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SEISMOLOGICAL BULLETIN

SEP 1963

GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

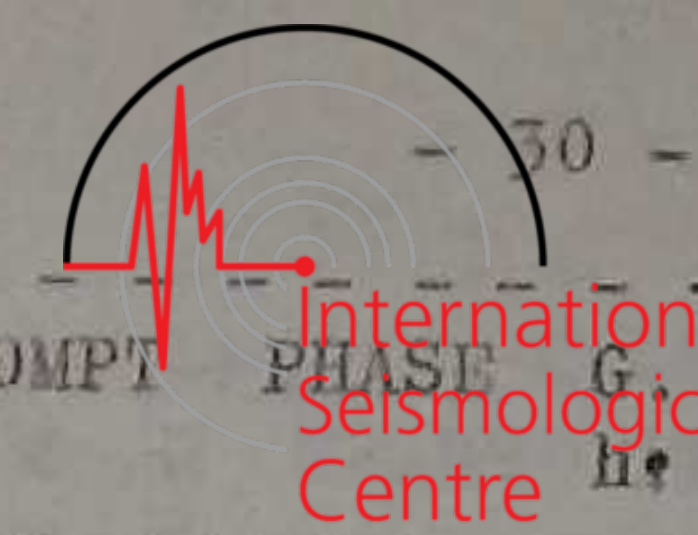
PUBLISHED UNDER THE DIRECTION OF
SHRI P. R. KRISHNA RAO
DIRECTOR GENERAL OF OBSERVATORIES

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	E	To=15 Tg=100			15
					Long Period	N	To=15 Tg=95			15
					- do -	Z	To=15 Tg=70			15
Bombay	18.54°N, 72.49°E		1	Deccan Trap	Milne-Shaw	N	12 350	13:1		15
					Milne-Shaw	E	12 350	23:1		8
Bokaro	23.50°N, 85.49°E			Rock	Sprengnether	E	To=Tg=7 secs			30
					Milne-Shaw	N	12 250	20:1		15
					Milne-Shaw	E	12 250	20:1		15
					Wood-Anderson	E	0.8 950	h=0.8		60
					Wood-Anderson	N	0.8 1000	h=0.8		50
Calcutta	22.32°N, 88.22°E	(1) 7		Alluvium	Milne-Shaw	E	12 250	20:1		8
					Wood-Anderson	N	2 870	Critical		30
					Omori-Ewing	N	15 32			25.4
					Omori-Ewing	E	21 30			25.4
Chatra	26.50°N, 87.10°E		151	Sand Stone	Milne-Shaw	E	12 250	20:1		16
					Wood-Anderson	N	1 1000	30:1		60
					Benioff	Z	To=0 Tg=0.45 secs	Critical		60
Colombo	06.54°N, 79.52°E		7	Beach Sand	Wenner-Accelerograph	ZNE	-	-		-
					Milne-Shaw	E	12 250	20:1		-
Dehra Dun	30.19°N, 78.02°E		682	Gravel	Wood-Anderson	N	0.8 950	Critical		60
					Wood-Anderson	E	0.8 850	Critical		60
					Milne-Shaw	N	12 250	20:1		8
					Milne-Shaw	E	12 250	20:1		8
Hyderabad	17.26°N, 78.27°E		536	Granite	Milne-Shaw	E	12 250	20:1		8
					Milne-Shaw	E	12 250	20:1		8
Kodaikamal	10.14°N, 77.28°E		2345	Rock	Milne-Shaw	E	10 250	20:1		8
Madras	13.00°N, 80.11°E		15	-	Sprengnether	E	To=Tg=7.2 secs	Critical		30
New Delhi	28.35°N, 77.12°E		207	Massive Quartzite						
Poona	18.32°N, 73.51°E		560	Deccan Trap	Sprengnether	Z	To=Tg=1.6	Critical		30
					Wood-Anderson	E	4 1000	20:1		15
					Milne-Shaw	N	12 280	20:1		8
Port Blair	11.49°N, 92.43°E				Wood-Anderson	N	2 1000	20:1		30
					Wood-Anderson	E	0.8 1000	65:1		30
					Milne-Shaw	N	12 350	20:1		8
Sehore	23.10°N, 77.08°E				Wood-Anderson	N	0.8 980	Critical		30
Shillong	25.34°N, 91.53°E		1500	Quartzite Sand Stone (Shillong Quartzite)	Wood-Anderson	N	0.8 1000	h=0.8		30
					Wood-Anderson	E	0.8 1000	h=0.8		30
					Milne-Shaw	N	12 250	20:1		8
					Benioff	Z	To=1.0 Tg=18			50
					Sprengnether	E	To=Tg=5.3	Critical		30
Wenner Accelerograph	ZNE	-	-		-					
Tocklai	23.45°N, 94.45°E			Alluvium	Wood-Anderson	E	0.8 970	h=0.8		60
Vizianagaram	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.
September, 1963.						
22	Bombay (Contd.)	NE	eS	03 20 08		
			e	24 37		
			eSS	26 05		
22	Madras	E	eP	03 14 15		
			e	23 13		
			e	28 24		
			e	32 26		
22	Epc:- 36.1° N 71.5° E in Hindu Kush. h = 147 Km. -H= 03 h 28 m 54.0 s (USCGS).					
	Delhi	ENZ	iP	03 31 01	910	Slight, distant.
				32 35		
	Chatra	Z	e	03 32 31		Slight.
			i	35 41		
	Shillong	ZNE	iP	06 50 55		Slight, near.
	Chatra	Z	e	06 51 52		Slight, near.
			e	52 39		
22	Shillong	ZNE	iP	07 59 32		Slight, local.
22	Shillong	ZNE	iP	10 21 21		Slight, local.
	Chatra	Z	iP	10 22 31		Slight, near.
22	Delhi	ENZ	iP	10 45 14		Slight, rarefaction. Initial ground motion towards South-West.
	Shillong	ZNE	iP	10 47 19		Slight, distant, rarefaction.
22	Port Blair	Z	e	19 34 44		Slight.
22	Shillong	ZNE	iP	19 35 09		Slight, distant, rarefaction.
22	Delhi	Z	eP	20 45 50		Slight, rarefaction.
22	Delhi	Z	iP	22 40 43		Slight, compression.
22	Shillong	ZNE	iP	22 42 18		Slight, distant, compression.
22	Chatra	Z	iP	22 49 30	410	Slight.
			iS	50 15		
	Shillong	ZNE	iP	22 49 39		Slight, near.
23	Shillong	ZNE	iP	00 51 26		Slight, near.
			e	51 50		
23	Bokaro	NE	e	01 09 29		Slight, tremor.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
21	Shillong	ZNE	eP	05 52 32		Slight, near.
21	Shillong	ZNE	iP	07 27 43		Slight, near, compression.
	Chatra	Z	iP i i	07 28 19 28 27 29 11		Slight, near, rarefaction.
	Tocklai	E	e e i i	07 28 42 29 05 29 07 29 11		Slight.
21	Bokaro	NE	iP	07 33 35		Slight, local.
		NE	iP	08 58 28		Slight, local.
21	Shillong	ZNE	eP	13 11 31		Slight, near.
21	Delhi	Z ENZ	iPg iSg	15 39 40.6 39 42.3		Slight, rarefaction.
21	Shillong	ZNE	iP	18 29 41		Slight, distant, compression.
21	Chatra	Z	i	18 30 20		Slight, distant.
21	Delhi	EZ Z	eP i	18 31 27 31 38		Slight, compression.
21	Shillong	ZNE	eP	23 18 50		Slight, distant.
22	Delhi	ENZ	eP	00 32 43		Slight.
22	Delhi	NZ ENZ NZ	iPg iSg i i	02 19 48.6 19 50.3 19 51.0 19 52.9	10	Slight, rarefaction. Initial ground motion towards South.
22	Shillong	ZNE	iP	03 00 17		Slight, distant, rarefaction.
22	Epc:- 19.3° S 175.9° E in Fiji Islands region. h = about 28 km. -H= 02 h 56 m 24.3 s (USCGS). Mag: 5.8 S.D. 0.4 (CGS).					
	Port Blair	Z E	iP e iS i SSS	03 09 12 14 37 19 46 24 37 28 54	9550	Rarefaction.
	Shillong	ZNE	iP	03 09 36		Slight, distant, rarefaction.
	Bombay	NE	e e e e	03 14 10 15 34 16 20 17 26		



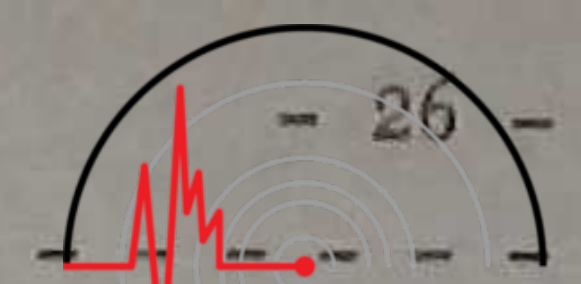
DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
20	Delhi	N EZ	iP eP	17 41 04		Slight. Initial ground motion towards South
20	Shillong	ZNE	iP	19 09 57		Slight, distant, rarefaction.
	Chatra	Z	iP	19 10 31		Slight, distant.
20	Delhi	ZNE	iP	19 11 35		Slight. Initial ground motion North-East. Rarefaction.
	Dehra Dun	Z	iP	19 11 37		Tremor, compression.
	Poona	Z	iP	19 11 42		Slight, rarefaction.
20	Port Blair	ZNE	iPg iSg	19 59 45 59 50	50	Slight, rarefaction.
20	Delhi	Z	eP	21 37 36		Slight, distant, rarefaction.
20	Shillong	ZNE	eP e	22 00 55 01 08		Slight, near.
20	Dehra Dun	Z	eP	22 30 00		Tremor.
	Poona	Z	iP	22 30 50		Slight, rarefaction.
	Delhi	ENZ Z	eP i e e	22 30 56 30 58 31 42 34 17		Slight, compression. Initial ground motion towards East.
20	Chatra	Z	e	22 31 34		Slight, distant.
20	Shillong	ZNE	eP	23 31 57		Slight, distant.
21	Shillong	ZNE	eP	00 44 43		Slight, distant.
	Delhi	N EZ	iP eP	00 45 54		Slight. Initial ground motion towards North.
21	Shillong	ZNE	iP	04 02 34		Slight, distant, compression.
21	Delhi	ENZ	eP	04 04 17		Slight, compression.
21	Delhi	ENZ	iP iS	04 40 54 42 30	930	Slight. Initial ground motion South-east. Rarefaction.
	Chatra	Z	e e	04 42 30 45 24		Slight, distant.
	Shillong	ZNE	iP	04 43 15		Slight, distant, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
September, 1963.						
19	Delhi	Z	iP	17 01 30		Slight, compression.
19	Delhi	Z	eP	18 57 03		Slight, compression.
19	Shillong	ZNE	iP	19 41 23		Slight, distant, compression.
19	Delhi	Z	iP	21 29 36		Slight, rarefaction.
19	Port Blair	ZNE NE	iPg iSg	21 51 12 51 17	50	Slight, rarefaction. Initial ground movement North West.
20	Port Blair	Z	eP PP Sg SS SSS	03 36 46 35 54 36 03 36 16 36 25	150	Slight.
20	Delhi	Z	eP	07 44 41		Slight, compression.
20	Delhi	ENZ	eP	08 13 25		Slight.
20	Port Blair	ZNE NE	iPg iSg	12 13 17 13 23		Slight, rarefaction. First ground movement N.W.
20	Delhi	Z	eP	15 00 50		Slight, rarefaction.
	Dehra Dun	Z	eP	15 00 51		Tremor.
20	Dehra Dun	Z ENZ	iP i	15 02 27 02 59		Slight, rarefaction.
	Delhi	ENZ	iPn iPg iSn iSg	15 02 37 02 48 03 16 03 29	360	Moderate. Initial ground motion North West. Compression.
	Chatra	Z	iP	15 03 11		Slight, distant, compression.
	Bokaro	NE	e	15 03 25		Slight.
	Shillong	ZNE	iP	15 04 07		Slight, distant, rarefaction.
	Poona	Z	eP	15 04 29		Slight.
	Sehore	NZ EW	iP Lq iS SS	15 04 47 05 29 05 39 05 48	490	Slight, near shock.
	Madras	E	eP e e e e	15 08 27 08 40 09 19 10 12 11 15		Slight, near shock.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	km.	REMARKS.
September, 1963.						
18	Shillong	ZNE NE	iP iS	17 07 31 15 03	5950	Rarefaction.
18	Port Blair	Z E	iP e	17 08 34 09 26		Compression.
18	Shillong	Z NE	iP	17 27 23		Slight, distant, rarefaction.
	Delhi	Z	eP	17 28 50		Slight, distant, compression.
	Dehra Dun	Z	eP	17 28 52		Tremor.
18	Delhi	ZNE Z	eP iS	17 32 30 34 10	970	Slight, rarefaction.
18	Shillong	ZNE	iP	18 28 09		Slight, distant, compression.
18	Shillong	ZNE	eP	22 00 19		Slight, distant, rarefaction.
	Chatra	Z	eP	22 01 04		Slight, distant.
	Delhi	ZE N	eP e	22 02 47 02 49		Slight, distant.
19	Chatra	Z	iP	00 25 14		Slight, distant, rarefaction.
19	Chatra	Z	eP	05 24 18		Slight, distant.
	Shillong	ZNE	eP	05 24 56		Slight, near.
19	Chatra	Z	eP	06 06 27		Slight, distant.
19	Shillong	ZNE	eP	13 07 25		Slight, near.
19	Port Blair	ZNE NE	iPg iSg	16 00 11 00 16	50	Slight, rarefaction. Initial ground movement towards North West.
19	Epc:- 31.0° N 66.8° E in Afganistan-Pakistan Border. h - about 37 km. -H= 16 h 31 m 15 s (USCGS).					
	Delhi	ZNE Z ZNE	eP i iS	16 33 28 33 32 35 12	1010	Slight.
	Chatra	Z	eP	16 35 30		Slight, distant.
	Shillong	ZNE	iP	16 36 15		Slight, distant, compression.
	Bokaro	E	e	16 38 46		Slight, distant.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
September, 1963.					
18	Epc:- 40.9° N 29.2° E in Turkey. 1 killed and several injured at Istanbul.				
	h = about 33 km.				
	-H= 16 h 58 m 12.5 s (USCGS).				
	Mag: 6 $\frac{1}{4}$ (Pas), 5 $\frac{3}{4}$ -6(Pal), 5.2 S.D. 0.3 (CGS).				
	Delhi	Z	i	17 05 56	
		ZE	PP	07 53	
		E	PcP	07 48	
		Z	i	09 08	
		E	S	12 10	
			SS	14 58	
		Z	Lq	15 24	
		E	SSS	15 46	
		ZE	Lr	17 42	
		Z	M	-	Period = 17.5 secs. Amp. = 24.0.
	Bombay	NE	eP	17 06 11	4760
			PP	07 59	
			PPP	08 28	
			PcS	11 52	
			eS	12 36	
		N	e	14 37	
		NE	ScS	15 48	
			SSS	16 20	
		N	M	24 41	Period = 23 secs. Amp. = 4
		E	M	30 11	
	Poona	Z	iP	17 06 20	4920 Compression.
		N	eS	12 55	
	Hyderabad	NE	eP	17 06 57	5570
			iS	14 09	
		E	Lr	21 41	
		N	Lr	21 44	
		E	M	25 36	Period = 19 secs. Gr. dis = 11 μ .
		N	M	25 37	Period = 16 secs. Gr. dis = 5 μ .
	Chatra	Z	iP	17 07 01	5720 Rarefaction.
		NE	iS	14 21	
	Bokaro	E	iP	17 07 05	5690 Initial ground move- ment towards West.
			PP	09 14	
			S	14 23	
			PS	14 29	
			PPS	14 36	
			SSS	19 43	
	Madras	E	iP	17 07 25	6310 Initial ground moti- towards East.
			PP	09 24	
			PPP	10 27	
			eS	14 38	
			SS	18 23	



