

Copies 498



SEISMOLOGICAL BULLETIN

FEB 1963

GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

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

Topic 498



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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	Seismic Magnifi- cation	Damping ratio	Paper speed mm/min
A. Agra					Columbia Long Period	E	To = 15 Tg = 100			15
					- do -	N	To = 15 Tg = 185			15
					- do -	Z	To = 15 Tg = 170			15
B. Bombay	18.54°N	72.40°E	4	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
C. Bokaro	23.50°N	85.48°E		Rock	Milne-Shaw	N	12 250	20:1		15
					Milne-Shaw	E	12 250	20:1		15
					Wood-Anderson	E	0.9 930	h = 0.8		60
					Wood-Anderson	N	0.9 1000	h = 0.8		50
					Wood-Anderson	N	0.9 1000	h = 0.8		50
D. Calcutta	22.32°N	88.32°E (1)	?		Milne-Shaw	E	12 250	20:1		8
		(2)	6	Alluvium	Omori-Ewing	N	2 870	Critical		30
					Omori-Ewing	N	16 32			25.4
					Omori-Ewing	E	21 30			25.4
E. Chatra	25.50°N	87.10°E	161	Sand Stone	Milne-Shaw	E	12 250	20:1		14
					Wood-Anderson	N	1 1000	30:1		60
					Benloff	Z	To = 0 Tg = 0.45 secs	Critical		60
					Renner- Accelerograph	ZNE				
F. Colombo	06.54°N	79.52°E	7	Beach Sand	Milne-Shaw	E	12 250	30:1		
G. Dohra Dun	30.10°N	78.02°E	583	Gravel	Wood-Anderson	N	0.9 930	Critical		60
					Wood-Anderson	E	0.9 850	Critical		60
					Milne-Shaw	N	12 250	20:1		8
					Milne-Shaw	E	12 250	20:1		8
H. Hyderabad	17.34°N	78.27°E	835	Granite	Milne-Shaw	E	12 250	20:1		8
					Milne-Shaw	N	12 250	20:1		8
I. Kodaikanal	10.14°N	77.28°E	2348	Rock	Milne-Shaw	E	10 250	20:1		8
J. Madras	13.00°N	80.11°E	15		Sprengnether	E	To = Tg = 7.2 secs	Critical		30
K. New Delhi	28.34°N	77.12°E	207	Massive Quartzite						
L. Poona	18.32°N	73.51°E	540	Deccan Trap	Sprengnether	Z	To = Tg = 1.4	Critical		30
					Wood-Anderson	E	4 1000	20:1		14
					Milne-Shaw	N	12 250	20:1		8
M. Port Blair	11.49°N	92.43°E			Wood-Anderson	N	2 1000	20:1		30
					Wood-Anderson	E	0.9 1000	64:1		30
					Milne-Shaw	N	12 350	20:1		8
					Wood-Anderson	N	0.9 930	Critical		30
N. Shillong	23.34°N	91.53°E	1500	Quartzite Sand Stone (Shillong Quartzite)	Wood-Anderson	N	0.9 1000	h = 0.8		30
					Wood-Anderson	E	0.9 1000	h = 0.8		30
					Milne-Shaw	N	12 250	20:1		8
					Benloff	Z	To = 1.0 Tg = 1.8			40
					Sprengnether	E	To = Tg = 4.3	Critical		30
					Renner Accelerograph	ZNE				
O. Teeklal	28.45°N	94.44°E		Alluvium	Wood-Anderson	E	0.8 970	h = 0.8		60
P. Visionsgram	18.07°N	83.27°E			Wood-Anderson	E	0.9 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.
February, 1963.						
01	Port Blair	NE	ePg iSg	03 07 22 07 31	80	Slight.
	Shillong	Z	eP	03 12 20		Slight, near.
01	Shillong	Z	eP	05 05 44		Feeble, distant, rarefaction
01	Shillong	Z	eP	06 39 24		Slight, distant.
01	Shillong	Z	eP	06 54 51		Slight, distant.
01	Delhi	Z	iP	09 26 42		Feeble, compression.
01	Shillong	Z	e	09 56 32		Slight, distant.
01	Epc: - 3.0° S 131.0° E Coram Region. h = about 33 Km. - H = 10 h 16 m 34 s (USCGS).					
	Shillong	Z	iP	10 25 07		Slight, distant, compression.
	Chatra	Z	iP	10 25 40		Feeble, distant, rarefaction.
01	Delhi	Z	iP	10 33 21 34 43	790	Slight, compression.
01	Delhi	Z	iP	12 17 12		Slight, compression.
01	Shillong	Z	e	12 33 10		Slight, distant.
01	Shillong	Z	iP	13 32 45		Slight, distant, rarefaction.
01	Shillong	Z	eP	14 18 04		Slight, distant, compression.
	Delhi	Z	iP	14 19 28		Slight, compression.
02	Shillong	Z	iP	00 14 57		Slight, distant, rarefaction.
02	Shillong	Z	iP	06 34 47		Slight, distant, rarefaction.
02	Shillong	Z	iP	07 20 31		Slight, distant, compression.
02	Shillong	Z	eP	07 29 33		Slight, distant.
02	Shillong	Z	iP	07 52 03		Slight, distant, rarefaction.
02	Shillong	Z	iP	07 58 52		Slight, distant, rarefaction.



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h. m. s. km.

February, 1963.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
02	Shillong	Z	e	14 29 00	Slight, near.
02	Shillong	Z	iP	15 08 46	Slight, distant, compression.
02	Shillong	Z	iP	15 54 53	Slight, distant, compression.
02	Shillong	Z	iP	16 48 51	Slight, distant, compression.
02	Delhi	Z	iP	20 04 37	Tremor, compression.
02	Shillong	Z	eP	20 56 54	Local, compression.
02	Shillong	Z	e	21 45 02	Slight, distant.
	Delhi	Z	iP	21 45 03	Tremor, rarefaction.
02	Shillong	Z	e	22 49 32	Local.
02	Shillong	Z	iP	23 06 03	Slight, distant, compression.
02	Shillong	Z	iP	23 21 43	Slight, distant, rarefaction.
03	Delhi	Z	iP	03 38 20	Tremor, compression.
03	Shillong	Z	iP	03 58 44	Slight, distant, compression.
03	Delhi	Z	iP	04 42 29	Slight, rarefaction.
03	Shillong	Z	iP	09 41 45	Slight, distant, compression.
03	Shillong	Z	iP	10 30 05	Slight, distant, rarefaction.
03	Shillong	Z	iP	13 11 43	Slight, distant, compression.
03	Shillong	Z	iP	13 26 38	Slight, distant, compression.
03	Shillong	Z	iP	15 03 15	Slight, distant, compression.
	Delhi	Z	iP	15 06 52	Slight, rarefaction.
03	Delhi	Z	iP	18 22 08	Slight, rarefaction.
03	Shillong	Z	iP	18 34 44	Slight, distant, compression.
03	Shillong	Z	iP	19 07 20	Slight, distant, compression.



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h. m. s. km.

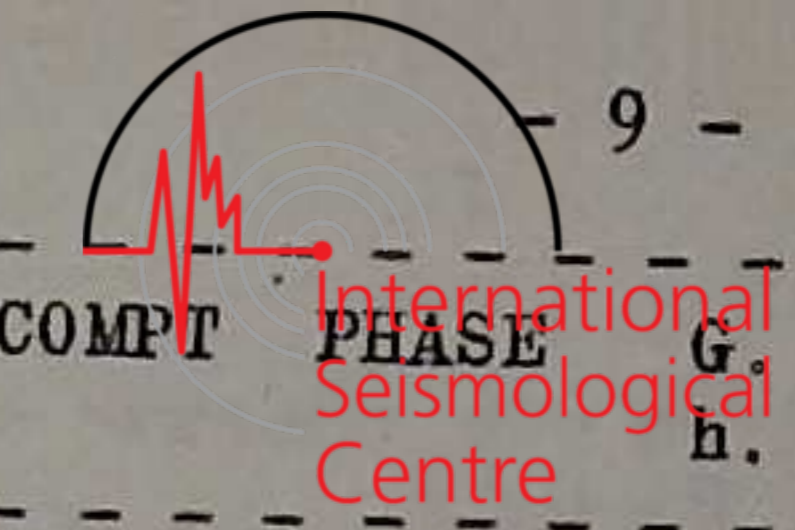
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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
03	Shillong	Z	iP	19 52 45	Slight, distant, rarefaction.
03	Delhi	Z	iP	21 05 07	Slight, rarefaction.
04	Epc:- 6.3° S 149.1° E. New Britain Region. h = about 36 Km. -H = 01 h 17 m 03 s (USCGS).				
	Shillong	Z	iP	01 27 33	Slight, distant, rarefaction.
	Delhi	Z	iP	01 28 55	Slight, compression.
	Shillong	Z	iP	03 51 37	Slight, distant, compression.
04	Shillong	Z	iP	04 04 14	Slight, distant, rarefaction.
04	Shillong	Z	iP	04 27 41	Slight, distant, compression.
04	Epc:- 27.3° N 54.2° E. Southern Iran. Felt at Lar and Bastak. h = about 34 Km. -H = 05 h 14 m 25.6 s (USCGS).				
	Poona	Z	iP	05 19 01	Slight.
	Delhi	EZ N	iP eS	05 19 03 22 50	2300 Slight, rarefaction. First ground motion East.
	Dehra Dun	Z	eP	05 19 11	Slight.
	Chatra	Z	iP	05 20 28	Feeble, distant, compression.
04	Shillong	Z	iP	06 29 58	Slight, distant, compression.
04	Delhi	EZ NE	iP eS	07 22 12 26 36	Slight, compression. First ground motion East.
	Poona	Z	iP	07 22 40	Slight, rarefaction.
	Dehra Dun	Z	eP	07 22 49	Slight.
	Chatra	Z	iP	07 24 06	Slight, distant, compression.
	Shillong	Z	iP	07 24 40	Slight, distant, compression.
04	Shillong	Z	iP	08 14 33	Slight, distant, compression.

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<u>February, 1963.</u>						
04	Delhi	Z	iPg iSg	11 21 54 22 03	80	Slight.
04	Shillong	Z	iP	15 16 39		Slight, distant, compression.
04	Epc:- 26.1° N 124.1° E. Ryukyu Islands region. h = about 33 Km. -H = 16 h 15 m 22.9 s (USCGS).					
	Shillong	Z	iP	16 21 21		Slight, distant, compression.
	Chatra	Z	iP	16 21 58		Feeble, distant, compression.
	Delhi	Z	iP	16 23 11		Tremor, rarefaction.
04	Chatra	Z	iP	18 11 24		Feeble, near, compression.
	Shillong	Z	iP	18 11 24		Slight, near, rarefaction.
04	Chatra	Z	iPg Sg	18 59 10 59 19	80	Feeble.
04	Shillong	Z	iP	21 06 21		Slight, distant, rarefaction.
04	Shillong	Z	iP	22 31 38		Slight, near, rarefaction.
04	Delhi	Z	iP iS	23 22 40 24 19	970	Slight, compression.
	Shillong	Z	iP	23 24 59		Slight, distant, rarefaction.
04	Delhi	Z	iP	23 28 24		Slight, compression.
04	Epc:- 48.5° N 154.9° E. Kurile Islands. h = 85 Km. -H = 23 h 21 m 09 s (USCGS)					
	Shillong	Z	iP	23 30 22		Slight, distant, compression.
	Chatra	Z	eP	23 30 43		Slight, distant.
	Delhi	ENZ	iP	23 31 16		Slight, compression. First ground motion South-West
	Poona	Z	iP	23 32 18		Slight, compression.
	Bombay	ZNE	eP	23 32 21		Feeble.
	Dehra Dun	Z	eP	23 32 30		Slight.

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05	Dehra Dun	Z	iP	00 31 07		Slight.
05	Delhi	Z	iP	01 56 41		Slight, rarefaction.
05	Shillong	Z	eP	05 12 56		Slight, distant, compression.
05	Bokaro	NE	iP	07 59 59		Slight.
05	Shillong	Z	iP	08 31 57		Slight, near, rarefaction.
05	Shillong	Z	eP	13 45 35		Slight, near.
05	Shillong	Z	iP	17 53 10		Slight, near, rarefaction.
05	Epc:- 38.4° S 73.2° W. Near coast of Central Chile. h = about 41 Km. -H = 20 h 39 m 21.6 s (USCGS). Mag:- 6 $\frac{1}{4}$ - 6 $\frac{1}{2}$ (Pas). 6-6 $\frac{1}{2}$ (Berk). 5 $\frac{3}{4}$ -6 (Pal).					
	Bombay	ZE	ePKP PS i	20 58 53 21 12 30 21 21	16330	
	Poona	Z	iPKP PP	20 58 55 21 02 19	16250	Compression. Initial ground movement North East.
	Madras	E	PKP PKS SKS SKKS SS LR M	59 12 21 02 41 05 59 09 22 21 56 50 42 22 01 50	16690	Initial ground motion towards East.
	Delhi	ENZ	PKP i iPP i EZ ENZ EN i i N Z	20 59 09 59 28 21 03 07 03 14 03 33 06 33 13 23 21 16 35 18 11 22 53 23 35	17070	Compression. First ground motion North.
	Dehra Dun	ENZ	PKP PP i i i i i	20 59 11 21 02 57 03 15 04 57 10 11 11 26 13 39	16780	Distant.

