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SEISMOLOGICAL BULLETIN

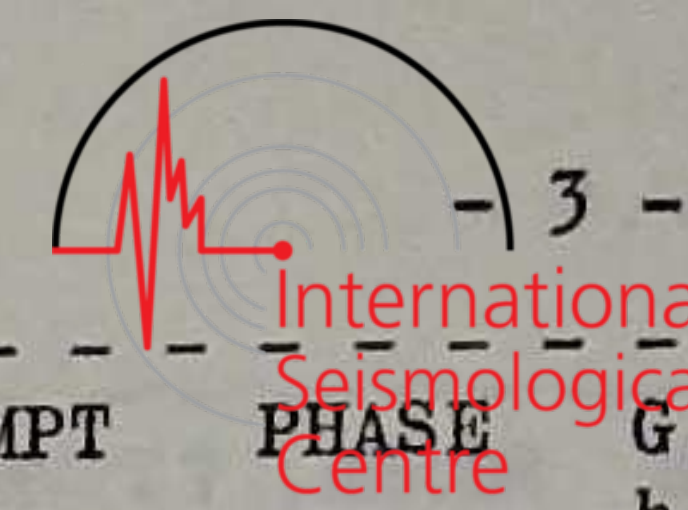
MAR 1963

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

PUBLISHED UNDER THE DIRECTION OF
SHRI P. R. KRISHNA RAO
DIRECTOR GENERAL OF OBSERVATORIES

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 Magnifi- cation	Damping ratio	Paper speed mm/min
Agra					Columbia Long Period	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: 15	Tg: 7 secs		30
Bokaro	23.50°N	85.40°E		Rock	Milne-Shaw	N	12	250	20:1	16
					Milne-Shaw	E	12	250	20:1	16
					Wood-Anderson	E	0.8	930	h: 0.8	60
					Wood-Anderson	N	0.8	1000	h: 0.8	50
Calcutta	22.32°N	88.32°E	(1) 7	Alluvium	Milne-Shaw	E	12	350	20:1	8
			(2) 6		Omori-Ewing	N	2	870	Critical	30
					Omori-Ewing	N	16	32		25.4
					Omori-Ewing	E	21	30		25.4
Chatra	25.40°N	87.40°E	161	Sand Stone	Milne-Shaw	E	12	250	20:1	14
					Wood-Anderson	N	1	1000	30:1	60
					Benloff	Z	To: 10	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	30.10°N	78.02°E	682	Gravel	Wood-Anderson	N	0.8	930	Critical	60
					Wood-Anderson	E	0.8	850	Critical	60
					Milne-Shaw	N	12	350	20:1	8
					Milne-Shaw	E	12	350	20:1	8
Hyderabad	17.95°N	78.27°E	835	Granite	Milne-Shaw	E	12	250	20:1	8
					Milne-Shaw	N	12	250	20:1	8
Kodaikanal	10.14°N	77.29°E	3348	Rock	Milne-Shaw	E	10	250	20:1	8
Madras	13.00°N	80.11°E	15		Sprengnether	E	To: 15	Tg: 72 secs	Critical	30
New Delhi	28.34°N	77.12°E	207	Massive Quartzite						
Poona	18.32°N	73.51°E	540	Deccan Trap	Sprengnether	Z	To: 15	Tg: 1.4	Critical	30
					Wood-Anderson	E	4	1000	20:1	14
Port Blair	11.49°N	92.45°E			Milne-Shaw	N	12	250	20:1	8
					Wood-Anderson	N	2	1000	20:1	30
					Wood-Anderson	E	0.8	1000	64:1	30
Sehera					Milne-Shaw	N	12	350	20:1	8
Shillong	25.34°N	91.33°E	1500	Quartzite Sand Stone (Shillong Quartzite)	Wood-Anderson	N	0.8	930	Critical	30
					Wood-Anderson	E	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
					Benloff	Z	To: 1.0	Tg: 18		40
					Sprengnether	E	To: 15	Tg: 6.3	Critical	30
					Wenner Accelerograph	ZNE				
Tocklal	28.45°N	94.44°E		Alluvium	Wood-Anderson	E	0.8	970	h: 0.8	60
Vishnogram	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.
March, 1963.						
01	Shillong	Z	iP	00 38 29		Slight, distant, compression.
01	Dehra Dun	Z	iP	00 40 15		Tremor, rarefaction.
01	Shillong	Z	iP	02 42 53		Slight, distant, compression.
01	Epc: - 35.7°N 59.9°E, Northeastern Iran. h = about 33 km. -H = 03 h 20 m 02.4 s (USCGS) Mag: 4.8.					
	Delhi	Z	eP i	03 23 50 24 05		Rarefaction.
	Dehra Dun	Z	iP	03 23 52		Rarefaction.
	Chatra	Z	eP	03 25 26		Distant.
	Shillong	Z	iP	03 26 03		Distant, compression.
01	Shillong	Z	iP	03 31 36		Slight, distant.
01	Shillong	Z	iP	04 11 40		Slight, distant, compression.
01	Dehra Dun	Z	eP i i	05 01 39 02 13 02 23		Slight.
	Delhi	Z	iP i	05 01 54 02 04		Slight, rarefaction.
01	Dehra Dun	Z	eP	10 20 13		Tremor.
	Delhi	Z	iP	10 21 13		Slight, rarefaction.
01	Epc: - 41.2°N 142.9°E, South of Hokkaido, Japan. h = 41 km. -H = 10 h 45 m 55.7 s (USCGS). Mag: 5.1.					
	Shillong	Z	iP	10 54 06		Distant, rarefaction.
	Chatra	Z	eP	10 54 32		Distant.
	Dehra Dun	Z	eP	10 55 11		Tremor.
	Delhi	Z NE	iP iS	10 55 19 03 50	7020	
01	Epc: - 41.9°N 80.8°E, Sinkiang Province, China. h = 33 km. -H = 11 h 55 m 22.5 s (USCGS).					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Km.	REMARKS
<u>March, 1963.</u>						
01	Dehra Dun	Z	iP	11 58 11		Slight, rarefaction.
	Delhi	Z	iP	11 58 32		Slight, compression.
	Shillong	Z	iP	11 58 38		Slight, distant, compression.
	Chatra	Z	iP	11 59 02		Feeble, distant, compression.
01	Shillong	Z	iP	11 59 37		Slight, distant, rarefaction.
01	Shillong	Z	iP	16 41 51		Slight, distant, compression.
01	Shillong	Z	eP	17 42 47		Slight, near.
01	Shillong	Z	iP	17 58 05		Slight, distant, rarefaction.
01 ✓	Shillong	Z	iP	19 26 16		Slight, distant, rarefaction.
01	Shillong	Z	iP	20 35 22		Slight, distant, compression.
01	Chatra	Z	iPg	22 48 11	130	Feeble, compression.
		Z	iSg	22 48 28		
	Shillong	Z	iP	22 48 52		Slight, distant, rarefaction.
01	Shillong	Z	iP	23 12 01		Slight, distant, rarefaction.
02	Shillong	Z	iP	00 30 30		Slight, distant, compression.
02	Shillong	Z	iP	01 43 32		Slight, distant, rarefaction.
02	Epc:- 23.8° N 92.2° E, East Pakistan- India border region. h = 36 km. -H= 02 h 45 m 37 s (USCGS) Mag : 4.2.					
	Shillong	ZNE	iP	02 46 06	250	Slight, compression.
		NE	iS	02 46 35		
	Chatra	ZNE	iP	02 46 59	510	Feeble, rarefaction.
		NE	eS	02 47 54		
	Bokaro	NE	iP	02 47 03	1300	
		E	S	49 16		
			SS	49 29		
			SSS/LQ	49 40		
			M	50 37		
02	Dehra Dun	Z	eP	02 47 42		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Km.	REMARKS
<u>March, 1963.</u>						
02	Poona	Z	eP	02 49 42		
	Bombay	Z	e	02 53 14		
		Z	e	54 39		
		ZE	e	55 29		
02	Shillong	Z	iP	03 55 54		Slight, near, rarefaction.
02	Chatra	Z	eP	04 51 46		Feeble, distant.
02	Epc:- 1.8° S 143.6° E, North of New Guinea. h = about 129 km. -H= 05 h 39 m 07.4 s (USCGS) Mag: 5.3.					
	Shillong	Z	iP	05 48 18		Distant, compression.
	Dehra Dun	Z	e	05 49 45		
02	Shillong	Z	i	08 42 04		Slight, distant, rarefaction.
02	✓ Shillong	Z	iP	09 35 07		Slight, distant, compression.
02 ✓	Dehra Dun	Z	eP	09 35 50		Tremor.
02 ✓	Delhi	ZNE	iP	09 36 05		Slight. Initial ground motion Southwest, compression.
		N	i	44 29		
		E	i	45 55		
02	Shillong	Z	iP	11 31 14		Slight, distant, compression.
	Delhi	Z	iP	11 22 11		Tremor, compression.
02	Bokaro	NE	iP	12 02 19		Feeble, local.
02	Shillong	Z	iP	16 13 49		Slight, distant, compression.
02	Shillong	Z	iP	16 36 04		Slight, near, rarefaction.
02	Shillong	Z	iP	16 46 25		Slight, distant, rarefaction.
02	Shillong	Z	iP	17 35 08		Slight, distant, compression.
03	Shillong	Z	iP	17 34 34		Slight, distant, rarefaction.
02	Shillong	Z	iP	18 10 50		Slight, distant.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
02	Shillong	Z	iP	19 31 12		Slight, distant, compression.
02	Shillong	Z	iP	21 59 13		Slight, distant, compression.
	Delhi	Z	iP	22 00 43		Tremor, compression.
02	Shillong	Z	iP	22 06 11		Slight, distant, rarefaction.
03	Epc:- 36.7° N 71.4° E, Hindukush. h = about 209 Kms. -H= 01 h 48 m 09.4 s (USCGS). Mag : 4.3.					
	Dehra Dun	Z	eP iS	01 50 10 51 43	900	
	Delhi	Z	iP iS	01 50 21 51 58	950	Compression.
	Shillong	Z	iP	01 52 35		Distant, compression.
03	Dehra Dun	Z	iP	02 27 56		Tremor, compression.
03	Shillong	Z	iP	03 51 48		Slight, distant, compression.
03	Shillong	Z	eP	04 31 19		Slight, distant.
03	Shillong	Z	eP	04 38 19		Slight, distant.
03	Dehra Dun	Z	iP	06 39 11		Tremor, compression.
03	Shillong	Z	iP	10 00 23		Slight, distant, compression.
03	Shillong	Z	iP	12 00 30		Slight, distant, compression.
03	Shillong	Z	iP	13 16 00		Slight, distant, compression.
03	Dehra Dun	Z	e	14 08 49		Tremor.
03	Shillong	Z	iP	15 43 09		Slight, near, rarefaction.
03	Shillong	Z	iP	16 46 59		Slight, distant, compression.
03	Chatra	Z	iP eS	17 02 34 17 05 26	1710	Slight, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
03	Epc:- 36.4° N 71.3° E, Hindukush. h = about 156 Kms. -H= 17 h 05 m 03.7 s (USCGS).					
	Dehra Dun	NZ	eP	17 06 59		Slight.
		Z	i	07 00		
		N	e	08 28		
		Z	i	08 38		
		Z	i	08 51		
	Delhi	Z	eP	17 07 10	950	Slight.
			i	07 11		
			iS	08 48		
	Bokaro	E	eP	17 09 04	1810	Slight.
		E	iS	12 05		
	Poona	Z	eP	17 09 08		Slight.
	Shillong	Z	iP	17 09 32		
	Colaba	ZE	e	17 12 28 14 41		Feeble.
	Madras	E	e	17 15 08 17 16		Feeble, tremor.
03	Shillong	Z	iP	18 08 49		Slight, distant, compression.
03	Epc:- 0.3° N 67.1° E, Maldive Islands region. h = about 33 Km. -H= 18 h 36 m 14.3 s (USCGS)					
	Madras	E	eP	18 40 22		Slight.
			e	43 15		
	Poona	Z	eP	18 40 34		Slight, rarefaction.
		E	e	44 16		
	Shillong	Z	iP	18 43 03		Slight, distant, compression.
03	Chatra	Z	iP	23 00 58		Feeble, distant, rarefaction.
03	Epc:- 30.7° N 136.9° E, South of Honshu, Japan. h = about 490 Kms. -H= 22 h 59 m 44.9 s (USCGS).					
	Shillong	Z	iP	23 06 36		Slight, distant, compression.
	Dehra Dun	Z	iP	23 07 57		Slight, rarefaction.
		Z	i	12 14		
	Delhi	Z	iP	23 08 05		Slight, rarefaction.

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<u>March, 1963.</u>						
03	Delhi	Z	eP	23 12 18		Feeble, rarefaction.
03	Delhi	Z	eP	23 14 46		Feeble, rarefaction.
04	Dehra Dun	Z	eP	05 51 51		Feeble.
		Z	i	51 58		
04	Bokaro	E	iP	07 36 28		Slight, near.
04	Epc:- 82.9°N 7.7° W, North Polar Region. h= about 33 Kms. -H= 07 h 41 m 51.0 s (USCGS).					
	Delhi	NZ	iP	07 52 03		Slight, compression.
	Chatra	Z	iP	07 52 21		Feeble, distant, compression.
	Shillong	Z	iP	07 52 32		Slight, near.
	Poona	Z	eP	07 53 05		Slight.
	Colaba	N	eP	07 53 20		Slight.
	(BOMBAY)	N	E	55 37		
04	Colaba	N	e	08 02 14		
		NE	M	27 -		
	Shillong	Z	iP	08 02 57		Slight, distant, compression.
	Chatra	Z	eP	08 02 55		Slight.
			e	03 59		
04	Epc:- 47.7° N 152.5° E, Kurile Islands Region. h = about 140 Kms. -H= 12 h 37 m 44.6 s (USCGS). Mag.: 4.3.					
	Shillong	Z	iP	12 46 41		Distant, compression.
	Delhi	Z	iP	12 47 37		Compression.
04	Shillong	Z	eP	12 59 26		Slight, distant.
04	Epc:- 24.2°N 121.7°E, Formosa. h = about 33 Kms. -H= 13 h 38 m 41.0 s (USCGS). Mag : 4.8.					
	25° N, 122.2° E, Formosa. -H= 13 h 38 m 35.5 s (Shillong).					
	Tocklai	E	eP	13 44 12		
	Shillong	Z	iP	13 44 23	3040	Rarefaction. Initial ground motion towards East.
		E	i	44 54		
			iS	49 03		
			SS	50 19		
			M	53 35		



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<u>March, 1963.</u>						
04	Port Blair	E	eP	13 44 54	3370	
			eS	49 54		
			LQ	51 30		
			LR	52 54		
			M	55 28		
	Calcutta	E	iP	13 44 57	3480	Period = 14 secs. u = 70.
			iS	50 04		
			M	56 18		
04	Chatra	ZNE	iP	13 45 03	3450	Initial ground motion Northeast. Rarefaction.
		NE	PP	46 04		
			PPP	46 13		
			PcP	47 57		
			iS	50 08		
			LQ	51 30		
			SS	51 55		
			SSS	52 06		
			LR	53 58		
			M	55 28		
			ScS	55 43		
		E	Mn	14 00 01		Period = 9 secs. u=30.
		N	Mn	14 00 01		Period=10 secs. u =30.
04	Bokaro	NE	iP	13 45 15	3730	
		E	PP	46 26		
			PPP	46 43		
			PcP	47 48		
		NE	eS	50 37		
		E	PcS	51 35		
			LQ/SS	52 38		
			SSS	53 04		
		NE	LR	54 21		
			M	57 04		
04	Visakhapatnam	NE	iP	13 45 47	4080	Distant. Initial ground motion North East.
		E	ePP	47 06		
			ePPP	47 20		
		NE	iS	51 31		
			iPcS	51 38		
		E	eSS	53 52		Period=13.6secs. Amp.= 11.1 mm.
			eLR	56 00		
		NE	eM	59 19		
	Dehra Dun	EZ	eP	13 46 09	4330	Initial ground motion West. Rarefaction.
		EN	PP	47 43		
			PPP	48 06		
			PcP	48 21		
			iS, PcS	52 09		
			SS	54 48		
			LQ	54 57		
			SSS	55 21		
			LR	56 49		
			M	14 00 01		

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<u>March, 1963.</u>						
04	Delhi	EZ	iP	13 46 16	4390	Initial ground motion East. Compression.
		ENZ	i	46 20		
			i	46 32		
			i	47 38		
		EZ	PP	47 56		
			PcP/PPP	48 18		
			PcS/ScP	52 12		
		ENZ	iS	52 19		
			PS	52 26		
			PPS	52 36		
		NZ	i	53 43		
		ENZ	SS	55 19		
		EN	LQ	55 33		
		E	i	56 01		
		ENZ	SSS	56 11		
			ScS	56 31		
			LR	57 43		
	Madras	E	iP	13 46 25	4490	Initial ground motion East.
			PP	48 04		
			PPP	48 32		
			e	49 32		
			eS	52 34		
			LQ	55 34		
			ScS	56 26		
			LR	57 41		
			M	14 00 53		
04	Hyderabad	E	iP	13 46 26	4550	Intensity North-Eastward.
			PP	48 05		
			PPP	48 50		
			iS	52 39		
			SS	55 23		
			SSS	56 14		
			LR	57 50		
			M	14 00 50		
						Period=9secs. u=7.
	Sehore	E	eP	13 46 30		
	Kodaikanal	E	iP	13 46 52	4890	Initial ground motion East.
			ePcS	53 01		
			e	57 40		
			e	14 05 49		
	Poona	NEZ	iP	13 46 55	4960	Rarefaction. Initial movement North-East
		N	eS	53 32		
			eSS	57 00		
			eSSS	58 50		
			M	14 00 03		
	Colaba (BOMBAY)	NEZ	eP	13 47 03	5090	
		NE	PP	48 55		
		N	e	53 29		
		NE	eS	53 47		
		Es	PS	53 56		
		NE	PPS	54 05		
		N	ScS	56 43		



