               |             |            |          |       | SSS      | 35 02    |                                        |         |
|      | SHILLONG                                                                                   | ZE    | iP    | 01 06 20 |      | Slight, distant compression   |             | KODAIKANAL | E        | e     | 21 16 58 |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | e     | 21 58    |          |                                        |         |
|      | DEHRA DUN                                                                                  | NE    | eP    | 01 10 14 | 4270 | Feeble                        |             |            |          | e     | 27 13    |          |                                        |         |
|      |                                                                                            |       | iS    | 16 10    |      |                               |             |            |          | e     | 32 40    |          |                                        |         |
|      | POONA                                                                                      | Z     | eP    | 01 10 49 |      | Slight, phases not clear.     |             |            |          | e     | 35 58    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | e     | 39 28    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | e     | 43 34    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             | HYDERABAD  | N        | e     | 21 17 02 | 8900     |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | iS    | 27 05    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | PS    | 27 30    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | SS    | 32 41    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | Lq    | 39 53    |          |                                        |         |
|      |                                                                                            |       |       |          |      |                               |             |            |          | Lr    | 43 30    |          |                                        |         |



| DATE | STATION                                                                                       | COMPT | PHASE  | G. h. | M. m. | T. s. | $\Delta$ km | REMARKS                | DATE | STATION    | COMPT     | PHASE | G. h. | M. m. | T. s. | $\Delta$ km | REMARKS              |
|------|-----------------------------------------------------------------------------------------------|-------|--------|-------|-------|-------|-------------|------------------------|------|------------|-----------|-------|-------|-------|-------|-------------|----------------------|
| 17   | HYDERABAD                                                                                     | N     | M      | 21    | 50    | 02    |             | Per: 15, $\mu$ = 13    | 18   | SHILLONG   | N         | e     | 06    | 51    | 51    |             |                      |
|      | AGRA                                                                                          | ZE    | iP     | 21    | 17    | 10    | 9220        | Initial ground         |      |            |           | i     | 07    | 02    | 10    |             |                      |
|      |                                                                                               | N     | eP     | 17    | 10    |       |             | movement towards       |      |            |           | e     | 05    | 32    |       |             |                      |
|      |                                                                                               | ZNE   | PcP    | 17    | 24    |       |             | North - West.          |      |            |           | i     | 43    | 02    |       |             |                      |
|      |                                                                                               | ZE    | i      | 19    | 04    |       |             | and compression        |      | DEHRA DUN  | NE        | e     | 06    | 55    | 47    |             |                      |
|      |                                                                                               | PP    |        | 20    | 36    |       |             |                        |      |            | N         | e     | 57    | 26    |       |             |                      |
|      |                                                                                               | PPP   | i      | 22    | 14    |       |             |                        |      |            |           | e     | 58    | 16    |       |             |                      |
|      |                                                                                               | ZNE   | iS,SKS | 27    | 29    |       |             |                        |      |            |           | i     | 07    | 02    | 22    |             |                      |
|      |                                                                                               | E     | ScS    | 27    | 44    |       | 28 06       |                        |      |            |           | e     | 05    | 46    |       |             |                      |
|      |                                                                                               | NE    | PPS    | 28    | 32    |       |             |                        |      |            |           | e     | 06    | 29    |       |             |                      |
|      |                                                                                               | N     | i      | 30    | 34    |       |             |                        |      |            |           | e     | 08    | 36    |       |             |                      |
|      |                                                                                               | ZN    | SS     | 33    | 10    |       |             |                        |      | TOCKLAI    | E         | e     | 05    | 55    | 56    |             | Very distant         |
|      |                                                                                               | E     | i      | 34    | 38    |       |             |                        |      | CHATRA     | Z         | i     | 06    | 56    | 02    |             | Distant              |
|      |                                                                                               | SSS   |        | 36    | 26    |       |             |                        |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               | NE    | Lq     | 39    | 20    |       |             |                        |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               | ZNE   | M      | 39    | 20    |       |             | Per: 28, $\mu$ = 54 mm |      | POONA      | Z         | ePKP1 | 06    | 56    | 08    | 12780       |                      |
|      | SEHORE                                                                                        | NE    | eP     | 21    | 17    | 15    | 9260        | Other phases           |      |            | ZN        | ePP   | 57    | 11    |       |             |                      |
|      |                                                                                               |       | eS     | 27    | 36    |       |             | unidentifiable         |      |            | N         | PPP   | 59    | 37    |       |             |                      |
|      | DEHRA DUN                                                                                     | NE    | e      | 21    | 17    | 20    | 9360        |                        |      |            |           | SKS1  | 07    | 02    | 48    |             |                      |
|      |                                                                                               | N     | PP     | 20    | 20    |       |             |                        |      |            |           | SKS2  | 03    | 11    |       |             |                      |
|      |                                                                                               |       | PPP    | 22    | 49    |       |             |                        |      |            |           | PS    | 06    | 51    |       |             |                      |
|      |                                                                                               |       | iS     | 27    | 38    |       |             |                        |      |            |           | PKKP1 | 06    | 56    |       |             |                      |
|      |                                                                                               |       | e      | 32    | 44    |       |             |                        |      |            |           | PPS   | 07    | 59    |       |             |                      |
|      |                                                                                               |       | e      | 35    | 35    |       |             |                        |      |            |           | SS    | 13    | 03    |       |             |                      |
|      |                                                                                               |       | Lq     | 38    | 48    |       |             |                        |      |            |           | SSP   | 13    | 16    |       |             |                      |
|      |                                                                                               |       | Lr     | 42    | 11    |       |             | Per: 27, $\mu$ = 17.5  |      |            |           | SSS   | 17    | 11    |       |             |                      |
|      |                                                                                               |       | M      | 48    | 33    |       |             |                        |      |            |           | Lq    | 25    | 41    |       |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | Lr    | 31    | 22    |       |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | Mn    | 46    | 00    |       |             | Per: 20, $\mu$ = 129 |
|      | POONA                                                                                         | Z     | iP     | 21    | 17    | 23    | 9420        |                        |      | BOKARO     | N         | i     | 06    | 56    | 26    |             |                      |
|      |                                                                                               | NE    | iS     | 27    | 51    |       |             |                        |      |            |           | i     | 07    | 05    | 48    |             | Phases unidenti-     |
|      |                                                                                               | N     | SS     | 33    | 20    |       |             |                        |      |            |           | e     | 33    | 35    |       |             | fiable due to        |
|      |                                                                                               |       | PKKP1  | 35    | 20    |       |             |                        |      |            |           |       |       |       |       |             | over lapping of      |
|      |                                                                                               |       | SSS    | 36    | 44    |       |             |                        |      |            |           |       |       |       |       |             | phases.              |
|      |                                                                                               |       | PKKS1  | 38    | 41    |       |             |                        |      | COLOMBO    | E         | e     | 06    | 56    | 36    |             |                      |
|      |                                                                                               |       | Lq     | 40    | 19    |       |             |                        |      |            |           | e     | 07    | 05    | 55    |             |                      |
|      |                                                                                               |       | Lr     | 44    | 22    |       |             |                        |      |            |           | e     | 36    | 26    |       |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | e     | 47    | 11    |       |             |                      |
|      | BOMBAY                                                                                        | NE    | eP     | 21    | 17    | 30    | 9550        |                        |      | SEHORE     | N         | e     | 06    | 56    | 39    |             |                      |
|      |                                                                                               | E     | PP     | 20    | 49    |       |             |                        |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               | NE    | iS     | 28    | 04    |       |             |                        |      | BOMBAY     | N         | e     | 06    | 57    | 04    |             |                      |
|      |                                                                                               |       | PS     | 29    | 06    |       |             |                        |      |            | E         | e     | 57    | 12    |       |             |                      |
|      |                                                                                               | N     | PPS    | 29    | 41    |       |             |                        |      |            | NE        | e     | 57    | 27    |       |             |                      |
|      |                                                                                               | E     | e      | 29    | 53    |       |             |                        |      |            | N         | e     | 58    | 11    |       |             |                      |
|      |                                                                                               | N     | e      | 30    | 53    |       |             |                        |      |            |           | e     | 07    | 02    | 52    |             |                      |
|      |                                                                                               |       | SS     | 33    | 37    |       |             |                        |      |            |           | e     | 04    | 06    |       |             |                      |
|      |                                                                                               |       | SSS    | 37    | 07    |       |             |                        |      |            |           | e     | 06    | 45    |       |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | e     | 08    | 04    |       |             |                      |
| 17   | SHILLONG                                                                                      | Z     | eP     | 23    | 53    | 08    |             |                        |      |            | NE        | e     | 13    | 17    |       |             |                      |
| 18   | Epc: 22°N, 121°E. Near South Coast of Formosa. H: 00h 33m 43s (U.S.C.G.S)                     |       |        |       |       |       |             |                        |      |            | HYDERABAD | N     | PP    | 06    | 57    | 17          | 130 40               |
|      | SHILLONG                                                                                      | ZE    | eP     | 00    | 37    | 15    | 1750        | Slight                 |      |            |           | PPP   | 59    | 49    |       |             |                      |
|      |                                                                                               |       | e      | 40    | 12    |       |             |                        |      |            |           | SKS2  | 07    | 03    | 06    |             |                      |
|      | POONA                                                                                         | Z     | i      | 00    | 38    | 51    |             | Feeble?                |      |            |           | e     | 04    | 17    |       |             |                      |
|      | DEHRA DUN                                                                                     | NE    | e      | 00    | 39    | 01    |             | Feeble                 |      |            |           | PS    | 07    | 05    |       |             |                      |
|      |                                                                                               |       | i      | 47    | 16    |       |             |                        |      |            |           | PPS   | 08    | 17    |       |             |                      |
|      |                                                                                               |       | e      | 48    | 20    |       |             |                        |      |            |           | SS    | 13    | 11    |       |             |                      |
|      | TOCKLAI                                                                                       | E     | e      | 00    | 40    | 22    |             | Slight, distant        |      |            |           | SSP   | 13    | 41    |       |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | Lq    | 26    | 17    |       |             |                      |
| 18   | POONA                                                                                         | Z     | iP     | 00    | 42    | 02    | 4740        |                        |      |            |           | Lr    | 32    | 20    |       |             |                      |
|      |                                                                                               |       | i      | 42    | 44    |       |             |                        |      |            |           | M     | 41    | 32    |       |             | Per: 15 sec          |
|      |                                                                                               | NE    | S      | 48    | 26    |       |             |                        |      |            |           |       |       |       |       |             | $\mu$ = 12           |
|      | BOKARO                                                                                        | N     | i      | 00    | 45    | 33    |             |                        |      | PORT BLAIR | E         | i     | 06    | 57    | 36    |             |                      |
|      |                                                                                               |       | i      | 46    | 35    |       |             |                        |      |            |           | i     | 07    | 14    | 06    |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | e     | 32    | 17    |       |             |                      |
| 18   | SHILLONG                                                                                      | Z     | eP     | 04    | 44    | 16    |             | Distant, slight        |      |            |           |       |       |       |       |             |                      |
| 18   | TOCKLAI                                                                                       | E     | i      | 06    | 38    | 13    |             | Slight, near           |      |            |           |       |       |       |       |             |                      |
|      | SHILLONG                                                                                      | Z     | eP     | 05    | 38    | 16    |             | Distant, slight        |      |            |           |       |       |       |       |             |                      |
|      | CHATRA                                                                                        | ZNE   | iP     | 06    | 39    | 50    | 1030        | Moderate               |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               |       | iS     | 41    | 35    |       |             |                        |      |            |           |       |       |       |       |             |                      |
| 18   | Epc: 44½°N, 111°W. Yellowstone Park, Wyoming. Many killed and injured. Major property damage. |       |        |       |       |       |             |                        |      |            | MADRAS    | E     | e     | 06    | 57    | 50          |                      |
|      | AGRA                                                                                          | Z     | iP     | 06    | 51    | 44    | 1200        | Amplitude very         |      | 18         | SHILLONG  | Z     | eP    | 15    | 44    | 23          |                      |
|      |                                                                                               | ZN    | PP     | 56    | 09    |       |             | large, light           |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               |       | PPP    | 58    | 25    |       |             | spot going out         |      |            |           |       |       |       |       |             |                      |
|      |                                                                                               | E     | i      | 07    | 03    | 41    |             | of the slit.           |      |            |           |       |       |       |       |             | Feeble               |
|      |                                                                                               |       | SS     | 11    | 21    |       |             |                        |      | DEHRA DUN  | NE        | e     | 15    | 44    | 37    |             |                      |
|      |                                                                                               |       |        |       |       |       |             |                        |      |            |           | e     | 51    | 11    |       |             |                      |

| DATE    | STATION                                                                                                   | COMPT   | PHASE      | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                          | DATE    | STATION                                                                             | COMPT    | PHASE                 | G. M. T.<br>h. m. s.                         | Δ<br>km | REMARKS                      |
|---------|-----------------------------------------------------------------------------------------------------------|---------|------------|----------------------|---------|----------------------------------|---------|-------------------------------------------------------------------------------------|----------|-----------------------|----------------------------------------------|---------|------------------------------|
| 18      | BOMBAY                                                                                                    | N       | e          | 15 45 54             |         | Slight                           | 21      | HYDERABAD                                                                           | N        | e                     | 08 26 35                                     |         |                              |
| Cont'd. |                                                                                                           |         | e          | 55 40                |         |                                  | Cont'd. |                                                                                     |          | e                     | 28 47                                        |         |                              |
|         |                                                                                                           |         | e          | 56 55                |         |                                  |         |                                                                                     |          | M                     | 47 42                                        |         | Peri = 21, $\mu = 13$        |
|         | BOKARO                                                                                                    | N       | i          | 16 24 39             |         |                                  |         | BOMBAY                                                                              | N        | e                     | 08 27 12                                     |         |                              |
|         | KODAIKANAL                                                                                                | E       | e          | 16 32 03             |         | Tremor                           |         |                                                                                     |          | e                     | 33 33                                        |         | Peri = 19, $\mu = 3$         |
|         | COLOMBO                                                                                                   | E       | e          | 16 33 21             |         |                                  | 21      | Epc: 50°S, 140°E. In Indian Ocean South of Australia. - H = 09h 37m 49s (U.S.C.G.S) |          |                       |                                              |         |                              |
|         |                                                                                                           |         | e          | 40 31                |         |                                  |         |                                                                                     |          | M                     | 54 19                                        |         |                              |
| 18      | SHILLONG                                                                                                  | Z       | ePg<br>eSg | 18 32 15<br>32 59    | 380     | Slight                           |         | SHILLONG                                                                            | Z        | eP                    | 09 50 34                                     |         | Slight, distant              |
| 18      | SHILLONG                                                                                                  | Z       | iP         | 22 14 13             |         | Slight, near rarefaction         |         | CHATRA                                                                              | Z        | e                     | 09 50 52                                     |         | Slight, distant              |
| 19      | SHILLONG                                                                                                  | Z       | iP         | 04 08 43             |         | Compression. Distant, slight     |         | POONA                                                                               | Z        | e                     | 09 50 59                                     |         | Slight                       |
| 19      | SHILLONG                                                                                                  | Z       | ePg<br>eSg | 06 41 39<br>41 52    | 110     | Slight                           |         | COLOMBO                                                                             | E        | e                     | 09 59 33                                     |         |                              |
| 19      | SHILLONG                                                                                                  | Z       | iP         | 07 14 03             |         | Distant, compression, slight.    |         |                                                                                     |          | e                     | 10 13 31                                     |         | Amp: 0.3 mm                  |
| 19      | SHILLONG                                                                                                  | Z       | iP         | 08 10 37             |         | Distant, rarefaction, slight.    |         | HYDERABAD                                                                           | N        | M                     | 10 22 39                                     |         | Peri = 21 secs<br>$\mu = 8$  |
| 19      | SHILLONG                                                                                                  | Z       | eP         | 09 47 48             |         |                                  | 21      | SHILLONG                                                                            | Z        | ePg<br>eSg            | 18 31 40<br>32 00                            | 170     | Slight                       |
| 20      | SHILLONG                                                                                                  | Z       | iP         | 07 39 17             |         | Distant, slight                  |         | CHATRA                                                                              | Z<br>ZE  | iP<br>iS              | 20 40 04<br>40 25                            | 170     | Slight                       |
| 20      | SHILLONG                                                                                                  | Z       | eP         | 09 35 43             |         | Distant, slight                  | 21      | SHILLONG                                                                            | Z        | eP                    | 21 00 39                                     |         | Distant, slight              |
| 20      | Epc: 29°S, 78°E. Indian Ocean<br>- H = 12h 20m 08s (U.S.C.G.S)                                            |         |            |                      |         |                                  |         | CHATRA                                                                              | Z<br>ZNE | iP<br>eS              | 21 01 49<br>02 15                            | 220     | Slight                       |
|         | POONA                                                                                                     | Z       | iP         | 12 30 07             |         | Feeble, distant phases not clear | 22      | SHILLONG                                                                            | Z        | eP                    | 06 14 49                                     |         | Slight, distant              |
|         | SHILLONG                                                                                                  | Z       | eP         | 12 30 52             |         | Distant, slight                  | 22      | SHILLONG                                                                            | Z        | e                     | 16 09 19                                     |         | Slight                       |
|         | COLOMBO                                                                                                   | E       | e          | 12 35 25             |         |                                  | 22      | SHILLONG                                                                            | Z        | iP                    | 19 23 03                                     |         | Slight, distant rarefaction  |
|         |                                                                                                           |         | e          | 43 12                |         |                                  | 22      | CHATRA                                                                              | Z        | i                     | 23 53 06                                     |         | Feeble, distant              |
|         |                                                                                                           |         | e          | 53 50                |         |                                  |         | SHILLONG                                                                            | Z        | iP                    | 23 53 46                                     |         | Slight, distant compression. |
|         |                                                                                                           |         | Max        | 58 25                |         | Amp: 0.4 mm                      | 23      | DEHRA DUN                                                                           | NE       | eP<br>iS              | 03 21 03<br>23 09                            | 1230    | Slight, phases not clear     |
|         | KODAIKANAL                                                                                                | E       | e          | 12 39 17             |         | Tremor                           | 23      | SHILLONG                                                                            | Z        | eP                    | 03 23 35                                     |         | Slight, distant rarefaction  |
|         | DEHRA DUN                                                                                                 | NE      | e          | 12 45 07             |         | Feeble                           |         | POONA                                                                               | Z        | e                     | 03 23 55                                     |         | Mild, near phases not clear  |
|         | HYDERABAD                                                                                                 | N       | M          | 12 48 32             |         | Peri = 21, $\mu = 10$            |         |                                                                                     |          | e                     | 24 26                                        |         |                              |
| 20      | DEHRA DUN                                                                                                 | NE      | e          | 13 46 24             |         | Tremor                           |         | BOMBAY                                                                              | N<br>E   | e<br>i                | 03 24 19<br>28 22                            |         | Very slight                  |
|         | SHILLONG                                                                                                  | Z       | eP         | 13 46 42             |         | Distant, slight                  |         | BOKARO                                                                              | NE<br>N  | e<br>e<br>e<br>e<br>i | 03 25 35<br>25 50<br>26 41<br>26 50<br>27 22 |         | Slight                       |
| 20      | DEHRA DUN                                                                                                 | NE      | e          | 22 13 29             |         | Tremor                           |         | HYDERABAD                                                                           | N        | S<br>M                | 03 26 33<br>28 19                            |         | Peri = 6, $\mu = 2$          |
|         | SHILLONG                                                                                                  | Z       | eP         | 22 16 00             |         | Distant, slight                  | 23      | CALCUTTA                                                                            | E        | e                     | 03 27 22                                     |         |                              |
| 21      | Epc: 38°N, 104°E. Kansu Province, China.<br>- H = 07h 13m 19s (U.S.C.G.S)                                 |         |            |                      |         |                                  |         |                                                                                     |          | e                     | 28 57                                        |         |                              |
|         | SHILLONG                                                                                                  | Z       | eP         | 07 17 12             |         | Distant, slight                  |         | MADRAS                                                                              | E        | e                     | 03 28 57                                     |         | Slight, phases not clear     |
|         | CHATRA                                                                                                    | Z       | iP<br>iS   | 07 17 52<br>21 30    | 2200    | Slight                           | 23      | SHILLONG                                                                            | Z        | eP                    | 05 44 20                                     |         | Distant, slight              |
| 21      | Epc: 50°S, 139°E. In Indian Ocean, South of Australia. - H = 08h 03m 15s (U.S.C.G.S)<br>Mag: 5.4-6 (Paw). |         |            |                      |         |                                  |         | BOKARO                                                                              | NE       | e                     | 05 46 34                                     |         | Slight, very poorly recorded |
|         | COLOMBO                                                                                                   | E       | e          | 08 15 26             |         |                                  |         | SHILLONG                                                                            | Z        | eP                    | 05 48 28                                     |         | Distant, slight              |
|         |                                                                                                           |         | S          | 25 01                |         |                                  |         | CHATRA                                                                              | Z<br>ZE  | iP<br>iS              | 11 24 29<br>24 48                            | 150     |                              |
|         |                                                                                                           |         | L          | 38 56                |         |                                  |         | SHILLONG                                                                            | Z        | ePg<br>eSg            | 12 25 04<br>25 51                            |         | Slight                       |
|         |                                                                                                           |         | M          | 45 11                |         | Amp: 0.5 mm                      |         | SHILLONG                                                                            | Z        | ePg<br>eSg            | 12 31 18<br>32 23                            |         | Near, slight                 |
|         | SHILLONG                                                                                                  | Z<br>E  | iP<br>eS   | 08 16 01<br>26 42    | 9730    |                                  | 23      | TOCKLAI                                                                             | E        | e                     | 15 09 37                                     |         | Tremor                       |
|         | DEHRA DUN                                                                                                 | NE      | e          | 08 16 07             |         |                                  | 23      | SHILLONG                                                                            | Z        | eP                    | 16 45 53                                     |         | Distant, slight              |
|         | POONA                                                                                                     | Z       | e          | 08 16 15             |         |                                  |         |                                                                                     |          |                       |                                              |         |                              |
|         | CHATRA                                                                                                    | Z       | i          | 08 16 15             |         | Distant                          |         |                                                                                     |          |                       |                                              |         |                              |
|         | BOKARO                                                                                                    | NE<br>E | e<br>e     | 08 21 54<br>26 49    |         | Phases not well developed        |         |                                                                                     |          |                       |                                              |         |                              |
|         | PORT BLAIR                                                                                                | E       | i          | 08 24 26             |         |                                  |         |                                                                                     |          |                       |                                              |         |                              |
|         | KODAIKANAL                                                                                                | E       | e          | 08 25 47             |         | Tremor                           |         |                                                                                     |          |                       |                                              |         |                              |

| DATE | STATION                                                                                                                                                   | COMPT            | PHASE                                                                     | G. M. T.<br>h. m. s.                                                                                           | Δ<br>km | REMARKS                                                                                        | DATE | STATION    | COMPT | PHASE    | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                                    |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------|------|------------|-------|----------|----------------------|---------|--------------------------------------------|
| 23   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 21 58 25                                                                                                       |         | Rarefaction, slight, distant                                                                   | 24   | KODAIKANAL | E-W   | e        | 22 06 23             |         | Contd. Contd.<br>Period = 18 sec<br>Δ = 27 |
| 23   | SHILLONG                                                                                                                                                  | Z                | iP                                                                        | 22 33 37                                                                                                       |         | Compression, distant, slight                                                                   |      |            |       | M        | 17 19                |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | ePg<br>eSg                                                                | 01 58 23<br>58 41                                                                                              |         | Near, slight                                                                                   | 24   | AGRA       | ZE    | iP       | 21 44 44             | 9800    | Period = 26<br>Amp = 30 mm                 |
| 24   | Epc: 25°N, 97°E. Burma. - H: 08h 13m 17s (Shillong)                                                                                                       |                  |                                                                           |                                                                                                                |         |                                                                                                |      | Z          | i     | 43 58    |                      |         |                                            |
|      | TOCKLAI                                                                                                                                                   | E                | eP                                                                        | 08 14 12                                                                                                       |         | Moderate, near                                                                                 |      | ZE         | i     | 44 46    |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | ZE               | iP<br>iS                                                                  | 08 14 37<br>15 22                                                                                              | 410     | Moderate, initial ground movement East. Rarefaction                                            |      | Z          | PP    | 47 14    |                      |         |                                            |
|      | CHATRA                                                                                                                                                    | Z                | iP                                                                        | 08 15 34                                                                                                       | 1020    | Moderate                                                                                       |      | ZNE        | PPP   | 49 18    |                      |         |                                            |
|      |                                                                                                                                                           | ZNE              | iS                                                                        | 17 19                                                                                                          |         |                                                                                                |      | ZN         | SKS   | 54 14    |                      |         |                                            |
|      | DEHRA DUN                                                                                                                                                 | NE               | eP<br>iS                                                                  | 08 17 25<br>20 14                                                                                              | 1670    | Feeble                                                                                         |      | ZNE        | iS    | 54 28    |                      |         |                                            |
|      |                                                                                                                                                           |                  |                                                                           |                                                                                                                |         |                                                                                                |      | NE         | ScS   | 54 54    |                      |         |                                            |
|      | BOKARO                                                                                                                                                    | N                | iS<br>i                                                                   | 08 17 35<br>19 00                                                                                              |         | Slight                                                                                         |      | ZN         | PPS   | 55 56    |                      |         |                                            |
|      |                                                                                                                                                           |                  |                                                                           |                                                                                                                |         |                                                                                                |      | ZNE        | SS    | 22 00 44 |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 12 39 04                                                                                                       |         | Distant, slight                                                                                |      | N          | SSS   | 04 04    |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | iP                                                                        | 13 00 37                                                                                                       |         | Compression, distant, slight                                                                   |      |            | i     | 07 16    |                      |         |                                            |
| 24   | Epc: 10°S, 161°E. Solomon Islands, - H: 15h 41m 40s (U.S.C.G.S)                                                                                           |                  |                                                                           |                                                                                                                |         | foreshock                                                                                      |      | ZNE        | M     |          |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | Z                | iP                                                                        | 15 53 33                                                                                                       |         | Slight, distant compression                                                                    |      |            |       |          |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 16 50 57                                                                                                       |         | Slight, distant                                                                                |      |            |       |          |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | e                                                                         | 19 06 17                                                                                                       |         | Near, slight                                                                                   |      |            |       |          |                      |         |                                            |
| 24   | Epc: 10°S, 161°E. Solomon Islands, - H: 21h 30m 46s (U.S.C.G.S). Mag: 7 (Pas).                                                                            |                  |                                                                           |                                                                                                                |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | PORT BLAIR                                                                                                                                                | E                | iP<br>PP<br>iS<br>PPS<br>M                                                | 21 42 22<br>44 57<br>51 35<br>52 02<br>10 12                                                                   | 7860    | Period = 15 sec<br>Δ = 14                                                                      |      |            |       |          |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | Z                | iP<br>PP<br>PPP<br>iS<br>SKS<br>ScS<br>PS<br>PPS<br>SS<br>SSS<br>Lq<br>Lr | 21 42 39<br>45 35<br>47 13<br>52 31<br>52 46<br>52 54<br>53 12<br>53 30<br>57 36<br>22 00 56<br>03 32<br>07 24 | 8530    |                                                                                                |      |            |       |          |                      |         |                                            |
|      | BOKARO                                                                                                                                                    | NE<br>E          | eP<br>i<br>PP<br>iS<br>Lq<br>Lr<br>M                                      | 21 43 14<br>44 05<br>46 29<br>53 29<br>22 06 40<br>10 40<br>17 29                                              | 9130    |                                                                                                |      |            |       |          |                      |         |                                            |
|      | MADRAS                                                                                                                                                    | E                | eP<br>i<br>i                                                              | 21 43 22<br>43 50<br>53 53                                                                                     |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | HYDERABAD                                                                                                                                                 | E                | iP<br>iS<br>PS<br>PPS<br>SS<br>Lq<br>Lq<br>Lr<br>M                        | 21 43 39<br>54 04<br>54 31<br>55 04<br>59 49<br>22 06 01<br>06 09<br>10 21<br>17 23                            | 9360    | Initial ground movement towards East.<br>Period = 18 sec<br>Δ = 19<br>Period = 15 sec<br>Δ = 4 |      |            |       |          |                      |         |                                            |
|      | KODAIKANAL                                                                                                                                                | E-W              | e<br>i<br>e<br>e                                                          | 21 43 41<br>53 39<br>55 17<br>59 23                                                                            |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | DEHRA DUN                                                                                                                                                 | NE<br>N          | e<br>PP<br>PPP<br>ScS<br>PS<br>SS<br>SSS<br>Lq<br>Lr<br>M                 | 21 44 08<br>47 41<br>49 39<br>54 44<br>55 42<br>22 00 39<br>04 19<br>07 23<br>12 29<br>19 25                   | 10000   |                                                                                                |      |            |       |          |                      |         |                                            |
|      | POONA                                                                                                                                                     | Z                | eP<br>e<br>PP<br>e<br>SKS<br>ScS<br>iS<br>SS<br>SSS<br>Mn                 | 21 43 56<br>44 03<br>46 20<br>53 16<br>54 32<br>54 43<br>54 58<br>22 01 13<br>01 28<br>38 39                   | 10260   | Period = 17, Δ = 11                                                                            |      |            |       |          |                      |         |                                            |
|      | BOMBAY                                                                                                                                                    | N<br>E<br>e<br>N | e<br>e<br>e<br>e                                                          | 21 44 31<br>44 49<br>55 05<br>22 10 41                                                                         |         |                                                                                                |      |            |       |          |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 23 33 32                                                                                                       |         | Slight, near                                                                                   |      |            |       |          |                      |         |                                            |
| 24   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 23 44 16                                                                                                       |         | Slight, distant                                                                                |      |            |       |          |                      |         |                                            |
| 25   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 08 19 59                                                                                                       |         |                                                                                                |      |            |       |          |                      |         |                                            |
| 25   | Epc: 6°S, 155°E. Solomon Islands - H: 13h 40m 06s (U.S.C.G.S)                                                                                             |                  |                                                                           |                                                                                                                |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 13 50 14                                                                                                       |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | CHATRA                                                                                                                                                    | Z                | i                                                                         | 13 51 41                                                                                                       |         | Feeble, distant                                                                                |      |            |       |          |                      |         |                                            |
| 25   | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 17 46 40                                                                                                       |         |                                                                                                |      |            |       |          |                      |         |                                            |
| 26   | Epc: 5°S, 152°E. New Britain. - H: 02h 29m 37s (U.S.C.G.S)                                                                                                |                  |                                                                           |                                                                                                                |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | Z                | eP                                                                        | 02 40 09                                                                                                       |         | Slight, distant                                                                                |      |            |       |          |                      |         |                                            |
| 26   | Epc: 5°S, 153°E. New Britain Region. - H: 04h 53m 00s (U.S.C.G.S)                                                                                         |                  |                                                                           |                                                                                                                |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | SHILLONG                                                                                                                                                  | Z                | iP                                                                        | 05 03 45                                                                                                       |         | Slight, distant rarefaction                                                                    |      |            |       |          |                      |         |                                            |
| 26   | PORT BLAIR                                                                                                                                                | E                | iPg<br>iSg                                                                | 05 24 01<br>24 07                                                                                              | 50      | Slight                                                                                         |      |            |       |          |                      |         |                                            |
| 26   | CHATRA                                                                                                                                                    | Z                | iP<br>ZE                                                                  | 07 44 38<br>44 55                                                                                              | 130     |                                                                                                |      |            |       |          |                      |         |                                            |
| 26   | DEHRA DUN                                                                                                                                                 | NE               | e<br>i                                                                    | 08 34 55<br>48 11                                                                                              |         | Feeble                                                                                         |      |            |       |          |                      |         |                                            |
| 26   | Epc: 18°N, 94°W. Vera Cruz, Mexico. - H: 08h 25m 30s (U.S.C.G.S) 40 killed, many injured, extensive damage throughout Tehuantepec Isthmus. Mag: 6½ (Pas). |                  |                                                                           |                                                                                                                |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | AGRA                                                                                                                                                      | Z                | iPKP<br>ZNE                                                               | 08 44 52<br>47 21                                                                                              |         | Distant, compression                                                                           |      |            |       |          |                      |         |                                            |
|      | CHATRA                                                                                                                                                    | Z                | iPKP<br>NE                                                                | 08 44 55<br>48 23                                                                                              |         |                                                                                                |      |            |       |          |                      |         |                                            |
|      | TOCKLAI                                                                                                                                                   | E                | e                                                                         | 08 44 56                                                                                                       |         | Distant                                                                                        |      |            |       |          |                      |         |                                            |

| DATE   | STATION                                                         | COMPT | PHASE | G. | M. | T. | $\Delta$ | REMARKS                                             | DATE        | STATION    | COMPT                                                                                                                                          | PHASE | G. | M. | T. | $\Delta$                                           | REMARKS                                               |  |
|--------|-----------------------------------------------------------------|-------|-------|----|----|----|----------|-----------------------------------------------------|-------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------|----|----|----|----------------------------------------------------|-------------------------------------------------------|--|
|        |                                                                 |       |       | h. | m. | s. | km       |                                                     | August 1959 |            |                                                                                                                                                |       | h. | m. | s. | km                                                 |                                                       |  |
| 25     | SHILLONG                                                        | Z     | ePKP  | 08 | 44 | 56 |          |                                                     | 27/28       | HYDERABAD  | N                                                                                                                                              | Lr    | 00 | 01 | 56 |                                                    |                                                       |  |
| Contd. |                                                                 | E     | e     | 45 | 23 |    |          |                                                     | Contd.      | Contd.     |                                                                                                                                                | M     | 03 | 52 |    |                                                    | Period 9 sec<br>Amp. 1 mm                             |  |
|        |                                                                 |       | e     | 47 | 40 |    |          |                                                     |             | MADRAS     | E                                                                                                                                              | e     | 23 | 57 | 38 |                                                    | Slight, initial<br>phases are not<br>discernable      |  |
|        |                                                                 |       | e     | 48 | 27 |    |          |                                                     |             |            |                                                                                                                                                | e     | 57 | 59 |    |                                                    |                                                       |  |
|        |                                                                 |       | e     | 48 | 29 |    |          |                                                     |             |            |                                                                                                                                                | e     | 00 | 01 | 17 |                                                    |                                                       |  |
|        | POONA                                                           | Z     | PKP1  | 08 | 44 | 59 |          |                                                     |             | POONA      | Z                                                                                                                                              | P     | 23 | 58 | 05 | 2440                                               | Slight                                                |  |
|        |                                                                 |       | e     | 48 | 07 |    |          |                                                     |             |            | ZNE                                                                                                                                            | S     | 00 | 02 | 04 |                                                    |                                                       |  |
|        | BOKARO                                                          | NE    | e     | 08 | 45 | 01 |          |                                                     |             | BOMBAY     | N                                                                                                                                              | e     | 23 | 58 | 40 |                                                    | Slight                                                |  |
|        |                                                                 |       | i     | 48 | 35 |    |          |                                                     |             |            | E                                                                                                                                              | i     | 59 | 11 |    |                                                    |                                                       |  |
|        | BOMBAY                                                          | N     | e     | 08 | 45 | 06 |          | Distant                                             |             |            | N                                                                                                                                              | e     | 59 | 34 |    |                                                    |                                                       |  |
|        |                                                                 |       | e     | 48 | 39 |    |          |                                                     |             |            | NE                                                                                                                                             | e     | 00 | 02 | 40 |                                                    |                                                       |  |
|        |                                                                 |       | e     | 09 | 08 | 24 |          |                                                     |             |            | NE                                                                                                                                             | eS    | 00 | 02 | 40 |                                                    |                                                       |  |
|        | PORT BLAIR                                                      | E     | i     | 08 | 45 | 24 |          |                                                     |             |            | N                                                                                                                                              | e     | 03 | 36 |    |                                                    |                                                       |  |
|        | MADRAS                                                          | E     | e     | 08 | 45 | 26 |          |                                                     |             | PORT BLAIR | E                                                                                                                                              | iP    | 23 | 59 | 23 |                                                    | Slight                                                |  |
|        | KODAIKANAL                                                      | E     | e     | 09 | 38 | 00 |          |                                                     |             |            |                                                                                                                                                | i     | 00 | 00 | 49 |                                                    |                                                       |  |
|        |                                                                 |       | e     | 09 | 38 | 00 |          |                                                     |             |            |                                                                                                                                                | e     | 01 | 34 |    |                                                    |                                                       |  |
| 26     | BOMBAY                                                          | N     | e     | 10 | 46 | 27 |          | Slight, distant                                     | 28          | SHILLONG   | Z                                                                                                                                              | iP    | 02 | 06 | 22 |                                                    | Slight, distant<br>rarefaction                        |  |
|        | POONA                                                           | Z     | e     | 10 | 46 | 29 |          | Slight, distant<br>Phases not clear                 | 28          | SHILLONG   | Z                                                                                                                                              | iP    | 02 | 33 | 20 |                                                    | Slight, distant<br>compression                        |  |
| 26     | SHILLONG                                                        | Z     | eP    | 17 | 12 | 46 |          | Slight, distant                                     | 28          | SHILLONG   | Z                                                                                                                                              | iP    | 12 | 19 | 46 |                                                    | Distant,<br>compression                               |  |
| 26     | SHILLONG                                                        | Z     | eP    | 17 | 59 | 39 |          | Slight, distant                                     |             | CHATRA     | Z                                                                                                                                              | i     | 12 | 19 | 51 |                                                    |                                                       |  |
| 26     | SHILLONG                                                        | Z     | eP    | 21 | 51 | 26 |          | Slight, distant                                     | 28          | SHILLONG   | Z                                                                                                                                              | iP    | 14 | 04 | 49 |                                                    | Rarefaction,<br>distant, slight                       |  |
| 27     | SHILLONG                                                        | Z     | iP    | 05 | 15 | 45 |          | Slight, distant<br>compression                      | 28          | SHILLONG   | Z                                                                                                                                              | eP    | 23 | 17 | 15 |                                                    | Tremor                                                |  |
| 27     | SHILLONG                                                        | Z     | eP    | 07 | 57 | 40 |          | Slight, distant                                     | 29          | SHILLONG   | Z                                                                                                                                              | ePg   | 02 | 08 | 52 | 100                                                | Slight                                                |  |
|        | CHATRA                                                          | Z     | i     | 07 | 58 | 21 |          | Slight, distant                                     |             |            | eSg                                                                                                                                            | 09    | 04 |    |    |                                                    |                                                       |  |
| 27     | SHILLONG                                                        | Z     | eP    | 09 | 05 | 31 |          | Tremor                                              | 29          | CHATRA     | Z                                                                                                                                              | iP    | 05 | 35 | 26 |                                                    | Slight                                                |  |
| 27     | SHILLONG                                                        | Z     | eP    | 11 | 22 | 00 |          | Slight, near                                        |             |            |                                                                                                                                                | i     | 38 | 19 |    |                                                    |                                                       |  |
| 27     | SHILLONG                                                        | Z     | iP    | 15 | 01 | 01 |          | Slight,<br>rarefaction                              |             | SHILLONG   | Z                                                                                                                                              | eP    | 05 | 36 | 11 |                                                    | Slight, distant                                       |  |
| 27     | CHATRA                                                          | Z     | iP    | 18 | 25 | 19 | 190      |                                                     |             | BOMBAY     | E                                                                                                                                              | e     | 05 | 42 | 20 |                                                    | Very slight                                           |  |
|        |                                                                 |       | iS    | 25 | 42 |    |          |                                                     |             |            | NE                                                                                                                                             | e     | 42 | 34 |    |                                                    |                                                       |  |
|        |                                                                 |       |       |    |    |    |          |                                                     |             |            | N                                                                                                                                              | e     | 44 | 17 |    |                                                    |                                                       |  |
|        | SHILLONG                                                        | Z     | ePg   | 18 | 26 | 00 | 380      | Slight                                              | 29          | CHATRA     | Z                                                                                                                                              | i     | 10 | 47 | 45 |                                                    | Feeble, distant                                       |  |
|        |                                                                 |       | eSg   | 26 | 45 |    |          |                                                     |             |            |                                                                                                                                                |       |    |    |    |                                                    |                                                       |  |
| 27     | Epc: 25°N, 96°E. Northern Burma<br>- H: 23h 53m 10s (U.S.C.G.S) |       |       |    |    |    |          |                                                     |             | 29         | Epc: 52°N, 106°E. Lake Baikal U.S.S.R.<br>- H: 17h 03m 10s (U.S.C.G.S)<br>Mag: 6 $\frac{1}{2}$ -6 $\frac{1}{2}$ (Pas), 6 $\frac{1}{2}$ (Berk). |       |    |    |    |                                                    |                                                       |  |
|        | SHILLONG                                                        | Z     | iP    | 23 | 54 | 17 | 320      | Slight                                              | 29          | TOCKLAI    | E                                                                                                                                              | eP    | 17 | 09 | 10 |                                                    | Distant                                               |  |
|        |                                                                 |       | iSg   | 55 | 04 |    |          |                                                     |             |            |                                                                                                                                                |       |    |    |    |                                                    |                                                       |  |
|        | CHATRA                                                          | Z     | iP    | 23 | 55 | 15 |          |                                                     | 29          | SHILLONG   | Z                                                                                                                                              | iP    | 17 | 09 | 18 | 3400                                               |                                                       |  |
|        |                                                                 | ZNE   | i     | 57 | 04 |    |          |                                                     |             |            | E                                                                                                                                              | PP    | 10 | 18 |    |                                                    |                                                       |  |
|        | BOKARO                                                          | E     | iP    | 23 | 55 | 30 | 970      | Slight, initial<br>ground movement<br>towards East. |             |            |                                                                                                                                                | PPP   | 10 | 33 |    |                                                    |                                                       |  |
|        |                                                                 | N     | eP    | 55 | 30 |    |          |                                                     |             |            |                                                                                                                                                | iS    | 14 | 20 |    |                                                    |                                                       |  |
|        |                                                                 | E     | PPP   | 55 | 42 |    |          |                                                     |             |            |                                                                                                                                                | SS    | 16 | 05 |    |                                                    |                                                       |  |
|        |                                                                 | N     | Lq    | 56 | 41 |    |          |                                                     |             |            |                                                                                                                                                | SSS   | 16 | 27 |    |                                                    |                                                       |  |
|        |                                                                 |       | iS    | 57 | 10 |    |          |                                                     |             |            |                                                                                                                                                | Lr    | 17 | 23 |    |                                                    |                                                       |  |
|        |                                                                 |       | SS/L  | 57 | 25 |    |          |                                                     |             |            |                                                                                                                                                | M     | 20 | 01 |    |                                                    |                                                       |  |
|        |                                                                 |       | M     | 58 | 33 |    |          |                                                     |             |            |                                                                                                                                                |       |    |    |    |                                                    |                                                       |  |
| 27/28  | COLOMBO                                                         | E     | e     | 23 | 55 | 57 |          |                                                     |             | CHATRA     | Z                                                                                                                                              | iP    | 17 | 09 | 22 | 3490                                               |                                                       |  |
|        |                                                                 |       | e     | 00 | 02 | 49 |          |                                                     |             |            | NE                                                                                                                                             | iS    | 14 | 30 |    |                                                    |                                                       |  |
|        |                                                                 |       | e     | 09 | 19 |    |          |                                                     |             | DEHRA DUN  | NE                                                                                                                                             | e     | 17 | 09 | 29 |                                                    | Other phases<br>not clear                             |  |
|        |                                                                 |       | e     | 12 | 09 |    |          |                                                     |             |            |                                                                                                                                                |       |    |    |    |                                                    |                                                       |  |
|        | CALCUTTA                                                        | E     | iS    | 23 | 56 | 28 |          | Slight                                              |             | BOKARO     | NE                                                                                                                                             | iP    | 17 | 09 | 50 | 3790                                               | Initial ground<br>movement towards<br>North and East. |  |
|        |                                                                 |       | Lr    | 57 | 28 |    |          |                                                     |             |            | E                                                                                                                                              | PP    | 11 | 08 |    |                                                    |                                                       |  |
|        |                                                                 |       | M     | 59 | 28 |    |          |                                                     |             |            |                                                                                                                                                | PPP   | 11 | 24 |    |                                                    |                                                       |  |
|        | AGRA                                                            | ZE    | eP    | 23 | 57 | 04 | 1750     | Slight                                              |             |            |                                                                                                                                                | PcP   | 12 | 20 |    |                                                    |                                                       |  |
|        |                                                                 |       | iS    | 00 | 00 | 01 |          |                                                     |             |            |                                                                                                                                                | iS    | 15 | 16 |    |                                                    |                                                       |  |
|        | DEHRA DUN                                                       | NE    | e     | 23 | 57 | 13 |          | Slight                                              |             |            |                                                                                                                                                | Lq    | 17 | 24 |    |                                                    |                                                       |  |
|        |                                                                 |       | iS    | 00 | 00 | 01 |          |                                                     |             |            |                                                                                                                                                | SSS   | 17 | 48 |    |                                                    |                                                       |  |
|        | SEHORE                                                          | NE    | iP    | 23 | 57 | 24 | 1800     | Slight                                              |             |            |                                                                                                                                                | Lr    | 19 | 07 |    |                                                    |                                                       |  |
|        |                                                                 |       | iS    | 00 | 00 | 24 |          |                                                     |             |            |                                                                                                                                                | M     | 21 | 44 |    |                                                    |                                                       |  |
|        |                                                                 |       |       |    |    |    |          |                                                     |             |            | N                                                                                                                                              | M     | 21 | 44 |    | Period 15, $\Delta$ 172<br>Period 19, $\Delta$ 147 |                                                       |  |
|        | HYDERABAD                                                       | N     | eP    | 23 | 57 | 29 | 1990     |                                                     |             | CALCUTTA   | E                                                                                                                                              | iP    | 17 | 09 | 53 | 3860                                               |                                                       |  |
|        |                                                                 |       | PP    | 57 | 53 |    |          |                                                     |             |            |                                                                                                                                                | eS    | 15 | 23 |    |                                                    |                                                       |  |
|        |                                                                 |       | eS    | 00 | 00 | 47 |          |                                                     |             |            |                                                                                                                                                | PcS   | 16 | 15 |    |                                                    |                                                       |  |
|        |                                                                 |       | SS    | 00 | 57 |    |          |                                                     |             |            |                                                                                                                                                | Lq    | 17 | 45 |    |                                                    |                                                       |  |
|        |                                                                 |       |       |    |    |    |          |                                                     |             |            |                                                                                                                                                | M     | 22 | 00 |    |                                                    |                                                       |  |