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
September, 1963.					
17	Shillong	ZNE	iPg iSg	21 14 42 14 55	110 Slight.
17	Port Blair	Z	iP P* Pg PPP	21 19 46 19 52 19 57 20 00	360 Slight, rarefaction.
		ZNE Z	i iS S* SS Sg SSS	20 09 20 25 20 33 20 37 20 40 20 48	
17	Delhi	ZNE	iP oS	21 21 41 24 16	1530 Slight. Initial ground motion towards South, East. Compression.
	Shillong	ZNE	eP	21 22 41	Slight, distant.
17	Port Blair	Z	ePg iSg	21 52 32 52 39	60 Slight.
17	Shillong	ZNE	eP	22 40 37	Slight, distant.
	Delhi	Z	iP	22 41 40	Slight, compression.
17	Madras	E	e	22 51 46	
18	Delhi	NE E NE	eP i e	06 58 54 59 19 59 24	Slight.
18	Delhi	ZNE	iPg Sg	08 36 49 36 54	40 Slight.
18	Chatra	Z	eP iS	09 52 44 53 15	280 Slight.
18	Delhi	Z	iP	12 30 19	Tremor, rarefaction.
18	Delhi	Z N	eP e	15 31 07 31 09	Slight.
18	Delhi	NE Z	eP eP	15 46 26 49 29	Slight, compression.
18	Dehra Dun	Z	e	15 46 26	Tremor.
18	Chatra	Z	e	15 47 51	Slight, distant.
	Shillong	ZNE	iP	15 48 28	Slight, distant, compression.
18	Delhi	ZNE	eP	17 05 52	4630 Slight. Initial ground motion South, East. Rarefaction.
	Dehra Dun	Z N	eP e	17 05 53 06 01	Slight. Phases not well recorded.

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

September, 1963.

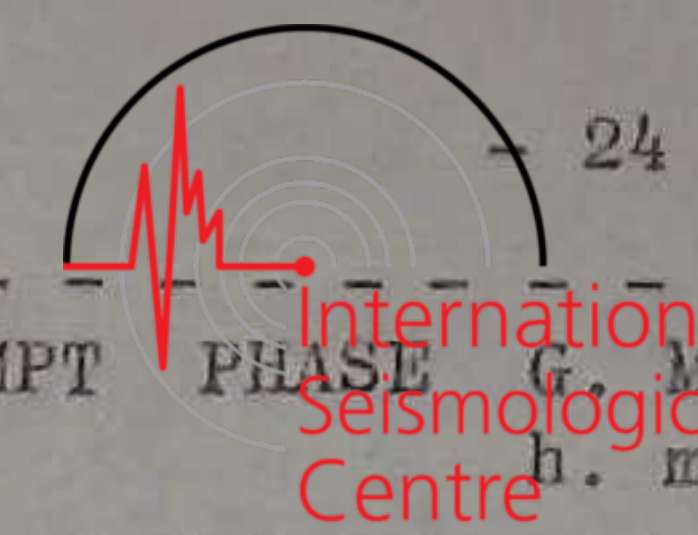
17	Dehra Dun	ZN	eP	19 33 21	10910
		N	i	35 56	
			SKS1	44 05	
			iS	44 46	
			PS	46 13	
			PKKP2	49 41	
			SS	51 35	
			PKKS	53 24	
			PcPPKP2	54 14	
			SK KS2	56 55	
			Lq	20 01 10	
			Lr	05 47	
			M	13 59	
	Delhi	ZNE	iP	19 33 23	
		NE	i	40 12	
	Sehore	NE	e	19 33 28	
	Poona	E	iP	19 33 30	
			PP	37 52	
			PPP	40 03	
			PKS	41 18	
			e	45 12	
			PS	46 50	
			PPS	47 46	
			SS	52 24	
			SSP	52 35	
			SSS	56 13	
			Lq	20 02 32	
			Lr	07 20	
			M	16 12	
	Bombay	NE	iP	19 33 35	10850
			PP	37 31	
		N	e	38 50	
		NE	PPP	39 42	
		N	e	42 05	
			e	43 24	
		NE	SKS1	- 46	
		E	SKKS1	44 28	
		NE	eS	44 57	
		N	PS	51	
		NE	e	46 24	
		E	PPS	55	
		N	PKKP2	49 50	
		E	PKKS1	53 26	
		N	PcPPKP2	54 20	
		E	Lq	20 00 38	
		N	SKKKS	02 02	
			Lr	04 42	
		E	M	19 50	
		N	M	31 35	

Rarefaction.

Initial ground movement East and Rarefaction.

Period = 17 secs
Amp. = 17 μ .
Period = 19 secs
Amp. = 18 μ .

Slight, compressi



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

September, 1963.

17	Chatra (Contd.)	NE	SS	19 48 38	
			Mn	20 14 -	Period = 15 secs. Amp. = 17 u.
	Bokaro	NE	iP	19 32 44	9630
		E	PP	36 08	Initial ground movement towards South, East.
		NE	S	43 21	
		N	PS	44 28	
		E	i	48 30	
		N	SS	49 15	
		NE	SSS	52 34	
		N	Lq	56 49	
	Visakhapatnam	NE	iP	19 32 48	9690
			iPP	36 12	Distant. Initial ground movement South East.
			iPPP	38 15	
		E	iSKS	43 09	
		NE	iS	43 27	
		E	iPS	44 25	
			iPPS	45 00	
			iSS	42 12	?
		NE	Lr	20 01 14	
	Madras	E	iP	19 33 00	9950
			PP	36 28	Initial ground motion towards West.
			PPP	38 29	
			SKS	43 29	
			SKKS	43 40	
			iS	43 49	
			ScS	43 55	
			PS	44 56	
			PPS	45 28	
			SS	49 39	
			SSS	53 21	
			Lq	57 30	
			Lr	20 01 41	
			M	09 16	
			T	21 22 11	
	Hyderabad	E	iP	19 33 10	Initial ground movement towards South-east.
			PP	36 09	
			PPP	38 06	
		NE	iSKS	43 51	
		E	LR	20 00 09	
		N	Lr	02 00	
		E	M	08 25	Period = 15 secs. Gr. dis = 12 u. Period = 18 secs. Gr. dis = 15 u.
		N	M	08 36	
	Kodaikanal	E	iP	19 33 10	10310
			PPP	38 49	Initial ground movement towards West.
			iSKS	43 49	
			SS	51 01	
			LQ	51 01	
			M	- - -	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
17	Dehra Dun	Z	eP i? i?	06 14 17 14 21 14 38		Tremor.
	Poona	Z	iP	06 14 18		Slight, rarefaction.
	Port Blair	Z	iP	06 14 38		Slight, distant, rarefaction.
17	Bombay	Zsp	e	11 03 18		Slight, near, tremor.
17	Bombay	Zsp	e	11 59 25		Slight, near, tremor.
17	Poona	Z	iP eE	12 09 15 09 30	120	Slight.
17	Delhi	Z	i	12 15 31		
17	Epc:- 10.1° S 165.3° E in Santacruz Islands. h = about 17 km. -H = 19 h 20 m 08.0 s (USCGS). Felt : Eastern Solomon Islands. Mag : 7¼(Pas), 7½(Berk), 7 (Pal), 6.1 (CGS).					
17	Epc:- 9.0° S 168° E in Santacruz Islands. -H = 19 h 20 m 00 s (Shillong)					
17	Port Blair	ZNE E	iP i PP PPP eS PS i SS SSS Lq Lr M Mn	19 31 55 33 56 34 59 36 37 44 47 42 33 42 53 46 41 50 11 52 29 55 48 20 03 01 24 -	8630	Rarefaction. Initial ground movement South, East. Period = 15 secs. Amp := 27 μ.
	Tocklai	E	eP	19 32 09		
	Shillong	ZNE NE	iP iS	19 32 18 42 28	9020	Rarefaction.
	Calcutta	E	iP PP PPP iS	19 32 28 35 34 37 30 42 47	9220	
	Chatra	Z ZNE NE	e iP PP PPP SKS iS ScS PS PPS	19 32 40 32 42 36 01 37 55 42 57 43 08 45 14 44 06 44 30	9380	Initial ground motion towards South, East.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
15	Delhi	ZNE	iP	09 17 55		Slight. Initial ground motion towards South, East. Rarefaction.
15	Delhi	ZNE	iP	09 19 18		Slight. Initial ground movement towards South-east.
	Shillong	ZNE	iP	09 20 30		Slight, distant, compression.
15	Shillong	ZNE	eP	10 03 30		Slight, local.
15	Chatra	Z	iP	14 15 06	540	Slight, rarefaction.
15	Shillong	ZNE	eP	14 15 38		Slight, near.
15	Delhi	ZNE	P iS	14 16 13 17 50	950	Slight.
15	Shillong	ZNE	eP	21 47 00		Slight, near.
16	Shillong	ZNE	iP	00 12 25		Slight, distant, compression.
16	Poona	Z	iP	00 53 53	120	Slight.
16	Shillong	ZNE	iPg iSg	03 16 26 16 31	40	Slight.
16	Shillong	ZNE	iPg iSg	07 36 25 36 38	110	Slight.
16	Bokaro	NE	iP	10 51 29		Slight, local.
16	Shillong	ZNE	iP	20 17 44		Slight, distant, compression.
16	Chatra	Z	iP	20 18 08		Slight, distant, compression.
16	Madras	E	e e	20 29 12 21 03 55		Slight, distant,
16	Tocklai	E	eP i	23 08 06 08 11		Slight.
	Shillong	ZNE	iP i e	23 08 14 08 24 09 16		Slight, near.
	Chatra	Z	eP eS	23 08 50 10 10	770	Slight.
7	Delhi	ZNE	iP	06 14 16		Slight. Initial ground motion North East. Rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
September, 1963.						
15	Delhi	ZNE	iP	01 00 05	10390	Initial ground motion on South East. Rarefaction.
		E	i	03 19		
		EN	PP	04 51		
		N	PPP	07 37		
		EN	iS	11 12		
		N	ScS	12 35		
		Z	M			Period = 97 secs. Amp. 31 mm.
	Poona	N	iP	01 00 15	10660	Initial ground movement North West and compression.
			PP	04 37		
			PPP	06 37		
			SKS1	10 37		
			eS	11 30		
			PS	13 38		
			PPS	14 38		
			SS	18 53		
			SSS	22 54		
			Lq	29 39		
			Lr	35 34		
			M	46 34		
		Z	iP	53 53		
	Bombay	NE	iP	01 00 17	10750	
			PP	04 16		
		E	e	06 09		
			e	06 36		
		EN	PPP	06 36		
		E	SKS1	10 26		
			iS	11 37		
		N	PPS	14 24		
		E	SS	18 09		
		NE	PKKS1	20 49		
			SKKS2	24 44		
		E	M	51 36		Period = 15 secs. Amp. = 7 μ
		N	M	58 39		Period = 17 secs. Amp. = 14 μ
15	Sehore	EW	e	01 13 19		Distant shock.
15	Chatra	Z	e	02 10 09		Slight, distant.
15	Delhi	Z	eP	02 10 48		Slight, distant, compression.
15	Shillong	ZNE	iP	04 17 13		Slight, local.
15	Port Blair	Z	ePg	06 17 09	50	Slight.
			iSg	19 14		
15	Shillong	ZNE	iP	06 27 31		Slight, distant, rarefaction.
15	Delhi	ENZ	i	08 19 12		
15	Shillong	ZNE	iP	08 36 47		Slight, distant, compression.