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<u>March, 1963.</u>						
04	Colaba (Contd.)	NE	e	13 57 14		Period=17secs. u=25. Period=14secs. u=10.
		E	LQ	58 04		
		E	SSS	58 17		
		N	M	14 05 32		
		E	M	05 35		
04	Shillong	Z	eP	14 48 49		Slight, distant.
04	Epc:- 35.2°N 25.4°E Crete. h= about 42 Kms. -H= 15 h 10 m 19.2 s (USCGS). Mag : 4.8.					
	Delhi	Z	iP	15 18 25		Distant.
	Dehra Dun	Z	iP	15 18 26		Rarefaction.
	Poona	Z	eP	15 18 39		Compression.
	Chatra	Z	iP	15 19 33		Distant, rarefaction.
			e	27 04		
	Madras	E	eP	15 19 39		Distant, compression.
			e	27 24		
			e	29 14		
	Shillong	Z	iP	15 20 02		
04	Shillong	Z	eP	15 46 16		Slight, distant.
04	Shillong	Z	iP	15 58 35		Slight, distant, rarefaction.
04	Epc:- 4.5°S 81.6°W, Off coast of Northern Peru. h = about 33 Kms. -H= 15 h 43 m 04.0 s (USCGS). Mag: 5.4.					
	Chatra	Z	iPKP	15 59 22		Rarefaction.
			e	16 02 55		
	Madras	E	ePKP	15 59 25		Slight, rarefaction.
			e	16 03 51		
			e	23 15		
			e	17 05 29		
	Dehra Dun	Z	ePKP	16 00 20		Slight.
		Z	e	02 23		
		Z	i	02 26		
	Delhi	Z	iPKP	16 02 45		
	Poona	Z	ePKP	16 02 52		Slight, rarefaction.
	Shillong	Z	ePKP	16 02 56		Slight, distant, compression.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.	DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.							March, 1963.						
04	✓ Colaba (BOMBAY)	N E	ePKP e e eSS e M M	16 02 57 03 05 07 01 22 25 25 58 17 15 - 18 -		Slight.	05	Poona	Z	iP eS iSS eSSS M	02 38 06 40 33 41 05 41 17 43 40	1350	Slight, compression.
	Port Blair	E	e Mn	16 03 28 17 22 13		Slight. Period=18.7 secs. u = 9.1.		Colaba	Z EsZ NE	eP eS M	02 38 08 40 34 43 -	1430	Feeble.
04	Delhi	Z	iP	18 51 43		Slight, compression.		Calcutta	E	e i	02 39 30 40 15		Slight.
	Dehra Dun	Z	iP	18 51 44		Tremor, compression.		Madras	E	e e e	02 41 49 42 31 43 53		Slight.
04	Shillong	Z	iP	19 16 47		Slight, distant, compression.	5	Shillong	Z	eP	03 39 51		Slight, local.
04	Delhi	Z	iP	22 04 09		Tremor, compression.	5	Epc:- 4.5°S 81.5°W, Off coast of Northern Peru. h = about 33 Kms. -H= 07 h 05 m 01.7 s (USCGS). Mag : 5.6.					
04	Chatra	Z	eP eS	23 02 41 03 19	240	Feeble.		✓ Delhi	Z	iPKP	07 24 34		Rarefaction.
	Delhi	Z	iP	23 03 36		Tremor, rarefaction.		✓ Shillong	Z	iPKP	07 24 58		Distant, compression.
05	Epc:- 29.2° N 81.2° E, Nepal. h = about 35 Kms. -H= 02 h 35 m 07.8 s (USCGS). 28.8° N 81.1° E, West Nepal. -H= 02 h 35 m 10 s (Shillong)							✓ Chatra	Z	ePKP	07 25 03		Distant.
	Dehra Dun	Z	ePn P* i Pg iSn S* SS Sg SSS	02 35 54 35 57 36 02 36 02 36 27 36 31 36 37 36 41 36 48	290	Slight.		✓ Dehra Dun	Z	iPKP i	07 25 43 25 46		Compression.
	Delhi	Z E	iP i iS i	02 36 02 36 16 36 41 36 58	360	Slight, compression.	5	Dehra Dun	Z EN	iP i	08 48 39 48 51		Slight, compression.
	Chatra	Z ZNE	iP iS	02 36 39 37 49	670	Slight, compression.		Delhi	Z	iP iS	08 49 01 49 31	270	Slight, compression.
	Sehore	E E NE	eP eS i i	02 36 52 38 12 38 53 38 57	770	Slight.		Dehra Dun	Z	e	11 49 29		Tremor.
	Shillong	Z	iP eS	02 37 36 39 30	1090	Slight, compression.		Shillong	Z	iP	13 15 13		Slight, distant, rarefaction.
								Shillong	Z	iPg Sg	16 20 51 21 04	110	Slight, rarefaction.
								Shillong	Z	eP	19 56 15		Slight, near.
								Shillong	Z	iP	21 17 32		Slight, distant, rarefaction.
								Epc:- 28° N 83° E in Nepal. -H= 02 h 59 m 55 s GMT (New Delhi)					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
06	Chatra	Z	eP iS iSg	03 01 02 01 50 02 13	460	Feeble.
06	Delhi	Z	Pn P Pg Sn S* Sg	03 01 04 01 12 01 21 01 56 02 07 02 17	470	Slight, compression.
	Dehra Dun	Z	e	03 01 12		Tremor.
	Bokaro	E E	ePg iS	03 01 35 02 41	550	Slight.
06	Shillong	Z	eP	03 01 57		Slight, distant.
06	Epc:- 28.9° N 132.2° E, Ryukyu Island. h = about 55 Kms. -H= 04 h 37 m 44.5 s (USCGS). Mag: 4.4.					
	Shillong	Z	iP	04 44 41		Distant, rarefaction.
	Chatra	Z	iP	04 45 14		Distant, rarefaction.
	Dehra Dun	Z	e	04 46 10		
	Delhi	Z	eP	04 46 19		
06	Delhi	Z	eP	08 03 19		Tremor.
06	Bokaro	NE	iP	08 07 02		Feeble, local.
06	Bokaro	NE	i	08 17 15		Slight, tremor.
06	Epc:- 33.8° N 2.6° E, West Pakistan. h = about 36 Kms. -H= 08 h 35 m 03.7 s (USCGS). Mag: 4.3.					
06	Dehra Dun	Z	iP i i ENZ i	08 36 31 36 54 38 06 38 20		Rarefaction.
	Delhi	Z EZ	iP iS	08 36 39 38 26	1040	Rarefaction.
	Poona	Z	eP M	08 38 39 43 03		Very slight.
	Chatra	Z	iP	05 38 40		Slight, distant, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1964.</u>						
06	Bokaro	E	eP iS	08 38 43 43 28	3120	Slight.
06	Bokaro	NE	iP	09 31 35		Feeble, local.
06	Shillong	Z	ePn eSg	10 36 34 36 57	180	Slight, near.
06	Delhi	Z	iP	11 19 08		Tremor, compression.
06	Dehra Dun	Z	e	15 37 27		Tremor.
06	Shillong	Z	iP	18 05 19		Slight, near, compression.
06	Shillong	Z	iP	20 01 19		Slight, distant, compression.
06	Dehra Dun	Z	e	20 12 42		Tremor.
	Chatra	Z	eP eS	20 13 25 20 14 33	640	Feeble.
	Shillong	Z	iP	20 14 21		Slight, near, compression.
06	Dehra Dun	Z	e	20 40 56		Tremor.
06	Delhi	Z Z	P S	21 12 59 13 44	450	Slight, rarefaction.
06	Delhi	Z	iP	21 41 32		Slight, rarefaction
	Chatra	Z	iP iS	21 48 23 21 49 11	440	Feeble, compression.
	Shillong	Z	iP	21 48 42		Slight, near, compression.
06	Shillong	Z	eP	23 20 11		Slight, near.
07	Delhi	Z	eP	00 55 09		Tremor.
07	Shillong	Z	iP	01 59 08		Slight, distant, rarefaction.
07	Epc:- 27.0° S 113.5° W, Approximately 500 Kms West of Easter Island. h = about 33 Kms. -H= 05 h 22 m 01.1 s (USCGS). Mag: 6 ³ / ₄ (Pas), 6 ³ / ₄ (Berk) 5.6(CGS).					
	Chatra	Z	ePKP	05 41 54		Very distant.



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07 Port Blair E iPKP 05 41 55
 i 45 52
 e 48 08
 i 53 01
 i 55 46

Shillong Z ePKP 05 41 57 Distant.
 E e 46 15

Dehra Dun Z e 05 42 07

Colaba NEZ ePKP 05 42 07
 (BOMBAY) NEZ e 47 12
 E e 54 37
 e 06 08 05
 M 56 42
 M 57 36
 Period 19 secs. $u=3$.
 Period=19secs. $u=5$.

07 Poona Z ePKP 05 42 08 Compression.
 i 43 17

Delhi Z iPKP 05 42 08 18970 Rarefaction.
 Z ePP 47 90
 N SS 06 08 12
 e 11 08
 SSS 15 00
 i_i 18 57
 ENZ M 22 46
 Period = 20 secs.
 $u = 20.5$ mm.

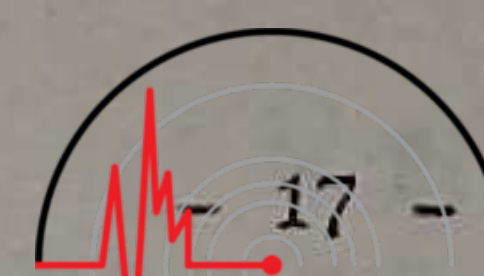
Madras ePKP 05 42 19 17830
 PKP 43 05
 PKS 45 49
 PP 46 40
 SKS 49 28
 PPP 50 27
 e 53 56
 SKSP 57 16
 SS 06 06 55
 SSS 13 12
 LR 38 28

Bokaro E ePKP 05 42 20 Very distant.
 i 46 33
 i 54 12
 i 06 00 19

Kodaikanal E i 05 42 48 Distant.

07 Epc:- 44.3° S 75.3° W, Near coast of Southern Chile.
 $h =$ about 45 Kms.
 $-H =$ 12 h 16 m 28.5 s (USCGS).
 Mag : 5.6.

Colaba NEZ ePK₁P 12 35 57
 (BOMBAY) Z e 39 15
 E e 55 15
 e 59 55



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March, 1963.

07 Poona Z ePKP 12 35 58 Compression.
 Madras E ePKP 12 36 11 16360
 PKP₂ 36 20
 PP 39 42
 PKS 39 50
 SS 58 36
 LR 13 26 16

Delhi Z iPKP 12 36 16 17000 Rarefaction.
 Z PP 40 11

Shillong Z iP 12 36 21 Distant, rarefaction.

Port Blair E iP 12 36 07
 i 37 45

Calcutta E e 12 36 23

Dehra Dun ZE iPKP 12 36 24 Rarefaction.
 NZ i 36 34
 Z i 36 42
 Z i 36 57
 i 40 28

Bokaro E ePKP 12 36 28
 i 40 31

Chatra NE eP 12 36 31 Slight, distant.

07 Shillong Z iP 13 54 02 Slight, distant, compression.

07 Shillong Z iPn 15 39 07 200 Slight, compression.
 iSg 39 53

07 Shillong Z eP 20 05 21 Slight, near.

07 Calcutta E e 20 53 47 Slight.

07 Epc:- 36.1° N 71.2° E, Hindukush.
 $h =$ about 202 Kms.
 $-H =$ 21 h 49 m 32.6 s (USCGS).
 36° N 71.8° E, Hindukush.
 $-H =$ 21 h 49 m 20 s (Shillong).

Dehra Dun ENZ iPn 21 51 22 850 Slight. Near shock.
 Z i 51 23 First ground move-
 ENZ PP 51 29 ment towards North-
 PPP 51 36 East. Rarefaction.
 P* 51 42
 Pg 52 03
 LQ 52 40
 iS 52 50
 SS 53 01
 LR 53 03
 SSS 53 13
 S* 53 21
 Sg,M 53 39

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
07	Delhi	EZN E	iP iS	21 51 32 53 10	960	Slight. First ground motion South-West. Compression.
	Sehore	N E	iP eS	21 32 37 21 55 04	1450	
07	Bokaro	E	iP PPP S SS SSS LM	21 53 23 53 44 56 27 56 47 57 01 57 22	1840	Slight.
	Colaba (BOMBAY)	NZ NE NE E	eP E e e	21 53 25 56 39 56 57 59 39		Slight.
	Poona	NZ Z	iP i	21 53 28 21 55 38		Compression (Slight.)
	Shillong	ZE E	iP eS e	21 53 57 57 32 57 42	2220	Slight, rarefaction. Initial ground motion towards East.
	Visakhapatnam	NE N	iP ePP iS eSS	21 54 09 54 31 58 07 58 48	2430	Slight, distant. First ground movement N.W.
	Madras	E	eP PP PPP e eS LQ LR	21 54 38 55 08 55 20 56 00 58 52 59 21 22 00 44 02 27	2650	Slight. 0 = 21, 49 m 22 s.
08	Shillong	ZE	iP eS	02 32 17 32 49	290	Slight.
	Chatra	Z	iP	02 33 19 02 34 37	740	Feeble.
08	Delhi	Z	iP	02 38 58		Tremor, compression.
08	Shillong	Z	iP	02 57 19		
08	Shillong	Z	eP	03 37 41		Slight, distant.
08	Shillong	Z	eP	03 45 50		Slight, distant.
08	Epc:- 19.3°S 169.6° E . New Hebridges Islands . Felt Tanna . h = about 33 Kms. -H= 03 h 33 m 03.4 s (USCGS).					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
08	Madras	E	eP PP PPP e LQ	03 49 19 51 22 52 31 57 02 04 02 55	6140	Slight.
	Colaba	E E E	e e e	03 50 03 51 11 57 47		Slight.
08	Bokaro	E	iP	07 29 00		Feeble, local.
08	Epc:- 13° N 91½° E in Bay of Bengal. -H= 11 h 44 m 55 s GMT (New Delhi)					
08	Port Blair	SE	eP eS	11 45 23 11 45 42	160	Slight.
	Madras	E	eP LQ eS? M	11 47 28 49 19 49 26 50 45	1150	Slight.
	Shillong	Z	eP	11 47 44		Slight, distant.
	Chatra	Z	eP	11 48 18		Feeble, distant.
	Bokaro	E	eP S i	11 49 33 52 36 54 54	1840	Slight.
	Dehra Dun	Z	eP	11 49 41		Feeble .
	Poona	Z	M	11 52 18		No other phases identified.
	Delhi	Z	eP	11 53 11		Slight, rarefaction.
8	Chatra	Z	eP eS	14 11 39 12 59	770	Feeble.
8	Chatra	Z	eP eS	14 14 12 14 14 35	190	Feeble.
8	Chatra	Z	eP	14 18 14 14 18 33	160	Feeble.
8	Chatra	Z	iP	14 47 35 14 47 57	170	Slight, rarefaction.
8	Shillong	Z	iP	14 48 30		Slight, distant, compression.
	Delhi	Z	iP	14 49 19		Slight, compression.
8	Epc:- 25°N 86.5° E Nepal Tibet Border. -H= 14 h 58 m 15 s GMT (New Delhi).					