*Earthquake Report*  
(Non Instrumental Reports)

Following is the list of Earthquakes that were reported by voluntary observers from different stations during the month of August 1959.

| Place          | Date in GMT | Time in GMT h.m. | No. of shocks | Duration of shock in secs. | Intensity in R. F. Scale | Remarks |
|----------------|-------------|------------------|---------------|----------------------------|--------------------------|---------|
| Upper Shillong | 16          | 03 23            | 2             | 2                          | II                       |         |

MICROSEISMIC TABULATION

| DATE                                                | HOUR GMT | K   | MEAN Amplitude in mm | MEAN Period in secs | DATE      | HOUR GMT | K   | MEAN Amplitude in mm | MEAN Period in secs | DATE                     | HOUR GMT | K   | MEAN Amplitude in mm | MEAN Period in secs | DATE | HOUR GMT | K   | MEAN Amplitude in mm | MEAN Period in secs |     |   |     |     |
|-----------------------------------------------------|----------|-----|----------------------|---------------------|-----------|----------|-----|----------------------|---------------------|--------------------------|----------|-----|----------------------|---------------------|------|----------|-----|----------------------|---------------------|-----|---|-----|-----|
| Station: Shillong      Compt: E-W.      August 1959 |          |     |                      |                     |           |          |     |                      |                     |                          |          |     |                      |                     |      |          |     |                      |                     |     |   |     |     |
| 01                                                  | 00       | 1   | 0.6                  | 5.1                 | 14        | 12       | 3   | 0.3                  | 4.4                 | 28                       | 00       | ... | -                    | -                   | 07   | 00       | ... | -                    | -                   |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.0                 | Contd. 18 |          | 1   | 0.3                  | 4.3                 |                          | 06       | 1   | 0.4                  | 4.7                 |      | 06       | 3   | 3.1                  | 4.1                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.1                 |           |          |     |                      |                     |                          | 12       | 1   | 0.3                  | 4.4                 |      | 12       | 3   | 0.8                  | 1.9                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 4.3                 | 15        | 00       | 1   | 0.3                  | 4.1                 |                          | 18       | 1   | 0.4                  | 4.8                 |      | 12       | 3   | 2.7                  | 4.0                 |     |   |     |     |
| 02                                                  | 00       | 1   | 0.4                  | 4.4                 |           | 06       | 1   | 0.3                  | 4.3                 | 29                       | 00       | 1   | 0.3                  | 4.3                 |      | 18       | 3   | 0.7                  | 1.8                 |     |   |     |     |
|                                                     | 06       | 1   | 0.4                  | 4.3                 |           | 12       | ... | -                    | -                   |                          | 06       | ... | -                    | -                   |      | 18       | 3   | 2.9                  | 3.6                 |     |   |     |     |
|                                                     | 12       | 1   | 0.4                  | 4.5                 |           | 18       | 1   | 0.3                  | 4.2                 |                          | 12       | 1   | 0.5                  | 5.4                 |      |          |     | 1.0                  | 2.2                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.1                 | 16        | 00       | 1   | 0.3                  | 4.4                 |                          | 18       | ... | -                    | -                   | 08   | 00       | 3   | 3.1                  | 3.9                 |     |   |     |     |
| 03                                                  | 00       | 1   | 0.3                  | 4.0                 |           | 06       | 1   | 0.3                  | 4.3                 |                          |          |     | -                    | -                   |      |          |     | 1.2                  | 2.2                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 3.9                 |           | 12       | 1   | 0.3                  | 4.0                 | 30                       | 00       | 1   | 0.4                  | 4.8                 |      | 06       | 3   | 2.9                  | 3.7                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.1                 |           | 18       | 1   | 0.3                  | 4.1                 |                          | 06       | 1   | 0.4                  | 4.9                 |      |          |     | 0.8                  | 1.8                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.2                 | 17        | 00       | 1   | 0.3                  | 4.0                 |                          | 12       | 1   | 0.4                  | 5.0                 |      | 12       | 3   | 2.5                  | 3.8                 |     |   |     |     |
| 04                                                  | 00       | 1   | 0.3                  | 4.0                 |           | 06       | 1   | 0.3                  | 4.2                 |                          |          |     | 0.3                  | 4.4                 |      |          |     | 1.1                  | 2.0                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.3                 |           | 12       | 1   | 0.3                  | 4.1                 | 31                       | 00       | ... | -                    | -                   |      | 18       | 3   | 2.7                  | 3.2                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.1                 |           | 18       | 1   | 0.3                  | 4.0                 |                          | 06       | 0.0 | -                    | -                   |      |          |     | 1.3                  | 2.1                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 4.5                 | 18        | 00       | ... | -                    | -                   |                          | 12       | 1   | 0.3                  | 4.2                 | 09   | 00       | 3   | 3.1                  | 3.7                 |     |   |     |     |
| 05                                                  | 00       | 1   | 0.3                  | 4.2                 |           | 06       | 0.0 | -                    | -                   |                          | 18       | 1   | 0.3                  | 4.0                 |      |          |     | 4.1                  | 2.3                 |     |   |     |     |
|                                                     | 06       | 1   | 0.4                  | 5.0                 |           | 12       | 0.0 | -                    | -                   | Station: Colaba (Bombay) |          |     |                      |                     |      |          |     |                      |                     | 06  | 3 | 3.1 | 3.4 |
|                                                     | 12       | 1   | 0.4                  | 4.8                 |           | 18       | 3   | 0.3                  | 4.2                 | 01                       | 00       | 3   | 1.6                  | 2.7                 |      | 12       | 3   | 2.7                  | 3.2                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.3                 | 19        | 00       | 0.0 | -                    | -                   |                          | 06       | 3   | 2.3                  | 2.8                 |      | 18       | 3   | 2.5                  | 2.0                 |     |   |     |     |
| 06                                                  | 00       | 1   | 0.3                  | 4.4                 |           | 06       | 0.0 | -                    | -                   |                          |          |     | 1.2                  | 1.8                 |      |          |     | 1.4                  | 2.0                 |     |   |     |     |
|                                                     | 06       | 1   | 0.4                  | 4.7                 |           | 12       | 0.0 | -                    | -                   | 06                       | 3        | 2.3 | 2.6                  |                     | 10   | 00       | ... | 3.1                  | 2.3                 |     |   |     |     |
|                                                     | 12       | 1   | 0.4                  | 5.0                 |           | 18       | 0.0 | -                    | -                   |                          | 12       | 3   | 2.3                  | 2.6                 |      | 06       | 3   | 2.7                  | 3.2                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 4.8                 | 20        | 00       | 0.0 | -                    | -                   |                          | 18       | 3   | 0.9                  | 1.8                 |      | 18       | 3   | 2.5                  | 3.3                 |     |   |     |     |
| 07                                                  | 00       | 1   | 0.4                  | 4.6                 |           | 06       | 0.0 | -                    | -                   |                          |          |     | 2.1                  | 2.9                 |      |          |     | 1.0                  | 1.8                 |     |   |     |     |
|                                                     | 06       | 1   | 0.5                  | 5.2                 |           | 12       | 0.0 | -                    | -                   | 02                       | 00       | 3   | 2.3                  | 3.1                 |      | 10       | 06  | 3                    | 2.9                 | 3.4 |   |     |     |
|                                                     | 12       | 1   | 0.4                  | 5.0                 |           | 18       | 0.0 | -                    | -                   |                          | 06       | 3   | 2.3                  | 2.8                 |      | 12       | 3   | 2.9                  | 2.5                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 4.8                 | 21        | 00       | 0.0 | -                    | -                   |                          | 18       | 3   | 2.3                  | 2.6                 |      | 12       | 3   | 2.9                  | 3.4                 |     |   |     |     |
| 08                                                  | 00       | 1   | 0.4                  | 4.7                 |           | 06       | 0.0 | -                    | -                   | 02                       | 05       | 3   | 2.1                  | 2.9                 |      | 18       | 3   | 1.3                  | 2.0                 |     |   |     |     |
|                                                     | 06       | 1   | 0.4                  | 5.0                 |           | 12       | 0.0 | -                    | -                   |                          | 05       | 3   | 1.1                  | 1.8                 |      |          |     | 1.6                  | 2.5                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.3                 |           | 18       | 3   | 0.3                  | 4.1                 |                          | 12       | 3   | 2.5                  | 3.2                 |      | 11       | 00  | 3                    | 2.4                 | 3.4 |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.2                 | 22        | 00       | 0.0 | -                    | -                   |                          | 18       | 3   | 1.0                  | 1.8                 |      |          |     | 1.2                  | 2.2                 |     |   |     |     |
| 09                                                  | 00       | 1   | 0.3                  | 4.1                 |           | 06       | 0.0 | -                    | -                   |                          |          |     | 2.6                  | 3.0                 |      | 01       | 3   | 2.7                  | 3.7                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.0                 |           | 12       | 0.0 | -                    | -                   | 03                       | 00       | 3   | 2.1                  | 2.9                 |      | 02       | 3   | 2.9                  | 2.0                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.2                 |           | 18       | 1   | 0.3                  | 4.2                 |                          | 06       | 3   | 1.1                  | 1.9                 |      |          |     | 1.0                  | 2.0                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 5.0                 | 23        | 00       | 0.0 | -                    | -                   |                          | 12       | 3   | 2.3                  | 3.1                 |      | 03       | 3   | 2.8                  | 3.5                 |     |   |     |     |
| 10                                                  | 00       | ... | -                    | -                   |           | 06       | ... | -                    | -                   |                          |          |     | 2.3                  | 2.6                 |      | 04       | 3   | 0.9                  | 1.8                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.1                 |           | 12       | 0.0 | -                    | -                   |                          | 06       | 3   | 2.5                  | 3.2                 |      | 04       | 3   | 2.5                  | 3.7                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.3                 |           | 18       | 0.0 | -                    | -                   |                          | 12       | 3   | 1.2                  | 2.0                 |      | 05       | 3   | 0.8                  | 2.0                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.2                 | 24        | 00       | 0.0 | -                    | -                   |                          | 18       | 3   | 2.5                  | 3.4                 |      | 05       | 3   | 2.5                  | 3.6                 |     |   |     |     |
| 11                                                  | 00       | 1   | 0.3                  | 4.4                 |           | 06       | 0.0 | -                    | -                   |                          |          |     | 2.9                  | 3.1                 |      | 06       | 3   | 1.3                  | 2.0                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.2                 |           | 12       | 0.0 | -                    | -                   | 04                       | 00       | 3   | 2.3                  | 3.0                 |      | 06       | 3   | 2.3                  | 3.4                 |     |   |     |     |
|                                                     | 12       | 1   | 0.4                  | 4.8                 |           | 18       | 0.0 | -                    | -                   |                          | 06       | 3   | 1.2                  | 2.0                 |      |          |     | 1.3                  | 2.2                 |     |   |     |     |
|                                                     | 18       | 1   | 0.4                  | 5.0                 | 25        | 00       | ... | -                    | -                   |                          | 18       | 3   | 2.6                  | 3.0                 |      | 07       | 3   | 2.5                  | 3.8                 |     |   |     |     |
| 12                                                  | 00       | 1   | 0.4                  | 5.1                 |           | 06       | 3   | 0.3                  | 4.4                 |                          |          |     | 0.9                  | 2.0                 |      | 08       | 3   | 0.9                  | 1.8                 |     |   |     |     |
|                                                     | 06       | 1   | 0.4                  | 4.9                 |           | 12       | 0.0 | -                    | -                   |                          | 06       | 3   | 2.6                  | 2.8                 |      |          |     | 2.3                  | 3.5                 |     |   |     |     |
|                                                     | 12       | ... | -                    | -                   |           | 18       | 0.0 | -                    | -                   |                          | 12       | 3   | 2.9                  | 3.0                 |      | 09       | 3   | 1.1                  | 2.0                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.1                 | 26        | 00       | 3   | 0.3                  | 4.2                 |                          | 18       | 3   | 1.1                  | 1.8                 |      | 09       | 3   | 2.3                  | 3.4                 |     |   |     |     |
| 13                                                  | 00       | 1   | 0.3                  | 4.3                 |           | 06       | 3   | 0.3                  | 4.3                 |                          |          |     | 1.1                  | 1.8                 |      |          |     | 2.0                  | 2.5                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.0                 |           | 12       | ... | -                    | -                   | 05                       | 00       | ... | -                    | -                   |      | 10       | 3   | 1.0                  | 2.0                 |     |   |     |     |
|                                                     | 12       | 1   | 0.3                  | 4.2                 |           | 18       | 1   | 0.3                  | 4.1                 |                          | 06       | ... | -                    | -                   |      | 10       | 3   | 2.4                  | 3.6                 |     |   |     |     |
|                                                     | 18       | 1   | 0.3                  | 4.0                 | 27        | 00       | 1   | 0.3                  | 4.3                 |                          | 18       | ... | -                    | -                   |      |          |     | 2.1                  | 2.6                 |     |   |     |     |
| 14                                                  | 00       | 1   | 0.3                  | 4.3                 |           | 06       | 3   | 0.3                  | 4.4                 |                          |          |     | 1.2                  | 2.0                 |      | 11       | 3   | 0.8                  | 2.2                 |     |   |     |     |
|                                                     | 06       | 1   | 0.3                  | 4.1                 |           | 12       | 3   | 0.3                  | 4.2                 |                          |          |     | 1.2                  | 2.0                 |      | 11       | 3   | 2.4                  | 3.6                 |     |   |     |     |
|                                                     |          |     |                      |                     |           | 18       | 3   | 0.4                  | 4.6                 |                          | 06       | ... | -                    | -                   |      |          |     | 1.5                  | 2.4                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 12       | ... | -                    | -                   |      |          |     | 0.6                  | 2.0                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 18       | ... | -                    | -                   |      | 12       | 3   | 2.3                  | 3.7                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          |          |     | -                    | -                   |      |          |     | 1.0                  | 2.3                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 06       | 00  | ...                  | -                   |      | 13       | 3   | 2.0                  | 3.5                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 06       | ... | -                    | -                   |      |          |     | 1.0                  | 1.9                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 12       | ... | -                    | -                   |      |          |     | 2.1                  | 3.5                 |     |   |     |     |
|                                                     |          |     |                      |                     |           |          |     |                      |                     |                          | 18       | ... | -                    | -                   |      | 14       | 3   | 0.7                  | 1.7                 |     |   |     |     |







GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

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*Shri S. Basu, M.Sc., F.N.I.,*  
Director General of Observatories

List of Seismograph stations with their Instruments and Constants

| Station              | Latitude  | Longitude | Height<br>a.s.l.<br>(Mètres) | Lithographic<br>Foundation                         | Instrument           | Compt.        | Period<br>in<br>secs | Static<br>Magni-<br>fication | Damping<br>ratio | Paper<br>speed<br>mm/min. |      |
|----------------------|-----------|-----------|------------------------------|----------------------------------------------------|----------------------|---------------|----------------------|------------------------------|------------------|---------------------------|------|
| Agra                 |           |           |                              |                                                    | Columbia             | E             | To=15                | Tg=100                       |                  | 15                        |      |
|                      |           |           |                              |                                                    | Long Period          | N             | To=15                | Tg=95                        |                  | 15                        |      |
|                      |           |           |                              |                                                    | do                   | Z             | To=15                | Tg=70                        |                  | 15                        |      |
| Bombay               | 18° 54' N | 72° 40' E | 6                            | Deccan Trap                                        | Milne-Shaw           | N             | 12                   | 350                          | 13:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 350                          | 23:1             | 8                         |      |
|                      |           |           |                              |                                                    | Sprengnether         | E             | To=Tg= 7 secs        |                              | 30               |                           |      |
| Bokaro               | 23° 50' N | 85° 48' E |                              | Rock                                               | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 950                          | h = 0.8          | 60                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 1000                         | h = 0.8          | 60                        |      |
| Calcutta             | 22° 32' N | 88° 22' E | (1) 7                        | (Milne-Shaw)                                       | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | (2) 6(Omori-Ewing)   | Wood-Anderson | N                    | 2                            | 870              | Critical                  | 30   |
|                      |           |           |                              |                                                    | Alluvium             | Omori-Ewing   | N                    | 16                           | 32               |                           | 25.4 |
|                      |           |           |                              |                                                    | Omori-Ewing          | E             | 21                   | 30                           |                  | 25.4                      |      |
| Chatra               | 25° 50' N | 87° 10' E | 161                          | Sand Stone                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 1                    | 1000                         | 30:1             | 60                        |      |
|                      |           |           |                              |                                                    | Benioff              | Z             | To=0                 | Tg= 0.45<br>secs.            | Critical         | 60                        |      |
|                      |           |           |                              |                                                    | Wenner-Accelerograph | ZNE           |                      |                              |                  |                           |      |
| Colombo              | 06° 54' N | 79° 52' E | 7                            | Beach Sand                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             |                           |      |
| Dehra Dun            | 30° 19' N | 78° 02' E | 682                          | Gravel                                             | Wood-Anderson        | N             | 0.8                  | 950                          | Critical         | 60                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 850                          | Critical         | 60                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
| Hyderabad            | 17° 25' N | 78° 27' E | 535                          | Granite                                            | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
| Kodaikanal           | 10° 14' N | 77° 28' E | 2345                         | Rock                                               | Milne-Shaw           | E             | 10                   | 250                          | 20:1             | 8                         |      |
| Madras               | 13° 00' N | 80° 11' E | 15                           |                                                    | Sprengnether         | E             | To=Tg=72 secs        |                              | Critical         | 30                        |      |
| New Delhi            | 28° 35' N | 77° 12' E | 207                          | Massive Quartzite                                  |                      |               |                      |                              |                  |                           |      |
| Poona                | 18° 32' N | 73° 51' E | 560                          | Deccan Trap                                        | Sprengnether         | Z             | To=Tg=1.6            |                              | Critical         | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 4                    | 1000                         | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 280                          | 20:1             | 8                         |      |
| Port Blair           | 11° 49' N | 92° 43' E |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | 65:1             | 30                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 350                          | 20:1             | 8                         |      |
| Sehore               |           |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 980                          | Critical         | 30                        |      |
| Shillong             | 25° 34' N | 91° 53' E | 1500                         | Quartzite<br>Sand stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N             | 0.8                  | 1000                         | h=0              | h=0.8                     | 30   |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Benioff              | Z             | To=1.0               | Tg=0.18                      |                  | 60                        |      |
|                      |           |           |                              |                                                    | Sprengnether         | E             | To= Tg= 6.3          |                              | Critical         | 30                        |      |
| Wenner Accelerograph | ZNE       |           |                              |                                                    |                      |               |                      |                              |                  |                           |      |
| Tocklai              | 28° 45' N | 94° 45' E |                              | Alluvium                                           | Wood-Anderson        | E             | 0.8                  | 970                          | h=0.8            | 50                        |      |
| Vizianagram          | 18° 07' N | 83° 27' E |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |

| DATE | STATION                                                                                                | COMPT | PHASE | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                                   | DATE | STATION    | COMPT    | PHASE    | G. M. T.<br>h. m. s. | Δ<br>km  | REMARKS                                                      |                             |
|------|--------------------------------------------------------------------------------------------------------|-------|-------|----------------------|---------|-------------------------------------------|------|------------|----------|----------|----------------------|----------|--------------------------------------------------------------|-----------------------------|
| 01   | SHILLONG                                                                                               | Z     | eP    | 00 11 06             |         | Slight, distant                           | 02   | CHATRA     | Z        | i        | 11 47 24             |          | Slight, distant                                              |                             |
| 01   | Epc: 22°9'N, 93.1°E. - H: 01h 00m 53s (Shillong)                                                       |       |       |                      |         |                                           |      | 02         | SHILLONG | Z        | e                    | 16 57 35 |                                                              | Tremor                      |
|      | SHILLONG                                                                                               | Z     | iP    | 01 01 38             | 300     | Moderate, rarefaction                     |      | 02         | SHILLONG | Z        | iP                   | 17 26 27 |                                                              | Slight, distant rarefaction |
|      |                                                                                                        | NE    | eP    |                      |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        | E     | P     | 01 42                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        |       | Pg    | 01 48                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        |       | PPP   | 01 52                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        | NE    | S     | 02 11                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        | E     | Sg    | 02 27                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        |       | i     | 02 27                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      |                                                                                                        |       | SSS   | 02 32                |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      | BOKARO                                                                                                 | NE    | iP    | 01 02 28             | 650     | Slight, initial ground movement South.    |      | PORT BLAIR | E        | eP       | 06 34 21             | 3700     | Slight                                                       |                             |
|      |                                                                                                        |       | iS    | 03 37                |         |                                           |      |            |          | PP       | 35 27                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | iS       | 39 41                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | SS       | 41 41                |          |                                                              |                             |
|      | CHATRA                                                                                                 | Z     | iP    | 01 02 29             | 1280    | Slight                                    |      | SHILLONG   | ZNE      | iP       | 06 35 28             | 4640     | Moderate, rarefaction.                                       |                             |
|      |                                                                                                        | NE    | iS    | 04 40                |         |                                           |      |            | E        | PP       | 37 08                |          | Firs:                                                        |                             |
|      | DEHRA DUN                                                                                              | NE    | eP    | 01 04 29             |         | Slight, phases not clear                  |      |            |          | i        | 39 54                |          | ground movement                                              |                             |
|      |                                                                                                        |       | i     | 07 03                |         |                                           |      |            | NE       | iS       | 41 46                |          | towards South                                                |                             |
|      | MADRAS                                                                                                 | E     | eP    | 01 04 29             | 1600    | Slight                                    |      |            | N        | SS       | 44 45                |          | and East.                                                    |                             |
|      |                                                                                                        |       | Lq    | 07 04                |         |                                           |      |            |          | SSS      | 45 49                |          |                                                              |                             |
|      |                                                                                                        |       | eS?   | 07 10                |         |                                           |      |            | E        | Lr       | 47 21                |          |                                                              |                             |
|      | POONA                                                                                                  | Z     | eP    | 01 05 05             |         | Mild                                      |      | COLOMBO    | E        | P        | 06 35 40             | 4900     |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | S        | 42 14                |          |                                                              |                             |
|      | BOMBAY                                                                                                 | N     | e     | 01 11 08             |         | Very slight                               |      |            |          | L        | 54 20                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | M        | 59 30                |          | Amp.: 1.0 mm                                                 |                             |
| 01   | SHILLONG                                                                                               | Z     | iP    | 01 12 49             |         | Slight, distant                           |      | BOKARO     | NE       | iP       | 06 35 54             |          | Moderate,                                                    |                             |
| 01   | DEHRA DUN                                                                                              | NE    | e     | 05 44 58             |         | Tremor                                    |      |            | E        | PP       | 37 43                |          | direction of                                                 |                             |
| 01   | SHILLONG                                                                                               | Z     | iP    | 05 47 16             |         | Slight, distant Compression               |      |            |          | PPP      | 38 33                |          | the initial                                                  |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | iS       | 42 37                |          | ground motion                                                |                             |
|      | POONA                                                                                                  | Z     | i     | 05 47 50             |         | Mild, phases not clear                    |      |            |          | Lq       | 46 35                |          | South.                                                       |                             |
|      |                                                                                                        |       | i     | 50 02                |         |                                           |      |            |          | Lr       | 49 05                |          | Per.: 30 secs                                                |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | M        | 53 07                |          | Amp.: 25 mm                                                  |                             |
| 01   | SHILLONG                                                                                               | Z     | iP    | 07 11 13             |         | Slight, distant Compression               |      | MADRAS     | E        | iP       | 06 35 55             | 5090     | Moderate,                                                    |                             |
| 01   | Epc: 41°N, 20°E. Albania. - H: 11h 37m 42s (USCGS) 2 killed, 34 injured and extensive property damage. |       |       |                      |         |                                           |      |            |          | PP       | 37 43                |          | ground                                                       |                             |
|      | DEHRA DUN                                                                                              | NE    | e     | 11 46 20             |         | Slight, phases not clear                  |      |            |          | PPP      | 38 25                |          | movement East.                                               |                             |
|      |                                                                                                        |       | e     | 52 50                |         |                                           |      |            |          | iS       | 42 39                |          |                                                              |                             |
|      | AGRA                                                                                                   | ZE    | iP    | 11 46 27             | 5410    | Ground movement East. Compression slight. |      |            |          | PS       | 42 47                |          |                                                              |                             |
|      |                                                                                                        | N     | eP    | 46 27                |         |                                           |      |            |          | PPS      | 42 56                |          |                                                              |                             |
|      |                                                                                                        | Z     | PP    | 48 28                |         |                                           |      |            |          | SS       | 45 55                |          |                                                              |                             |
|      |                                                                                                        |       | PPP   | 49 52                |         |                                           |      |            |          | Lq       | 46 45                |          |                                                              |                             |
|      |                                                                                                        | ZNE   | iS    | 23 29                |         |                                           |      |            |          | SSS      | 46 57                |          |                                                              |                             |
|      |                                                                                                        | N     | ScS   | 26 13                |         |                                           |      |            |          | Lr       | 49 05                |          |                                                              |                             |
|      |                                                                                                        | ZNE   | Lq    | 27 39                |         |                                           |      |            |          | M        | 52 30                |          |                                                              |                             |
|      | POONA                                                                                                  | Z     | i     | 11 46 46             |         | Slight, distant phases not clear          |      | CHATRA     | ZNE      | iP       | 06 36 01             | 5170     | Slight                                                       |                             |
|      |                                                                                                        |       | i     | 48 46                |         |                                           |      |            | NE       | iS       | 42 50                |          |                                                              |                             |
|      | BOKARO                                                                                                 | NE    | eP    | 11 47 29             |         | Slight, other phases unidentifiable.      |      | KODAIKANAL | E        | iP       | 06 36 03             |          | Ground motion West.                                          |                             |
|      |                                                                                                        |       | e     | 51 12                |         |                                           |      |            |          | i        | 41 33                |          |                                                              |                             |
|      | SHILLONG                                                                                               | ZE    | iP    | 11 47 52             | 6690    | Slight, compression                       |      |            |          | Lr       | 45 36                |          | Per.: 20,                                                    |                             |
|      |                                                                                                        | E     | iSg   | 56 05                |         |                                           |      |            |          | M        | 48 18                |          | Amp.: 16.1                                                   |                             |
|      |                                                                                                        | Z     | eSg   |                      |         |                                           |      |            |          |          |                      |          |                                                              |                             |
|      | BOMBAY                                                                                                 | N     | e     | 11 53 44             |         | Moderate                                  |      | AGRA       | ZNE      | iP       | 06 36 49             | 5950     | Moderate,                                                    |                             |
|      |                                                                                                        |       | e     | 56 25                |         |                                           |      |            | Z        | PcP      | 38 01                |          | ground motion                                                |                             |
|      | HYDERABAD                                                                                              | N     | e     | 11 54 59             |         | Per.: 18, Dur.: 8 mm                      |      |            |          | PP       | 39 02                |          | South and East,                                              |                             |
|      |                                                                                                        |       | M     | 12 11 38             |         |                                           |      |            | E        | PcS, ScP | 41 58                |          | rarefaction                                                  |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            | NE       | iS       | 44 21                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            | ZNE      | PS       | 44 29                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | PPS      | 44 41                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | ZN       | ScS                  | 46 40    |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | Z        | SS                   | 48 04    |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | N        | Lq/SSS               | 49 56    |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | ZN       | Lr                   | 52 48    |                                                              |                             |
| 01   | TOCKLAI                                                                                                | E     | eP    | 13 47 04             |         | Slight, near                              |      | POONA      | Z        | iP       | 06 36 52             | 5910     | Moderate, initial ground motion North and West, compression. |                             |
| 01   | SHILLONG                                                                                               | Z     | e     | 18 37 07             |         |                                           |      | BOMBAY     | E        | iP       | 06 37 00             | 6050     | Moderate.                                                    |                             |
| 01   | SHILLONG                                                                                               | Z     | eP    | 18 41 11             |         | Slight, distant                           |      |            |          | PP       | 39 00                |          |                                                              |                             |
| 01   | SHILLONG                                                                                               | Z     | eP    | 20 54 40             |         | Slight, distant                           |      |            |          | PPP      | 40 23                |          |                                                              |                             |
| 01   | SHILLONG                                                                                               | Z     | eP    | 21 16 17             |         | Slight, distant                           |      |            |          | i        | 41 24                |          |                                                              |                             |
| 01   | SHILLONG                                                                                               | Z     | eP    | 21 55 26             |         | Slight, distant                           |      |            |          | N        | eSg                  | 44 38    |                                                              |                             |
| 01   | SHILLONG                                                                                               | Z     | iP    | 23 02 51             |         | Slight, distant                           |      |            |          | E        | iSg                  |          |                                                              |                             |
| 01   | SHILLONG                                                                                               | Z     | iP    | 23 02 51             |         | Slight, distant                           |      |            |          | E        | PPS                  | 45 11    |                                                              |                             |
| 02   | SHILLONG                                                                                               | Z     | eP    | 08 18 14             |         | Slight, distant                           |      |            |          | ScS      | 47 00                |          |                                                              |                             |
| 02   | SHILLONG                                                                                               | Z     | eP    | 09 26 11             |         | Slight, distant                           |      | DEHRA DUN  | NE       | eP       | 06 37 07             | 6140     | Slight.                                                      |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            | N        | PPP      | 40 19                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | iS       | 44 50                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | SS       | 48 34                |          |                                                              |                             |
|      |                                                                                                        |       |       |                      |         |                                           |      |            |          | SSS      | 50 06                |          |                                                              |                             |

| DATE | STATION              | COMPT   | PHASE                  | G. M. T.                            | $\Delta$ | REMARKS                        | DATE           | STATION   | COMPT                                                                          | PHASE                                    | G. M. T.                                                       | $\Delta$          | REMARKS                                                                                  |                                          |
|------|----------------------|---------|------------------------|-------------------------------------|----------|--------------------------------|----------------|-----------|--------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------|------------------------------------------|
|      |                      |         |                        | h. m. s.                            | km       |                                | September 1959 |           |                                                                                |                                          | h. m. s.                                                       | km                |                                                                                          |                                          |
| 03   | DEHRA DUN<br>Cont'd. | N       | Lr<br>M                | 06 52 27<br>57 26                   |          |                                |                | 04        | SHILLONG                                                                       | Z                                        | iP                                                             | 21 47 10          |                                                                                          | Slight, distant<br>rarefaction           |
| 03   | HYDERABAD            | N       | iS<br>M                | 06 43 27<br>57 24                   |          | Per. = 18 secs<br>Amp: 11 mm   |                | 04        | SHILLONG                                                                       | Z                                        | iP                                                             | 22 56 35          |                                                                                          | Slight, distant<br>rarefaction           |
| 03   | SHILLONG             | Z       | e                      | 17 08 28                            |          | Slight, near                   |                | 04        | SHILLONG                                                                       | Z                                        | eP                                                             | 23 42 57          |                                                                                          | Slight, distant                          |
| 03   | SHILLONG             | Z       | e                      | 17 28 49                            |          | Slight, distant<br>compression |                | 04        | SHILLONG                                                                       | Z                                        | e                                                              | 23 49 33          |                                                                                          | Slight, near                             |
| 03   | SHILLONG             | Z       | iP                     | 18 55 34                            |          | Slight, distant<br>compression |                | 05        | SHILLONG                                                                       | Z                                        | iP<br>ZNE e                                                    | 01 18 46<br>19 41 |                                                                                          | Slight, near                             |
| 03   | SHILLONG             | Z       | e<br>i<br>i            | 18 55 36<br>55 44<br>56 06          |          | Slight, near                   |                | CHATRA    | Z                                                                              | iP<br>iS                                 | 01 19 37<br>21 30                                              | 1000              | Slight                                                                                   |                                          |
| 03   | SHILLONG             | Z       | eP                     | 19 40 18                            |          | Slight, distant                |                | 05        | SHILLONG                                                                       | Z                                        | iP                                                             | 03 09 07          |                                                                                          | Slight, distant<br>rarefaction           |
| 03   | SHILLONG             | Z       | e                      | 21 32 55                            |          | Slight, distant                |                | 05        | SHILLONG                                                                       | Z                                        | iP                                                             | 03 12 46          |                                                                                          | Slight, distant<br>compression           |
| 03   | SHILLONG             | Z       | iP                     | 21 45 36                            |          | Slight, distant                |                | 05        | SHILLONG                                                                       | Z                                        | e                                                              | 03 49 41          |                                                                                          | Slight, near                             |
| 04   | TOCKLAI              | E       | eP                     | 00 10 48                            |          | Slight, distant                |                | 05        | SHILLONG                                                                       | Z                                        | e<br>e                                                         | 04 01 45<br>01 58 |                                                                                          | Slight, near                             |
|      | SHILLONG             | Z       | iP<br>i<br>NE iS       | 00 10 50<br>10 55<br>11 36          | 420      | Slight,<br>rarefaction         |                | 05        | TOCKLAI                                                                        | E                                        | eP                                                             | 05 34 26          |                                                                                          | Slight, distant                          |
|      | CHATRA               | Z       | iP<br>ZNE i            | 00 11 12<br>12 37                   |          |                                |                | SHILLONG  | Z<br>NE<br>Z<br>E<br>Z<br>NE                                                   | iP<br>eP<br>PP<br>PG<br>i<br>iS/SS<br>Sg | 05 34 27<br>34 34<br>34 42<br>34 46<br>35 25<br>35 34          | 450               | Slight,<br>rarefaction                                                                   |                                          |
|      | BOKARO               | NE      | eP<br>eS               | 00 12 33<br>13 52                   | 750      | Slight, phases<br>not clear    |                | CHATRA    | Z                                                                              | iP<br>ZNE iS                             | 05 34 51<br>36 13                                              | 790               | Slight, distant                                                                          |                                          |
|      | DEHRA DUN            | NE      | e<br>i                 | 00 15 01<br>16 06                   |          | Feeble                         |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | eP                     | 00 19 19                            |          | Slight, near                   |                | 05        | AGRA                                                                           | N                                        | iP                                                             | 05 40 350         |                                                                                          | Very slight,<br>intensity near<br>shock. |
|      | POONA                | Z       | P?                     | 00 20 02                            |          | Slight, phases<br>not clear    |                | 05        | BOMBAY                                                                         | NE                                       | e                                                              | 05 44 19          |                                                                                          | Slight, distant                          |
|      | BOMBAY               | NE      | e                      | 00 20 33                            |          | Slight                         |                | 05        | SHILLONG                                                                       | Z                                        | e                                                              | 06 05 50          |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | e                      | 04 39 17                            |          | Slight, near                   |                | 05        | Epc: 1°N, 129°E. Halmahera Island Region<br>- H = 05h 07m 38s (U. S. C. G. S). |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | e                      | 07 17 13                            |          | Slight, distant                |                | SHILLONG  | ZE<br>N<br>E<br>NE<br>E                                                        | iP<br>eP<br>i<br>iS<br>i                 | 06 15 17<br>16 04<br>22 10<br>22 50                            | 4720              | Slight, rarefac-<br>tion. First move-<br>ment East. Phases<br>not clear<br>probably deep |                                          |
| 04   | SHILLONG             | Z       | e                      | 07 20 13<br>21 30                   |          | Slight, near                   |                | BOKARO    | NE<br>E                                                                        | eP<br>iS                                 | 06 16 18<br>23 14                                              | 5250              | Moderate, phases<br>very poorly<br>developed.                                            |                                          |
| 04   | SHILLONG             | Z       | i<br>i                 | 07 52 26<br>52 31                   |          | Slight, near                   |                | CHATRA    | Z<br>NE                                                                        | iP<br>iS                                 | 06 16 21<br>23 25                                              | 5460              | Slight                                                                                   |                                          |
| 04   | SHILLONG             | Z       | iP                     | 08 50 15                            |          | Slight, distant<br>rarefaction |                | MADRAS    | E                                                                              | eP?<br>PP<br>PPP<br>iS<br>PS<br>PPS<br>e | 06 16 35<br>18 31<br>19 30<br>23 45<br>23 53<br>24 03<br>24 20 | 5550              | Moderate                                                                                 |                                          |
| 04   | SHILLONG             | Z       | iP                     | 09 03 36                            |          | Slight, distant<br>compression |                | AGRA      | E<br>NE                                                                        | eP<br>iS<br>PS<br>PPS<br>ScS             | 06 17 11<br>24 55<br>25 04<br>25 30<br>27 07                   | 6150              | Slight                                                                                   |                                          |
| 04   | SHILLONG             | Z       | e                      | 10 32 39                            |          | Slight, near                   |                | POONA     | Z<br>NE                                                                        | iP<br>S                                  | 06 17 27<br>25 15                                              | 6250              | Slight, initial<br>ground motion<br>West, compressor                                     |                                          |
| 04   | SHILLONG             | Z       | e                      | 13 48 42<br>48 54                   |          | Slight, near                   |                | DEHRA DUN | NE<br>N                                                                        | eP<br>i<br>e<br>e<br>e<br>M              | 06 17 34<br>25 15<br>28 51<br>30 38<br>33 08<br>37 28          |                   | Slight                                                                                   |                                          |
| 04   | SHILLONG             | Z       | iP                     | 14 10 51                            |          | Slight, distant<br>rarefaction |                | COLOMBO   | E                                                                              | P<br>L<br>M                              | 06 23 26<br>34 04<br>38 06                                     |                   | Amp: 0.3 mm                                                                              |                                          |
| 04   | SHILLONG             | Z       | iP                     | 09 03 36                            |          | Slight, distant<br>compression |                | HYDERABAD | N<br>E<br>N                                                                    | e<br>M<br>N                              | 06 24 22<br>28 37<br>28 40                                     |                   | Per. = 14, Amp: 4 mm.<br>Per. = 10, Amp: 3 mm                                            |                                          |
| 04   | SHILLONG             | Z       | e                      | 10 32 39                            |          | Slight, near                   |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | e                      | 13 48 42<br>48 54                   |          | Slight, near                   |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | iP                     | 14 10 51                            |          | Slight, distant<br>rarefaction |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | TOCKLAI              | E       | eP                     | 14 48 40                            |          | Slight                         |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
|      | SHILLONG             | Z       | e<br>E e<br>Z i<br>E e | 14 48 47<br>48 51<br>49 28<br>49 29 |          | Slight, near                   |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
|      | CHATRA               | Z<br>NE | iP<br>iS               | 14 49 18<br>50 34                   | 730      | Slight                         |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | eP                     | 17 55 30                            |          | Slight, distant                |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | e<br>e                 | 18 32 07<br>32 21                   |          | Slight, near                   |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | e                      | 19 18 00                            |          | Slight, distant                |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | eP                     | 19 27 23                            |          | Slight, distant                |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |
| 04   | SHILLONG             | Z       | iP                     | 19 34 19                            |          | Slight, distant<br>rarefaction |                |           |                                                                                |                                          |                                                                |                   |                                                                                          |                                          |