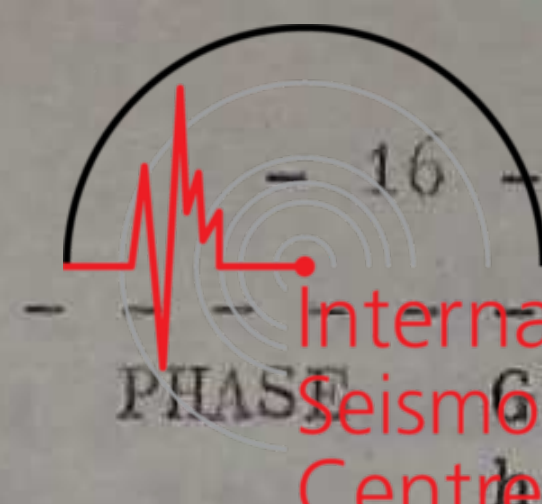
DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
September, 1963.						
15	Visakhapatnam	NE	iP	00 59 30	9690	Initial ground movement towards South, East.
			iPP	02 58		
		E	iPPP	04 57		
			iSKS	09 43		
		NE	iS	10 09		
			SS	16 06		
			SSS	19 20		
	Madras	E	iP	00 59 42	9910	Initial ground motion towards West.
			PP	01 03 09		
			PPP	05 07		
			e	06 35		
			SKS	10 08		
			SKKS	10 17		
			iS	10 30		
			ScS	10 33		
			PS	11 30		
			PPS	12 07		
			e	12 47		
			SS	16 32		
			SSS	19 55		
			Lq	23 58		
			Lr	28 58		
	Hyderabad	E	iP	00 59 49	10260	Great intensity.
		NE	PP	01 03 36		
		E	PPP	05 35		
		NE	S	10 51		
		E	ScS	10 53		
			PS	11 38		
		NE	SS	15 47		
		N	Lr	28 05		
		E	Lr	28 20		
			M	36 23		Period = 18 secs. Gr. dis = 15 u.
		N	M	36 26		Period = 15 secs. Gr. dis = 8 u.
	Kodaikanal	E	iP	00 59 54	10470	Initial ground movements towards West.
			PP	01 03 27		
			eSKS	10 42		
			Lr	29 48		
	Dehra Dun	ZN	eP	01 00 04	10360	Distant shocks.
		E	iP	00 04		Initial ground movement towards East.
		NE	PP	03 31		
			PPP	05 28		
			SKS1	10 47		
			iS	11 10		
			PS	12 19		
			PPS	12 47		
			SS	17 09		
			PKKP1	17 48		
			SSS	20 47		
			PKKS1	21 25		
			PcPPKP2	22 42		
			Lq	24 57		
			Lr	29 17		
			M	36 52		



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
<u>September, 1963.</u>						
14	Shillong	ZNE	eP	09 35 05		Slight, distant.
14	Delhi	Z	eP	09 36 34		Slight, distant.
14	Delhi	Z	eP	10 06 42		Tremor, compression.
14	Delhi	Z	eP	12 08 02		Slight.
14	Shillong	ZNE	iP	16 36 28		Slight, distant, rarefaction.
14	Poona	Z	iP	17 20 53	110	Slight, near.
	Madras	E	e	17 24 09		Slight.
	Delhi	ZNE	eP	17 25 59		Slight.
14	Poona	Z	iP	17 45 21	110	Slight, near.
14	Poona	E	iP	20 31 06	110	Slight(near) shock.
15	Epc:- 10.3° S 165.6° E in Santacruz Islands. h = about 43 km. -H= 00 h 46 m 54.1 s (USCGS). Mag : 7¼-7½(Pas), 6¾-7(Pal), 6.3 S.D. 0.3 (CGS) felt Vanikoro.					
15	Epc:- 10.0° S, 166° E -H= 00 h 46 m 45 s (Shillong).					
15	✓ Poona	Z	iP	00 54 03		Slight.
15	✓ Tocklai	E	eP	00 58 46		
	✓ Shillong	ZNE	iP	00 59 02	8980	Rarefaction.
		NE	PP	01 02 18		
			PPP	04 04		
			iS	09 10		
			ScS	09 19		
			PS	09 58		
			PPS	10 25		
			SS	14 32		
			SSS	17 58		
	✓ Calcutta	NE	iP	00 59 12	9110	
			eS	01 09 26		
	✓ Chatra	ZNE	iP	00 59 25	9360	Initial ground motion towards South rarefaction.
		NE	i	01 01 35		
			PP	02 38		
			PPP	04 34		
			SKS	09 37		
			eS	09 50		
			ScS	09 54		
			PS	10 48		
			PPS	11 16		
			SS	15 22		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
13	Delhi	ZNE	eP	12 18 22		Slight, compression.
13	Delhi	ZN	eP	14 36 39		Slight, rarefaction. Initial ground motion towards North.
13	Delhi	ZN	eP	17 18 17		Slight.
			e	19 30		
13	Chatra	Z	ePg	18 06 50	90	Slight.
			iSg	07 01		
13	Shillong	ZNE	iP	18 27 51		Slight, distant, compression.
14	Chatra	Z	iP	00 24 50		Slight, distant, rarefaction.
			i	27 42		
	Shillong	ZNE	iP	00 24 21		Slight, distant, rarefaction.
	Delhi	Z	eP	00 25 54		Slight, compression.
	Bokaro	NE	iP	00 59 27	9510	Moderate. Initial ground movement towards South East.
		E	PP	01 05 00		
			PPP	05 10		
		N	S	09 59		
		NE	PS	10 12		
			PPS	10 39		
			SS	15 43		
		E	SSS	18 29		
		N	LQ	22 59		
			LR	26 54		
	✓ Madras	E	eP	04 10 50	9470	Slight.
			e	11 12		
			SKS	21 18		
			eS	21 24		
			ScS	21 37		
			PPS	22 47		
			LQ	33 44		
			LR	37 53		
	✓ Delhi	Z	eP	04 11 55		Slight, distant, compression.
	Shillong	ZNE	eP	06 53 15		Slight, near.
	Delhi	Z	iP	06 54 25		Slight, compression.
	✓ Shillong	ZNE	iP	07 25 17		Slight, distant, rarefaction.
	✓ Delhi	ZE	eP	07 26 42		Slight, rarefaction.
		ZNE	i	26 43		
	Delhi	Z	eP	07 34 20		Slight. Initial ground motion towards North, East. Rarefaction.
		NE	iP			


DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
12	Delhi	ZNE	eP i	05 32 34 32 40		Slight, rarefaction
12	Shillong	ZNE	eP	06 24 51		Slight, distant, rarefaction.
12	Shillong	ZNE	eP iSg	06 46 13 46 29	130	Slight,
12	Bokaro	NE	e	08 22 19		Slight, tremor.
12	Delhi	S	iP	08 26 16		Slight, compression
12	Chatra	Z	iP	08 27 28		Slight, distant, compression.
12	Shillong	ZNE	eP	08 38 07		Slight, near.
12	Bokaro	NE	iP	09 39 18		Slight, local .
12	Delhi	ZNE	iPg iSg	10 35 19 35 23.3	40	Slight. Initial ground motion South, East Rarefaction.
12	Delhi	ZN	eP	18 33 40		Slight, compression Initial ground motion towards South.
13	Dehra Dun	Z	iP	01 25 50		Tremor.
13	Delhi	NZ ENZ	ePn iSn	01 26 06 26 39	290	Slight.
13	Shillong	ZNE	eP i i i	03 55 37 56 34 57 09 59 08		Slight, near.
13	Shillong	ZNE	iP	06 41 37		Slight, distant, compression.
13	Chatra	Z	iP i	06 42 34 43 54		Slight, near, compression
13	Delhi	ZE N	iP eP	09 17 04		Slight, compression
13	Port Blair	ZNE Z	iPg P PP iSg	12 10 08 10 11 10 15 10 19	90	Slight, compression
13	Shillong	ZNE	eP	12 12 37		Slight, distant
13	Delhi	Z EN	iP eP	12 14 37		Slight, compression



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
10	Shillong	ZNE	iP	17 13 13		Slight, distant, rarefaction.
	Chatra	Z	iP	17 13 21		Slight, distant, rarefaction.
	Dehra Dun	Z	eP	17 13 27		Tremor.
	Delhi	Z N Z	iP eP i	17 13 36 13 48		Slight, rarefaction. Initial ground motion towards North.
10	Shillong	ZNE	iP	18 04 53		Slight, near.
10	Shillong	ZNE	iP	20 07 14		Slight, distant, compression.
10	Shillong	ZNE	eP	20 39 30		Slight, near.
11	Shillong	ZNE	iP	00 05 00		Slight, distant, compression.
	Delhi	Z	eP	00 06 33		Slight, distant, rarefaction.
11	Dehra Dun	Z	eP	00 06 34		Tremor.
11	Shillong	ZNE	eP	04 22 02		Slight, near.
11	Delhi	Z	iP	08 29 24		Slight, rarefaction.
11	Shillong	ZNE	iP	09 08 15		Slight, distant, compression.
11	Chatra	Z	iP	09 08 49		Slight, distant, compression.
11	Delhi	ZNE	iP	19 09 48		Slight. Initial ground motion South East. Compression.
11	Tocklai	E	eP i	21 23 28 23 55		Slight.
	Shillong	ZNE	iP	21 23 54		Slight, distant, compression.
	Chatra	Z	eP i i e	21 24 45 25 06 26 01 26 43		Slight, distant.
11	Chatra	Z	iPg iSg	23 19 05 19 17	100	Slight, compression.
12	Shillong	ZNE	iP	03 24 51		Slight, distant, rarefaction .