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08	Chatra	Z	iP	14 58 44	360	Slight, rarefaction.
		ZNE	iS	14 59 05		
	Shillong	Z	iP	14 59 38		Slight, distant, compression.
	Dehra Dun	Z	eP	15 00 08		Tremor.
			i	01 21		
	Bokaro	NE	eS	15 00 21		Slight, tremor.
	Delhi	Z	iP	15 01 28		Slight, rarefaction.
08	Chatra	Z	eP	15 45 35	160	Feeble.
			eS	15 45 54		
08	Shillong	Z	iP	16 17 39		Slight, distant, compression.
08	Shillong	Z	eP	16 24 22		Slight, near.
08	Epc:- $29\frac{3}{4}^{\circ}$ N $85\frac{1}{2}^{\circ}$ E in Tibet. -H= 18 h 03 m 30 s GMT (New Delhi).					
08	Chatra	Z	eP	18 04 26	380	Feeble.
			eS	05 07		
	Shillong	Z	eP	18 05 17		Slight, near.
	Bokaro	NE	eS	18 06 10		Slight, tremor.
08	Shillong	Z	eP	19 19 26		Slight, near.
08	Shillong	Z	iPg	21 16 45	110	Slight.
				16 58		
	Chatra	Z	eP	21 17 37	480	Feeble.
				18 28		
08	Shillong	Z	iP	22 46 02		Slight, distant, compression.
09	Shillong	Z	iP	00 11 23		Slight, near.
09	Chatra	Z	eP	01 10 46	180	Feeble.
				01 11 08		

09	Poona	E	eP	02 20 20		
	Delhi	Z	iP	02 21 16	1600	Rarefaction.
			iS	23 57		
	Dehra Dun	Z	eP	02 21 32		
		EZ	i	21 38		
		Z	i	24 02		
09	Madras	E	iP	02 22 04	2350	Initial ground motion West.
			PP	22 26		
			PPP	22 36		
			iS	25 55		
			LQ	26 07		
			LR	26 54		
			M	28 35		
	Chatra	Z	eP	08 22 49		Distant.
	Shillong	Z	eP	02 23 25		Distant.
09	Dehra Dun	Z	e	05 02 30		Tremor.
09	Shillong	Z	eP	05 33 56		Slight, near.
09	Delhi	Z	eP	05 35 46		Tremor, compression.
09	Shillong	Z	iP	06 52 35		Slight, distant, rarefaction.
	Dehra Dun	Z	iP	06 53 28		Tremor, rarefaction.
	Delhi	Z	eP	06 53 38		Slight, rarefaction.
09	Dehra Dun	Z	eP	09 12 14	220	Slight.
			iSg	13 04		
	Delhi	Z	iP	09 12 26	280	Slight, compression.
			iS	12 57		
09	Delhi	Z	iP	10 54 32		Slight, compression.
09	Dehra Dun	Z	ePn	11 13 48	280	Slight, near shock.
			i	13 49		
			P*	13 51		
		EZ	PP	13 55		
			PPP	14 01		
			LQ	14 09		
		ENZ	LR	14 17		
			iSn	14 20		
			S*	14 25		
			Sg	14 30		
			SSS	14 41		
	Delhi	NZ	iP	11 13 57	370	Slight, rarefaction.
		ENZ	iS	14 37		

09 Epc:- 21.9° N 62.0° E, Arabian Sea.
h = about 33 Kms.
-H= 02 h 17 m 39.5 s (USCGS).
Mag: 5.1 .

Colaba

ZES	eP	02 20 12	1100
NE	PPP	20 27	
ZNE	LQ	21 56	
E	eS	22 05	
	S	22 17	
	LR	22 30	
	M	24 -	

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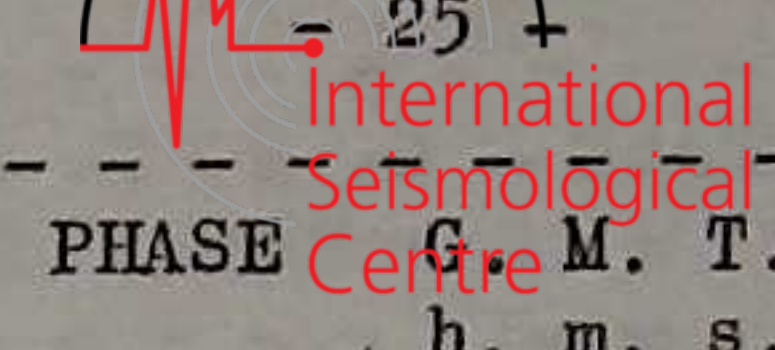
DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
<u>March, 1963.</u>						
09	Shillong	Z	eP	11 15 29		Slight, near.
	Bokaro	E	eP S	11 15 30 16 52	790	Slight.
	Poona	Z	eP	11 15 59		Slight.
09	Colaba	Z	e e e	11 19 41 19 48 19 54		Feeble.
	Madras	E	e e	11 20 01 21 31		Feeble.
09	Shillong	Z	iP	16 33 51		Slight, distant, compression.
09	Dehra Dun	Z	e	16 35 16 35 21		Tremor.
	Delhi	Z	eP	16 35 17		Slight, rarefaction.
09	Colaba	E	e	16 45 13 50 17		Slight.
09	Shillong	Z	eP	17 03 11		Slight, distant.
09	Delhi	Z	eP	17 05 09		Feeble, rarefaction.
09	Colaba	Es	e e	19 10 07 17 19		
09	Delhi	E	eP	20 34 20		Slight, rarefaction.
09	Poona	Z	eP	22 05 18		Slight.
10	Delhi	Z	eP	00 04 20		Slight, compression.
10	Shillong	Z	iP	01 02 16		Slight, distant, compression.
10	Shillong	Z	iP	01 31 53		Slight, distant, compression.
10	Shillong	Z	iP	01 38 18		Slight, distant, compression.
	Dehra Dun		iP	38 30		Tremor, compression.
10	Chatra	Z	iP	02 34 24	160	Feeble, rarefaction.

10 Epc:- 24.7° N 122.1° E, Near East coast of Formosa.
 h = about 33 Kms.
 -H= 02 h 53 m 33.0 s (USCGS),
 Mag : 4.9.
 26° N 123° E, North-east of Formosa.
 -H= 02 h 53 m 22 s (Shillong)

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
<u>March, 1963.</u>						
10	Shillong	ZE NE E	iP iS SSS M	02 59 16 03 03 56 05 26 08 14	3070	Rarefaction. First ground motion towards East.
	Calcutta	E	iP PP iS LR M	02 59 51 03 00 51 04 58 08 13 11 17	3480	
	Bokaro	NE E NE E	iP PcP S SSS	03 00 08 02 40 05 27 07 55	3680	Initial ground motion towards East.
		NE	LR ScS M	09 12 10 16 11 54		
	Port Blair	E	i e e	03 00 32 02 44 04 59		
	Visakhapatnam	E NE E	iP ePP iS eSS	03 00 40 02 08 06 29 09 10	4150	Distant. First ground movement East.
	Dehra Dun	EZ N E	iP eP PP PPP	03 01 02 01 02 02 32 02 59	4330	First ground motion towards West. Rarefaction.
		EN	iS/PcS LQ SSS	07 02 09 58 10 22		
		EN	LR M	11 55 15 10		
	Madras	E	iP PP PPP PcS/ScP iS LQ ScS LR M	03 01 16 02 54 03 27 07 07 07 33 10 42 11 26 12 40 16 07	4620	Initial ground motion towards East.
	Delhi	ENZ NZ	iP PP PcP PPP iS	03 01 16 02 52 02 10 03 42 07 21	4420	Initial ground motion East. Rarefaction.

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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
March, 1963.						
10	✓ Poona	EZ EN M	iP iS PPS Lr M	03 01 48 08 27 08 50 15 41 18 30	5000	Initial ground motion North, East. Rarefaction.
	✓ Colaba (1280) (BOMBAY)	ZE E	eP e e e M M	03 01 57 03 45 08 42 12 14 19 - 20 -		
10	Dehra Dun	Z	eP	05 10 23		Tremor.
10	Dehra Dun	Z Z	eP i	05 58 50 06 00 18		Tremor.
10	Shillong	Z	iP	09 51 15		Slight, distant, rarefaction.
10	Epc:- 29.9° S 71.2° W Neat coast of Central Chile. h = about 70 Kms. -H= 10 h 51 m 48.1 s (USCGS). Mag : 6-6 $\frac{1}{4}$ (Pas) 5.5 (cgs).					
10	✓ Poona	Z	iPKP	11 11 25		Rarefaction.
	✓ Colaba (BOMBAY)	E	ePKP e e	11 11 30 12 23 25 19		
	✓ Dehra Dun	Z	ePKP i i	11 11 36 11 43 11 50		Feeble.
	✓ Bakaro	E	ePKP	11 11 44		
	✓ Chatra	Z	ePKP	11 11 44		
	✓ Shillong	Z	iPKP	11 11 46		Distant, rarefaction.
10	✓ Shillong	Z	iP	11 58 26		Slight, distant, rarefaction.
10	Epc:- 2.4° N 126.6° E, Celebes Sea. h = about 41 Kms. -H= 13 h 51 m 09.3 s (USCGS).					
	✓ Shillong	Z	iP	13 58 41		Slight, distant, rarefaction.
	✓ Bokaro	E	iP	13 59 16		Slight.
	✓ Chatra	Z	iP	13 59 18		Feeble, distant, rarefaction.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
March, 1963.						
10	✓ Dehra Dun	Z	iP	14 00 24		Tremor, compression.
	✓ Poona	Z	iP	14 00 26		Slight, compression.
10	Dehra Dun	Z	i	18 11 22		Tremor.
10	Dehra Dun	Z	eP	21 51 31		Feeble.
11	Dehra Dun	Z	eP	05 12 30		Tremor.
11	Epc:- 38.1° N 29.3° E Turkey. h = about 33 Kms. -H= 07 h 27 m 22.0 s (USCGS). Mag : 5.5.					
	✓ Dehra Dun	Z	eP	07 35 01		
	✓ Colaba (BOMBAY)	NE	eP eS	07 35 13 41 39	4700	
	✓ Poona	Z	iP	07 35 23		Compression.
	✓ Chatra	Z	eP	07 36 10		Distant.
	✓ Madras	E	eP PP e eS LR M	07 36 26 37 34 41 46 43 47 45 21 48 21	5730	
11	✓ Port Blair	E	i e	07 37 43 07 46 10		
11	Dehra Dun	Z	e	09 52 42		Tremor.
11	Epc:- 36.7° N 71.1° E, Hindukush. h = about 189 Kms. -H= 10 h 27 m 42.1 s (USCGS). Mag : 4.7.					
	Dehra Dun	ZE Z	iP i i	10 29 47 30 35 31 16		Rarefaction.
	Chatra	Z	iP	10 31 29 10 34 30		Distant, rarefaction.
11	Bokaro	W	eP	10 31 40 35 02	2030	
	Poona	Z	eP Mn	10 31 43 10 37 00		
	Shillong	Z	iP	10 32 10		Distant, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
<u>March, 1963.</u>						
11	Madras	E	e	10 37 50		Seismic activity discernable.
11	Shillong	Z	eP	15 31 09		Slight, near.
	Dehra Dun	Z	e	15 31 59		Tremor.
	Delhi	Z	iP	15 32 03		Tremor, compression.
11	Dehra Dun	Z	e	18 59 14		Tremor.
	Chatra	Z	eP	18 59 16		Feeble, distant.
	Shillong	Z	iP	18 59 24		Slight, distant, rarefaction.
11	Shillong	Z	iP	20 43 25		Slight, distant, rarefaction.
11	Shillong	Z	iP	21 18 08		Slight, distant, rarefaction.
11	Shillong	Z	iPg iSg	22 25 51 25 57	50	Slight, near.
11	Shillong	Z	iP	23 58 50		Slight, near, compression.
12	Delhi	Z	iP	01 38 39		Slight, compression.
	Dehra Dun	Z	e	01 38 59		Tremor.
12	Port Blair	Z	iPg eSg	07 54 18 07 54 26	70	Slight, compression.
12	Shillong	Z	ePg eSg	13 11 34 11 44	90	Slight.
12	Shillong	Z	ePg eSg	13 24 35 24 41	40	Slight.
12	Shillong	Z	iP	18 35 36		Slight, distant, rarefaction.
12	Shillong	Z	iP	20 27 33		Slight, distant, compression.
12	Epc:- 7.1° S 156-3° E Solomon Islands. h = about 97 Kms. -H= 20 h 40 m 12.8 s (USCGS) Mag : 5.2 .					
	Shillong	Z	iP	20 51 18		Distant, rarefaction.
	Chatra	Z	iP	20 51 45		Distant, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
<u>March, 1963.</u>						
12	Dehra Dun	Z	iP	20 52 31		Compression.
	Dehra Dun	Z	iP	21 15 05		Tremor.
12	Shillong	Z	iP	21 17 03		Slight, distant, compression.
12	Dehra Dun	Z	eP	23 00 03		Tremor.
12	Shillong	Z	eP	23 07 44		Slight, near.
13	Shillong	Z	eP	03 10 43		Slight, near.
13	Dehra Dun	Z	e	08 23 03		Tremor.
	Delhi	Z	iP	08 23 51		Slight, rarefaction.
13	Shillong	Z	eP	10 35 57		Slight, near.
13	Chatra	Z	iP eS	11 05 49 06 05	110	Feeble.
13	Shillong	Z	eP	12 45 49		Slight, near.
13	Chatra	Z	eP	12 48 26		Feeble, near.
13	Shillong	Z	iP	15 02 17		
13	Dehra Dun	Z	e	16 59 32		Tremor.
13	Dehra Dun	Z	eP i	17 29 24 31 04		Tremor.
	Delhi	Z	iP iS	17 29 35 31 13	940	Slight, compression.
	Chatra	Z	iP	17 31 10		Feeble, near.
13	Shillong	Z	eP	18 02 53		Slight, distant.
13	Chatra	Z	iPg eSg	19 02 19 02 31	100	Feeble.
	Shillong	Z	eP	19 03 05		Feeble, near.
13	Shillong	Z	iP	19 23 22		Slight, distant, compression.
13	Shillong	Z	iP	22 08 39		Slight, near, compression.
13	Shillong	Z	iPn eSg	22 22 02 22 35	240	Slight, rarefaction.
14	Chatra	Z	iPg Sg	04 39 59 40 12	110	Feeble, rarefaction.

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14	Shillong	Z	eP	04 40 54		Slight, near.
14	Shillong	Z	eP	04 59 51		Slight, near.
14	Shillong	ZE	Pn iSg	07 24 48 25 03	130	Slight.
14	Chatra	Z	eP i i	07 25 25 07 25 31 07 26 00		Feeble.
14	Epc:- 19.0°N 120.4° E. Off coast of northern Luzon, Philippines. h = about 51 Kms. -H= 08 h 00 m 15.6 s (USCGS). Mag : 5.0.					
	Shillong	Z	iP	08 05 55	3020	Compression.
		E	iS	10 35		
	Port Blair	EZ	e	08 05 56 06 55 09 16		
	Chatra	Z	iP	08 06 33		
	Bokaro	E	iP PP PcP	08 06 41 07 59 08 57	3630	
		NE	S	11 57		
		E	PcS	12 53		
			SSS	15 00		
			LR	16 10		
		NE	ScS	16 58		
			M	19 05		
14	Madras	E	iP e PPP eS? LQ LR M	08 07 38 08 07 09 30 13 37 16 22 18 22 21 32	4320	
	Dehra Dun	EZ Z E	eP i PP PcP	08 07 45 07 55 09 20 09 54	4360	
		EN	iS	13 46		
		E	SS	16 31		
	Delhi	EZ	P PP PPP	08 07 48 09 28 09 48	4360	
		N	S	13 49		
		EN	SSS	16 57		
		N	i i	19 37 20 37		

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<u>March, 1963.</u>						
14	Poona	Z	iP	08 08 17	4860	Compression.
		E	eS	08 14 47		
14	Colaba	EZ	eP	08 08 25	4050	Slight.
		E	eS	15 01		
		Es	Ps	15 11		
			PPS	15 19		
		E	SS	18 25		
		N	M	26 -		
		E	M	31 46		Period=13 secs. $\mu=2$.
14	Shillong	Z	iP	18 39 54		Slight, distant, compression.
	Chatra	Z	e	18 40 13		Feeble, distant.
	Dehra Dun	Z	iP	18 40 41		Tremor, compression.
14	Shillong	Z	eP	19 00 41		Slight, near.
14	Shillong	Z	eP i i	19 33 26 33 29 33 38		
14	Shillong	Z	iP	19 54 58		Slight, distant, compression.
	Chatra	Z	eP e	19 55 38 19 57 17		Feeble, near.
14	Shillong	Z	ePg eSg	21 06 45 07 01	130	Slight.
14	Shillong	Z	ePg Sg	21 27 36 27 45	60	Slight.
14	Shillong	Z	eP	23 25 28		Slight, distant.
15	Epc:- 5.0°S 129.6°E, Banda Sea. h = about 295 Kms. -H= 23 h 15 m 23.2 s (USCGS). Mag : 4.8.					
	Port Blair	Z	iP i	00 11 09 00 22 38		
	Shillong	Z	iP	00 12 08		Distant, compression.
	Chatra	Z	iP	00 12 41		Distant, compression.
	Madras	E	iP eS LQ LR M	00 12 44 19 50 24 14 26 24 30 57	5480	

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15	/ Poona	Z	iP	00 13 36		Compression.
	/ Delhi	Z	iP	00 13 41		Rarefaction.
	/ Dehra Dun	Z	iP	00 13 42		Compression.
15	Delhi	ZNE E	iP i	00 21 33 23 06		
15	Epc:- 8.4° N 126.4° E, Mindanao, Philippine Islands. h = about 117 Kms. -H= 00 h 16 m 01.3 s (USCGS). Mag : 5.0 .					
	/ Shillong	ZE E	iP i iS	00 23 03 34 52 28 35	3900 2 2/3	
	/ Chatra	Z	eP e	00 23 39 00 30 44		Distant.
	/ Bokaro	NE E NE E	P PcP PP PPP	00 23 41 25 18 25 39 26 13	5020	
			S	30 21		
		NE	PS	30 28		
			SS	23 37		
		E	LQ	34 30		
15	/ Dehra Dun	Z E Z EN	iP eP i iS	00 24 47 24 47 25 01 32 16	5890	Rarefaction. Other phases not clear.
	/ Delhi	EN EN	iP e	00 24 48 27 03	5700	Initial ground motion South-West.
			e	31 57		Compression.
		E	iS	32 07		
		EN	i	35 59		
	/ Poona	Z	iP	00 25 00		Compression.
	/ Colaba (BOMBAY)	EZ	eP	00 25 06	6410	
			PP	27 21		
		E	PPP	28 43		
			eS	33 04		
		E	ScS	35 14		
			SS	35 33		
		NE	M	47		
15	Shillong	Z	eP	03 23 27		Slight, near.
15	Delhi	Z	iP	06 22 26		Slight, rarefaction.