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05	Port Blair	E	PKP	20 59 12		
	Chatra	Z	PKP	20 59 17		Distant.
		ZE	e	59 57		
			PP	21 03 39		
	Shillong	ZE	iPKP	20 59 19	16770	Distant, rarefaction.
			PP	21 03 52		
	Bokaro	NE	PKP	20 59 43	17220	
			PP	21 03 18		
			i	05 20		
			SKKS	10 10		
			i	10 33		
			i	10 38		
			i	12 05		
			e	13 44		
			PPS	16 24		
			i	19 56		
	Visakhapatnam	NE	e	21 08 45		Slight.
	Calcutta	E	e	21 59 06		
05	Chatra	Z	iP	22 26 52	210	Feeble, rarefaction.
			iS	27 17		
	Shillong	Z	iP	22 27 31		Slight, rarefaction.
06	Dehra Dun	Z	e	01 31 21		Slight.
			i	31 46		
	Bombay	EZ	eP	01 41 02		Slight.
		N	M	02 51 -		
	Poona	Z	eP	01 41 03		Slight.
	Madras	E	e	01 41 06		Slight.
06	Shillong	Z	iP	02 03 32		Slight, distant, rarefaction.
06	Shillong	Z	iP	03 47 19		Slight, distant, compression.
06	Delhi	Z	eP	03 32 44		Slight, compression.
06	Shillong	Z	iP	07 21 23		Slight, distant, compression.
06	Epc:- 3.5° S 146.0° E. Bismark Sea. h = about 33 Km. - H = 10 h 20 m 25.5 s (USCGS).					
	Visakhapatnam	NE	eP	10 30 17		Slight.
	Shillong	ENE	iP	10 30 29	6700	Slight, distant, compression.
			iS	30 43		



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06	Chatra	Z	iP	10 30 58		Feeble, distant, rarefaction.
	Poona	Z	iP	10 32 02		Slight.
	Port Blair	E	eP	10 33 52		Slight.
06	Delhi	E	e	10 41 19		Slight, rarefaction.
	Bombay	NE	eP	10 41 44		Slight.
		E	e	46 28		
06	Dehra Dun	Z	eP	11 31 54		Slight.
Epc:- 25° N 92½° E (Assam). -H = 15 h 46 m 33 s (New Delhi).						
06	Shillong	ZNE	Pg	15 46 49	90	Slight, local.
			Sg	46 59		
	Tocklai		eP	15 47 19	240	Slight.
			PP	47 31		
			iS	47 49		
			SS	47 57		
			SSS	48 10		
	Chatra	Z	iP	15 47 49	520	Slight.
	Bokaro	NE	eP	15 48 01		Slight, near.
			e	48 28		
			e	48 33		
			e	48 58		
			e	49 23		
	Bokaro		iSg	15 49 37		
			i	50 30		
	Calcutta	E	eP	15 48 03		Slight.
			i	48 48		
	Dehra Dun	Z	iP	15 49 44		Slight.
	Delhi	Z	iP	15 49 46		Slight, rarefaction.
	Poona	Z	eP	15 50 45		Slight.
			Mn	56 00		
	Visakhapatnam	E	eP	15 50 56		Slight.
			i	52 20		
	Bombay	Z	e	15 55 30		Feeble, near.
			e	56 41		
06	Shillong	Z	eP	17 43 13		Slight, distant.
Epc:- 55.6° N 166.1° E. Kamandorskie Islands region. = about 33 Km. - H = 18 h 17 m 10.9 s (USCGS).						



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06	Shillong	Z	iP	18 27 18		Slight, distant, compression.
	Chatra	Z	iP	18 27 32		Slight, distant, compression.
	Dehra Dun	Z	iP	18 27 46		Slight, compression.
06	Delhi	Z	iP	19 27 46		Slight, compression.
06	Epc:- 28.2° S 67.4° W La Rioja Province, Argentina. h = about 19 Km. -H= 21h 43m 16.3 s (USCGS).					
	Poona	Z	PKP	22 03 06		Slight, compression.
	Delhi	Z	PKP	22 03 14		Slight, compression.
	Dehra Dun	Z	PKP i	22 03 15 03 22		Slight, compression.
	Delhi	Z	PKP	22 03 20		Slight, rarefaction.
	Shillong	Z	PKP	22 03 28		Slight, distant, rarefaction.
06	Delhi	Z	iP	22 03 30		Slight, compression.
06	Delhi	Z	iP	22 03 37		Slight, rarefaction.
07	Shillong	Z	iP	02 14 32		Slight, distant, compression.
07	Bokaro	NE	iP	07 08 26		Slight.
07	Port Blair	Z	ePg eSg	10 24 14 24 40	220	Slight.
07	Epc:- 36.4° N 70.8° E . Hindu Kush. h = about 214 Km. -H= 12 h 12 m 31.4 s (USCGS). Mag: = 3.7 .					
	Dehra Dun	Z	iP iS	12 14 31 16 08	940	Compression.
	Delhi	Z	iP iS	12 14 43 16 23	970	Compression.
	Chatra	Z	iP	12 16 20		Distant, rarefaction.
	Shillong	Z	iP	12 16 59		Distant, compression.
07	Shillong	Z	iP	15 01 48		Slight, distant, compression.
07	Shillong	Z	iP	16 44 09		Slight, distant, compression.

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07	Epc:- 14.4° N 53.3° E . Gulf of Aden. h = about 33 Km. -H= 16 h 44 m 45.3 s (USCGS).					
	Bombay	E	e	16 49 06		Slight.
07	Chatra	Z	eP	17 30 01		Feeble.
07	Shillong	Z	iP	17 42 33		Slight, distant, compression.
07	Shillong	Z	iP	18 10 12		Slight, distant, rarefaction.
07	Shillong	Z	eP	18 39 36		Slight, distant.
07	Dehra Dun	Z	eP	19 47 37		Slight.
08	Shillong	Z	eP	01 36 16		Slight, distant.
08	Port Blair	Z	ePg eSg	04 11 41 11 49	80	Slight.
08	Dehra Dun	Z	eP	04 46 45		Slight.
08	Bokaro	NE	iP	07 21 24		Slight.
08	Dehra Dun	Z	iP	08 32 27		Slight, compression.
08	Port Blair	Z	eP	10 16 25		Slight.
08	Shillong	Z	iP	12 15 42		Slight, distant, rarefaction.
08	Shillong	Z	iP	16 05 38		Slight, distant, rarefaction.
08	Port Blair	Z	eP	19 00 21		Slight.
08	Shillong	Z	iP	19 48 15		Slight, near, rarefaction.
08	Chatra	Z	iP iS	19 48 18 48 49	270	Slight, rarefaction.
08	Port Blair	N	iPg iSg	21 34 07 34 13	60	Slight.
08	Epc:- 46.7° N 153.6° E . Kurile Islands. h = about 56 Km. -H = 22 h 30 m 27.6 s (USCGS). Mag:- 4.2.					
	Shillong	Z	iP	22 39 39		Distant, rarefaction.
	Dehra Dun	Z	iP	22 40 26		Rarefaction.
	Delhi	Z	iP	22 40 37		Compression.

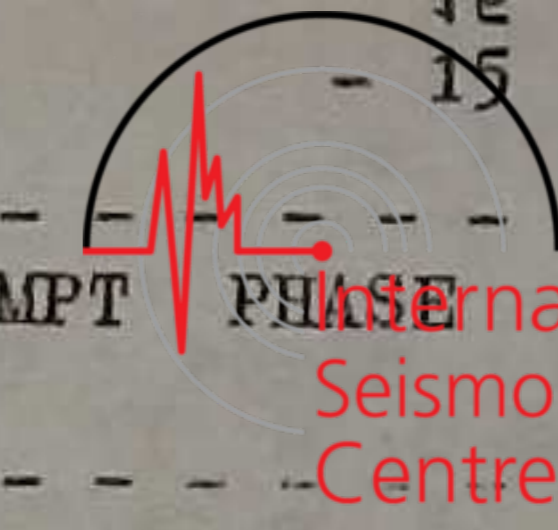
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09	Shillong	Z	eP	01 27 20		Slight, distant.
09	Epc:- 36.4° N 137.9° E. Central Honshu, Japan. h = about 33 Km. -H= 03 h 53 m 06 s (USCGS). Mag:- 4.4.					
	Shillong	Z	iP	04 00 42		Distant, rarefaction.
	Dehra Dun	Z	eP	04 01 54		
	Delhi	Z	iP	04 02 06		Compression.
09	Shillong	Z	iP	08 10 29		Slight, distant, compression.
	Chatra	Z	eP	08 11 13		Feeble, distant.
	Dehra Dun	Z	iP	08 11 27		Slight, compression.
09	Shillong	Z	iP	11 39 12		Slight, distant, rarefaction.
09	Shillong	Z	iP	11 53 07		Slight, near, rarefaction.
09	Tocklai		eP i i	16 04 19 04 55 05 07		Slight.
09	Shillong	ZNE NE	iP LQ iS SS	16 04 41 06 26 06 40 07 03	1370	Slight, compression.
09	Chatra	Z	iP e	16 06 38 07 29		Feeble, compression.
	Dehra Dun	Z	eP i	16 07 27 14 52		Slight.
09	Epc:- 43.7° N 150.6° E Kurile Islands region. h = about 39 Km. -H= 16 h 05 m 03 s (USCGS). Mag:- 4.8					
	Shillong	Z	iP	16 14 01		Distant, rarefaction.
	Chatra	Z	iP	16 14 21		Distant, rarefaction.
	Poona	Z	iP	16 16 01		
09	Chatra	Z	eP eS	16 23 43 24 01	140	Feeble.
09	Chatra	Z	iP	17 26 34		Feeble, distant, rarefaction.



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09	Port Blair		ePg eSg	23 12 27 12 34	60	Slight.
10	Shillong	Z	iP	04 02 05		Slight, distant, compression.
10	Shillong	Z	iP	06 54 32		Slight, distant, rarefaction.
10	Chatra	Z	iPg Sg	07 42 45 42 53	70	Slight, compression.
10	Shillong	Z	iP	09 43 47		Slight, distant, compression.
	Delhi	Z	iP	09 45 15		Feeble, rarefaction.
10	Shillong	Z	iP	11 48 34		Slight, near, compression.
10	Epc:- 42.4° N 142.1° E, Near south coast of Hokkaido, Japan. h = about 54 Km. -H= 12 h 00 m 42.2 s (USCGS). Mag:- 4.3 .					
	Shillong	Z	iP	12 18 48		Distant, compression.
	Delhi	Z	iP	12 09 59		Rarefaction.
10	Delhi	Z	iP	13 41 27		Feeble, compression.
10	Shillong	Z	eP	14 37 08		Slight, distant.
10	Shillong	Z	iP	15 15 42		Slight, distant, rarefaction.
	Chatra	Z	eP	15 16 07		Feeble, distant.
	Delhi	Z	iP	15 17 24		Feeble, rarefaction.
10	Dehra Dun	Z	eP	16 26 13		Slight.
	Delhi	Z	iP	16 26 49		Slight, rarefaction.
10	Dehra Dun	Z	eP	17 49 07		Feeble.
	Delhi	Z	iP iS	17 49 18 50 52	910	Slight, compression.
	Chatra	Z	eP	17 50 49		Feeble, distant.
	Shillong	Z	iP	17 51 40		Slight, distant.
10	Epc:- 44.6° N 147.8° E Kurile Islands region. h = about 67 Km. -H = 21 h 35 m 48.7 s (USCGS). Mag:- 5.0.					

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10	✓ Shillong	Z	iP	21 44 28		Distant, rarefaction.
	✓ Chatra	Z	iP	21 44 49		Distant, rarefaction.
	✓ Dehra Dun	Z	iP	21 45 21		Rarefaction.
	✓ Delhi	Z	iP	21 45 32		Rarefaction.
	✓ Poona	Z	eP	21 46 31		
10	Delhi	Z	eP	21 53 20		Slight, rarefaction.
10	Shillong	Z	iP	23 28 28		Slight, distant, rarefaction.
11	Dehra Dun	Z	eP	01 56 43		Slight.
			i	57 00		
			i	57 20		
			i	57 25		
			i	57 36		
	Delhi	Z	iP	01 57 03		Slight, rarefaction.
			i	57 04		
11	Shillong	Z	iP	03 27 30		Slight, distant, compression.
11	Shillong	Z	iP	04 17 15		Slight, distant.
11	Epc:- 29.8° S 179.1° E . Kermadec Islands region. h = about 528 Km. -H= 04 h 36 m 30.4 s (USCGS). Mag: 4.6.					
	Shillong	Z	eP	04 47 01		Distant.
	Dehra Dun	Z	eP	04 51 28		
			e	51 53		
11	Shillong	Z	iP	06 05 49		Slight, distant, compression.
	Chatra	Z	eP	06 06 42		Slight, distant.
11	Madras	E	eP	06 20 16		Feeble.
	Port Blair	E	eP	06 20 17		Slight.
	Shillong	Z	iP	06 21 01		Slight, distant, compression.
	Chatra	Z	iP	06 21 27		Slight, distant, compression.
	Poona	Z	eP	06 22 00		Slight.
	Dehra Dun	Z	eP	06 22 29		Slight.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
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11	Bokaro	NE	iP	08 10 28		Slight.
11	Shillong	Z	eP	13 02 17		Slight, distant.
11	Shillong	Z	iP	13 37 20		Slight, distant, compression.
11	Shillong	Z	iP	13 54 44		Slight, distant, rarefaction.
11	Shillong	Z	iP	16 18 41		Slight, distant, rarefaction.
11	Shillong	Z	iP	16 46 48		Slight, distant, compression.
11	Port Blair	Z	ePg eSg	21 50 42 90 50 52		Slight.
12	Epc:- 17.7° N 122.3° E . Near West coast of Luzon Philippine Islands. h= about 33 Km. -H= 00 h 26 m 19 s (USCGS).					
	Shillong	Z	iP	00 32 19		Distant, compression.
	Chatra	Z	iP	00 32 56		Distant, rarefaction.
	Dehra Dun	Z	e	00 40 53		
12	Shillong	Z	eP	09 46 41		Slight, near.
12	Port Blair	E	ePg eSg	11 13 33 170 13 53		Slight.
12	Shillong	Z	iP	13 06 23		Slight, local, compression.
	Chatra	Z	eP iS	13 07 17 430 08 04		Slight.
12	Shillong	Z	iP	15 21 00		Slight, distant.
12	Shillong	Z	iP	17 54 11		Slight, distant, rarefaction.
12	Delhi	Z	iP	18 55 33		Slight, rarefaction.
12	Shillong	Z	iP	19 48 31		Slight, distant.
12	Shillong	Z	eP	20 52 47		Slight, near.
12	Shillong	Z	iP	21 02 30		Slight, distant, rarefaction.
12	Epc:- 17.8° S 178.6° W. Fiji Islands. h = about 583 Km. -H= 23 h 07 m 28.9 s (USCGS). Mag: 5.5					



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12	✓ Shillong	Z	iP	23 20 00		Distant, compression.
	✓ Delhi	Z	iP	23 24 57		Compression.
13	Shillong	Z	iP	00 29 48		Slight, distant, compression.
13	✓ Shillong	Z	eP	00 40 25		Slight, distant.
	✓ Delhi	Z	iP	00 42 08		Slight, rarefaction.
13	Hyderabad	N	M	01 44 01		Period = 14 secs. Gr. dis = 5 μ.
13	Epc:- 13.0° N 57.9° E . Arabian Sea. h = about 33 Km. -H= 01 h 34 m 40.4 s (USCGS).					
	✓ Bombay	NE N	eP PPP eS M	01 38 12 38 39 41 25 47 -	1940	Slight.
	✓ Poona	ZE Z	eP eS	01 38 23 41 09	1650	Slight, rarefaction.
	✓ Madras	E	iP P PP PPP iS LQ LR M	01 39 25 39 31 39 54 40 04 43 34 44 06 45 10 46 58	2590	Slight. Initial ground movement towards East.
	✓ Visakhapatnam	NE	iP	01 39 30		Slight.
	✓ Delhi	NEZ	iP	01 39 51		Slight, compression.
	✓ Dehra Dun	Z	iP	01 40 05		Slight, compression.
	✓ Chatra	Z	iP	01 40 51		Slight, distant, compression.
	✓ Port Blair	E	eP e	01 46 58 48 17		Slight.
13	Delhi	Z	iP iS	05 59 27 06 01 14	1040	Slight, rarefaction.
13	Shillong	Z	eP	06 05 07		Slight, near.
13	Shillong	Z	iP	08 04 15		Slight, near, rarefaction.
	Chatra	Z	eP	08 06 41		Feeble, distant.