| DATE | STATION                                                                     | COMPT    | PHASE                      | G. M. T.<br>h. m. s.                                           | $\Delta$<br>km | REMARKS                      | DATE      | STATION  | COMPT    | PHASE      | G. M. T.<br>h. m. s.       | $\Delta$<br>km | REMARKS                                |                 |
|------|-----------------------------------------------------------------------------|----------|----------------------------|----------------------------------------------------------------|----------------|------------------------------|-----------|----------|----------|------------|----------------------------|----------------|----------------------------------------|-----------------|
| 08   | SHILLONG                                                                    | Z        | iP                         | 20 37 40                                                       |                | Slight, distant compression  | 10        | CHATRA   | ZE       | i          | 05 46 40                   |                | Slight, distant                        |                 |
|      |                                                                             |          |                            |                                                                |                |                              | September | Contd.   | NE       | i          | 55 08                      |                |                                        |                 |
| 08   | SHILLONG                                                                    | Z        | ePg<br>eSg                 | 21 16 14<br>16 28                                              | 120            | Slight                       |           | POONA    | Z        | iP         | 05 47 35                   |                | Feeble, phases not clear, compression. |                 |
| 08   | SHILLONG                                                                    | Z        | eP                         | 21 46 01<br>46 18                                              | 150            | Slight                       |           |          |          |            |                            |                |                                        |                 |
| 09   | SHILLONG                                                                    | Z        | iP                         | 05 18 49                                                       |                | Slight, distant rarefaction  | 10        | SHILLONG | Z        | eP         | 05 55 09                   |                | Slight, distant                        |                 |
| 09   | SHILLONG                                                                    | Z        | iPg<br>iSg                 | 13 17 31<br>17 37                                              | 50             | Slight                       | 10        | SHILLONG | Z        | iPg<br>iSg | 13 17 31<br>17 37          |                |                                        |                 |
| 09   | Epc: Hindukush. - h = 200 km<br>- H = 05h 44m 38s (U. S. C. G. S)           |          |                            |                                                                |                |                              |           | 10       | SHILLONG | Z          | eP                         | 14 07 20       |                                        | Slight, distant |
|      | DEHRA DUN                                                                   | NE       | eP<br>iS                   | 05 46 30<br>47 57                                              | 840            | Feeble                       | 10        | SHILLONG | Z        | iP         | 14 36 42                   |                | Slight, distant compression            |                 |
|      | POONA                                                                       | Z        | i                          | 05 47 35                                                       |                | Mild. Phases not clear.      | 10        | SHILLONG | Z        | i          | 14 51 27                   |                | Slight, near                           |                 |
|      | CHATRA                                                                      | Z        | iP<br>i                    | 05 48 15<br>51 15                                              |                | Slight                       | 10        | SHILLONG | Z        | iP         | 15 05 32                   | 150            | Slight, compression                    |                 |
|      | SHILLONG                                                                    | ZE       | iP                         | 05 49 05                                                       |                | Slight, distant compression  | 10        | SHILLONG | Z        | iP         | 15 52 19                   |                | Slight, distant rarefaction            |                 |
| 09   | SHILLONG                                                                    | Z        | iP                         | 09 45 20                                                       |                | Slight, near rarefaction     | 10        | SHILLONG | Z        | iP         | 15 24 34                   |                | Slight, distant compression            |                 |
| 09   | POONA                                                                       | Z        | i                          | 10 42 58                                                       |                | Mild. Phases not clear.      | 10        | SHILLONG | Z        | e          | 15 28 58                   |                | Tremor                                 |                 |
| 09   | TOCKLAI                                                                     | NE       | eP                         | 11 11 36                                                       |                | Slight                       | 10        | SHILLONG | Z        | iP         | 15 46 05                   |                | Slight, distant compression            |                 |
|      | CHATRA                                                                      | Z<br>ZNE | iP<br>iS                   | 11 12 04<br>14 04                                              | 1170           | Slight                       | 10        | SHILLONG | Z        | iP         | 17 04 07                   |                | Slight, distant compression            |                 |
|      | BOKARO                                                                      | NE       | eP<br>iSg                  | 11 12 07<br>12 24                                              | 130            | Slight                       | 10        | SHILLONG | Z        | i          | 17 27 22                   |                | Tremor                                 |                 |
|      | SHILLONG                                                                    | Z        | e<br>i<br>i<br>i<br>i<br>E | 11 12 13<br>12 14<br>12 17<br>12 59<br>13 40<br>15 01          |                | Slight, near                 | 10        | SHILLONG | Z        | e          | 17 28 19                   |                | Slight, distant                        |                 |
|      | HYDERABAD                                                                   | N        | iP<br>e                    | 11 13 59<br>14 05                                              |                | Slight, North wards.         | 10        | SHILLONG | Z        | e          | 17 30 09                   |                | Tremor                                 |                 |
|      | SEHORE                                                                      | NE       | e                          | 11 14 44                                                       |                | Very feeble, distant.        | 10        | SHILLONG | Z        | e          | 19 35 59                   |                | Slight, near                           |                 |
|      | BOMBAY                                                                      | NE       | e                          | 11 15 44                                                       |                | Very slight, near tremor.    | 10        | SHILLONG | Z        | iP         | 21 20 48                   |                | Slight, near                           |                 |
|      |                                                                             |          |                            |                                                                |                |                              | 10        | SHILLONG | ZE       | iP         | 22 03 12                   |                | Slight, distant compression            |                 |
|      |                                                                             |          |                            |                                                                |                |                              |           | CHATRA   | Z        | i          | 23 05 42                   |                | Slight, distant rarefaction.           |                 |
|      |                                                                             |          |                            |                                                                |                |                              |           |          |          |            |                            |                | Feeble, distant                        |                 |
|      |                                                                             |          |                            |                                                                |                |                              | 10        | CHATRA   | Z        | iPg<br>iSg | 23 28 03<br>28 09          | 40             | Feeble                                 |                 |
|      |                                                                             |          |                            |                                                                |                |                              | 11        | SHILLONG | Z        | iPg<br>iSg | 02 53 16<br>53 25          | 70             | Slight, rarefaction                    |                 |
| 09   | VIZIANAGRAM                                                                 | NE       | eP                         | 12 54 55                                                       |                | Slight, near                 | 11        | SHILLONG | Z        | e          | 07 08 48                   |                | Slight, near                           |                 |
| 09   | BOKARO                                                                      | NE       | eP<br>iSg                  | 12 55 54<br>56 12                                              | 140            | Slight                       |           |          |          |            |                            |                |                                        |                 |
|      | CHATRA                                                                      | Z<br>ZNE | iP<br>iS                   | 12 55 58<br>57 53                                              | 870            | Slight                       | 11        | SHILLONG | Z        | eP         | 15 02 17                   |                | Slight, distant                        |                 |
|      | SHILLONG                                                                    | Z        | e<br>i<br>i<br>E<br>Z      | 12 56 00<br>56 02<br>56 04<br>56 47<br>57 31<br>58 22<br>58 34 |                | Slight, near                 | 11        | SHILLONG | Z        | iP         | 17 35 19                   |                | Slight, near compression               |                 |
|      | BOMBAY                                                                      | E        | e                          | 12 59 21                                                       |                | Very slight                  | 11        | SHILLONG | Z        | eP         | 19 19 01                   |                | Slight, distant                        |                 |
|      | DEHRA DUN                                                                   | NE       | e                          | 12 59 21                                                       |                | Tremor                       | 11        | SHILLONG | Z        | iP         | 19 35 27                   |                | Slight, distant compression            |                 |
| 09   | BOMBAY                                                                      | NE       | e                          | 13 00 25                                                       |                | Near, tremor                 | 11        | SHILLONG | Z        | iP         | 19 40 50                   |                | Slight, distant rarefaction            |                 |
| 09   | SHILLONG                                                                    | Z        | iP                         | 15 38 02                                                       |                | Slight, distant compression  | 11        | SHILLONG | Z        | iP         | 19 54 05                   |                | Slight, distant rarefaction            |                 |
| 09   | SHILLONG                                                                    | Z        | e                          | 15 38 17                                                       |                | Tremor                       | 11        | SHILLONG | Z        | iP         | 20 21 07                   |                | Slight, distant compression            |                 |
| 09   | SHILLONG                                                                    | Z        | e                          | 20 16 00                                                       |                | Slight, local                | 11        | SHILLONG | Z        | iP         | 20 25 23                   |                | Slight, distant compression            |                 |
| 09   | SHILLONG                                                                    | Z        | iP                         | 22 03 46                                                       |                | Slight, distant compression. | 11        | SHILLONG | Z        | iP         | 22 19 10<br>20 44<br>22 29 |                |                                        |                 |
|      |                                                                             |          |                            |                                                                |                |                              | 11        | CHATRA   | Z<br>ZNE | iP<br>i    | 22 43 02<br>43 24          |                | Slight                                 |                 |
| 10   | Epc: 6 1/2° S, 154° W. Solomon Islands<br>- H = 05h 35m 04s (U. S. C. G. S) |          |                            |                                                                |                |                              |           |          |          |            |                            |                |                                        |                 |
|      | SHILLONG                                                                    | ZE       | iP                         | 05 45 12                                                       |                | Slight, distant compression  | 12        | SHILLONG | Z        | eP         | 22 43 44                   |                | Slight, distant                        |                 |
|      |                                                                             |          |                            |                                                                |                |                              |           |          |          |            |                            |                | Slight, distant compression.           |                 |









| DATE | STATION                                                                                              | COMPT | PHASE | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                        | DATE   | STATION    | COMPT | PHASE    | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                              |
|------|------------------------------------------------------------------------------------------------------|-------|-------|----------------------|---------|--------------------------------|--------|------------|-------|----------|----------------------|---------|--------------------------------------|
| 15   | Epc: 21½°S, 179¼°W. Fiji Islands Region<br>- h about 600 km. - H: 11h 05m 33s<br>Mag: 6½ (Berkeley). |       |       |                      |         |                                | 16     | MADRAS     | E     | e        | 15 22 11             |         | Initial phases not discernable       |
|      | SHILLONG                                                                                             | ZN    | iP    | 11 18 12             | 8320    | Rarefaction                    | Contd. | KODAIKANAL | E     | e        | 15 22 19             |         | Tremor                               |
|      |                                                                                                      |       | PcP   | 18 36                |         |                                |        | BOMBAY     | N     | e        | 15 24 03             |         | Slight, distant                      |
|      |                                                                                                      |       | PP    | 20 52                |         |                                | 16     | SHILLONG   | Z     | eP       | 17 27 24             |         | Slight, distant                      |
|      |                                                                                                      |       | PPP   | 22 34                |         |                                | 16     | SHILLONG   | Z     | iP       | 18 38 19             |         | Slight, compression                  |
|      |                                                                                                      |       | S     | 27 49                |         |                                | 16     | SHILLONG   | Z     | eP       | 21 13 34             |         | Slight, distant                      |
|      |                                                                                                      |       | PS    | 28 10                |         |                                | 17     | SHILLONG   | Z     | iP       | 00 33 25             |         | Slight, compression                  |
|      |                                                                                                      |       | PPS   | 28 25                |         |                                | 17     | SHILLONG   | Z     | eP       | 05 41 51             |         | Slight, near other phases not clear. |
|      |                                                                                                      |       | SKS   | 28 40                |         |                                | 17     | SHILLONG   | Z     | iP       | 06 43 26             |         |                                      |
|      |                                                                                                      |       | SS    | 32 15                |         |                                | 17     | DEHRA DUN  | NE    | e        | 11 13 53             |         | Feeble                               |
|      |                                                                                                      |       | SSS   | 35 23                |         |                                | 17     | MADRAS     | E     | e        | 12 17 59             |         | Phases could not be identified       |
|      | CHATRA                                                                                               | Z     | iP    | 11 21 44             |         |                                | 17     | SHILLONG   | Z     | iP       | 12 20 28             |         | Slight, compression                  |
|      |                                                                                                      | NE    | i     | 27 15                |         |                                | 17     | DEHRA DUN  | NE    | e        | 12 32 52             |         | Feeble                               |
|      | POONA                                                                                                | Z     | e     | 11 22 24             |         | Phases not clear               | 17     | SHILLONG   | Z     | iP       | 12 33 13             |         | Slight, rarefaction                  |
|      | COLOMBO                                                                                              | E     | P     | 11 22 51             |         |                                | 17     | CHATRA     | Z     | iP       | 14 16 13             |         | Slight                               |
|      |                                                                                                      |       | e     | 28 18                |         |                                |        | EZ         | i     | 16 55    |                      |         |                                      |
|      | BOKARO                                                                                               | NE    | i     | 11 22 53             |         | Phases unidentifiable.         | 17     | SHILLONG   | Z     | eP       | 14 16 16             |         | Slight                               |
|      |                                                                                                      |       | i     | 28 15                |         |                                |        | P*         | 16 23 |          |                      |         |                                      |
|      | DEHRA DUN                                                                                            | NE    | e     | 11 23 14             |         | Feeble                         |        | Pg         | 16 37 |          |                      |         |                                      |
|      | KODAIKANAL                                                                                           | E     | e     | 11 23 25             |         | Tremor                         |        | S          | 17 16 |          |                      |         |                                      |
|      | AGRA                                                                                                 | Z     | iP    | 11 23 28             |         |                                | 17     | BOMBAY     | N     | e        | 15 02 45             |         | Very slight                          |
|      |                                                                                                      |       | i     | 25 36                |         |                                |        | DEHRA DUN  | NE    | e        | 15 03 06             |         | Feeble, phases not clear             |
|      |                                                                                                      | ZNE   | iP    | 25 44                |         |                                | 17     | SHILLONG   | Z     | iP       | 21 43 58             |         | Slight, distant rarefaction          |
|      |                                                                                                      | NE    | iP    | 26 46                |         |                                | 17     | CHATRA     | Z     | iP       | 23 25 47             | 130     | Slight                               |
|      |                                                                                                      | Z     | iP    | 32 41                |         |                                |        | EZ         | iS    | 25 04    |                      |         |                                      |
|      | PORT BLAIR                                                                                           | N     | i     | 11 27 21             |         | Slight                         | 18     | BOMBAY     | N     | e        | 11 40 34             |         | Slight, distant                      |
|      | MADRAS                                                                                               | E     | e     | 11 28 23             |         | Initial phases not discernable | 18     | SHILLONG   | Z     | iP       | 12 20 15             |         | Slight, distant rarefaction          |
|      | HYDERABAD                                                                                            | N     | i     | 11 28 35             |         |                                | 18     | DEHRA DUN  | NE    | e        | 12 31 32             |         | Feeble, phases not clear             |
| 15   | SHILLONG                                                                                             | Z     | eP    | 11 44 54             |         | Slight, distant                | 18     | SHILLONG   | Z     | eP       | 17 02 44             |         | Tremor                               |
| 15   | SHILLONG                                                                                             | Z     | eP    | 12 30 26             | 120     | Slight                         | 19     | CHATRA     | Z     | i        | 04 18 35             |         | Feeble, distant                      |
|      |                                                                                                      |       | iSg   | 39 40                |         |                                | 19     | SHILLONG   | Z     | iP       | 04 19 11             |         | Slight, compression                  |
| 15   | SHILLONG                                                                                             | Z     | iP    | 13 49 19             |         | Slight, distant compression    | 19     | DEHRA DUN  | NE    | e        | 15 07 30             |         | Feeble                               |
| 15   | SHILLONG                                                                                             | Z     | iP    | 15 16 59             |         | Slight                         |        | e          | 11 50 |          |                      |         |                                      |
| 15   | SHILLONG                                                                                             | Z     | eP    | 15 31 46             |         | Slight, near                   | 19     | POONA      | Z     | eP       | 19 07 45             |         | Feeble, phases not clear             |
| 15   | SHILLONG                                                                                             | Z     | eP    | 16 21 28             | 280     | Slight                         | 19     | SHILLONG   | Z     | iP       | 21 40 57             |         | Slight, compression, near            |
| 15   | SHILLONG                                                                                             | Z     | iP    | 21 02 22             |         | Slight, distant compression    | 19     | SHILLONG   | Z     | e        | 22 10 25             |         | Tremor                               |
| 15   | SHILLONG                                                                                             | Z     | i     | 22 45 54             |         | Tremor                         | 20     | CHATRA     | Z     | iPg      | 03 52 22             | 60      | Feeble                               |
| 16   | SHILLONG                                                                                             | Z     | iPg   | 04 20 43             | 90      | Slight, rarefaction            |        | iSg        | 52 30 |          |                      |         |                                      |
|      |                                                                                                      |       | Sg    | 20 54                |         |                                | 20     | SHILLONG   | Z     | iP       | 05 28 21             |         | Slight, rarefaction                  |
| 16   | CHATRA                                                                                               | Z     | i     | 05 23 05             |         | Feeble, distant                | 20     | DEHRA DUN  | NE    | e        | 09 30 15             |         | Feeble                               |
|      | SHILLONG                                                                                             | Z     | iP    | 05 23 36             |         | Slight, compression            |        | i          | 31 23 |          |                      |         |                                      |
| 15   | SHILLONG                                                                                             | Z     | iP    | 05 38 43             |         | Slight, rarefaction            | 20     | DEHRA DUN  | NE    | e        | 11 53 59             |         | Tremor                               |
| 16   | DEHRA DUN                                                                                            | NE    | e     | 09 44 28             |         | Feeble                         |        | Z          | iP    | 11 54 41 | 970                  | Slight  |                                      |
|      |                                                                                                      |       | i     | 46 01                |         |                                |        | ZNE        | iS    | 56 21    |                      |         |                                      |
|      | CHATRA                                                                                               | Z     | i     | 09 46 10             |         | Feeble, distant                |        |            |       |          |                      |         |                                      |
|      | SHILLONG                                                                                             | Z     | iP    | 09 47 01             |         | Slight, compression            |        |            |       |          |                      |         |                                      |
| 16   | SHILLONG                                                                                             | Z     | iP    | 10 16 33             |         | Slight, rarefaction            |        |            |       |          |                      |         |                                      |
| 16   | AGRA                                                                                                 | Z     | eP    | 15 17 47             |         | Slight                         |        |            |       |          |                      |         |                                      |
|      |                                                                                                      |       | iS    | 27 31                |         |                                |        |            |       |          |                      |         |                                      |
|      | PORT BLAIR                                                                                           | E     | i     | 16 21 30             |         | Slight                         |        |            |       |          |                      |         |                                      |
|      | DEHRA DUN                                                                                            | NE    | e     | 16 21 58             |         | Slight, phases not clear       |        |            |       |          |                      |         |                                      |
|      | COLOMBO                                                                                              | E     | P     | 16 22 03             |         |                                |        |            |       |          |                      |         |                                      |
|      |                                                                                                      |       | M     | 17 10 00             |         | Amp: = 0.1 mm                  |        |            |       |          |                      |         |                                      |

| DATE | STATION                                                              | COMPT    | PHASE                                 | G. M. T.<br>h. m. s.                                           | Δ<br>km | REMARKS                                        | DATE      | STATION                                                                | COMPT    | PHASE             | G. M. T.<br>h. m. s. | Δ<br>km                        | REMARKS                        |        |
|------|----------------------------------------------------------------------|----------|---------------------------------------|----------------------------------------------------------------|---------|------------------------------------------------|-----------|------------------------------------------------------------------------|----------|-------------------|----------------------|--------------------------------|--------------------------------|--------|
| 20   | SHILLONG<br>Contd.                                                   | Z        | iP                                    | 11 55 38                                                       |         | Slight,<br>rarefaction                         | 22        | SHILLONG                                                               | Z        | iPg<br>iSg        | 18 42 32<br>42 47    | 130                            | Slight,<br>rarefaction         |        |
| 21   | SHILLONG                                                             | ZE       | iP                                    | 02 19 15                                                       |         | Slight, compression,<br>other phases not clear |           | CHATRA                                                                 | Z        | iP<br>iS          | 18 43 38<br>44 35    | 540                            | Feeble                         |        |
|      | POONA                                                                | Z        | eP                                    | 02 20 35                                                       |         | Feeble, phases<br>not clear                    | 22        | SHILLONG                                                               | Z        | iP                | 19 42 44             |                                | Slight, distant<br>compression |        |
| 21   | DEHRA DUN                                                            | NE       | e                                     | 02 30 29                                                       |         | Feeble                                         | 22        | SHILLONG                                                               | Z        | iP                | 20 49 01             |                                | Slight, near<br>rarefaction    |        |
| 21   | CHATRA                                                               | Z        | iPg<br>iSg                            | 04 09 18<br>09 38                                              | 120     | Feeble                                         | 22        | SHILLONG                                                               | Z        | e                 | 21 25 39             |                                | Slight, near                   |        |
| 21   | SHILLONG                                                             | Z        | iP                                    | 08 27 00                                                       |         | Slight, near                                   | 23        | SHILLONG                                                               | Z        | e                 | 09 15 07             |                                | Tremor                         |        |
| 21   | SHILLONG                                                             | Z        | iP                                    | 11 28 54                                                       |         | Slight, near                                   | 23        | SHILLONG                                                               | Z        | e                 | 09 40 32             |                                | Slight, near                   |        |
| 21   | Epc: 40°N, 74½°E, Kirghiz-China Border<br>H: 12h 19m 30s (U.S.C.G.S) |          |                                       |                                                                |         |                                                |           | 23                                                                     | SHILLONG | Z                 | e                    | 10 22 55                       |                                | Tremor |
|      | DEHRA DUN                                                            | NE       | eP<br>iS                              | 12 22 17<br>24 20                                              | 1200    | Slight, phases<br>not clear                    | 23        | SHILLONG                                                               | Z        | iP                | 10 48 58             |                                | Slight, distant<br>compression |        |
|      | CHATRA                                                               | Z<br>NE  | iP<br>iS                              | 12 23 38<br>26 45                                              | 1870    | Slight                                         | 23        | DEHRA DUN                                                              | NE       | e                 | 13 56 53             |                                | Tremor                         |        |
|      | SHILLONG                                                             | Z        | iP<br>PP<br>iS<br>Lq<br>SS<br>Lr<br>M | 12 24 21<br>24 45<br>28 15<br>28 27<br>28 45<br>29 20<br>31 15 | 2380    | Slight,<br>compression                         | 23        | SHILLONG                                                               | Z        | eP                | 14 00 24             |                                | Slight, distant                |        |
|      | POONA                                                                | Z        | eP<br>i<br>i                          | 12 24 36<br>28 38<br>28 58                                     |         | Feeble, S-Phase<br>not clear.                  | 23        | SHILLONG                                                               | Z        | e                 | 19 13 11             |                                | Slight, near                   |        |
|      | BOMBAY                                                               | E        | e<br>e                                | 12 24 43<br>28 37                                              |         | Slight                                         | 23        | SHILLONG                                                               | Z        | iPg<br>iSg        | 20 02 58<br>03 00    | 20                             | Slight,<br>rarefaction         |        |
|      | MADRAS                                                               | E        | e<br>e                                | 12 31 01<br>35 03                                              |         | Phases could not<br>be identified.             | 23        | SHILLONG                                                               | Z        | iPg<br>iSg        | 20 35 13<br>35 15    | 20                             | Slight                         |        |
| 21   | SHILLONG                                                             | Z        | iP                                    | 13 17 55                                                       |         | Slight,<br>rarefaction                         | 23        | SHILLONG                                                               | Z        | iPg<br>iSg        | 20 39 21<br>39 23    |                                |                                |        |
| 21   | SHILLONG                                                             | Z        | e                                     | 14 28 44                                                       |         | Tremor                                         | 23        | SHILLONG                                                               | Z        | eP                | 22 30 54             |                                | Slight, distant                |        |
| 21   | SHILLONG                                                             | Z        | ePg<br>Sg                             | 15 13 46<br>13 53                                              | 50      | Slight                                         | DEHRA DUN | NE                                                                     | e<br>e   | 22 32 13<br>39 22 |                      | Feeble                         |                                |        |
| 21   | DEHRA DUN                                                            | NE       | e                                     | 17 56 56                                                       |         |                                                | 23        | SHILLONG                                                               | Z        | iP                | 23 24 43             |                                | Slight, near<br>compression    |        |
|      | SHILLONG                                                             | Z        | iP                                    | 17 57 14                                                       |         | Slight,<br>rarefaction                         | TOCKLAI   | E                                                                      | eP       | 23 25 23          |                      | Near, slight                   |                                |        |
| 21   | SHILLONG                                                             | Z        | P<br>Sg                               | 18 38 13<br>38 45                                              | 210     | Slight                                         | 23        | SHILLONG                                                               | Z        | iP                | 23 34 25             |                                | Slight, distant<br>compression |        |
| 21   | SHILLONG                                                             | Z        | Pg<br>Sg                              | 19 54 30<br>54 45                                              | 130     | Slight                                         | 24        | VIZIANAGRAM                                                            | NE<br>E  | eP<br>eP          | 01 16 44<br>20 24    |                                | Slight, near                   |        |
| 21   | SHILLONG                                                             | Z        | eP                                    | 23 55 54                                                       |         | Slight, near                                   | 24        | SHILLONG                                                               | Z        | e                 | 05 53 34             |                                | Slight, distant                |        |
| 22   | SHILLONG                                                             | Z        | eP                                    | 01 25 37                                                       |         |                                                | 24        | SHILLONG                                                               | Z        | iP                | 14 18 52             |                                | Slight, distant<br>rarefaction |        |
| 22   | SHILLONG                                                             | Z        | iP<br>iS                              | 05 04 33<br>05 08                                              | 310     | Slight, Compression,<br>Ground movement West   | 24        | SHILLONG                                                               | Z        | iP                | 15 46 41             |                                | Slight, near<br>rarefaction    |        |
|      | TOCKLAI                                                              | E        | eP                                    | 05 04 39                                                       |         | Slight, distant                                | 24        | CHATRA                                                                 | Z        | i                 | 16 40 01             |                                | Feeble, distant                |        |
| 22   | CHATRA                                                               | Z<br>ZNE | iP<br>iS                              | 05 05 32<br>06 53                                              | 780     | Slight                                         | SHILLONG  | Z                                                                      | e        | 15 40 39          |                      | Slight, near                   |                                |        |
|      | DEHRA DUN                                                            | NE       | e                                     | 06 10 11                                                       |         | Tremor                                         | 24        | SHILLONG                                                               | Z        | iPg<br>iSg        | 16 55 38<br>56 51    | 110                            | Slight,<br>compression         |        |
|      | POONA                                                                | Z        | P                                     | 06 11 42                                                       |         | Feeble, Phases<br>not clear                    | 24        | SHILLONG                                                               | Z        | e                 | 17 30 09             |                                | Slight, near                   |        |
| 22   | PORT BLAIR                                                           | E        | iPg<br>iSg                            | 06 29 15<br>29 26                                              | 100     | Slight                                         | 24        | SHILLONG                                                               | Z        | e                 | 18 01 08             |                                |                                |        |
| 22   | SHILLONG                                                             | Z        | iP                                    | 07 57 52                                                       |         | Slight,<br>compression                         | 25        | Epc: 9°S, 113½°E. Off East Coast of Java<br>H: 00h 14m 30s (U.S.C.G.S) |          |                   |                      |                                |                                |        |
| 22   | SHILLONG                                                             | Z        | eP                                    | 13 51 44                                                       |         | Slight, near                                   | SHILLONG  | Z                                                                      | iP<br>i  | 00 22 19<br>28 04 |                      | Slight, distant<br>compression |                                |        |
|      | TOCKLAI                                                              | E        | eP                                    | 13 51 54                                                       |         | Slight                                         | CHATRA    | Z<br>E                                                                 | iP<br>iS | 00 22 49<br>28 45 | 4270                 | Slight                         |                                |        |
| 22   | SHILLONG                                                             | Z        | iP                                    | 17 37 53                                                       |         | Slight, distant<br>compression                 | POONA     | Z                                                                      | iP       | 00 23 19          |                      | Feeble, phases<br>not clear.   |                                |        |

| DATE                                                 | STATION     | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                                          | DATE           | STATION     | COMPT | PHASE | G. M. T. | Δ    | REMARKS                     |
|------------------------------------------------------|-------------|-------|-------|----------|------|------------------------------------------------------------------|----------------|-------------|-------|-------|----------|------|-----------------------------|
|                                                      |             |       |       | h. m. s. | km   |                                                                  | September 1959 |             |       |       | h. m. s. | km   |                             |
| 25                                                   | DEHRA DUN   | NE    | e     | 00 23 53 |      | Tremor                                                           | 25             | SHILLONG    | Z     | eP    | 03 54 14 |      | Slight, near                |
| Contd.                                               |             |       |       |          |      |                                                                  |                |             |       |       |          |      |                             |
| 25 Epc: 22.3°N, 122.2°E. Near East Coast of Formosa. |             |       |       |          |      |                                                                  |                |             |       |       |          |      |                             |
| - H = 02h 36m 47s (Shillong)                         |             |       |       |          |      |                                                                  |                |             |       |       |          |      |                             |
| 22°N, 122°E. - H = 02h 36m 48s (U.S.C.G.S)           |             |       |       |          |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      | SHILLONG    | ZNE   | iP    | 02 42 36 | 3040 | Moderate, compression. Ground movement North and West not clear. | 25             | DEHRA DUN   | NE    | eP    | 08 39 44 | 4300 | Slight, phases not clear    |
|                                                      |             | N     | i     | 43 48    |      |                                                                  |                |             |       | iS    | 45 42    |      |                             |
|                                                      |             | E     | i     | 44 15    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | iS    | 47 16    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | N     | i     | 47 48    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | i     | 48 17    |      |                                                                  |                |             |       |       |          |      |                             |
| 25                                                   | TOCKLAI     | E     | eP    | 02 42 47 |      | Moderate, distant                                                | 25             | SHILLONG    | Z     | iP    | 10 37 15 |      | Slight, distant compression |
|                                                      | PORT BLAIR  | E     | eP    | 02 42 58 | 3040 | Slight                                                           | 25             | SHILLONG    | Z     | i     | 13 19 08 |      |                             |
|                                                      |             |       | eS    | 47 37    |      |                                                                  | 25             | SHILLONG    | Z     | iP    | 14 14 51 |      | Slight, distant compression |
|                                                      | CALCUTTA    | E     | iP    | 02 43 10 | 3370 | Moderate, first movement West                                    | 25             | DEHRA DUN   | NE    | e     | 15 45 11 |      | Tremor                      |
|                                                      |             |       | iS    | 48 10    |      |                                                                  | 25             | SHILLONG    | Z     | eP    | 15 46 15 |      | Slight, distant             |
|                                                      | CHATRA      | ZNE   | iP    | 02 43 13 | 3450 | Moderate                                                         |                |             |       | e     | 49 57    |      |                             |
|                                                      |             | NE    | iS    | 48 18    |      |                                                                  | 25             | SHILLONG    | Z     | iP    | 18 53 45 |      | Slight, distant compression |
|                                                      | DEHRA DUN   | NE    | eP    | 02 44 25 | 4300 | Moderate                                                         | 25             | SHILLONG    | Z     | iP    | 20 02 52 |      | Slight, distant rarefaction |
|                                                      |             | N     | PP    | 45 46    |      |                                                                  | 25             | SHILLONG    | Z     | iP    | 20 42 58 |      | Slight, distant rarefaction |
|                                                      |             |       | PPP   | 46 32    |      |                                                                  | 25             | SHILLONG    | Z     | iP    | 20 56 29 |      | Slight, distant rarefaction |
|                                                      |             |       | iS    | 50 23    |      |                                                                  | 25             | SHILLONG    | Z     | e     | 21 35 44 |      | Slight, near                |
|                                                      |             |       | SS    | 52 21    |      |                                                                  | 25             | SHILLONG    | Z     | e     | 23 00 54 |      | Tremor                      |
|                                                      |             |       | SSS   | 53 22    |      |                                                                  | 25             | SHILLONG    | Z     | iP    | 23 28 35 |      | Slight, distant compression |
|                                                      |             |       | Lr    | 54 55    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | M     | 57 41    |      | Peri: 13 secs<br>Amp: 43.4 mm                                    | 27             | TOCKLAI     | E     | eP    | 02 51 40 |      | Slight, distant             |
|                                                      | MADRAS      | E     | iP    | 02 44 29 |      |                                                                  | 27             | VIZIANAGRAM | E     | eP    | 04 48 52 |      | Slight, near                |
|                                                      |             |       | PP    | 46 05    |      |                                                                  | 27             | SHILLONG    | Z     | iP    | 05 40 55 |      | Slight, near                |
|                                                      |             |       | PPP   | 46 30    |      |                                                                  | 27             | SHILLONG    | Z     | iP    | 10 29 09 |      | Slight, distant compression |
|                                                      |             |       | iS    | 50 39    |      |                                                                  |                | CHATRA      | Z     | i     | 10 29 40 |      | Slight, distant             |
|                                                      |             |       | PPS   | 50 54    |      |                                                                  | 27             | SHILLONG    | Z     | eP    | 10 53 39 |      | Slight, distant             |
|                                                      |             |       | Lq    | 54 00    |      |                                                                  | 27             | VIZIANAGRAM | NE    | eP    | 12 35 08 |      | Slight, near                |
|                                                      |             |       | SSS   | 54 17    |      |                                                                  | 27             | DEHRA DUN   | NE    | e     | 12 43 15 |      | Feeble                      |
|                                                      |             |       | Lr    | 55 41    |      |                                                                  |                |             |       | i     | 44 50    |      |                             |
|                                                      |             |       | M     | 58 56    |      |                                                                  | 27             | CHATRA      | Z     | i     | 12 44 59 |      | Feeble, distant             |
|                                                      | HYDERABAD   | N     | iP    | 02 44 31 | 4550 | Moderate, South wards.                                           | 27             | SHILLONG    | Z     | iP    | 12 45 39 |      | Slight, distant compression |
|                                                      |             |       | iS    | 50 44    |      |                                                                  | 27             | SHILLONG    | Z     | eP    | 16 44 35 |      | Slight, distant             |
|                                                      |             |       | PS    | 51 00    |      |                                                                  | 27             | CHATRA      | Z     | i     | 16 45 11 |      | Feeble, distant             |
|                                                      |             |       | PPS   | 51 13    |      |                                                                  | 27             | SHILLONG    | Z     | eP    | 18 53 55 |      | Slight, distant             |
|                                                      |             |       | SS    | 53 49    |      |                                                                  | 27             | SHILLONG    | Z     | ePg   | 19 11 39 |      | Slight, local               |
|                                                      |             |       | Lq    | 54 18    |      |                                                                  | 27             | VIZIANAGRAM | E     | eP    | 21 03 44 |      | Very slight, near           |
|                                                      |             |       | SSS   | 54 39    |      |                                                                  | 28             | SHILLONG    | Z     | iP    | 03 47 51 |      | Slight, near rarefaction    |
|                                                      |             |       | Lr    | 56 19    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | M     | 59 57    |      | Peri: 15 secs<br>Amp: 36 mm                                      | 28             | SHILLONG    | Z     | eP    | 04 27 05 |      | Slight, distant             |
|                                                      | KODAIKANAL  | E     | iP    | 02 44 59 | 4630 | Slight                                                           | 28             | SHILLONG    | Z     | iP    | 04 29 51 |      | Slight, distant rarefaction |
|                                                      |             |       | iS    | 51 17    |      |                                                                  | 28             | SHILLONG    | Z     | iP    | 08 25 43 |      | Slight, distant compression |
|                                                      |             |       | Lq    | 55 08    |      |                                                                  | 28             | SHILLONG    | Z     | iP    | 10 25 32 |      | Slight, distant compression |
|                                                      |             |       | Lr    | 57 11    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | M     | 03 00 47 |      | Peri: 15 secs<br>Amp: 28.8 mm                                    | 28             | CHATRA      | Z     | iPg   | 13 41 21 | 70   | Feeble                      |
|                                                      | POONA       | Z     | eP    | 02 45 04 | 4930 | Moderate                                                         |                |             |       | iSg   | 41 30    |      |                             |
|                                                      |             | NE    | S     | 51 39    |      |                                                                  | 28             | SHILLONG    | Z     | eP    | 14 21 16 |      | Slight, near                |
|                                                      |             | N     | SS    | 54 47    |      |                                                                  | 28             | SHILLONG    | Z     | e     | 15 42 34 |      | Slight, near                |
|                                                      | BOMBAY      | N     | eP    | 02 45 10 | 5050 | Moderate                                                         |                |             |       |       |          |      |                             |
|                                                      |             | E     | iP    |          |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | NE    | PP    | 46 59    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | N     | PPP   | 47 37    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | E     | iS    | 51 45    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | NE    | eS    | 51 52    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             | N     | e     | 52 24    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | e     | 53 14    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | SS    | 55 16    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | Lq    | 55 40    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | SSS   | 56 00    |      |                                                                  |                |             |       |       |          |      |                             |
|                                                      |             |       | M     | 03 06 12 |      | Peri: 16 secs<br>Amp: 25 mm                                      |                |             |       |       |          |      |                             |
| 25                                                   | SHILLONG    | Z     | iP    | 02 46 56 |      | Slight, distant                                                  |                |             |       |       |          |      |                             |
| 25                                                   | TOCKLAI     | E     | eP    | 13 17 57 |      | Slight, distant                                                  |                |             |       |       |          |      |                             |
| 25                                                   | SHILLONG    | Z     | eP    | 13 19 54 |      | Slight, near                                                     |                |             |       |       |          |      |                             |
| 25                                                   | VIZIANAGRAM | E     | eP    | 14 34 29 |      | Slight, near                                                     |                |             |       |       |          |      |                             |
| 25                                                   | SHILLONG    | Z     | iP    | 22 20 38 |      | Slight, distant Compression                                      |                |             |       |       |          |      |                             |
| 25                                                   | SHILLONG    | Z     | eP    | 22 30 03 |      | Slight, distant Compression                                      |                |             |       |       |          |      |                             |
| 26                                                   | VIZIANARGAM | E     | eP    | 02 45 29 |      | Very slight, near                                                |                |             |       |       |          |      |                             |

| DATE | STATION                                                          | COMPT | PHASE | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                             | DATE<br>September 1959 | STATION     | COMPT | REMARKS   |          |
|------|------------------------------------------------------------------|-------|-------|----------------------|---------|-------------------------------------|------------------------|-------------|-------|-----------|----------|
| 28   | SHILLONG                                                         | Z     | e     | 16 34 38             |         | Slight, near                        | 29 BOMBAY              | E           | e     | 54 18     |          |
| 28   | VIZIANAGRAM                                                      | E     | eP    | 17 19 19             |         | Slight, near                        | Contd.                 |             | e     | 58 57     |          |
| 28   | VIZIANAGRAM                                                      | E     | eP    | 18 58 09             |         | Slight                              |                        | NE          | e     | 16 01 40  |          |
| 28   | SHILLONG                                                         | Z     | iP    | 19 15 25             |         | Slight, distant rarefaction         |                        | E           | e     | 02 58     |          |
| 28   | SHILLONG                                                         | Z     | iP    | 19 15 25             |         | Slight, distant rarefaction         |                        | E           | e     | 10 03     |          |
| 28   | SHILLONG                                                         | Z     | iP    | 19 15 25             |         | Slight, distant rarefaction         |                        | E           | e     | 12 34     |          |
| 28   | VIZIANAGRAM                                                      | E     | eP    | 19 22 29             |         | Slight, near                        | DEHRA DUN              | NE          | e     | 15 53 53  |          |
| 28   | SHILLONG                                                         | Z     | eP    | 19 34 50             |         | Slight, distant                     |                        |             | e     | 57 42     |          |
| 28   | SHILLONG                                                         | Z     | iP    | 21 53 36             |         | Slight, distant rarefaction         | PORT BLAIR             | E           | iP    | 15 56 10  |          |
| 28   | SHILLONG                                                         | Z     | iP    | 21 53 36             |         | Slight, distant rarefaction         |                        | E           | e     | 58 53     |          |
| 28   | SHILLONG                                                         | Z     | eP    | 21 59 36             |         | Slight, near                        |                        |             | i     | 16 05 37  |          |
| 28   | SHILLONG                                                         | Z     | eP    | 21 59 36             |         | Slight, near                        |                        |             | e     | 10 30     |          |
| 29   | SHILLONG                                                         | Z     | iP    | 02 51 49             | 1440    | Slight, compression                 | BOKARO                 | EN          | i     | 15 57 07  |          |
| 29   | SHILLONG                                                         | E     | iS    | 54 16                |         | Slight, compression                 |                        |             | i     | 16 00 14  |          |
| 29   | CHATRA                                                           | Z     | iP    | 02 52 32             | 2180    | Slight                              |                        |             |       |           |          |
| 29   | CHATRA                                                           | NE    | iS    | 56 08                |         | Slight                              |                        |             |       |           |          |
| 29   | DEHRA DUN                                                        | NE    | e     | 02 59 58             |         | Tremor                              | MADRAS                 | E           | e     | 15 57 07  |          |
| 29   | SHILLONG                                                         | Z     | eP    | 04 47 07             |         | Slight, near                        | CHATRA                 | E           | iP    | 15 57 08  |          |
| 29   | SHILLONG                                                         | Z     | i     | 47 50                |         | Slight, near                        |                        |             | eP    |           |          |
| 29   | SHILLONG                                                         | Z     | iP    | 09 08 18             |         | Slight, near                        | KODAIKANAL             | E           | e     | 15 57 17  |          |
| 29   | SHILLONG                                                         | Z     | iP    | 09 13 52             |         | Slight, near compression            | HYDERABAD              | N           | M     | 16 30 13  |          |
| 29   | SHILLONG                                                         | Z     | i     | 14 51                |         | Slight, near compression            |                        |             |       |           |          |
| 29   | CHATRA                                                           | Z     | i     | 09 16 11             |         | Feeble, distant                     | 29 SHILLONG            | Z           | iPg   | 17 55 59  |          |
| 29   | SHILLONG                                                         | Z     | iPg   | 10 57 41             | 110     | Slight                              | 29 SHILLONG            | Z           | eP    | 18 44 07  |          |
| 29   | SHILLONG                                                         | Z     | iSg   | 57 53                |         | Slight                              |                        |             |       |           |          |
| 29   | CHATRA                                                           | Z     | iP    | 12 04 36             | 240     | Slight                              | 30 VIZIANAGRAM         | E           | eP    | 01 15 58  |          |
| 29   | CHATRA                                                           | ZE    | iS    | 05 04                |         | Slight                              | 30 VIZIANAGRAM         | E           | eP    | 01 42 20  |          |
| 29   | Epc: 29°S, 176°W. Kermadec Islands<br>H: 15h 31m 57s (U.S.C.G.S) |       |       |                      |         |                                     |                        | 30 SHILLONG | Z     | iP        | 03 36 51 |
| 29   | SHILLONG                                                         | Z     | e     | 15 46 01             |         | Slight, distant                     | 30 SHILLONG            | Z           | iP    | 04 51 02  |          |
| 29   | SHILLONG                                                         | Z     | i     | 56 42                |         | Slight, distant                     |                        |             |       |           |          |
| 29   | COLOMBO                                                          | E     | eP    | 15 50 00             |         | Slight, near, first movement large. | 30 SHILLONG            | Z           | iP    | 05 38 29  |          |
| 29   | COLOMBO                                                          | E     | e     | 16 05 35             |         | Slight, near, first movement large. |                        |             |       |           |          |
| 29   | COLOMBO                                                          | E     | e     | 31 00                |         | Slight, near, first movement large. | 30 CHATRA              | Z           | i     | 05 38 47  |          |
| 29   | COLOMBO                                                          | E     | e     | 46 00                |         | Slight, near, first movement large. |                        |             |       |           |          |
| 29   | AGRA                                                             | Z     | iP    | 15 51 44             |         | Rarefaction                         | 30 SHILLONG            | Z           | iP    | 110 32 05 |          |
| 29   | AGRA                                                             | EN    | i     | 57 32                |         | Rarefaction                         | 30 SHILLONG            | Z           | iP    | 17 34 49  |          |
| 29   | AGRA                                                             | ZNE   | i     | 58 44                |         | Rarefaction                         | 30 SHILLONG            | Z           | e     | 19 48 03  |          |
| 29   | AGRA                                                             | ZNE   | i     | 15 01 30             |         | Rarefaction                         | 30 SHILLONG            | Z           | iP    | 21 38 29  |          |
| 29   | AGRA                                                             | ZNE   | i     | 15 01 30             |         | Rarefaction                         | 30 VIZIANAGRAM         | E           | eP    | 23 34 45  |          |

**Earthquake Reports**  
(Non Instrumental Reports)

The following is the list of earthquakes that are reported by voluntary Observers from different station during the month of September, 1959.