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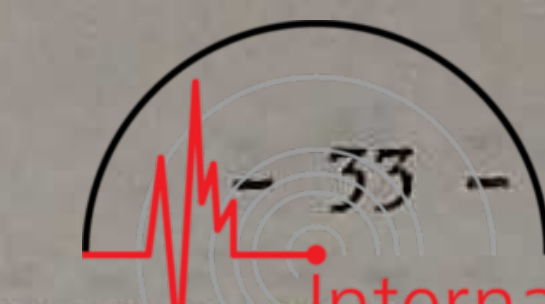
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15	Shillong	Z	iP	10 59 43		Slight, distant, rarefaction.
15	Chatra	Z	iP	11 00 23		Feeble, distant.
	Dehra Dun	Z	iP	11 01 35		Tremor, compression.
15	Dehra Dun	Z	e	12 23 02		Tremor.
15	Delhi	Z	eP	18 59 53		Feeble, rarefaction.
15	Shillong	Z	iP	22 24 36		Slight, near.
16	Epc:- 26.1° N 92.8° E, Assam, India. h = about 48 Kms. -H= 03 h 35 m 22.5 s (USCGS). Mag :- 4.5.					
	Shillong	ZE E	iPg eS	03 35 39 35 53	120	Felt at C.S.Obsy, Shillong, Chaparmukh, Umding, Assam.
	Tocklai	E	iPg iSg	03 35 51 36 13	180	
	Chatra	ZNE	eP eS	03 36 33 38 01	850	
	Calcutta	N	e	03 37 10		
	Dehra Dun	Z	eP	03 38 30		
	Delhi	Z	iP	03 38 38		
	Poona	Z	eP	03 39 21		
16	Dehra Dun	Z	e	05 28 32		Tremor.
16	Epc:- 46.5° N 154.7° E, Kurile Islands region. h = about 26 Kms. -H= 08 h 44 m 48.3 s (USCGS). Mag : 7 (Pas), 7 3/4 (Berk) 6 3/4 (Pal) 6.2 (CGS).					
	47° N 155° E Kurile Islands. -H= 08 h 44 m 45 s (Shillong). Mag : 7.4 (DLI).					
	/ Tocklai	E	eP eS	08 53 56 09 01 21	5810	
	/ Shillong	Z	eP eS	08 54 09 01 46	6030	
	/ Chatra	NE	iP PcP PPP PcS ScS SS	08 54 38 55 26 57 37 59 10 04 - 05 41		Initial ground motion South and West.

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16	✓ Chatra	NE	Lq/SSS	09 07 52	6460	Initial ground motion South, West. Compression.			
			LR	10 26					
		N	Mn	19 -					
		E	Mn	15 -					
									Period = 21secs. $\mu = 37$ Period = 17sec $\mu = 178.$
	✓ Calcutta	N	iP	08 54 47					
			iS	09 02 49					
	✓ Bokaro	E	iP	08 54 52					
	✓ Dehra Dun	ENZ	iP	08 54 55					
		EZ	PcP	55 40					
		EZ	PP	57 10					
		EZ	PPP	58 36					
		EZ	iS	09 03 08					
		EZ	PS	03 20					
		EZ	PPS	03 33					
EN		ScS	04 35						
E		SS	07 10						
E		SSS	09 44						
E		LQ	10 14						
E		LR	13 03						
E		PKKP ₁	15 37						
EN	M	18 12							
✓ Delhi	ENZ	iP	08 55 06						
	E	i	55 08						
	EZ	PcP	55 46						
	Z	PP	57 28						
✓ Delhi	ENZ	iS	09 03 19						
	Z	PS	03 53						
		PPS	03 57						
✓ Port Blair	ENZ	ScS	04 55						
	E	i	05 29						
	ENZ	SS	07 26						
	EZ	SSS	09 52						
	M	LR	12 55						
						Period = 20 secs. Amp. = 34 mm.			
	ZNE	iP	08 55 18						
✓ Port Blair	E	PP	08 57 38						
		PPP	08 59 06						
		i	08 59 53						
		iS	09 03 42						
		SS	09 07 43						
		i	09 10 01						
✓ Visakhapatnam	NE	iP	08 55 31						
		iPcP	55 59						
		iPP	57 57						
		iPPP	59 30						
		iS	09 04 17						
		iPS	04 34						
		iPPS	04 49						
		iSS	08 34						



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.			
✓	Visakhapatnam	NE	iSSS	09 11 36	7450	Period = 13.5 secs. Amp. 19.4 mm.			
			eLR	15 12					
			eM	19 32					
✓	Sehore	E	iP	08 55 31	7450				
			PcP	55 53					
			PP	58 04					
	NE	iS	09 04 24						
✓	Madras	E	iP	08 56 03	7800	Initial ground movement West.			
			PcP	56 28					
			PP	58 40					
			PPP	09 00 23					
			iS	05 14					
			PS	05 42					
			PPS	05 55					
			ScS/SeS	06 04					
			SS	09 47					
			SSS	12 49					
			LQ	14 23					
			LR	17 32					
			M	23 28					
✓	Poona	Z	iP	08 56 04	7880	Initial ground movement North, East. Compression.			
		N	PP	58 50					
			iS	09 05 20					
			SS	09 52					
			SSS	12 40					
			Lq	14 35					
			Lr	18 05					
			M	23 00					
6 ✓	Colaba (BOMBAY)	NEZ	iP	08 56 08	7890				
			PcP	56 25					
		NZ	PP	58 53					
		NEZ	iS	09 05 24					
		NE	PS	05 48					
			PPS	06 40					
		NEZ	SS	10 04					
			SSS	13 40					
			N	LQ			15 33		
✓		E	LR	17 44					
			M	09 28 26					
							Period = 19 secs. Amp. = 147 mm. Period = 21 secs. Amp. = 171 mm.		
✓	Kodaikanal	E	iP	08 56 22	8180				
			PP	59 01					
			iS	09 05 52					
			SS	10 37					
6	Shillong	Z	iP	13 03 29		Slight, near.			
6	Dehra Dun	Z	eP	19 18 41		Tremor.			

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16 Epc:- 38.9°N 71.8°E, Tadshik SSR.
h = about 73 Kms.
-H= 22 h 28 m 56.7 s (USCGS).
Mag : 5.0 .

STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.
Dehra Dun	Z	iPn	22 31 16	1110	Rarefaction.
		PP	31 23		
		PPP	31 30		
		P*	31 41		
		Pg	32 08		
	ENZ	iSn	33 10		
		SS	33 23		
	Z	LR	33 31		
	ENZ	SSS	33 34		
	Z	Sg,M	34 20		
Delhi	Z	iP	22 31 33	1180	Rarefaction.
	EN	eP	31 33		
	ENZ	eS	33 34		
Bokaro	E	iP	22 33 09		
		i	36 49		
Poona	Z	eP	22 33 31		Compression.
Shillong	Z	eP	22 33 40		
Madras	E	eP	22 35 52		
		e	39 27		
		e	40 20		
		e	42 28		
Colaba	E	e	22 37 39		Slight.
		e	39 34		
Calcutta	E	e	22 37 46		Slight.

Epc:- 27 $\frac{1}{2}$ °N 89 $\frac{1}{4}$ °E In Bhutan.
-H= 23 h 01 m 50 s GMT (New Delhi).

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.
16	Chatra	NE	eP	23 02 21	170	Slight.
			iS	23 02 43		
	Shillong	Z	iP	23 02 39		Slight, distant, rarefaction.
	Bokaro	E	eP	23 03 09		Slight.
16	Shillong	Z	eP	23 42 10		Slight, near.
17	Shillong	Z	iPg	00 33 34	100	Slight, near.
			eSg	33 46		
17	Dehra Dun	Z	e	03 13 34		Tremor.
17	Dehra Dun	Z	eP	05 54 46		Slight.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.
7	Delhi		iP	55 05	410	Slight, rarefaction.
			iS	55 50		
7	Delhi	Z	iP	08 05 27		Tremor, rarefaction.
7	Shillong	Z	iP	08 51 33		Slight, distant, compression.
7	Epc:- 46.0°N 155.0°E, Kurile Island Region. h = about 35 Kms. -H= 08 h 42 m 12.3 s (USCGS). Mag : 4.7 .					
	Dehra Dun	Z	iP	08 52 20		Tremor, rarefaction.
	Delhi	Z	iP	08 52 29		Slight, compression.
7	Shillong	Z	eP	10 42 51		Slight, distant.
	Dehra Dun	Z	e	10 43 17		Tremor.
7	Shillong	Z	iPg	13 11 30	110	Slight, compression.
			iSg	11 43		
7	Shillong	Z	iP	13 18 13		Slight, near, compression.
7	Dehra Dun	Z	eP	14 25 29		Tremor.
7	Shillong	Z	iP	14 27 24		Slight, distant, compression.
7	Dehra Dun	Z	eP	15 06 50		Tremor.
			e	08 22		
7	Delhi	Z	iP	15 07 08	960	Slight, compression.
			iS	08 47		
7	Dehra Dun	Z	eP	15 35 27		Tremor.
			e	36 57		
	Delhi	Z	iP	15 35 38	930	Slight, compression.
			iS	37 14		
	Shillong	Z	eP	15 37 57		Slight, distant.
7	Bokaro	E	iP	19 16 59		Slight.
			i	21 10		
7	Shillong	Z	eP	22 00 40		Slight, near.
7	Shillong	Z	iP	22 19 03	260	Slight, rarefaction.
			eSg	19 40		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
18	Dehra Dun	Z	eP i	00 47 18 48 58		Feeble..
	Delhi	Z	iP iS	00 47 31 49 15	1010	Slight, rarefaction
	Shillong	Z	iP	00 49 38		Slight, distant, compression.
18	Shillong	Z	iP	04 05 40		Slight, near, compression.
18	Shillong	Z	iP	08 40 17		Slight, distant, compression.
18	Shillong	Z	iP iS	10 45 15 45 45	220	Slight, compression
18	Shillong	Z	iP	11 47 36		Slight, distant, compression.
18	Shillong	Z	eP	15 53 57		Slight, near.
18	Shillong	Z	eP	16 58 45		Slight, near.
18	Shillong	Z	iPg iSg	19 16 25 16 30	40	Slight.
18	Shillong	Z	iPg iSg	20 52 35 52 47	100	Slight.
19	Shillong	Z	iP Sg	00 23 27 23 59	230	Slight.
19	Shillong	Z	iP	05 59 43		Slight, distant, rarefaction.
19	Shillong	Z	iP	06 26 56		Slight, near, compression.
19	Shillong	Z	iP	13 26 19		Slight, distant, compression.
19	Dehra Dun	Z	e	13 54 58		Tremor.
19	Shillong	Z	eP	14 54 27		Slight, distant.
19	Shillong	Z	eP	15 05 03		Slight, near.
19	Shillong	Z	iP	15 36 50		Slight, distant, rarefaction.
19	Shillong	Z	iP	17 26 16		Slight, near, compression.
19	Dehra Dun	Z	e	17 27 34		Tremor.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
19	Dehra Dun	Z	iP	18 41 07		Tremor.
19	Shillong	Z	iP	19 12 32		Slight, near, compression.
19	Shillong	Z	iP	19 15 11		Slight, distant, compression.
19	Dehra Dun	Z	iP	19 16 56		Tremor, rarefaction.
20	Shillong	Z	iP	00 06 53		Slight, distant, rarefaction.
20	Chatra	Z	eP iS	02 33 36 02 34 00	200	Feeble.
20	Chatra	Z	iP	02 43 26 02 43 43	130	Feeble, rarefaction.
20	Shillong	Z	eP	04 55 40		Slight, distant.
20	Epc:- 19.9°S 179.1°W, Fiji Island region. h = about 680 Kms. -H= 04 h 43 m 13.5 s . Mag : 5.2 Km.					
20	Shillong	Z	iPn iSg	04 58 16 58 46	220	Slight.
	Chatra	Z	eP i	04 58 55 04 59 57		Feeble.
		E	i	05 05 38		
	Dehra Dun	Z	e	05 01 13		Tremor.
20	Bokaro	W	iP i i	05 51 04 06 05 36 08 12		Slight, distant.
20	Shillong	Z	iP	07 13 39		Slight, distant, rarefaction.
	Dehra Dun	Z	iP	07 14 27		Tremor, compression.
20	Bokaro	NE	iP	09 07 09		Feeble, local.
20	Bokaro	NE	iS	10 20 54		Feeble, local.
20	Dehra Dun	Z	e	12 39 58		Tremor.
20	Epc:- 11.9°N 93.1° E, Andaman Island region. h = about 33 Kms. -H= 14 h 41 m 4.8 s (USCGS). Mag : 4.4.					
	Port Blair	Z	iP	14 41 59		Rarefaction. Felt locally.

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20	Visakhapatnam	NE	iP iS	14 44 31 46 21	1070	Slight, near. First ground move- ment South, East.
	Madras	E	iP PP PPP P*	14 44 44 44 54 44 59 45 16	1350	Slight. Initial ground motion towards West.
	Shillong	Z	iP eS	14 45 01 47 29	1460	Slight, compression.
	Bokaro	E	eP e eS SS e PcP PcS	14 45 04 47 22 47 38 47 55 48 54 50 42 54 06	1480	Slight.
	Chatra	Z	eP e	14 45 34 48 18		Slight, distant.
	Poona	Z	iP	14 40 15		Slight, compression.
	Madras	E	e e e	14 46 15 46 48 47 01		Feeble, near shock.
	Colaba	EZ NEZ	e e	14 46 30 50 26		Feeble.
	Calcutta	E	e	14 46 40		Slight.
	Delhi	NEZ N EN	eP PcP iS i SS LR	14 46 48 50 42 50 50 51 16 51 40 52 14	2470	Slight, compression.
	Dehra Dun	Z NZ E	iP i i	14 46 55 51 05 58 30		Slight, compression.
	Madras	E	e	14 56 36		Feeble,
	Poona	Z	eP	14 59 23		Slight.
	Shillong	Z	eP	15 05 02		Slight, near.
	Shillong	Z	ePn P* eSg	15 10 03 10 05 10 37	240	Slight.

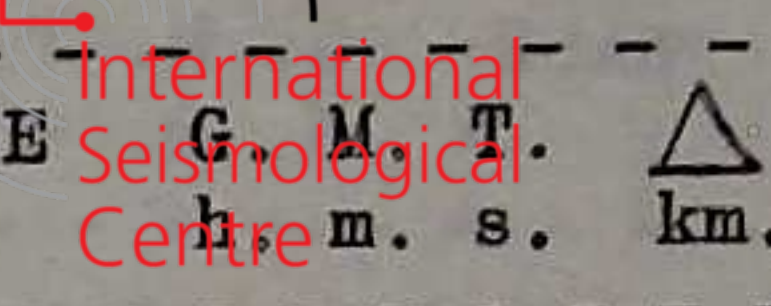
20 Epc:- 19.9° S 179.1° W Fiji Island Region.
h = about 68 Kms.
-H= 04 h 43 m 13.5 s (USCGS).
Mag:- 5.2.