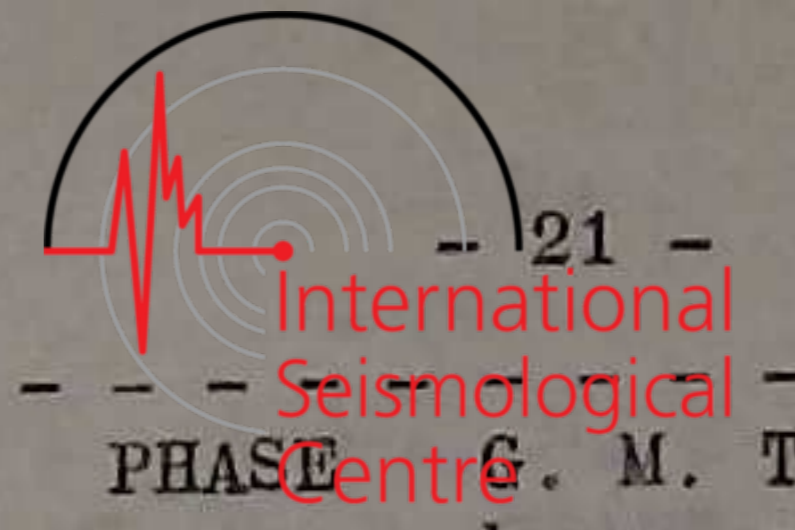
DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
13	Epc:- 24.5° N 121.8° E . Northern Formosa, 3 killed and 15 injured, h = about 33 Km. widespread, but moderate damage. -H=08 h 50 m 02.2 s. Mag: 7¼(Pas); 7¼ (Berk) 7-7¼(Pal) (SHILLONG). Epc:- 25° N 122.2° E. -H= 08 h 50 m 00 s .					
13	✓ Tocklai	E	iP	08 55 29		Slight.
	✓ Shillong	ZNE N	iP PP PPP E NE N M	08 55 45 56 16 56 20 59 28 09 00 21 00 26 00 35 04 12	3070	Distant, compression.
	✓ Port Blair	NE	iP PP i PcP	08 56 13 57 09 58 20 59 17	3380	
	✓ Port Blair	NE	iS SS	09 01 14 03 11		
	✓ Calcutta	N	iP iS	08 56 23 09 01 23	3370	
	✓ Chatra	ZNE NE	iP PP PPP PcP iS LQ SS SSS E N	08 56 25 57 27 57 48 59 04 09 01 25 03 03 05 18 03 31 09 10 10	3370	Initial ground movement towards South West and Compression. Period=21 secs. Gr. dis = 1000 u. Period = 15 secs. Gr. dis = 334 u.
	✓ Bokaro	NE E NE	iP PP PPP PcP eS i LQ ScS M	08 56 37 57 50 58 05 59 14 09 01 56 08 02 56 03 55 06 54 08 22	3680	
	✓ Visakhapatnam	NE	iP PP PPP iS	08 57 10 58 32 58 58 09 02 52	4045	Distant. First ground movement North East.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
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13	✓ Visakhapatnam	NE	PcS SS SSS LR M	09 03 10 05 22 05 44 07 12 10 16		Period = 18.0 secs. Amp: = 7.1 mm.
	✓ Dehra Dun	ZNE	iP PP PPP PcP	08 57 31 59 04 59 28 59 42	4320	First ground movement towards South East. Compression.
	✓ Dehra Dun	NE	iS SS LQ SSS	09 03 30 06 13 06 21 06 47		
	✓ Dehra Dun	NE	ScS LR M	09 07 41 08 16 11 31		
	✓ Hyderabad	EN E	iP PP PcP PPP PcS	08 57 46 59 25 59 46 59 55 09 03 21	4540	
		EN	eS SS LR	03 58 07 10 09 07		
		N E	M M	14 10 14 25		Pd. = 15 secs. Gr. dis = 12 μ. Pd. = 18 secs. Gr. dis = 10 μ.
	✓ Delhi	ZNE	iP PP iS PcS/ScS i i	08 57 38 59 14 09 03 17 03 39 05 57 06 38	4450	First ground movement North West. Compression. Mag : = 7.2. Amp. = 0.45 mm.
	✓ Sehore	E NE N	iP eS LQ	08 57 45 09 03 55 06 59	4530	Distant.
	✓ Madras	E	iP PP PPP iS LQ LR M	08 57 48 59 27 59 53 09 04 04 07 17 09 28 13 03	4600	Initial ground movement towards West.
	✓ Kodaikanal	E	iP PcS	08 57 50 09 03 33	4610	Distant.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
13	✓ Poona	ZNE	iP N E NE N E	08 58 18 09 00 04 00 41 03 44 04 55 08 08 08 51	4970	Compression. Initial movement South West.
	✓ Bombay	N	SSS LR M Mn	09 00 06 11 12 14 28 16 30		
	✓ Bombay	N	iP PP PPP iS PS SS i LQ M	08 58 20 09 00 15 00 31 05 07 05 24 08 06 08 35 08 58 17 09	5080	Period = 10 secs. Gr. dis = 106 μ.
	✓ Bokaro	NE	iP	09 17 18		Feeble, local.
13	Epc:- 24.8° N 121.7° E. Northern Formosa. h = about 33 Km. -H = 09 h 30 m 34.6 s (USCGS). Mag : 5.4.					
	Shillong	Z	iP	09 36 17		Distant, rarefaction.
	Dehra Dun	Z	iP	09 38 05		Rarefaction.
	Poona	Z	iP	09 38 49		Compression after shock.
13	Shillong	Z	iP	12 23 07		Slight, distant, rarefaction.
13	Dehra Dun	Z	eP	13 37 22		Tremor.
13	Madras	E	e e e	15 59 56 16 30 06 39 58		Slight.
13	Epc:- 9.9° S 160.8° E. Solomon Islands. Felt Honiara. h = about 29 Km. -H = 18 h 13 m 55.1 s (USCGS) Mag: 6½ (Pas) 6½ (Bts) 6-6¼ (Pal) 5.8 (CGS).					
	Epc:- 7.5° S 163° E. -H = 18 h 13 m 45 s .					
	✓ Port Blair	E	eP eS	18 25 16 34 24	7730	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
13	Shillong	ZNE	iP PcP PP PPP iS SS i SSS	18 25 37 25 50 28 31 30 21 35 19 41 00 41 16 45 17	8430	Distant, compression.
	Calcutta	E	iP iS	18 25 51 35 48	8730	
	Chatra	ZN E NE	eP iS	18 26 04 36 05	8820	
	Bokaro	NE E NE	iP PP eS ScS PS PPS	18 26 05 29 12 36 11 36 35 37 12 37 42	8930	Initial ground motion towards West.
	Madras	E	iP PP PPP SKS SKKS iS ScS PS PPS i SSS LQ LR M	18 26 22 30 00 31 51 36 43 36 56 37 05 37 12 38 08 38 29 43 03 46 36 50 31 54 23 19 02 17	9780	Initial ground motion
	Hyderabad	E	eP eS i i LR M	18 26 36 36 54 37 22 41 42 53 09 59 27	9190	Period = 18 secs. Gr. dis = 4 μ.
	Dehra Dun	EZ E N	eP SKS ScS	18 26 45 37 13 37 28		
	Delhi	ZNE EZ E Z N ENZ NZ	eP/PcP i PP SKS i i eS, ScS i	18 26 47 27 01 30 29 37 03 37 10 37 14 37 37 38 05	9960	First ground motion South-West.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
13	Delhi (Contd.)	EZ E EZ E N E	PS PPS SS SSS i LQ LR	18 38 45 39 07 43 41 47 05 49 11 51 47 54 37 54 49		
	Poona	Z N	eP iS	18 26 53 37 45	9990	
	Bombay	N	eP eS M	18 27 03 37 54 19 24 33	9980	Period=19 secs. Gr. dis = 6 μ.
13	Epc:- 24.6°N 122.1° E Northern Formosa. h = about 33 Km. -H= 19 h 02 m 06.7 s (USCGS). Mag : 5.0 (CGS).					
	Chatra	Z	iP	19 07 27		Distant, compression.
	Shillong	Z	iP	19 07 47		Slight, distant, compression.
	Dehra Dun	Z	eP	19 09 34		Slight.
13	Poona	Z	iP	19 59 32		Slight, compression.
	Bombay	E	eP	19 59 53		Slight.
	Madras	E	iP PP PPP iS LQ LR M	20 00 31 00 57 01 16 04 42 05 11 06 20 08 12	2610	Slight. Initial ground motion towards East.
	Dehra Dun	Z	iP	20 01 13		Slight, rarefaction.
	Shillong	Z	iP	20 02 28		Slight, distant, rarefaction.
13	Shillong	Z	eP	20 17 42		Slight, near.
14	Shillong	Z	eP	01 05 04		Slight, near.
	Chatra	Z	iP eS	01 06 38 08 02	810	Slight, rarefaction.
14	Shillong	Z	iP	03 16 05		Slight, near, rarefaction.
14	Shillong	Z	iP	07 00 09		Slight, distant, compression.

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14 Epc:- 7.2° S 128.2° E . Banda Sea. Felt Darwin ,Australia.
 h = about 197 Km.
 -H= 07 h 04 m 4.8 s . Mag: 6½(Pas)5.8 (CGS).
 Epc:- 3° S 128° E.
 -H= 07 h 04 m 35 s (SHILLONG).

DATE	STATION	COMPT	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	km.	
14	Port Blair	E	iP	07 11 59	4170	
			PP	13 27		
			eS	17 49		
			SS	20 14		
	+ Dehra Dun	N	eP	07 12 02		Dup see over
			e	07 12 03	6390	
	Delhi	EN ENZ	iP	14 34		
			i	14 40		
			PcP	15 26		
			PP	16 53		
			iS	22 31		
			PS	22 45		
PPS			22 57			
ScS			24 14			
SSS			28 39			
LR			31 55			
14	Tocklai	E	e	07 13 00		Slight.
Shillong	ZNE	iP	07 13 02	5250	Compression.	
		i	14 16			
	E	PP	14 53			
		PPP	15 55			
	NE	PcS	18 12			
		iS	19 53			
	E	PS	20 19			
		PPS	20 25			
	E	ScS	22 41			
		SS	07 23 43			
Shillong	EN	LQ	24 57			
		i	25 19			
		LR	27 31			
		M	31 37			
		iP	07 13 26	5490	First ground movement South East.	
iPP	15 22					
i	15 30					
iS	20 33					
ePS	20 42					
ePPS	20 49					
Visakhapatnam	E	i	21 37			
		iSS	24 03			
		P	07 13 30	5460	Initial ground motion towards West.	
i	13 40					
i	15 44					
PPP	16 16					
i	16 54					

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DATE	STATION	COMPT	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	km.	
14	Bokaro	E NE	PcS	07 18 45		
			i	20 13		
			S	20 35		
Bokaro	E	SS	07 24 01			
		i	24 35			
Madras	E	iP	07 13 31	5490	Initial ground movement towards West.	
		i	13 42			
		PcP	14 39			
		PP	15 24			
		PPP	16 34			
		iS	20 38			
		PS	20 51			
		e	21 41			
		ScS	23 12			
		SS	24 09			
		LQ	25 41			
		LR	28 30			
M	33 05					
Chatra	Z	iP	07 13 35		Distant, compression.	
		e	22 10			
		SS	24 19			
Hyderabad	EN	iP	07 13 51	5940	Initial ground movement towards North East.	
		PP	15 59			
	N	eS	21 23			
		SS	24 29			
	E	SSS	26 41			
		LR	29 47			
	E	M	33 21			
		M	33 23			
	Calcutta	E	iP	07 14 07		
			eP	07 14 18		6360
Sehore	E	iS	22 14			
		iP	07 14 25	6270	Compression. Initial ground movement North West.	
iS	22 16					
PS	22 25					
i	23 29					
i	25 26					
SSS	28 05					
Poona	NEZ	LR	30 43			
		M	35 48			
		iP	07 14 34	6570	First ground movement towards East. Compression.	
PcP	15 29					
PP	16 47					
PPP	17 52					
PcS	19 43					
i	20 25					
Dehra Dun	EZ ENZ	iS	22 41			
		i	22 41			