| Place at which felt | Date in G.M.T. | Time in G.M.T.<br>h. m. s. | No. of shocks | Duration of the shocks | Intensity in R.F. Scale | Remarks |
|---------------------|----------------|----------------------------|---------------|------------------------|-------------------------|---------|
| Gangtok (Sikkim)    | 06             | 21 06                      | One           | 2 secs                 | V                       |         |
| Gopalpur (Ganjam)   | 09             | 11 15                      | One           | 2 secs                 | IV                      |         |
| Gopalpur (Ganjam)   | 09             | 12 50                      | One           | 3 secs                 | IV                      |         |
| Upper Shillong      | 22             | 06 04                      | One           | 3 secs                 | IV                      |         |







| DATE                      | HOUR | K | MEAN   | MEAN   | DATE                       | HOUR | K | MEAN     | MEAN   | DATE                | HOUR | K   | MEAN     | MEAN   | DATE        | HOUR | K   | MEAN     | MEAN   |
|---------------------------|------|---|--------|--------|----------------------------|------|---|----------|--------|---------------------|------|-----|----------|--------|-------------|------|-----|----------|--------|
|                           | GMT  |   | Ampli- | Period |                            | GMT  |   | Ampli-   | Period |                     | GMT  |     | Ampli-   | Period |             | GMT  |     | Ampli-   | Period |
|                           |      |   | tude   | in     |                            |      |   | tude     | in     |                     |      |     | tude     | in     |             |      |     | tude     | in     |
|                           |      |   | in mm  | secs   |                            |      |   | (Micron) | secs   |                     |      |     | (Micron) | secs   |             |      |     | (Micron) | secs   |
| Station: BOMBAY (Colaba). |      |   |        |        | Compt. E-W. September 1959 |      |   |          |        | Station: PONT BLAIR |      |     |          |        | Compt. E-W. |      |     |          |        |
| 19                        | 12   |   |        |        | 01                         | 00   | 3 | 0.4      | 3.2    | 13                  | 00   | 3   | 0.4      | 3.1    | 23          | 00   | 0.0 |          |        |
| Conf'd.                   | 18   |   |        |        |                            | 06   |   |          |        |                     | 05   | 3   | 0.4      | 3.1    |             | 05   | 0.0 |          |        |
|                           |      |   |        |        |                            | 12   |   |          |        |                     | 12   | 3   | 0.4      | 3.1    |             | 12   | 0.0 |          |        |
|                           |      |   |        |        |                            | 18   |   |          |        |                     | 18   | 3   | 0.4      | 3.1    |             | 18   | 0.0 |          |        |
| 20                        | 00   |   |        |        | 02                         | 00   |   |          |        | 14                  | 00   | 3   | 0.4      | 3.1    | 24          | 00   | 0.0 |          |        |
|                           | 05   |   |        |        |                            | 06   |   |          |        |                     | 06   |     |          |        |             | 06   | 3   | 0.4      | 7.2    |
|                           | 12   | 2 | 0.7    | 4.1    |                            | 12   |   |          |        |                     | 12   |     |          |        |             | 12   | 3   | 0.4      | 7.2    |
|                           | 18   | 2 | 0.7    | 3.9    |                            | 18   |   |          |        |                     | 18   |     |          |        |             | 18   | 3   | 0.4      | 7.2    |
| 21                        | 00   | 2 | 0.7    | 3.9    | 03                         | 00   |   |          |        | 15                  | 00   | 0.0 |          |        | 25          | 00   | 3   | 0.4      | 3.2    |
|                           | 05   | 2 | 0.7    | 3.8    |                            | 06   |   |          |        |                     | 06   | 0.0 |          |        |             | 06   | 3   | 0.4      | 3.2    |
|                           | 12   | 2 | 0.7    | 3.8    |                            | 12   |   |          |        |                     | 12   | 0.0 |          |        |             | 12   | 3   | 0.4      | 3.2    |
|                           | 18   |   |        |        |                            | 18   |   |          |        |                     | 18   | 0.0 |          |        |             | 18   | 3   | 0.4      | 3.2    |
| 22                        | 00   | 2 | 0.9    | 4.0    | 04                         | 00   |   |          |        | 15                  | 00   | 0.0 |          |        | 25          | 06   | 3   | 0.4      | 3.2    |
|                           | 06   | 2 | 0.9    | 4.0    |                            | 06   |   |          |        |                     | 06   | 0.0 |          |        |             | 12   | 3   | 0.4      | 3.2    |
|                           | 12   | 2 | 1.0    | 4.1    |                            | 12   |   |          |        |                     | 12   | 0.0 |          |        |             | 18   | 3   | 0.4      | 3.2    |
|                           | 18   | 2 | 1.0    | 4.4    |                            | 18   |   |          |        |                     | 18   | 0.0 |          |        |             |      |     |          |        |
| 23                        | 00   | 2 | 0.8    | 4.2    | 05                         | 00   |   |          |        | 16                  | 00   | 0.0 |          |        | 26          | 00   | 3   | 0.8      | 3.2    |
|                           | 06   | 2 | 0.0    | 4.2    |                            | 06   |   |          |        |                     | 06   | 0.0 |          |        |             | 06   | 3   | 0.4      | 3.2    |
|                           | 12   | 2 | 1.0    | 4.0    |                            | 12   |   |          |        |                     | 12   | 0.0 |          |        |             | 12   | 3   | 0.4      | 3.2    |
|                           | 18   | 2 | 0.9    | 4.1    |                            | 18   |   |          |        |                     | 18   | 0.0 |          |        |             | 18   | 3   | 0.4      | 3.2    |
| 24                        | 00   | 2 | 0.9    | 4.0    | 06                         | 00   |   |          |        | 17                  | 00   | 0.0 |          |        | 26          | 06   | 3   | 0.4      | 3.2    |
|                           | 06   | 2 | 1.0    | 4.4    |                            | 06   |   |          |        |                     | 06   | 0.0 |          |        |             | 12   | 3   | 0.4      | 3.2    |
|                           | 12   | 2 | 1.1    | 4.1    |                            | 12   |   |          |        |                     | 12   | 0.0 |          |        |             | 18   | 3   | 0.4      | 3.2    |
|                           | 18   | 2 | 1.1    | 4.3    |                            | 18   |   |          |        |                     | 18   | 0.0 |          |        |             |      |     |          |        |
| 25                        | 00   | 2 | 1.2    | 4.0    | 07                         | 00   | 3 | 0.8      | 7.2    | 18                  | 00   | 0.0 |          |        | 27          | 00   | 3   | 0.4      | 3.2    |
|                           | 06   | 2 | 1.3    | 4.5    |                            | 06   | 3 | 0.8      | 7.5    |                     | 06   | 0.0 |          |        |             | 06   | 3   | 0.4      | 3.2    |
|                           | 12   | 2 | 1.3    | 4.4    |                            | 12   | 3 | 0.8      | 7.5    |                     | 12   | 0.0 |          |        |             | 12   | 3   | 0.8      | 3.4    |
|                           | 18   | 2 | 1.1    | 4.4    |                            | 18   | 3 | 0.8      | 7.5    |                     | 18   | 0.0 |          |        |             | 18   | 3   | 0.8      | 3.4    |
| 26                        | 00   | 2 | 1.1    | 4.3    | 08                         | 00   | 3 | 0.4      | 7.2    | 19                  | 00   | 0.0 |          |        | 28          | 00   | 3   | 0.8      | 3.4    |
|                           | 06   | 2 | 1.0    | 4.1    |                            | 06   | 3 | 0.4      | 7.2    |                     | 06   | 0.0 |          |        |             | 06   | 2   | 1.2      | 3.2    |
|                           | 12   | 2 | 1.3    | 4.2    |                            | 12   | 3 | 0.4      | 7.2    |                     | 12   | 0.0 |          |        |             | 12   | 2   | 1.2      | 3.2    |
|                           | 18   | 2 | 0.9    | 4.2    |                            | 18   | 3 | 0.4      | 7.2    |                     | 18   | 0.0 |          |        |             | 18   | 3   | 1.2      | 3.2    |
| 27                        | 00   | 2 | 1.1    | 4.3    | 09                         | 00   | 3 | 0.4      | 7.2    | 20                  | 00   | 0.0 |          |        | 29          | 00   | 2   | 1.2      | 3.2    |
|                           | 06   | 2 | 1.1    | 3.8    |                            | 06   | 3 | 0.8      | 7.2    |                     | 06   | 0.0 |          |        |             | 06   | 2   | 1.2      | 3.2    |
|                           | 12   |   |        |        |                            | 12   | 3 | 0.8      | 7.2    |                     | 12   | 0.0 |          |        |             | 12   | 2   | 1.2      | 3.2    |
|                           | 18   | 2 | 1.0    | 3.7    |                            | 18   | 3 | 0.8      | 7.2    |                     | 18   | 0.0 |          |        |             | 18   | 2   | 2.1      | 3.2    |
| 28                        | 00   | 2 | 1.3    | 3.4    | 10                         | 00   | 3 | 0.8      | 7.2    | 21                  | 00   | 0.0 |          |        | 30          | 00   | 2   | 1.6      | 3.2    |
|                           | 06   | 2 | 1.3    | 3.1    |                            | 06   | 3 | 0.8      | 7.5    |                     | 06   | 0.0 |          |        |             | 06   | 2   | 2.4      | 3.6    |
|                           | 12   | 2 | 1.1    | 3.1    |                            | 12   | 3 | 1.3      | 7.5    |                     | 12   | 0.0 |          |        |             | 12   | 2   | 2.4      | 3.6    |
|                           | 18   | 2 | 1.1    | 3.2    |                            | 18   | 3 | 1.3      | 7.5    |                     | 18   | 0.0 |          |        |             | 18   | 2   | 2.8      | 3.7    |
| 29                        | 00   | 2 | 1.3    | 3.3    | 11                         | 00   | 3 | 1.3      | 7.3    | 22                  | 00   | 0.0 |          |        |             |      |     |          |        |
|                           | 06   | 2 | 1.3    | 3.0    |                            | 06   | 3 | 0.4      | 7.2    |                     | 06   | 0.0 |          |        |             |      |     |          |        |
|                           | 12   | 2 | 1.3    | 3.4    |                            | 12   | 3 | 0.4      | 7.2    |                     | 12   | 0.0 |          |        |             |      |     |          |        |
|                           | 18   |   |        |        |                            | 18   | 3 | 0.4      | 7.2    |                     | 18   | 0.0 |          |        |             |      |     |          |        |
| 30                        | 00   | 1 | 1.5    | 3.8    | 12                         | 00   | 3 | 0.4      | 7.2    |                     | 06   | 0.0 |          |        |             |      |     |          |        |
|                           | 03   | 1 | 1.5    | 3.8    |                            | 06   | 3 | 0.4      | 3.1    |                     | 12   | 0.0 |          |        |             |      |     |          |        |
|                           | 06   | 1 | 2.0    | 4.1    |                            | 12   | 3 | 0.4      | 3.1    |                     | 18   | 0.0 |          |        |             |      |     |          |        |
|                           | 09   | 1 | 2.5    | 4.3    |                            | 18   | 3 | 0.4      | 3.1    |                     |      |     |          |        |             |      |     |          |        |
|                           | 12   | 1 | 2.4    | 4.2    |                            |      |   |          |        |                     |      |     |          |        |             |      |     |          |        |
|                           | 15   | 1 | 2.0    | 4.5    |                            |      |   |          |        |                     |      |     |          |        |             |      |     |          |        |
|                           | 18   | 1 | 2.6    | 4.3    |                            |      |   |          |        |                     |      |     |          |        |             |      |     |          |        |
|                           | 21   | 1 | 2.5    | 4.5    |                            |      |   |          |        |                     |      |     |          |        |             |      |     |          |        |





GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

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Director General of Observatories

## List of Seismograph stations with their Instruments and Constants

| Station              | Latitude | Longitude | Height<br>a.s.l.<br>(Metres) | Lithographic<br>Foundation | Instrument           | Compt.        | Period<br>in<br>secs | Static<br>Magni-<br>fication | Damping<br>ratio | Paper<br>speed<br>mm/min. |      |
|----------------------|----------|-----------|------------------------------|----------------------------|----------------------|---------------|----------------------|------------------------------|------------------|---------------------------|------|
| Agra                 |          |           |                              |                            | Columbia             | E             | To=15                | Tg=100                       |                  | 15                        |      |
|                      |          |           |                              |                            | Long Period          | N             | To=15                | Tg=85                        |                  | 15                        |      |
|                      |          |           |                              |                            | do                   | Z             | To=15                | Tg=70                        |                  | 15                        |      |
| Bombay               | 18°54'N  | 72°40'E   | 6                            | Deccan Trap                | Milne-Shaw           | N             | 12                   | 350                          | 13:1             | 16                        |      |
|                      |          |           |                              |                            | Milne-Shaw           | E             | 12                   | 350                          | 23:1             | 8                         |      |
|                      |          |           |                              |                            | Sprengnether         | E             | To=Tg=7 secs         |                              | 30               |                           |      |
| Bokaro               | 23°50'N  | 85°48'E   |                              | Rock                       | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                            | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | E             | 0.8                  | 950                          | h = 0.8          | 60                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | N             | 0.8                  | 1000                         | h = 0.8          | 60                        |      |
| Calcutta             | 22°32'N  | 88°22'E   | (1)                          | 7(Milne-Shaw)              | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                            | (2) 6(Omori-Ewing)   | Wood-Anderson | N                    | 2                            | 870              | Critical                  | 30   |
|                      |          |           |                              |                            | Alluvium             | Omori-Ewing   | N                    | 16                           | 32               |                           | 25.4 |
|                      |          |           |                              |                            | Omori-Ewing          | E             | 21                   | 30                           |                  | 25.4                      |      |
| Chatra               | 25°50'N  | 87°10'E   | 161                          | Sand Stone                 | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | N             | 1                    | 1000                         | 30:1             | 60                        |      |
|                      |          |           |                              |                            | Benioff              | Z             | To=0                 | Tg=0.45                      | Critical         | 50                        |      |
|                      |          |           |                              |                            | Wenner-Accelerograph | ZNE           |                      |                              |                  |                           |      |
| Colombo              | 06°54'N  | 79°52'E   | 7                            | Beach Sand                 | Milne-Shaw           | E             | 12                   | 250                          | 20:1             |                           |      |
| Dehra Dun            | 30°19'N  | 78°02'E   | 682                          | Gravel                     | Wood-Anderson        | N             | 0.8                  | 950                          | Critical         | 60                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | E             | 0.8                  | 850                          | Critical         | 60                        |      |
|                      |          |           |                              |                            | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                            | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
| Hyderabad            | 17°25'N  | 78°27'E   | 535                          | Granite                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |          |           |                              |                            | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
| Kodaikanal           | 10°14'N  | 77°28'E   | 2345                         | Rock                       | Milne-Shaw           | E             | 10                   | 250                          | 20:1             | 8                         |      |
| Madras               | 13°00'N  | 80°11'E   | 15                           |                            | Sprengnether         | E             | To=Tg=72 secs        |                              | Critical         | 30                        |      |
| New Delhi            | 28°35'N  | 77°12'E   | 207                          | Massive Quartzite          |                      |               |                      |                              |                  |                           |      |
| Poona                | 18°32'N  | 73°51'E   | 560                          | Deccan Trap                | Sprengnether         | Z             | To=Tg=1.6            |                              | Critical         | 30                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | E             | 4                    | 1000                         | 20:1             | 16                        |      |
|                      |          |           |                              |                            | Milne-Shaw           | N             | 12                   | 280                          | 20:1             | 8                         |      |
| Port Blair           | 11°49'N  | 92°43'E   |                              |                            | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | E             | 0.8                  | 1000                         | 65:1             | 30                        |      |
|                      |          |           |                              |                            | Milne-Shaw           | N             | 12                   | 350                          | 20:1             | 8                         |      |
| Sehore               |          |           |                              |                            | Wood-Anderson        | N             | 0.8                  | 980                          | Critical         | 30                        |      |
| Shillong             | 25°34'N  | 91°53'E   | 1500                         | Quartzite                  | Wood-Anderson        | N             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |          |           |                              |                            | Sand stone           | Wood-Anderson | E                    | 0.8                          | 1000             | h=0.8                     | 30   |
|                      |          |           |                              |                            | (Shillong            | Milne-Shaw    | N                    | 12                           | 250              | 20:1                      | 8    |
|                      |          |           |                              |                            | Quartzite)           | Benioff       | Z                    | To=1.0                       | Tg=0.18          |                           | 60   |
|                      |          |           |                              |                            | Sprengnether         | E             | To=                  | Tg=6.3                       | Critical         | 30                        |      |
| Wenner Accelerograph | ZNE      |           |                              |                            |                      |               |                      |                              |                  |                           |      |
| Tocklai              | 28°45'N  | 94°45'E   |                              | Alluvium                   | Wood-Anderson        | E             | 0.8                  | 970                          | h=0.8            | 60                        |      |
| Vizianagram          | 18°07'N  | 83°27'E   |                              |                            | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |          |           |                              |                            | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |







| DATE | STATION                                                                                                  | COMPT | PHASE     | H  | h  | T  | km   | DESCRIPTION                    | DATE  | STATION | COMPT | PHASE | H  | h  | T  | km   | REMARKS                                     |                            |
|------|----------------------------------------------------------------------------------------------------------|-------|-----------|----|----|----|------|--------------------------------|-------|---------|-------|-------|----|----|----|------|---------------------------------------------|----------------------------|
| 13   | SHILLONG                                                                                                 | Z     | eP        | 07 | 04 | 45 |      | Slight distant                 |       |         |       |       |    |    |    |      |                                             |                            |
| 13   | SHILLONG                                                                                                 | Z     | iP        | 07 | 04 | 45 |      |                                |       |         |       | iP    | 07 | 04 | 45 |      |                                             |                            |
| 13   | SHILLONG                                                                                                 | Z     | iP        | 07 | 04 | 45 |      |                                |       |         |       | iP    | 07 | 04 | 45 |      |                                             |                            |
| 13   | SHILLONG                                                                                                 | Z     | iP        | 19 | 29 | 25 |      |                                |       |         |       | iP    | 19 | 29 | 25 |      | Per. 24 secs<br>Amp. 48 mm                  |                            |
| 13   | SHILLONG                                                                                                 | Z     | iP<br>eSg | 19 | 23 | 38 | 150  |                                |       |         |       | iP    | 06 | 24 | 19 | 120  | Ground motion<br>South and East.            |                            |
| 13   | SHILLONG                                                                                                 | Z     | eP        | 19 | 23 | 38 |      |                                |       |         |       | eP    | 06 | 24 | 19 |      | Rarefaction                                 |                            |
| 13   | TOCKLAI                                                                                                  | E     | eP        | 19 | 29 | 25 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 17 |      |                                             |                            |
| 13   | SHILLONG                                                                                                 | Z     | eP        | 20 | 01 | 38 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 27 |      |                                             |                            |
| 13   | SHILLONG                                                                                                 | Z     | eP        | 20 | 01 | 26 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 27 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 00 | 45 | 30 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 18 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 02 | 13 | 06 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 18 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 02 | 14 | 50 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 18 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | NE    | e         | 07 | 39 | 2  |      |                                |       |         |       | e     | 06 | 24 | 18 |      | Per. 20 secs                                |                            |
| 14   | SHILLONG                                                                                                 | Z     | i         | 07 | 33 | 53 |      | Slight distant                 | BOBAY |         |       | i     | 06 | 24 | 23 | 5350 | Compression                                 |                            |
| 14   | SHILLONG                                                                                                 | Z     | e         | 07 | 40 | 25 |      | Slight distant                 |       |         |       | e     | 06 | 24 | 25 |      | Initial ground<br>motion North<br>and West. |                            |
| 14   | SHILLONG                                                                                                 | Z     | iP        | 08 | 12 | 22 |      | Slight distant<br>rarefaction  |       |         |       | iP    | 06 | 24 | 20 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 10 | 02 | 54 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 20 |      |                                             |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 17 | 31 | 06 |      | Slight distant                 |       |         |       | eP    | 06 | 24 | 17 |      | Per. 15 secs<br>Amp. 42.5                   |                            |
| 14   | SHILLONG                                                                                                 | Z     | eP        | 22 | 38 | 53 |      | Slight distant                 | BOBAY |         |       | eP    | 05 | 24 | 35 | 5570 |                                             |                            |
| 15   | 10°N, 121°E. Celebes. H = 0.5h 1.5m<br>8°N, 120°E. H = 0.5h 1.5m 31% (L.S.C.G.S.)<br>Mag. 5.4 (Pasadena) |       |           |    |    |    |      |                                |       |         |       |       |    |    |    |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 05 | 22 | 47 | 4150 |                                |       |         |       | iP    | 05 | 24 | 32 |      |                                             |                            |
|      |                                                                                                          | E     | PP        |    |    | 24 | 15   |                                |       |         |       | PP    |    |    | 25 | 32   |                                             |                            |
|      |                                                                                                          |       | PPP       |    |    | 24 | 38   |                                |       |         |       | SS    |    |    | 35 | 24   |                                             |                            |
|      |                                                                                                          |       | PcP       |    |    | 24 | 52   |                                |       |         |       | SSS   |    |    | 35 | 40   |                                             |                            |
|      |                                                                                                          | EN    | iS        |    |    | 28 | 36   |                                |       |         |       | Lr    |    |    | 39 | 02   |                                             | Per. 17 secs<br>Amp. 30 mm |
|      |                                                                                                          | E     | SS        |    |    | 30 | 53   |                                |       |         |       | Lr    |    |    | 39 | 08   |                                             | Per. 18 secs<br>Amp. 25 mm |
|      |                                                                                                          |       | Lq        |    |    | 31 | 04   |                                |       |         |       | M     |    |    | 50 | 11   |                                             |                            |
|      |                                                                                                          |       | SSS       |    |    | 31 | 33   |                                |       |         |       |       |    |    | 50 | 17   |                                             |                            |
|      |                                                                                                          |       | Lr        |    |    | 32 | 07   |                                |       |         |       |       |    |    |    |      |                                             |                            |
|      |                                                                                                          |       | M         |    |    | 36 | 18   |                                |       |         |       |       |    |    |    |      |                                             |                            |
|      | TOCKLAI                                                                                                  | E     | eP        | 06 | 22 | 51 |      |                                |       |         |       | eP    | 05 | 24 | 24 | 4550 |                                             |                            |
|      | CALCUTTA                                                                                                 | E     | iP        | 05 | 23 | 00 | 3100 | Initial ground<br>motion West  |       |         |       | iP    | 05 | 24 | 20 |      |                                             |                            |
|      |                                                                                                          |       | PP        |    |    | 24 | 27   |                                |       |         |       | PPP   |    |    | 27 | 30   |                                             |                            |
|      |                                                                                                          |       | PcP       |    |    | 25 | 20   |                                |       |         |       | iS    |    |    | 31 | 50   |                                             |                            |
|      |                                                                                                          |       | iS        |    |    | 28 | 43   |                                |       |         |       | SS    |    |    | 35 | 24   |                                             |                            |
|      |                                                                                                          |       | SS        |    |    | 31 | 05   |                                |       |         |       | Lr    |    |    | 39 | 10   |                                             |                            |
|      |                                                                                                          |       | M         |    |    | 35 | 00   |                                |       |         |       | M     |    |    | 43 | 40   |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 07 | 00 | 10 |      | Slight distant<br>compression  |       |         |       | iP    | 07 | 00 | 10 |      |                                             |                            |
|      | CHATRA                                                                                                   | Z     | i         | 07 | 49 | 30 |      | Slight distant                 |       |         |       | i     | 07 | 49 | 30 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 07 | 52 | 25 |      | Slight distant<br>rarefaction. |       |         |       | iP    | 07 | 52 | 25 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 13 | 49 | 29 |      | Slight, near                   |       |         |       | eP    | 13 | 49 | 29 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 15 | 08 | 05 |      | Slight, distant<br>rarefaction |       |         |       | iP    | 15 | 08 | 05 |      |                                             |                            |
|      | CHATRA                                                                                                   | Z     | iP        | 15 | 33 | 11 | 130  | Slight                         |       |         |       | iP    | 15 | 33 | 11 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 15 | 34 | 43 |      | Slight, distant                |       |         |       | eP    | 15 | 34 | 43 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 15 | 57 | 12 |      | Slight, distant<br>rarefaction |       |         |       | iP    | 15 | 57 | 12 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 16 | 25 | 39 |      | Slight, distant                |       |         |       | eP    | 16 | 25 | 39 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 20 | 45 | 34 |      | Slight, distant                |       |         |       | eP    | 20 | 45 | 34 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 22 | 05 | 18 |      | Slight, near                   |       |         |       | eP    | 22 | 05 | 18 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | eP        | 23 | 23 | 08 |      | Slight, distant                |       |         |       | eP    | 23 | 23 | 08 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 02 | 14 | 19 |      | Slight, distant<br>rarefaction |       |         |       | iP    | 02 | 14 | 19 |      |                                             |                            |
|      | KODAIKANAL                                                                                               | E     | eP        | 03 | 33 | 56 |      | Tremor                         |       |         |       | eP    | 03 | 33 | 56 |      |                                             |                            |
|      | SHILLONG                                                                                                 | Z     | iP        | 15 | 22 | 30 |      | Slight distant<br>rarefaction  |       |         |       | iP    | 15 | 22 | 30 |      |                                             |                            |
|      | CHATRA                                                                                                   | Z     | i         | 15 | 23 | 24 |      | Feeble distant                 |       |         |       | i     | 15 | 23 | 24 |      |                                             |                            |



| DATE | STATION                                                                | COMPT            | PHASE                                          | G. M. T.<br>h. m. s.                                           | Δ<br>km | REMARKS                                             | DATE | STATION    | COMPT             | PHASE                                    | G. M. T.<br>h. m. s.                                           | Δ<br>km | REMARKS                                                               |  |
|------|------------------------------------------------------------------------|------------------|------------------------------------------------|----------------------------------------------------------------|---------|-----------------------------------------------------|------|------------|-------------------|------------------------------------------|----------------------------------------------------------------|---------|-----------------------------------------------------------------------|--|
|      |                                                                        |                  |                                                |                                                                |         | October 1959                                        |      |            |                   |                                          |                                                                |         |                                                                       |  |
| 22   | DEHRA DUN                                                              | NE               | eP<br>iS                                       | 17 05 59<br>06 26                                              | 230     | Slight, phases not clear                            | 24   | SEHORE     | E                 | e                                        | 23 49 22<br>50 12<br>50 50                                     |         |                                                                       |  |
|      | CHATRA                                                                 | Z                | iP<br>i                                        | 17 08 02<br>09 50                                              |         | Feeble                                              |      | BOKARO     | NE<br>N           | iP<br>i                                  | 23 45 32<br>45 38                                              | 2490    | Moderate, direction of the initial ground movement South & West Deep. |  |
|      | POONA                                                                  | Z                | eP?<br>SP                                      | 17 08 37<br>10 57                                              | 1380    | Feeble, phases not clear                            |      |            |                   | pp<br>PP<br>PPP<br>iS<br>Lq<br>sS<br>i   | 45 41<br>46 00<br>46 15<br>49 34<br>49 47<br>50 09<br>50 47    |         |                                                                       |  |
|      | SHILLONG                                                               | Z                | eP                                             | 17 08 44                                                       |         | Slight, distant                                     |      |            |                   | Lr                                       | 50 58                                                          |         |                                                                       |  |
| 22   | BOMBAY                                                                 | E                | e                                              | 17 11 13<br>11 40                                              |         | Very slight, near, tremor                           |      | BOMBAY     | NE<br>E<br>N<br>E | eP<br>PP<br>eS<br>iS                     | 23 45 42<br>46 24<br>49 54                                     | 2520    | Slight                                                                |  |
| 22   | SHILLONG                                                               | Z                | eP                                             | 17 11 23                                                       |         | Slight, distant                                     |      |            |                   | Lq<br>SS                                 | 50 28<br>50 42                                                 |         |                                                                       |  |
|      | BOKARO                                                                 | NE               | i                                              | 17 11 51                                                       |         | Tremor                                              |      |            |                   | M                                        | 54 39                                                          |         | Period 7 secs<br>Amplitude 3 mm                                       |  |
|      | MADRAS                                                                 | E                | eP<br>eS?                                      | 17 13 11<br>15 37                                              | 1430    | Slight, phases not quite clear                      |      |            |                   | M                                        | 56 39                                                          |         | Period 9 secs<br>Amplitude 5 mm                                       |  |
| 22   | SHILLONG                                                               | Z                | eP                                             | 19 38 50                                                       |         | Slight, distant                                     |      |            |                   |                                          |                                                                |         |                                                                       |  |
| 22   | SHILLONG                                                               | Z                | e                                              | 23 30 14                                                       |         | Tremor                                              | 24   | POONA      | Z<br>ZNE<br>N     | iP<br>iS<br>Mn                           | 23 45 45<br>49 59<br>55 56                                     | 2650    | Moderate, probably deep focus<br>Period 7.5 secs<br>Amplitude 8 mm    |  |
| 22   | SHILLONG                                                               | Z                | iP                                             | 23 33 50                                                       |         | Slight, distant rarefaction                         |      | SHILLONG   | ZNE<br>NE         | iP<br>sP<br>iS                           | 23 45 53<br>46 52<br>50 12                                     | 2740    | Slight, compression                                                   |  |
| 23   | SHILLONG                                                               | Z                | e                                              | 00 44 44                                                       |         | Slight, distant                                     |      | CALCUTTA   | E                 | iP<br>iS                                 | 23 45 56<br>50 29                                              | 2950    | Moderate, first movement East                                         |  |
| 23   | SHILLONG                                                               | Z                | iP                                             | 03 54 13                                                       |         | Slight, distant compression                         |      | HYDERABAD  | N                 | iP<br>PP<br>PPP<br>PcP<br>iS<br>SS<br>Lr | 23 46 01<br>46 15<br>46 46<br>49 49<br>50 32<br>51 25<br>53 01 | 2910    | Moderate, initial ground motion North.                                |  |
| 23   | CHATRA                                                                 | Z                | iP<br>iS                                       | 05 59 36<br>07 01 15                                           | 960     | Feeble                                              |      |            | E<br>N            | M                                        | 53 56<br>53 58                                                 |         | Period 5 secs<br>Amplitude 10 mm<br>Period 8 secs<br>Amplitude 9 mm   |  |
| 23   | Epic: 33½°N, 59°E. Eastern Iran.<br>- H = 16h 54m 23s (U.S.C.G.S)      |                  |                                                |                                                                |         |                                                     |      |            |                   |                                          |                                                                |         |                                                                       |  |
|      | DEHRA DUN                                                              | NE               | eP<br>is                                       | 15 58 23<br>17 00 27                                           | 1210    | Slight, phases not clear                            |      | TOCKLAI    | E                 | eP                                       | 23 46 04                                                       |         | Slight, distant                                                       |  |
|      | BOMBAY                                                                 | E                | eP<br>e<br>e<br>eS<br>e<br>e                   | 15 58 48<br>59 16<br>17 00 29<br>02 12<br>02 44<br>04 48       | 2050    | Very slight                                         |      | MADRAS     | E                 | eP<br>eS<br>SSS?<br>Lr?<br>M?            | 23 46 19<br>51 42<br>54 18<br>56 06<br>59 06                   | 3740    | Slight, phases indistinct due to microseismic activity.               |  |
|      | POONA                                                                  | Z                | eP                                             | 15 58 57                                                       |         | Feeble, phases not clear                            |      | KODAIKANAL | E                 | e?                                       | 23 53 45                                                       |         | Phases not clear                                                      |  |
|      | CHATRA                                                                 | Z                | i                                              | 16 59 50                                                       |         | Slight, distant                                     | 24   | COLOMBO    | E                 | P<br>S<br>L<br>M                         | 23 55 23<br>58 53<br>00 00 33<br>02 03                         |         | Amplitude 0.6 mm                                                      |  |
|      | CALCUTTA                                                               | E                | eP?<br>eS                                      | 17 06 30<br>10 38                                              | 2570    | Slight                                              | 25   | CHATRA     | ZNE               | iP<br>i                                  | 01 45 15<br>49 05                                              |         |                                                                       |  |
| 24   | SHILLONG                                                               | Z                | eP                                             | 02 25 51                                                       |         | Slight, near                                        | 25   | SHILLONG   | Z                 | eP                                       | 04 41 01                                                       |         | Slight, distant                                                       |  |
| 24   | SHILLONG                                                               | Z                | iP                                             | 12 12 35                                                       |         | Slight, distant compression                         | 25   | CHATRA     | Z<br>ZNE          | iP<br>iS                                 | 09 11 46<br>11 55                                              | 70      | Slight                                                                |  |
| 24   | SHILLONG                                                               | Z                | iP                                             | 17 08 36                                                       |         | Feeble, distant rarefaction                         | 25   | SHILLONG   | Z                 | eP                                       | 09 13 07                                                       |         | Slight, distant                                                       |  |
| 24   | SHILLONG                                                               | Z                | e                                              | 17 25 09                                                       |         | Tremor                                              | 25   | SHILLONG   | Z                 | eP                                       | 12 08 49                                                       |         | Tremor                                                                |  |
| 24   | SHILLONG                                                               | Z                | iPg                                            | 21 05 44                                                       |         | Slight, local                                       | 25   | DEHRA DUN  | E                 | eP<br>eS<br>e                            | 15 04 38<br>10 06<br>19 09                                     | 3830    | Slight                                                                |  |
| 24   | SHILLONG                                                               | Z                | iP                                             | 23 27 11                                                       |         |                                                     |      | POONA      | Z                 | iP                                       | 15 04 48                                                       |         | Feeble, phases not clear.                                             |  |
| 24   | Epic: 41½°N, 70°E. Kazakh in U.S.S.R.<br>- H = 23h 40m 34s (U.S.C.G.S) |                  |                                                |                                                                |         |                                                     |      |            |                   |                                          |                                                                |         |                                                                       |  |
|      | SHILLONG                                                               | NE<br>N          | eP<br>PP<br>Lq<br>iS<br>SS<br>SSS, Lr<br>Sg, M | 23 43 43<br>43 53<br>45 45<br>45 55<br>46 13<br>46 13<br>47 18 | 1300    | Slight                                              | 25   | SHILLONG   | Z                 | eP                                       | 16 05 01                                                       |         | Slight, distant                                                       |  |
|      | AGRA                                                                   | ZNE<br>NE<br>ZNE | iP<br>PP<br>iS<br>SS<br>SSS<br>Lr<br>M         | 23 44 17<br>44 31<br>47 05<br>47 21<br>47 31<br>47 39<br>-- -- | 1670    | Compression, ground motion South and East. Moderate | 25   | DEHRA DUN  | NE                | e<br>e                                   | 16 09 22<br>19 38                                              |         | Feeble                                                                |  |
|      |                                                                        |                  |                                                |                                                                |         | Period 14 secs<br>Amplitude 33.5 mm                 | 25   | SHILLONG   | Z                 | iP                                       | 17 15 20                                                       |         | Slight, distant compression                                           |  |
|      | SEHORE                                                                 | N<br>E           | e<br>e                                         | 23 45 27<br>48 50                                              |         | Distant, shock slight.                              | 25   | SHILLONG   | Z                 | eP                                       | 19 38 48                                                       |         | Tremor                                                                |  |







| DATE   | STATION    | COMPT | PHASE    | G. M. T.<br>h. m. s. | Δ<br>km | REMARKS                                                            | DATE | STATION  | COMPT     | PHASE | G. M. T.<br>h. m. s. | Δ<br>km  | REMARKS                     |                             |
|--------|------------|-------|----------|----------------------|---------|--------------------------------------------------------------------|------|----------|-----------|-------|----------------------|----------|-----------------------------|-----------------------------|
| 29     | SHILLONG   | NE    | iS       | 14 41 45             |         |                                                                    | 30   | SHILLONG | Z         | eP    | 06 32 54             |          | Slight, distant             |                             |
| Contd. | Contd.     | E     | ScP      | 42 06                |         |                                                                    | 30   | SHILLONG | Z         | eP    | 07 55 18             |          | Slight, distant             |                             |
|        |            |       | Lq       | 42 23                |         |                                                                    | 30   | SHILLONG | Z         | iP    | 08 24 52             |          | Slight, distant rarefaction |                             |
|        |            |       | SS       | 42 32                |         |                                                                    | 30   | SHILLONG | Z         | eP    | 11 21 21             |          | Slight, distant             |                             |
|        |            |       | SSS      | 42 52                |         |                                                                    | 30   | SHILLONG | Z         | iP    | 12 42 00             | 120      | Slight                      |                             |
|        |            |       | Lr       | 43 50                |         |                                                                    |      |          | E         | iS    | 42 15                |          |                             |                             |
|        |            |       | ScS      | 45 54                |         |                                                                    |      |          | E         | eP    | 42 02                |          |                             |                             |
|        |            |       | M        | 46 18                |         |                                                                    |      |          | E         | iS    | 42 17                |          |                             |                             |
|        | CHATRA     | ZNE   | iP       | 14 37 07             | 3580    | Slight                                                             |      | SHILLONG | Z         | eP    | 12 42 22             |          | Slight, distant             |                             |
|        |            | NE    | iS       | 42 25                |         |                                                                    |      | CHATRA   | Z         | iP    | 12 42 41             | 470      | Slight                      |                             |
|        | DEHRA DUN  | NE    | eP       | 14 37 46             | 4120    |                                                                    |      | POONA    | Z         | eP?   | 12 47 55             |          | Mild, phases not clear      |                             |
|        |            | N     | PPP      | 39 39                |         |                                                                    |      | BOMBAY   | E         | e     | 12 48 27             |          | Very slight, near, tremor   |                             |
|        |            |       | iS       | 43 33                |         |                                                                    |      |          | NE        | e     | 49 43                |          |                             |                             |
|        |            |       | SS       | 45 38                |         |                                                                    |      | 30       | BOMBAY    | E     | e                    | 14 13 42 |                             | Slight, distant             |
|        |            |       | SSS      | 46 34                |         |                                                                    |      |          |           |       | 15 39                |          |                             |                             |
|        |            |       | M        | 50 33                |         |                                                                    |      |          |           |       | 24 13                |          |                             |                             |
|        | AGRA       | ZNE   | iP       | 14 37 57             | 4320    | Ground motion North and East, rarefaction                          |      |          |           |       | 25 28                |          |                             |                             |
|        |            | Z     | PPP      | 39 55                |         |                                                                    |      |          |           |       | 27 44                |          |                             |                             |
|        |            | ZNE   | iS       | 43 55                |         |                                                                    |      | 30       | SHILLONG  | Z     | iP                   | 17 20 33 |                             | Slight, distant compression |
|        |            | E     | PcS, PcP | 43 55                |         |                                                                    |      | 30       | SHILLONG  | Z     | eP                   | 19 50 40 |                             | Slight, distant             |
|        |            |       | SSS      | 47 00                |         |                                                                    |      | 31       | SHILLONG  | Z     | eP                   | 04 39 35 |                             | Slight, distant             |
|        | POONA      | ZE    | iP       | 14 38 58             |         | Initial ground motion East, rarefaction. Probably multiple shocks. |      | 31       | POONA     | Z     | eP?                  | 04 45 27 |                             | Feeble, phases not clear    |
|        |            |       | iPKP     | 40 34                |         |                                                                    |      |          |           |       | i                    | 45 37    |                             |                             |
|        |            | Z     | e        | 41 07                |         |                                                                    |      | 31       | SHILLONG  | Z     | i                    | 04 49 57 |                             | Slight                      |
|        |            | ZNE   | i        | 45 50                |         |                                                                    |      | 31       | DEHRA DUN | NE    | e                    | 05 02 05 |                             | Tremor                      |
|        | BOMBAY     | E     | eP       | 14 39 00             | 5300    |                                                                    |      | 31       | SHILLONG  | Z     | iP                   | 06 05 23 |                             | Slight, distant rarefaction |
|        |            | NE    | e        | 40 47                |         |                                                                    |      | 31       | SHILLONG  | Z     | eP                   | 09 58 54 |                             | Slight, distant             |
|        |            | E     | e        | 42 04                |         |                                                                    |      | 31       | SHILLONG  | Z     | eP                   | 11 27 11 |                             | Slight, distant             |
|        |            | NE    | eS       | 45 56                |         |                                                                    |      | 31       | SHILLONG  | Z     | eP                   | 13 45 54 |                             | Slight, distant             |
|        |            |       | e        | 49 08                |         |                                                                    |      | 31       | SHILLONG  | Z     | eP                   | 17 24 08 |                             | Slight, near                |
|        |            |       | e        | 52 57                |         |                                                                    |      |          | CHATRA    | Z     | iPg                  | 19 27 52 | 60                          | Feeble                      |
|        | KODAIKANAL | E     | e        | 14 45 03             |         | Tremor                                                             |      |          |           |       | iSg                  | 28 00    |                             |                             |
|        | HYDERABAD  | N     | i        | 14 45 14             |         |                                                                    |      | 31       | SHILLONG  | Z     | iP                   | 19 51 03 |                             | Slight, distant compression |
|        |            |       | M        | 15 23 22             |         | Period 21 secs<br>Amp. = 5 mm                                      |      | 31       | SHILLONG  | Z     | eP                   | 20 50 22 |                             | Slight, near                |
| 29     | SHILLONG   | Z     | iP       | 17 15 19             | 170     | Slight, near rarefaction                                           |      |          |           |       |                      |          |                             |                             |
| 29     | CHATRA     | Z     | iP       | 18 15 21             |         | Slight                                                             |      |          |           |       |                      |          |                             |                             |
|        |            | NE    | i        | 15 40                |         |                                                                    |      |          |           |       |                      |          |                             |                             |
|        | SHILLONG   | Z     | eP       | 18 16 14             | 450     | Slight                                                             |      |          |           |       |                      |          |                             |                             |
|        |            |       | eS       | 17 01                |         |                                                                    |      |          |           |       |                      |          |                             |                             |
| 29     | SHILLONG   | Z     | eP       | 19 47 42             |         | Slight, near                                                       |      |          |           |       |                      |          |                             |                             |
| 29     | SHILLONG   | Z     | eP       | 19 57 54             |         | Slight, distant                                                    |      |          |           |       |                      |          |                             |                             |
| 29     | SHILLONG   | Z     | eP       | 20 34 52             | 330     | Slight                                                             |      |          |           |       |                      |          |                             |                             |
|        |            |       | eS       | 35 32                |         |                                                                    |      |          |           |       |                      |          |                             |                             |
| 29     | SHILLONG   | Z     | eP       | 21 18 37             |         | Slight, near                                                       |      |          |           |       |                      |          |                             |                             |
| 30     | SHILLONG   | Z     | eP       | 00 41 04             |         | Slight, distant                                                    |      |          |           |       |                      |          |                             |                             |
|        | AGRA       | Z     | iP       | 00 42 33             |         | Compression, Distant, slight                                       |      |          |           |       |                      |          |                             |                             |
| 30     | POONA      | Z     | eP?      | 00 42 58             |         | Mild, phases not clear                                             |      |          |           |       |                      |          |                             |                             |
| 30     | SHILLONG   | Z     | eP       | 04 09 16             |         | Slight, distant compression                                        |      |          |           |       |                      |          |                             |                             |
|        | POONA      | Z     | e?       | 04 10 51             |         | Mild, phases not clear.                                            |      |          |           |       |                      |          |                             |                             |

*Earthquake Reports*  
(Non Instrumental Report)

Following is the list of earthquakes that were reported by Voluntary Observers from different stations during the month of October, 1959.