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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
20	Port Blair	E	eP e i i	16 47 37 48 38 49 36 54 56		Slight.
	Shillong	ZE NE	iP iS	16 48 10 55 39	5890	Slight. Initial ground motion East. Rarefaction.
20	Chatra	Z NE	iP i	16 48 43 56 57		Slight, distant, rarefaction.
	Bokaro	E	iP PcP PP PPP S PS PPS ScS SS	16 48 44 49 24 50 51 52 15 56 38 56 51 57 01 58 14 17 00 29	6330	Slight. Initial ground motion towards East.
	Madras	E	iP PP PPP iS PS PPS SS LQ	16 49 01 51 17 52 42 57 12 57 22 57 32 17 00 50 03 33	6640	Moderate. Initial ground motion East.
	Calcutta	E	e	16 49 33		Slight.
20	Delhi	EZ ENZ	iP iS i i EZ ENZ SS SSS LR	16 49 40 58 28 58 52 59 12 17 00 06 00 18 01 06 02 48	7350	Slight, East, rarefaction.
	Dehra Dun	Z N	iP eP e	16 49 42 49 42 58 29		Slight, rarefaction.
	Colaba	EZ ZNE NE	eP PP PPP eS PPS eSS	16 49 55 52 15 54 01 58 48 59 37 17 03 24	7450	Slight.
20	Port Blair	Z	eP	18 55 17		Slight.
20	Port Blair	Z	eP	22 13 51		Slight.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
20	Poona	Z	eP	22 19 45		Slight.
20	Dehra Dun	Z	e	23 27 16		Tremor.
21	Dehra Dun	Z	eP	02 09 20		Tremor.
21	Epc:- 36.5° N 140.9° E, Near east coast of Honshu, Japan. h = about 50 Kms. -H= 04 h 00 m 11.1 s (USCGS). Mag : 5.2.					
	/ Poona	Z	iP	04 07 23		Slight, compression.
	/ Shillong	Z	iP	04 08 05		Slight, distant, compression.
21	Chatra	Z	iP	04 05 35		Slight, distant, compression.
21	Bokaro	W	iP	04 08 51		Slight, near.
	Port Blair	Z	eP	04 08 59		Slight.
	Delhi	Z	iP	04 09 27		Slight, rarefaction.
21	Shillong	Z	iP	04 45 34		Slight, distant, compression.
21	Shillong	Z	iP	18 02 37		Slight, near, compression.
21	Dehra Dun	Z	e	20 58 06		Tremor.
21	Shillong	Z	ePg eSg	23 18 04 18 07	20	Slight.
21	Shillong	Z	eP	23 45 16		Slight, distant.
	Dehra Dun	Z	e	23 46 02		Tremor.
22	Shillong	Z	ePg Sg	00 11 18 12 00	290	Slight.
22	Shillong	Z	ePg Sg	00 15 34 16 09	240	Slight.
22	Epc:- 46.0° N 148.4° E, Kurile Islands Region. h = about 115 Kms. -H= 03 h 57 m 23.8 s (USCGS). Mag : 4.9.					
	Shillong	Z	iP	04 06 00		Slight, distant, rarefaction.
	Dehra Dun	Z	iP	04 06 51		Tremor, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
22	Delhi	Z	iP	04 07 01		Tremor, compression.
22	Shillong	Z	eP	06 18 03		Slight, near.
22	Shillong	Z	iP	16 28 16		Slight, near, rarefaction.
22	Shillong	Z	iP	19 46 37		Slight, near, rarefaction.
22	Shillong	Z	eP	22 37 30		Slight, near.
22	Port Blair	Z	eP	22 45 30		Slight.
22	Shillong	Z	iP	23 49 16		Slight, distant, rarefaction.
23	Delhi	ENZ EZ	iP i	02 16 42 18 04	5010	Slight. Initial ground motion North-West. Compression.
		Z	PP	18 47		
		NZ	PPP	20 21		
			iS	24 22		
23	Port Blair	Z	eP* eS	04 41 31 04 41 46	120	Slight.
23	Port Blair	Z	ePg eSg	04 42 06 04 42 16	90	Slight.
23	Shillong	Z	iP eSg	05 05 56 06 13	140	Slight.
23	Dehra Dun	Z	eP	05 51 47		Tremor.
23	Shillong	Z	iP	05 52 42		Slight, distant, compression.
23	Bokaro	E	iP	08 08 24		Slight, tremor.
23	Bokaro	E	iP	08 23 16		Feeble, local.
23	Port Blair	Z	eP	11 00 09		Slight.
23	Dehra Dun	Z	e	12 11 48		Tremor.
23	Port Blair	Z	eP	12 47 21		Slight.
23	Bokaro	E	iP	13 42 58		Feeble.
23	Calcutta	E	iPg	14 18 40		Slight, local.
23	Dehra Dun	Z	eP	15 23 18		Tremor.
23	Shillong	Z	eP	21 19 00		Slight, distant.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
23	Shillong	Z	iP	21 31 35		Slight, distant, compression.
23	Dehra Dun	Z	iP	21 33 10		Tremor, compression
23	Shillong	Z	iPg eSg	22 08 42 08 46	30	Slight.
23	Shillong	Z	iPg eSg	22 36 47 36 53	50	Slight.
23	Shillong	Z E	iPg eSg	23 40 03 40 13	90	Slight.
23	Chatra	Z	eP eS	23 41 02 41 46	400	Feeble.
24	Shillong	Z	iPg iSg	00 02 17 02 30	110	Slight.
24	Epc:- 9.7° S 120.4° E, Sumba Island region. h = about 33 Kms. -H= 02 h 07 m 12.8 s (USCGS). Mag : 6¼(Pas) 6 (Pal) 5.4 (CGS). 9° S 120° E. -H= 02 h 07 m 15 s (Shillong).					
24	Port Blair	N	eP eS i	02 14 02 19 24 24 24	3720	
24	Shillong	ZNE E NE E	iP ScP iS LR	02 15 25 20 55 21 57 27 40	4880	Compression.
24	Kodaikanal	E	iP PPP iS SS M	02 15 30 18 03 22 15 27 00 -	5110	Initial ground movement towards West Period=15 secs.
24	Madras	E	eP e PP PPP iS PS PPS e ScS LQ LR M	02 15 35 15 58 17 22 18 02 22 13 22 22 22 28 22 52 25 31 25 56 28 18 32 00	4980	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
24	Visakhapatnam	E	iP ePP ePPP iS iPS iPPS eSS eSSS eLR eM	02 15 36 17 32 18 22 22 16 22 26 22 40 25 40 26 40 28 38 32 51	5020	Initial ground motion East. Period 21.5 secs. u = 12.0.
24	Calcutta	E	iP iS LQ LR M	02 15 36 21 55 25 10 27 10 29 40	4680	
24	Chatra	ZNE NE	iP PcP PP PPP iS	02 15 57 17 19 17 47 18 36 22 54	5320	Rarefaction.
24	Hyderabad	EN EN EN EN E N E N	iP iS PS PPS SS LQ LR M	02 16 02 23 00 23 09 23 15 26 04 29 12 29 24 32 21	5330	Intensity North, East. Period=24 secs. u = 26. Period =24 secs. u = 16.
24	Poona	Z	iP iS PS PPS SS SSS LQ LR M	02 16 35 24 03 24 08 24 18 27 38 29 35 29 46 32 47 37 08	5870	Compression.
24	Colaba	EZ NE N E Z N E	eP iS e e eS M M	02 16 42 24 16 24 19 24 50 24 20 37 24 39 35	5980	Period=22 secs. u=27. Period=23secs. u=30.
24	Dehra Dun	N N E	eP iS iS	02 17 01 24 39 25 17		

DATE STATION COMPT PHASE G. M. T. h. m. s. km. REMARKS.

March, 1963.

24	Chatra	NE	SS	02 25 58	
			LQ	27 04	
			SSS	27 12	
			LR	29 24	
			Mn	44 -	
		N			Period=15secs., n=10.
24	Shillong	Z	iP	02 36 16	Slight, distant, compression.
24	Shillong	Z	eP	04 06 28	Slight, near.
24	Bokaro	NE	iP	08 06 20	Feeble, local.
24	Bokaro	NE	iP	09 33 56	Feeble, local.

24 Epc:- 9.0° N 125.6° E, Mindanao Region, Philippine Islands.
 h = about 51 Kms.
 -H= 09 h 43 m 20.2 s (USCGS).
 Mag : 5.2.

✓	Shillong	ZE	iP	09 50 17	4000	
		E	iS	55 56		
✓	Bokaro	NE	iP	09 51 00		Distant.
			i	52 54		
			i	57 34		
✓	Madras	E	eP	09 51 29	5030	
			e	53 13		
			eS	58 10		
✓	Delhi	Z	iP	09 52 05		Rarefaction.
✓	Dehra Dun	E	iP	09 52 06		Initial ground motion West.
		N	eP	52 06		
		E	i	59 10		
		E	i	59 32		
✓	Poona	Z	iP	09 52 18		Rarefaction.
✓	Port Blair	E	i	09 55 18		
			e	59 11		
24	Delhi	Z	iP	11 01 07	960	Slight, rarefaction.
			iS	02 45		

24 Epc:- 34.4° N 47.9° E, Western Iran, 20 injured and minor damage in Kanganar area.
 h = about 33 Kms.
 -H= 12 h 44 m 03.2 s (USCGS).
 Mag : 5½-5¾(Pal) 5.2(CGGS).
 37° N 48° E Iran.
 -H= 12 h 43 m 58 s (Shillong)

✓	Delhi	ENZ	iP	12 49 31	2830	Initial ground motion North, West, compression
		EZ	i	49 57		
		ENZ	PP	50 10		

DATE STATION COMPT PHASE G. M. T. h. m. s. km. REMARKS.

March, 1963.

24	Delhi	EN	iS	53 56		
			i	54 45		
			SS	54 59		
14	Dehra Dun	EN	iP	12 49 35	2770	Initial ground motion South, East.
		N	i	53 53		
		E	iS	54 02		
24	Colaba	NEZ	eP	12 49 46	3110	
		E	eS	54 30		
		Z	e	55 01		
		N	M	58 -		
✓	Poona	Z	eP	12 49 54		
✓	Bokaro	NE	iP	12 50 55	3760	
		E	PP	52 09		
		NE	PPP	52 22		
			S	56 19		
			LQ/SS	58 24		
			SSS	58 42		
		E	LQ	59 55		
		NE	M	13 02 25		
✓	Madras	E	eP	12 51 05	4010	
			PP	52 26		
			PPP	52 50		
			iS	56 45		
			LQ	59 06		
			LR	13 00 48		
			M	03 54		
✓	Visakhapatnam	E	eP	12 51 07	4010	Distant.
			ePP	52 30		
			ePPP	52 52		
			eS	56 47		
			eSS	59 17		
			eSSS	59 53		
			eLR	13 01 07		
✓	Calcutta	E	iP	12 51 12	4110	
			iS	56 57		
✓	Shillong	ZNE	iP	12 51 26	4360	Rarefaction.
		NE	iS	57 27		
✓	Port Blair	E	e	13 01 01		Slight.
24	Shillong	Z	iP	14 30 23		Slight, near.
24	Shillong	Z	iPn	15 59 25	200	Slight.
			eSg	59 52		
24	Port Blair	N	ePg	18 46 52	90	Slight.
			eSg	47 03		
24	Dehra Dun	Z	e	18 51 39		Tremor.

DATE STATION COMPT PHASE G. M. T. h. m. s. km. REMARKS.

March, 1963.

24	Colaba	NEZ	e	19 18 46	Feeble, near, tremor.
			e	18 51	
	Poona	Z	iP	19 18 56	Slight but very near, other phases not clear.
	Madras	E	e	19 23 16	Feeble, tremor.
24	Shillong	Z	iP	20 47 30	Slight, Near.
24	Shillong	Z	iP	20 57 53	Slight, near, rarefaction.
24	Chatra	Z	eP	20 58 32	Feeble, distant.
			i	58 53	

24 Epc:- 51.8° N 178.1° W, Andreanof Islands, Aleutian Islands.
 h= about 57 Kms.
 -H= 21 h 35 m 24.4 s (USCGS).
 Mag . 6(Pas), 5 (Pal) 5.5 (CGS).

✓	Shillong	ZE	iP	21 46 34	Distant, compression.
		E	i	55 42	Initial ground motion towards West.
✓	Chatra	Z	iP	21 46 46	8300
		NE	eS	56 22	
		E	Mn	22 09	Period=10secs.
		N	Mn	15 -	Period =10secs.
✓	Dehra Dun	Z	iP	21 46 59	Compression.
✓	Bokaro	E	iP	21 47 05	Distant.
		E	i	57 02	
✓	Poona	Z	iP	21 48 01	Compression .
✓	Colaba	Z	e	21 48 03	
✓	Madras	E	eP	21 48 05	
			e	48 37	
			e	52 40	
			e	59 00	
			e	22 02 02	
	Dehra Dun	Z	e	22 01 49	Tremor.
24	Chatra	Z	iP	22 41 26	Feeble, distant, rarefaction.
24	Shillong	Z	iP	23 20 37	Slight, distant, compression.
25	Delhi	Z	eP	02 02 10	Slight.
25	Delhi	Z	iP	02 19 03	Tremor.

DATE STATION COMPT PHASE G. M. T. h. m. s. km. REMARKS.

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25	Shillong	Z	iP	04 01 10	Slight, distant, compression.
25	Bokaro	E	iP	08 12 10	Feeble, local.
	Shillong	Z	iP	08 14 48	Slight, distant, compression.
	Chatra	Z	iP	08 15 28	Feeble, distant, compression.
	Bokaro	E	e	10 07 02	Distant, slock.
			i	22 01	
	Shillong	Z	eP	13 01 13	Slight, distant.
	Shillong	Z	iP	16 41 35	Slight, distant, compression.
25	Shillong	Z	eP	17 53 26	Slight, near.
25	Shillong	Z	eP	19 38 08	Slight, near.
25	Colaba	N	e	19 40 35	Slight.
			e	49 06	
			M	20 08 -	
	Delhi	EN	ePKP	19 41 46	Slight, South-East.
			ePP	44 27	Rarefaction.
		E	ePPP	46 49	
		EN	e	50 09	
25	Shillong	Z	eP	20 30 18	Slight, distant.
25	Madras	E	e	20 40 30	Slight.
	Hyderabad	N	i	20 40 57	
			M	21 01 30	Period=18secs. n=6.

25 Epc:- 0.7° N 96.5° E, Off South-west coast of Sumatra.
 h = about 30 Kms.
 -H= 22 h 46 m 16.2 s (USCGS).
 Mag : 5.6.
 0.4° N, 96.4° E, Off west Sumatra.
 -H= 22 h 46 m 10 s (Shillong).

	Madras	E	iP	22 50 51	2410	Initial ground motion East.
			PP	51 17		
			PPP	51 28		
			iS	54 47		
			LQ	55 03		
			SS	55 20		
			SSS	55 36		
			LR	56 07		
			M	58 10		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
March, 1963.						
25	✓ Visakhapatnam	NE	iP eS	22 51 02 54 58	2410	Initial ground motion South East.
	✓ Calcutta	E	iP iS	22 51 22 55 31	2590	
	✓ Hyderabad	EN EN	iP iS SS	22 51 36 56 09 57 36	2940	Initial ground motion South & East.
		N E N	LR LR M	58 12 58 15 23 00 33		Period=15.0 secs. Amp. = 5mm.
		E	M	00 36		Period=15.0 secs. Amp. = 4 mm.
	✓ Shillong	ZNE E NE E	iP PcP iS Lq e	22 51 39 55 14 56 01 56 40 57 43	2800	Rarefaction. Initial ground motion South and East.
	✓ Bokaro	NE E NE	iP PP PPP PcP S LQ SS SSS PcS M	22 51 43 52 22 52 34 55 07 56 06 56 38 57 13 57 23 58 47 23 00 05		
	✓ Tocklai	E	eP	22 51 45		
	✓ Chatra	NE E N	iP i i	22 52 03 56 41 57 37		Initial ground motion South & West.
25	✓ Poona	Z ZEN	iP iS	22 52 12 22 57 03	3220	Rarefaction.
	✓ Colaba	ZE E N E	eP eS SSS M M	22 52 21 57 22 59 37 23 07 26 11 21	3380	Period=15.0 secs. Amp. = 5 mm. Period=18.0 secs. Amp. = 5 mm.
	✓ Delhi	ENZ N ENZ EN	iP i PP i iS	22 52 54 53 19 54 07 54 47 58 11	3230	Slight, South-east. Rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
March, 1963.						
25	✓ Delhi (Contd.)	E Z EN	LQ SSS LR	23 00 05 00 39 01 09		
25	✓ Dehra Dun	EN N	iP i i	22 53 03 59 23 23 03 36		Initial ground motion North, West.
26	Shillong	Z	eP	00 16 47		Slight, distant.
26	Chatra	Z	iP Sg	03 06 26 06 40	120	Feeble, compression.
26	Shillong	Z	eP	03 07 38		Slight, near.
26	Shillong	Z	iP	03 30 53		Slight, near, rarefaction.
26	Epc:- 29.7°S 177.8° W, Kurile Islands. Felt: Rasul Island. h = about 33 Kms. -H= 09 h 48 m 19.7 s (USCGS). Mag : 6 $\frac{3}{4}$ -7(Pas), 7(Berk), 7 (Pal).					
	✓ Port Blair	NE	iP iS PS i i LQ M	10 01 39 12 10 13 06 13 47 18 40 25 59 37 36	9490	Period=16.5 secs. Amp. = 27.0 mm.
	✓ Tocklai	E	iS	10 12 44		
	✓ Shillong	ZNE NE	iP iS	10 02 14 13 14	10200	Distant.
	✓ Visakhapatnam	NE	eP e	10 02 36 09 26		
	✓ Bokaro	E NE E NE	eP PP PPP SKS SCS PS PPS SS SSS	10 02 39 07 24 09 42 13 31 14 44 16 28 17 31 22 17 26 09		
	✓ Chatra	ZNE NE	e PKP PP PPP iSKS iS	10 02 41 06 46 07 31 09 50 13 28 14 44	11560	

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DATE STATION COMPT PHASE G. M. T. Δ REMARKS.
 h. m. s. km.

March, 1963.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.			
26	✓ Chatra (Contd.)	NE	iPS	16 37					
			PPS	17 25					
			SS	21 07					
			SSS	26 06					
			LQ	32 03					
			LR	37 18					
	N	Mn	55 -	Period=19.5 secs. $\mu = 8.$					
		E	Mn		58 -	Period=19 secs. $\mu = 23.$			
	✓ Kodaikanal	E	e	10 02 57					
			i	07 03					
			i	13 33					
			i	16 24					
			i	17 45					
			i	22 03					
✓ Madras	E	ePKP	10 06 00	12450					
		PP	06 52						
		PPP	09 13						
		e	13 01						
		PS	16 18						
		PPS	17 32						
		SS	22 23						
		SSS	26 35						
		LR	41 12						
		M	48 09						
✓ Poona	Z NE N	ePP	10 06 41		Moderate, compression				
		iS	17 36						
		PS	18 50						
		PPS	19 18						
		SS	23 48						
		i	24 40						
		i	25 30						
		M	44 00						
✓ Dehra Dun	NZ EN	ePP	10 06 53						
		i	14 12						
		i	17 56						
26 Colaba	NZ N	ePP	10 06 54						
		PP	10 36						
		eS	17 48						
		PPS	19 23						
		SS	24 01						
		M	54 36						
		Period=23 secs. $\mu=3$							

26 Epc:- 29.8° S 177.9° W, Kermadec Islands.
 h = about 42 Kms.
 -H= 13 h 25 m 02.6 s (USCGS).
 Mag : 7 $\frac{1}{4}$ (Pas) 6 $\frac{1}{2}$ (Pal) 5.9 (CGS).