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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
14	Dehra Dun	E	PPS SS SSS	07 23 04 26 40 28 51		
	Bombay	NE E N	eP i eS PS ScS	07 14 42 14 52 22 28 22 35 23 40	6190	
14	Poona	Z	eP	07 43 51		Slight.
14	Shillong	Z	iP	10 04 28		Slight, distant, rarefaction.
14	Delhi	Z	iP	12 56 39		Feeble, rarefaction.
14	Delhi	Z	iP	13 27 46		Slight, compression.
14	Shillong	Z	iP	14 18 15		Slight, distant, rarefaction.
	Delhi	Z	iP	14 19 17		Slight, rarefaction.
14	Shillong	Z	iP	15 22 12		Slight, distant, rarefaction.
14	Shillong	Z	iP	15 41 12		Slight, distant, rarefaction.
14	Delhi	Z	iP	18 37 37		Feeble, compression.
14	Bombay	Z	e	21 19 -		Slight.
14	Shillong	Z	iP	22 04 08		Slight, distant, compression.
14	Shillong	Z	iP	22 12 26		Slight, distant, compression.
14	Epc:- 5.0° S 144.6° E Eastern New Guinea. h = about 80 Km. -H= 22 h 07 m 54.3 s (USCGS). Mag: 6½(Pas)6(Pal)6.0(CGS)					
	Epc:- 6.5° S 145° E. (SHILLONG). -H= 22 h 07 m 50 s					
	Delhi	EN EZ	e iP PcP i i iS PS SKS SS	22 16 55 19 17 19 27 20 08 25 13 28 34 28 55 29 05 33 37	7910	First ground motion West. Compression.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
14	Shillong	ZNE NE E	iP iS PPS ScS SS	22 17 51 25 54 26 25 27 25 29 46	6501	Rarefaction.
	Calcutta	E	eP iS	22 18 03 26 18	6720	
	Chatra	Z E	iP iS	22 18 21 26 37	6740	Rarefaction.
	Bokaro	E	iP i PcP PPP	22 18 21 18 37 19 16 22 13	7080	Initial ground motion towards West.
	Bokaro	NE E NE	eS PS PPS SKS	22 26 55 27 14 27 24 28 08		
	Visakhapatham	EN E	iP iPcP iS PS PPS	22 18 27 18 50 27 02 27 22 27 31	7100	First ground move- ment South East.
	Madras	E	eP PcP PP PPP eS PPS SKS LQ M	22 18 37 19 10 21 05 22 41 27 18 27 50 28 18 35 06 43 41	7200	
	Dehra Dun	Z EZ E	iP PcP i PP PPP iS PS PPS ScS	22 19 15 19 34 20 25 21 41 23 19 28 35 29 01 29 12 29 15	8030	Compression.
	Poona	Z EN	iP iS	22 19 21 28 43	8030	Compression.
14	Dehra Dun	Z	iP	22 52 15		Tremor, compression.
14	Shillong	Z	iP	23 54 13		Slight, distant, rarefaction.
15	Shillong	Z	iP	00 20 08		Slight, distant, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
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15	Shillong	Z	iP	05 52 54		Slight, distant, compression.
15	Shillong	Z	iP	09 52 10		Slight, distant, compression.
15	Shillong	Z	iP	10 46 31		Slight, distant, rarefaction.
15	Shillong	Z	eP	12 37 57		Slight, distant.
15	Shillong	Z	iP	15 44 12		Slight, near, rarefaction.
15	Shillong	Z	iP	15 52 27		Slight, near, compression.
15	Epc:- 4.3° N 96.3° E . Sumatra. h = about 33 Km. -H= 16 h 29 m 19 s . Mag:- 5.7 .					
	Port Blair	E	e	16 33 19		
	Shillong	Z	iP	16 34 06		Distant, rarefaction.
	Bokaro	E	eP i i	16 34 25 38 14 38 39		
	Chatra	Z	iP	16 34 34		Distant.
	Dehra Dun	Z	iP	16 35 37		Rarefaction.
15	Shillong	Z	iP	16 51 07		Slight, distant, compression.
15	Shillong	Z	iP	18 06 25		Slight, distant, rarefaction.
15	Shillong	Z	iP	20 25 13		Slight, distant, compression.
16	Shillong	Z	iP	05 48 39		Slight, distant, rarefaction.
16	Dehra Dun	Z	eP	05 53 21		Tremor.
16	Shillong	Z	iP	05 57 27		Slight, distant, rarefaction.
16	Shillong	Z	iP	08 38 28		Slight, distant, rarefaction.




DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
16	Delhi	Z	iP i	09 54 43 55 45		Slight, compression.
	Delhi	Z	iP	09 56 36		Slight, rarefaction.
16	Delhi	Z	iP	09 58 46		Slight, compression.
	Delhi	Z	iP	10 01 23		Slight, rarefaction.
16	Epc:- 7.0° S 117.3° E . Flores sea. h = about 561 Km. -H= 10 h 46 m 22.0 s (USCGS). Mag:- 4.6 (CGS).					
	Shillong	ZNE E	iP iS i SS LQ	10 53 16 58 45 59 06 11 01 04 01 09	3850	Compression.
	Bokaro	E	eP iS	10 53 35 59 19	4080	
	Dehra Dun	Z	iP	10 53 46		Compression.
	Poona	Z	eP iS	10 54 25 11 00 47	4690	
	Port Blair	E	iP iS	10 56 11 11 01 16	3450	
	Calcutta	E	i	10 58 49		
	Delhi	EN	iP e	11 01 20 03 27		First ground motion North East.
16	Shillong	Z	iP	11 50 48		
	Epc:- 36.5° N 70.5° E Hindu Kush. h = about -H = 12 h 19 m 31.1 s (USCGS). Mag: = 5.2 (CGS).					
	Epc:- 36.7° N 70° E. -H= 12 h 19 m 30 s					
	Dehra Dun	ENZ	iP PP PPP LQ iS SS LR SSS S* Sg;M	12 21 34 21 41 21 50 22 59 23 07 23 19 23 26 23 32 23 38 24 02	300	First ground movement towards South West. Rarefaction.
						h= 200 Km.(Shillong).


DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
16	Delhi	ENZ	iP PP PPP LQ eS LR, SS SSS	12 21 45 21 52 21 59 23 12 23 26 23 38 27 10	910	First ground motion towards North West. Rarefaction. Mag: 5.5.
7	Shillong	Z	iP	12 22 43		Distant, compression
	Sehore	NE N	eP eS	12 22 50 25 23	1580	Deep shock.
	Chatra	NE	eP iS	12 23 19 26 16	1770	
	Bombay	NEZ E	eP PP eS LR	12 23 24 23 47 26 38 27 47	1950	
	Poona	Z EN	iP eS	12 23 29 26 47	1990	Rarefaction.
	Bokaro	NE	iP iS	12 23 31 26 45	1950	Initial ground motion towards West.
	Hyderabad	N EN N E	iP i eS LR M M	12 23 52 24 56 27 38 28 26 29 26 29 29	2290	North-ward. Period = 8 secs. Gr. dis = 4 μ. Period = 6 secs. Gr. dis = 3 μ.
	Calcutta	E	eP iS	12 23 54 27 25	2130	
	Shillong	ZNE E ZE E E	iP PP SP iS LQ i LR ScP i	12 24 01 24 23 25 06 27 46 28 03 28 58 29 05 31 19 34 53	2390	Rarefaction. Depth 200 Km. Epc: 36.7° N 70° E.
	Visakhapatnam	E	iP PP PPP iS LQ SS	12 24 09 24 36 25 13 12 28 00 28 24 28 45	2340	First ground movement North West.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
16	Madras	E	eP PP sP iS LQ LR M	12 24 37 25 18 25 44 28 44 29 06 30 18 32 13	2810	Depth 200 Kms.
	Port Blair	E	e	12 30 34		
	Kodaikanal	E	i i	12 30 46 33 31		
16	Shillong	Z	iP	21 59 13		Slight, distant, rarefaction.
16	Shillong	Z	iP	22 09 58		Slight, distant, compression.
16	Shillong	Z	iP	22 19 31		Slight, distant, compression.
16	Shillong	Z	iP	23 47 03		Slight, distant, compression.
17	Shillong	Z	iP	00 21 08		Slight, distant, compression.
17	Shillong	Z	eP	02 11 47		Slight, distant.
17	Shillong	Z	iP	02 21 48		Slight, distant, rarefaction.
17	Epc:- 24.1° N 122.5° E Ryuku Islands. h = about 33 Km. -H = 02 h 31 m 40.8 s (USCGS). Mag: - 4.6 (CGS).					
	Shillong	Z	iP	02 37 31		Distant, compression.
	Dehra Dun	Z	iP	02 39 14		Rarefaction.
	Delhi	Z	iP	02 39 19		Compression.
17	Shillong	Z	iP	04 03 06		Slight, distant, rarefaction.
17	Shillong	Z	iP	04 25 26		Slight, distant, rarefaction.
17	Sehore	N	e	05 34 01		
17	Epc:- 36.9° N 71.5° E Hindu Kush Region. h = about 174 Km. -H = 05 h 38 m 17.1 s (USCGS). Mag: 4.7 (CGS).					

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

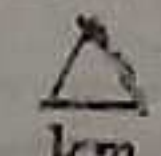
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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	 km.	REMARKS.
17	Dehra Dun	Z	iP i iS	05 40 21 41 21 42 00	970	Rarefaction.
	Delhi	Z	iP iS	05 40 31 42 12	980	First ground motion East. Compression.
	Poona	Z	iP	05 42 18		Rarefaction.
	Bokaro	E	iP eS	05 42 19 45 32	1930	
	Chatra	Z	iP i	05 42 46 44 10		Distant, compression.
	Shillong	Z	iP	05 42 47		Distant, compression.
	Visakhapatnam	EN	e	05 46 56		
	Madras	E	e	05 48 07		
17	Chatra	Z	eP	06 14 36		Feeble, distant.
17	Epc:- 4.8° S 144.2° E. North east New Guinea. h = about 35 Km. -H= 06 h 53 m 20.3 s (USCGS). Mag:- 5.7 (CGS).					
	Shillong	Z	iP	07 03 19		Distant, rarefaction.
	Dehra Dun	Z	iP	07 04 46		
	Delhi	Z	iP	07 04 46		Rarefaction.
17	Epc:- 42.1° N 37.2° E. Black Sea. h = about 33 Km. -H= 08 h 28 m 24.9 s (USCGS). Mag:- 4.8					
	Delhi	Z	iP	08 35 11		Rarefaction.
	Shillong	Z	iP	08 36 56		Distant, compression.
17	Dehra Dun	Z	eP iS	09 11 06 12 39	900	Feeble.
	Delhi	Z	iP iS	09 11 27 13 07	970	Slight, compression.
17	Bokaro	NE	iP	09 16 42		Feeble, local.
17	Toeklai	E	e	10 47 57		Tremor.
17	Shillong	Z	iP	10 48 27		Slight, distant, compression.
17	Shillong	Z	iP	12 05 12		Slight, distant, compression.



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

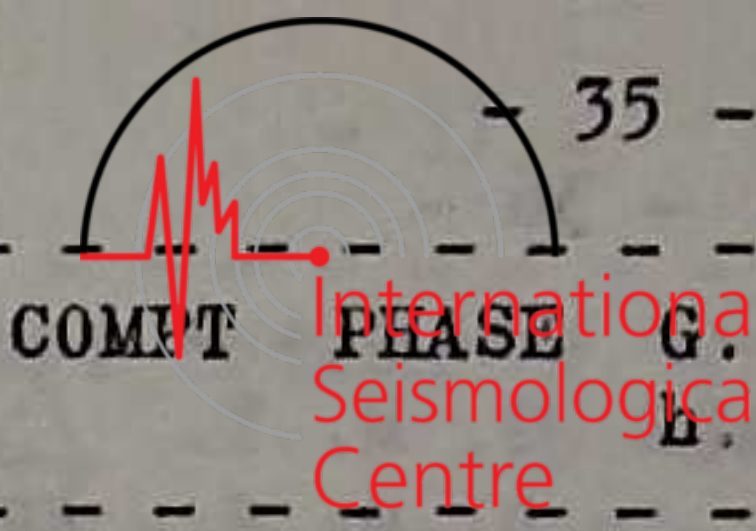
February, 1963.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	 km.	REMARKS.
17	Shillong	Z	eP	12 41 55		Slight, distant.
17	Shillong	Z	iP	13 54 04		Slight, near, rarefaction.
17	Shillong	Z	iP	13 59 05		Slight, distant, compression.
17	Shillong	Z	iP	14 15 52		Slight, near, rarefaction.
17	Chatra	Z	eP eS	14 28 51 31 44	1710	Slight.
17	Delhi	Z	iP	17 06 24		Slight, compression.
17	Shillong	Z	iP	17 30 59		Slight, distant, compression.
	Delhi	Z	iP	17 32 24		Tremor, compression.
17	Shillong	Z	iP	18 30 51		Slight, distant, rarefaction.
17	Shillong	Z	iP	22 03 03		Slight, near, rarefaction.
	Delhi	Z	iP	22 04 46		Slight, compression.
18	Shillong	Z	iP	00 07 48		Slight, distant, rarefaction.
18	Chatra	Z	iP	01 29 36		Feeble, compression.
18	Chatra	Z	eP	06 15 36		Feeble, distant.
18	Epc:- 25.3° N 121.8° E. Near North coast of Formosa. h = about 33 Km. -H= 07 h 08 m 29 s (USCGS).					
	Shillong	Z	iP	07 14 10		Slight, distant, compression.
	Dehra Dun	Z	eP	07 15 57		Slight.
18	Shillong	Z	iP	10 20 24		Slight, distant, rarefaction.
18	Shillong	Z	iP	10 44 20		Slight, near, rarefaction.
18	Shillong	ZE	iP	10 57 55		Slight, near, rarefaction.
18	Chatra	Z	eP	12 21 23		Feeble, distant.
18	Epc:- 36.4° N 70.9° E. Hindu Kush. h = about 225 Km. -H= 14 h 25 m 18.9 s (USCGS). Mag: 4.9 Km (CGS).					
	Epc:- 35.6° N 71.3° E. (SHILLONG). -H= 14 h 25 m 20 s					

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February, 1963.						
18	Dehra Dun	ENZ	eP	14 27 20	890	Rarefaction.
			PP	27 27		
			FPP	27 34		
		EZ	P*	27 40		
		ENZ	Pg	28 01		
			LQ	28 44		
			iS	28 52		
			SS	29 04		
			LR	29 07		
			SSS	29 15		
			S*	29 23		
			Sg, M	29 47		
	Delhi	ENZ	iP	14 27 30	960	Initial ground motion north West.
			iS	29 00		Rarefaction.
		EN	LR	29 21		Mag: 5.0.
			SS	29 31		
	Sehore	N	eP	14 28 34	1520	
			PP	28 44		
			PPP	28 53		
			LQ	31 05		
			eS	31 08		
		E	SS	31 26		
			SSS	31 37		
	Bombay	Z	eP	14 29 11	1900	
		E	eS	32 21		
	Poona	Z	iP	14 29 15	1950	Rarefaction.
		N	eS	32 30		
	Bokaro	E	iP	14 29 17	1920	
			iS	32 29		
	Shillong	ZNE	iP	14 29 46	2110	Rarefaction.
		E	PP	30 09		
			PPP	30 20		
		NE	iS	33 29		
		E	SSS	34 13		
			i	37 15		
	Calcutta		eP	14 30 03	2190	
			iS	33 40		
	Madras	E	eP	14 30 27	2550	
			PPP	31 07		
			eS	34 34		
			LQ	35 03		
			SS	35 29		
			LR	36 13		
			M	38 05		
	Visakhapatnam	E	eP	14 30 32	2160	
			iS	34 06		
18	Shillong	Z	iP	15 47 46		Slight, distant, rarefaction.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
18	Shillong	Z	iP	16 02 09		Slight, distant, compression.
18	Shillong	Z	iP	16 13 56		Slight, near, rarefaction.
18	Tocklai	E	e	17 33 55		Feeble.
			i	34 23		
18	Shillong	Z	eP	18 16 18		Slight, distant.
18	Shillong	ZNE	iP	18 34 21		Slight, distant, compression.
18	Shillong	Z	iP	19 15 31		Slight, distant, compression.
18	Shillong	Z	iP	20 14 14		Slight, near, compression.
18	Shillong	Z	iP	22 01 07		Slight, distant.
19	Shillong	Z	iP	00 59 27		Slight, distant, rarefaction.
	Dehra Dun	Z	eP	01 00 56		Tremor.
19	Epc:- 11.1° N 134.2° E. Cebu Philippine Islands region. h = about 31 Km. -H= 01 h 22 m 23 s (USCGS).					
	Shillong	Z	iP	01 29 11		Slight, distant, compression.
	Dehra Dun	Z	iP	01 30 59		Tremor, rarefaction.
	Delhi	Z	iP	01 31 01		Feeble, rarefaction.
19	Delhi	Z	iP	03 26 14		Tremor, compression.
19	Delhi	Z	iP	03 34 21		Tremor, compression.
19	Shillong	Z	eP	05 00 43		Slight, near.
19	Bokaro	NE	iP	07 36 48		Feeble, local.
19	Epc:- 41.1° N 142.8° E. South of Hokkaido Japan. h = about 52 Km. -H= 12 h 12 m 47.5 s. Mag: 4.2.					
	Shillong	Z	iP	12 20 59		Distant, rarefaction.
	Dehra Dun	Z	eP	12 22 01		
	Delhi	Z	eP	12 22 11		Compression.
19	Epc:- 6.2° S 128.1° E. Banda Sea. h = about 570 Km. -H= 15 h 28 m 20.1 s (USCGS). Mag: 5.3 (CGS).					