| Place                                                | Date in G. M. T. | Time in G. M. T. | No. of Shocks | Duration of shock | Intensity in R. F. scale | Remarks |
|------------------------------------------------------|------------------|------------------|---------------|-------------------|--------------------------|---------|
| Gaunavaram Aerodrome<br>Krishna Dt., Andhra (State). | 12               | 19 30            | One           | 30 secs           | VI                       |         |









| DATE                            | HOUR | K   | MEAN   | MEAN   | DATE                | HOUR | K   | MEAN   | MEAN   | DATE                         | HOUR | K   | MEAN   | MEAN   |
|---------------------------------|------|-----|--------|--------|---------------------|------|-----|--------|--------|------------------------------|------|-----|--------|--------|
|                                 | GMT  |     | Ampli- | Period |                     | GMT  |     | Ampli- | Period |                              | GMT  |     | Ampli- | Period |
|                                 |      |     | tude   | in     |                     |      |     | tude   | in     |                              |      |     | tude   | in     |
|                                 |      |     | Micron | secs   |                     |      |     | Micron | secs   |                              |      |     | Micron | secs   |
| -----                           |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| Station: MADRAS Component: E-W. |      |     |        |        | Station: PORT BLAIR |      |     |        |        | October 1959 Component: E-W. |      |     |        |        |
| 28                              | 03   | 1   | 0.6    | 2.9    | 09                  | 00   |     |        |        | 21                           | 00   | 3   | 0.4    | 7.5    |
| Contd.                          | 06   | 1   | 0.7    | 3.1    | to                  | 0,0  |     |        |        | 01                           | 3    | 0.4 | 7.5    |        |
|                                 | 09   | 1   | 0.8    | 3.1    | 23                  |      |     |        |        | 02                           | 3    | 0.4 | 7.5    |        |
|                                 | 12   | 1   | 0.8    | 2.9    |                     |      |     |        |        | 03                           |      |     |        |        |
|                                 | 15   | 1   | 0.8    | 3.1    | 10                  | 00   |     |        |        | to                           | 0,0  |     |        |        |
|                                 | 18   | 1   | 0.8    | 3.1    | 01                  | 0,0  |     |        |        | 23                           |      |     |        |        |
|                                 | 21   | 1   | 1.0    | 3.1    | 02                  |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        |        | 03                  |      |     |        |        |                              |      |     |        |        |
| 29                              | 00   | 1   | 1.1    | 3.3    | to                  | 3    | 0.4 | 7.5    | 22     | 00                           |      |     |        |        |
|                                 | 03   | 1   | 1.1    | 3.2    | 06                  |      |     |        |        | to                           | 0,0  |     |        |        |
|                                 | 06   | 1   | 1.2    | 3.2    | 07                  |      |     |        |        | 23                           |      |     |        |        |
|                                 | 09   | 1   | 1.1    | 3.2    | to                  |      |     |        |        |                              |      |     |        |        |
|                                 | 12   | 1   | 1.1    | 3.5    | 11                  |      |     |        |        | 23                           | 00   |     |        |        |
|                                 | 15   | 1   | 1.0    | 3.1    | 12                  |      |     |        |        | 01                           | 0,0  |     |        |        |
|                                 | 18   | 1   | 0.8    | 3.1    | to                  | 3    | 0.4 | 7.5    | 02     |                              |      |     |        |        |
|                                 | 21   | 1   | 0.8    | 3.2    | 23                  |      |     |        |        | 03                           |      |     |        |        |
|                                 |      |     |        |        |                     |      |     |        |        | to                           |      |     |        |        |
| 30                              | 00   | 1   | 0.7    | 3.3    | 11                  | 00   |     |        |        | 10                           |      |     |        |        |
|                                 | 03   | 1   | 0.8    | 3.4    | to                  | 3    | 0.8 | 7.5    | 11     |                              |      |     |        |        |
|                                 | 06   | 1   | 0.7    | 3.0    | 03                  |      |     |        |        | to                           | 0,0  |     |        |        |
|                                 | 09   | 1   | 0.9    | 3.2    | 04                  |      |     |        |        | 18                           |      |     |        |        |
|                                 | 12   | 1   | 0.8    | 3.4    | to                  | 3    | 1.2 | 7.5    | 19     |                              |      |     |        |        |
|                                 | 15   | 1   | 0.7    | 3.3    | 23                  |      |     |        |        | to                           | 3    | 0.4 | 7.5    |        |
|                                 | 18   | 1   | 0.7    | 3.4    |                     |      |     |        |        | 23                           |      |     |        |        |
|                                 | 21   | 1   | 0.7    | 3.2    |                     |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| 31                              | 00   | 1   | 0.6    | 3.3    | 12                  | 00   | 3   | 1.2    | 7.5    | 24                           | 00   |     |        |        |
|                                 | 03   | 1   | 0.6    | 3.0    | 06                  |      |     |        |        | to                           | 3    | 0.4 | 7.5    |        |
|                                 | 06   | 1   | 0.6    | 3.0    | 12                  | 3    | 0.8 | 7.5    | 03     |                              |      |     |        |        |
|                                 | 12   | 3   | 0.5    | 3.1    | 18                  | 3    | 0.4 | 7.5    | 04     |                              |      |     |        |        |
|                                 | 18   | 3   | 0.5    | 3.0    |                     |      |     |        |        | to                           |      |     |        |        |
|                                 |      |     |        |        | 13                  | 00   | 3   | 0.4    | 7.5    | 07                           |      |     |        |        |
|                                 |      |     |        |        | 06                  |      |     |        |        | 08                           |      |     |        |        |
|                                 |      |     |        |        | 12                  |      |     |        |        | to                           | 3    | 0.4 | 7.5    |        |
|                                 |      |     |        |        | 18                  |      |     |        |        | 23                           |      |     |        |        |
|                                 |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| -----                           |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| Station: PORT BLAIR             |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| 01                              | 00   | 2   | 2.8    | 3.6    | 14                  | 00   |     |        |        | 25                           | 00   |     |        |        |
|                                 | 01   |     |        |        | 06                  |      |     |        |        | to                           |      |     |        |        |
|                                 | 02   |     |        |        | 12                  | 0,0  |     |        |        | 23                           |      |     |        |        |
|                                 | 03   | 1   | 2.4    | 3.6    | 18                  |      |     |        |        |                              |      |     |        |        |
|                                 | 04   |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
|                                 | to   |     |        |        | 15                  | 00   |     |        |        | 26                           | 00   |     |        |        |
|                                 | 12   |     |        |        | to                  | 0,0  |     |        |        | to                           |      |     |        |        |
|                                 | 13   | 1   | 1.6    | 3.6    | 18                  |      |     |        |        | 23                           |      |     |        |        |
|                                 | 14   |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
|                                 | 15   |     |        |        | 16                  | 00   |     |        |        |                              |      |     |        |        |
|                                 | to   | 1   | 1.6    | 3.6    | to                  | 0,0  |     |        |        | 27                           | 00   |     |        |        |
|                                 | 23   |     |        |        | 18                  |      |     |        |        | 01                           |      |     |        |        |
|                                 |      |     |        |        |                     |      |     |        |        | 02                           |      |     |        |        |
| 02                              | 00   | 1   | 1.6    | 3.6    | 17                  | 00   | 0,0 |        |        | to                           |      |     |        |        |
|                                 | 01   | 1   | 1.6    | 3.6    | 06                  |      |     |        |        | 07                           | 2    | 0.8 | 2.8    |        |
|                                 | 02   | 1   | 1.2    | 3.5    | 12                  | 3    | 0.8 | 7.5    | 08     |                              |      |     |        |        |
|                                 | 03   | 1   | 0.8    | 3.5    | 18                  | 3    | 1.2 | 7.5    | 09     | 2                            | 0.8  | 2.8 |        |        |
|                                 | 04   |     |        |        |                     |      |     |        |        | to                           |      |     |        |        |
|                                 | to   |     |        |        | 18                  | 00   | 3   | 1.2    | 7.5    | 23                           |      |     |        |        |
|                                 | 12   |     |        |        | 01                  | 3    | 1.2 | 7.5    |        |                              |      |     |        |        |
|                                 | 13   |     |        |        | 02                  | 3    | 1.2 | 7.5    | 28     | 00                           | 2    | 0.8 | 2.8    |        |
|                                 | to   | 0,0 |        |        | 03                  | 3    | 0.8 | 7.5    | 06     |                              |      |     |        |        |
|                                 | 23   |     |        |        | 04                  |      |     |        |        | 12                           |      |     |        |        |
|                                 |      |     |        |        | to                  |      |     |        |        | 18                           |      |     |        |        |
| 03                              | 00   |     |        |        | 10                  |      |     |        |        |                              |      |     |        |        |
| to                              | 0,0  |     |        |        | 11                  |      |     |        |        | 29                           | 00   |     |        |        |
| 02                              |      |     |        |        | to                  | 3    | 0.8 | 7.5    | 06     | 3                            | 0.8  | 2.8 |        |        |
| 03                              |      |     |        |        | 15                  |      |     |        |        | 12                           | 3    | 0.4 | 2.8    |        |
| to                              |      |     |        |        | 16                  |      |     |        |        | 18                           | 3    | 0.4 | 2.8    |        |
| 23                              |      |     |        |        | to                  | 3    | 0.4 | 7.5    |        |                              |      |     |        |        |
|                                 |      |     |        |        | 23                  |      |     |        |        |                              |      |     |        |        |
| 04                              | 00   |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| 06                              |      |     |        |        | 19                  | 00   | 3   | 0.4    | 7.5    |                              |      |     |        |        |
| 12                              |      |     |        |        | 01                  |      |     |        |        |                              |      |     |        |        |
| 18                              | 1    | 0.8 | 7.5    | to     |                     |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        | 11     |                     |      |     |        |        |                              |      |     |        |        |
| 05                              | 00   | 1   | 0.8    | 7.5    | 12                  |      |     |        |        |                              |      |     |        |        |
| 06                              |      |     |        |        | to                  | 3    | 0.4 | 7.5    |        |                              |      |     |        |        |
| 12                              |      |     |        |        | 16                  |      |     |        |        |                              |      |     |        |        |
| 18                              |      |     |        |        | 17                  |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        |        | 18                  |      |     |        |        |                              |      |     |        |        |
| 06                              | 00   |     |        |        | 19                  |      |     |        |        |                              |      |     |        |        |
| 06                              |      |     |        |        | 20                  |      |     |        |        |                              |      |     |        |        |
| 12                              | 0,0  |     |        |        | to                  | 3    | 0.4 | 7.5    |        |                              |      |     |        |        |
| 18                              | 0,0  |     |        |        | 23                  |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        |        |                     |      |     |        |        |                              |      |     |        |        |
| 07                              | 00   | 1   | 0.4    | 7.5    | 20                  | 00   |     |        |        |                              |      |     |        |        |
| 06                              |      |     |        |        | 01                  | 3    | 0.4 | 7.5    |        |                              |      |     |        |        |
| 12                              |      |     |        |        | 02                  |      |     |        |        |                              |      |     |        |        |
| 18                              |      |     |        |        | 03                  |      |     |        |        |                              |      |     |        |        |
|                                 |      |     |        |        | to                  |      |     |        |        |                              |      |     |        |        |
| 08                              | 00   |     |        |        | 10                  |      |     |        |        |                              |      |     |        |        |
| to                              |      |     |        |        | 11                  |      |     |        |        |                              |      |     |        |        |
| 18                              |      |     |        |        | to                  | 3    | 0.4 | 7.5    |        |                              |      |     |        |        |
|                                 |      |     |        |        | 23                  |      |     |        |        |                              |      |     |        |        |





GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

Nov, 1959



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Director General of Observatories

## List of Seismograph Stations with their Instruments and Constants

| STATION     | LATI-<br>TUDE | LONGI-<br>TUDE | HEIGHT<br>a. s. l.<br>(Metres) | LITHOGRAPHIC<br>FOUNDATION                         | INSTRUMENT           | COMPT. | PERIOD<br>IN<br>SECS | STATIC<br>MAGNIFI-<br>CATION | DAMPING<br>RATIO | PAPER<br>SPEED<br>mm/min |    |
|-------------|---------------|----------------|--------------------------------|----------------------------------------------------|----------------------|--------|----------------------|------------------------------|------------------|--------------------------|----|
| Agra        |               |                |                                |                                                    | Columbia             | E      | To=15                |                              |                  | 15                       |    |
|             |               |                |                                |                                                    | Long Period          |        | Tg=100               |                              |                  |                          |    |
|             |               |                |                                |                                                    | -do-                 | N      | To=15                |                              |                  | 15                       |    |
|             |               |                |                                |                                                    | -do-                 | Z      | Tg=8.5               |                              |                  | 15                       |    |
|             |               |                |                                |                                                    | -do-                 |        | To=15                |                              |                  | 15                       |    |
|             |               |                |                                |                                                    | -do-                 |        | Tg=70                |                              |                  | 15                       |    |
| Bombay      | 18° 54' N     | 72° 40' E      | 6                              | Deccan Trap                                        | Milne-Shaw           | N      | 12                   | 350                          | 13:1             | 16                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | E      | 12                   | 350                          | 23:1             | 8                        |    |
|             |               |                |                                |                                                    | Sprengnether         | E      | To=Tg=7              | secs                         |                  | 30                       |    |
| Bokaro      | 23° 50' N     | 85° 48' E      |                                | Rock                                               | Milne-Shaw           | N      | 12                   | 250                          | 20:1             | 16                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | E      | 12                   | 250                          | 20:1             | 16                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | E      | 0.8                  | 950                          | h=0.8            | 60                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | N      | 0.8                  | 1000                         | h=0.8            | 60                       |    |
| Calcutta    | 22° 32' N     | 88° 22' E      | (1) 7                          | (2) 6                                              | (Milne-Shaw)         | E      | 12                   | 250                          | 20:1             | 8                        |    |
|             |               |                |                                |                                                    | (Omori-Ewing)        | N      | 2                    | 870                          | Critical         | 30                       |    |
|             |               |                |                                |                                                    | Alluvium             | N      | 16                   | 32                           |                  | 25.4                     |    |
|             |               |                |                                |                                                    | Omori-Ewing          | E      | 21                   | 30                           |                  | 25.4                     |    |
| Chatra      | 26° 50' N     | 87° 10' E      | 161                            | Sand Stone                                         | Milne-Shaw           | E      | 12                   | 250                          | 20:1             | 16                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | N      | 1                    | 1000                         | 30:1             | 60                       |    |
|             |               |                |                                |                                                    | Benioff              | Z      | To=0.72              | Tg=0.45                      | Critical         | 60                       |    |
|             |               |                |                                |                                                    | Wenner-Accelerograph | ZNE    |                      |                              |                  |                          |    |
| Colombo     | 06° 54' N     | 79° 52' E      | 7                              | Beach Sand                                         | Milne-Shaw           | E      | 12                   | 250                          | 20:1             | -                        |    |
| Dehra dun   | 30° 19' N     | 78° 02' E      | 682                            | Gravel                                             | Wood-Anderson        | N      | 0.8                  | 950                          | Critical         | 60                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | E      | 0.8                  | 850                          | Critical         | 60                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | N      | 12                   | 250                          | 20:1             | 8                        |    |
|             |               |                |                                |                                                    | Milne-Shaw           | E      | 12                   | 250                          | 20:1             | 8                        |    |
| Hyderabad   | 17° 25' N     | 78° 27' E      | 536                            | Granite                                            | Milne-Shaw           | E      | 12                   | 250                          | 20:1             | 8                        |    |
|             |               |                |                                |                                                    | Milne-Shaw           | N      | 12                   | 250                          | 20:1             | 8                        |    |
| Kodakanal   | 10° 14' N     | 77° 28' E      | 2345                           | Rock                                               | Milne-Shaw           | E      | 10                   | 250                          | 20:1             | 8                        |    |
| Madras      | 13° 00' N     | 80° 11' E      | 15                             | -                                                  | Sprengnether         | E      | To=Tg=72             | secs                         | Critical         | 30                       |    |
| New Delhi   | 28° 35' N     | 77° 12' E      | 207                            | Massive Quartzite                                  |                      |        |                      |                              |                  |                          |    |
| POONA       | 18° 32' N     | 73° 51' E      | 560                            | Deccan Trap                                        | Sprengnether         | Z      | To=Tg=1.5            |                              | Critical         | 30                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | E      | 4                    | 1000                         | 20:1             | 15                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | N      | 12                   | 280                          | 20:1             | 8                        |    |
| Port Blair  | 11° 49' N     | 92° 43' E      |                                |                                                    | Wood-Anderson        | N      | 2                    | 1000                         | 20:1             | 30                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | E      | 0.8                  | 1000                         | 55:1             | 30                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | N      | 12                   | 350                          | 20:1             | 8                        |    |
| Sehore      |               |                |                                |                                                    | Wood-Anderson        | N      | 0.8                  | 980                          | Critical         | 30                       |    |
| Shillong    | 25° 34' N     | 91° 53' E      | 1500                           | Quartzite<br>Sand Stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N      | 0.8                  | 1000                         | h=0              | h=0.8                    | 30 |
|             |               |                |                                |                                                    | Wood-Anderson        | E      | 0.8                  | 1000                         | h=0.8            | 30                       |    |
|             |               |                |                                |                                                    | Milne-Shaw           | N      | 12                   | 250                          | 20:1             | 8                        |    |
|             |               |                |                                |                                                    | Benioff              | Z      | To=1.0               | Tg=0.18                      |                  | 50                       |    |
|             |               |                |                                |                                                    | Sprengnether         | E      | To=Tg=6.5            |                              | Critical         | 30                       |    |
|             |               |                |                                |                                                    | Wenner Accelerograph | ZNE    |                      |                              |                  |                          |    |
| Tocklai     | 28° 45' N     | 94° 45' E      |                                | Alluvium                                           | Wood-Anderson        | E      | 0.8                  | 970                          | h=0.8            | 50                       |    |
| Vizianagram | 18° 07' N     | 83° 27' E      |                                |                                                    | Wood-Anderson        | E      | 0.8                  | 1000                         | h=0.8            | 30                       |    |
|             |               |                |                                |                                                    | Wood-Anderson        | N      | 2                    | 1000                         | 20:1             | 30                       |    |





| DATE | STATION                                                                                         | COMPT | PHASE | G. M. T. | Δ     | REMARKS                                        | DATE | STATION                                                                                      | COMPT                                                                                                                                                       | PHASE | G. M. T. | Δ        | REMARKS                                 |                               |
|------|-------------------------------------------------------------------------------------------------|-------|-------|----------|-------|------------------------------------------------|------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|----------|-----------------------------------------|-------------------------------|
|      |                                                                                                 |       |       | h. m. s. | km    | November                                       | 1959 |                                                                                              |                                                                                                                                                             |       | h. m. s. | km       |                                         |                               |
| 05   | SHILLONG                                                                                        | Z     | iP    | 11 07 05 |       | Slight, distant rarefaction                    | 05   | Epc: 9°S, 157½°E. Solomon Islands<br>- H = 01h 11m 36m (U. S. C. G. S)                       |                                                                                                                                                             |       |          |          |                                         |                               |
|      | KODAIKANAL                                                                                      | E     | e     | 11 08 07 |       | Tremor                                         |      | SHILLONG                                                                                     | Z                                                                                                                                                           | iP    | 01 23 08 |          | Slight, distant compression             |                               |
| 05   | Epc: 13°S, 166½°E. New Hebrides Region.<br>- H = 11h 50m 17s (U. S. C. G. S) - h about 100 kms. |       |       |          |       |                                                |      | 05                                                                                           | SHILLONG                                                                                                                                                    | Z     | iP       | 09 33 05 |                                         | Slight, distant compression   |
|      | SHILLONG                                                                                        | ZE    | iP    | 12 02 37 |       | Slight, distant rarefaction                    |      | 05                                                                                           | SHILLONG                                                                                                                                                    | Z     | eP       | 10 35 14 |                                         | Slight, distant               |
|      | POONA                                                                                           | Z     | iP    | 12 03 44 |       | Feeble, distant other phases not clear         |      | 05                                                                                           | SHILLONG                                                                                                                                                    | Z     | eP       | 17 15 44 |                                         | Slight, distant               |
|      | DEHRA DUN                                                                                       | NE    | e     | 12 03 48 |       | Feeble                                         |      | 06                                                                                           | SHILLONG                                                                                                                                                    | Z     | e        | 17 18 28 |                                         | Very slight, distant.         |
|      | BOMBAY                                                                                          | E     | e     | 12 06 59 |       | Slight, distant                                |      | 06                                                                                           | SHILLONG                                                                                                                                                    | Z     | iPn      | 18 13 25 | 230                                     | Slight, compression           |
|      | KODAIKANAL                                                                                      | E     | e     | 12 46 35 |       | Tremor                                         |      |                                                                                              |                                                                                                                                                             | eSg   | 13 57    |          |                                         |                               |
| 05   | Epc: 30°N, 129°E. Ryukyu Islands Region<br>- H = 14h 59m 37s (U. S. C. G. S)                    |       |       |          |       |                                                |      | 06                                                                                           | SHILLONG                                                                                                                                                    | Z     | eP       | 20 23 47 |                                         | Slight, near                  |
|      | SHILLONG                                                                                        | Z     | iP    | 15 05 55 |       | Slight, distant compression                    |      | 06                                                                                           | CHATRA                                                                                                                                                      | Z     | eP       | 21 24 01 | 550                                     | Feeble                        |
|      | SHILLONG                                                                                        | Z     | iS    | 01 14    | 470   | Slight, rarefaction                            |      |                                                                                              |                                                                                                                                                             | iS    | 25 00    |          |                                         |                               |
| 05   | SHILLONG                                                                                        | Z     | eP    | 16 25 22 |       | Slight, near                                   |      | 07                                                                                           | SHILLONG                                                                                                                                                    | Z     | iP       | 02 43 48 |                                         | Slight, distant compression   |
|      | CHATRA                                                                                          | Z     | iP    | 16 26 56 | 410   | Slight                                         |      | 07                                                                                           | SHILLONG                                                                                                                                                    | Z     | iP       | 03 08 57 |                                         | Slight, distant compression   |
|      |                                                                                                 |       | iS    | 27 41    |       |                                                |      | 07                                                                                           | SHILLONG                                                                                                                                                    | Z     | e        | 08 30 18 |                                         | Very slight, distant          |
| 05   | Epc: 9°S, 157½°E. Solomon Islands<br>- H = 17h 38m 08s (U. S. C. G. S)                          |       |       |          |       |                                                |      | 07                                                                                           | SHILLONG                                                                                                                                                    | Z     | e        | 09 23 18 |                                         | Very slight, distant          |
|      | SHILLONG                                                                                        | Z     | e     | 17 49 12 | 8030  | Slight                                         |      | 07                                                                                           | MADRAS                                                                                                                                                      | E     | e        | 15 22 49 |                                         | Slight, phases unidentifiable |
|      |                                                                                                 |       | iP    | 49 40    |       |                                                |      |                                                                                              |                                                                                                                                                             | e     | 25 50    |          |                                         |                               |
|      |                                                                                                 |       | S     | 59 03    |       |                                                |      | POONA                                                                                        | Z                                                                                                                                                           | eP    | 15 23 15 |          | Feeble, distant other phases not clear. |                               |
|      | CHATRA                                                                                          | Z     | iP    | 17 50 02 |       | Slight, distant                                |      | BOMBAY                                                                                       | NE                                                                                                                                                          | e     | 15 23 17 |          | Slight                                  |                               |
|      | DEHRA DUN                                                                                       | NE    | eP    | 17 50 58 | 9230  | Feeble                                         |      |                                                                                              | E                                                                                                                                                           | e     | 27 48    |          |                                         |                               |
|      |                                                                                                 |       | iS    | 18 01 18 |       |                                                |      | COLOMBO                                                                                      | E                                                                                                                                                           | e     | 15 24 50 |          |                                         |                               |
|      | POONA                                                                                           | Z     | P     | 17 50 59 |       | Feeble                                         |      |                                                                                              | e                                                                                                                                                           | 26 55 |          |          |                                         |                               |
|      |                                                                                                 | N     | S     | 18 01 36 | 9630  |                                                |      | CHATRA                                                                                       | Z                                                                                                                                                           | i     | 15 25 01 |          | Slight, distant                         |                               |
|      | BOMBAY                                                                                          | E     | eP    | 17 51 06 | 9780  |                                                |      | DEHRA DUN                                                                                    | NE                                                                                                                                                          | e     | 15 25 07 |          | Feeble                                  |                               |
|      |                                                                                                 |       | e     | 54 15    |       |                                                |      |                                                                                              | e                                                                                                                                                           | 30 44 |          |          |                                         |                               |
|      |                                                                                                 | NE    | SKKS  | 18 01 35 |       |                                                |      | SHILLONG                                                                                     | Z                                                                                                                                                           | eP    | 15 25 15 |          | Slight, distant                         |                               |
|      |                                                                                                 |       | eS    | 01 49    |       |                                                |      | KODAIKANAL                                                                                   | E                                                                                                                                                           | e     | 15 25 37 |          | Tremor                                  |                               |
|      | BOKARO                                                                                          | NE    | e     | 17 59 58 |       | Tremor                                         |      |                                                                                              |                                                                                                                                                             |       |          |          |                                         |                               |
|      | KODAIKANAL                                                                                      | E     | e     | 18 00 56 |       | Tremor                                         | 07   | Epc: 2¾°S, 175½°W. Tonga Islands Region<br>- H = 22h 16m 15s (U. S. C. G. S). Mag: 6¼ (Pas). |                                                                                                                                                             |       |          |          |                                         |                               |
| 05   | TOCKLAI                                                                                         | E     | iP    | 19 36 52 |       | Distant, initial ground movement towards West. |      | BOMBAY                                                                                       | E                                                                                                                                                           | e     | 22 38 19 |          | Slight, distant                         |                               |
|      | SHILLONG                                                                                        | Z     | eP    | 19 39 35 |       | Slight, near                                   |      |                                                                                              | e                                                                                                                                                           | 41 53 |          |          |                                         |                               |
|      | CHATRA                                                                                          | Z     | i     | 10 41 12 |       | Feeble, distant                                |      |                                                                                              | e                                                                                                                                                           | 46 00 |          |          |                                         |                               |
| 05   | SHILLONG                                                                                        | Z     | eP    | 21 49 05 | 10350 | Slight, distant                                |      | SHILLONG                                                                                     | Z                                                                                                                                                           | e     | 22 40 44 |          | Distant                                 |                               |
|      |                                                                                                 | E     | iS    | 22 00 12 |       |                                                | 07   | PORT BLAIR                                                                                   | E                                                                                                                                                           | i     | 23 40 27 |          |                                         |                               |
| 06   | Epc: 9°S, 157½°E. Solomon Islands.<br>- H = 01h 07m 31s (U. S. C. G. S)                         |       |       |          |       |                                                |      | 08                                                                                           | Epc: 44°N, 140¼°E. Near West Coast of Hokkaido, Japan.<br>- H = 13h 54m 55s (U. S. C. G. S)<br>44°N, 140°E. - H = 13h 54m 56s (Shillong).<br>Mag: 6¼ (Pas). |       |          |          |                                         |                               |
|      | SHILLONG                                                                                        | Z     | iP    | 01 19 04 | 8130  | Slight, rarefaction                            |      | TOCKLAI                                                                                      | E                                                                                                                                                           | eP    | 14 02 53 |          | Distant                                 |                               |
|      |                                                                                                 | E     | iS    | 28 32    |       |                                                |      | SHILLONG                                                                                     | ZE                                                                                                                                                          | iP    | 14 02 59 | 4780     |                                         |                               |
|      | CHATRA                                                                                          | Z     | i     | 01 19 25 |       | Slight, distant                                |      |                                                                                              | E                                                                                                                                                           | PcP0  | 04 39    |          |                                         |                               |
|      | POONA                                                                                           | Z     | eP    | 01 20 19 | 9710  | Slight                                         |      |                                                                                              |                                                                                                                                                             | PP0   |          |          |                                         |                               |
|      |                                                                                                 | N     | S     | 30 59    |       |                                                |      |                                                                                              |                                                                                                                                                             | PPP   | 05 17    |          |                                         |                               |
|      | BOMBAY                                                                                          | E     | eP    | 01 20 22 | 9780  | Slight                                         |      |                                                                                              |                                                                                                                                                             | ScP   | 08 33    |          |                                         |                               |
|      |                                                                                                 |       | e     | 22 10    |       |                                                |      |                                                                                              |                                                                                                                                                             | iS    | 09 25    |          |                                         |                               |
|      |                                                                                                 |       | SKKS  | 30 50    |       |                                                |      |                                                                                              |                                                                                                                                                             | SS    | 12 28    |          |                                         |                               |
|      |                                                                                                 |       | eS    | 31 05    |       |                                                |      |                                                                                              |                                                                                                                                                             | Lq    | 13 03    |          |                                         |                               |
|      |                                                                                                 |       | SS    | 36 28    |       |                                                |      |                                                                                              |                                                                                                                                                             | SSS   | 13 18    |          |                                         |                               |
|      | DEHRA DUN                                                                                       | NE    | e     | 01 21 12 |       | Feeble                                         |      | CHATRA                                                                                       | ZNE                                                                                                                                                         | iP    | 14 03 21 | 5120     | Slight                                  |                               |
|      |                                                                                                 |       | i     | 30 43    |       |                                                |      |                                                                                              | NE                                                                                                                                                          | iS    | 10 07    |          |                                         |                               |
|      | BOKARO                                                                                          | NE    | i     | 01 29 25 |       | Slight                                         |      | SEHORE                                                                                       | NE                                                                                                                                                          | e     | 14 03 33 |          | Phases not clear                        |                               |
|      |                                                                                                 |       |       |          |       |                                                |      |                                                                                              |                                                                                                                                                             | e     | 11 20    |          |                                         |                               |



| DATE | STATION    | COMPT | PHASE | G. h. | M. m. | T. s. | Δ km | REMARKS                         | DATE      | STATION                                                             | COMPT | PHASE | G. h. | M. m. | T. s. | Δ km | REMARKS                                                  |
|------|------------|-------|-------|-------|-------|-------|------|---------------------------------|-----------|---------------------------------------------------------------------|-------|-------|-------|-------|-------|------|----------------------------------------------------------|
|      |            |       |       |       |       |       |      | November                        | 1959      |                                                                     |       |       |       |       |       |      |                                                          |
| 10   | CALCUTTA   | E     | e     | 21    | 00    | 21    |      | Slight                          | 12        | SHILLONG                                                            | Z     | eP    | 18    | 37    | 49    |      | Slight, distant                                          |
|      | Contd.     |       | Lq    |       | 02    | 03    |      |                                 | 12        | SHILLONG                                                            | Z     | eP    | 18    | 43    | 24    |      | Slight, distant                                          |
|      |            |       | eS    |       | 02    | 19    |      |                                 | 12        | SHILLONG                                                            | Z     | iP    | 18    | 51    | 57    |      | Slight, distant rarefaction                              |
|      |            |       | M     | 03    | 18    |       |      | Per. = 12 secs<br>Gr. dis. = 8  |           |                                                                     |       |       |       |       |       |      |                                                          |
|      |            |       | Mn    | 04    | 08    |       |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
|      | HYDERABAD  | NE    | iP    | 21    | 00    | 55    | 2350 | Moderate, Eastward              | 12        | SHILLONG                                                            | Z     | ePn   | 20    | 04    | 39    | 240  | Slight                                                   |
|      |            | N     | iS    |       | 04    | 47    |      |                                 |           |                                                                     |       | eSg   |       | 05    | 14    |      |                                                          |
|      |            |       | Lq    |       | 05    | 20    |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
|      |            |       | SS    |       | 05    | 26    |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
|      |            |       | Lr    |       | 06    | 20    |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
|      |            | E     | M     |       | 07    | 29    |      | Per. = 9 secs<br>Gr. dis. = 8   |           | TOCKLAI                                                             | E     | eP    | 20    | 05    | 41    |      | Slight, distant                                          |
|      |            | N     | M     |       | 08    | 05    |      | Per. = 12 secs<br>Gr. dis. = 11 | 12        | SHILLONG                                                            | Z     | iP    | 20    | 42    | 28    |      | Slight, distant compression                              |
|      | POONA      | Z     | P     | 21    | 01    | 09    | 2510 | Moderate                        | 12        | SHILLONG                                                            | Z     | eP    | 20    | 48    | 55    |      | Slight, near                                             |
|      |            | ZNE   | S     |       | 05    | 13    |      |                                 | 13        | SHILLONG                                                            | Z     | ePg   | 02    | 12    | 36    | 100  | Slight                                                   |
|      |            |       |       |       |       |       |      |                                 |           |                                                                     |       | eSg   |       | 12    | 47    |      |                                                          |
|      | BOMBAY     | NE    | eP    | 21    | 01    | 15    | 2510 | Slight                          | 13        | SHILLONG                                                            | Z     | eP    | 08    | 38    | 23    |      | Slight, near                                             |
|      |            |       | eS    |       | 05    | 19    |      |                                 | 13        | SHILLONG                                                            | Z     | eP    | 08    | 56    | 49    |      | Slight, distant                                          |
|      |            |       | Lq    |       | 05    | 37    |      |                                 | 13        | SHILLONG                                                            | Z     | iP    | 09    | 28    | 17    |      | Slight, distant compression                              |
|      |            | E     | SS    |       | 06    | 02    |      | Per. = 9 secs<br>Gr. dis. = 8   | 13        | SHILLONG                                                            | Z     | eP    | 09    | 36    | 51    |      | Slight, near                                             |
|      |            | N     | e     |       | 06    | 08    |      | Per. = 7 secs<br>Gr. dis. = 5   | 13        | SHILLONG                                                            | Z     | eP    | 09    | 58    | 14    |      | Slight, distant                                          |
|      |            |       | M     |       | 10    | 07    |      |                                 | 13        | SHILLONG                                                            | Z     | eP    | 18    | 00    | 48    |      | Slight, distant                                          |
|      |            | E     | M     |       | 10    | 29    |      |                                 | 13        | SHILLONG                                                            | Z     | ePg   | 19    | 28    | 22    | 140  | Slight                                                   |
|      |            |       |       |       |       |       |      |                                 |           |                                                                     |       | eSg   |       | 28    | 39    |      |                                                          |
|      | PORT BLAIR | E     | iP    | 21    | 01    | 38    | 2920 | Slight                          | 13        | SHILLONG                                                            | Z     | eP    | 09    | 58    | 14    |      | Slight, distant                                          |
|      |            |       | iS    |       | 06    | 09    |      |                                 | 13        | SHILLONG                                                            | Z     | eP    | 18    | 00    | 48    |      | Slight, distant                                          |
|      |            |       | M     |       | 11    | 01    |      |                                 | 13        | SHILLONG                                                            | Z     | eP    | 21    | 21    | 13    |      | Slight, near                                             |
|      | MADRAS     | E     | eP    | 21    | 01    | 41    | 2920 | Slight                          | 13        | SHILLONG                                                            | Z     | ePg   | 19    | 28    | 22    | 140  | Slight                                                   |
|      |            |       | eS    |       | 06    | 12    |      |                                 | 13        | SHILLONG                                                            | Z     | eP    | 00    | 36    | 53    |      | Slight, near                                             |
|      |            |       | Lr    |       | 08    | 16    |      |                                 | 14        | SHILLONG                                                            | Z     | eP    | 01    | 14    | 27    |      | Slight, near                                             |
|      |            |       | M     |       | 10    | 48    |      |                                 | 14        | SHILLONG                                                            | Z     | eP    | 02    | 17    | 13    |      | Slight, distant                                          |
|      | KODAIKANAL | E     | e     | 21    | 07    | 11    |      |                                 | 14        | SHILLONG                                                            | Z     | eP    | 02    | 19    | 22    |      | Very feeble phases not clear                             |
|      |            |       | e     |       | 10    | 44    |      |                                 | 14        | SHILLONG                                                            | Z     | eP    | 02    | 27    | 53    |      | Slight, near                                             |
|      |            |       | e     |       | 11    | 17    |      |                                 | 14        | SHILLONG                                                            | Z     | iP    | 05    | 30    | 59    |      | Slight, distant compression                              |
|      |            |       | e     |       | 11    | 50    |      |                                 | 14        | SHILLONG                                                            | Z     | eP    | 06    | 54    | 00    |      | Slight, distant                                          |
|      | COLOMBO    | E     | e     | 21    | 08    | 40    |      |                                 | 14        | SHILLONG                                                            | Z     | e     | 12    | 13    | 24    |      | Slight, distant                                          |
|      |            |       | e     |       | 13    | 20    |      |                                 |           | POONA                                                               | Z     | eP    | 02    | 19    | 22    |      | Very feeble phases not clear                             |
|      |            |       | e     |       | 20    | 35    |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
|      |            |       | e     |       | 22    | 00    |      |                                 |           |                                                                     |       |       |       |       |       |      |                                                          |
| 11   | SHILLONG   | Z     | eP    | 01    | 03    | 15    |      | Slight, distant                 | 14        | SHILLONG                                                            | Z     | eP    | 02    | 27    | 53    |      | Slight, near                                             |
| 11   | SHILLONG   | Z     | eP    | 02    | 00    | 05    |      | Slight, distant                 | 14        | SHILLONG                                                            | Z     | iP    | 05    | 30    | 59    |      | Slight, distant compression                              |
| 11   | SHILLONG   | Z     | ePn   | 05    | 21    | 48    | 200  | Slight                          | 14        | SHILLONG                                                            | Z     | eP    | 06    | 54    | 00    |      | Slight, distant                                          |
|      |            |       | eSg   |       | 22    | 16    |      |                                 | 14        | SHILLONG                                                            | Z     | e     | 12    | 13    | 24    |      | Slight, distant                                          |
| 11   | SHILLONG   | Z     | eP    | 06    | 22    | 07    |      | Slight, near                    | 15        | Ept: 38°N, 74½°E. Tadjhik U.S.S.R.<br>- H = 10h 25m 03s (U.S.C.G.S) |       |       |       |       |       |      |                                                          |
| 11   | DEHRA DUN  | NE    | e     | 07    | 27    | 32    |      | Tremor                          | DEHRA DUN | NE                                                                  | eP    | 10    | 27    | 24    | 930   |      | Moderate                                                 |
| 11   | BOMBAY     | E     | e     | 07    | 33    | 44    |      | Very slight, surface waves      |           | N                                                                   | PP    |       | 27    | 32    |       |      |                                                          |
| 11   | SHILLONG   | Z     | ePg   | 12    | 01    | 28    | 150  | Slight                          |           |                                                                     | PPP   |       | 27    | 37    |       |      |                                                          |
|      |            |       | eSg   |       | 01    | 48    |      |                                 |           |                                                                     | Lq    |       | 28    | 49    |       |      |                                                          |
| 11   | CHATRA     | Z     | iPg   | 13    | 00    | 35    | 120  | Feeble                          |           |                                                                     | iS    |       | 29    | 00    |       |      |                                                          |
|      |            |       | iSg   |       | 00    | 51    |      |                                 |           |                                                                     | SS    |       | 29    | 12    |       |      |                                                          |
| 11   | SHILLONG   | Z     | eP    | 13    | 16    | 35    |      | Slight, distant                 |           |                                                                     | Lr    |       | 29    | 15    |       |      |                                                          |
| 11   | SHILLONG   | Z     | eP    | 14    | 42    | 58    |      | Slight, distant                 |           | AGRA                                                                | ZNE   | iP    | 10    | 28    | 00    | 1250 | Moderate, initial ground motion South, East, compression |
| 11   | SHILLONG   | Z     | eP    | 17    | 41    | 05    |      | Slight, distant                 |           |                                                                     | iS    |       | 30    | 08    |       |      |                                                          |
| 11   | SHILLONG   | Z     | i     | 17    | 56    | 25    |      |                                 |           | CHATRA                                                              | NE    | iP    | 10    | 28    | 45    | 1580 | Slight                                                   |
| 11   | DEHRA DUN  | NE    | e     | 18    | 23    | 52    |      | Tremor                          |           |                                                                     | iS    |       | 31    | 34    |       |      |                                                          |
| 11   | SHILLONG   | Z     | iP    | 18    | 24    | 57    |      | Slight, distant rarefaction     |           | SEMORE                                                              | NE    | iP    | 10    | 28    | 50    | 1650 | Moderate                                                 |
| 12   | SHILLONG   | Z     | eP    | 03    | 13    | 21    |      | Slight, near                    |           |                                                                     | PP    |       | 29    | 02    |       |      |                                                          |
| 12   | BOMBAY     | E     | e     | 06    | 06    | 32    |      | Very slight, near minor tremor  |           |                                                                     | PPP   |       | 29    | 09    |       |      |                                                          |
|      |            |       | e     |       | 07    | 52    |      |                                 |           |                                                                     | iS    |       | 31    | 36    |       |      |                                                          |
|      | POONA      | Z     | e     | 06    | 06    | 57    |      | Mild tremor                     |           | BOKARO                                                              | NE    | iP    | 10    | 29    | 13    | 2020 | Moderate, initial ground motion towards South and East.  |
|      |            |       | i     |       | 08    | 21    |      |                                 |           |                                                                     | N     | PPP   |       | 29    | 34    |      |                                                          |
|      | SHILLONG   | Z     | eP    | 06    | 09    | 33    |      | Slight, distant                 |           |                                                                     | iS    |       | 32    | 34    |       |      |                                                          |
| 12   | TOCKLAI    | E     | eP    | 06    | 41    | 49    |      | Slight                          |           |                                                                     | SS    |       | 32    | 55    |       |      |                                                          |
|      |            |       |       |       |       |       |      |                                 |           |                                                                     | SSS   |       | 33    | 06    |       |      |                                                          |
|      | SHILLONG   | Z     | eP    | 06    | 41    | 55    |      | Slight, near                    |           |                                                                     | Lr    |       | 33    | 19    |       |      |                                                          |
|      |            |       |       |       |       |       |      |                                 |           |                                                                     | M     |       | 34    | 51    |       |      |                                                          |