DATE STATION COMPT PHASE G. M. T. Δ REMARKS.
 h. m. s. km.

March, 1963.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.	
26	✓ Port Blair	E	eP	13 38 21	10400	Slight.	
			iPP	41 36			
			eSKS	48 51			
	✓ Shillong	Z	iP	13 38 56		Distant, rarefaction.	
	✓ Delhi	N	eP	13 40 47		North.	
				e			50 31
	✓ Chatra	ZNE NE	ePKP	13 42 47		Distant.	
				e			43 26
				e			49 54
	✓ Bokaro	NE E	ePKP	13 43 08			
				i			44 07
				i			50 15
				i			53 08
	✓ Calcutta	E	ePKP	13 43 20			
e				52 43			
✓ Madras	E	ePKP	13 43 37				
			e			49 44	
			e			52 58	
			e			54 10	
			e			59 06	
			e			14 18 05	
✓ Poona	Z N	ePKP PS	13 43 40		Compression.		
			PS			54 18	
						56 00	
						56 40	
						14 04 50	
						14 40	
✓ Dehra Dun	Z EN	eP	13 43 42				
			i			54 33	
✓ Kodaikanal	E	i	13 43 49		Slight, distant.		
			i			53 31	
✓ Colaba	NZ	ePP	13 44 29		Moderate.		
			e			47 19	
			PS			54 29	
			e			55 59	
			M			14 31 51	
Period=27 secs $\mu=13.$							
✓ Shillong	Z	iP	14 46 55		Slight, distant, rarefaction.		
26 Shillong	Z	iP	14 50 32		Slight, near.		
26 Shillong	Z	iP	15 34 08		Slight, distant.		
26 Shillong	Z	iP	16 09 11		Slight, distant, rarefaction.		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
26	Shillong	Z	iP	19 56 17		Slight, distant, compression.
26	Chatra	Z	iP	19 56 37		Feeble, compression, distant.
	Dehra Dun	Z	iP	19 57 10		Tremor, compression.
	Shillong	Z	eP	20 54 26		Slight, near.
26	Epc:- 36.0° N 135.7° E, Near east coast of Honshu, Japan, minor damage in Central Honshu,					
	h = about 33 Kms.					
	-H= 21 h 34 m 41.1 s (USCGS).					
	Mag :- 6½(Pas), 6½(Berk), 6-6¼(Pal), 5-9 (CGS).					
	35° N 136° E, Honshu Japan.					
	-H= 21 h 34 m 37 s (Shillong).					
	Tocklai	E	iP iS	21 41 45 47 31	4110	
	Shillong	Z E	iP PP iS SS SSS	21 42 03 43 39 48 00 50 53 51 21	4290	
	Chatra	ZNE NE	eP PP PPP PcS S SS LQ SSS	21 42 35 44 14 44 41 48 10 48 52 51 49 52 10 52 38	4610	
		E N	Mn Mn	22 02 22 02		Period=13 secs. u=63. Period=12 secs. u=50.
	Calcutta	E	iP iS LQ M	21 42 42 49 07 52 27 56 47	4690	
	Bokaro	NE	iP i PPP PcS S PS PPS SS ScS LQ LR M	21 42 53 44 27 44 44 45 23 48 27 49 27 49 34 49 51 52 35 52 47 53 24 55 22 59 37	4900	Period=16secs. u=57.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
26	Port Blair	NE	iP iS	21 42 59 49 39	5010	
	Dehra Dun	NZ N	iP PP PPP PcS iS ScS SS LQ SSS LR M	21 43 22 45 15 46 03 48 48 50 16 53 09 53 54 54 28 54 58 56 41 22 00 56	5250	First ground movement towards North. Rarefaction.
	Delhi	N	iP iS ScS/PPS SS M	21 43 30 50 36 53 17 54 09 22 01 13	5480	Period=12 secs. u=4.5.
	Visakhapatnam	NE	iP iPP iS iSS	21 43 34 45 30 50 46 54 36	5580	Initial ground motion North, East.
	Hyderabad	E	iP PP PPP iS SS LR M	21 44 02 46 03 47 23 51 37 55 20 59 14 22 04 02	5990	Initial ground motion East. Period=15secs. u=11.
26	Madras	E	iP PcP PP PPP iS PS PPS ScS SS e SSS LR M	21 44 09 45 10 46 14 47 30 51 49 51 59 52 06 54 00 55 29 56 19 57 36 59 25 22 04 11	6100	Initial ground motion East.
	Poona	Z N	iP iS i SSS	21 44 25 52 23 54 20 58 30	6420	Rarefaction. Initial ground movement South, East.
		NE N	Lr M	22 01 40 06 00		
	Colaba	NEZ	eP eS	21 44 30 52 24	6330	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
26	Colaba(Contd.)	NE	PS	21 52 43		Period=11 secs. $\mu=9$. Period=17secs. $\mu=17$.
			ScS	54 22		
			LR	22 00 37		
		N	M	13 48		
		E	M	15 13		
	Kodaikanal	E	iP	21 44 33	6220	Initial ground motion East.
			PP	46 42		
			iS	52 21		
			SSS	58 51		
	Shillong	Z	iP	22 44 32		Rarefaction.
	Shillong	Z	iPg	23 28 43	130	Slight.
			Sg	28 58		
	Shillong	Z	iPg	22 43 34	130	Slight.
			Sg	43 49		
27	Shillong	Z	iP	00 00 26		Slight, distant, compression.
	Dehra Dun	Z	iP	00 01 57		Tremor, rarefaction.
27	Colaba	NEZ N NE	eP	00 27 25	8300	Moderate.
			PP	30 11		
			PPP	31 59		
			eS	37 01		
			ScS	37 30		
		N	PPS	38 03		
		NE	e	41 50		
		N	SS	42 16		
			LR	52 03		
		E	M	01 02 24		
		N	M	04 08		Period=19secs. $\mu=84$. Period=17 secs. $\mu=81$.
	Bokaro	NE	iP	00 27 31	8330	Moderate.
			PcP	27 41		
			PP	30 15		
			PPP	32 06		
			S	37 09		
			PS	37 52		
			PPS	38 09		
		E	SS	42 02		
		NE	SSS	45 17		
		E	M	52 12		
	Shillong	Z	iPn	00 49 10	290	Slight.
			Sg	49 51		
27	Hyderabad	E	eP	03 05 32	11430	Moderate intensity.
			eS	17 16		
			SS	24 33		
			Lq	34 36		
			LR	39 12		
			M	47 04		Period=24 secs. $\mu=18$.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
27	Dehra Dun	Z	iP	03 41 03		Tremor, compression.
			e	42 40		
	Chatra	Z	eP	03 42 48		Feeble, distant.
	Shillong	Z	eP	03 43 30		Slight, distant.
27	Port Blair	N	ePg	07 01 54	70	Slight.
			eSg	07 02 02		
27	Shillong	Z	iP	12 51 10		Slight, distant, compression.
27	Shillong	Z	iP	13 34 53		Slight, distant, compression.
27	Hyderabad	E	e	14 44 08		Period=18secs. $\mu=6$.
			M	15 24 08		
27	Calcutta	N	iPg	14 54 26		Slight, local.
27	Shillong	Z	eP	16 20 40		Slight, distant.
27	Delhi	N	eP	17 15 28	390	Slight.
			eS	16 11		
27	Shillong	Z	eP	18 14 01		Slight, distant.
27	Shillong	Z	eP	21 30 17		Slight, near.
28	Epc:- 66.3°N 19.6°W Iceland. Slight damage and several injured in northern island.					
	h = about 15 km.					
	-H= 00 h 15 m 47.5 s (USCGS).					
	Mag: - 7-7 $\frac{1}{4}$ (Pas), 6 $\frac{1}{2}$ (Berk), 6 $\frac{1}{2}$ -6 $\frac{3}{4}$ (Pal).					
	67°N 25° W. -H= 00 h 15 m 40 s (Shillong).					
	Chatra	NE	iP	00 27 16	8110	Initial ground motion North, West.
			PcP	00 27 32		
			PP	30 08		
			PPP	32 52		
			iS	36 43		
			ScS/PS	37 09		
			PPS	37 28		
			SS	41 11		
			SSS	44 00		
			LQ	45 58		
			LR	48 32		
		N	Mn	00 58 -		Period=13secs. $\mu=50$.
		E	Mn	00 58 -		Period=13 secs. $\mu=54$.
	Dehra Dun	ENZ	iP	00 26 36	7420	Initial ground motion towards South, East.
			PcP	27 06		
			PP	29 02		
			PPP	30 36		
		EN	PcS	31 02		Rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
27	Dehra Dun (Contd.)	EN	iS	00 35 28		
			PS	35 47		
			PPS	36 02		
			SKS/ScS	36 32		
		Z	i	37 51		
		EN	SS	39 49		
			SSS	42 43		
			LQ	43 43		
			LR,PKKP ₁	46 51		
			PKKS ₁	50 23		
			M	52 23		
			SKKS ₂	58 43		
			SKKKS	59 13		
	Poona	Z	iP	00 27 30	8230	
		N	eS	37 03		
			SS	41 40		
		NE	SSS	44 56		
		N	Lq	46 55		
			Lr	50 00		
			M	56 20		
	Shillong	ZNE	iP	00 27 32	8400	Moderate. Initial ground motion South-east.
		E	PcP	27 47		
		NE	iS	37 13		
		E	SKS	37 32		
			SS	42 05		
	Hyderabad	EN	iP	00 27 43	8790	Initial ground motion North-east.
		N	PP	30 38		
			PPP	32 27		
			iS	37 43		
			SS	42 32		
			SSS	45 53		
			Lq	48 41		
			LR	52 38		
		E	LR	52 41		
			M	57 57		
		N	M	00 58 03		Period=18secs. $\mu=24$.
						Period=18secs. $\mu=43$.
	Calcutta	E	iP	00 27 43	8630	
			iS	37 35		
			M	55 55		
	Visakhapatnam	NE	iP	00 27 59	9050	Initial ground movement North-West.
			iS	38 10		
	Madras	E	iP	00 28 11	9240	Initial ground motion East.
			PP	31 24		
			PPP	33 18		
			SKS/iS	38 31		
			e	39 12		
			PS	39 22		
			PPS	39 52		
			SS	43 59		
			SSS	47 30		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
27	Madras(Contd.)	E	LQ	00 50 45		
			LR	54 07		
			M	59 45		
	Kodaikanal	E	eP	00 28 32	9800	
			i	31 47		
			iSKS?	39 02		
			i	44 09		
	Port Blair	NE	eP	00 28 42	9580	Moderate.
			PP	32 08		
			eS	39 17		
28	Shillong	ZNE	iPn	02 31 00	220	Slight.
		NE	iSg	31 31		
	Chatra	NE	iP	02 32 02	1130	Slight, rarefaction.
			iS	33 58		
28	Chatra	Z	iP	03 08 38		Feeble, distant, rarefaction.
28	Dehra Dun	EN	e	03 59 15		Tremor.
28	Bokaro	NE	iP	08 30 34		Feeble, local.
28	Shillong	Z	iP	09 56 31		Slight, distant, compression.
28	Shillong	Z	eP	11 29 55		Slight, distant.
28	Chatra	Z	eP	15 19 38		Feeble, distant.
28	Epc:- 30.8° N 70.0° E (West Pakistan). h = about 24 Kms. -H= 17 h 12 m 23.1 s (USCGS).					
	Dehra Dun	E	eP	17 14 02	640	
		N	eS	15 10		
		EN	i	17 16 25		
	New Delhi	NE	iP	17 14 05	720	
			iS	15 20		
	Chatra	Z	eP	17 16 02	3340	Slight.
		NE	iS	21 06		
	Bokaro	E	iP	17 16 07	3100	Slight.
			S	20 50		
			LQ	21 55		
			SSS	22 31		
			ScP	22 58		
			LR	23 54		
			M	25 42		
	Shillong	Z	eP	17 16 57		Slight, distant.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
28	Colaba	E NZE	e e	17 18 54 19 28		Slight.
	Poona	Z	eP	17 19 09		Slight.
	Visakhapatnam	NE NE	eP iS	17 20 26 24 11	2280	Slight, distant.
	Madras	E	e e e LR M	17 21 28 22 05 22 49 23 14 25 23		Slight. Initial phases not recorded.
	Calcutta	E	i	17 22 15		Slight.
28	Shillong	Z	eP	20 00 25		Slight, distant.
28	Shillong	Z	eP	20 14 10		Slight, distant.
28	Chatra	Z	iP	21 55 30		Feeble, rarefaction.
28	Colaba	E E	e e	23 58 34 00 00 08		
29	Delhi	N	iP eS	00 26 44 35 37	7450	Slight, North.
29	Shillong	Z	ePn eSg	02 53 24 53 56	230	Slight.
29	Chatra	Z	eP	03 18 19		Feeble, distant.
	Shillong	Z	iP	03 18 44		Slight, distant, compression.
29	Chatra	Z	ePg iSg	17 32 00 32 09	80	Feeble.
	Dehra Dun	Z	e i i	20 06 57 08 11 08 38		Feeble.
	Dehra Dun	ZNE EN NZ	iP i i	22 56 33 56 43 56 45		Slight. Initial ground motion South. Rarefaction.
29	Chatra	Z	eP eS	23 29 51 30 16	210	Feeble.
30	Epc:- 19.1° S 169.1° E, New Hebrides Islands. Felt: Port Vila, Tanna and Anaton. h= about 160 Kms. -H= 01 h 53 m 28.8 s (USCGS). Mag : 6.1.					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
March, 1963.						
50	Visakhapatnam	E NE	eP i	02 06 22 16 39		Moderate, distant.
	Poona	Z	eP	02 07 00		Slight, compression.
	Madras	E	e e e e	02 07 05 09 58 16 44 17 20 17 59		
	Hyderabad	E EN N E	eP iS M M	02 07 22 17 00 38 15 38 18	8330	Slight intensity. Period=12secs. n=3. Period=6secs. n=2.
	Colaba	EZ	eP PP e NEZ NE PPS	02 07 44 10 38 11 08 17 27 18 04 18 26	8450	Slight.
	Port Blair	E	i	02 35 13		Slight.
	Port Blair	N	eP eS	03 41 46 42 06	160	Slight.
	Shillong	Z	iP	05 26 50		Slight, near, rarefaction.
	Dehra Dun	Z	iP i	09 25 29 25 38		Tremor, rarefaction.
	Dehra Dun	Z	iP	12 14 29		Tremor, rarefaction.
30	Epc:- 44.2° N 148.0° E, Kurile Islands. h = about 33 Kms. -H= 0.16 h 51 m 56.6 s (USCGS). Mag : 5¼-5½(Pal) 6.3 (CGS).					
	Chatra	ZNE NE	iP iS	07 01 00 08 11	5560	Compression.
30	Bokaro	E NE	iP S PS PPS ScS SS	17 01 20 08 53 09 05 09 12 10 01 11 53	5970	Initial ground motion West.
	Dehra Dun	EZ N EN	iP eP iS	17 01 33 01 33 09 16	6150	Initial ground motion East. Compression.
	Port Blair	NE	eP iS	17 01 45 09 36	6280	Slight.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
March, 1963.						
30	Madras	E	eP e PP PPP iS e e e	17 02 34 02 52 05 03 06 22 11 13 11 35 15 50 42 50	7170	Slight.
	Poona	E	eP	17 02 38		Slight, other phases not clear.
	Colaba	ZES E	eP eS ScS M	17 02 44 11 31 11 32 33 -	7335	Slight.
	Hyderabad	E	M	17 10 52		Period=9 secs. Amp: = 2 mm.
		N	M	10 53		Period=9secs.Amp:=4 mm.
30	Dehra Dun	Z ENZ	eP i	17 31 47 34 11		Slight.
	Chatra	Z	eP	17 33 13		Feeble, distant.
	Dehra Dun	ENZ	iP i	18 53 07 53 16		Slight, near shock. Initial ground motion North East. Rarefaction.
	Chatra	Z	eP eS	18 55 03 56 39	930	Feeble.
	Bokaro	E	iP	18 57 00		Slight, near.
30	Shillong	Z	eP	21 33 29		Slight, near.
30	Shillong	Z	iP	22 08 37		Slight, distant, rarefaction.
30	Shillong	Z	iP	22 16 08		Slight, distant, rarefaction.
	Chatra	Z	eP	22 16 30		Feeble, distant.
31	Dehra Dun	Z	eP	00 51 41		Tremor.
31	Dehra Dun	Z E	e e	02 31 17 38 49		Tremor.
	Chatra	Z	eP	02 32 46		Feeble, distant.
	Colaba	E	e e M	02 36 18 41 30 43 -		Slight.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
March, 1963.						
31	Madras	E	e	02 41 11		Slight, phases could not be identified.
	Calcutta	E	e i	02 44 49 48 59		Slight.
31	Epc:- 6.5° S , 81.1° W, Near coast of southern Peru. h = about 33 Kms. -H= 04 h 46 m 00.8 s (USCGS). Mag : 5.2(CGS).					
	Dehra Dun	Z	e	05 05 45		
		EN	e	05 49 05 58		
	Colaba	NEZ	PKP ₁ PP ₁	05 05 50 09 35	16720	
		E N	e M	19 48 06 40 -		
	Poona	Z	ePKP ₁ ePP	05 05 50 09 42	17000	Moderate. Initial ground movement North and West.
	Shillong	Z	eP	05 05 57		Slight, distant.
	Bokaro	E	e	05 07 02		Slight, distant.
	Madras	E	eP	05 10 21		Slight. Due to irregular oscillations phases could not be identified.
	Port Blair	E	i i	05 11 28 19 19		
31	Epc:- 29.9° S, 177.7° W, Kermadec Islands. h = about 48 Kms. -H= 05 h 30 m 49.3 s (USCGS). Mag : 6¼-6½(Pas), 6¼(Berks) , 6-6¼(Pal) 5.7 (CGS).					
	Shillong	Z E	eP i	05 44 43 55 40		
	Bokaro	E	e i i i	05 46 02 49 53 56 01 58 57		
	Dehra Dun	Z E	eP i	05 49 27 56 39		
	Poona	Z	eP	05 49 28		
	Madras	E	eP e e	05 49 29 06 00 08 05 03		