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<u>February, 1963.</u>						
19	Shillong	Z	iP	15 36 20		Distant, rarefaction.
	Delhi	Z	iP	15 37 50		Rarefaction.
19	Dehra Dun	Z	eP	16 22 53		Slight.
			e	23 23		
	Delhi	Z	iP	16 23 57		Slight, rarefaction.
19	Chatra	Z	iP	16 57 17		Feeble, distant, rarefaction.
	Dehra Dun	Z	eP	16 58 13		Slight.
	Shillong	Z	iP	16 58 20		Slight, near, compression.
19	Shillong	Z	iP	18 41 42		Slight, distant, rarefaction.
	Chatra	Z	iP	18 42 14		Feeble, distant, rarefaction.
	Delhi	Z	iP	18 43 10		Tremor, compression.
19	Shillong	Z	eP	20 46 55		Slight, distant, tremor.
19	Chatra	Z	eP	21 00 35		Feeble, distant.
19	Shillong	Z	iP	22 24 37		Slight, near.
19	Epc:- 24.0° N 122.9° E . Off east coast of Formosa. h = about 33 Km. -H= 22 h 28 m 14 s (USCGS). Mag: 4.7 (CGS).					
	Shillong	Z	iP	22 34 07		Distant, compression.
	Chatra	Z	iP	22 34 46		Distant, compression.
	Dehra Dun	Z	iP	22 35 54		Compression.
	Delhi	Z	iP	22 35 59		Compression.
19	Shillong	Z	iP	23 14 41		Slight, distant, compression.
	Delhi	Z	iP	23 16 00		Slight, rarefaction.
20	Epc:- 7.0° S 121.2° E. Flores Sea. h = about 33 Km. -H= 04 h 03 m 03.6 s (USCGS).					
	Shillong	Z	iP	04 11 06		Slight, distant, compression.
	Delhi	Z	iP	04 12 34		Feeble, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
20	Shillong	Z	iP	04 43 42		Slight, near, rarefaction.
20	Shillong	Z	iP	07 52 21		Slight, distant, compression.
20	Shillong	Z	iP	08 25 17		Slight, distant, rarefaction.
20	Shillong	Z	iP	08 56 56		Slight, distant, compression.
20	Shillong	Z	eP	10 19 08		Slight, near.
20	Shillong	Z	eP	10 44 58		Slight, distant, tremor.
20	Shillong	Z	iP	13 06 13		Slight, distant, rarefaction.
20	Shillong	Z	eP	13 52 22		Slight, near.
20	Shillong	Z	iP	13 57 19		Slight, distant, compression.
20	Shillong	Z	iP	14 43 06		Slight, distant, rarefaction.
20	Shillong	Z	eP	15 10 35		Slight, distant, rarefaction.
20	Epc:- 38.8° N 139.0° E. Off west coast of Honshu, Japan. h = about 175 Km. -H= 16 h 45 m 51.0 s (USCGS).					
	Shillong	Z	iP	16 53 23		Slight, distant, rarefaction.
	Chatra	Z	iP	16 53 48		Feeble, distant, rarefaction.
	Delhi	Z	iP	16 54 36		Feeble, rarefaction.
20	Poona	Z	M	17 27 11		Slight.
	Shillong	Z	eP	17 27 33		Slight, distant.
20	Shillong	Z	eP	17 40 34		Slight, distant, tremor.
20	Dehra Dun	Z	eP	18 54 32		Tremor.
20	Dehra Dun	Z	eP	19 27 39		Tremor.
20	Epc:- 24.6° N 122.1° E, near north-east coast of Formosa. h = about 33 Km. -H = 19 h 40 m 30.9 s (USCGS). Mag: 4.7 (CGS).					



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS,
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20	Shillong	ZNE	iP	19 46 13		Distant, compression.
	Chatra	Z	eP	19 46 48		Distant.
	Bokaro	E	eP	19 47 06		Distant.
	Dehra Dun	Z	eP	19 47 59		
	Delhi	Z	iP	19 48 06		Rarefaction.
	Port Blair	E	eP e	19 53 31 57 22		
	Calcutta	E	eP	19 55 51		Slight.
20	Poona	N	M	20 20 05		Slight.
20	Shillong	Z	iP	20 46 43		Slight, distant, compression.
21	Delhi	Z	iP	02 42 34		Slight, compression.
21	Shillong	Z	iP	06 19 28		Slight, distant, compression.
21	Shillong	Z	eP	06 54 36		Slight, distant.
21	Shillong	Z	iP	07 11 49		Slight, distant, compression.
	Chatra	Z	eP	07 12 17		Feeble, distant.
21	Shillong	Z	iP	11 42 36		Slight, near, rarefaction.
21	Shillong	Z	iP	11 46 46		Slight, near, rarefaction.
21	Shillong	Z	iP	11 59 47		Slight, near, compression.
21	Shillong	Z	iP	12 32 01		Slight, distant, rarefaction.
	Dehra Dun	Z	eP	12 23 48		Slight.
21	Shillong	Z	iP	12 55 30		Slight, distant, compression.
	Chatra	Z	eP	12 55 50		Feeble, distant.
	Bokaro	E	e	12 56 27		Slight.
	Dehra Dun	Z	eP	12 57 01		Slight.
21	Epc:- 17.9° N 146.5° E . Mariana Islands region. h = about 88 Km. -H= 13 h 01 m 06.5 s (USCGS). Mag: 4.4 (CGS).					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
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21	Chatra	Z	iP	13 10 33		Distant, rarefaction.
	Delhi	Z	iP	13 10 33		Rarefaction.
21	Dehra Dun	Z	iP	15 26 53		Tremor, compression.
	Delhi	Z	eP	15 27 59		Tremor, compression.
21	Epc:- 0.9° N 126.8° E. Molucca Sea. h = about 101 Km. -H= 15 h 44 m 29.7 s (USCGS). Mag: 4.4 (CGS).					
	Dehra Dun	Z	eP	15 49 38		
		E	i	54 41		
		N	i	55 01		
	Delhi	Z	iP	15 50 03		Compression.
	Delhi	Z	iP iS	15 50 21 52 21	1300	Compression.
	Shillong	Z	iP	15 52 10		Distant, compression.
	Chatra	Z	iP	15 52 14		Distant, rarefaction.
	Poona	NZ	eP	15 22 23		
	Bokaro	E	e	15 55 33		
	Calcutta	E	e	15 59 05		
21	Chatra	Z	iP	16 24 17		Feeble, distant.
21	Epc:- 32.7° N 20.9° E . Near coast of Libya. h = about 33 Km. 300-500 estimated dead, -H= 17 h 14 m 35.7 s . 500 injured, 12000 homeless at Mag: 5.0 (CGS). EL Marj.					
	Delhi	NEZ	iP	17 23 14	5340	Compression.
			PP	25 10		First ground motion
			iS	30 12		South East.
		NE	i	31 11		
		ZNE	ScS	33 06		
		NE	SS	33 58		
	Hyderabad	EN	eP	17 23 53	6110	
			iS	31 34		
		N	i	32 29		
			ScS	33 35		
			SS	35 38		
			LR	40 20		
			M	42 29		Period = 21 secs. Gr. dis = 8 μ.
	Dehra Dun	ZNE	iP	17 23 16	5490	Rarefaction.
			eS	30 23		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
21	✓ Poona	Z	iP	17 23 22	5560	Compression.
		N	iS	30 33		
	✓ Bokaro	E	eP	17 24 18		Distant.
	✓ Madras	E	eP	17 24 23	6300	
			PP	26 27		
			PPP	27 53		
			eS	32 15		
			PS	32 28		
			PPS	32 38		
			SS	35 56		
			LQ	38 15		
			LR	40 57		
			M	45 51		
	✓ Shillong	Z	iP	17 24 47		Distant, compression
	✓ Calcutta	E	eP	17 28 29		
	✓ Port Blair	E	e	17 33 07		
			e	34 40		
			e	37 52		
21	Bombay	E	eP	18 23 15	5430	Slight.
			PP	25 08		
			eS	30 18		
			M	43 -		
21	Epc:- 32.9° 21.1° E, Near coast of Libya. h = about 33 Km. -H= 18 h 33 m 06.8 s (USCGS). Mag: 4.5 (CGS).					
	Delhi	Z	iP	18 41 43		Rarefaction.
21	Shillong	Z	iP	19 50 42		Slight, distant, compression.
21	Shillong	Z	eP	19 59 14		Slight, distant, tremor.
21	Shillong	Z	iP	20 03 41		Slight, distant, rarefaction.
21	Epc:- 32.6° N 21.0° E Near coast of Libya. h = about 33 Km. -H= 20 h 26 m 43.8 s (USCGS). Mag: 4.4 (CGS).					
	✓ Chatra	Z	eP	20 36 25		Distant.
	✓ Shillong	Z	iP	20 36 55		Distant, compression
	✓ Port Blair	E	e	20 38 03		
	✓ Delhi	Z	iP	21 15 31		Tremor, compression
21	Dehra Dun	Z	iP	21 35 24		Tremor, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
21	Shillong	Z	eP	21 58 12		Slight, near.
	Dehra Dun	Z	eP	22 26 17		Slight.
			e	26 27		
22	Chatra	Z	eP	01 32 41		Slight, near.
	Shillong	ZNE	eP	01 33 29		Slight, distant.
22	Epc:- 27.5° N 87.7° E Nepal Tibet border region. h = about 33 Km. -H = 01 h 32 m 25.4 s (USCGS). Mag: 4.3.					
	Epc:- 27.2° N 87.1° E. (Shillong). -H = 01 h 32 m 30 s Mag: 5 1/4.					
	Bokaro	NE	iP	01 33 31	600	
			PPP	33 41		
			eS	34 34		
	Calcutta	E	eP	01 34 07	570	
			iS	35 07		
	Shillong	ZNE	iP	01 33 41	500	
		EN	PP	33 44		
		EN	PPP	33 51		
		E	LQ	34 19		
		NE	iS	34 34		
			SS	34 42		
		E	SSS	34 53		
			M	34 54		
	Dehra Dun	Z	iP	01 34 34	960	Compression.
			PP	34 41		
		E	PPP	34 49		
		NE	P*	34 56		
		Z	Pg	35 19		
			LQ	36 06		
		NE	iS	36 13		
			SS	36 25		
		NE	LR	36 29		
			SSS	36 36		
			S*	36 47		
			Sg;M	37 13		
	Delhi	Z	iP	01 34 39	980	Rarefaction.
			iS	36 19		
	Visakhapatnam	E	iP	01 34 59	1120	
			iS	36 55		
22	Toeklai	E	eP	01 35 08	760	First ground move- ment North-West.
			PPP	35 56		
			S	36 28		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
22	Hyderabad	N	eP	01 35 55	1520	Pd. = 9secs. Gr. dis = 4 μ. Pd. = 8secs. Gr. dis = 3 μ.
		E	e	37 53		
		N	eS	38 29		
		E	e	38 30		
		N	M	40 11		
		E	M	40 12		
22	Port Blair	E	eP	01 36 11		
			e	37 36		
	Madras	E	eP	01 36 14	1720	
			LQ	39 04		
			iS	39 07		
			SS	39 24		
			SSS	39 34		
			LR	39 45		
			e	40 24		
			M	41 06		
22	Bombay	Z	e	02 39 03		Feeble, near.
		NEZ	e	39 34		
		E	e	40 21		
		Z	e	40 47		
22	Shillong	Z	iP	07 02 44		Slight, distant, compression.
22	Sehore	N	i	07 08 14		Slight.
			i	08 22		
22	Epc:- 85.0° N 98.9° E, North Polar region. h = about 33 km. -H= 07 h 10 m 28.0 s (USCGS). Mag : 5.0.					
	Dehra Dun	NZ	iP	07 19 59	6180	First ground movement towards North.
		N	i	20 48		
		NE	i	22 52		
		EN	iS	27 44		
		E	ScS	30 03		
	Delhi	Z	eP	07 20 09		Rarefaction. Initial ground movement North.
		N	PP	22 30		
		EN	PPP	23 35		
			iS	28 04		
	Delhi	N	i	07 31 00		
	Chatra	Z	iP	07 20 10		Distant, compression.
	Shillong	Z	iP	07 20 29		Distant, compression.
	Bokaro	NE	eP	07 20 51	6880	Distant.
		N	PPP	24 31		
	Poona	Z	iP	07 21 19	7450	Compression.
		N	eS	30 12		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
22	Port Blair	E	eP	07 22 00	8090	
			e	22 35		
			PPP	26 15		
	Madras	E	eP	07 22 06	8210	
			SS	35 56		
			e	43 16		
22	Shillong	Z	iP	07 33 14		Slight, distant, compression.
22	Delhi	Z	iP	07 51 06		Slight, rarefaction.
22	Bombay	N	eP	08 21 17	7500	Slight.
		NE	PPP	25 24		
		N	eS	30 13		
			M	54 00		Period = 17 secs. Gr. dis = 3 μ.
22	Delhi	Z	iP	09 57 27		Slight, compression.
	Dehra Dun	Z	iP	09 57 27		Slight, rarefaction.
22	Epc:- 40.6° N 20.5° E. Albania-Greece border. h = about 33 Km. Felt Argyro Kastron and Te -H= 14 h 12m 54.4 s (USCGS). Mag: 4.4 (CGS). Albania to Tito Veles. Skoplje, Yugoslavia.					
	Dehra Dun	Z	e	14 21 24		
	Chatra	Z	iP	14 22 29		Distant, compression.
	Shillong	Z	iP	14 22 58		Distant, compression.
22	Chatra	Z	iP	16 24 46	150	Feeble, rarefaction.
			eS	25 03		
	Shillong	Z	iP	16 25 31		Slight, distant, rarefaction.
22	Shillong	Z	iP	21 47 06		Slight, distant, compression.
22	Shillong	Z	eP	23 18 14		Slight, distant.
23	Shillong	Z	iP	01 23 55		Slight, distant, compression.
23	Dehra Dun	Z	eP	02 43 11		Slight.
	Delhi	Z	iP	02 43 23		Slight, compression.
23	Bokaro	E	eP	08 20 47		Slight, near.
23	Shillong	Z	eP	08 29 05		Slight, distant.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
23	Shillong	Z	eP	09 32 00		Slight, distant.
23	Shillong	Z	iP	10 10 09		Slight, distant, compression.
23	Shillong	Z	iP	10 18 35		Slight, distant, compression.
23	Shillong	Z	iP	10 59 47		Slight, near, rarefaction.
23	Dehra Dun	Z	iP i	12 44 12 44 40		Slight, compression.
23	Shillong	Z	eP	13 32 08		Slight, distant.
23	Shillong	Z	iP	15 18 12		Slight, near, rarefaction.
23	Shillong	Z	iP	15 53 01		Slight, distant, rarefaction.
23	Chatra	Z	eP e	15 53 15 53 56		Feeble, distant.
23	Shillong	Z	iP	17 16 34		Slight, distant, compression.
	Chatra	Z	iP i	17 17 03 22 41		Feeble, distant, compression.
23	Epc:- 49.4° N 158.6° E. Kurile Islands region. h = about 50 Km. -H= 17 h 12 m 47.4 s . Mag: 4.4.					
	Shillong	Z	iP	17 22 23		Distant, compression
	Dehra Dun	Z	eP	17 23 06		
23	Shillong	Z	eP	17 29 26		Tremor, distant.
23	Shillong	Z	iP	19 12 34		Slight, distant, rarefaction.
23	Shillong	Z	iP	19 57 00		Slight, distant, compression.
24	Shillong	Z	iP	04 05 25		Slight, distant, rarefaction.
24	Delhi	Z	e iP i i	05 57 13 57 57 58 01 58 10		Slight, compression.
	Poona	Z	iP	05 57 55		Slight, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>February, 1963.</u>						
24	Dehra Dun	Z	eP i	05 57 55 57 59		Tremor, rarefaction.
24	Bokaro	NE	iP	06 34 54		Feeble, local.
24	Bokaro	Z	iP Sg	08 02 17 02 30	110	Feeble, rarefaction.
	Shillong	Z	iP	08 03 20		Slight, distant, compression.
24	Shillong	Z	iP	08 50 18		Slight, distant, compression.
24	Bokaro	NE	iP	08 59 14		Feeble, local.
24	Bokaro	NE	i	09 01 16		Slight.
24	Shillong	Z	iP	09 04 48		Slight, distant, rarefaction.
24	Shillong	Z	eP	09 50 52		Slight, distant.
24	Shillong	Z	iP	13 52 51		Slight, distant, compression.
	Dehra Dun	Z	eP i	13 53 15 53 21		Slight.
	Delhi	Z	iP i	13 53 19 53 23		Slight, rarefaction.
	Chatra	Z	eP	13 53 22		Feeble, distant.
	Poona	Z	iP	13 53 34		Slight, compression.
24	Shillong	Z	iP	18 47 43		Slight, distant, rarefaction.
24	Shillong	Z	eP	18 48 43		Tremor.
24	Shillong	Z	iP	19 18 23		Slight, distant, rarefaction.
24	Bokaro	E	iP	20 06 49		Slight, near.
24	Shillong	Z	eP	21 58 35		Slight, distant.
24	Shillong	Z	iP	22 31 01		Slight, distant, rarefaction.
25	Shillong	Z	iP	00 50 48		Slight, distant, compression.
25	Shillong	Z	eP	00 58 09		Slight, near.
25	Shillong	Z	iP	01 25 15		Slight, distant, compression.
25	Shillong	Z	iP	02 45 40		Slight, distant, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
25	Shillong	Z	iP	03 01 00		Slight, near, rarefaction.
25	Shillong	Z	iP	04 14 35		Slight, distant, rarefaction.
25	Shillong	Z	iP	04 23 08		Slight, distant, compression.
25	Delhi	Z	iP	06 29 12		Feeble, compression.
25	Shillong	Z	iP	07 07 18		Slight, near, rarefaction.
25	Shillong	Z	iP	08 11 04		Slight, distant, rarefaction.
25	Delhi	Z	iP	08 28 03		Slight, rarefaction.
25	Dehra Dun	Z	iP	08 28 04		Slight, rarefaction.
			i	28 09		
25	Bokaro	NE	iP	09 07 09		Feeble, local,
25	Epc:- 10.4° N 121.8° E. Near West coast of Penay Philippine Islands. h= about 46 Km. -H = 09 h 11 m 23.7 s (USCGS). Mag: 4.5 (CGS).					
	Shillong	Z	eP	09 17 25		Distant,
	Dehra Dun	Z	e	09 19 39		
25	Port Blair	E	e	09 22 34		Slight.
25	Chatra	Z	iPg Sg	09 43 19 43 34	130	Feeble.
25	Shillong	Z	iP	10 57 40		Slight, distant, compression.
25	Delhi	Z	iP	12 47 41		Slight, compression.
25	Shillong	Z	iP	13 24 03		Slight, distant, compression.
25	Shillong	Z	iP	14 35 10		Slight, distant, rarefaction.
25	Shillong	Z	iP	15 29 31		Slight, distant, compression.
25	Epc:- 24.4° N 123.4° E, near east coast of Formosa. h = about 33 Km. -H = 17 h 11 m 01.7 s (USCGS). Mag: 5.3 (CGS).					