| DATE | STATION                                                                 | COMPT | PHASE | G. M. T. | Δ     | REMARKS                                                      | DATE      | STATION                                                                    | COMPT  | PHASE    | G. M. T. | Δ     | REMARKS                        |                               |
|------|-------------------------------------------------------------------------|-------|-------|----------|-------|--------------------------------------------------------------|-----------|----------------------------------------------------------------------------|--------|----------|----------|-------|--------------------------------|-------------------------------|
|      |                                                                         |       |       | h. m. s. | km    | November                                                     | 1959      |                                                                            |        |          | h. m. s. | km    |                                |                               |
| 27   | SHILLONG                                                                | Z     | iP    | 00 13 04 |       | Slight, distant rarefaction                                  | 28        | SHILLONG                                                                   | Z Z    | iP       | 21 31 04 |       | Slight, distant compression.   |                               |
| 27   | POONA                                                                   | Z     | iP    | 00 31 23 |       | Mild, compression phases not clear                           | 28        | SHILLONG                                                                   | Z      | eP       | 22 12 03 |       | Slight, near                   |                               |
|      | CHATRA                                                                  | Z     | i     | 00 32 12 |       | Slight, distant                                              | 28        | Epc: 13°S, 167½°E. New Hebrides Islands<br>- H: 22h 39m 13s (U.S.C.G.S)    |        |          |          |       |                                |                               |
|      | SHILLONG                                                                | Z     | eP    | 00 32 36 |       | Slight, distant                                              | SHILLONG  | Z                                                                          | iP     | 22 51 39 |          |       | Slight, distant compression    |                               |
| 27   | SHILLONG                                                                | Z     | eP    | 07 07 56 |       | Slight, distant                                              | CHATRA    | Z                                                                          | i      | 22 52 02 |          |       | Slight, distant                |                               |
| 27   | SHILLONG                                                                | Z     | iP    | 08 13 52 |       | Slight, distant compression                                  | POONA     | Z                                                                          | e      | 22 52 47 |          |       | Very feeble, phases not clear. |                               |
| 27   | SHILLONG                                                                | Z     | eP    | 10 29 43 |       | Slight, distant                                              | 29        | SHILLONG                                                                   | Z      | iP       | 10 51 44 |       |                                |                               |
| 27   | SHILLONG                                                                | Z     | eP    | 13 45 09 |       | Tremor                                                       | 29        | SHILLONG                                                                   | Z      | iP       | 11 18 36 |       |                                | Slight, distant rarefaction   |
|      | CHATRA                                                                  | Z     | i     | 17 42 07 |       | Slight, distant                                              | 29        | SHILLONG                                                                   | Z      | eP       | 13 50 09 |       |                                | Near, slight                  |
| 27   | SHILLONG                                                                | Z     | eP    | 17 42 30 |       | Slight, distant                                              | 29        | SHILLONG                                                                   | Z      | eP       | 15 24 45 |       |                                | Slight, near                  |
| 27   | SHILLONG                                                                | Z     | iP    | 18 58 02 |       | Slight, distant                                              | 29        | DEHRA DUN                                                                  | NE     | e        | 23 01 31 |       |                                | Feeble                        |
| 27   | CHATRA                                                                  | Z     | i     | 18 58 29 |       | Slight, distant                                              |           |                                                                            |        | e        | 02 35    |       |                                |                               |
|      | POONA                                                                   | Z     | f     | 18 59 05 |       | Feeble, phases not clear                                     | CHATRA    | Z                                                                          | iP     | 23 03 15 | 3430     |       | Slight                         |                               |
|      | BOMBAY                                                                  | E     | e     | 19 04 43 |       | Slight, not recorded in M-S Seismograms.                     | NE        | iS                                                                         | 08 19  |          |          |       |                                |                               |
|      |                                                                         |       | e     | 07 52    |       |                                                              | SHILLONG  | Z                                                                          | eP     | 23 04 09 |          |       | Slight, distant                |                               |
|      |                                                                         |       | e     | 09 02    |       |                                                              | POONA     | Z                                                                          | e      | 23 04 42 |          |       | Mild, near phases not clear.   |                               |
| 27   | SHILLONG                                                                | Z     | eP    | 19 24 50 |       | Tremor                                                       | 29        | SHILLONG                                                                   | Z      | iP       | 23 59 41 |       |                                | Slight, distant, rarefaction  |
|      | CHATRA                                                                  | Z     | iP    | 20 26 33 | 180   | Feeble                                                       | 30        | Epc: 44°N, 80°E. Sinkiang Province, China.<br>- H: 11h 12m 43s (U.S.C.G.S) |        |          |          |       |                                |                               |
|      |                                                                         |       | iS    | 25 55    |       |                                                              | CALCUTTA  | E                                                                          | e      | 11 17 43 |          |       | Slight                         |                               |
| 28   | KODAIKANAL                                                              | E     | e     | 02 34 13 |       | Tremor                                                       |           |                                                                            |        | PP       | 18 24    |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | eP    | 02 59 00 |       | Tremor                                                       |           |                                                                            |        | eS       | 22 10    |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | eP    | 03 13 06 |       | Slight, distant                                              | DEHRA DUN | NE                                                                         | eP     | 11 16 22 | 1490     |       | Slight                         |                               |
| 28   | Epc: 26°N, 128°E. Ryukyu Islands<br>- H: 03h 20m 24s (U.S.C.G.S).       |       |       |          |       |                                                              |           |                                                                            |        | N        | PP       | 15 29 |                                |                               |
|      | SHILLONG                                                                | Z     | iP    | 03 27 03 |       | Slight, distant rarefaction                                  |           |                                                                            |        | iS       | 18 53    |       |                                |                               |
|      | CHATRA                                                                  | Z     | i     | 03 27 38 |       | Feeble, distant                                              |           |                                                                            |        | SS       | 19 07    |       |                                |                               |
|      | DEHRA DUN                                                               | NE    | eP    | 03 28 45 | 4890  | Slight                                                       |           |                                                                            |        | SSS      | 19 21    |       |                                |                               |
|      |                                                                         | N     | PP    | 30 34    |       |                                                              |           |                                                                            |        | M        | 20 24    |       |                                |                               |
|      |                                                                         |       | eS    | 35 19    |       |                                                              | AGRA      | ZNE                                                                        | eP     | 11 16 53 | 2080     |       | Slight rarefaction             |                               |
|      |                                                                         |       | SS    | 38 42    |       |                                                              |           | NZ                                                                         | PP     | 17 02    |          |       |                                |                               |
|      |                                                                         |       | M     | 44 43    |       |                                                              |           | ZNE                                                                        | PPP    | 17 14    |          |       |                                |                               |
|      | POONA                                                                   | ZE    | e     | 03 29 30 |       | Feeble, distant phases not clear                             |           | E                                                                          | iP     | 19 55    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           | ZNE                                                                        | iS, Lq | 20 19    |          |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | eP    | 09 24 57 |       | Slight, near                                                 |           | Z                                                                          | SS     | 20 32    |          |       |                                |                               |
| 28   | Epc: 28½°S, 71°W. Chile. - H: 12h 34m 53s (U.S.C.G.S)<br>Mag: 4½ (Pas). |       |       |          |       |                                                              |           |                                                                            |        | ZNE      | M        | 22 24 |                                | Period 6 secs<br>Amp: ±8.5 mm |
|      | BOMBAY                                                                  | NE    | e     | 12 54 34 |       |                                                              | CHATRA    | Z                                                                          | iP     | 11 17 12 | 2110     |       | Slight                         |                               |
|      | POONA                                                                   | ZNE   | iPKP1 | 12 54 38 | 15330 | Initial ground movement towards North, East and compression. |           | NE                                                                         | iS     | 20 41    |          |       |                                |                               |
|      |                                                                         |       | iPKP2 | 54 48    |       |                                                              | BOKARO    | NE                                                                         | eP     | 11 17 39 | 2420     |       | Slight                         |                               |
|      |                                                                         | E     | PKS1  | 57 59    |       |                                                              |           | N                                                                          | PPP    | 18 11    |          |       |                                |                               |
|      |                                                                         |       | e     | 58 08    |       |                                                              |           |                                                                            | iS     | 21 35    |          |       |                                |                               |
|      | AGRA                                                                    | Z     | iP    | 12 54 47 |       | Compression, distant.                                        |           |                                                                            | Lq     | 22 00    |          |       |                                |                               |
|      | SHILLONG                                                                | Z     | iP    | 12 54 55 |       | Distant, compression                                         |           |                                                                            | SSS    | 22 50    |          |       |                                |                               |
|      | DEHRA DUN                                                               | NE    | e     | 12 54 57 |       |                                                              |           |                                                                            | Lr     | 22 56    |          |       |                                |                               |
|      |                                                                         |       | i     | 13 05 44 |       |                                                              |           |                                                                            | M      | 44 22    |          |       |                                |                               |
|      | COLOMED                                                                 | E     | e     | 13 27 42 |       |                                                              | SHILLONG  | ZE                                                                         | iP     | 11 17 40 | 2330     |       | Slight, rarefaction            |                               |
|      |                                                                         |       | e     | 33 49    |       |                                                              |           | E                                                                          | PP     | 18 00    |          |       |                                |                               |
|      |                                                                         |       | e     | 59 39    |       |                                                              |           |                                                                            | PPP    | 18 12    |          |       |                                |                               |
| 28   | CHATRA                                                                  | Z     | i     | 13 55 00 |       | Feeble, distant                                              |           | NE                                                                         | iS     | 21 30    |          |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | eP    | 15 37 04 |       | Tremor                                                       |           | E                                                                          | SS     | 22 02    |          |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | iP    | 19 14 39 |       | Rarefaction                                                  |           |                                                                            | SSS    | 22 16    |          |       |                                |                               |
| 28   | SHILLONG                                                                | Z     | iP    | 19 19 34 |       | Slight, near                                                 |           |                                                                            | Lr     | 22 42    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           |                                                                            | M      | 44 22    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              | TOCKLAI   | E                                                                          | eP     | 11 17 43 |          |       | Slight, distant                |                               |
|      |                                                                         |       |       |          |       |                                                              | POONA     | Z                                                                          | eP     | 11 18 35 | 3010     |       | Slight                         |                               |
|      |                                                                         |       |       |          |       |                                                              |           | NE                                                                         | eS     | 23 13    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              | BOMBAY    | NE                                                                         | eP     | 11 18 42 | 3000     |       | Slight                         |                               |
|      |                                                                         |       |       |          |       |                                                              |           | E                                                                          | PP     | 19 21    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           |                                                                            | e      | 20 13    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           |                                                                            | e      | 23 05    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           |                                                                            | iS     | 23 19    |          |       |                                |                               |
|      |                                                                         |       |       |          |       |                                                              |           |                                                                            | SSS    | 24 29    |          |       |                                |                               |

| DATE   | STATION    | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS                        | DATE | STATION  | COMPT | PHASE | G. M. T. | $\Delta$ | REMARKS                     |
|--------|------------|-------|-------|----------|----------|--------------------------------|------|----------|-------|-------|----------|----------|-----------------------------|
|        |            |       |       | h. m. s. | km       | November                       | 1959 |          |       |       | h. m. s. | km       |                             |
| 30     | HYDERABAD  | N     | e     | 11 19 05 |          |                                | 30   | SHILLONG | Z     | iP    | 15 30 47 |          | Slight, distant rarefaction |
| Contd. |            | E     | e     | 23 17    |          |                                |      | CHATRA   | Z     | i     | 15 31 00 |          | Feeble, distant             |
|        | KODAIKANAL | E     | e     | 11 25 05 |          |                                | 30   | SHILLONG | Z     | eP    | 18 35 52 |          | Tremor                      |
|        |            |       | e     | 31 44    |          |                                | 30   | SHILLONG | Z     | iP    | 20 37 38 |          | Slight, distant compression |
|        |            |       | e     | 34 59    |          |                                | 30   | SHILLONG | Z     | iPg   | 21 37 32 | 140      | Slight, rarefaction         |
|        |            |       | e     | 35 47    |          |                                |      |          |       | eSg   | 37 49    |          |                             |
|        | MADRAS     | E     | e     | 11 25 44 |          | Phases could not be identified | 30   | SHILLONG | Z     | eP    | 23 46 28 |          | Slight, near                |
|        |            |       | e     | 30 17    |          |                                |      |          |       |       |          |          |                             |
| 30     | SHILLONG   | Z     | eP    | 15 12 15 |          | Slight, near                   | 30   | SHILLONG | Z     | eP    | 23 46 28 |          | Slight, near                |

The following is the list of Earthquakes that are reported by Voluntary Observers from different stations during the month of November, 1959.

| Place              | Date in G. M. T. | Time in h. m. | No. of shocks | Duration of shock     | Intensity in R. F. scale | Remarks |
|--------------------|------------------|---------------|---------------|-----------------------|--------------------------|---------|
| Shillong           | 09               | 02 40         | One           | fraction of a second. | IV                       |         |
| Shillong           | 16               | 20 25         | One           | 3                     | IV                       |         |
| Mukteswar (Kumaon) | 22               | 13 57         | One           | 2                     | VI                       |         |

## MICROSEISMIC TABULATION

Station: Shillong

Compt. L.W

November 1959

| Date | Hour   | K   | Mean Amplitude in mm | Mean Period in secs | Date | Hour   | K   | Mean Amplitude in mm | Mean Period in secs | Date   | Hour   | K   | Mean Amplitude in mm | Mean Period in secs |
|------|--------|-----|----------------------|---------------------|------|--------|-----|----------------------|---------------------|--------|--------|-----|----------------------|---------------------|
| 01   | 00     | 1   | 0.3                  | 4.0                 | 10   | 00     | 1   | 0.4                  | 4.9                 | 18     | 06     | 1   | 0.3                  | 4.4                 |
|      | 06     | 0,0 | -                    | -                   |      | 06     | 1   | 0.4                  | 5.0                 | Contd. | 12     | 1   | 0.3                  | 4.5                 |
|      | 12     | 3   | 0.3                  | 4.2                 |      | 12     | 1   | 0.5                  | 5.4                 |        | 18     | 1   | 0.4                  | 5.0                 |
|      | 18     | 0,0 | -                    | -                   |      | 18     | 1   | 0.4                  | 5.1                 |        |        |     |                      |                     |
| 02   | 00     |     |                      |                     | 11   | 00     | 1   | 0.4                  | 4.9                 | 19     | 00     | 1   | 0.5                  | 5.3                 |
|      | to 0,0 |     |                      |                     |      | 06     | 1   | 0.4                  | 5.0                 |        | 06     | 1   | 0.5                  | 5.0                 |
|      | 18     |     |                      |                     |      | 12     | 1   | 0.5                  | 5.1                 |        | 12     |     |                      |                     |
|      |        |     |                      |                     |      | 18     | 1   | 0.5                  | 5.0                 |        | 18     | 1   | 0.4                  | 4.5                 |
| 03   | 00     |     |                      |                     | 12   | 00     | 1   | 0.5                  | 5.3                 | 20     | 00     | 1   | 0.3                  | 4.0                 |
|      | to 0,0 |     |                      |                     |      | 06     | 1   | 0.5                  | 5.5                 |        | 06     | 1   | 0.3                  | 4.2                 |
|      | 12     |     |                      |                     |      | 12     | 1   | 0.7                  | 6.2                 |        | 12     | 1   | 0.3                  | 4.4                 |
|      | 18     | 1   | 0.3                  | 4.1                 |      | 18     | 1   | 0.8                  | 6.4                 |        | 18     | 0,0 | -                    | -                   |
| 04   | 00     |     |                      |                     | 13   | 00     | 1   | 0.5                  | 5.2                 | 21     | 00     | 1   | 0.3                  | 4.1                 |
|      | to 0,0 |     |                      |                     |      | 06     | 1   | 0.5                  | 5.3                 |        | 06     | 3   | 0.3                  | 4.3                 |
|      | 18     |     |                      |                     |      | 12     |     |                      |                     |        | 12     | 1   | 0.4                  | 5.2                 |
| 05   | 00     | 0,0 | -                    | -                   |      | 18     |     |                      |                     |        | 18     | 1   | 0.4                  | 5.0                 |
|      | 06     | 0,0 | -                    | -                   | 14   | 00     |     |                      |                     | 22     | 00     | 1   | 0.3                  | 4.6                 |
|      | 12     |     |                      |                     |      | to 0,0 |     |                      |                     |        | 06     | 1   | 0.3                  | 4.4                 |
|      | 18     |     |                      |                     |      | 18     |     |                      |                     |        | 12     | 0,0 | -                    | -                   |
| 06   | 00     | 0,0 | -                    | -                   | 15   | 00     |     |                      |                     |        | 18     | 3   | 0.3                  | 4.2                 |
|      | 06     | 0,0 | -                    | -                   |      | 06     | 3   | 0.3                  | 4.2                 | 23     | 00     | 0,0 | -                    | -                   |
|      | 12     | 3   | 0.3                  | 4.4                 |      | 12     | 3   | 0.3                  | 4.4                 |        | 06     | 3   | 0.3                  | 4.1                 |
|      | 18     | 0,0 | -                    | -                   |      | 18     |     |                      |                     |        | 12     |     |                      |                     |
| 07   | 00     |     |                      |                     | 16   | 00     | 3   | 0.3                  | 4.1                 |        | 18     |     |                      |                     |
|      | to 0,0 |     |                      |                     |      | 06     |     |                      |                     | 24     | 00     |     |                      |                     |
|      | 18     |     |                      |                     |      | 12     | 0,0 | -                    | -                   |        | to 0,0 |     |                      |                     |
| 08   | 00     | 0,0 | -                    | -                   |      | 18     |     |                      |                     |        | 18     |     |                      |                     |
|      | 06     | 0,0 | -                    | -                   | 17   | 00     |     |                      |                     | 25     | 00     | 0,0 | -                    | -                   |
|      | 12     | 0,0 | -                    | -                   |      | 06     | 0,0 | -                    | -                   |        | 06     | 1   | 0.3                  | 4.3                 |
|      | 18     | 1   | 0.3                  | 4.1                 |      | 12     | 1   | 0.3                  | 4.8                 |        | 12     | 1   | 0.3                  | 4.1                 |
| 09   | 00     | 1   | 0.3                  | 4.0                 |      | 18     | 1   | 0.3                  | 4.6                 |        | 18     | 1   | 0.3                  | 4.0                 |
|      | 06     | 1   | 0.3                  | 4.2                 |      |        |     |                      |                     | 26     | 00     | 1   | 0.4                  | 4.6                 |
|      | 12     | 1   | 0.4                  | 4.7                 |      |        |     |                      |                     |        | 06     | 1   | 0.4                  | 4.8                 |
|      | 18     | 1   | 0.4                  | 5.0                 |      |        |     |                      |                     |        |        |     |                      |                     |

Station: Bombay (Colaba)

|    |    |   |     |     |
|----|----|---|-----|-----|
| 01 | 00 | 2 | 0.9 | 3.8 |
|    | 06 | 2 | 0.6 | 4.3 |
|    | 12 | 3 | 0.5 | 4.2 |
|    |    |   | 0.5 | 1.8 |
|    | 15 | 1 | 0.5 | 1.8 |
|    | 18 | 1 | 0.7 | 2.0 |
|    | 21 | 1 | 0.4 | 3.0 |
| 02 | 00 | 2 | 0.5 | 4.5 |
|    | 06 | 2 | 0.5 | 4.7 |
|    | 12 | 2 | 0.5 | 4.6 |
|    | 18 | 2 | 0.5 | 4.5 |



| DATE                        | HOUR | K | MEAN   | MEAN   | DATE                | HOUR | K  | MEAN     | MEAN   | DATE                | HOUR | K   | MEAN     | MEAN   |
|-----------------------------|------|---|--------|--------|---------------------|------|----|----------|--------|---------------------|------|-----|----------|--------|
|                             | GMT  |   | Ampli- | Period |                     | GMT  |    | Ampli-   | Period |                     | GMT  |     | Ampli-   | Period |
|                             |      |   | tude   | in     |                     |      |    | tude     | in     |                     |      |     | tude     | in     |
|                             |      |   | in mm  | secs   |                     |      |    | (Micron) | secs   |                     |      |     | (Micron) | secs   |
| Station: Madras Compt. E-W. |      |   |        |        | November 1959       |      |    |          |        | Station: Port Blair |      |     |          |        |
| 18                          | 13   | 3 | 0.5    | 2.5    | 26                  | 00   | 1  | 0.7      | 3.1    | 29                  | 00   |     |          |        |
| Cont'd.                     | 14   | 3 | 0.5    | 2.6    |                     | 03   | 1  | 0.7      | 2.8    | to                  | to   | 0.0 |          |        |
|                             | 15   | 3 | 0.5    | 2.7    |                     | 06   | 1  | 0.7      | 3.0    | 30                  | 18   |     |          |        |
|                             | 16   | 3 | 0.5    | 2.6    |                     | 12   | 1  | 0.8      | 2.9    |                     |      |     |          |        |
|                             | 17   | 3 | 0.6    | 2.6    |                     | 18   | 1  | 0.9      | 2.9    |                     |      |     |          |        |
|                             | 18   | 3 | 0.5    | 2.6    | 27                  | 00   | 1  | 0.9      | 3.0    |                     |      |     |          |        |
|                             | 19   | 3 | 0.5    | 2.6    |                     | 03   | 1  | 1.0      | 3.2    |                     |      |     |          |        |
|                             | 20   | 3 | 0.5    | 2.5    |                     | 06   | 1  | 1.0      | 3.2    |                     |      |     |          |        |
|                             | 21   | 3 | 0.5    | 2.6    |                     | 09   | 1  | 0.9      | 2.9    |                     |      |     |          |        |
|                             | 22   | 3 | 0.5    | 2.6    |                     | 12   | 1  | 1.1      | 2.9    |                     |      |     |          |        |
|                             | 23   | 3 | 0.5    | 2.7    |                     | 15   | 1  | 1.1      | 2.7    |                     |      |     |          |        |
| 19                          | 00   | 3 | 0.5    | 2.6    |                     | 18   | 1  | 1.2      | 2.8    |                     |      |     |          |        |
|                             | 01   | 3 | 0.5    | 2.7    |                     | 21   | 1  | 1.1      | 2.8    |                     |      |     |          |        |
|                             | 02   | 3 | 0.4    | 2.5    | 28                  | 00   | 1  | 1.2      | 2.9    |                     |      |     |          |        |
|                             | 03   | 3 | 0.6    | 2.6    |                     | 03   | 1  | 1.3      | 2.9    |                     |      |     |          |        |
|                             | 04   | 3 | 0.5    | 2.7    |                     | 06   | 1  | 1.2      | 2.8    |                     |      |     |          |        |
|                             | 05   | 3 | 0.5    | 2.6    |                     | 09   | 1  | 1.1      | 2.9    |                     |      |     |          |        |
|                             | 06   | 3 | 0.5    | 2.7    |                     | 12   | 1  | 1.3      | 2.9    |                     |      |     |          |        |
|                             | 07   | 3 | 0.5    | 2.5    |                     | 15   | 1  | 1.2      | 2.9    |                     |      |     |          |        |
|                             | 08   | 3 | 0.5    | 2.7    |                     | 18   | 1  | 1.4      | 2.9    |                     |      |     |          |        |
|                             | 09   | 3 | 0.5    | 2.6    |                     | 21   | 1  | 1.3      | 3.0    |                     |      |     |          |        |
|                             | 10   | 3 | 0.5    | 2.7    | 29                  | 00   | 1  | 1.3      | 3.0    |                     |      |     |          |        |
|                             | 11   | 3 | 0.4    | 2.5    |                     | 03   | 1  | 1.2      | 3.0    |                     |      |     |          |        |
|                             | 12   |   |        |        |                     | 06   | 1  | 1.1      | 3.1    |                     |      |     |          |        |
|                             | 13   | 1 | 0.5    | 2.7    |                     | 12   | 1  | 0.8      | 3.1    |                     |      |     |          |        |
|                             | 14   | 1 | 0.6    | 2.6    |                     | 18   | 1  | 0.8      | 2.9    |                     |      |     |          |        |
|                             | 15   | 1 | 0.5    | 2.7    |                     |      |    |          |        |                     |      |     |          |        |
|                             | 16   | 1 | 0.5    | 2.6    | 30                  | 00   | 1  | 1.5      | 3.1    |                     |      |     |          |        |
|                             | 17   | 1 | 0.6    | 2.7    |                     | 03   | 1  | 0.8      | 2.8    |                     |      |     |          |        |
|                             | 18   | 1 | 0.5    | 2.7    |                     | 06   | 1  | 0.7      | 3.0    |                     |      |     |          |        |
|                             | 19   | 1 | 0.5    | 2.7    |                     | 12   | 1  | 0.6      | 3.0    |                     |      |     |          |        |
|                             | 20   | 3 | 0.5    | 2.7    |                     | 18   | 1  | 0.5      | 2.9    |                     |      |     |          |        |
|                             | 21   | 3 | 0.5    | 2.8    |                     |      |    |          |        |                     |      |     |          |        |
|                             | 22   | 3 | 0.5    | 2.6    |                     |      |    |          |        |                     |      |     |          |        |
|                             | 23   | 3 | 0.5    | 2.7    |                     |      |    |          |        |                     |      |     |          |        |
| 20                          | 00   | 3 | 0.5    | 2.8    | Station: Port Blair |      |    |          |        |                     |      |     |          |        |
|                             | 03   | 3 | 0.6    | 2.7    | 01                  | 00   |    |          |        |                     |      |     |          |        |
|                             | 06   | 3 | 0.7    | 2.7    |                     | 06   |    |          |        |                     |      |     |          |        |
|                             | 12   | 3 | 0.7    | 3.0    |                     | 12   | 1  | 1.2      | 7.5    |                     |      |     |          |        |
|                             | 18   | 3 | 0.7    | 3.0    |                     | 18   | 1  | 1.2      | 7.5    |                     |      |     |          |        |
| 21                          | 00   | 3 | 0.6    | 2.9    | 02                  | 00   | 1  | 1.2      | 7.5    |                     |      |     |          |        |
|                             | 03   | 3 | 0.6    | 3.0    |                     | 06   |    |          |        |                     |      |     |          |        |
|                             | 06   | 3 | 0.6    | 2.9    |                     | 12   | 1  | 1.2      | 7.5    |                     |      |     |          |        |
|                             | 12   | 3 | 0.6    | 2.9    |                     | 18   | 1  | 1.2      | 7.5    |                     |      |     |          |        |
|                             | 18   | 3 | 0.6    | 2.9    | 03                  | 00   | 1  | 0.8      | 7.5    |                     |      |     |          |        |
| 22                          | 00   | 3 | 0.5    | 2.7    |                     | 06   |    |          |        |                     |      |     |          |        |
|                             | 03   | 3 | 0.3    | 2.7    |                     | 12   | 3  | 0.4      | 7.5    |                     |      |     |          |        |
|                             | 06   | 3 | 0.5    | 2.6    |                     | 18   | 3  | 0.4      | 7.5    |                     |      |     |          |        |
|                             | 12   | 3 | 0.5    | 2.5    | 04                  | 00   | 3  | 0.4      | 7.5    |                     |      |     |          |        |
|                             | 18   | 3 | 0.4    | 2.7    |                     | 06   |    |          |        |                     |      |     |          |        |
| 23                          | 00   | 3 | 0.4    | 2.7    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 03   | 3 | 0.4    | 2.4    |                     | 18   |    |          |        |                     |      |     |          |        |
|                             | 06   | 3 | 0.4    | 2.6    | 05                  | 00   |    |          |        |                     |      |     |          |        |
|                             | 12   | 3 | 0.4    | 2.6    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 18   | 3 | 0.5    | 2.6    |                     | to   |    |          |        |                     |      |     |          |        |
| 24                          | 00   | 1 | 0.6    | 2.7    |                     | 08   | 18 |          |        |                     |      |     |          |        |
|                             | 03   | 1 | 0.5    | 2.7    | 09                  | 00   |    |          |        |                     |      |     |          |        |
|                             | 06   | 1 | 0.5    | 2.7    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 12   | 1 | 0.6    | 2.7    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 18   | 1 | 0.6    | 2.7    |                     | 11   | 18 |          |        |                     |      |     |          |        |
| 25                          | 00   | 1 | 0.6    | 2.8    |                     |      |    |          |        |                     |      |     |          |        |
|                             | 03   | 1 | 0.6    | 2.7    |                     | 12   | 00 |          |        |                     |      |     |          |        |
|                             | 06   | 1 | 0.5    | 2.7    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 12   | 1 | 0.6    | 2.7    |                     | to   |    |          |        |                     |      |     |          |        |
|                             | 18   | 1 | 0.7    | 3.0    |                     | 19   | 18 |          |        |                     |      |     |          |        |



GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

Dec. 1959



Published under the direction of  
*Shri P.R. Krishna Rao,*  
Director General of Observatories

List of Seismograph stations with their Instru



From the ISC collection scanned by SISMOS

| Station              | Latitude  | Longitude | Height<br>a.s.l.<br>(Metres) | Lithographic<br>Foundation                         | Instrument           | Compt.        | Period<br>in<br>secs | Static<br>Magni-<br>fication | Damping<br>ratio | Paper<br>speed<br>mm/min. |      |
|----------------------|-----------|-----------|------------------------------|----------------------------------------------------|----------------------|---------------|----------------------|------------------------------|------------------|---------------------------|------|
| Agra                 |           |           |                              |                                                    | Columbia             | E             | To=15                | Tg=100                       |                  | 15                        |      |
|                      |           |           |                              |                                                    | Long Period          | N             | To=15                | Tg=85                        |                  | 15                        |      |
|                      |           |           |                              |                                                    | do                   | Z             | To=15                | Tg=70                        |                  | 15                        |      |
| Bombay               | 18° 54' N | 72° 40' E | 6                            | Deccan Trap                                        | Milne-Shaw           | N             | 12                   | 350                          | 13:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 350                          | 23:1             | 8                         |      |
|                      |           |           |                              |                                                    | Sprengnether         | E             | To=Tg= 7 secs        |                              |                  | 30                        |      |
| Bokaro               | 23° 50' N | 85° 48' E |                              | Rock                                               | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 950                          | h = 0.8          | 60                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 1000                         | h = 0.8          | 60                        |      |
| Calcutta             | 22° 32' N | 88° 22' E | (1)                          | 7 (Milne-Shaw)                                     | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | (2) 6 (Omori-Ewing)  | Wood-Anderson | N                    | 2                            | 870              | Critical                  | 30   |
|                      |           |           |                              |                                                    | Alluvium             | Omori-Ewing   | N                    | 16                           | 32               |                           | 25.4 |
|                      |           |           |                              |                                                    | Omori-Ewing          | E             | 21                   | 30                           |                  | 25.4                      |      |
| Chetna               | 25° 50' N | 87° 10' E | 161                          | Sand Stone                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 15                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 1                    | 1000                         | 30:1             | 60                        |      |
|                      |           |           |                              |                                                    | Benioff              | Z             | To=0                 | Tg= 0.45<br>secs.            | Critical         | 50                        |      |
|                      |           |           |                              |                                                    | Wenner-Accelerograph | ZNE           |                      |                              |                  |                           |      |
| Colombo              | 05° 54' N | 76° 52' E | 7                            | Beach Sand                                         | Milne-Shaw           | E             | 12                   | 250                          | 20:1             |                           |      |
| Dehra Dun            | 30° 19' N | 78° 02' E | 682                          | Gravel                                             | Wood-Anderson        | N             | 0.8                  | 950                          | Critical         | 60                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 850                          | Critical         | 60                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
| Hyderabad            | 17° 25' N | 78° 27' E | 535                          | Granite                                            | Milne-Shaw           | E             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
| Kodaikanal           | 10° 14' N | 77° 28' E | 2345                         | Rock                                               | Milne-Shaw           | E             | 10                   | 250                          | 20:1             | 8                         |      |
| Madras               | 13° 00' N | 80° 11' E | 15                           |                                                    | Sprengnether         | E             | To=Tg=72 secs        |                              | Critical         | 30                        |      |
| New Delhi            | 28° 35' N | 77° 12' E | 207                          | Massive Quartzite                                  |                      |               |                      |                              |                  |                           |      |
| Poona                | 18° 32' N | 73° 51' E | 560                          | Deccan Trap                                        | Sprengnether         | Z             | To=Tg=1.6            |                              | Critical         | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 4                    | 1000                         | 20:1             | 16                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 280                          | 20:1             | 8                         |      |
| Fort Blair           | 11° 49' N | 92° 43' E |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | 65:1             | 30                        |      |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 350                          | 20:1             | 8                         |      |
| Sehore               |           |           |                              |                                                    | Wood-Anderson        | N             | 0.8                  | 980                          | Critical         | 30                        |      |
| Shillong             | 25° 34' N | 91° 53' E | 1500                         | Quartzite<br>Sand stone<br>(Shillong<br>Quartzite) | Wood-Anderson        | N             | 0.8                  | 1000                         | h=0              | h=0.8                     | 30   |
|                      |           |           |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         |                  | h=0.8                     | 30   |
|                      |           |           |                              |                                                    | Milne-Shaw           | N             | 12                   | 250                          | 20:1             | 8                         |      |
|                      |           |           |                              |                                                    | Benioff              | Z             | To=1.0               | Tg=0.18                      |                  | 60                        |      |
|                      |           |           |                              |                                                    | Sprengnether         | E             | To= Tg= 6.3          |                              | Critical         | 30                        |      |
| Wenner Accelerograph | ZNE       |           |                              |                                                    |                      |               |                      |                              |                  |                           |      |
| Tocklai              | 28° 45' N | 94° 45' E |                              | Alluvium                                           | Wood-Anderson        | E             | 0.8                  | 970                          | h=0.8            | 60                        |      |
| Vizianagram          | 18° 07' N | 83° 27' E |                              |                                                    | Wood-Anderson        | E             | 0.8                  | 1000                         | h=0.8            | 30                        |      |
|                      |           |           |                              |                                                    | Wood-Anderson        | N             | 2                    | 1000                         | 20:1             | 30                        |      |



| DATE | STATION   | COMPT PHASE | G. M. T.                                  | Δ                                                                                | REMARKS                                                              | DATE  | STATION                                                                                                                           | COMPT PHASE             | G. M. T.                           | Δ                                                     | REMARKS                                                                           |
|------|-----------|-------------|-------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------|
|      |           |             | h. m. s.                                  | km                                                                               | December                                                             | 19 59 |                                                                                                                                   |                         | h. m. s.                           | km                                                    |                                                                                   |
| 01   | Shillong  | Z           | eP<br>iSg                                 | 04 11 18<br>27 18                                                                | 130 Slight                                                           | 02    | Chatra                                                                                                                            | Z<br>NE                 | iP<br>iS                           | 06 45 00<br>44 34                                     | 850 Slight                                                                        |
| 01   | Shillong  | Z           | eP<br>iSg                                 | 09 14 43<br>15 09                                                                | 220 Slight                                                           | 02    | Epc: 5°S, 104°E. Near Coast of Sumatra<br>- h = 150 km. Ca. - H = 07h 30m 05s (USCGS)                                             |                         |                                    |                                                       |                                                                                   |
| 01   | Tocklai   | E           | eP                                        | 09 15 30                                                                         | Local, slight                                                        |       | Port Blair                                                                                                                        | E                       | eP                                 | 07 34 25                                              | Slight                                                                            |
| 01   | Shillong  | Z           | iP                                        | 11 17 58                                                                         | Compression,<br>slight, distant                                      |       | Shillong                                                                                                                          | Z                       | iP                                 | 07 35 23                                              | Slight, distant<br>compression                                                    |
| 01   | Agra      | Z           | iP                                        | 12 47 33                                                                         | Compression,<br>slight, distant                                      |       | Bokaro                                                                                                                            | NE                      | eP<br>eS                           | 07 35 33<br>41 51                                     | 3570 Slight, phases<br>very poorly<br>developed.                                  |
| 01   | BOMBAY    | E           | e<br>e<br>e                               | 12 47 39<br>49 35<br>55 02                                                       | Slight, deep                                                         |       | Poona                                                                                                                             | Z                       | iP<br>S                            | 07 37 05<br>42 49                                     | 4090 Mild,<br>compression                                                         |
| 01   | Poona     | Z           | iP                                        | 12 47 46                                                                         | Very feeble, S<br>phases not clear<br>compression.                   |       | Bombay                                                                                                                            | E<br>NE<br>E<br>NE<br>E | eP<br>PP<br>PPP<br>iS<br>SS        | 07 37 14<br>38 46<br>39 02<br>43 05<br>46 08          | 4190 Slight                                                                       |
| 01   | Chatra    | Z           | i                                         | 12 48 33                                                                         | Feeble, distant                                                      |       | Agra                                                                                                                              | ZN                      | iP                                 | 07 37 29                                              | Slight, near,<br>ground motion<br>North, compression                              |
| 01   | Shillong  | Z           | iP                                        | 12 48 58                                                                         | Slight, distant<br>compression                                       |       | Dehra Dun                                                                                                                         | NE<br>N                 | eP<br>iS<br>SSS<br>M               | 07 37 55<br>44 12<br>47 48<br>53 05                   | 4520 Slight                                                                       |
| 01   | Shillong  | Z           | eP                                        | 13 02 12                                                                         | Slight, distant                                                      |       | Colombo                                                                                                                           | E                       | e<br>M                             | 07 39 50<br>48 05                                     |                                                                                   |
| 01   | Dehra Dun | NE          | e                                         | 13 29 44                                                                         | Tremor                                                               |       | Kodaikanal                                                                                                                        | E                       | e                                  | 07 41 03                                              | Tremor                                                                            |
| 01   | Shillong  | Z           | e                                         | 15 00 01                                                                         | Slight, distant                                                      |       | Madras                                                                                                                            | E                       | e                                  | 07 41 52                                              |                                                                                   |
| 01   | Shillong  | Z           | e                                         | 15 17 40                                                                         | Slight, distant                                                      |       | 02 Shillong                                                                                                                       | ZNE<br>NE               | iP<br>iS                           | 07 45 03<br>45 52                                     | 450 Slight                                                                        |
| 01   | Dehra Dun | NE          | e                                         | 15 18 59                                                                         | Feeble, phases<br>not clear                                          |       | Tocklai                                                                                                                           | E                       | eP                                 | 07 45 18                                              | Near, slight                                                                      |
| 01   | Colombo   | E           | P<br>L<br>M                               | 15 23 30<br>37 20<br>43 20                                                       |                                                                      |       | Calcutta                                                                                                                          | NE                      | eP<br>eS                           | 07 45 22<br>45 17                                     | 390 Slight                                                                        |
|      | Hyderabad | N           | e<br>e<br>e<br>e<br>e<br>e<br>e<br>e<br>M | 15 24 15<br>24 58<br>25 22<br>27 34<br>32 19<br>32 37<br>39 43<br>41 34<br>47 58 | Slight<br><br>Per: 18 secs<br>Amp: 7 mm                              |       | Bokaro                                                                                                                            | NE                      | iP                                 | 07 47 16                                              | Slight                                                                            |
|      | Bombay    | E           | e<br>e<br>e<br>N<br>E                     | 15 24 32<br>31 05<br>33 05<br>54 16<br>54 20                                     | Slight<br><br>Per: 18 secs<br>Amp: 2 mm<br>Per: 19 secs<br>Amp: 1 mm |       | Poona                                                                                                                             | ZE                      | iP<br>S                            | 07 48 17<br>51 43                                     | 2080 Feeble,<br>rarefaction                                                       |
|      | Madras    | E           | e                                         | 15 43 24                                                                         | Initial phases<br>could not be<br>identified.                        |       | Epc: 2°N, 124°E. - H = 09h 34m 10s (Shillong)<br>1°S, 123°E. - H = 09h 34m 00s (U. S. C. G. S.)<br>Mag: 6 1/4 - 6 1/2 (Pasadena). |                         |                                    |                                                       |                                                                                   |
|      | Shillong  | Z           | e                                         | 15 43 45                                                                         | Slight, distant                                                      |       | Port Blair                                                                                                                        | N                       | iP<br>iS<br>ScS                    | 09 40 40<br>45 55<br>51 00                            | 3620                                                                              |
| 01   | Tocklai   | E           | e                                         | 18 17 21                                                                         | Slight, distant                                                      |       | Tocklai                                                                                                                           | E                       | eP                                 | 09 41 38                                              |                                                                                   |
|      | Shillong  | Z           | iP                                        | 18 18 32                                                                         | Rarefaction,<br>distant, slight                                      |       | Shillong                                                                                                                          | ZNE                     | iP                                 | 09 41 43                                              | 4340 Initial ground<br>movement, West<br>and North,<br>compression.               |
|      | Chatra    | Z           | i                                         | 18 19 09                                                                         | Feeble, distant                                                      |       | Calcutta                                                                                                                          | E                       | iP<br>iS                           | 09 41 58<br>48 09                                     | 4520                                                                              |
| 01   | Shillong  | Z           | eP                                        | 18 23 53                                                                         | Slight, distant                                                      |       | Colombo                                                                                                                           | E                       | P<br>e<br>e<br>e<br>M              | 09 42 12<br>44 15<br>48 45<br>58 50<br>01 35          |                                                                                   |
| 01   | Shillong  | Z           | iP                                        | 18 45 55                                                                         | Slight, distant<br>compression                                       |       | Bokaro                                                                                                                            | NE<br>N                 | iP<br>iS<br>SS<br>Lq<br>Lr<br>M    | 09 42 15<br>48 41<br>51 43<br>52 15<br>54 15<br>57 51 | 4780 Initial ground<br>movement North<br>and West.<br><br>Per: 28 secs<br>Amp: 39 |
| 01   | Shillong  | Z           | eP                                        | 19 03 05                                                                         | Slight, distant                                                      |       | Chatra                                                                                                                            | ZNE<br>NE               | iP<br>iS                           | 09 42 18<br>48 49                                     | 4860                                                                              |
| 01   | Shillong  | Z           | eP                                        | 19 59 05                                                                         | Slight, distant                                                      |       | Madras                                                                                                                            | E                       | iP<br>PcP<br>PP<br>PPP<br>iS<br>PS | 09 42 23<br>43 56<br>44 10<br>44 57<br>48 57<br>49 07 | 4900 Ground movement<br>West.                                                     |
| 01   | Dehra Dun | NE          | e                                         | 23 38 04                                                                         | Tremor                                                               |       |                                                                                                                                   |                         |                                    |                                                       |                                                                                   |
| 02   | Tocklai   | E           | eP                                        | 00 19 07                                                                         | Local, slight                                                        |       |                                                                                                                                   |                         |                                    |                                                       |                                                                                   |
| 02   | Shillong  | Z           | e                                         | 04 26 10                                                                         | Slight                                                               |       |                                                                                                                                   |                         |                                    |                                                       |                                                                                   |
| 02   | Shillong  | Z           | eP                                        | 04 28 05                                                                         | Slight                                                               |       |                                                                                                                                   |                         |                                    |                                                       |                                                                                   |
| 02   | Shillong  | Z           | e                                         | 06 28 08                                                                         | Slight, distant                                                      |       |                                                                                                                                   |                         |                                    |                                                       |                                                                                   |