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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
31	Dehra Dun	Z	iP	06 10 52		Tremor, compression.
31	Hyderabad	N	M	06 26 03		Period=24secs. $\mu=10$.
31	Epc:- 6.1° S 14.9° E, New Britain, Felt : Popondeth, Walindi and Kanderare. h = about 60 Kms. -H= 07 h 07 m 36.3 s (USCGS). Mag : $6\frac{1}{4}$ (Pas), 6(Pal), 5.7 (CGS).					
✓	Shillong	Z	iP	07 18 02	6980	Compression.
		E	eS	26 31		
✓	Madras	E	eP	07 18 47	7930	
			PcP	19 08		
			PP	21 31		
			PPP	23 12		
			eS	28 07		
			PS	28 35		
			PPS	28 52		
			LQ	37 37		
			LR	41 13		
✓	Bokaro	E	eP	07 18 58	7080	
			PcP	19 34		
			S	27 32		
			PS	27 50		
			SKS	28 41		
✓	Dehra Dun	Z	eP	07 19 25		
		N	iP	30 16		
		E	i	30 26		
✓	Poona	Z	iP	07 19 32		
✓	Colaba	EZ	eP	07 19 34		Rarefaction.
		NE	e	29 40		
✓	Chatra	Z	eP	07 19 35	6280	Feeble.
		NE	eS	27 26		
31	Shillong	Z	eP	07 46 44		Slight, distant.
	Bokaro	E	eP	07 46 54		Slight, distant.
			i	50 36		
			i	51 12		
31	Bokaro	E	iP	08 22 38		Feeble, local.
31	Bokaro	E	iP	08 48 47		Feeble, local.
	Delhi	N	eP	09 25 15		Slight.
	Delhi	N	eP	09 26 31	1030	Slight.
			i	26 58		
			iS	28 17		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>March, 1963.</u>						
31	Dehra Dun	Z	iP	17 00 09		Tremor, compression.
31	Epc:- 0.8° N 96.6° E, Nicobar Islands region. h = about 33 Kms. -H= 17 h 28 m 52.7 s (USCGS). <i>Jan to March</i>					
✓	Port Blair	E	eP	17 32 39	1410	Slight.
			eS	17 35 03		
✓	Madras	E	iP	17 33 27	2430	Initial ground motion East.
			PP	33 51		
			PPP	34 03		
			iS	37 25		
			LQ	37 39		
			SS	38 01		
			SSS	38 17		
			LR	38 38		
			M	40 32		
✓	Visakhapatnam	E	iP	17 33 43	2620	Moderate. Initial ground motion East.
		N	eP			
		NE	iPP	34 14		
			iPPP	34 26		
			iS	37 55		
			eSS	38 50		
			eSSS	39 11		
✓	Kodaikanal	E	iP	17 33 43	2610	Slight, distant. Initial ground motion West.
			PPP	34 19		
			iS	37 53		
			LQ	38 26		
✓	Hyderabad	EN	iP	17 34 08	2890	Slight, intensity Southward-Eastward.
		EN	iS	38 37		
		N	LB	41 02		
		E	LR	41 26		
		N	M	42 09		Period=17secs. $\mu=5$.
		E	M	42 35		Period=18secs. $\mu=6$.
✓	Bokaro	EN	iP	17 34 18	2900	Slight. Initial ground motion East.
		E	PP	34 59		
			PPP	35 14		
		EN	S	38 48		
		E	LQ	39 45		
		EN	SS	40 02		
		E	SSS	40 19		
			LR	40 58		
			PcS	41 10		
			M	43 10		
✓	Chatra	Z	iP	17 34 41	4000	Slight, rarefaction.
		NE	eS	40 20		
31	✓ Poona	Z	iP	17 34 48	3250	Moderate, rarefaction. Initial ground motion North-East.
		N	iS	39 41		
		Z	M	45 15		

DATE STATION COMPT PHASE G. M. T. Δ REMARKS.
h. m. s. km.

March, 1963.

31	Colaba	NE	eP	17 34 58	3410	Moderate.
		ES	PcP	37 54		
		NE	eS	40 01		
			SSS	42 01		
			e	42 45		
		N	M	51 -		
	Dehra Dun	Z	iP	17 35 38		Slight, rarefaction.
		E	i	43 37		
31	Dehra Dun	Z	iP	19 26 31		Tremor, rarefaction.
31	Madras	E	eP	19 41 28	7930	Slight.
			PP	44 04		
			PPP	45 49		
			eS	50 46		
			PS	51 12		
			PPS	51 29		
			e	56 36		
			e	20 16 04		
31	Colaba	E	eP	19 45 12	5445	Slight.
		NE	eS	52 16		

MICROSEISMIC - 65 - TABULATION
International Seismological Centre

Date Hour K Mean amplitude in m.m. Mean period in sec. Date Hour K Mean amplitude in m.m. Mean period in sec.

Station : Bombay

March, 1963.

01	00	-	-	-	08	00	-	-	-
	06	3	0.6	6.7		06	3	0.6	5.0
		3	0.4	2.6				0.5	2.3
	12	3	0.6	6.2		12	3	0.5	5.2
			0.4	2.7				0.4	2.2
	18	3	0.6	6.2		18	3	0.6	5.1
			0.4	2.5				0.4	2.0
02	00	-	-	-	09	00	3	0.5	5.0
	06	3	0.6	5.5		06	3	0.4	2.3
			0.4	2.5				0.5	5.0
	12	3	0.5	5.9		12	3	0.4	2.0
			0.4	2.7				0.5	5.1
	18	3	0.5	5.8		18	3	0.5	2.3
			0.3	2.7				0.5	5.0
								0.4	2.3
03	00	3	0.5	5.5	10	00	3	0.6	4.8
			0.3	2.4				0.6	2.5
	06	3	0.5	5.2		06	3	0.7	4.9
			0.3	2.5				0.7	3.0
	12	3	0.5	5.6		12	2	0.7	3.4
			0.3	3.0		18	2	0.7	4.6
	18	3	0.6	5.1					
			0.4	1.5					
					11	00	3	0.8	4.4
04	00	3	0.5	5.0				0.4	2.5
			0.3	1.7		06	3	0.7	4.3
	06	3	0.5	5.0				0.4	2.0
			0.4	2.3		12	3	0.8	4.2
	12	3	0.5	4.9				0.5	2.4
			0.4	2.2		18	3	0.8	4.0
	18	3	0.5	5.3				0.4	2.5
			0.5	2.2					
					12	00	3	0.8	4.4
05	00	3	0.7	2.3				0.5	3.0
	06	1	0.7	2.5		06	3	0.7	4.5
	12	1	0.5	2.5				0.5	2.5
	18	3	0.5	5.2		12	3	0.5	4.6
			0.4	2.3				0.4	2.5
					18	3	0.6	4.9	
								0.4	2.0
06	00	3	0.5	5.0	13	00	3	0.5	5.5
			0.5	2.1				0.3	2.2
	06	3	0.6	4.6		06	3	0.7	5.3
			0.3	2.2				0.5	2.0
	12	3	0.5	5.1		12	3	0.5	5.2
			0.4	2.5				0.4	2.3
	18	3	0.6	4.9		18	3	0.7	5.0
			0.4	2.2				0.5	2.3
					14	00	3	0.5	5.3
07	00	3	0.5	4.3				0.4	2.3
			0.4	2.0		06	3	0.6	5.5
	06	-	-	-				0.4	2.0
	12	3	0.5	5.0		12	3	0.5	5.2
			0.5	2.3				0.4	2.0
	18	3	0.5	5.0		18	3	0.6	2.3
			0.5	2.2					

Date Hour K Mean amplitude in m.m. Mean period in sec. Date Hour GMT K Mean amplitude in m.m. Mean period in sec.

Station : Bombay (Contd.)

March, 1963.

Date	Hour	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
15	00	1	0.6	2.2	22	00	3	0.9	2.5
	06	1	0.5	2.5				0.4	1.8
	12	1	0.6	2.4		06	3	0.5	5.2
	18	3	0.5	5.1				0.6	2.6
			0.4	2.2		12	3	0.6	5.5
								0.5	2.5
16	00	3	0.5	5.0	18	3	0.6	5.7	2.0
			0.4	2.3				0.5	2.0
	06	3	0.6	5.0	23	00	3	0.6	5.5
			0.4	2.0				0.5	2.5
	12	-	-	-		06	3	0.7	5.8
	18	3	0.4	4.3				0.6	2.5
			0.4	2.2		12	3	0.7	5.7
17	00	3	0.5	4.5				0.4	2.6
			0.6	2.0		18	3	0.5	5.6
	06	1	0.7	2.5				0.3	2.7
	12	1	0.7	2.7	24	00	3	0.6	5.1
	18	1	0.6	2.5				0.3	1.5
18	00	3	0.5	4.9	06	-	-	-	-
			0.4	2.1	12	-	-	-	-
	06	3	0.6	5.2	18	-	-	-	-
			0.6	2.5	25	00	-	-	-
	12	3	0.6	4.7		06	3	0.6	5.7
			0.4	2.3				0.6	2.2
	18	3	0.5	5.0		12	3	0.6	5.3
			0.5	2.5				0.4	2.2
19	00	3	0.6	4.9	18	3	0.6	5.0	2.4
			0.5	2.5				0.5	2.4
	06	3	0.6	5.4	26	00	-	-	-
			0.5	2.3		06	3	0.5	5.2
	12	3	0.6	5.3				0.5	2.6
			0.6	2.6		12	3	-	-
	18	3	0.7	5.4		18	3	0.6	5.4
			0.5	2.5				0.4	2.0
20	00	3	0.7	5.0	27	00	-	-	-
			0.6	2.5		06	1	0.6	1.9
	06	3	0.6	5.3		12	1	0.7	2.0
			0.6	2.5		18	1	1.1	2.0
	12	3	0.7	5.3	28	00	3	0.5	5.3
			0.4	2.3				0.4	2.2
	18	3	0.7	5.3		06	2	0.5	5.8
			0.5	2.3		12	2	0.5	6.0
21	00	3	0.6	5.1		18	3	0.5	5.4
			0.4	2.3				0.4	2.0
	06	3	0.6	5.2	29	00	3	0.5	5.7
			0.5	2.4				0.3	2.0
	12	3	0.6	5.3		06	2	0.5	5.4
			0.6	2.5		12	3	0.5	5.4
	18	3	0.6	5.7		18	3	0.4	1.8
			0.7	2.5				0.4	5.3
								0.3	1.9

International Seismological Centre

Date Hour GMT K Mean amplitude in m.m. Mean period in sec. Date Hour GMT K Mean amplitude in m.m. Mean period in sec.

Station : Bombay (Contd.)

March, 1963.

Date	Hour	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour	K	Mean amplitude in m.m.	Mean period in sec.
30	00	3	0.4	5.1	08	12	3	0.4	4.0
			0.3	1.3		18	3	0.4	4.0
	06	2	0.4	5.3	09	00	3	0.4	5.0
	12	3	0.4	5.2		06	3	0.4	5.0
			0.3	1.7		12	3	0.4	4.2
	18	3	0.5	5.3		18	3	0.3	4.4
			0.4	2.0	10	00	3	0.3	4.2
31	00	3	0.4	5.1		06	3	0.3	4.2
			0.4	2.2		12	3	0.3	4.2
	06	-	-	-		18	3	0.4	4.5
	12	3	0.5	5.2	11	00	...	-	-
			0.4	1.9		06	...	-	-
	18	-	-	-		12	...	-	-
						18	3	0.3	4.8
					12	00	3	0.4	4.4
						06	3	0.3	4.8
						12	...	-	-
						18	3	0.4	4.4
					13	00	3	0.4	4.8
						06	3	0.4	4.8
						12	3	0.4	4.8
						18	3	0.3	5.0
					14	00	3	0.4	4.8
						06	3	0.3	4.4
						12	3	0.3	4.4
						18	3	0.3	4.8
					15	00	3	0.4	4.8
						06	...	-	-
						12	3	0.4	5.0
						18	3	0.3	4.6
					16	00	3	0.4	4.6
						06	...	-	-
						12	...	-	-
						18	3	0.3	4.2
					17	00	...	-	-
						06	3	0.3	4.2
						12	3	0.3	4.4
						18	3	0.4	4.6
					18	00	3	0.4	4.6
						06	3	0.4	4.4
						12	3	0.4	4.2
						18	3	0.4	4.8
					19	00	3	0.4	4.4
						06	3	0.3	4.2
						12	3	0.3	4.4
						18	3	0.4	4.8
					08	00	3	0.3	4.4
						06	3	0.3	4.0



Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
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Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
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Station: Shillong(Contd.)

March, 1963.

20	00	3	0.3	4.2	31	00	3	0.3	4.4
	06	3	0.3	4.4		06	...	-	-
	12	3	0.3	4.4		12	3	0.3	4.2
	18	3	0.3	4.2		18	...	-	-

21	00	3	0.3	4.2				
	06	3	0.3	4.2					
	12	3	0.4	4.2					
	18	3	0.4	4.2					

Station : Madras.

22	00	3	0.3	4.4	01	00	3	0.4	2.7
	06	3	0.3	4.4		03	3	0.4	2.6
	12	3	0.3	4.2			3	0.1	1.5
	18	3	0.3	4.2		06	3	0.5	2.7

23	00	3	0.3	4.6		12	3	0.6	2.8
	06	3	0.2	4.4		18	3	0.5	2.8
	12	0..	-	-			3	0.5	4.1
	18	3	0.3	4.2	02	00	3	0.6	3.8

24	00	0..	-	-		03	3	0.5	3.6
	06	0..	-	-			3	0.5	2.7
	12	3	0.3	4.4		06	3	0.4	2.7
	18	3	0.2	4.4			3	0.1	1.7

25	00	3	0.3	4.4		12	3	0.4	2.7
	06	3	0.3	4.2		18	3	0.2	1.5
	12	3	0.3	4.4			3	0.5	3.7
	18	3	0.3	4.4			3	0.3	2.7

26	00	3	0.3	4.2	03	00	3	0.4	3.8
	06	3	0.3	4.2			3	0.3	2.6
	12	...	-	-			3	0.2	1.6
	18	3	0.3	4.2		03	3	0.3	2.7

27	00	3	0.3	4.4		06	3	0.3	2.7
	06	3	0.3	4.4		12	3	0.4	2.7
	12	3	0.3	4.4		18	3	0.2	1.9
	18	3	0.3	4.4			3	0.4	4.3

28	00	3	0.4	4.8		3	0.3	0.3	2.7
	06	3	0.4	4.8			3	0.1	1.6
	12	3	0.4	4.4	04	00	3	0.4	4.0
	18	3	0.3	4.4			3	0.3	2.7

29	00	3	0.3	4.4		3	0.1	1.7	1.7
	06	3	0.3	4.4		03	2	0.4	4.1
	12	...	-	-			3	0.3	2.7
	18	...	-	-		06	2	0.2	1.7

30	00	...	-	-		12	3	0.2	1.8
	06	3	0.3	4.4		18	3	0.3	2.7
	12	...	-	-			2	0.4	4.3
	18	...	-	-			3	0.2	2.6

Station : Madras(Contd.)

March, 1963.