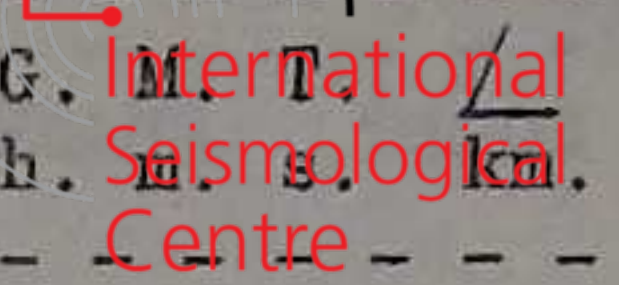
DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
09	Delhi	Z	iP	12 31 28		Slight, compression. Initial ground motion towards West.
09	Shillong	ZNE	iP	13 04 25		Slight, distant, compression.
09	Port Blair	Z	e	21 35 55		Slight, near.
09	Epc:- 31.3° N 72.1° E in Pakistan. h = about 33 km. -H= 21 h 41 m 43.6 s (USCGS). Mag : 4.7 (CGS).					
09	Dehra Dun	Z	iP	21 43 04		Compression.
		ZNE	i	44 29		
		Z	i	44 37		
	Delhi	ZNE	iP	21 43 06	510	Rarefaction. Initial ground motion towards North, West.
		Z	P*	43 16		
		EN	i	43 40		
		ZNE	iS	44 01		
			i	44 04		
		Z	i	44 50		
	Shillong	ZNE	iP	21 45 55		Rarefaction.
10	Shillong	ZNE	iP	01 22 05		Slight, distant, rarefaction.
10	Shillong	ZNE	eP e	05 30 59 33 10		Slight, near.
10	Shillong	ZNE	eP e	06 43 12 44 15		Slight, near.
10	Delhi	ZNE	iP	07 14 18		Slight, South East rarefaction.
10	Bokaro	NE	iP	08 27 10		Slight, local.
10	Bokaro	NE	e	09 09 28		Slight, tremor.
10	Shillong	ZNE	iP	14 20 31		Slight, distant, compression.
10	Delhi	NZ	iP	14 22 10		Slight, rarefaction. Initial ground motion towards North
10	Shillong	ZNE	eP i	14 47 10 47 24		Slight, near.
10	Chatra	Z	iPg eSg	15 57 48 58 06	150	Slight, compression.
10	Shillong	ZNE	eP i	15 58 21 59 04		Slight, near.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
09	Calcutta	E	eP eS	02 56 44 03 05 42	7550	
	Chatra	Z NE	iP i eS	02 57 02 03 00 05 06 25	8030	Compression.
	Bokaro	E	iP PP S PPS SS SSS	02 57 05 59 44 03 06 31 07 19 11 24 14 33	8090	
	Visakhapatnam	E	iP iPP ePPP iS SKS eSS	02 57 13 59 59 03 01 42 06 41 07 01 11 23	8130	Initial ground movement S.E.
	Madras	E	iP PcP PP PPP eS SKS PS PPS SS SSS LQ LR M	02 57 21 57 33 03 00 11 01 56 06 58 07 28 07 38 07 50 03 11 48 14 54 16 52 20 39 26 52	8510	Initial ground motion towards East.
	Hyderabad	E	P M	02 57 36 03 31 33		Pd. = 18 secs. Amp. = 5 u.
	Delhi	EZ	iP i	02 57 50 57 52		Slight West, compression.
	Dehra Dun	E N	eP e	02 57 50 03 06 59		
	Poona	Z N	eP eS	02 57 58 03 08 08	9020	Compression.
	Bombay	ZNE	iP i	02 59 03 09 28		
	Shillong	ZNE	eP	03 25 00		Slight, distant.
	Bokaro	NE	e	09 30 42		Slight, tremor.
	Bokaro	NE	iP	10 09 43		Slight, local.
	Shillong	ZNE	iP	12 29 53		Slight, distant, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
September, 1963.					
08	Shillong	ZNE	iP	17 32 07	Slight, distant, rarefaction.
08	Epc:- 23.6° S 179.8° E, in Fiji Islands region. h = about 550 km. -H= 19 h 50 m 29.8 s (USCGS). Mag : 5.7 S D 0.4 (CGS).				
	Shillong	ZNE	iP	20 03 11 10940	Distant, compression
			iPP	07 19	
			iSKS	12 55	
			iPPS	17 20	
08	Chatra	Z	PP	20 05 35	Distant.
	Visakhapatnam	E	eP	20 07 17	
		NE	i	13 25	
		E	e	13 32	
		E	e	13 39	
		E	e	16 17	
	Delhi	Z	e	20 08 02	
		EZ	i	08 04	
		ENZ	e	17 40	
	Madras	E	e	20 08 58	
			i	13 26	
	Dehra Dun	Z	e	20 09 02	
	Calcutta	E	e	20 09 15	
			i	13 01	
	Poona	NE	e	20 12 52	
	Delhi	Z	iP	20 18 59	Slight, rarefaction
08	Dehra Dun	Z	eP	20 19 01	Slight.
08	Delhi	ENZ	iP	23 30 30	Slight.
08	Delhi	ENZ	eP	23 50 45	Slight.
09	Epc:- 4.4° S 152.7° E in New Britain. h = about 34 km. Felt -H= 02 h 45 m 45.5 s Mag : 5.6 S D 0.4 (CGS).				
Epc:- 3.0° S 153° E near New Island. -H= 02 h 45 m 41 s (Shillong)					
	Port Blair	E	e	02 56 04	
			i	03 05 08	
	Shillong	ZNE	iP	02 56 33 7370	Compression.
			i	56 59	
		NE	PP	59 08	
			iS	03 05 22	
			i	05 57	
			i	18 26	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	REMARKS.
September, 1963.					
07	Delhi	Z	iP	08 52 41	Slight, rarefaction.
07	Shillong	ZNE	eP	10 07 07	Slight, near.
07	Shillong	ZNE	iP	12 02 10	Slight, tremor.
07	Shillong	ZNE	iP	12 14 16	Slight, local.
07	Shillong	ZNE	eP	12 34 11	Slight, near.
07	Shillong	ZNE	iP	12 53 37	Slight, distant, compression.
	Chatra	Z	iP	12 53 52	Slight, distant, compression.
	Dehra Dun	Z	eP	12 54 13	Slight.
	Delhi	ZNE	iP	12 54 20	Slight. Initial ground motion towards South, West. Rarefaction.
07	Shillong	ZNE	iP	13 11 52	Slight, distant, rarefaction.
07	Shillong	ZNE	iP	16 37 54	Slight, near.
07	Delhi	Z	iP	19 09 38	Slight, compression.
	Dehra Dun	Z	iP	19 09 43	Tremor, compression.
07	Shillong	ZNE	iP	19 34 59	Slight, distant, compression.
	Chatra	Z	iP	19 35 32	Slight, distant, compression.
	Delhi	Z	eP	19 36 32	Slight, compression.
	Dehra Dun	Z	eP	19 36 35	Slight.
07	Shillong	ZNE	eP	20 19 59	Slight, distant.
07	Shillong	ZNE	iP	22 09 05	Slight, distant, compression.
	Delhi	ZE	iP	22 10 33	Slight. Initial ground motion towards East. Compression.
08	Delhi	ENZ	iPg	03 48 56 50	Slight, compression. Initial ground motion towards South-east.
			iSg	49 01	
08	Port Blair	Z	e	13 33 53	Slight, near.
08	Chatra	Z	ePg	14 54 55 220	Slight.
			iSg	55 21	



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
07	✓ Bokaro	E	PPP e e S SS	01 24 42 26 16 26 37 30 48 33 17		
	✓ Dehra Dun	Z E NE E	iP e eS SS	01 25 01 25 26 31 32 34 56		Rarefaction.
	✓ Delhi	ZNE ZE ZNE NE	eP PP eS SS Lr	01 25 11 27 05 31 44 35 20 40 46	4890	Initial ground motion towards North, East. Rarefaction. Period = 35 secs. Amp: = 25 μ.
	✓ Visakhapatnam	E	eP eS eLR	01 25 19 32 11 35 25	5220	
	✓ Poona	Z	iP	01 26 09		Rarefaction.
	✓ Port Blair	E	i i	01 35 05 40 44		
07	Shillong	ZNE	iP	03 26 08		Slight, near.
	Chatra	Z NE	iP eS	03 26 59 27 55	520	Slight, rarefaction
07	Port Blair	Z	ePg iSg	03 30 20 30 27	50	Slight.
07	Shillong	ZNE	iP	04 17 57		Slight, distant, compression.
	Delhi	ZE	eP	04 19 27		Slight. Initial ground motion East. Compression.
07	Shillong	ZNE	iP i	07 02 01 02 12		Slight, local.
07	✓ Shillong	ZNE	iP	07 22 41		Slight, distant, compression.
	✓ Chatra	Z	iP	07 23 01		Slight, compression
	✓ Dehra Dun	Z	iP i	07 23 31 23 32		Tremor, compression
	✓ Delhi	ZNE Z	iP i i	07 23 40 23 45 23 50		Slight. Initial ground motion South West, compression.
07	✓ Shillong	ZNE	iP	08 51 15		Slight, distant, compression.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
06	Dehra Dun	Z	iP	08 19 29		Tremor, rarefaction.
	Delhi	ZNE	iP	08 19 29		Slight. Initial ground motion towards North, East. Rarefaction.
06	Shillong	ZNE	eP	09 27 18		Slight, local.
06	Dehra Dun	Z	eP	11 29 55		Tremor.
	Delhi	N EN	P iS	11 30 06 31 38	890	Slight.
06	Dehra Dun	Z	iP	15 34 24		
	Delhi	ENZ	iP iS	15 32 52 34 33	970	Slight. Initial ground motion towards South, West. Compression.
06	Shillong	ZNE	iP	13 35 09		Slight, distant, compression.
06	Shillong	ZNE	iP	18 08 58		Slight, near, rarefaction.
06	Shillong	ZNE	iP	20 11 47		Slight, distant, compression.
	Delhi	Z	eP	20 13 24		Slight.
	Shillong	ZNE	iP	20 16 41		Slight, near, compression.
06	Shillong	ZNE	iP	20 27 14		Slight, near, rarefaction.
06	Shillong	ZNE	iP	21 08 49		Slight, distant, compression.
06	Port Blair	ZNE	iP	21 50 09		Slight, local.
06	Shillong	ZNE	eP i e	22 32 04 32 17 32 30		Slight, near.
06	Shillong	ZNE	eP	23 14 36		Slight, near.
07	Epc:- 36.4° N 130.6° E Off coast of South Korea. Felt. h = about 33 km. -H= 01 h 16 m 55.1 s (USCGS). Mag : = 5.3 SD 0.4 (CGS).					
07	✓ Chatra	Z NE	eP i	01 23 14 25 45		
	✓ Shillong	ZNE	eP	01 23 45		Distant.
	✓ Calcutta	E	ePPP e	01 24 35 31 42		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
05	Shillong	ZNE	eP	21 34 33		Slight, distant.
06	Delhi	ZNE	iPg iSg	01 58 30 58 37	60	Slight. First ground motion South, East. Compression.
06	Epc:- 96.4° N 130.6° E in Sea of Japan. h = about 33 km. -H= 06 h 03 m 52.1 s (USCGS). Mag: 5.4 SD 0.3 (CGS) .					
	Shillong	ZNE	iP PP PPP	06 10 40 12 04 12 28	4030	Rarefaction.
		NE	iS SS M	16 21 18 48 23 48		
	Chatra	Z	e	06 11 15		
	Bokaro	E	iP PP PcP S ScS Lr	06 11 38 13 18 13 34 17 59 21 33 23 28	4690	
	Dehra Dun	Z NE E	eP eS SS	06 11 57 18 29 21 30	4800	
	Delhi	ZE ZNE	eP PP eS SS Lr M	06 12 06 14 09 18 48 22 23 27 23 - - -	5060	Rarefaction . Period = 31secs Amplitude = 20 mm
	Poona	Z N	iP eS	06 13 07 20 34	5820	Rarefaction.
	Bombay	N NE N E N	PPP e e SS e M	06 14 32 15 21 16 09 22 15 24 27 30 15 38 54		Period = 14 sec ^s Amp: = 3 μ. Period = 12 sec ^s Amp: = 2 μ.
	Hyderabad	E	e	06 20 09		
	Port Blair	E	i i	06 21 42 27 42		
06	Shillong	ZNE	iP	08 17 45		Slight, distant, rarefaction.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
04	Madras (Contd.)	E	LQ LR M	14 03 05 05 38 10 29		
04	Chatra	Z	iP e	17 39 00 39 18		Slight.
04	Epc:- 24.1° N 96.0° E in Northern Burma. h = about 148 km. -H= 18 h 36 m 28.1 s (USCGS). Mag: 5.0 (CGS) .					
	Tocklai	E	eP i	18 37 18 37 45		Trace amplitude faded out.
	Shillong	ZNE NE	iP i	18 37 29 38 06		
	Chatra	Z ZNE	iP iS	18 38 27 40 00	900	
	Bokaro	E	iP	18 38 39		
	Dehra Dun	Z	eP iS	18 40 18 45 15	1770	Tremor.
	Delhi	ZE ZNE NE	iP i iS	18 40 21 40 24 45 19	1780	
	Madras	E	eS	18 45 57		
04	Shillong	ZNE	eP	20 42 20		Slight, near.
04	Chatra	Z	eP eSg	21 51 12 51 27	120	Slight.
05	Bokaro	NE	e	09 34 22		Slight, tremor.
05	Delhi	ZNE	iP	09 48 40		Slight. Initial ground motion towards South, East. Rarefaction.
05	Delhi	N ZNE	iP iS	10 29 37 31 15	950	Slight. Initial ground motion towards South.
05	Chatra	Z	e	11 09 53		Slight.
05	Shillong	ZNE	iP i	13 29 09 29 33		Slight, local.
05	Delhi	Z	iP	16 31 37		Slight, rarefaction.
05	Chatra	Z	e	17 02 40		Slight, rarefaction.
05	Shillong	ZNE	iPg iSg	20 00 19 00 30	90	Slight, local.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
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04	Delhi	ZN	iP	13 44 10	8690	Initial ground motion towards North. Rarefaction.
		E	eP			
		ZN	PP	47 08		
		ZNE	iS	54 05		
		ZN	SKS	54 25		
		NE	SS	59 07		
		N	SSS	14 02 29		
		NE	LR	09 29		
		Z	M	- - -		Period = 41 secs. Amp: = 26 mm.
	Chatra	ZNE	iP	13 44 27		
	Shillong	ZNE	iP	13 44 35	9220	Compression.
		NE	PP	47 50		
			PPP	49 46		
			iS	54 54		
			PS	55 46		
			SS	14 00 29		
			SSS	04 10		
	Bombay	E	ePKP1	13 44 37	9140	
		NE	e	45 27		
			PPP	47 32		
		E	SKS1	51 18		
		NE	PS	54 35		
		N	e	55 24		
			e	14 00 14		
			SSP	01 24		
			SKKKS	06 25		
			e	08 50		
		E	M	28 20		
		N	M	28 14		Period = 23 secs. Amp. = 5 μ.
	Bokaro	E	eP	13 44 56		
			i	55 05		
	Poona	Z	iP	13 44 57		Rarefaction.
	Hyderabad	NE	eP	13 45 09	9890	
		N	PP	48 29		
			PS	57 05		
		E	M	14 22 02		Period = 18 secs. Amp: = 10 u.
		N	M	22 05		Period = 21 secs. Amp: = 6 μ.
	Visakhapatnam	E	eP	13 45 28		
			e	55 41		
		NE	e	56 02		
	Madras	E	e	13 49 20		
			e	49 57		
			e	57 08		
			PS	57 18		
			PPS	57 28		
			e	58 05		
			ScS	58 50		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
03	Shillong	ZNE	iP	05 38 39		Slight, near.
	Dehra Dun	Z	iP	05 39 29		Tremor, compression.
	Delhi	ENZ	iP	05 39 40		Slight, South-West.
		Z	e	39 49		Compression.
03	Shillong	ZNE	iP	06 23 36		Slight, distant, compression.
03	Chatra	Z	iP	11 46 37	260	Slight, rarefaction.
			eSg	47 14		
03	Chatra	Z	iP	12 03 15	260	Slight, rarefaction.
			eSg	03 52		
03	Delhi	NZ	eP*	16 47 53	150	Slight, rarefaction.
		ENZ	iS*	48 10		
03	Shillong	ZNE	iP	17 00 00		Slight, distant, compression.
	Chatra	Z	eP	17 00 59		Slight, distant.
			i	02 40		
03	Delhi	ENZ	eP	17 12 31		Slight.
03	Delhi	ENZ	eP	22 52 59		Slight, rarefaction.
04	Chatra	Z	e	03 04 51		Slight.
04	Delhi	Z	iP	05 16 49		Slight, rarefaction.
04	Chatra	Z	e	05 17 44		Slight.
04	Shillong	ZNE	iP	05 18 11		Slight, distant, compression.
04	Madras	E	e	05 46 20		Surface waves.
04	Bokaro	NE	iP	07 43 00		Slight, tremor.
04	Delhi	ZNE	iPg	08 37 56.5	10	Slight. First ground motion South, West. rarefaction.
		E	iSg	37 57.5		
04	Epc: - 71.4° N 73.3° W, near east coast of Baffin Island. h = about 33 km. -H = 13 h 32 m 12.3 s (USCGS). Felt Clyde River. Mag: 6 1/4 - 6 1/2 (Pas), 6 (Berk). Mag.: 5.9 S.D. 0.4 (CGS).					
	Dehra Dun	ZNE	iP	13 44 04	8530	Initial ground movement towards South, East, rarefaction.
		E	i	44 49		
		N	PP	46 58		
		NE	iS	53 51		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
02	Epc:- 26.2° N 90.0° E in Assam (India). h = about 220 km. -H= 22 h 25 m 52 s (USCGS).					
	Calcutta	N	iP iS	22 26 19 26 39	170	Slight.
	Bokaro	NE	eP e	22 26 26 26 58		Slight.
	Chatra	ZNE	iP eSg	22 26 28 27 06	270	Slight, compression.
	Shillong	ZNE	iP	22 26 31		Slight, near, rarefaction.
	Delhi	EZ	eP	22 28 00		Slight.
	Dehra Dun	Z	eP i	22 28 17 31 46		Tremor.
	Visakhapatnam	NE	iPg iP iSg iS	22 29 46 22 47 29 54 29 56	70	Slight, near. Initial ground movement NW.
	Delhi	ENZ EN	eP eS	22 30 11 31 32	780	Slight.
	Poona	Z	eP	22 30 57		Slight.
02	Bombay	ESN EN	e e	22 33 46 34 14		Slight.
02	Delhi	ENZ	iPg iSg	23 42 54 43 00	60	Slight. Initial ground movement towards North-East. Rarefaction.
02	Shillong	ZNE	iP	28 53 59	¹³	Slight, distant, compression.
	Chatra	Z	iP	23 54 11		Slight, distant.
	Dehra Dun	Z	iP	23 54 49		Tremor, compression.
	Delhi	EZ N	iP eP	23 54 59		Slight, compression. Initial ground movement towards East.
03	Shillong	ZNE	iP i	04 22 19 22 55		Slight, local.
03	Dehra Dun	Z	eP	05 07 47		Tremor.
	Delhi	Z EN	iP eP	05 07 57		Slight, compression.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
02	Bombay	NZ	eP	01 38 06	1670	
		N	e	38 30		
		NE	eS	40 54		
			e	41 19		
		ES	e	41 36		
			LR	42 14		
		N	e	42 30		
		N	M	45 12		Period 7 secs. Amp: = 2 u.
	Poona	Z	eP	01 38 08	1740	Initial ground movement towards West and compression.
		E	iS	41 03		
			SS	41 27		
			SSS	41 42		
			Lr	41 50		
			M	43 01		
	Calcutta	E	eP i	01 38 15 41 36		
	Sehore	NE	i?	01 39 09		
	Madras	E	eP	01 39 16	2390	
			PP	39 42		
			PPP	39 52		
			iS	43 11		
			LR	43 25		
			SS	43 48		
			SSS	44 01		
			LR	44 23		
			LQ	45 45		
			M	46 16		
			Rg	47 15		
	Kodaikanal	E	i i	01 44 04 46 43		
02	Shillong	ZNE	eP	06 02 32		Slight, local.
02	Bokaro	NE	iP	10 04 55		Slight, local.
02	Delhi	ENZ	iPg iSg	10 17 48.5 17 51.5	30	Slight. Initial ground motion towards North-east. Compression.
02	Shillong	ZNE	iP	11 53 00		Slight, near, compression.
	Dehra Dun	Z	iP	11 53 51		Tremor, rarefaction.
	Delhi	ENZ	iP	11 54 00		Slight, compression. Initial ground motion towards North-West.
02	Shillong	ZNE	iP	15 52 05		Slight, near, rarefaction.