| DATE | STATION                         | COMPT | PHASE | G. | M. | T. | △    | REMARKS                               | DATE     | STATION                                       | COMPT | PHASE | G. | M. | T. | △    | REMARKS                                                   |
|------|---------------------------------|-------|-------|----|----|----|------|---------------------------------------|----------|-----------------------------------------------|-------|-------|----|----|----|------|-----------------------------------------------------------|
|      |                                 |       |       | h. | m. | s. | km   |                                       | December | 1959                                          |       |       | h. | m. | s. | km   |                                                           |
| 09.  | Chatra                          | Z     | iP    | 18 | 25 | 12 |      | Slight, near                          | 12.      | Shillong                                      | Z     | eP    | 19 | 10 | 46 |      | Slight, near                                              |
|      |                                 | NE    | Pg    |    | 25 | 27 |      |                                       |          |                                               |       |       |    |    |    |      |                                                           |
|      | Dehra Dun                       | NE    | e     | 18 | 25 | 33 |      | Feeble                                | 12.      | Shillong                                      | Z     | eP    | 19 | 22 | 07 | 90   | Slight                                                    |
|      |                                 |       | i     |    | 27 | 06 |      |                                       |          |                                               |       | iS    |    | 22 | 19 |      |                                                           |
|      | Shillong                        | Z     | eP    | 18 | 25 | 58 |      | Slight, distant                       | 12.      | Shillong                                      | Z     | iP    | 19 | 45 | 32 |      | Slight, distant rarefaction                               |
|      | Bokaro                          | NE    | eP    | 18 | 26 | 32 | 750  | Slight, local beginning doubtful.     | 12.      | Shillong                                      | Z     | eP    | 20 | 12 | 02 |      | Slight, distant                                           |
|      |                                 |       | iS    |    | 27 | 51 |      |                                       | 12.      | Shillong                                      | Z     | eP    | 21 | 50 | 22 |      | Slight, near                                              |
|      | Poona                           | Z     | P     | 18 | 27 | 45 | 1530 | Feeble                                | 12.      | Shillong                                      | Z     | iP    | 23 | 03 | 48 |      | Slight, near                                              |
|      |                                 |       | S     |    | 30 | 20 |      |                                       | 13.      | Shillong                                      | Z     | iP    | 00 | 03 | 04 |      | Slight, distant rarefaction                               |
|      | Bombay                          | E     | e     | 18 | 30 | 25 |      | Slight, near                          | 13.      | Port Blair                                    | N     | iPg   | 01 | 36 | 07 | 70   | Slight                                                    |
|      |                                 |       | e     |    | 32 | 20 |      |                                       |          |                                               |       | iSg   |    | 35 | 15 |      |                                                           |
|      |                                 | NE    | e     |    | 32 | 35 |      |                                       | 13.      | Shillong                                      | Z     | eP    | 03 | 28 | 49 |      | Slight, distant                                           |
|      |                                 | E     | e     |    | 32 | 48 |      | Per: 5 secs<br>Amp: 1 mm              | 13.      | Shillong                                      | Z     | eP    | 05 | 46 | 41 |      | Slight, distant                                           |
|      |                                 |       | M     |    | 34 | 34 |      |                                       | 13.      | Shillong                                      | Z     | iP    | 10 | 35 | 16 |      | Slight, distant compression                               |
|      |                                 | N     | M     |    | 34 | 41 |      | Per: 7 secs<br>Amp: 1 mm              | 13.      | Shillong                                      | Z     | eP    | 11 | 02 | 17 |      | Slight, distant                                           |
| 09.  | Shillong                        | Z     | e     | 18 | 51 | 24 |      | Tremor                                | 13.      | Shillong                                      | Z     | eP    | 11 | 02 | 35 |      | Tremor                                                    |
| 09.  | Shillong                        | Z     | eP    | 19 | 58 | 34 |      | Slight, distant                       | 13.      | Shillong                                      | Z     | e     | 11 | 30 | 29 |      | Tremor                                                    |
| 09.  | Shillong                        | Z     | eP    | 20 | 21 | 53 |      | Slight, distant                       | 13.      | Dehra Dun                                     | NE    | e     | 15 | 40 | 28 |      | Feeble                                                    |
| 09.  | Shillong                        | Z     | iP    | 20 | 59 | 53 |      | Slight, local                         |          |                                               |       | i     |    | 40 | 37 |      |                                                           |
| 09.  | Shillong                        | Z     | e     | 21 | 13 | 29 |      | Tremor                                | 13.      | Shillong                                      | Z     | eP    | 15 | 42 | 11 |      | Slight, near                                              |
| 09.  | Shillong                        | Z     | eP    | 21 | 22 | 02 |      | Slight, near                          | 13.      | Shillong                                      | Z     | eP    | 15 | 42 | 17 |      | Feeble                                                    |
| 09.  | Shillong                        | Z     | iP    | 21 | 39 | 42 |      | Slight, distant compression           | 13.      | Shillong                                      | Z     | eP    | 19 | 10 | 24 |      | Slight, distant                                           |
| 09.  | Shillong                        | Z     | eP    | 23 | 38 | 30 |      | Slight, distant                       | 13.      | Shillong                                      | Z     | iP    | 19 | 28 | 21 |      | Slight, distant rarefaction                               |
| 10.  | Shillong                        | Z     | eP    | 00 | 52 | 05 |      | Slight, near                          | 13.      | Shillong                                      | Z     | iP    | 21 | 13 | 18 |      | Slight, near                                              |
| 10.  | Shillong                        | Z     | eP    | 06 | 21 | 06 |      | Slight, near                          | 13.      | Shillong                                      | Z     | eP    | 22 | 45 | 33 |      | Slight, distant                                           |
| 10.  | Shillong                        | Z     | eP    | 19 | 09 | 12 | 180  | Slight                                | 13.      | Chatra                                        | Z     | iP    | 23 | 28 | 55 |      | Very mild                                                 |
|      |                                 |       | iSg   |    | 09 | 33 |      |                                       | 14.      | Shillong                                      | Z     | eP    | 00 | 31 | 12 |      | Slight, distant                                           |
| 10.  | Shillong                        | Z     | eP    | 21 | 51 | 19 |      | Slight, distant                       | 14.      | Shillong                                      | Z     | eP    | 00 | 32 | 08 |      | Slight, distant                                           |
| 10.  | Shillong                        | Z     | eP    | 22 | 16 | 45 |      | Slight, near                          | 14.      | Shillong                                      | Z     | eP    | 05 | 16 | 52 |      | Slight, distant                                           |
| 11.  | Epc: 5°S, 130°E. Banda Sea.     |       |       |    |    |    |      |                                       | 14.      | Shillong                                      | Z     | iP    | 05 | 37 | 25 | 100  | Slight                                                    |
|      | H = 00h 31m 40s (U. S. C. G. S) |       |       |    |    |    |      |                                       |          |                                               |       | iS    |    | 37 | 38 |      |                                                           |
|      | Shillong                        | Z     | iP    | 00 | 40 | 23 |      | Slight, distant compression           | 14.      | Shillong                                      | Z     | eP    | 00 | 53 | 07 | 210  | Slight                                                    |
|      | Chatra                          | Z     | iP    | 00 | 40 | 59 |      | Feeble, distant                       | 14.      | Shillong                                      | ZNE   | iP    | 17 | 21 | 22 |      | Local, slight                                             |
|      | Poona                           | Z     | iP    | 00 | 41 | 35 |      | Feeble, phases not clear, compression | 14.      | Epc: 5°N, 124°E. - H = 17h 58m 30s (Shillong) |       |       |    |    |    |      |                                                           |
|      | Bombay                          | E     | e     | 00 | 42 | 04 |      |                                       |          |                                               |       | iS    |    | 10 | 06 |      | 3500 Slight                                               |
|      |                                 |       | e     |    | 42 | 21 |      |                                       |          |                                               |       | i     |    | 11 | 23 |      | Slight, initial ground motion South and East. Rarefaction |
|      |                                 |       | e     |    | 50 | 13 |      |                                       |          |                                               |       |       |    | 12 | 25 |      |                                                           |
| 11.  | Bombay                          | E     | e     | 02 | 04 | 16 |      | Slight, not recorded in Milne-Shaw.   |          | Calcutta                                      | E     | eP    | 18 | 05 | 47 | 4280 | Slight                                                    |
|      |                                 |       | e     |    | 08 | 32 |      |                                       |          |                                               |       | eS    |    | 11 | 44 |      |                                                           |
| 11.  | Chatra                          | Z     | eP    | 20 | 59 | 35 |      | Feeble, near                          |          | Chatra                                        | Z     | P     | 18 | 06 | 15 | 4510 | Slight, distant                                           |
| 11.  | Tocklai                         | E     | eP    | 21 | 01 | 43 |      | Slight, distant                       |          |                                               | N     | S     |    | 12 | 25 |      |                                                           |
| 12.  | Dehra Dun                       | NE    | e     | 04 | 53 | 27 |      | Tremor                                |          | Bokaro                                        | NE    | iP    | 18 | 06 | 16 |      |                                                           |
| 12.  | Chatra                          | Z     | iP    | 11 | 49 | 24 |      | Feeble.                               |          |                                               | N     | i     |    | 06 | 42 |      |                                                           |
| 12.  | Shillong                        | Z     | eP    | 12 | 49 | 59 |      | Slight, distant                       |          |                                               |       | pP    |    | 06 | 52 |      |                                                           |
| 12.  | Shillong                        | Z     | e     | 14 | 03 | 43 |      | Feeble, near                          |          |                                               |       | PP    |    | 07 | 55 |      |                                                           |
| 12.  | Shillong                        | Z     | eP    | 17 | 33 | 12 |      | Slight, distant                       |          |                                               |       | iS    |    | 12 | 27 |      |                                                           |
| 12.  | Shillong                        | Z     | eP    | 17 | 38 | 57 |      | Slight, distant                       |          |                                               |       | PPS   |    | 12 | 39 |      |                                                           |
| 12.  | Shillong                        | Z     | iP    | 18 | 17 | 11 |      | Slight, distant compression           |          |                                               |       | sS    |    | 13 | 22 |      |                                                           |
| 12.  | Bombay                          | E     | e     | 18 | 37 | 42 |      | Surface waves                         |          |                                               |       | Lq    |    | 15 | 48 |      |                                                           |
| 12.  | Shillong                        | Z     | eP    | 18 | 40 | 46 |      | Feeble, near                          |          | Madras                                        | E     | iP    | 18 | 06 | 42 | 4890 | Moderate, ground movement east                            |
|      |                                 |       |       |    |    |    |      |                                       |          |                                               |       | e     |    | 07 | 17 |      |                                                           |
|      |                                 |       |       |    |    |    |      |                                       |          |                                               |       | PP    |    | 08 | 31 |      |                                                           |

| DATE | STATION                                          | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                  | DATE | STATION                            | COMPT      | PHASE | G. M. T. | Δ        | REMARKS                     |
|------|--------------------------------------------------|-------|-------|----------|------|------------------------------------------|------|------------------------------------|------------|-------|----------|----------|-----------------------------|
|      |                                                  |       |       | h. m. s. | km   |                                          |      |                                    |            |       | h. m. s. | km       |                             |
| 14   | Madras                                           | E     | PPP   | 18 09 17 |      |                                          | 14   | Hyderabad                          | N          | PPS   | 22 26 12 |          |                             |
|      | Contd.                                           |       | iS    | 13 15    |      |                                          |      | Contd.                             |            | SS    | 29 47    |          |                             |
|      | Colombo                                          | E     | P     | 18 05 44 |      |                                          |      |                                    |            | Lq    | 36 56    |          |                             |
|      |                                                  |       | S     | 13 07    |      |                                          |      |                                    |            | Lr    | 40 36    |          |                             |
|      |                                                  |       | L     | 22 -     |      |                                          |      |                                    |            | M     | 47 47    |          | Peri: 16 secs<br>Amp: 11 mm |
|      |                                                  |       | M     | 27 -     |      |                                          |      | Poona                              | Z          | P     | 22 14 00 | 9530     | Slight                      |
|      | Hyderabad                                        | NE    | iP    | 18 05 58 | 5020 | Slight, ground motion South and East.    |      |                                    | E          | S     | 24 33    |          |                             |
|      |                                                  | E     | PP    | 08 51    |      |                                          |      | Bombay                             | NE         | eP    | 22 14 03 | 10110    | Moderate                    |
|      |                                                  | N     | PPP   | 09 35    |      |                                          |      |                                    |            | PP    | 17 42    |          |                             |
|      |                                                  |       | iS    | 13 38    |      |                                          |      |                                    |            | SKKS  | 24 34    |          |                             |
|      |                                                  |       | e     | 14 32    |      |                                          |      |                                    | E          | eS    | 24 59    |          |                             |
|      |                                                  |       | ScS   | 16 29    |      |                                          |      |                                    | N          | e     | 25 12    |          |                             |
|      |                                                  |       | SS    | 17 23    |      |                                          |      |                                    | E          | PS    | 25 51    |          |                             |
|      |                                                  |       | SSS   | 18 05    |      |                                          |      |                                    | N          | M     | 57 15    |          | Peri: 19 secs<br>Amp: 5 mm  |
|      |                                                  |       | Lr    | 20 08    |      |                                          |      |                                    |            |       |          |          | Peri: 17 secs<br>Amp: 3 mm  |
|      |                                                  |       | M     | 24 20    |      | Peri: 9 secs<br>Amp: 2 mm                |      |                                    | E          | M     | 23 00 57 |          |                             |
|      | Agra                                             | ZNE   | iP    | 18 07 15 | 5510 | Ground motion East, rarefaction Slight   |      | Madras                             | E          | e     | 22 57 38 |          | Phases not clear            |
|      |                                                  | Z     | i     | 07 43    |      |                                          |      |                                    |            | e     | 59 45    |          |                             |
|      |                                                  |       | iP    | 07 58    |      |                                          |      |                                    |            | e     | 23 00 31 |          |                             |
|      |                                                  | ZNE   | iS    | 14 23    |      |                                          |      |                                    |            |       | 24 43    |          |                             |
|      |                                                  | N     | iP    | 15 07    |      |                                          |      |                                    |            |       |          |          |                             |
|      |                                                  |       | iP    | 16 55    |      |                                          |      |                                    |            |       |          |          |                             |
|      | Dehra Dun                                        | NE    | eP    | 18 07 26 | 5430 | Slight                                   | 14   | Epc: 59°S, 31°W. Sandwich Islands. |            |       |          |          |                             |
|      |                                                  | N     | PP    | 09 18    |      |                                          |      | - H: 23h 21m 56s (U.S.C.G.S)       |            |       |          |          |                             |
|      |                                                  |       | PPP   | 10 05    |      |                                          |      | Mag: 7 (Pasadena).                 |            |       |          |          |                             |
|      |                                                  |       | iS    | 14 29    |      |                                          |      |                                    | Poona      | Z     | ePKP1    | 23 40 14 | Rarefaction                 |
|      |                                                  |       | SSS   | 10 24    |      |                                          |      |                                    |            |       | e        | 41 14    |                             |
|      |                                                  |       | Lr    | 21 22    |      |                                          |      |                                    |            |       | e        | 50 40    |                             |
|      |                                                  |       | M     | 25 12    |      |                                          |      |                                    |            | N     | Mn       | 00 00 23 | Peri: 17 secs<br>Amp: 15    |
|      | Bombay                                           | NE    | eP    | 18 07 36 | 5930 | Slight, deep                             |      |                                    | Bombay     | E     | ePKP     | 23 40 18 |                             |
|      |                                                  | E     | pP    | 08 06    |      |                                          |      |                                    |            |       | i        | 41 14    |                             |
|      |                                                  | NE    | PP    | 09 40    |      |                                          |      |                                    |            |       | e        | 43 20    |                             |
|      |                                                  |       | eS    | 14 56    |      |                                          |      |                                    |            | NE    | eS       | 50 42    |                             |
|      |                                                  | E     | sS    | 15 53    |      |                                          |      |                                    |            |       | e        | 50 51    |                             |
|      |                                                  |       |       |          |      |                                          |      |                                    |            | F     | e        | 55 58    |                             |
|      |                                                  |       |       |          |      |                                          |      |                                    |            | N     | M        | 00 00 26 | Peri: 18 secs<br>Amp: 14    |
|      |                                                  |       |       |          |      |                                          |      |                                    |            | E     | M        | 29 18    | Peri: 17 secs<br>Amp: 10    |
| 14   | Epc: 1°N, 125°E. Celebes.                        |       |       |          |      | H: 21h 49m 10s (USCGS)                   |      |                                    | Colombo    | E     | PKP      | 23 40 19 |                             |
|      | Shillong                                         | Z     | iP    | 21 56 52 |      | Slight, distant compression              |      |                                    |            |       | e        | 45 44    |                             |
|      | Port Blair                                       | E     | e     | 21 57 25 |      | Slight                                   |      |                                    |            |       | L        | 00 11 09 |                             |
|      | Chatra                                           | Z     | P     | 21 57 26 |      | Feeble, distant                          |      |                                    |            |       | M        | 18 09    |                             |
|      | Poona                                            | Z     | eP    | 21 58 29 |      | Feeble, other phases not clear           |      |                                    | Kodaikanal | E     | ePKP     | 23 40 30 |                             |
|      | Colombo                                          | E     | P     | 21 59 29 |      |                                          |      |                                    |            |       | e        | 49 54    |                             |
|      |                                                  |       | L     | 22 57 -  |      |                                          |      |                                    |            |       | Lq       | 00 00 18 |                             |
|      |                                                  |       | M     | 23 07 -  |      |                                          |      |                                    |            |       | Lr       | 03 57    |                             |
|      | Kodaikanal                                       | E     | e     | 21 59 35 |      | Tremor                                   |      |                                    |            |       | M        | 10 27    | Peri: 15 secs<br>Amp: 23.8  |
| 14   | Epc: 52°N, 168°W. Fox Islands, in the Aleutians. |       |       |          |      | H: 22h 00m 50s (U.S.C.G.S)               |      |                                    | Port Blair | E     | ePKP     | 23 40 41 |                             |
|      | Shillong                                         | ZNE   | iP    | 22 12 41 | 5280 |                                          |      |                                    |            |       | i        | 42 32    |                             |
|      |                                                  | NE    | PcP   | 12 56    |      |                                          |      |                                    |            |       | e        | 48 45    |                             |
|      |                                                  |       | iS    | 22 27    |      |                                          |      |                                    |            |       | e        | 53 55    |                             |
|      |                                                  |       | PS    | 22 38    |      |                                          |      |                                    |            |       | M        | 00 09 25 | Peri: 15 secs<br>Amp: 21    |
|      |                                                  |       | M     | 23 49 -  |      | Peri: 17 secs<br>Amp: 15 mm              |      |                                    | Dehra Dun  | NE    | ePKP     | 23 40 59 |                             |
|      | Chatra                                           | Z     | iP    | 22 12 51 |      | Moderate, compression                    |      |                                    |            | N     | e        | 42 41    |                             |
|      |                                                  | NE    | e     | 22 40    |      |                                          |      |                                    |            |       | e        | 43 21    |                             |
|      | Dehra Dun                                        | NE    | eP    | 22 13 02 | 9220 | Slight                                   |      |                                    |            |       | i        | 47 54    |                             |
|      |                                                  | N     | PP    | 16 03    |      |                                          |      |                                    |            |       | e        | 51 09    |                             |
|      |                                                  |       | iS    | 23 21    |      |                                          |      |                                    |            |       | e        | 52 06    |                             |
|      |                                                  |       | PS    | 24 05    |      |                                          |      |                                    |            |       | e        | 52 33    |                             |
|      |                                                  |       | SS    | 28 24    |      |                                          |      |                                    |            |       | e        | 54 25    |                             |
|      |                                                  |       | SSS   | 32 42    |      |                                          |      |                                    |            |       | M        | 58 22    |                             |
|      |                                                  |       | Lq    | 35 05    |      |                                          |      |                                    | Chatra     | Z     | iPKP1    | 23 40 59 |                             |
|      |                                                  |       | Lr    | 39 30    |      |                                          |      |                                    |            |       |          |          |                             |
|      |                                                  |       | M     | 46 42    |      |                                          |      |                                    | Calcutta   | E     | e?       | 23 41 00 | Slight                      |
|      | Bokaro                                           | NE    | eP    | 22 13 10 |      | Moderate, distant other phases not clear |      |                                    |            |       | i        | 44 30    |                             |
|      |                                                  |       | i     | 23 15    |      |                                          |      |                                    | Shillong   | ZNE   | ePKP     | 23 41 01 | 14000 Compression           |
|      | Agra                                             | ZE    | iP    | 22 13 15 | 9150 | Compression, slight                      |      |                                    |            | N     | PP       | 42 58    |                             |
|      |                                                  | NE    | iS    | 23 31    |      |                                          |      |                                    |            |       | SKS2     | 47 50    |                             |
|      | Hyderabad                                        | N     | eP    | 22 13 56 | 9320 | Moderate                                 |      |                                    |            |       | PS       | 52 50    |                             |
|      |                                                  |       | PP    | 17 16    |      |                                          |      |                                    |            |       | SS       | 00 00 00 |                             |
|      |                                                  |       | iS    | 24 20    |      |                                          |      |                                    |            |       | SSP      | 00 18    |                             |
|      |                                                  |       | SKS2  | 24 32    |      |                                          |      |                                    |            |       | M        | 02 25    |                             |
|      |                                                  |       | PS    | 25 20    |      |                                          |      |                                    |            |       | Mn       | 05 09 -  | Peri: 16.5 secs<br>Amp: 26  |

| DATE | STATION                     | COMPT | PHASE | G. M. T. | Δ                       | REMARKS                                            | DATE | STATION    | COMPT | PHASE | G. M. T. | Δ   | REMARKS                                                |
|------|-----------------------------|-------|-------|----------|-------------------------|----------------------------------------------------|------|------------|-------|-------|----------|-----|--------------------------------------------------------|
|      |                             |       |       | h. m. s. | km                      |                                                    |      |            |       |       | h. m. s. | km  |                                                        |
| 14   | Madras                      | E     | e     | 23 41 04 |                         | Moderate                                           | 15   | Madras     | E     | e     | 10 57 50 |     | Slight                                                 |
|      | Contd.                      |       | e     | 41 58    |                         |                                                    |      | Contd.     |       | e     | 11 00 48 |     |                                                        |
|      |                             |       | e     | 50 30    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      | Hyderabad                   | NE    | iPKP  | 23 41 23 |                         |                                                    | 15   | Shillong   | Z     | eP    | 11 34 02 |     | Slight, distant                                        |
|      |                             | N     | e     | 41 44    |                         |                                                    |      |            |       | eP    | 12 34 54 |     | Slight, distant                                        |
|      |                             |       | e     | 44 35    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | e     | 46 03    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | i     | 50 55    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | e     | 51 20    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | e     | 51 33    |                         |                                                    | 15   | Dehra Dun  | NE    | e     | 14 49 19 |     | Feeble                                                 |
|      |                             |       | e     | 51 47    |                         |                                                    |      |            |       | i     | 51 06    |     |                                                        |
|      |                             |       | e     | 55 11    |                         |                                                    |      |            |       | i     | 52 19    |     |                                                        |
|      |                             |       | e     | 58 47    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      | Bokaro                      | NE    | PKP1  | 23 42 24 |                         | Moderate                                           | 15   | Shillong   | Z     | eP    | 14 51 12 |     | Slight, distant                                        |
|      |                             | N     | e     | 43 09    |                         |                                                    |      |            |       | eP    | 14 51 44 |     | Very feeble, probably distant, other phases not clear. |
|      |                             |       | e     | 49 00    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | e     | 52 30    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | M     | 00 21 29 |                         | Period 24 secs<br>μ = 25                           |      |            |       |       |          |     |                                                        |
| 15   | Shillong                    | Z     | eP    | 01 44 21 |                         | Slight, distant                                    | 15   | Shillong   | Z     | e     | 15 35 48 |     | Tremor                                                 |
| 15   | Dehra Dun                   | NE    | e     | 03 17 33 |                         | Tremor                                             | 15   | Shillong   | Z     | e     | 17 06 44 |     | Tremor                                                 |
| 15   | Shillong                    | Z     | eP    | 04 03 53 |                         | Slight, near                                       | 15   | Shillong   | Z     | iP    | 17 16 51 |     | Slight, distant compression                            |
| 15   | Dehra Dun                   | NE    | e     | 04 08 09 |                         | Tremor                                             | 15   | Poona      | Z     | eP    | 17 18 25 |     | Mild, tremor                                           |
| 15   | Shillong                    | Z     | iP    | 05 13 13 |                         | Slight, distant rarefaction                        | 15   | Shillong   | Z     | eP    | 18 30 22 |     | Slight, distant                                        |
| 15   | Chatra                      | Z     | Pn    | 07 10 07 | 150                     | Moderate                                           | 15   | Chatra     | Z     | P     | 19 59 10 | 250 | Feeble                                                 |
|      |                             | E     | Sn    | 10 27    |                         |                                                    |      |            |       | S     | 59 39    |     |                                                        |
|      | Shillong                    | Z     | iP    | 07 10 37 |                         | Slight, near                                       | 15   | Shillong   | Z     | eP    | 19 59 18 |     | Slight, distant                                        |
|      | Calcutta                    | E     | eP    | 07 11 34 |                         | Tremor                                             | 15   | Shillong   | Z     | eP    | 22 08 56 |     | Slight, distant                                        |
|      |                             |       | i     | 12 20    |                         |                                                    |      |            |       | iP    | 23 17 26 |     | Slight, near                                           |
|      | Bokaro                      | NE    | eP    | 07 11 51 |                         | Slight                                             | 15   | Chatra     | Z     | P     | 23 18 23 |     | Feeble                                                 |
|      |                             |       | e     | 12 06    |                         |                                                    |      |            |       | P     | 00 17 11 |     | Feeble                                                 |
|      | Tocklai                     | E     | eP    | 07 11 57 |                         | Near, slight                                       |      | Shillong   | Z     | iP    | 00 17 34 |     | Slight, distant compression                            |
|      | Dehra Dun                   | NE    | e     | 07 12 14 |                         | Feeble                                             | 15   | Shillong   | Z     | eP    | 00 54 34 |     | Slight, distant                                        |
|      |                             |       | e     | 13 38    |                         |                                                    |      |            |       | eP    | 02 39 36 |     | Slight, distant                                        |
|      | Poona                       | Z     | eP    | 07 14 10 |                         | Feeble, near phases not clear                      | 16   | Shillong   | Z     | eP    | 03 41 46 |     | Slight, near                                           |
|      | Bombay                      | E     | e     | 07 17 14 |                         | Slight, near                                       | 16   | Shillong   | Z     | eP    | 04 45 32 | 100 | Slight                                                 |
|      |                             |       | e     | 17 50    |                         |                                                    |      |            |       | iS    | 45 46    |     |                                                        |
|      |                             | NE    | e     | 18 30    |                         |                                                    |      |            |       |       |          |     |                                                        |
| 15   | Shillong                    | Z     | iP    | 09 05 15 |                         | Slight, near                                       | 16   | Dehra Dun  | NE    | e     | 05 04 31 |     | Feeble                                                 |
| 15   | Shillong                    | Z     | eP    | 09 37 41 |                         | Slight, distant                                    |      |            |       | i     | 05 57    |     |                                                        |
| 15   | Ept: 37°N, 70°E, Hindukush. |       |       |          | H = 10h 47m 42s (USCGS) |                                                    | 15   | Shillong   | Z     | eP    | 05 06 53 |     | Slight, distant                                        |
|      | Dehra Dun                   | NE    | eP    | 10 50 00 | 960                     | Slight                                             |      |            |       | eP    | 05 10 18 |     | Slight, distant                                        |
|      |                             | N     | PPP   | 50 15    |                         |                                                    | 15   | Shillong   | Z     | eP    | 09 34 12 | 210 | Slight                                                 |
|      |                             |       | Lq    | 51 26    |                         |                                                    |      |            |       | iS    | 34 37    |     |                                                        |
|      |                             |       | iS    | 51 39    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             |       | SS    | 51 50    |                         |                                                    | 15   | Shillong   | Z     | eP    | 10 21 31 |     | Slight, near                                           |
|      |                             |       | Lr    | 51 54    |                         |                                                    |      |            |       | eP    | 11 30 53 |     | Slight, distant                                        |
|      |                             |       | SSS   | 52 03    |                         |                                                    | 16   | Shillong   | Z     | eP    | 15 49 45 | 70  | Slight                                                 |
|      |                             |       | Sg, M | 52 34    |                         |                                                    |      |            |       | e     | 49 54    |     |                                                        |
|      | Agra                        | ZNE   | iP    | 10 50 29 | 1200                    | Slight, compression, ground motion South and East. | 16   | Shillong   | Z     | eP    | 18 39 34 |     | Slight, near                                           |
|      |                             |       | iS    | 52 33    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      | Chatra                      | Z     | P     | 10 51 48 | 1870                    | Slight                                             | 16   | Shillong   | Z     | e     | 18 43 08 |     | Tremor                                                 |
|      |                             | NE    | S     | 54 55    |                         |                                                    | 16   | Shillong   | Z     | e     | 20 00 33 |     | Tremor                                                 |
|      | Poona                       | Z     | P     | 10 51 55 | 1920                    | Slight                                             | 16   | Shillong   | Z     | i     | 21 10 48 |     | Tremor                                                 |
|      |                             | ZE    | S     | 55 08    |                         |                                                    | 17   | Shillong   | Z     | iP    | 02 36 46 |     | Slight, distant compression                            |
|      | Bombay                      | NE    | e     | 10 52 06 |                         |                                                    | 17   | Shillong   | Z     | eP    | 02 52 43 |     | Slight, distant                                        |
|      |                             |       | e     | 55 02    |                         |                                                    |      |            |       |       |          |     |                                                        |
|      |                             | E     | e     | 55 44    |                         |                                                    | 17   | Shillong   | Z     | e     | 05 12 55 |     |                                                        |
|      | Shillong                    | Z     | iP    | 10 52 34 |                         | Slight, compression                                | 17   | Shillong   | Z     | iP    | 05 12 59 |     | Slight, distant compression                            |
|      | Bokaro                      | NE    | i     | 10 55 29 |                         | Slight, phases not clear                           | 17   | Port Blair | N     | iP    | 05 58 47 |     | Slight                                                 |
|      | Hyderabad                   | NE    | i     | 10 55 29 |                         | Slight, phases not clear                           | 17   | Shillong   | Z     | iP    | 06 00 24 |     | Slight, distant compression                            |



| DATE   | STATION                                                                                           | COMPT | PHASE | G. M. T. | Δ     | REMARKS                      | DATE  | STATION   | COMPT    | PHASE | G. M. T. | Δ        | REMARKS                      |                             |
|--------|---------------------------------------------------------------------------------------------------|-------|-------|----------|-------|------------------------------|-------|-----------|----------|-------|----------|----------|------------------------------|-----------------------------|
|        |                                                                                                   |       |       | h. m. s. | km    | December                     | 19 59 |           |          |       | h. m. s. | km       |                              |                             |
| 17     | Chatra                                                                                            | Z     | iP    | 06 00 50 |       |                              | 18    | Shillong  | Z        | iP    | 18 09 37 | 930      | Slight                       |                             |
| Contd. | Poona                                                                                             | Z     | eP    | 06 01 05 | 4110  | Mild                         |       |           | E        | iS    | 11 13    |          |                              |                             |
|        |                                                                                                   | N     | eS    | 06 51    |       |                              |       | Chatra    | Z        | eP    | 18 09 38 |          | Slight                       |                             |
|        | Dehra Dun                                                                                         | NE    | eP    | 06 02 04 | 4510  | Feeble                       |       | Bombay    | NE       | e     | 18 11 32 |          | Slight                       |                             |
|        |                                                                                                   |       | iS    | 08 14    |       |                              |       |           | E        | e     | 15 47    |          |                              |                             |
|        | Bombay                                                                                            | NE    | eP    | 06 07 06 |       | Slight                       |       |           | NE       | e     | 17 34    |          |                              |                             |
|        |                                                                                                   | E     | e     | 10 14    |       |                              |       | Calcutta  | E        | eP?   | 18 11 37 | 530      | Slight                       |                             |
|        |                                                                                                   | E     | e     | 11 21    |       |                              |       |           |          | Lq    | 12 29    |          |                              |                             |
| 17     | Shillong                                                                                          | Z     | iP    | 05 10 02 |       | Slight, distant rarefaction  |       |           |          | eS    | 12 44    |          |                              |                             |
|        |                                                                                                   |       |       |          |       |                              |       |           |          | SSS   | 13 15    |          |                              |                             |
| 17     | Shillong                                                                                          | Z     | iP    | 08 24 46 |       | Slight, distant rarefaction  |       | Dehra Dun | NE       | e     | 18 12 25 |          | Feeble                       |                             |
|        |                                                                                                   |       |       |          |       |                              |       |           |          | i     | 15 05    |          |                              |                             |
| 17     | Shillong                                                                                          | Z     | eP    | 14 23 53 |       | Slight, near                 |       | Poona     | Z        | eP    | 18 12 47 |          | Very feeble phases not clear |                             |
| 17     | Shillong                                                                                          | Z     | iP    | 14 56 20 |       | Slight, near                 |       | Bokaro    | NE       | i     | 18 13 05 |          | Slight, phases not clear     |                             |
| 17     | Shillong                                                                                          | Z     | iP    | 14 56 47 |       | Slight, near                 |       | Hyderabad | N        | M     | 18 19 32 |          | Period 9 secs                |                             |
| 17     | Shillong                                                                                          | Z     | eP    | 17 09 01 |       | Slight, very distant         |       |           |          |       |          |          | U = 3                        |                             |
| 17     | Shillong                                                                                          | Z     | eP    | 17 59 03 |       | Slight, near                 | 18    | Chatra    | Z        | eP    | 20 35 06 |          | Slight                       |                             |
| 17     | Shillong                                                                                          | Z     | e     | 19 17 28 |       | Tremor                       | 18    | Shillong  | Z        | eP    | 20 36 58 |          | Slight, near                 |                             |
| 17     | Shillong                                                                                          | Z     | iP    | 23 04 50 |       | Slight, distant, rarefaction | 18    | Shillong  | Z        | eP    | 20 56 29 |          | Slight, distant              |                             |
| 17     | Shillong                                                                                          | Z     | eP    | 23 23 22 |       | Feeble, near                 | 18    | Shillong  | Z        | eP    | 22 01 10 |          | Slight, near                 |                             |
| 18     | Shillong                                                                                          | Z     | iP    | 00 24 00 |       | Slight, local                | 19    | Shillong  | Z        | iP    | 03 31 48 |          | Slight, distant rarefaction  |                             |
| 18     | Shillong                                                                                          | Z     | iP    | 00 55 31 |       | Slight, distant rarefaction  | 19    | Chatra    | Z        | P?    | 09 09 37 |          | Feeble                       |                             |
| 18     | Shillong                                                                                          | Z     | e     | 14 08 17 |       | Slight, near                 | 19    | Shillong  | Z        | eP    | 11 01 09 |          | Slight, near                 |                             |
| 18     | Shillong                                                                                          | Z     | eP    | 14 08 30 |       | Slight, near                 | 19    | Shillong  | Z        | iP    | 14 27 04 |          | Slight, distant Rarefaction  |                             |
| 18     | Epc: 53°N, 168°W. Fox Islands in the Aleutians<br>H = 16h 24m 50s (U.S.CCG. S). Mag: 5 1/2 (Pas). |       |       |          |       |                              |       | 19        | Shillong | Z     | iP       | 15 05 38 |                              | Slight, distant Rarefaction |
|        | Shillong                                                                                          | Z     | iP    | 16 36 38 | 8450  | Slight, compression, West.   | 19    | Shillong  | Z        | eP    | 18 13 14 |          | Slight, near                 |                             |
|        |                                                                                                   | E     | iS    | 46 21    |       |                              | 19    | Shillong  | Z        | eP    | 18 47 41 |          | Slight, distant              |                             |
|        | Chatra                                                                                            | Z     | iP    | 15 36 49 | 8060  | Slight                       | 19    | Shillong  | Z        | eP    | 18 50 45 |          | Slight, distant              |                             |
|        |                                                                                                   | NE    | S     | 46 56    |       |                              | 19    | Shillong  | Z        | eP    | 19 14 58 |          | Slight, distant              |                             |
|        | Dehra Dun                                                                                         | NE    | eP    | 16 37 01 | 9020  | Slight                       | 19    | Shillong  | Z        | eP    | 20 10 40 |          | Slight, distant              |                             |
|        |                                                                                                   | N     | PP    | 40 08    |       |                              | 19    | Shillong  | Z        | eP    | 22 46 54 |          | Slight, near                 |                             |
|        |                                                                                                   |       | iS    | 47 11    |       |                              | 19    | Shillong  | Z        | iP    | 22 54 30 |          | Slight, near                 |                             |
|        |                                                                                                   |       | SSS   | 55 35    |       |                              | 20    | Chatra    | Z        | eP    | 06 26 19 |          | Feeble                       |                             |
|        |                                                                                                   |       | Lq    | 57 39    |       |                              | 20    | Shillong  | Z        | eP    | 06 26 38 |          | Slight, near                 |                             |
|        |                                                                                                   |       | M     | 17 08 46 |       |                              | 20    | Shillong  | Z        | eP    | 08 23 40 |          | Slight, distant              |                             |
|        | Bokaro                                                                                            | NE    | iP    | 16 37 06 |       |                              | 20    | Chatra    | Z        | eP    | 09 33 58 |          | Feeble                       |                             |
|        |                                                                                                   | N     | eS    | 47 11    |       |                              | 20    | Chatra    | Z        | eP    | 09 58 19 |          | Slight                       |                             |
|        | Agra                                                                                              | ZNE   | iP    | 16 37 08 |       |                              | 20    | Shillong  | Z        | eP    | 10 00 20 |          | Slight, distant              |                             |
|        | Port Blair                                                                                        | E     | iP    | 16 37 35 | 9250  | Slight                       | 20    | Shillong  | Z        | eP    | 13 00 43 |          | Slight, distant              |                             |
|        |                                                                                                   |       | iS    | 47 56    |       |                              | 20    | Chatra    | Z        | eP    | 13 01 20 |          | Feeble                       |                             |
|        | Hyderabad                                                                                         | EN    | iP    | 16 37 47 | 9500  | Slight, west and South.      | 20    | Shillong  | Z        | eP    | 13 06 50 |          | Slight, distant              |                             |
|        |                                                                                                   | N     | iS    | 48 10    |       |                              | 20    | Shillong  | Z        | eP    | 14 43 38 |          | Slight, near                 |                             |
|        |                                                                                                   |       | SKS2  | 48 32    |       |                              | 20    | Shillong  | Z        | eP    | 15 09 56 |          | Slight, distant              |                             |
|        |                                                                                                   |       | PPS   | 50 02    |       |                              | 20    | Shillong  | Z        | eP    | 17 20 23 |          | Slight, distant              |                             |
|        |                                                                                                   |       | SS    | 53 44    |       |                              | 20    | Shillong  | Z        | eP    | 17 26 29 |          | Slight, distant              |                             |
|        |                                                                                                   |       | Lq    | 17 01 20 |       |                              | 20    | Shillong  | Z        | eP    | 18 38 05 |          | Slight, near                 |                             |
|        |                                                                                                   |       | Lr    | 05 34    |       |                              | 20    | Shillong  | Z        | eP    | 18 39 41 |          | Slight, near                 |                             |
|        |                                                                                                   |       | M     | 11 38    |       | Period 15 secs U = 5         | 20    | Shillong  | Z        | eP    | 18 55 52 |          | Slight, distant              |                             |
|        | Poona                                                                                             | Z     | iP    | 16 37 59 | 9470  | Slight                       | 20    | Shillong  | Z        | eP    | 19 06 00 |          | Slight, distant              |                             |
|        |                                                                                                   |       | iS    | 48 29    |       |                              |       |           |          |       |          |          |                              |                             |
|        | Bombay                                                                                            | NE    | eP    | 16 38 00 | 10410 | Slight                       |       |           |          |       |          |          |                              |                             |
|        |                                                                                                   | E     | SKS   | 48 28    |       |                              |       |           |          |       |          |          |                              |                             |
|        |                                                                                                   | NE    | SKKS  | 48 52    |       |                              |       |           |          |       |          |          |                              |                             |
|        |                                                                                                   | E     | eS    | 49 08    |       |                              |       |           |          |       |          |          |                              |                             |
|        |                                                                                                   | E     | PPS   | 50 48    |       |                              |       |           |          |       |          |          |                              |                             |
|        | Madras                                                                                            | E     | e     | 15 48 37 |       | Slight                       |       |           |          |       |          |          |                              |                             |
|        | Kodaikanal                                                                                        | E     | e     | 15 48 57 |       | Tremor                       |       |           |          |       |          |          |                              |                             |
| 18     | Shillong                                                                                          | Z     | eP    | 15 50 34 |       | Slight, distant              |       |           |          |       |          |          |                              |                             |
| 18     | Shillong                                                                                          | Z     | eP    | 17 00 24 |       | Slight, distant              |       |           |          |       |          |          |                              |                             |