05	00	2	0.4	4.5	12	06	2	0.5	4.5
		3	0.2	2.5			3	0.1	1.3
	03	2	0.4	4.3		12	2	0.6	4.6
		3	0.2	2.5			3	0.1	1.6

	06	2	0.4	4.6		18	2	0.5	4.3
		3	0.2	2.4			3	0.1	1.5
	12	2	0.4	4.6					
		3	0.2	2.3	13	00	2	0.5	4.5

	18	2	0.4	4.5			3	0.1	1.5
		3	0.2	2.5		03	2	0.4	4.3
06	00	2	0.5	4.6			3	0.1	1.3
		3	0.2	2.5		06	2	0.4	4.3

	03	2	0.4	4.0		12	2	0.4	4.3
	06	2	0.4	4.0		18	3	0.4	4.8
	12	2	0.4	3.9					
	18	2	0.4	3.8	14	00	3	0.4	4.8

							3	0.2	2.5
07	00	2	0.3	3.9		03	3	0.4	4.6
	03	2	0.3	4.1			3	0.2	2.6
	06	...	Earthquake.			06	3	0.4	4.5

	12	2	0.3	3.8		12	3	0.4	4.4
	18	2	0.3	4.3			3	0.3	2.8
						18	3	0.3	4.6
08	00	2	0.3	4.4			3	0.3	2.9

		3	0.1	1.1					
	03	2	0.3	4.2	15	00	3	0.4	4.7
		3	0.1	1.2			3	0.2	2.8
	06	2	0.3	4.4		03	3	0.3	4.4

	12	2	0.4	4.6		06	3	0.3	2.9
	18	2	0.4	4.6		12	3	0.4	2.9
09	00	2	0.5	4.8		18	3	0.2	2.8
	03	2	0.5	5.0			3	0.4	4.7

	06	2	0.5	5.2			3	0.2	2.9
	12	2	0.4	5.0		06	3	0.3	4.5
	18	2	0.4	4.9		12	3	0.2	2.7
10	00	2	0.3	4.8		18	3	0.4	4.7

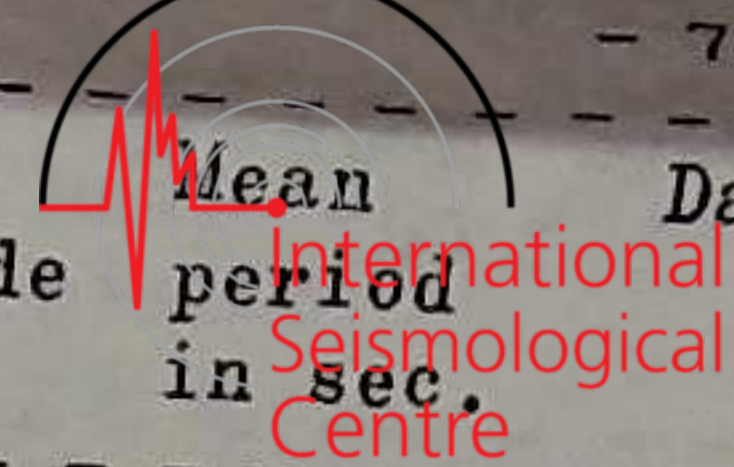
	03	2	0.3	4.5			3	0.2	2.9
	06	2	0.3	4.7		03	2	0.3	4.1
	12	3	0.4	4.8		06	...	- No record.	4.3
	18	2	0.4	5.2		12	2	0.3	4.3

						18	2	0.4	4.8
	00	2	0.5	4.7		00	2	0.3	4.6
		3	0.1	1.6			3	0.2	2.6

	03	2	0.5	4.6		03	2	0.3	4.3
		3	0.1	1.3			3	0.2	2.7
						06	2	0.4	4.3
							3	0.3	2.9

Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
Station : Madras (Contd.)									
March, 1963.									
18	00	2	0.4	4.4	24	00	2	0.4	5.4
		3	0.3	2.9			1	0.2	1.8
	03	2	0.4	4.4		03	...	Earthquake.	
		3	0.3	3.0		06	3	0.1	1.8
	06	2	0.4	4.3		12	2	0.4	5.4
		3	0.3	2.9			3	0.2	2.0
	12	2	0.5	4.5		18	2	0.4	5.5
		3	0.3	3.0			2	0.3	4.6
	18	2	0.5	4.5			3	0.2	2.2
		3	0.3	3.1					
March, 1963.									
					25	00	2	0.4	4.7
							3	0.1	2.1
19	00	2	0.5	4.5		03	2	0.4	4.8
		3	0.3	3.0			3	0.1	1.7
	03	2	0.5	4.5		06	2	0.4	4.7
		3	0.3	2.8			3	0.1	1.8
	06	2	0.4	4.6		12	2	0.5	4.7
		3	0.3	4.8			3	0.1	1.7
	12	2	0.4	4.8		18	2	0.4	4.7
		3	0.3	5.0			3	0.1	1.5
	18	2	0.5	5.0					
March, 1963.									
20	00	2	0.5	5.0	26	00	2	0.4	4.6
		3	0.3	4.7			3	0.1	1.7
	03	2	0.5	4.7		03	2	0.5	4.7
		3	0.3	4.6			3	0.2	1.9
	06	2	0.4	4.6		06	2	0.4	4.6
		3	0.3	4.7			3	0.2	1.6
	12	2	0.4	4.7		12	...	Earthquake.	
		3	0.3	4.8		18	2	0.4	4.9
	18	2	0.5	5.0					
March, 1963.									
21	00	2	0.4	4.7	27	00	2	0.4	5.0
		3	0.3	4.6			3	0.3	4.9
	03	2	0.4	4.6		03	2	0.3	4.5
		3	0.3	4.7			2	0.3	4.5
	06	2	0.4	4.7		12	2	0.5	4.5
		3	0.3	5.4		18	2	0.3	4.9
	12	2	0.5	5.4					
		3	0.3	4.5					
	18	2	0.5	5.4		00	2	0.4	5.0
		3	0.3	4.7			3	0.3	4.9
March, 1963.									
22	00	2	0.5	5.7	28	00	2	0.4	5.0
		3	0.3	4.7			3	0.3	4.6
	03	2	0.5	5.7		03	2	0.3	4.6
		3	0.3	4.6			3	0.1	2.2
	06	...	No record.			06	...	No record.	
		2	0.5	5.7		12	2	0.4	4.9
		3	0.1	2.5		18	2	0.4	4.9
	12	2	0.5	5.6					
		3	0.2	2.6					
March, 1963.									
23	00	2	0.5	5.7	29	00	2	0.4	4.9
		3	0.2	2.5			2	0.4	5.0
	03	2	0.5	5.8		03	3	0.1	1.5
		3	0.2	2.4			2	0.4	4.9
	06	2	0.5	5.7		06	3	0.1	1.6
		3	0.1	2.1		12	2	0.4	4.9
		3	0.1	2.1			3	0.1	1.7
	12	2	0.5	5.3			2	0.3	4.9
		3	0.2	2.7			3	0.1	1.6
		3	0.1	1.6					
	18	2	0.4	5.5	30	00	2	0.3	4.9
		3	0.2	1.9			3	0.1	1.5
		1	0.2	1.9		03	2	0.4	4.8
							3	0.1	1.1

Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
Station : Madras (Contd.)									
March, 1963.									
30	06	2	0.3	4.9	09	00	3	0.3	5.0
		3	0.1	1.0		06	3	0.3	5.0
	12	2	0.3	4.9		12	3	0.3	5.1
		3	0.3	5.0		18	3	0.2	4.6
31	00	2	0.3	5.0	10	00	3	0.2	4.5
		3	0.3	4.7		06	3	0.2	5.0
	03	2	0.3	4.7		12	3	0.2	4.5
		3	0.3	4.8		18	3	0.2	4.6
	12	...	Earthquake.						
		2	0.3	4.8					
	18	...	Earthquake.						
March, 1963.									
					11	00	3	0.3	4.9
						06	2	0.3	5.0
						12	2	0.3	4.4
						18	2	0.3	4.0
Station : Bokaro.									
01	00	...	-	-	12	00	3	0.3	5.0
		2	0.3	6.0		06	2	0.2	3.8
	06	2	0.3	5.0		12	2	0.2	5.0
		3	0.3	5.0		18	2	0.3	5.0
02	00	2	0.4	5.2	13	00	3	0.4	5.1
		3	0.5	6.0		06	3	0.3	5.0
	06	2	0.3	5.0		12	3	0.3	4.9
		3	0.4	6.5		18	3	0.3	4.8
03	00	3	0.4	5.3	14	00	1	0.3	5.1
		3	0.3	5.6		06	3	0.3	5.2
	06	3	0.3	4.6		12	3	0.2	4.4
		3	0.3	5.5		18	3	0.3	4.8
04	00	3	0.2	5.0	15	00	3	0.2	5.0
		3	0.2	5.1		06	3	0.2	4.6
	06	3	0.3	4.5		12	3	0.2	5.0
		3	0.3	5.0		18	3	0.2	5.0
05	00	3	0.3	5.5	16	00	3	0.2	4.5
		3	0.3	5.0		06	3	0.2	4.8
	06	3	0.3	5.3		12	3	0.2	4.6
		3	0.3	5.0		18	3	0.2	4.8
06	00	2	0.3	4.8	17	00	3	0.2	4.5
		2	0.4	5.0		06	3	0.2	5.0
	06	2	0.3	4.7		12	3	0.2	4.6
		2	0.3	5.0		18	3	0.2	5.0
07	00	3	0.2	5.0	18	00	3	0.3	4.5
		3	0.2	5.2		06	3	0.2	4.4
	06	...	-	-		12	3	0.3	4.8
		3	0.2	5.2		18	3	0.3	4.8
	12	1	0.2	5.0	19	00	3	0.2	4.4
		3	0.3	4.7		06	3	0.2	4.6
	06	3	0.2	4.7		12	3	0.3	5.0
		3	0.3	4.6		18	1	0.3	5.0



Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
Station : Bokaro(Contd.)					Station: Visakhapatnam.				
March, 1963.									
20	00	3	0.3	4.6	01	00	00	-	-
	06	3	0.3	4.8		06	2	0.3	2.9
	12	3	0.3	4.8		12	2	0.3	3.0
	18	3	0.2	5.5		18	2	0.3	3.0
21	00	3	0.2	5.0	02	00	00	-	-
	06	3	0.2	4.6		06	2	0.3	3.3
	12	3	0.2	5.4		12	2	0.3	3.5
	18	3	0.3	5.3		18	2	0.3	3.0
22	00	3	0.3	5.2	03	00	00	-	-
	06	3	0.3	5.3		06	2	0.2	3.9
	12	3	0.3	5.0		12	2	0.3	4.1
	18	3	0.3	5.5		18	2	0.3	4.3
23	00	3	0.3	4.8	04	00	00	-	-
	06	3	0.2	5.0		06	2	0.3	4.2
	12	3	0.2	5.6		12	2	0.3	4.1
	18	3	0.2	5.0		18	2	0.3	4.2
24	00	3	0.2	5.3	05	00	00	-	-
	06	3	0.3	5.6		06	2	0.3	4.9
	12	1	0.2	5.0		12	2	0.3	4.9
	18	3	0.3	5.0		18	2	0.3	5.0
25	00	3	0.3	4.9	06	00	00	-	-
	06	3	0.3	5.2		06	2	0.3	5.0
	12	2	0.3	5.4		12	2	0.3	5.1
	18	2	0.3	5.5		18	2	0.2	5.0
26	00	2	0.3	5.0	07	00	00	-	-
	06	3	0.3	5.0		06	2	0.3	5.0
	12	...	-	-		12	2	0.3	5.1
	18	3	0.3	5.3		18	2	0.3	5.1
27	00	3	0.3	5.6	08	00	00	-	-
	06	3	0.3	4.7		06	2	0.3	4.8
	12	3	0.2	4.9		12	2	0.3	4.5
	18	3	0.3	5.0		18	2	0.3	4.5
28	00	3	0.3	5.4	09	00	00	-	-
	06	3	0.3	5.6		06	2	0.3	4.9
	12	3	0.3	4.9		12	2	0.3	4.7
	18	3	0.3	5.0		18	2	0.3	4.8
29	00	...	-	-	10	00	00	-	-
	06	...	-	-		06	2	0.3	5.0
	12	3	0.2	5.4		12	2	0.3	5.1
	18	3	0.3	5.3		18	2	0.3	4.7
30	00	3	0.3	5.0	11	00	00	-	-
	06	3	0.3	5.0		06	2	0.2	5.0
	12	3	0.3	5.0		12	00	Microseism very feeble.	
	18	3	0.4	5.0		18	00	-	-
31	00	3	0.3	5.3					
	06	...	-	-					
	12	3	0.2	5.0					
	18	...	-	-					

Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in m.m.	Mean period in sec.
Station : Visakhapatnam(Contd.)					Station : Visakhapatnam(Contd.)				
March, 1963.									
12	00	00	-	-	23	00	00	-	-
	06	00	-	-		06	2	0.3	5.5
	12	2	0.3	5.0		12	2	0.3	5.7
	18	00	-	-		18	00	-	-
13	00	00	-	-	24	00	00	-	-
	06	2	0.3	5.0		06	2	0.4	5.8
	12	2	0.3	6.0		12	2	0.3	5.6
	18	2	0.2	5.0		18	00	-	-
14	00	00	-	-	25	00	00	-	-
	06	2	0.3	5.0		06	2	0.4	5.9
	12	00	Microseisms very feeble.			12	2	0.4	6.0
	18	00	-	-		18	2	0.4	6.0
15	00	00	-	-	26	00	00	-	-
	06	2	0.3	4.5		06	2	0.4	6.1
	12	2	0.3	4.9		12	00	Shock is in progress.	
	18	2	0.3	4.6		18	2	0.4	5.9
16	00	00	-	-	27	00	00	-	-
	06	2	0.3	5.1		06	2	0.3	5.7
	12	2	0.3	5.2		12	2	0.3	5.5
	18	00	-	-		18	2	0.3	5.5
17	00	00	-	-	28	00	00	-	-
	06	2	0.3	5.2		06	2	0.4	6.2
	12	2	0.3	5.5		12	2	0.3	6.1
	18	2	0.3	5.7		18	2	0.3	6.1
18	00	00	-	-	29	00	00	-	-
	06	2	0.3	5.5		06	2	0.4	5.9
	12	2	0.3	5.5		12	2	0.3	5.8
	18	2	0.3	5.7		18	2	0.3	5.7
19	00	00	-	-	30	00	00	-	-
	06	2	0.3	5.8		06	2	0.4	6.0
	12	2	0.3	5.9		12	2	0.4	5.9
	18	00	-	-		18	2	0.3	5.9
20	00	00	-	-	31	00	00	-	-
	06	2	0.3	5.6		06	00	Shock is in progress.	
	12	2	0.3	5.4		12	2	0.4	5.8
	18	2	0.3	5.6		18	00	Shock is in progress.	
21	00	00	-	-					
	06	2	0.3	5.2					
	12	2	0.3	5.5					
	18	2	0.3	5.3					
22	00	00	-	-					
	06	2	0.3	5.3					
	12	2	0.3	5.3					
	18	2	0.3	5.1					



Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.
Station : Port Blair					March, 1963.				
01	00	...	-	-	12	00	1	0.2	6
	06	2	2.0	3		06	1	0.4	7
	12	2	2.0	3		12	1	0.2	7
	18	2	1.6	3		18	1	0.4	7
02	00	1	1.6	3	13	00	1	0.4	7
	06	1	0.8	3		06	1	0.4	7
	12	1	0.4	3		12	1	0.4	7
	18	1	0.4	3		18	1	0.4	7
03	00	1	0.4	3	14	00	1	0.4	7
	06	1	0.2	3		06	1	0.4	7
	12	...	-	-		12	1	0.4	7
	18	...	-	-		18	1	0.4	7
04	00	...	-	-	15	00	1	0.4	7
	06	1	0.2	7		06	1	0.4	7
	12	1	0.2	7		12	1	0.4	7
	18	1	0.2	7		18	1	0.4	7
05	00	0,0	-	-	16	00	1	0.4	7
	06	0,0	-	-		06	1	0.4	6
	12	0,0	-	-		12	...	-	-
	18	0,0	-	-		18	1	0.4	6.0
06	00	1	0.2	5	17	00	1	0.2	5
	06	1	0.2	5		06	1	0.2	5
	12	1	0.2	5		12	1	0.2	4
	18	0,0	-	-		18	1	0.2	4
07	00	1	0.2	5	18	00	1	0.2	4
	06	...	-	-		06	1	0.2	4
	12	1	0.2	5		12	1	0.2	3
	18	0,0	-	-		18	1	0.2	3
08	00	1	0.2	6	19	00	1	0.4	7
	06	1	0.2	6		06	1	0.4	7
	12	...	-	-		12	1	0.8	7
	18	1	0.4	6		18	1	0.8	7
09	00	1	0.2	6	20	00	1	0.8	7
	06	0,0	-	-		06	1	0.4	7
	12	0,0	-	-		12	1	0.8	7
	18	1	0.2	5		18	1	0.8	7
10	00	1	0.2	6	21	00	1	0.4	7
	06	1	0.2	7		06	1	0.4	7
	12	0,0	-	-		12	1	0.4	6
	18	1	0.2	7		18	1	0.4	7
11	00	1	0.2	6	22	00	1	0.4	7
	06	1	0.2	5		06	1	0.4	6
	12	1	0.2	5		12	1	0.4	6
	18	1	0.2	6		18	1	0.8	7

Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.
Station : Port Blair(Contd.)					March, 1963.				
23	00	1	0.8	7	28	00	1	0.2	6
	06	1	0.8	5		06	1	0.2	6
	12	1	0.8	5		12	1	0.2	6
	18	1	0.8	6		18	1	0.2	7
24	00	1	0.4	6	29	00	...	-	-
	06	1	0.8	7		06	1	0.2	6
	12	1	0.4	7		12	1	0.2	6
	18	1	0.4	6		18	1	0.2	7
25	00	1	0.4	6	30	00	1	0.2	7
	06	...	-	-		06	1	0.2	7
	12	...	-	-		12	1	0.2	7
	18	...	-	-		18	1	0.2	7
26	00	...	-	-	31	00	1	0.2	7
	06	1	0.2	6		06	...	-	-
	12	...	-	-		12	1	0.4	7
	18	1	0.2	6		18	...	-	-
27	00	0,0	-	-					
	06	1	0.2	7					
	12	1	0.2	6					
	18	1	0.2	6					