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
25	Shillong	Z	iP	17 16 31		Distant, rarefaction.
	Shillong	ZNE E	iP PP PPP	17 16 55 17 10 17 35	3110	Distant, compression.
		Z NE E	i iS SS LR	21 01 21 39 22 55 24 15		
	Port Blair	E	eP PP PPP	17 17 33 18 28 18 50	3580	Slight.
	Calcutta	E	i	17 17 33		
	Chatra	Z	iP i	17 17 34 22 47		Distant, compression.
	Bokaro	E NE	iP i	17 17 46 23 11		Distant. Initial ground motion towards West.
	Dehra Dun	EZN EN	iP iS	17 18 40 24 47	4460	Compression.
	Delhi	EZ ENZ EZ ENZ N NE ENZ	iP i PPP PcS, ScP iS i eSS LQ SSS	17 18 47 19 01 20 49 24 29 24 56 25 18 28 18 28 32 28 38	4490	Compression. Initial ground motion West.
	Madras	E	iP e PP PcP PPP iS e LQ M	17 18 55 19 14 20 34 20 54 21 05 25 15 25 39 28 37 34 15	4670	Initial ground movement towards West.
	Poona	Z N	iP iS	17 19 26 26 11	5100	Compression.
	Bombay	ENZ NE N E	eP PP eS PPS LQ	17 19 34 21 25 26 15 26 39 30 01	5040	
25	Shillong	Z	iP	19 27 42		Slight, distant, Compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
25	Shillong	Z	iP	20 14 14		Slight, near, rarefaction.
25	Shillong	Z	iP	21 43 25		Slight, near, compression.
25	Epc:- 15.5° N 121.3° E. Central Luzon, Philippine Islands. Felt Manila and Central Luzon. h= about 33 Km. -H= 23 h 45 m 16.8 s (USCGS). Mag: = 4.3 (CGS).					
✓	Shillong	Z	iP	23 51 18		Distant, rarefaction.
✓	Madras	E	eP PP iS LR	23 52 51 54 31 59 00 00 04 13	4510	
✓	Chatra	Z	iP	23 52 58		Distant, rarefaction.
✓	Poona	Z	iP	23 53 36		Compression.
26	Chatra	Z	eP	00 35 50		Feeble, distant.
26	Dehra Dun	Z EN	eP i	00 53 10 59 29		Slight.
26	Shillong	Z	eP	07 41 00		Slight, near.
26	Shillong	Z	iP	10 39 38		Slight, distant, compression.
26	Shillong	Z	iP	11 01 45		Slight, distant, rarefaction.
	Chatra	Z	eP iS	11 01 52 280 02 24		Slight.
26	Shillong	Z	eP	11 10 30		Slight, distant.
26	Port Blair	N	ePg eSg	18 58 29 20 58 31		Slight.
26	Tocklai	E	e	20 09 07		Slight.
26	Epc:- 7.5° S 146.2° E. Eastern New Guinea. h = about 171 Km. -H= 20 h 14 m 08.7 s (USCGS). Mag: = 7¼-7½(Pas) 7-7¼(Berk) 6¾-7(Pal)					
	Epc:- 9° S 148.5° E. h= 300 Km. 7.1(CGS). -H= 20h 14 m 11 s (Shillong).					
✓	Port Blair	E	iP PP eS	20 23 35 26 18 33 07	8220	