| DATE | STATION                                                                                  | COMPT | PHASE | G. M. T. h. m. s. | $\Delta$ km | REMARKS                               | DATE      | STATION                                                                                               | COMPT | PHASE    | G. M. T. h. m. s. | $\Delta$ km | REMARKS                               |                             |
|------|------------------------------------------------------------------------------------------|-------|-------|-------------------|-------------|---------------------------------------|-----------|-------------------------------------------------------------------------------------------------------|-------|----------|-------------------|-------------|---------------------------------------|-----------------------------|
| 22   | Tocklai<br>Cont'd.                                                                       | E     | iP    | 17 29 07          |             |                                       | 1959      | Shillong                                                                                              | Z     | eP       | 07 18 00          |             | Slight, distant                       |                             |
|      | Poona                                                                                    | Z     | iP?   | 17 30 37          |             | Feeble, phases not clear, compression | 25        | Epc: 25°S, 67°W. Chile-Argentina Border Region<br>H = 10h 18m 35s (U. S. C. G. S)<br>Mag: 6½-6¾ (Pas) |       |          |                   |             |                                       |                             |
| 22   | Shillong                                                                                 | Z     | eP    | 20 33 43          |             | Slight, distant                       | Bombay    | E                                                                                                     | ePKP1 | 10 38 14 |                   |             |                                       |                             |
| 22   | Shillong                                                                                 | Z     | eP    | 21 20 28          |             | Slight, near                          |           |                                                                                                       | e     | 42 00    |                   |             |                                       |                             |
| 22   | Shillong                                                                                 | Z     | eP    | 21 55 41          |             | Slight, near                          |           |                                                                                                       | e     | 47 30    |                   |             |                                       |                             |
|      | Chatra                                                                                   | Z     | eP    | 21 57 38          | 8 10        | Very feeble                           |           |                                                                                                       | e     | 49 06    |                   |             |                                       |                             |
|      |                                                                                          |       | eS?   | 59 02             |             |                                       | Poona     | Z                                                                                                     | iP    | 10 38 15 |                   |             | Feeble, phases not clear, rarefaction |                             |
| 23   | Shillong                                                                                 | Z     | eP    | 07 20 37          |             | Slight, distant                       | Agra      | Z                                                                                                     | iP    | 10 38 27 |                   |             | Dilatation, Slight, near              |                             |
| 23   | Chatra                                                                                   | Z     | eP    | 09 39 13          |             | Very feeble                           | Madras    | E                                                                                                     | e     | 10 38 31 |                   |             | Feeble                                |                             |
| 23   | Shillong                                                                                 | Z     | iP    | 09 39 39          |             | Slight, distant rarefaction           | Dehra Dun | NE                                                                                                    | e     | 10 38 31 |                   |             | Tremor                                |                             |
| 23   | Shillong                                                                                 | Z     | eP    | 10 07 06          |             | Slight, distant                       | Chatra    | Z                                                                                                     | eP    | 10 38 38 |                   |             | Feeble, distant                       |                             |
| 23   | Dehra Dun                                                                                | NE    | e     | 10 17 58          |             | Tremor                                | Shillong  | Z                                                                                                     | iP    | 10 38 43 |                   |             | Slight, distant rarefaction           |                             |
| 23   | Port Blair                                                                               | N     | i     | 13 16 00          |             | Slight                                | 25        | Shillong                                                                                              | Z     | iP       | 10 38 43          |             |                                       | Slight, distant rarefaction |
|      |                                                                                          |       | iS    | 16 03             |             |                                       | 25        | Shillong                                                                                              | Z     | iP       | 11 45 34          |             |                                       | Slight, distant             |
| 23   | Dehra Dun                                                                                | NE    | e     | 20 24 26          |             | Tremor                                | 25        | Shillong                                                                                              | Z     | eP       | 14 53 45          |             |                                       | Slight, distant             |
| 24   | Shillong                                                                                 | Z     | eP    | 04 58 39          |             | Slight, near                          | 25        | Shillong                                                                                              | Z     | eP       | 15 30 31          |             |                                       | Slight, distant             |
| 24   | Shillong                                                                                 | Z     | eP    | 05 34 57          |             | Slight, distant                       | 25        | Shillong                                                                                              | Z     | eP       | 16 02 59          |             |                                       | Slight, distant             |
| 24   | Dehra Dun                                                                                | NE    | e     | 07 10 58          |             | Tremor                                | 25        | Port Blair                                                                                            | N     | iPg      | 17 27 52          | 60          |                                       | Slight                      |
| 24   | Bombay                                                                                   | E     | e     | 07 34 27          |             | Slight                                |           |                                                                                                       | iSg   | 27 59    |                   |             |                                       |                             |
|      |                                                                                          |       | e     | 47 18             |             |                                       | 25        | Shillong                                                                                              | Z     | iP       | 02, 05 50         | 150         |                                       | Slight                      |
| 24   | Shillong                                                                                 | Z     | eP    | 09 40 40          |             | Slight, near                          |           |                                                                                                       | iSg   | 06 08    |                   |             |                                       |                             |
| 24   | Shillong                                                                                 | Z     | iP    | 09 56 49          | 200         | Slight, compression                   | 26        | Shillong                                                                                              | Z     | eP       | 08 05 50          |             |                                       | Slight, near                |
|      |                                                                                          |       | iS    | 57 13             |             |                                       | 26        | Chatra                                                                                                | Z     | eP       | 08 06 34          |             |                                       | Mild                        |
| 24   | Chatra                                                                                   | Z     | eP    | 09 56 59          |             | Very feeble                           | 26        | Dehra Dun                                                                                             | NE    | e        | 08 15 06          |             |                                       | Tremor                      |
| 24   | Poona                                                                                    | Z     | eP    | 13 10 25          |             | Feeble, phases not clear, rarefaction | 26        | Shillong                                                                                              | Z     | eP       | 12 23 06          |             |                                       | Slight, distant             |
| 24   | Shillong                                                                                 | Z     | eP    | 13 11 28          |             | Slight, distant                       | 26        | Chatra                                                                                                | Z     | eP       | 12 42 50          |             |                                       | Feeble                      |
| 24   | Epc: 9°N, 126°E. Near Coast of Mindanao in Philippines. H = 13h 08m 34s (U. S. C. G. S). |       |       |                   |             |                                       | 26        | Shillong                                                                                              | Z     | eP       | 15 33 52          |             |                                       | Slight, near                |
|      | Shillong                                                                                 | Z     | iP    | 13 15 43          |             | Slight, distant rarefaction           | 26        | Shillong                                                                                              | Z     | e        | 17 19 17          |             |                                       | Tremor                      |
|      | Chatra                                                                                   | Z     | eP    | 13 16 20          |             | Mild                                  | 26        | Shillong                                                                                              | Z     | eP       | 18 31 21          |             |                                       | Slight, distant             |
|      | Dehra Dun                                                                                | NE    | e     | 13 17 28          |             | Tremor                                | 26        | Chatra                                                                                                | Z     | eP       | 18 31 28          |             |                                       | Mild                        |
|      | Poona                                                                                    | Z     | eP    | 13 17 44          |             | Feeble, phases not clear, rarefaction | 26        | Poona                                                                                                 | Z     | iP       | 18 32 28          |             |                                       | Feeble, phases not clear    |
|      | Bombay                                                                                   | E     | eP    | 13 17 52          | 5890        | Slight                                | 26        | Shillong                                                                                              | Z     | iP       | 19 03 52          | 90          |                                       | Slight                      |
|      |                                                                                          |       | eS    | 25 21             |             |                                       |           |                                                                                                       | iS    | 04 04    |                   |             |                                       |                             |
|      |                                                                                          |       | PS    | 25 31             |             |                                       | 26        | Shillong                                                                                              | Z     | eP       | 19 05 22          |             |                                       | Slight, distant             |
|      | Shillong                                                                                 | Z     | eP    | 13 21 23          |             | Slight, distant                       | 26        | Shillong                                                                                              | Z     | eP       | 20 15 30          |             |                                       | Slight, distant             |
| 24   | Shillong                                                                                 | Z     | iP    | 13 47 40          |             | Slight, distant rarefaction           | 26        | Shillong                                                                                              | Z     | eP       | 20 48 12          |             |                                       | Slight, near                |
| 24   | Shillong                                                                                 | Z     | eP    | 13 54 14          |             | Slight, near                          | 25        | Epc: 53°N, 160°E. Kamchatka foreshock<br>H = 22h 02m 35s (U. S. C. G. S)                              |       |          |                   |             |                                       |                             |
| 24   | Shillong                                                                                 | Z     | eP    | 14 37 52          |             | Slight, near                          | Shillong  | Z                                                                                                     | iP    | 22 12 19 |                   |             | Slight, distant compression           |                             |
| 24   | Shillong                                                                                 | Z     | eP    | 19 37 09          |             | Slight, distant                       | Chatra    | Z                                                                                                     | eP    | 22 12 35 |                   |             | Slight, distant                       |                             |
| 25   | Shillong                                                                                 | Z     | iP    | 00 27 45          |             | Slight, distant rarefaction           | Poona     | Z                                                                                                     | iP    | 22 14 05 | 8 210             |             | Slight, compression                   |                             |
| 25   | Shillong                                                                                 | Z     | iP    | 01 11 34          |             | Slight, distant compression           |           |                                                                                                       | N     | 23 36    |                   |             |                                       |                             |
| 25   | Shillong                                                                                 | Z     | eP    | 03 24 00          |             | Slight, distant                       | Bombay    | NE                                                                                                    | eP    | 22 14 14 | 8 300             |             | Slight                                |                             |
| 25   | Bombay                                                                                   | E     | e     | 04 11 15          |             | Slight, distant                       |           |                                                                                                       | E     | 23 50    |                   |             | Per = 18 secs                         |                             |
|      |                                                                                          |       | e     | 18 45             |             |                                       |           |                                                                                                       | M     | 49 21    |                   |             | Per = 5                               |                             |
| 25   | Shillong                                                                                 | Z     | e     | 06 48 25          |             | Tremor                                |           |                                                                                                       | E     | 50 17    |                   |             | Per = 17 secs                         |                             |
|      |                                                                                          |       |       |                   |             |                                       | 26        | Shillong                                                                                              | Z     | iP       | 22 44 34          |             |                                       | Per = 2                     |
|      |                                                                                          |       |       |                   |             |                                       |           |                                                                                                       |       |          |                   |             | Slight, distant rarefaction           |                             |

| DATE | STATION                                                                | COMPT  | PHASE         | G. M. T.                      | $\Delta$ | REMARKS                                                    | DATE | STATION                                                      | COMPT                  | PHASE                                               | G. M. T.                                                                         | $\Delta$ | REMARKS                                                                                                                                    |                              |
|------|------------------------------------------------------------------------|--------|---------------|-------------------------------|----------|------------------------------------------------------------|------|--------------------------------------------------------------|------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|      |                                                                        |        |               | h. m. s.                      | km       | December                                                   | 1959 |                                                              |                        |                                                     | h. m. s.                                                                         | km       |                                                                                                                                            |                              |
| 26   | Shillong                                                               | Z      | eP            | 22 46 03                      |          | Slight, distant                                            | 27   | Poona                                                        | Z                      | eP                                                  | 09 36 09                                                                         |          | Very feeble phases not clear                                                                                                               |                              |
| 26   | Poona                                                                  | Z      | iP            | 22 47 47                      |          | Mild, phases not clear                                     |      | Clear                                                        |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
| 27   | Shillong                                                               | Z      | eP            | 00 18 06                      |          | Slight, distant                                            | 27   | Bombay                                                       | E<br>NE<br>E           | eP<br>PP<br>eS<br>Lq                                | 09 36 17<br>36 46<br>40 46<br>41 11                                              | 2590     | Slight                                                                                                                                     |                              |
| 27   | Shillong                                                               | Z      | eP            | 02 00 47                      |          | Slight, distant                                            |      | Dehra Dun                                                    | NE                     | e                                                   | 09 38 08                                                                         |          | Feeble                                                                                                                                     |                              |
| 27   | Shillong                                                               | Z      | eP            | 02 13 51                      |          | Slight, distant                                            | 27   | Shillong                                                     | Z                      | iP                                                  | 11 58 42                                                                         |          | Slight, distant compression                                                                                                                |                              |
| 27   | Epc: 52°N, 160°E. Kamchatka foreshock<br>- H = 04h 47m 45s (U.S.C.G.S) |        |               |                               |          |                                                            |      | 27                                                           | Poona                  | Z                                                   | iP                                                                               | 12 00 28 |                                                                                                                                            | Mild, other phases not clear |
|      | Shillong                                                               | Z      | iP            | 04 57 34                      |          | Slight, distant compression                                |      | Shillong                                                     | Z                      | iP                                                  | 12 04 37                                                                         |          | Distant, slight compression                                                                                                                |                              |
|      | Chatra                                                                 | Z      | iP            | 04 57 48                      |          | Slight, distant compression                                |      | Chatra                                                       | Z                      | eP                                                  | 12 04 50                                                                         |          | Slight                                                                                                                                     |                              |
|      | Dehra Dun                                                              | NE     | e             | 04 58 12<br>05 06 51          |          | Feeble                                                     |      | Poona                                                        | Z                      | iP                                                  | 12 06 22                                                                         |          | Feeble, compression                                                                                                                        |                              |
|      | Poona                                                                  | Z<br>N | iP<br>SP      | 04 59 19<br>05 07 50          | 7020     | Slight, compression                                        |      | Bombay                                                       | NE<br>N<br>E<br>N<br>E | e<br>e<br>e<br>M                                    | 12 06 24<br>15 13<br>16 07<br>16 26<br>41 57                                     |          | Very slight                                                                                                                                |                              |
|      | Bombay                                                                 | N      | eP<br>eS<br>M | 04 59 21<br>05 08 51<br>34 35 | 8170     | Slight                                                     |      |                                                              |                        |                                                     |                                                                                  |          | Peri = 7 secs<br>$\mu = 2$<br>Peri = 15 secs<br>$\mu = 1$                                                                                  |                              |
|      |                                                                        | E      | M             | 35 29                         |          | Peri = 18 secs<br>$\mu = 5$<br>Peri = 16 secs<br>$\mu = 2$ |      | 27                                                           | Hyderabad              | N                                                   | M                                                                                | 12 40 59 |                                                                                                                                            | Peri = 4 secs<br>$\mu = 3$   |
| 27   | Shillong                                                               | Z      | eP            | 05 11 43                      |          | Slight, distant                                            | 27   | Poona                                                        | Z                      | iP                                                  | 12 57 27<br>57 35                                                                |          | Mild, phases not clear, rarefaction                                                                                                        |                              |
| 27   | Shillong                                                               | Z      | iP            | 05 16 02                      |          | Slight, distant compression                                |      | Agra                                                         | ZE                     | iP                                                  | 12 57 43                                                                         |          | Slight, near initial ground motion West.                                                                                                   |                              |
| 27   | Shillong                                                               | Z      | iP            | 05 17 27                      |          | Slight, distant compression                                |      | Dehra Dun                                                    | NE                     | e                                                   | 12 57 47                                                                         |          | Feeble                                                                                                                                     |                              |
| 27   | Bokaro                                                                 | NE     | e             | 05 27 43                      |          | Slight                                                     |      | Chatra                                                       | Z                      | P<br>i<br>i                                         | 12 57 56<br>58 05<br>58 20                                                       |          | Slight, probably deep focus, rarefaction                                                                                                   |                              |
| 27   | Shillong                                                               | Z      | iP            | 05 32 25                      |          | Slight, distant rarefaction                                |      | Shillong                                                     | Z                      | iP                                                  | 12 58 01                                                                         |          | Slight, distant rarefaction                                                                                                                |                              |
| 27   | Hyderabad                                                              | N      | M             | 05 33 53                      |          | Peri = 15 secs<br>$\mu = 5$                                |      | Bombay                                                       | NE                     | e<br>e<br>e                                         | 13 00 10<br>00 27<br>01 09                                                       |          | Slight, near tremor                                                                                                                        |                              |
| 27   | Kodsikanal                                                             | E      | e             | 05 34 58                      |          | Tremor                                                     |      | Poona                                                        | Z                      | iP                                                  | 13 00 13                                                                         |          | Feeble, other phases not clear, compression                                                                                                |                              |
| 27   | Shillong                                                               | Z      | iP            | 06 27 54                      |          | Slight, distant rarefaction                                | 27   | Epc: 56°N, 162°E. Kamchatka<br>- H = 15h 52m 55s (U.S.C.G.S) |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
| 27   | Shillong                                                               | Z      | iP            | 07 01 21                      |          | Slight, distant compression                                |      | Shillong                                                     | ZNE<br>NE              | iP<br>iS                                            | 16 02 51<br>10 59                                                                | 6590     | Moderate, initial ground motion South and West.                                                                                            |                              |
|      | Chatra                                                                 | Z      | iP            | 07 01 35                      |          | Slight, distant                                            |      | Chatra                                                       | Z<br>NE                | eP<br>e                                             | 16 03 03<br>11 13                                                                |          | Moderate                                                                                                                                   |                              |
|      | Poona                                                                  | Z      | iP            | 07 03 26                      |          | Feeble                                                     |      | Dehra Dun                                                    | NE<br>N                | eP<br>PP<br>PPP<br>iS<br>SS<br>SSS<br>Lq<br>Lr<br>M | 16 03 19<br>05 24<br>06 48<br>11 43<br>15 43<br>18 09<br>18 46<br>21 53<br>26 34 |          | Peri = 19.5 secs<br>$\mu = 33.1$                                                                                                           |                              |
|      | Hyderabad                                                              | N      | M             | 07 37 41                      |          | Peri = 13 secs<br>$\mu = 3$                                |      | Bokaro                                                       | NE<br>N                | iP<br>PcP<br>iS<br>PPS<br>M                         | 16 03 23<br>03 58<br>11 54<br>12 16<br>26 24                                     | 7020     | Moderate, other phases doubtful<br>Initial ground motion South and West.<br>Peri = 37 secs<br>$\mu = 125$<br>Peri = 26 secs<br>$\mu = 145$ |                              |
| 27   | Shillong                                                               | Z      | eP            | 08 04 42                      |          | Slight, distant                                            |      |                                                              | E                      | M                                                   | 27 03                                                                            |          |                                                                                                                                            |                              |
| 27   | Poona                                                                  | Z      | iP            | 08 06 27                      |          | Slight, distant compression                                |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Shillong                                                               | Z      | iP            | 08 15 18                      |          | Slight, distant compression                                |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Chatra                                                                 | Z      | eP<br>e       | 08 15 32<br>17 10             |          | Slight, distant                                            |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
| 27   | Poona                                                                  | Z      | e<br>i        | 08 17 37<br>17 40             |          | Slight, distant                                            |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
| 27   | Shillong                                                               | Z      | iP            | 08 55 11                      |          | Slight, distant compression                                |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
| 27   | Shillong                                                               | Z      | eP            | 09 32 19                      |          | Slight, distant                                            |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Tocklai                                                                | E      | eP            | 09 33 13                      |          | Distant, slight                                            |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Chatra                                                                 | Z      | eP            | 09 33 17                      |          | Slight                                                     |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Calcutta                                                               | E      | e<br>e<br>i   | 09 33 43<br>34 46<br>39 08    |          | Slight                                                     |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |
|      | Bokaro                                                                 | NE     | e             | 09 35 53                      |          | Slight, phases not developed clearly                       |      |                                                              |                        |                                                     |                                                                                  |          |                                                                                                                                            |                              |



| DATE | STATION    | COMPT | PHASE | G. M. T. | Δ    | REMARKS                                                      | DATE     | STATION    | COMPT                                                                                                            | PHASE          | G. M. T. | Δ        | REMARKS                                                  |
|------|------------|-------|-------|----------|------|--------------------------------------------------------------|----------|------------|------------------------------------------------------------------------------------------------------------------|----------------|----------|----------|----------------------------------------------------------|
|      |            |       |       | h. m. s. | km   |                                                              | December | 1959       |                                                                                                                  |                | h. m. s. | km       |                                                          |
| 27   | Calcutta   | E     | eP    | 16 03 23 | 7020 | Slight                                                       |          | 27         | Shillong                                                                                                         | Z              | eP       | 21 53 20 | Slight, near                                             |
|      | Confid.    |       | PcP   | 04 11    |      |                                                              |          | 28         | Poona                                                                                                            | Z              | iP       | 01 54 57 | Mild, phases not clear                                   |
|      |            |       | PcS   | 08 22    |      |                                                              |          | 28         | Epc: 37°N, 70°E. Hindukush. - h = 200 km<br>- H = 02h 12m 18s (U.S.C.G.S)                                        |                |          |          |                                                          |
|      |            |       | eS    | 11 54    |      |                                                              |          | Dehra Dun  | NE                                                                                                               | eP             | 02 14 30 | 930      | Slight, phases not clear                                 |
|      |            |       | Lr    | 21 20    |      |                                                              |          |            |                                                                                                                  | iS             | 16 06    |          |                                                          |
|      |            |       | M     | 25 08    |      |                                                              |          | Chatra     | Z                                                                                                                | P              | 02 16 12 |          | Slight, rarefaction                                      |
|      | Agra       | ZNE   | iP    | 16 03 33 | 7290 | Moderate, compression, initial ground motion South and West. |          | Poona      | Z                                                                                                                | iP             | 02 16 21 | 2180     | Feeble                                                   |
|      |            | Z     | iP    | 03 41    |      |                                                              |          |            |                                                                                                                  | S <sup>2</sup> | 19 57    |          |                                                          |
|      |            |       | PcP   | 04 03    |      |                                                              |          | Bombay     | F                                                                                                                | e              | 02 16 22 |          | Very slight, and deep                                    |
|      |            |       | PP    | 06 09    |      |                                                              |          |            |                                                                                                                  | e              | 19 36    |          |                                                          |
|      |            |       | PPP   | 08 23    |      |                                                              |          |            |                                                                                                                  | e              | 20 44    |          |                                                          |
|      |            | ZNE   | iS    | 12 18    |      |                                                              |          | Shillong   | Z                                                                                                                | iP             | 02 16 55 |          | Slight, distant rarefaction.                             |
|      |            | E     | iP    | 12 36    |      |                                                              |          | 28         | Chatra                                                                                                           | Z              | eP       | 02 19 15 | Slight                                                   |
|      |            |       | SKS   | 13 22    |      |                                                              |          | 28         | Shillong                                                                                                         | Z              | eP       | 02 20 40 | Slight, distant                                          |
|      |            | N     | SS    | 15 51    |      |                                                              |          | 28         | Epc: 52°N, 160°E. Near East Coast of Kamchatka. - H = 07h 20m 32s (U.S.C.G.S)<br>Mag: 6 1/4 (Pas), 5 1/4 (Perk). |                |          |          |                                                          |
|      |            | ZNE   | SSS   | 19 44    |      |                                                              |          | Calcutta   | E                                                                                                                | iP             | 07 29 00 |          |                                                          |
|      |            | E     | Lr    | 24 05    |      |                                                              |          |            |                                                                                                                  | e              | 29 56    |          |                                                          |
|      |            | ZNE   | M     |          |      |                                                              |          |            |                                                                                                                  | e              | 37 23    |          |                                                          |
|      |            |       |       |          |      | Per: 20 secs<br>Δ = 56.5                                     |          |            |                                                                                                                  | e              | 37 38    |          |                                                          |
|      | Sehore     | N     | e     | 16 04 01 |      | Phases could not be distinguished                            |          |            |                                                                                                                  | e              | 41 19    |          |                                                          |
|      |            |       |       |          |      |                                                              |          |            |                                                                                                                  | e              | 44 37    |          |                                                          |
|      |            |       |       |          |      |                                                              |          |            |                                                                                                                  | e              | 47 15    |          |                                                          |
|      |            |       |       |          |      |                                                              |          |            |                                                                                                                  | e              | 52 45    |          |                                                          |
|      | Port Blair | E     | iP    | 16 04 06 | 7650 | Moderate                                                     |          | Shillong   | ZNE                                                                                                              | iP             | 07 30 22 | 6340     | Compression, initial ground motion South and West.       |
|      |            |       | iS    | 13 10    |      |                                                              |          |            | NE                                                                                                               | iS             | 38 16    |          |                                                          |
|      |            |       | M     | 33 35    |      |                                                              |          | Chatra     | NE                                                                                                               | P              | 07 30 33 | 6530     |                                                          |
|      | Hyderabad  | NE    | iP    | 16 04 24 | 7950 | Moderate, initial ground motion South and West.              |          |            | E                                                                                                                | S              | 38 39    |          |                                                          |
|      |            | N     | PcP   | 04 33    |      |                                                              |          |            | N                                                                                                                | M              | 28/30    |          | Per: 15 secs<br>Δ = 57                                   |
|      |            |       | PP    | 07 06    |      |                                                              |          |            |                                                                                                                  |                |          |          | Per: 15 secs<br>Δ = 28                                   |
|      |            |       | PPP   | 08 41    |      |                                                              |          | Dehra Dun  | NE                                                                                                               | eP             | 07 30 57 | 7200     |                                                          |
|      |            |       | iS    | 13 43    |      |                                                              |          |            | N                                                                                                                | iS             | 39 38    |          |                                                          |
|      |            |       | PS    | 14 36    |      |                                                              |          |            |                                                                                                                  | SS             | 43 41    |          |                                                          |
|      |            |       | SS    | 18 44    |      |                                                              |          |            |                                                                                                                  | SSS            | 46 34    |          |                                                          |
|      |            |       | SSS   | 22 03    |      |                                                              |          |            |                                                                                                                  | Lq             | 47 53    |          |                                                          |
|      |            |       | Lq    | 23 17    |      |                                                              |          |            |                                                                                                                  | Lr             | 50 34    |          |                                                          |
|      |            |       | Lr    | 26 51    |      |                                                              |          |            |                                                                                                                  | M              | 54 58    |          |                                                          |
|      |            |       | M     | 30 39    |      |                                                              |          | Agra       | ZNE                                                                                                              | iP             | 07 31 07 | 7330     | Initial ground motion South and West.                    |
|      |            |       |       |          |      | Per: 15 secs<br>Δ = 21                                       |          |            |                                                                                                                  | iS             | 39 54    |          |                                                          |
|      |            | E     | M     | 33 33    |      | Per: 15 secs<br>Δ = 8                                        |          |            |                                                                                                                  | M              |          |          | Per: 8 secs<br>Δ = 66.0                                  |
|      | Poona      | Z     | iP    | 16 04 32 | 8110 | Moderate, compression, initial ground motion South and West. |          | Port Blair | N                                                                                                                | i              | 07 31 27 |          |                                                          |
|      |            | N     | PcP   | 04 42    |      |                                                              |          |            |                                                                                                                  | i              | 39 59    |          |                                                          |
|      |            |       | PP    | 07 30    |      |                                                              |          | Hyderabad  | NE                                                                                                               | iP             | 07 31 48 | 8350     | Initial ground motion towards South and West             |
|      |            |       | PPP   | 09 15    |      |                                                              |          |            | N                                                                                                                | PcP            | 32 09    |          |                                                          |
|      |            |       | iS    | 13 59    |      |                                                              |          |            |                                                                                                                  | PP             | 34 36    |          |                                                          |
|      |            |       | ScS   | 14 29    |      |                                                              |          |            |                                                                                                                  | iS             | 41 27    |          |                                                          |
|      |            |       | SS    | 19 03    |      |                                                              |          |            |                                                                                                                  | PS             | 41 46    |          |                                                          |
|      |            |       | PKP1  | 22 54    |      |                                                              |          |            |                                                                                                                  | PPS            | 42 09    |          |                                                          |
|      |            |       | Lq    | 24 10    |      |                                                              |          |            |                                                                                                                  | SS             | 45 21    |          |                                                          |
|      |            |       | Lr    | 27 55    |      |                                                              |          |            |                                                                                                                  | Lr             | 52 36    |          |                                                          |
|      |            |       | SKKS2 | 29 49    |      |                                                              |          |            |                                                                                                                  | M              | 58 27    |          | Per: 17 secs<br>Δ = 22                                   |
|      |            |       | Mn    | 40 41    |      |                                                              |          |            |                                                                                                                  |                |          |          | Per: 12 secs<br>Δ = 14                                   |
|      |            |       |       |          |      | Per: 19 secs<br>Δ = 55                                       |          | Bekaro     | NE                                                                                                               | eP             | 07 31 54 |          | Time of S phase is doubtful due to overlapping of phases |
|      | Bombay     | NE    | eP    | 16 04 33 | 8200 | Moderate                                                     |          |            |                                                                                                                  | e              | 39 28    |          |                                                          |
|      |            |       | PP    | 07 25    |      |                                                              |          | Poona      | Z                                                                                                                | iP             | 07 32 07 | 8170     | Compression, initial ground motion South and West        |
|      |            |       | PPP   | 09 20    |      |                                                              |          |            | N                                                                                                                | PcP            | 32 22    |          |                                                          |
|      |            | E     | e     | 10 50    |      |                                                              |          |            |                                                                                                                  | iS             | 41 36    |          |                                                          |
|      |            | NE    | eS    | 14 04    |      |                                                              |          |            |                                                                                                                  | SKS1           | 41 48    |          |                                                          |
|      |            |       | PS    | 14 21    |      |                                                              |          |            |                                                                                                                  | ScS            | 42 05    |          |                                                          |
|      |            | N     | PPS   | 14 46    |      |                                                              |          |            |                                                                                                                  | PS             | 42 18    |          |                                                          |
|      |            |       | SS    | 19 35    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            | E     | M     | 41 08    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       |       |          |      | Per: 18 secs<br>Δ = 22                                       |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            | N     | M     | 14 19    |      | Per: 18 secs<br>Δ = 26                                       |          |            |                                                                                                                  |                |          |          |                                                          |
|      | Madras     | E     | eP    | 16 04 38 | 8330 | Moderate                                                     |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | PcP   | 04 48    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | PP    | 07 32    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | eS    | 14 15    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | SKS   | 14 32    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | PS    | 14 55    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      | Kodeikanal | E     | iP    | 15 04 59 | 8570 | Moderate, ground motion West.                                |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | iS    | 14 53    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | Lq    | 26 11    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | Lr    | 29 53    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | M     | 36 26    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       |       |          |      | Per: 21 secs<br>Δ = 43.8                                     |          |            |                                                                                                                  |                |          |          |                                                          |
|      | Colombo    | E     | P     | 16 05 10 |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | e     | 15 09    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | e     | 40 50    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
|      |            |       | M     | 44 06    |      |                                                              |          |            |                                                                                                                  |                |          |          |                                                          |
| 27   | Shillong   | Z     | eP    | 17 08 04 |      | Slight, near                                                 |          |            |                                                                                                                  |                |          |          |                                                          |
| 27   | Shillong   | Z     | eP    | 19 37 59 |      | Slight, distant                                              |          |            |                                                                                                                  |                |          |          |                                                          |
| 27   | Poona      | Z     | iP    | 19 40 17 |      | Mild, phases not clear.                                      |          |            |                                                                                                                  |                |          |          |                                                          |

| DATE | STATION    | COMPT PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                    | DATE      | STATION                                                                                              | COMPT PHASE | G. M. T.<br>h. m. s. | $\Delta$<br>km | REMARKS                                     |
|------|------------|-------------|----------------------|----------------|--------------------------------------------|-----------|------------------------------------------------------------------------------------------------------|-------------|----------------------|----------------|---------------------------------------------|
| 28   | Poona      | N           | PPS 07 42 34         |                |                                            | 28        | Shillong                                                                                             | Z           | eP 20 12 43          |                | Slight, near                                |
|      | Contd.     | Contd.      | Lq 51 49             |                |                                            |           | 28                                                                                                   | Shillong    | Z                    | eP 23 41 11    |                                             |
|      |            |             | Lr 55 25             |                |                                            | 29        | Poona                                                                                                | Z           | iP 03 04 57          |                | Feeble, phases not clear                    |
|      |            |             | SKKS2 57 18          |                | Per. = 20 secs<br>$\mu = 43$               | 29        | Shillong                                                                                             | Z           | e 03 58 01           |                | Tremor                                      |
|      |            |             | Mn 08 -- --          |                |                                            | 29        | Shillong                                                                                             | Z           | iP 04 28 55          |                | Slight, near                                |
|      | Madras     | E           | eP 07 32 09          | 8470           |                                            |           | Chatra                                                                                               | Z           | eP 04 29 52          |                | Feeble                                      |
|      |            |             | PeP 32 21            |                |                                            | 29        | Shillong                                                                                             | Z           | iP 07 12 18          |                | Slight, distant compression                 |
|      |            |             | PP 35 12             |                |                                            |           | Chatra                                                                                               | Z           | iP 07 12 52          |                | Slight, compression                         |
|      |            |             | eS? 41 53            |                | Per. = 19 secs<br>$\mu = 59$               | 29        | Poona                                                                                                | Z           | iP 07 13 51          |                | Feeble, other phases not clear, compression |
|      |            |             | PS 42 30             |                | Per. = 17 secs<br>$\mu = 3$                |           |                                                                                                      |             |                      |                |                                             |
|      | Bombay     | NE          | eP 07 32 10          |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            |             | e 41 41              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            | N           | e 41 44              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            | NE          | e 42 16              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            | N           | M 08 07 37           |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            | E           | M 08 25              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      | Colombo    | E           | P 07 32 43           |                |                                            | 29        | Shillong                                                                                             | Z           | e 14 44 39           |                | Tremor                                      |
|      |            |             | e 42 34              |                |                                            | 29        | Shillong                                                                                             | Z           | e 17 28 40           |                | Tremor                                      |
|      |            |             | e 08 00 35           |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      |            |             | M 05 25              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      | Kodaikanal | E           | eP 07 38 39          | 7780           |                                            | 29        | Shillong                                                                                             | Z           | eP 17 36 42          |                | Slight, near                                |
|      |            |             | eS 47 49             |                |                                            | 29        | Shillong                                                                                             | Z           | eP 18 14 11          |                | Slight, distant                             |
|      |            |             | SS 52 09             |                |                                            | 29        | Shillong                                                                                             | Z           | eP 18 52 10          |                | Slight, near                                |
|      |            |             | Lq 56 54             |                | Per. = 15 secs.<br>$\mu = 14.2$            | 29        | Shillong                                                                                             | Z           | eP 19 57 42          |                | Slight, near                                |
|      |            |             | M 08 05 45           |                |                                            | 29        | Shillong                                                                                             | Z           | eP 20 33 08          |                | Slight, distant                             |
| 28   | Shillong   | Z           | iP 09 42 10          |                | Slight, distant rarefaction                |           |                                                                                                      |             |                      |                |                                             |
| 28   | Poona      | Z           | iP 10 22 40          |                | Feeble, other phases not clear rarefaction | 29        | Epic: 19°N, 145°E. Mariana Islands. - h = 350 km. - H = 20h 35m 08s (U.S.C.G.S). Mag: 6-6 1/2 (Pas). |             |                      |                |                                             |
| 28   | Shillong   | Z           | eP 10 23 05          |                | Slight, distant                            | Shillong  | Z                                                                                                    | iP 20 43 34 |                      |                | Rarefaction                                 |
| 28   | Poona      | Z           | iP 10 23 08          |                | Feeble, other phases not clear rarefaction | Chatra    | Z                                                                                                    | iP 20 44 04 | 5450                 |                | Feeble, rarefaction                         |
|      |            |             |                      |                |                                            | NE        | S                                                                                                    | 51 09       |                      |                |                                             |
| 28   | Shillong   | Z           | eP 10 32 25          |                | Slight, near                               | Dehra Dun | NE                                                                                                   | eP 20 45 01 |                      |                | Slight, phases not clear                    |
|      |            |             |                      |                |                                            | iS        | 52 50                                                                                                |             |                      |                |                                             |
| 28   | Shillong   | Z           | eP 13 14 19          |                | Slight, distant                            | Poona     | Z                                                                                                    | eP 20 45 32 | 5860                 |                |                                             |
|      |            |             |                      |                |                                            | N         | S? 53 54                                                                                             |             |                      |                |                                             |
| 28   | Chatra     | Z           | eP 13 14 34          | 1630           | Slight, compression                        |           | eP 54 49                                                                                             |             |                      |                |                                             |
|      |            | NE          | eS 22 44             |                |                                            | 29        | Shillong                                                                                             | Z           | iP 20 50 13          |                | Slight, distant compression                 |
|      | Dehra Dun  | NE          | eP 13 14 53          | 7220           | Feeble                                     |           |                                                                                                      |             |                      |                |                                             |
|      |            |             | iS 23 35             |                |                                            | Calcutta  | E                                                                                                    | i 20 51 02  |                      |                |                                             |
|      | Hyderabad  | N           | i 13 15 51           |                |                                            | Bombay    | NE                                                                                                   | e 20 54 05  |                      |                | Slight, and deep.                           |
|      |            |             | M 51 05              |                | Per. = 15 secs<br>$\mu = 6$                | E         | e 54 37                                                                                              |             |                      |                |                                             |
|      |            |             |                      |                |                                            | N         | e 54 57                                                                                              |             |                      |                |                                             |
|      | Poona      | Z           | iP 13 16 05          |                | Slight, other phases not clear compression | 29        | Shillong                                                                                             | Z           | iP 21 35 37          |                | Slight, distant, compression                |
|      |            |             | i 16 18              |                |                                            |           |                                                                                                      |             |                      |                |                                             |
|      | Bombay     | NE          | eP 13 16 05          | 8250           | Slight                                     | 29        | Chatra                                                                                               | Z           | eP 21 36 07          |                | Feeble                                      |
|      |            |             | eS 25 39             |                |                                            | 29        | Shillong                                                                                             | Z           | iP 21 40 55          |                | Slight, distant                             |
|      |            | N           | M 51 41              |                | Per. = 17 secs<br>$\mu = 4$                | 30        | Dehra Dun                                                                                            | NE          | e 06 34 05           |                | Tremor                                      |
|      |            | E           | M 51 --              |                |                                            | 30        | Shillong                                                                                             | Z           | iP 06 35 50          |                | Slight, distant rarefaction                 |
| 28   | Shillong   | Z           | eP 13 19 51          |                | Slight, distant                            | 30        | Shillong                                                                                             | Z           | iP 11 01 49          |                | Slight, near                                |
| 28   | Poona      | Z           | i 13 21 38           |                | Mild, phases not clear, compression        | 30        | Chatra                                                                                               | Z           | iP 11 02 58          | 720            | Feeble                                      |
|      |            |             |                      |                |                                            | S         | 04 13                                                                                                |             |                      |                |                                             |
| 28   | Kodaikanal | F           | e 13 32 41           |                | Tremor                                     | 30        | Shillong                                                                                             | Z           | eP 13 16 32          |                | Slight, near                                |
| 28   | Shillong   | Z           | eP 15 18 38          |                | Slight, near                               | 30        | Shillong                                                                                             | Z           | iP 14 02 22          |                | Slight, distant rarefaction                 |
| 28   | Shillong   | Z           | eP 17 45 20          |                | Slight, distant                            | 30        | Chatra                                                                                               | Z           | iP 14 02 57          |                | Feeble                                      |
| 28   | Shillong   | Z           | eP 18 04 07          |                | Slight, near                               | 30        | Shillong                                                                                             | Z           | i 15 46 20           |                | Tremor                                      |
| 28   | Chatra     | Z           | iP 18 30 25          |                | Slight                                     | 30        | Shillong                                                                                             | Z           | iP 17 14 52          |                | Slight, near                                |
| 28   | Shillong   | Z           | e 19 41 14           |                | Slight, near                               | 30        | Shillong                                                                                             | Z           | iP 19 44 37          |                | Slight, near                                |
| 28   | Shillong   | Z           | e 19 41 14           |                | Slight, near                               | 30        | Dehra Dun                                                                                            | NE          | e 20 45 01           |                | Tremor.                                     |
| 28   | Shillong   | Z           | eP 19 52 15          |                | Slight, distant                            |           |                                                                                                      |             |                      |                |                                             |
| 28   | Shillong   | Z           | eP 19 56 08          |                | Slight, near                               |           |                                                                                                      |             |                      |                |                                             |

| DATE | STATION  | COMPT | PHASE | G. M. T. |    |    | Δ<br>km | REMARKS                              | DATE | STATION  | COMPT | PHASE      | G. M. T.          |    |                        | Δ<br>km | REMARKS |
|------|----------|-------|-------|----------|----|----|---------|--------------------------------------|------|----------|-------|------------|-------------------|----|------------------------|---------|---------|
|      |          |       |       | h.       | m. | s. |         |                                      |      |          |       |            | h.                | m. | s.                     |         |         |
|      |          |       |       |          |    |    |         | December 1959                        |      |          |       |            |                   |    |                        |         |         |
| 30   | Shillong | Z     | e?    | 20       | 46 | 18 |         | Slight, distant                      | 31   | Shillong | Z     | iPg<br>iSg | 15 42 49<br>42 57 | 70 | Slight,<br>rarefaction |         |         |
| 31   | Shillong | Z     | iP    | 19       | 38 | 52 |         | Slight, distant<br>compression       | 31   | Shillong | Z     | iPg<br>iSg | 15 50 59<br>51 09 | 90 | Slight,<br>rarefaction |         |         |
| 31   | Poona    | Z     | e?    | 10       | 40 | 26 |         | Feeble, other<br>phases not<br>clear | 31   | Shillong | Z     | e?         | 20 49 35          |    |                        |         |         |
| 31   | Shillong | Z     | e     | 15       | 19 | 34 |         | Tremor                               |      |          |       |            |                   |    |                        |         |         |

The following is the list of earthquakes that were reported by voluntary Observers from different stations during the month of December 1959.

| Place      | Date in<br>G.M.T. | Time in<br>G. M. T        | No. of<br>shocks | Duration<br>of shock | Intensity<br>in R. F. S. | Remarks |
|------------|-------------------|---------------------------|------------------|----------------------|--------------------------|---------|
| Shillong   | 03                | <sup>h. m.</sup><br>14 01 | one              | 3 secs               | IV                       |         |
| Shillong   | 11                | 20 58                     | two              | 4 secs               | IV                       |         |
| Shillong   | 14                | 17 20                     | two              | 3 secs               | V                        |         |
| Darjeeling | 15                | 07 10                     | two              | 4 secs               | V                        |         |
| Gangtok    | 15                | 07 06                     | two              | -                    | V                        |         |

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DATE	HOUR	K	MEAN	MEAN	DATE	HOUR	K	MEAN	MEAN	DATE	HOUR	K	MEAN	MEAN
GMT			Ampli- tude in mm	Period in secs	GMT			Ampli- tude in mm	Period in secs	GMT			Ampli- tude in (Micron)	Period in secs

Station: Madras Compt: E-W

Component: E-W December 1959

17	17	1	0.6	3.2
Cont'd.	18	1	0.6	3.3
	19	1	0.6	3.3
	20	1	0.6	3.2
	21	1	0.6	3.3
	22	1	0.6	3.6
	23	1	0.6	3.1
18	00	1	0.5	3.3
	01	1	0.5	3.6
	02	1	0.5	3.5
	03	1	0.6	3.7
	04	1	0.5	3.6
	05	1	0.6	3.6
	06	1	0.6	3.7
	07	1	0.6	3.6
	08	1	0.6	3.6
	09	1	0.6	3.7
	10	1	0.6	3.6
	11	1	0.7	3.6
	12	1	0.6	3.6
	13	1	0.6	4.0
	14	1	0.6	3.9
	15	1	0.5	4.0
	16	1	0.6	4.1
	17	1	0.6	4.1
	18	1	0.6	4.1
	19	1	0.6	4.2
	20	1	0.6	4.1
	21	1	0.5	4.1
	22	1	0.6	4.3
	23	1	0.6	4.2
19	00	1	0.5	4.2
	01	1	0.5	4.0
	02	1	0.5	3.9
	03	1	0.5	4.0
	04	1	0.6	4.1
	05	1	0.6	4.0
	06	1	0.6	4.2
	07	1	0.6	4.0
	08	1	0.7	4.3
	09	1	0.6	4.0
	10	1	0.7	4.1
	11	1	0.7	4.2
	12	1	0.7	4.2
	13	1	0.7	4.0
	14	1	0.7	4.1
	15	1	0.7	4.3
	16	1	0.7	4.2
	17	1	0.6	4.0
	18	1	0.7	4.1
	19	1	0.7	4.1
	20	1	0.6	4.0
	21	1	0.6	4.0
	22	1	0.6	3.9
	23	1	0.6	3.9
20	00	1	0.6	3.9
	01	1	0.6	3.9
	02	1	0.7	3.9
	03	1	0.6	3.9
	04	1	0.6	3.9
	05	1	0.6	3.9
	06	1	0.6	3.9
	07	1	0.6	3.9
	08	1	0.6	3.9
	09	1	0.6	3.8
	10	1	0.7	3.9
	11	3	0.6	4.0
	12	3	0.5	3.7
	13	3	0.6	3.7
	14	3	0.6	3.7
	15	3	0.5	3.7
	16	3	0.5	3.8
	17	3	0.5	3.7
	18	3	0.5	3.7
	19	3	0.5	3.6
	20	3	0.5	3.7
	21	3	0.5	3.7
	22	3	0.5	3.6
	23	3	0.5	3.6
21	00	3	0.5	3.7
	01	3	0.4	3.6
	02	3	0.4	3.3
	03	3	0.5	3.7
	04	3	0.4	3.7

21	05	3	0.4	3.4
Cont'd.	06	3	0.5	3.5
	07	3	0.5	3.2
	08	3	0.5	3.3
	09	3	0.5	3.2
	10	3	0.5	3.1
	11	3	0.4	3.2
	12			
	13	3	0.4	2.8
	14	3	0.4	2.9
	15	3	0.4	3.0
	16	3	0.4	2.9
	17	3	0.4	2.8
	18	3	0.4	2.9
	19	3	0.4	2.9
	20	3	0.4	2.9
	21	3	0.4	2.9
	22	3	0.4	2.9
	23	3	0.3	2.8
22	00	3	0.4	2.8
	03	3	0.4	2.9
	06	3	0.4	2.8
	12	3	0.5	2.9
	18	3	0.5	2.8
23	00	3	0.4	2.9
	03	3	0.3	2.5
	06	3	0.3	2.5
	12	3	0.3	2.5
	18	3	0.4	2.5
24	00	3	0.2	2.4
	03	3	0.3	2.3
	06	3	0.2	2.2
	12	3	0.2	2.2
	18	3	0.3	2.4
25	00	3	0.3	2.4
	03	3	0.3	2.2
	06	3	0.3	2.2
	12	3	0.3	2.4
	18	3	0.4	2.6
26	00	3	0.5	2.6
	03	3	0.4	2.6
	06	3	0.5	2.8
	12	3	0.5	2.9
	18	3	0.5	2.7
27	00	3	0.5	2.8
	03	1	0.5	2.6
	06	1	0.5	2.5
	12	1	0.6	2.5
	18	1	0.6	2.6
28	00	1	0.7	2.7
	03	1	0.9	2.9
	06	1	0.8	2.9
	12	1	0.7	2.8
	18	1	0.8	2.8
29	00	3	0.8	2.9
	03			
	06			
	12	3	0.5	2.8
	18	3	0.5	2.8
30	00	3	0.5	2.7
	03	3	0.5	3.0
	06	3	0.4	2.9
	12	3	0.4	2.8
	18	3	0.4	3.0
31	00	3	0.4	3.1
	03	3	0.5	3.1
	06	3	0.4	3.1
	12	3	0.4	3.0
	18	3	0.3	3.0

Station: Port Blair

01	00			
to	to			
02	18			
03	00	2	0.4	3.4
	06	2	0.4	3.5
	12	2	3.4	3.5
	18	2	3.4	3.5
04	00			
to	to	2	0.8	3.5
18				
05	00	2	0.4	3.5
06	to			
to	18			
06	00			
to	to			
14	18			
15	00			
to	to	1	0.8	7.2
18				
16	00	1	0.8	7.2
06	to			
to	18		0.0	
17	00			
to	to			
26	18			
27	00			
to	to	2	0.4	3.2
18				
28	00			
to	to	2	0.8	3.2
18				
29	00	2	0.4	3.0
06	to			
to	18		0.0	
30	00			
to	to			
31	18			