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

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h. m. s.

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DATE	STATION	COMPT	PHASE	G. M. T.	km.	REMARKS.
				h. m. s.		
01	Shillong	ZNE	eP iP	00 35 26 38 26		Slight, near, rarefaction.
01	Port Blair	NE	ePg iSg	01 53 07 53 12	50	Slight.
01	Shillong	ZNE	iP	06 25 05		Slight, near, rarefaction.
01	Bokaro	NE	iP	07 42 59		Slight, local.
01	Shillong	ZNE	iP	17 24 30		Slight, distant, rarefaction.
01	Port Blair		iP	19 35 11		Slight, distant, rarefaction.
01	Port Blair	NE	iPg P* iSg	20 01 00 01 03 01 06	50	Slight, compression.
01	Delhi	Z	eP	20 05 46		Slight, distant, compression.
02	Delhi	Z EN	iP eP	00 30 13		Slight.
02	Epc:- 33.9° N 74.7° E in Northern India. h = about 44 km. -H= 01 h 34 m 31.6 s (USCGS). Mag : 5.1 (CGS).					
	Epc:- 34.0° N 75.0° E near Srinagar. -H= 01 h 34 m 30 s . Mag : 5.5 (New Delhi).					
	Dehra Dun	Z	iP	01 35 41	490	Compression.
		EN	eP	35 41		
		ENZ	P* PP	35 50		
			PPP	35 56		
			Pg	36 00		
			LQ	36 22		
			iSLR	36 33		
			S*SSS	36 45		
			SSS, SgM	36 54		
	Delhi	ENZ	iP P* Pg iSn S* Sg	01 35 55 36 07 36 17 36 59 37 18 37 32	610	Initial ground motion towards South.east, compression.
		EN				
		NZ	i	38 03		
	Chatra	Z	iP	01 37 32	1360	Rarefaction.
		ZNE	eS	39 50		
	Bokaro	E	eP	01 37 49	1450	
		NE	S	40 16		
		E	LR	40 53		
		NE	i	42 15		
		E	ScS	50 21		

23	Delhi	ENZ	iPg iSg	05 38 04.4 38 07.1	30	Slight. Initial ground motion towards North, East. Rarefaction.
23	✓ Poona	Z	eP	06 50 15		Slight, rarefaction.
	✓ Madras	E	eP PcS eS PS PPS	06 50 37 51 22 58 46 58 58 59 07	6610	Slight.
	✓ Delhi	NZ	eP	06 51 14		Slight, rarefaction. Initial ground motion towards South.
	✓ Port Blair	Z	iP	06 51 45		Slight, distant, rarefaction.
	✓ Chatra	Z	i	06 51 56		Slight, distant.
	✓ Shillong	ZNE	iP	06 52 15		Slight, distant, compression.
23	Port Blair	Z	e	09 03 36		Tremor.
23	Epc:- 16.6° S 28.8° E in Northern Rhodesia. h = about 33 km. -H= 09 h 01 m 56.8 s (USCGS). Mag: = 5.8 (CGS).					
	✓ Bombay	NE	eP PP PPP N EN	09 11 33 13 40 15 05 16 29 19 26	6310	
			ScS SS SSS M	21 32 23 20 25 29 36 -		
	✓ Poona	Z	iP	09 11 45		Rarefaction.
	✓ Madras	E	iP PcP PP PPP iS PS PPS e Lq Lr M	09 11 56 12 43 14 10 15 36 20 02 20 16 20 25 21 52 26 32 29 18 34 24	6550	Initial ground motion towards East.
	✓ Visakhapatnam	E	iP	09 12 17		Initial ground motion towards N. E.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
23	Delhi	Z EN EN	iP iP eS	09 12 34 21 17	7240	Slight. Initial ground motion towards South. Rarefaction.
	Port Blair	ZE	iP	09 13 04		Slight, rarefaction.
	Chatra	Z	iP	09 13 15		Slight, distant, rarefaction.
	Shillong	ZNE NE PPP iS SS	iP PP PP iS SS	09 13 34 16 30 18 08 23 09 28 13	8280	Slight, rarefaction.
23	Delhi	EZ	eP	10 10 52		Slight, rarefaction.
23	Chatra	Z	iP eS	12 10 27 11 47	770	Slight, compression.
23	Delhi	Z	eP	15 13 06		Slight, rarefaction.
	Chatra	Z	i	15 13 08		Slight, distant.
	Shillong	ZNE	iP	15 14 01		Slight, distant, compression.
23	Shillong	ZNE	iP	17 13 45		Slight, distant, compression.
	Chatra	Z	iP	17 13 58		Slight, distant, compression.
	Delhi	ENZ	iP	17 14 21		Slight. Initial ground motion North West. Compression.
23	Poona	Z	iP	17 15 11		Slight.
23	Delhi	EZ	eP i	18 38 49 38 52		Slight, East, compression.
23	Poona	Z	eP	18 38 57		Slight.
	Chatra	Z	eP	18 40 12		Slight, distant.
	Shillong	ZNE	iP	18 40 49		Slight near, compression.
23	Delhi	ENZ Z	eP i	19 24 48 24 49		Slight, compression.
23	Tocklai	E	eP	20 49 12		Slight, near.
	Shillong	ZNE	iP	20 49 25		Slight, near, rarefaction.
	Chatra	Z	iP	20 50 25 51 49	810	Slight, rarefaction.



DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS
September, 1963.						
23	Delhi	Z	eP	22 34 16		Slight, distant, compression.
	Port Blair	Z	iP	22 34 46		Slight, distant, rarefaction.
	Chatra	Z	eP	22 34 57		Slight, distant.
	Shillong	ZNE	iP	22 35 15		Slight, distant, rarefaction.
24	Shillong	ZNE	iP	00 55 16		Slight, distant, compression.
24	Delhi	N ENZ	P iS	03 48 07 49 40	900	Slight.
24	Shillong	ZNE	iP	03 50 29		Slight, distant, tremor, rarefaction.
24	Delhi	EZ	iP i NZ	04 14 01 14 03 14 49	450	Slight, rarefaction. Initial ground movement towards West.
24	Shillong	ZNE	iPg iSg	04 25 20 25 29	80	Slight.
	Chatra	Z	eP eS	04 28 07 29 12	610	Slight.
	Delhi	NZ	eP iS	06 40 41 42 23	990	Slight, South, compression.
24	Delhi	Z	i	06 44 36		Slight.
24	Delhi	Z ENZ Z	e i i	08 49 39 49 44 49 50		Slight.
	Shillong	ZNE	eP	08 49 54		Slight, distant.
24	Delhi	Z	iP	09 24 15		Slight, compression.
	Shillong	ZNE	iP	09 25 15		Slight, distant, rarefaction.
24	Delhi	ENZ	iPg iSg	13 27 13 27 17.5	39	Slight. Initial ground motion South, East. Compression.
24	Shillong	ZNE	iP	13 28 16		Slight, distant, compression.
24	Epc:- 10.6° S 78.0° W near coast of Peru. h = about 80 km. -H= 16 h 30 m 16.0 s (USCGS). Mag: 7 (Pas), 6½ (Berk), 6.0 S.D. 0.5 (CGS).					




DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
24	✓ Poona	Z	ePKP1 e	16 49 50 50 49		Moderate.
24	✓ Delhi	ENZ Z NZ	iPKP iPKP2 PP	16 49 57 50 26 53 26		Initial ground motion South, West. Rarefaction.
	✓ Bombay	NE E N EN E N EN N	ePKP1 PP PKS1 e e e SKKKS e PS PPS M	16 50 02 53 16 35 55 19 55 31 57 32 17 00 29 03 50 04 12 05 32 18 07 27		Period = 21 secs. Amp. = 5 u. Period = 19 secs. Amp. = 5 u.
	✓ Shillong	ZNE N	iPKP1 i i i i	16 50 11 54 45 17 01 24 05 00 08 06 15 02		Rarefaction.
	✓ Port Blair	Z E	iPKP1 i i i	16 50 19 50 26 17 02 15 06 16 16 30		Compression.
	✓ Calcutta	E	ePKP i	16 50 20 17 01 28		
24	✓ Madras	E	ePKP1 e	16 50 21 55 03		
24	✓ Visakhapatnam	E	ePKP e e e	16 50 22 54 36 17 00 39 01 19		
	✓ Bokaro	N	e PKP1	16 50 28		
24	✓ Kodaikanal	E	ePKP1 i	16 50 41 17 00 59		Slight, distant.
	✓ Chatra	Z NE	iPKP i	16 51 06 17 02 10		Rarefaction.
	✓ Delhi	EN E	e i i i	17 00 28 00 45 01 03 06 32 12 08		

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
24	Shillong	ZNE	eP iSg	18 47 27 47 44	140	Slight.
24	Delhi	Z	eP	22 21 40		Slight.
25	Epc:- 16.7° S 28.7° E in Northern Rhodesia. h = about 33 km. -H= 07 h 03 m 54.6 s . Mag. = 5.8 (CGS).					
	✓ Bombay	N	eP e e eS e	07 13 28 17 35 18 46 21 22 24 24	6110	Slight.
	✓ Madras	E	eP eS PS PPS	07 13 53 22 01 22 15 22 23	6590	Slight.
	✓ Delhi	ENZ	eP	07 14 33		Slight. Initial ground motion South, West. Rarefaction.
	✓ Port Blair	Z	iP	07 15 04		Slight, distant, rarefaction.
	✓ Chatra	Z	iP	07 15 11		Slight, distant, rarefaction.
	✓ Shillong	ZNE	iP	07 15 32		Slight, distant, rarefaction.
25	Delhi	ENZ	iP	08 35 49		Slight. Initial ground motion South, West. Compression.
25	Delhi	NZ E ENZ	eP i iS	08 48 04 48 05 49 42	0950	Slight. Initial ground movement towards South.
25	Shillong	ZNE	iP	15 02 23		Slight, distant, rarefaction.
25	Delhi	NZ	eP	17 09 05		Slight.
26	✓ Shillong	ZNE	eP	05 39 26		Slight, distant.
	✓ Delhi	Z	eP	05 40 02		Slight, compression.
	✓ Poona	Z	iP	05 40 52		Slight, rarefaction.
	✓ Bombay	N	e e EN N EN	05 40 57 43 52 51 49 52 43 57 42		Slight, distant.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
26	Shillong	ZNE	eP	05 50 11		Slight, distant.
26	Delhi	ENZ	iP	06 06 40		Slight. Initial ground motion towards North, East. Rarefaction.
26	Port Blair	Z	i	12 09 33		Slight, near.
26	Shillong	ZNE	iP	20 45 35		Slight, distant.
27	Shillong	ZNE	eP	00 07 49		Slight, distant.
27	Port Blair	Z	e i	06 21 11 21 29		Slight, near.
27	Bokaro	NE	e	09 59 11		Slight, tremor.
27	Shillong	ZNE	iP	10 25 37		Slight, near, compression.
	Chatra	Z	eP	10 27 03		Slight, distant.
27	Epc:- 11.3°N 126.0° E Off coast of Leyte, Phillippine Islands. h = about 17 km. -H= 11 h 04 m 17.3 s (USCGS). Mag : 5.3 (CGS).					
	Shillong	ZNE	iP	11 11 11		Compression.
	Bokaro	E	e	11 12 05		Other phases not clear due to microseisms.
	Port Blair	E	i	11 12 16		
	Madras	E	eP ePP SS e e	11 12 39 14 35 22 31 24 17 29 39		
	Dehra Dun	ENZ N	eP PS	11 12 58 19 59		
	Delhi	Z	eP	11 12 59		Compression.
27	Dehra Dun	Z	eP iP	13 17 24 17 39		Tremor.
27	Shillong	ZNE	eP	16 34 46		Slight, distant.
	Chatra	Z	eP	16 35 14		Slight, distant.
27	Epc:- 27.9° N 66.1° E in West Pakistan. h = about 88 km. -H= 17 h 09 m 33 s (USCGS). Mag: 4.7 (CGS).					
27	Poona	Z	eP	17 11 25		
	Delhi	ENZ	iP iS	17 11 48 13 37	1060	Initial ground motion South West. Rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
<u>September, 1963.</u>						
27	Dehra Dun	Z	eP i	17 12 00 12 07	1130	
		EN	eS	13 57		
27	Chatra	Z	eP iS	17 13 44 17 14	2110	Distant.
		NE	i	19 48		
	Shillong	ZNE	iP	17 14 32		Rarefaction.
	Bombay	EN	e e N	17 15 14 16 29 17 14		
	Bokaro	E	e	17 16 54		
	Visakhapatnam	E	e	17 19 21		
	Madras	E	e	17 19 35		Presumably surface waves.
27	Shillong	ZNE	iP	18 13 25		Slight, distant, rarefaction.
27	Delhi	ENZ	iPg iPn iSg	21 57 57.0 57 59.5 58 07.0	90	Slight. Initial ground motion North East. Rarefaction.
	Dehra Dun	Z	iP	21 58 03		Slight.
27	Port Blair	Z	e i	23 37 59 38 07		Slight, near.
28	Shillong	ZNE	eP	00 46 15		Slight, distant.
28	Epc:- 22.9° N 94.5° E in Western Burma. h = about 108 km. -H= 06 h 00 m 25.4 s (USCGS). Mag : 5.6 (CGS).					
	Shillong	ZNE NE	iP iS	06 01 20 02 02	390	
	Tocklai	E	eP i iS	06 01 24 01 26 02 07	410	Slight.
	Chatra	Z NE	iP iS	06 02 16 03 38	790	Rarefaction.
	Bokaro	NE	eP S	06 02 19 03 41	690	
	Port Blair	Z	iP iS	06 03 03 06 05 04	1190	
	Visakhapatnam	E	eP eS	06 03 14 05 42	1460	

DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
28	Dehra Dun	Z	eP	06 04 12	1690	
		ENZ	iS	07 02		
	Delhi	ENZ	iP	06 04 14	1640	Initial ground m North West. Compr
			iS	07 08		
	Poona	Z	eP	06 04 25		
	Madras	E	eS	06 07 02		
			e	07 07		
			e	07 10		
			e	07 19		
			e	07 26		
28	Bombay	N	eS	06 08 38		
			e	09 39		
			e	10 25		
			e	11 26		
28	Shillong	ZNE	iP	18 48 39		Compression.
	Delhi	ZNE	iP	18 49 58		Slight. Initial g North, West. Compr
	Dehra Dun	Z	eP	18 50 07		Tremor.
28	Delhi	ENZ	eP	18 56 00		Slight, distant.
28	Delhi	ENZ	iP	20 04 46	1060	Slight. Initial g motion South, East
		N	i	05 57		Rarefaction.
		EN	iS	06 34		
	Dehra Dun	Z	iP	20 05 45		Slight, compression
			i	06 31		
28	Delhi	ENZ	iP	22 10 32	970	Slight. Initial g motion towards S East. Compression
			eS	12 12		
29	Epc:- 36.4° N 70.4° E in Hindu Kush. h = about 214 km. -H= 10 h 39 m 58.4 s (USCGS). Mag : 4.1 (CGS).					
	Delhi	ENZ	iP	10 42 11	990	Initial ground m North, West. Raref
			iS	43 53		
	Dehra Dun	Z	iP	10 42 44		Rarefaction.
			i	43 59		
		EN	i	44 17		
		Z	i	44 24		
	Chatra	Z	iP	10 43 48		Rarefaction .
	Poona	Z	eP	10 43 57		
	Shillong	ZNE	iP	10 44 30		Rarefaction.



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DATE	STATION	COMPT	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
September, 1963.						
29	Shillong	ZNE	iP	11 40 12		Slight, distant.
29	Delhi	Z	eP	13 43 27		Slight.
29	Delhi	ENZ	eP	15 33 32	900	Slight.
			iS	35 05		
29	Epc:- 36.1° N 72.0° E in Hindu Kush. h = about 150 km. -H= 15 h 31 m 31.4 s (USCGS). Mag : 4.9 (CGS).					
	Dehra Dun	Z	eP	15 34 01		
			iPP	34 04		
		ENZ	i	35 28		
	Poona	Z	iP	15 34 31		
	Chatra	Z	eP	15 35 05	1550	
			iS	37 50		
	Shillong	ZNE	eP	15 35 55		
29	Shillong	ZNE	iP	19 38 11		Slight, distant, rarefaction.
29	Epc:- 13.5° N 57.5° E in Arabian Sea. h = about 33 km. -H= 19 h 31 m 22.7 s (USCGS). ? 19h 35m PHILIPPINE IS.					
	Shillong	ZNE	iP	19 42 07	4030	Slight, compression.
		NE	PP	43 31		
			PPP	43 55		
			iS	47 48		
			LR	52 21		
29	Visakhapatnam	E	iP	19 42 39		Slight, distant.
			ePPP	44 41		
	Chatra	Z	iP	19 42 43		Slight, distant, compression.
	Madras	E	eP	19 43 09	4950	Slight .
			e	43 29		
			PP	44 51		
			PPP	45 23		
			iS	49 45		
			PS	49 49		
			PPS	49 55		
			e	50 27		
			Lq	53 54		
			Lr	55 48		
			M	59 22		
	Delhi	ENZ	eP	19 43 51		Slight.
	Poona	Z	iP	19 44 00		Slight, compression.
	Dehra Dun	Z	iP	19 44 35		Slight, rarefaction.

DATE	STATION	COMPT	PHASE	G. M. T. Δ			REMARKS.
				h.	m.	s. km.	
September, 1963.							
29	Bombay	N	e	19	51	57	Slight.
			e		52	13	
			e		53	24	
			e		54	21	
			e		55	13	
29	Delhi	EZ	iP	20	40	40	Slight, compression Initial ground mo towards East.
29	Delhi	NZ ENZ	iP i	20	57	40 57 42	Slight.
29	Epc:- 36.1°N 180.0° E in Indian Sea. h = about 47 km. -H= 22 h 16 m 38.6 s (USCGS). Mag : 5.3 S.D. 0.4 (CGS).						
29	Delhi	ENZ	iP	22	25	28	Slight. Initial gr motion towards So East. Compression.
	Poona	Z	iP	22	25	26	Slight, compression
	Dehra Dun	Z	iP	22	26	13	Compression.
	Chatra	Z	iP	22	26	32	Slight, distant, compression.
	Shillong	ZNE	eP	22	27	01	Slight, near.
29	Delhi	Z	iP	22	39	08	Slight.
29	Delhi	Z	eP	23	03	18	Slight, compression
29	Shillong	ZNE	eP	23	03	27	Slight, distant.
29	Poona	Z	iP	23	03	33	Slight, rarefaction
30	Delhi	ENZ NZ EZ	iP i i	01	39	54 39 56 39 58	Slight. Initial gr motion South East Rarefaction.
30	Shillong	ZNE	iP	04	06	26	Slight, distant, compression.
30	Bokaro	NE	iP	06	58	08	Slight, local.
30	Shillong	ZNE	iP	09	02	27	Slight, distant, rarefaction.
30	Chatra	Z	e	09	03	00	Slight, distant.
30	Shillong	ZNE	eP	14	09	31	Slight, near.
	Tocklai	E	e	14	09	37	Slight, near.
30	Chatra	Z	eP eS	14	10	03 790 11 25	Slight.