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
26	Shillong	Z E NE EN E NE	iP PcP pP PP PPP PcS iS PS SS SSS LR	20 24 14 24 54 25 18 26 26 27 54 28 50 32 25 32 32 36 07 38 47 42 13	7155	Compression. (depth: 300 Km).
✓	Calcutta	E	iP PcP pP PP iS ScS	20 24 26 24 58 25 29 26 56 32 49 33 56	6900	
✓	Chatra	ZNE	iP PcP PP PcS iS PS i i	20 24 42 25 57 26 48 30 06 33 14 34 06 35 40 38 38	7580	Initial ground motion towards South West and compression. h = 200Kms.
✓	Bokaro	NE	iP eS	20 24 42 33 18	7110	Initial ground motion towards West.
✓	Visakhapatnam	NE	iP PcP PP PPP PcS iS PS PPS ScS N SS SSS LQ LR M	20 24 47 25 12 27 10 28 35 29 06 32 35 33 58 34 10 34 22 37 44 40 27 41 52 44 42 50 35	7190	First ground movement South East.
✓	Madras		iP PcP e PP PPP iS PS PPS SKS, ScS e SS	20 24 55 25 27 25 55 27 12 28 53 33 44 34 07 34 27 34 49 35 03 37 33	7370	Initial ground movement towards West.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
26	Madras	E	SSS Lq LR M	20 40 39 41 50 45 15 50 47		
	Kodaikanal	E	iP	20 25 04		Distant.
	Hyderabad	EN N	iP PcP PP	20 25 15 25 52 27 37	7580	First ground movement towards North and East.
		E	i i	28 34 30 37		
		EN	iS	34 16		
		E	PS	34 55		
		N	SS	38 17		
		E	SSS	41 19		
		N	LQ	42 40		
		N	LR	45 43		
		N	M	52 22		Period= 18 secs. Gr. dis = 15 μ.
		E	M	52 57		Period= 15 secs. Gr. dis = 4 μ.
	Sehore	NE N	iP iS	20 25 29 34 46	5310	Deep shock.
	Dehra Dun	ENZ NE	iP PcP PP PPP iS SKS ScS PS SS	20 25 36 25 47 28 36 30 21 36 01 36 13 36 25 36 40 41 00	9360	First ground movement towards North West. Compression.
	Dehra Dun	EN	SSS Lq LR M	20 44 20 46 47 50 26 56 53		
	Delhi	ENZ	iP PcP PP *PP	20 25 36 25 48 26 12	8080	First ground motion North West. Compression.
		E	sP	26 28		
		ENZ	i	26 37		
		Z	i	28 07		
		ENZ	PP	28 25		
		EZ	i	29 19		
		NZ	PPP	29 58		
		E	i	34 13		
		ENZ	iS	35 01		
		Z	PS	35 30		
		EN	PPS	35 43		
		NZ	sS	36 02		
		ENZ	i	36 37		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
26	Delhi	E N EN N E N	SS i SSS i LR LR	20 39 27 40 55 43 34 45 37 47 32 48 05		
	Poona	NEZ N	iP PP iS SS SSS i i M	20 25 37 28 16 35 05 39 59 42 43 47 42 51 16 54 40	8680	Compression. Initial movement North West.
	Bombay	NEZ NE	iP pP PP PPP	20 25 44 26 41 29 17 30 41	8670	
		NEZ NE	iS PS PPS	35 17 35 44 36 12		
		E Z	i SS LQ	36 31 37 01 52 17		
27	Chatra	Z	eP iS	00 44 03 45 05	590	Feeble.
27	Shillong	Z	iP	01 14 17		Slight, distant, rarefaction.
27	Shillong	Z	iP	01 26 08		Slight.near.
27	Dehra Dun	Z	eP	01 42 01		Tremor.
27	Shillong	Z	iP	02 08 57		Slight, distant, compression.
27	Shillong	Z	iP	03 19 22		Slight, distant, rarefaction.
27	Epc:- 6.0° S 149.4° E, New Britain region. h = about 52 Km. -H= 04 h 30 m 00.8 s (USCGS). Mag: 6½ -6¾ (Pal), 5.2 (CGS).					
	Shillong	ZN	iP iS PS	04 40 30 49 16 49 30	7309	Compression.
	Bokaro	E	eP PP PPP	04 41 06 43 43 45 22	7610	
		NE E	eS PS PPS ScS SS	50 08 50 38 50 50 51 01 54 42		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
February, 1963.						
27	✓ Visakhapatnam	E	iP iS PS i ScS	04 41 16 50 16 50 40 50 49 51 11	4710	First ground movement South East.
	✓ Madras	E	eP PcP PP PPP iS PS PPS SS LQ LR M	04 41 26 41 45 44 14 45 50 50 45 51 12 51 30 55 17 05 00 05 03 30 09 37	7960	
	✓ Kodaikanal	E	iP iS SS SSS	04 41 37 51 22 56 07 59 31	8490	Initial ground movement towards East.
	✓ Dehra Dun	E Z N E	eP e PcP iS	04 41 42 41 52 42 15 51 25	8450	
	✓ Calcutta	E	eP	04 41 46		
	✓ Delhi	EZ ENZ EZ E ENZ EZ EN E EN E N	iP PcP i PP PPP i iS ScS PS i i i i SSS LQ	04 41 51 41 59 42 52 45 00 46 54 50 41 51 43 52 10 52 22 53 49 54 51 55 39 57 17 59 36 05 02 30	8630	First ground motion West.Compression.
	✓ Poona	Z N	eP eS	04 42 01 52 04	8880	
	✓ Bombay	ZE NEZ E E NE E N E	eP PcP PP SKS eS ScS PS PPS M M	04 42 03 42 12 45 09 52 15 52 23 52 35 52 39 53 25 05 18 04 20 31	9250	Period = 24 secs. Period = 19 secs. Gr. dis = 5 μ.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
February, 1963.						
27	Shillong	Z	eP	05 09 13		Slight, distant.
27	Port Blair	Z	eP eS	05 40 06 46 43	3970	Slight.
27	Dehra Dun	Z	eP	10 44 08		Tremor.
	Shillong	Z	iP	10 46 29		Slight, distant, compression.
27	Poona	Z	iP i	11 20 17 20 20		Slight, rarefaction.
	Dehra Dun	Z	iP i	11 20 20 20 25		Slight, rarefaction.
	Delhi	Z	iP i i	11 20 20 20 24 20 30		Slight, rarefaction.
	Dehra Dun	Z	eP	14 44 55		Tremor.
27	Shillong	Z	iP	16 42 19		Slight, distant, compression.
27	Epc:- 38.1° N 69.6° E. TadzhiK S.S.R. h = about 157 Km. -H= 17 h 28 m 00.6 s (USCGS). Mag: = 3.9 (CGS).					
	Dehra Dun	Z	eP	17 30 24		
	Shillong	Z	iP	17 32 49		Distant, compression.
27	Shillong	Z	iP	18 01 34		Slight, distant, compression.
	Delhi	Z	iPg iSg	18 46 41 46 42	14	Slight.
	Dehra Dun	Z	eP	18 48 38		Slight.
27	Shillong	Z	iP	19 34 51		Slight, distant, compression.
27	Port Blair	N	iPg eSg	19 55 07 55 15	70	Slight.
	Madras	E	eP e	19 57 50 59 57		Feeble.
	Shillong	Z	iP	19 57 59		Slight, distant, compression.
	Poona	Z	eP eS	19 59 33 20 02 42	1890	Slight.
	Delhi	Z	iP	19 59 51		Slight, compression.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
27	Dehra Dun	Z	eP i	19 59 57 20 04 11		Tremor.
27	Madras	E	e e	20 09 51 10 21		Feeble.
27	Poona	Z	eP	20 13 51		Slight.
27	Epc:- 4.6° S 152.9° E. New Britain, Felt Kabul. h = about 100 Km. -H= 20 h 28 m 34.9 s (USCGS). Mag: 5.0 (CGS).					
	Dehra Dun	Z	eP	20 40 35		
	Delhi	Z	iP	20 40 39		
	Poona	Z	iP	20 40 42		Compression.
	Bombay	Z	eP	20 42 48		
27	Bombay	E	e	20 51 25		Slight.
27	Delhi	Z	iP	21 56 59		Slight, rarefacti
	Dehra Dun	Z	eP i i	21 57 15 59 21 59 28		Feeble.
	Shillong	Z	eP	21 59 53		Slight, distant.
27	Poona	Z	eP	22 01 41		Slight.
27	Epc:- 54.8° N 161.6° W. Alaska Peninsula. h = about 33 Km. -H= 23 h 36 m 20.4 s (USCGS). Mag: 5.3 (CGS).					
	Shillong	Z	iP	23 48 17		Distant, compress
	Dehra Dun	Z	iP	23 48 34		
27	Delhi	Z	iP	23 48 43		Compression.
28	Dehra Dun	Z	eP	01 33 32		Tremor.
	Madras	E	eP PP iS LQ SS LR M	01 37 50 38 51 42 58 44 35 44 46 46 05 48 28	3490	Slight.
	Poona	Z	eP	01 38 07	4090	Slight.
		N	iS	43 51		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
February, 1963.						
	Bombay	E NE	eP eS	01 38 13 43 58	4100	Slight.
	Shillong	Z	iP	01 39 05		Slight, distant, compression.
	Bokaro	E	eP	01 39 23		Slight, distant.
	Dehra Dun	Z	eP	01 39 46		Feeble.
28	Calcutta	E	e	01 40 14		Slight.
	Port Blair	E	e e	01 42 48 44 05		Slight.
	Kodaikanal	E	i i	01 43 36 44 33		Slight, near.
28	Shillong	Z	eP	05 10 39		Slight, distant.
28	Shillong	Z	iP	06 23 04		Slight, distant, rarefaction.
28	Shillong	Z	iP	08 37 58		Slight, distant, compression.
28	Shillong	Z	eP	10 37 09		Slight, distant, compression.
28	Dehra Dun	Z	eP	12 53 28		Tremor.
28	Dehra Dun	Z	eP	15 47 12		Slight.
	Delhi	Z	iP	15 47 20		Slight, compression.
28	Chatra	Z	eP e	15 48 38 49 36		Feeble, distant.
28	Shillong	Z	eP	16 48 17		Slight, distant.
28	Shillong	Z	iP	16 59 13		Slight, distant, compression.
28	Epc:- 4.4° S 139.0° E. Central New Guinea. h = about 37 Km. -H= 17 h 48 m 23.1 s (USCGS). Mag: = 5.6 (CGS).					
	Shillong	Z	iP	17 37 29		Slight, distant, rarefaction.
	Chatra	Z	eP e	17 38 18 39 00		Feeble.
28	Shillong	Z	iP	17 57 51		Slight, distant, rarefaction.

See
dup.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
<u>February, 1963.</u>						
28	Shillong	Z	1P	18 12 17		Slight, distant, compression.
28	Chatra	ZNE	1P	19 17 16	190	Slight, rarefaction.
			1S	17 39		
	Shillong	Z	1P	19 18 12		Slight, distant, rarefaction.
	Dehra Dun	Z	eP	19 18 29		Feeble.
	Delhi	Z	eP	19 18 33	750	Slight.
			1S	19 51		
28	Poona	Z	M	19 24 16		Slight.
28	Shillong	Z	1P	21 16 53		Slight, distant, compression.
			Delhi	Z	1P	00 40 16

Earthquake Reports
(Non - Instrumental)

The following is the list of earthquakes, that were reported by voluntary observers from different stations, during the month of February, 1963 A.D.

Place	Date	Time in GMT	Duration of shocks in secs.	Number of shocks	Intensity in RF scale.	Rks.
Shillong	6.2.63	15-44	30	1	V	

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 : Shillong <u>February, 1963.</u> Component: E-W.									
01	00	3	0.4	5.0	12	00	3	0.4	4.6
	06	3	0.5	4.0		06	3	0.4	4.4
	12	3	0.4	4.0		12	1	0.4	4.2
	18	3	0.4	4.0		18	1	0.4	4.0
02	00	3	0.4	4.0	13	00	1	0.4	4.0
	06	3	0.4	5.0		06	3	0.4	4.6
	12	3	0.4	5.0		12	3	0.4	4.4
	18	3	0.4	5.0		18	3	0.4	4.2
03	00	3	0.4	4.0	14	00	3	0.4	4.0
	06	3	0.4	5.0		06	1	0.4	4.4
	12	3	0.4	4.0		12	1	0.4	4.6
	18	3	0.4	4.0		18	3	0.4	4.8
04	00	3	0.4	4.0	15	00	3	0.3	4.0
	06	3	0.4	4.0		06	3	0.4	4.6
	12	3	0.4	4.0		12	3	0.4	4.8
	18	3	0.4	4.0		18	3	0.4	4.4
05	00	3	0.4	3.0	16	00	3	0.4	4.2
	06	3	0.4	4.0		06	3	0.4	4.1
	12	3	0.4	4.0		12	3	0.4	4.1
	18	3	0.4	4.0		18	3	0.4	4.8
06	00	3	0.4	5.0	17	00	3	0.4	5.0
	06	3	0.4	4.0		06	3	0.4	4.8
	12	3	0.4	4.0		12	3	0.4	4.6
	18	3	0.4	4.0		18	3	0.4	4.2
07	00	3	0.4	4.0	18	00	3	0.4	3.8
	06	3	0.4	5.0		06	3	0.4	4.8
	12	3	0.4	4.0		12	3	0.4	4.6
	18	3	0.4	4.0		18	3	0.4	4.8
08	00	3	0.4	4.0	19	00	3	0.4	4.8
	06	3	0.4	4.0		06	3	0.4	5.0
	12	3	0.4	4.5		12	3	0.4	4.6
	18	3	0.4	4.0		18	3	0.4	4.4
09	00	3	0.4	4.2	20	00	3	0.4	4.0
	06	3	0.4	4.0		06	3	0.4	5.0
	12	3	0.4	3.0		12	3	0.4	4.6
	18	3	0.4	4.0		18	3	0.4	5.0
10	00	3	0.4	4.8	21	00	3	0.4	4.4
	06	3	0.4	4.2		06	3	0.4	4.0
	12	3	0.4	4.0		12	3	0.4	4.2
	18	3	0.4	4.4		18	...	-	-
11	00	3	0.4	4.6	22	00	3	0.4	4.0
	06	3	0.4	5.0		06	3	0.4	4.0
	12	3	0.4	3.2		12	3	0.4	4.3
	18	3	0.4	4.0		18	2	0.4	4.0

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: Shillong(Contd.) February, 1963. Component: E-W.

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.
23	00	3	0.4	4.0	03	00	...	-	-
	06	...	-	-		06	3	0.5	5.2
	12	3	0.4	4.4		12	3	0.4	2.3
	18	3	0.4	4.0		12	3	0.5	5.2
						18	3	0.6	4.3
24	00	3	0.4	3.8		18	3	0.4	1.9
	06	3	0.4	4.8					
	12	3	0.4	4.8	04	00	...	-	-
	18	2	0.4	4.0		06	3	0.6	5.0
								0.4	2.0
25	00	3	0.4	4.0		12	3	0.5	4.9
	06	2	0.4	4.9				0.4	2.3
	12	3	0.4	4.8		18	3	0.5	4.6
	18	3	0.4	5.0				0.6	2.0
26	00	...	-	-	05	00	3	0.5	4.7
	06	3	0.4	3.8				0.4	2.0
	12	3	0.4	4.0		06	3	0.7	4.6
	18	3	0.4	4.0				0.6	1.8
27	00	3	0.4	4.3		12	3	0.6	4.5
	06	...	-	-				0.4	2.5
	12	...	-	-		18	3	0.7	4.6
	18	...	-	-				0.6	1.8
28	00	...	-	-	06	00	3	0.7	4.5
	06	3	0.4	5.0				0.5	2.2
	12	3	0.4	4.9		06	3	0.6	4.4
	18	3	0.4	4.8				0.4	2.5
						12	3	0.7	4.2
						18	3	0.3	2.3
								0.6	4.0
								0.6	2.3

Station: Bombay (Colaba).

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.
01	00	3	0.4	4.9	07	00	3	...	-
			0.5	1.6				0.4	-
	06	3	0.5	5.4		06	3	0.5	4.1
			0.3	1.7				0.4	2.5
	12	3	0.5	6.0		12	3	0.5	4.2
			0.4	2.0				0.3	2.0
	18	3	0.5	5.3		18	3	0.4	4.2
			0.4	1.9				0.4	2.0
02	00	3	0.5	4.8	08	00	3	0.4	4.0
			0.3	2.2				0.3	2.7
	06	3	0.5	5.3		06	2	0.4	3.5
			0.3	2.5				0.4	2.5
	12	3	0.6	6.1		12	1	0.4	2.5
			0.3	1.5		15	1	0.5	2.5
	18	3	0.6	5.6		18	1	0.5	2.6
			0.3	1.5		21	1	0.5	2.6



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 (Colaba) February, 1963. Component: E-W.

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.
09	00	1	0.5	2.7	16	00	1	0.7	2.6
	03	1	0.4	2.8		03	1	0.8	2.7
	06	1	0.5	2.5		06	1	0.9	2.6
	09	1	0.6	2.6		09	1	1.1	2.7
	12	1	0.4	2.3		12	1	0.8	2.8
	15	1	0.4	2.3		18	3	0.6	3.2
	18	1	0.5	2.5					
10	00	3	0.4	4.9	17	00	3	0.5	5.2
			0.4	2.5				0.5	2.6
	06	1	0.6	2.5		06	3	0.6	5.8
	09	1	0.7	2.7				0.6	2.6
	12	1	0.6	2.7		12	3	0.5	5.0
	18	3	0.4	5.1				0.6	2.5
			0.4	2.3		18	3	0.5	5.0
								0.4	2.7
11	00	1	0.6	2.6	18	00	3	0.5	5.3
	03	1	0.6	2.6				0.3	2.5
	06	1	0.6	2.5		06	3	6.5	6.2
	12	3	0.4	5.1				0.5	2.5
			0.4	2.6		12	3	0.5	5.2
	18	3	0.5	5.1				0.4	2.5
			0.5	2.6		18	3	0.6	5.0
								0.5	2.7
12	00	3	0.4	4.9	19	00	3	0.6	5.3
			0.3	2.5				0.5	3.0
	06	3	0.4	5.2		06	-	-	-
			0.3	2.5		12	3	0.5	5.8
	12	3	0.4	5.1		18	3	0.4	3.0
			0.3	2.2		18	3	0.6	5.7
	18	3	0.5	4.9				0.3	3.0
			0.3	2.3					
13	00	3	0.4	5.0	20	00	3	0.5	5.4
			0.3	2.3				0.4	3.0
	06	3	0.4	4.5		06	3	0.6	5.2
			0.3	1.8				0.4	2.5
	12	3	-	-		12	3	0.6	5.4
	18	3	0.5	5.0		18	3	0.4	2.5
								0.6	5.3
								0.4	2.5
14	00	2	0.3	5.1	21	00	3	0.5	6.1
	06	2	0.3	4.9				0.5	2.7
	12	2	0.4	5.1				-	-
	18	-	-	-		06	3	-	-
						12	3	-	-
15	00	-	-	-				0.5	5.1
	06	3	0.5	5.1				0.6	2.6
			0.3	2.0					
	12	3	0.5	4.9					
			0.4	2.3					
	18	3	0.4	5.2					

Date	Hour	K	Mean amplitude in m.m.	Mean period in sec.	Date	Hour	K	Mean amplitude in m.m.	Mean period in sec.
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Station: Bombay (Colaba) (Contd.)

February, 1963.

Component: E-W.

Station: Madras.

22	00	3	0.5	5.0					
			0.6	2.5					
	06	1	0.6	2.6	01	00	3	0.4	2.9
	12	1	0.7	2.7		03	1	0.4	2.9
	18	3	0.6	2.5			3	0.2	1.8
			0.3	1.8		06	1	0.3	2.7
							3	0.1	1.8
23	00	3	0.5	5.4		12	1	0.4	2.8
			0.5	2.3			3	0.1	1.7
	03	1	0.6	2.5		18	1	0.5	2.9
	06	1	0.7	2.5			3	0.1	1.6
	09	1	0.5	2.5					
	12	3	0.6	5.2	02	00	1	0.5	2.9
			0.6	2.7			3	0.1	1.5
	18	3	0.6	5.2		03	1	0.5	2.9
			0.4	2.4			3	0.2	1.6
24	00	3	0.4	5.4		06	...	No record.	
			0.4	2.5		12	1	0.5	2.8
	06	-	-	-		18	1	0.5	2.8
	12	3	0.4	5.2			3	0.2	1.8
	18	3	0.5	5.1					
			0.4	1.6	03	00	1	0.4	2.9
25	00	3	0.4	5.2			3	0.2	1.7
			0.3	1.6		03	1	0.5	2.9
	06	3	0.5	5.0			3	0.1	1.6
			0.4	2.0		06	1	0.4	2.9
	12	3	0.4	5.0		12	1	0.5	2.8
			0.4	2.0		18	1	0.5	2.9
	18	3	0.5	5.1	04	00	1	0.5	3.1
			0.4	2.3		03	1	0.5	2.9
26	00	3	0.6	5.4		06	1	0.5	2.8
			0.5	2.4		12	1	0.5	2.8
	06	3	0.5	5.1		18	1	0.5	2.9
			0.3	2.0	05	00	1	0.5	3.0
	12	3	0.4	5.0		03	1	0.6	3.0
			0.4	2.0		06	1	0.5	2.8
	18	3	0.5	5.1		12	1	0.5	2.9
			0.3	2.0		18	1	0.4	2.9
27	00	3	0.5	5.3	06	00	1	0.4	2.9
			0.3	1.8		03	1	0.4	2.9
	06	-	-	-		06	1	0.4	2.9
	12	3	0.5	5.5		12	1	0.4	2.8
			0.3	2.5		18	1	0.4	2.8
	18	3	0.7	6.1					
			0.3	2.5	07	00	1	0.4	2.9
28	00	3	0.6	6.0		03	1	0.4	2.8
			0.4	2.5		06	3	0.3	2.8
	06	3	0.6	5.7		12	3	0.3	2.7
			0.3	2.2		18	3	0.3	2.6
	12	3	0.5	5.4					
			0.4	2.5					
	18	3	0.6	5.7	08	00	3	0.2	4.1
			0.4	1.7					



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

February, 1963.

Component: E-W.

08	06	3	0.3	4.0	13	12	...	Earthquake waves.	
			0.2	2.7		18	2	0.3	4.6
	12	3	0.3	3.9			3	0.2	2.5
			0.2	2.7	14	00	2	0.3	5.0
	18	3	0.3	4.2			3	0.2	2.5
			0.2	2.8		03	2	0.2	4.5
09	00	2	0.3	4.6		06	2	0.2	4.4
		3	0.2	2.6			3	0.1	1.9
	03	2	0.2	4.3		12	2	0.3	4.6
		3	0.2	2.7			3	0.1	1.9
	06	2	0.3	4.4		18	2	0.3	4.9
		3	0.2	2.7			3	0.1	2.1
	12	2	0.3	4.4	15	00	...	No record.	
	18	3	0.2	2.6		03	...	No record.	
			0.3	4.3		06	2	0.3	4.7
			0.2	2.7		12	2	0.3	4.7
10	00	2	0.3	4.5		18	2	0.3	4.5
		3	0.2	2.7					
	03	2	0.3	4.7	16	00	2	0.3	4.5
		3	0.2	2.6			3	0.1	2.0
	06	2	0.3	4.4		03	2	0.3	4.8
		3	0.2	2.7		06	2	0.4	4.6
	12	2	0.3	4.5		12	2	0.4	5.0
		3	0.2	2.7		18	2	0.4	5.2
	18	2	0.3	4.6			3	0.2	2.5
		3	0.2	2.8	17	00	2	0.6	5.8
11	00	2	0.2	4.5			3	0.3	2.9
		3	0.2	2.8		03	2	0.6	5.9
	03	3	0.2	2.8			3	0.3	2.8
	06	2	0.3	4.3		06	2	0.5	5.6
		3	0.2	2.5			3	0.3	2.8
	12	2	0.3	4.5		12	2	0.5	5.5
		3	0.2	2.7			3	0.3	2.8
	18	2	0.3	4.7		18	2	0.5	5.0
		3	0.2	2.7			3	0.4	3.0
12	00	2	0.3	4.7	18	00	3	0.5	3.3
		3	0.2	2.6		03	3	0.4	3.3
	03	2	0.3	4.5		06	3	0.4	3.3
		3	0.2	2.6		12	3	0.4	3.3
	06	2	0.3	4.7		18	2	0.5	4.9
		3	0.2	2.6			3	0.3	3.3
	12	2	0.3	4.7	19	00	2	0.5	5.1
		3	0.2	2.5			3	0.4	2.8
	18	2	0.3	5.0		03	2	0.5	5.1
		3	0.2	2.4			3	0.4	2.9
13	00	2	0.3	5.1		06	3	0.3	2.9
		3	0.1	2.3		12	3	0.3	3.0
	03	2	0.3	4.8		18	2	0.5	4.9
		3	0.1	2.4			3	0.3	2.8
	06	2	0.3	4.8					
		3	0.2	2.4					



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.
February, 1963. Component: E-W.									
Station: Madras (Contd.)									
20	00	2	0.5	5.3	25	06	3	0.2	2.5
		3	0.3	2.8		12	3	0.2	2.5
	03	2	0.5	5.1		18	2	0.3	4.7
		3	0.3	2.8			3	0.2	2.5
	06	3	0.2	2.6	26	00	2	0.3	4.7
		3	0.1	1.3			3	0.2	2.4
	12	2	0.4	5.1		03	2	0.3	4.6
		3	0.2	2.7			3	0.2	2.5
		3	0.1	1.5		06	3	0.1	2.3
	18	2	0.5	5.5		12	3	0.2	2.5
		3	0.2	2.6		18	3	0.3	2.5
21	00	2	0.5	5.6	27	00	2	0.3	5.0
		3	0.2	2.7			3	0.2	2.5
	03	2	0.5	4.9		03	2	0.3	5.0
		3	0.2	2.9			3	0.2	2.5
	06	2	0.4	5.2		06	3	0.2	2.5
		3	0.2	2.7		12	3	0.2	2.5
	12	3	0.2	2.7		18	2	0.5	6.1
	18	...	Earthquake.				3	0.2	2.6
22	00	2	0.5	5.0	28	00	2	0.5	6.3
		3	0.2	2.9			3	0.2	2.6
	03	2	0.5	4.9		03	3	0.2	2.6
		3	0.3	2.8		06	3	0.3	2.5
	06	3	0.3	2.7		12	3	0.3	2.7
	12	2	0.4	4.6		18	3	0.3	2.6
		3	0.3	2.7				
	18	2	0.5	4.9	Station: Port Blair.				
		3	0.3	2.7	(Amplitude in micron)				
23	00	2	0.5	5.5	01	00	1	0.2	3
		3	0.2	2.6		06	1	0.2	3
	03	2	0.4	4.9		12	1	0.2	3
		3	0.2	2.5		18	1	0.2	3
	06	2	0.4	5.0	02	00	1	0.2	3
		3	0.2	2.5		06	1	0.2	3
	12	2	0.4	5.3		12	1	0.2	3
		3	0.2	2.7		18	1	0.2	3
	18	2	0.4	5.3	03	00	1	0.2	3
		3	0.2	2.5		06	1	0.2	3
24	00	2	0.4	5.2		12	1	0.2	3
		3	0.2	2.7		18	1	0.2	3
	03	2	0.3	5.0	04	00	1	0.4	3
		3	0.2	2.3		06	...	-	-
	06	3	0.2	2.3		12	1	0.2	3
	12	3	0.1	2.3		18	1	0.2	3
	18	2	0.3	4.9					
		3	0.1	2.3					
25	00	2	0.3	4.9					
		3	0.2	2.3					
	03	2	0.3	4.9					
		3	0.2	2.5					

Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.	Date	Hour GMT	K	Mean amplitude in micron	Mean period in sec.
February, 1963. Component: E-W.									
Station: Port Blair (Contd.)									
05	00	1	0.5	3	16	00	0,0		
	06	1	0.5	3		06	0,0		
	12	1	0.5	3		12	0,0		
	18	1	0.6	3		18	0,0		
06	00	1	0.4	3	17	00	0,0		
	06	1	0.2	3		06	0,0		
	12	1	0.2	3		12	0,0		
	18	1	0.2	3		18	0,0		
07	00	1	0.2	3	18	00	1	0.2	3
	06	0,0				06	1	0.3	3
	12	0,0				12	1	0.3	3
	18	0,0				18	1	0.3	3
08	00	0,0			19	00	1	0.3	3
	06	0,0				06	1	0.2	3
	12	0,0				12	1	0.2	3
	18	0,0				18	1	0.3	3
09	00	0,0			20	00	1	0.3	3
	06	0,0				06	1	0.2	3
	12	0,0				12	1	0.2	3
	18	0,0				18	1	0.2	3
10	00	0,0			21	00	1	0.2	3
	06	0,0				06	1	0.2	3
	12	0,0				12	1	0.2	3
	18	0,0				18	...		
11	00	0,0			22	00	1	0.2	3
	06	0,0				06	1	0.2	3
	12	0,0				12	0,0		
	18	0,0				18	0,0		
12	00	0,0			23	00	0,0		
	06	0,0				06	0,0		
	12	0,0				12	0,0		
	18	0,0				18	0,0		
13	00	0,0			24	00	1	0.2	3
	06	0,0				06	1	0.2	3
	12	...				12	0,0		
	18	0,0				18	0,0		
14	00	0,0			25	00	0,0		
	06	0,0				06	0,0		
	12	0,0				12	0,0		
	18	0,0				18	0,0		
15	00	0,0			26	00	0,0		
	06	0,0				06	0,0		
	12	0,0				12	0,0		
	18	0,0				18	1	0.2	3

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: Port Blair (Contd.)
(Amplitude in micron)

27	00	1	0.2	3
	06	...		
	12	1	0.3	3
	18	1	0.3	3
28	00	1	0.4	3
	06	1	0.6	3
	12	1	0.6	3
	18	...		

February, 1963.

Component: E-W.

Station: Visakhapatnam .

01	00	0	-	-
	06	2	0.3	3.2
	12	2	0.3	3.2
	18	0	-	-
02	00	0	-	-
	06	2	0.2	2.9
	12	2	0.2	3.0
	18	0	-	-
03	00	0	-	-
	06	2	0.2	3.0
	12	2	0.3	3.3
	18	0	-	-
04	00	0	-	-
	06	2	0.3	3.0
	12	2	0.3	3.0
	18	2	0.4	3.1
05	00	0	-	-
	06	2	0.2	3.0
	12	2	0.3	3.2
	18	0	-	-
06	00	0	-	-
	06	2	0.4	3.8
	12	2	0.5	4.8
	18	2	0.4	3.0
07	00	0	-	-
	06	2	0.3	3.1
	12	2	0.3	3.3
	18	0	-	-
08	00	0	-	-
	06	2	0.4	3.8
	12	2	0.4	3.9
	18	0	-	-

09	00	0	-	-
	06	2	0.4	4.1
	12	2	0.4	4.0
	18	2	0.3	3.6
10	00	0	-	-
	06	2	0.4	4.3
	12	2	0.4	4.1
	18	2	0.4	3.9
11	00	0	-	-
	06	2	0.4	4.1
	12	2	0.4	4.3
	18	0	-	-
12	00	0	-	-
	06	2	0.4	4.1
	12	2	0.4	4.4
	18	2	0.4	4.5
13	00	0	-	-
	06	2	0.4	4.5
	12	0	-	-
	18	0	-	-
14	00	0	-	-
	06	2	0.4	4.7
	12	2	0.4	4.5
	18	2	0.4	4.5
15	00	0	-	-
	06	2	0.4	4.4
	12	2	0.4	4.6
	18	0	-	-
16	00	0	-	-
	06	2	0.4	4.1
	12	2	0.4	4.2
	18	0	-	-
17	00	0	-	-
	06	2	0.4	4.9
	12	2	0.4	5.0
	18	0	-	-
18	00	0	-	-
	06	2	0.4	4.8
	12	2	0.4	4.9
	18	0	-	-
19	00	0	-	-
	06	2	0.4	5.2
	12	2	0.4	5.1
	18	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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February, 1963.

Component: E-W.

Station: Visakhapatnam (Contd.).

20	00	0	-	-
	06	2	0.4	5.3
	12	2	0.4	5.2
	18	0	-	-
21	00	0	-	-
	06	2	0.4	5.1
	12	2	0.4	5.2
	18	0	-	-
22	00	0	-	-
	06	2	0.4	5.1
	12	2	0.4	5.8
	18	0	-	-
23	00	0	-	-
	06	2	0.4	5.4
	12	2	0.4	5.6
	18	0	-	-
24	00	0	-	-
	06	2	0.4	5.7
	12	2	0.4	5.7
	18	0	-	-
25	00	0	-	-
	06	2	0.4	5.2
	12	2	0.4	5.1
	18	0	-	-
26	00	0	-	-
	06	2	0.4	5.1
	12	2	0.4	5.1
	18	0	-	-
27	00	0	-	-
	06	0	-	-
	12	2	0.4	5.2
	18	0	-	-
28	00	0	-	-
	06	2	0.4	4.9
	12	2	0.4	4.7
	18	0	-	-