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DATE	STATION	COMPT	PHASE	G. M. T. Δ			REMARKS.
				h.	m.	s. km.	
September, 1963.							
30	Shillong	ZNE	eP	15	39	16	Slight, near.
30	Shillong	ZNE	iP	15	49	23	Slight, distant, rarefaction.
30	Shillong	ZNE NE	eP i	17	36	56 37 12	Slight, near.
30	Shillong	ZNE NE	eP i	22	25	31 36 31	Slight, near.

Earthquake Reports
(Non Instrumental Reports)

The following is the list of Earthquakes that were reported by
voluntary observers from different stations during the month of Sept., 1963.

Place at which felt.	Date (GMT)	Time (GMT)	No. of shocks	Duration of shocks in secs.	Intensity in R.F. Scale.	Remarks.
Srinagar	2.9.63	01-35	1	3 to 5	VIII	Appears to come from West.
Banihal	2.9.63	01-35	1	25	VII	-do-
Gulmarg	2.9.63	01-37	1	50	V	
Qazigund	2.9.63	01-34	1	8	V	
Shillong	4.9.63	18-35	1	3	IV	
Shillong	21.9.63	07-25	1	5	IV	
Shillong	28.9.63	06-00	1	3	VII	

MICROSEISMIC

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

September, 1963.

Station: Bombay.

Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.
01					12	00	3	1.0	3.9
								0.5	1.9
						06	3	1.0	4.0
								0.3	1.5
						12	3	1.2	4.0
								0.3	1.4
						18	3	1.0	3.9
								0.4	1.7
06	00	3	.	.					
	06	3	0.8	4.0	13	00	3	1.1	4.0
			0.4	1.6				0.5	1.9
	12	3	0.8	4.0		06	3	1.0	3.0
			0.4	1.7				0.5	2.0
	18	3	0.8	3.6		12	3	1.2	3.5
			0.5	2.0				0.5	2.0
						18	3	1.2	4.0
								0.5	2.0
07	00	3	0.7	3.4					
			0.4	1.8					
	06	3	0.5	1.9	14	00	.	.	.
			0.7	3.0		06	3	1.2	4.0
	12	3	0.7	3.0				0.4	1.5
			0.5	2.0		12	3	1.1	3.9
			1.0	3.6				0.5	2.0
	18	3	1.2	4.0		18	3	1.1	3.9
			0.4	1.6				0.5	1.9
08	00	3	1.3	3.3	15	00	3	1.0	4.0
			0.5	1.6				0.4	2.0
	06	3	1.3	3.2		06	3	1.0	4.0
			0.4	1.6				0.5	1.8
	12	3	1.1	3.1		12	3	1.1	4.0
			0.4	2.0				0.5	2.0
	18	3	1.0	3.2		18	3	1.0	4.0
			0.4	2.0				0.5	2.0
09	00	3	1.0	3.0	16	00	3	1.0	4.0
			0.5	2.0				0.5	1.8
	06	3	1.2	3.0		06	3	1.0	4.0
			0.4	1.6				0.4	1.4
	12	3	1.2	3.3		12	3	0.8	4.0
			0.4	1.6				0.4	1.9
	18	3	1.0	3.4		18	3	0.8	4.0
			0.4	1.7				0.4	1.5
10	00	3	1.2	3.8		21	1	0.8	4.0
			0.4	1.7					
	06	3	0.9	3.7	17	00	1	0.7	4.0
			0.3	1.5		03	1	0.6	4.3
	12	3	0.8	4.0		06	1	0.6	4.0
			0.3	1.5		09	1	0.8	3.8
	18	.	.	.		12	1	0.6	4.0
						15	1	0.7	4.0
11	00	3	1.0	4.1		18	1	0.6	4.0
			0.4	1.6		21	.	.	.
	06	3	1.1	4.0	18	00	1	0.7	4.0
			0.3	1.5		06	3	0.6	4.0
	12	3	1.1	4.0				0.4	1.5
			0.4	1.7				0.6	3.9
	18	3	1.1	4.0		12	3	0.6	1.8
			0.4	1.8				0.4	



International Seismological Centre

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

Station: Bombay (Contd.)

September, 1963.

Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.
18	18	.	.	.	25	00	3	0.4	1.8
	21	1	0.6	4.0				0.5	4.0
						06	3	0.4	2.3
19	00	1	0.6	3.8				0.5	4.7
	03	1	0.6	4.0		12	3	0.4	2.0
	06	1	0.6	4.0				0.5	5.2
	09	1	0.6	4.0		18	3	0.3	2.0
	12	1	0.6	4.0				0.4	5.4
	15	1	0.5	3.6					
	18	1	0.6	4.0	26	00	3	0.3	2.0
	21	1	0.6	4.0				0.5	4.0
						06	.	.	.
20	00	1	0.6	4.0		12	3	0.5	3.1
	03	1	0.5	3.6				0.3	1.4
	06	1	0.5	4.0		18	1	0.5	3.8
	09	1	0.5	3.7		21	1	0.6	3.5
	12	3	0.5	4.0					
			0.4	1.6	27	00	1	0.8	4.0
			0.4	1.6		03	1	0.7	3.9
	18	3	0.5	3.8		06	1	0.7	3.9
			0.4	1.5		12	1	0.7	4.0
21	00	3	0.5	3.7		15	1	0.6	4.0
			0.4	1.5		18	.	.	.
	06	3	0.5	3.9					
			0.4	1.5	28	00	.	.	.
			0.4	1.5		03	1	0.5	4.0
	12	3	0.5	1.9		06	1	0.5	3.6
			0.5	4.0		09	1	0.5	3.8
	18	3	0.5	3.7		12	1	0.5	3.6
			0.5	2.0		15	1	0.5	3.8
22	00	3	0.5	3.7		18	1	0.5	3.8
			0.4	2.0					
	06	3	0.5	3.6	29	00	3	0.4	3.2
			0.6	1.5				0.3	1.5
	12	3	0.4	1.5		06	3	0.5	4.1
			0.5	4.0				0.3	2.2
	18	3	0.5	3.9		12	3	0.5	4.2
			0.4	1.6				0.3	1.7
23	00	3	0.5	4.0		18	3	0.5	4.0
			0.4	1.9				0.3	1.4
	06	3	0.5	4.0	30	00	3	0.3	1.4
			0.4	2.0				0.4	3.7
	12	3	0.5	4.0		06	3	0.4	3.8
			0.4	1.6				0.3	1.7
	18	3	0.5	4.3		12	1	0.4	4.0
			0.4	1.4		18	1	0.5	3.9
24	00	3	0.5	4.0					
			0.4	1.4					
	06	3	0.4	4.0					
			0.3	1.6					
	12	3	0.5	4.0					
			0.4	1.4					
	18	.	.	.					

Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.
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September, 1963.

Station: Madras.

01	00	3	0.5	3.9	05	18	3	0.3	2.7
		3	0.3	2.6			3	0.1	1.5
		3	0.2	1.9					
03		3	0.5	4.4	06	00	3	0.6	4.6
		3	0.3	2.8			3	0.2	2.6
		3	0.2	2.0		03	3	0.6	4.8
06		3	0.5	4.1			3	0.3	2.7
		3	0.2	2.6		06	3	0.6	4.9
		3	0.6	4.6			3	0.3	2.9
12		3	0.2	2.5		12	3	0.6	4.7
		3	0.6	4.5			3	0.3	2.8
18		3	0.3	2.8		18	3	0.6	4.8
		3					3	0.3	2.8
02	00	3	0.6	4.3	07	00	3	0.6	4.7
		3	0.3	2.6			3	0.3	2.9
		3	0.2	1.9			3	0.6	4.5
03		3	0.6	4.7		03	3	0.3	2.8
		3	0.3	2.6			3	0.6	4.5
06		3	0.5	4.3		06	3	0.5	3.6
		3	0.3	2.6			3	0.6	4.5
12		3	0.6	4.3		12	3	0.4	3.5
		3	0.3	2.7			3	0.6	4.4
18		3	0.5	4.2		18	3	0.6	4.4
		3	0.3	2.8			3	0.4	3.5
03	00	3	0.5	3.9	08	00	3	0.6	4.3
		1	0.3	1.9			3	0.4	3.7
03		3	0.5	3.9			3	0.3	2.8
		3	0.2	2.4		03	3	0.6	4.2
06		3	0.5	4.2			3	0.3	2.9
		3	0.2	2.6		06	3	0.6	4.3
12		3	0.5	4.2			3	0.3	2.8
		3	0.3	2.7		12	3	0.6	4.3
18		3	0.5	4.2			3	0.4	2.9
		3	0.4	2.9		18	3	0.5	4.6
							3	0.3	2.7
04	00	3	0.5	4.2	09	00	3	0.6	4.2
		3	0.3	2.8			3	0.4	2.9
03		3	0.5	4.0		03	...	Earthquake.	
		3	0.3	2.7		06	3	0.6	3.9
06		3	0.5	4.1			3	0.3	2.7
		3	0.3	2.9		12	3	0.6	4.0
12		3	0.5	4.1			3	0.3	2.8
		3	0.4	3.0		18	3	0.5	4.1
18		3	0.5	4.1			3	0.3	2.5
		3	0.3	2.8					
		3	0.2	2.3					
05	00	3	0.5	4.2	10	00	1	0.6	3.7
		3	0.3	2.6			3	0.3	2.5
03		3	0.6	4.2		03	1	0.7	3.8
		3	0.3	2.5			3	0.4	2.7
06		3	0.6	4.4			3	0.1	1.4
		3	0.3	2.8		06	3	0.7	3.7
12		3	0.6	4.4			3	0.4	2.6
		3	0.3	2.8		12	1	0.6	3.9
18		3	0.6	4.5			3	0.3	2.7



International Seismological Centre

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

September, 1963.

10	18	1	0.6	3.8	15	06	1	0.7	4.1
		3	0.3	2.6			3	0.3	2.3
11	00	3	0.6	3.9		12	1	0.7	4.0
		3	0.4	2.8			3	0.3	2.7
	03	1	0.7	3.9		18	1	0.7	3.9
		3	0.4	2.7			3	0.3	2.5
	06	1	0.7	3.9	16	00	1	0.7	3.8
		3	0.4	2.7			3	0.2	2.3
		3	0.1	1.7		03	1	0.6	3.8
	12	1	0.8	3.9			3	0.2	2.2
		3	0.5	2.9		06	1	0.6	3.8
		3	0.2	1.8			3	0.2	2.3
	18	1	0.7	3.9		12	1	0.6	3.9
		3	0.5	2.8			3	0.2	2.4
12	00	1	0.8	3.8		18	1	0.5	4.1
		3	0.4	2.7					
		3	0.2	1.7	17	00	1	0.5	4.0
	03	1	0.7	4.0			3	0.2	2.1
		3	0.4	2.9		03	1	0.5	3.7
		3	0.2	1.9		06	1	0.4	3.8
	06	1	0.7	3.7			3	0.2	2.5
		3	0.3	2.6		12	1	0.4	3.7
	12	1	0.7	3.8			3	0.2	2.3
		3	0.4	2.6		18	1	0.3	3.5
	18	1	0.6	3.6			3	0.2	2.3
		3	0.4	2.7	18	00	3	0.3	3.3
13	00	1	0.6	3.7			3	0.1	1.5
		3	0.4	2.7		03	1	0.4	3.2
		3	0.2	1.7		06	1	0.4	3.3
	03	1	0.7	4.0			1	0.4	3.5
		3	0.4	2.9		12	1	0.4	3.5
		3	0.2	1.9		18	1	0.4	3.4
	06	1	0.7	3.7					
		3	0.3	2.6	19	00	1	0.4	3.7
	12	1	0.7	3.8			1	0.4	3.5
		3	0.4	2.6		03	3	0.3	3.5
	18	1	0.6	3.6			3	0.3	3.4
		3	0.4	2.7		18	3	0.3	5.5
							3	0.2	2.8
14	00	1	0.7	3.8	20	00	3	0.3	5.6
		3	0.2	2.2			3	0.2	2.8
	03	1	0.7	3.9			3	0.1	1.8
		3	0.2	2.5		03	3	0.2	3.9
	06	1	0.7	3.9			3	0.1	2.4
		3	0.2	2.1		06	...	No record.	
	12	1	0.7	3.9			3	0.2	2.4
		3	0.2	2.3		12	3	0.3	5.7
	18	1	0.7	4.1			3	0.2	2.5
		3	0.2	2.1	21	00	3	0.3	5.7
15	00	1	0.8	4.0			3	0.2	2.5
		3	0.1	1.6		03	3	0.3	5.7
	03	...	Earthquake.				3	0.2	2.5

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

September, 1963.

21	06	3	0.2	2.5	28	00	1	0.6	3.8
	12	3	0.2	2.6			3	0.4	2.7
	18	3	0.2	2.4			3	0.1	1.7
22	00	1	0.3	3.1		03	1	0.6	3.9
	03	1	0.3	2.9			3	0.4	2.8
	06	3	0.3	2.9		06	1	0.6	3.9
	12	3	0.3	2.9			3	0.4	2.8
	18	3	0.4	5.9		12	1	0.5	4.0
		3	0.2	2.9			3	0.4	2.7
						18	3	0.5	4.7
							3	0.4	3.0
23	00	3	0.3	5.8	29	00	3	0.6	5.3
	03	3	0.3	5.9			3	0.4	2.9
	06	3	0.2	2.6		03	3	0.6	5.6
	12	3	0.3	6.3			1	0.4	2.7
	18	3	0.2	2.7		06	3	0.6	5.4
		3	0.3	6.1			1	0.4	2.8
		3	0.2	2.6		12	3	0.6	5.3
		3	0.4	6.5			1	0.4	2.8
		3	0.1	2.6		18	3	0.5	5.4
							1	0.4	2.8
24	00	3	0.4	6.6	30	00	3	0.5	5.3
	03	3	0.1	2.5			1	0.4	3.0
	06	3	0.3	6.1		03	1	0.4	2.9
	12	3	0.1	2.4			1	0.4	2.9
	18	3	0.3	6.1		06	1	0.4	2.9
		3	0.1	2.4			1	0.3	2.9
		3	0.4	6.5		12	1	0.3	2.9
		3	0.1	2.3		18	1	0.4	3.0
		...	Earthquake.						

Station: Bokaro.

25	00	3	0.4	6.5	01	00	.	.	.
	03	3	0.1	2.1		06	3	0.4	4.9
	06	3	0.4	6.6		12	3	0.5	5.4
	12	3	0.1	2.1		18	3	0.3	5.0
	18	3	0.3	6.5	02	00	3	0.3	5.4
		3	0.1	2.2		06	3	0.3	4.4
		3	0.2	2.6		12	3	0.1	4.0
		3	0.2	2.5		18	3	0.3	4.8
26	00	1	0.3	2.6	03	00	3	0.3	4.6
	03	3	0.2	2.0		06	3	0.3	4.6
	06	3	0.3	2.5		12	3	0.3	4.4
	12	1	0.3	1.8		18	3	0.1	4.6
	18	1	0.4	2.7	04	00	3	0.2	3.8
		1	0.4	2.9		06	3	0.2	4.2
27	00	1	0.5	3.2		12	3	0.3	4.2
	03	1	0.6	3.6		18	3	0.2	3.8
	06	1	0.6	3.7	05	00	3	0.3	3.8
	12	1	0.7	4.0		06	3	0.4	4.4
	18	3	0.3	2.7					
		1	0.8	4.0					
		3	0.3	2.6					

International Seismological Centre

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

September, 1963.

05	12	3	0.4	4.6	16	12	3	0.2	3.8
	18	3	0.3	4.8		18	3	0.2	4.2
06	00	3	0.3	5.4	17	00	3	0.2	4.3
	06	3	0.3	4.6		06	3	0.2	3.8
	12	3	0.4	5.0		12	3	0.1	4.0
	18	3	0.3	4.6		18	3	0.2	4.4
07	00	3	0.4	5.0	18	00	3	0.1	4.2
	06	3	0.4	4.8		06	3	0.1	4.4
	12	3	0.5	4.6		12	3	0.1	3.6
	18	3	0.3	4.2		18	...	-	-
08	00	3	0.3	4.8	19	00	3	0.1	4.2
	06	3	0.4	4.2		06	3	0.1	4.4
	12	3	0.3	4.6		12	3	0.1	4.8
	18	3	0.3	5.0		18	3	0.1	4.4
09	00	3	0.4	5.3	20	00	3	0.1	4.5
	06	3	0.3	4.6		06	...	-	-
	12	3	0.3	4.4		12	...	-	-
	18	3	0.3	4.2		18	...	-	-
10	00	3	0.3	4.8	21	00	...	-	-
	06	...	-	-		06	...	-	-
	12	...	-	-		12	...	-	-
	18	...	-	-		18	...	-	-
11	00	...	-	-	22	00	...	-	-
	06	...	-	-		06	3	0.1	4.8
	12	...	-	-		12	3	0.1	4.7
	18	...	-	-		18	3	0.1	4.0
12	00	...	-	-	23	00	3	0.1	5.5
	06	3	0.4	4.0		06	...	-	-
	12	3	0.5	4.0		12	...	-	-
	18	3	0.4	4.2		18	...	-	-
13	00	3	0.4	4.0		00	...	-	-
	06	3	0.4	4.0		06	...	-	-
	12	3	0.5	4.4		12	...	-	-
	18	3	0.3	4.2		18	...	-	-
14	00	3	0.4	3.8	25	00	...	-	-
	06	3	0.4	4.0		06	3	0.1	5.5
	12	3	0.5	4.5		12	0,0	-	-
	18	3	0.4	4.5		18	0,0	-	-
15	00	3	0.4	4.0	26	00	0,0	-	-
	06	3	0.3	4.1		06	3	0.2	2.8
	12	3	0.3	4.2		12	1	0.5	3.2
	18	3	0.2	3.0		18	1	0.9	3.5
16	00	3	0.3	4.0	27	00	1	2.0	4.2
	06	3	0.2	3.8		06	1	1.2	3.4

Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.
Station: Bokaro(Contd.)					September, 1963.				
27	12	3	0.8	3.2	06	00	2	0.3	3.1
	18	3	0.6	3.2		06	2	0.3	3.1
						12	2	0.3	3.6
						18	2	0.6	3.9
28	00	3	0.3	3.0					
	06	...	-	-	07	000	2	0.3	3.9
	12	...	-	-		06	2	0.5	3.7
	18	...	-	-		12	2	0.3	3.3
						18	2	0.5	3.8
29	00	...	-	-	08	00	2	0.4	3.6
	06	0,0	-	-		06	2	0.3	3.2
	12	3	-	-		12	2	0.3	3.2
	18	0,0	-	-		18	2	0.3	3.6
30	00	0,0	-	-	09	00	2	0.4	3.9
	06	3	0.2	4.6		06	2	0.3	3.1
	12	3	0.2	4.2		12	2	0.2	2.9
	18	3	0.2	4.0		18	2	0.2	2.9
Station: Visakhapatnam.					10	00	2	0.5	3.1
Note: (a) Relay did not function due to voltage drop; hence no minute marks.						06	2	0.5	4.1
(b) Microseisms very feeble.						12	2	0.3	3.2
(c) Thunderstorm in progress.						18	2	0.3	3.3
(d) Earthquake in progress.					11	00	2	0.5	3.9
						06	1	0.4	3.3
						12	1	0.5	4.1
						18	1	0.5	3.9
01	00	2	0.4	3.5	12	00	1	0.7	4.1
	06	2	0.3	3.0		06	1	0.8	4.0
	12	2	0.3	3.0		12	1	0.6	3.3
	18	2	0.3	3.2		18	1	0.5	3.3
02	00	2	0.3	3.5	13	00	1	0.5	3.2
	06	2	0.2	3.1		06	1	0.7	4.1
	12	2	0.3	3.2		12	2	0.5	3.1
	18	2	0.2	2.9		18	2	0.4	3.0
03	00	2	0.3	3.1	14	00	2	0.5	3.1
	06	2	0.6	4.1		06	2	0.3	3.1
	12	....(a)	-	-		12	2	0.3	3.5
	18	2	0.4	3.3		18	2	0.3	3.6
04	00	2	0.3	3.1	15	00	2	0.3	3.1
	06	2	0.3	3.4		06	2	0.3	3.0
	12	2	0.3	3.1		12	2	0.3	3.5
	18	2	0.3	3.5		18	2	0.3	3.3
05	00	2	0.3	3.0	16	00	2	0.3	3.2
	06	2	0.5	3.9		06	2	0.3	3.3
	12	2	0.3	3.2		12	2	0.3	3.1
	18	2	0.3	3.8		18	2	0.2	3.0



Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in m.m.	Mean period in sec.	
Station: Visakhapatnam(Contd.)					September, 1963.					
17	00	2	0.2	3.1	28	00	2	0.5	3.7	
	06	2	0.3	3.3		06	2	0.3	3.0	
	12	2	0.2	2.9		12	2	0.3	3.2	
	18	2	0.2	2.9		18	2	0.4	4.0	
18	00	2	0.2	2.9	29	00	2	0.3	3.0	
	06	2	0.3	3.3		06	2	0.4	3.5	
	12	2	0.2	2.9		12	2	0.4	3.2	
	18	2	0.3	3.0		18	2	0.3	3.0	
19	00	2	0.2	3.1	30	00	2	0.4	3.5	
	06	2	0.3	3.3		06	2	0.5	3.3	
	12	2	0.2	3.0		12	2	0.5	3.2	
	18	2	0.3	3.1		18	2	0.2	2.5	
20	00	2	0.2	3.0	-----					
	06	2	0.3	3.1	Date	Hour GMT	K	Mean simple amplitude in micron	Mean period in sec.	
	12	0,0(b)	-	-	-----					
	18	0,0	-	-	Station: Port Blair.					
21	00	2	0.2	3.1	01	00	3	0.2	3	
	06	2	0.3	3.3		06	3	0.2	3	
	12	2	0.3	3.4				1.6	7	
	18	(c)	0.2	1.9		12	3	0.4	3	
22	00	0,0	-	-		18	3	0.4	3	
	06	2	0.4	3.6				1.6	7	
	12	2	0.3	3.7		02	00	3	0.4	3
	18	2	0.4	3.6		06	3	0.4	3	
23	00	2	0.3	3.7				0.8	7	
	06	2	0.3	5.0		12	...	-	-	
	12	2	0.2	4.5		18	3	0.4	3	
	18	2	0.3	4.5				0.4	7	
24	00	2	0.2	3.5	02	00	3	0.4	3	
	06	2	0.5	5.0		06	3	0.4	3	
	12	2	0.5	5.4		12	...	-	-	
	18	....(d)	-	-		18	3	0.4	3
25	00	0,0	-	-				0.4	7	
	06	2	0.5	4.2	03	00	3	0.4	3	
	12	2	0.5	5.2		06	3	0.4	3	
	18	2	0.2	3.0		12	3	0.4	3	
26	00	2	0.2	3.5		18	3	0.4	3	
	06	2	0.5	4.7	04	00	3	0.8	3	
	12	2	0.5	3.5		06	1	0.4	3	
	18	3	0.6	3.4		12	1	0.4	3	
27	00	1	1.1	3.9		18	1	0.4	3	
	06	1	1.1	3.9						
	12	1	1.1	3.9						
	18	1	0.6	3.9						



Date	Hour GMT	K	Mean simple amplitude in micron	Mean period in sec.	Date	Hour GMT	K	Mean simple amplitude in micron	Mean period in sec.
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Station: Port Blair.

September, 1963..

05	00	1	0.4	3	13	00	3	1.2	4
	06	1	0.4	3		06	1	0.8	3
	12	1	0.4	3		12	1	0.8	3
	18	1	0.4	3		18	1	0.4	3
06	00	1	0.4	3	14	00	1	0.4	3
	06	3	0.4	3		06	...	-	-
	12	3	0.4	3		12	1	0.4	3
			0.4	6		18	...	-	-
	18	3	0.2	3	15	00	...	-	-
			0.4	7		06	1	0.2	3
07	00	3	0.4	3		12	1	0.2	3
			0.4	7		18	1	0.2	3
	06	1	0.4	3	16	00	0,0	-	-
	12	1	0.4	3		06	0,0	-	-
	18	...	-	-		12	0,0	-	-
08	00	...	-	-		18	1	0.2	7
	06	1	0.8	3	17	00	1	0.2	7
	12	1	1.2	3		06	1	0.2	7
	18	1	1.2	3		12	1	0.4	7
09	00	3	1.2	3		18	1	0.4	7
			0.8	7	18	00	1	0.8	7
	06	3	1.2	3		06	1	0.8	7
			1.2	7		12	1	0.8	7
	12	3	1.2	3		18	...	-	-
	18	...	-	-	19	00	1	0.4	7
10	00	3	1.2	3		06	1	0.4	7
			1.2	7		12	1	0.4	7
	06	3	1.6	3		18	3	0.4	3
			1.2	7				0.4	7
	12	3	1.6	3	20	00	3	0.4	3
			1.2	7				0.4	7
	18	3	1.6	3		06	3	0.8	7
			1.6	7		12	1	0.8	7
11	00	3	1.6	3		18	1	0.8	7
			1.6	7	21	00	1	0.8	7
	06	3	1.2	3		06	1	0.8	7
			1.6	7		12	1	0.8	7
	12	...	-	-		18	1	0.8	7
	18	3	1.2	3	22	00	1	0.8	7
			1.6	7		06	1	0.4	7
12	00	3	1.2	4		12	1	0.4	7
			1.6	7		18	1	0.8	7
	06	3	0.8	4	23	00	1	0.8	7
			1.6	7		06	1	0.4	7
	12	3	0.8	4		12	1	0.8	7
			1.2	7		18	1	0.8	7
	18	3	1.2	4				0.8	7
			0.8	7				0.8	7