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SEISMOLOGICAL BULLETIN

11 AUG 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=85			15
					- do -	Z	To=15 Tg=70			15
Bombay	18.54°N, 72.40°E		4	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
Calcutta	22.32°N, 88.22°E (1) 7 (2) 6			Alluvium	Wood-Anderson	N	0.8 1000	h=0.8		60
					Milne-Shaw	E	12 250	20:1		8
					Wood-Anderson	N	2 870	Critical		30
					Omorri-Ewing	N	15 32			25.4
Chatra	25.50°N, 87.10°E		151	Sand Stone	Omorri-Ewing	E	21 30			25.4
					Milne-Shaw	E	12 250	20:1		16
					Wood-Anderson	N	1 1000	30:1		60
Colombo	06.54°N, 79.52°E		7	Beach Sand	Benioff	Z	To=0 Tg=0.45 secs	Critical		60
					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
Hyderabad	17.25°N, 78.27°E		536	Granite	Milne-Shaw	N	12 250	20:1		8
					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		9
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			60
					Sprengnether	E	To=Tg=5.3	Critical		30
Wenner Accelerograph	ZNE									
Tocklai	28.45°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 h	M m	Remarks
01	Delhi	Z	eP	10	13 05	Slight, compression
01	Port Blair	Z	eP iSg	10	45 48 45 55	50 Slight
01	Delhi	EZ	iP	12	43 49	Slight, compression, initial ground motion towards West.
01	Tocklai	E	e i	12	58 19 53 25	Slight, near
01	Shillong	ZNE	iP	13	03 55	Slight, near, compression, initial ground movement North, West.
01	Chatra	Z	eP eSg	13	04 55 05 05	100 Slight
01	Delhi	Z	iP	13	07 00	Tremor, rarefaction
01	Delhi	ENZ	eP	13	09 30	Slight
01	Chatra	Z	e	13	30 03	Slight
01	Chatra	Z	eP e	13	31 22 31 33	Slight
01	Delhi	ENZ	iP iSg	15	32 23 32 28	40 Slight, initial ground motion towards South, East compression
01	Delhi	ENZ	iP	13	17 26	Slight, compression, initial ground motion towards North East.
	Dehra Dun	Z	eP e	13	17 18 18 55	Slight
01	Delhi	ENZ	eP	13	32 13	Slight, compression
01	Delhi	ENZ	iP i	20	02 49 02 54	Slight, compression, initial ground motion towards North.
	Dehra Dun	Z	iP	20	02 35	Rarefaction
01	Delhi	ENZ	iP iSg	22	51 23 51 28	40 Slight, initial ground motion South East, compression
01	Shillong	ZNE	iP	23	03 03	Slight, distant, compression
02	Delhi	Z	eP	09	19 12	Slight, distant, compression
02	Delhi	Z	eP	09	25 40	Slight
02	Shillong	ZNE	iP	10	23 40	Slight, distant, compression
02	Delhi	EZ	iP	10	30 10	Slight, distant, initial ground motion East, rarefaction.
02	Chatra	Z	e	13	19 04	Slight

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
02	Shillong	Z/E	iPn Sg	14	48	25	250	Slight, compression
02	Port Blair	Z	i	15	49	14		
02	Shillong	ZNE	ePn eS	16	02	40	420	Slight
				08	45			
02	Port Blair	Z	i	13	07	27		
02	Shillong	ZN	iP	19	33	23		Slight, distant, compression
	Chatra	Z	e	19	34	04		Slight, distant
	Delhi	EZ	iP	19	35	13		Slight, rarefaction, initial ground motion towards West.
	Dehra Dun	Z	eP	19	35	14		Slight
02	Shillong	ZE	iP	03	58	45		Slight, distant, rarefaction
	Chatra	Z	iP	03	59	12		Slight, distant, rarefaction
	Dehra Dun	Z	iP	03	59	55		rarefaction
	Delhi	ENZ	iP	03	59	53		Slight, initial ground motion North, East and rarefaction.
03	Shillong	ZNE	iPg Sg	03	21	33	100	Slight, compression
					24	50		
03	Ebc 7.7°N, 35.8°W. In mid Atlantic Ocean. h about 33 km -H = 10h 21m 36.6s (USCGS). Mag. 6.1 SD 0.4 (CGS).							
	Delhi	EZ	iP	10	35	43	11370	Initial ground motion South, East, compression
			PP		40	12		
		E	PPP		42	32		
			i		44	19		
		EN	SKS		43	24		
		N	i		47	43		
		ENZ	PS		43	21		
			PPS		50	20		
			SSP		55	11		
		N	i		57	24		
			i	11	02	28		
		Z	M		-	-		Per.=22 secs, Amp.=103 mm
	Poona	N	eP eS	10	37	13		
					43	52		
	Dehra Dun	N	e	10	39	21		Slight, distant
			e		40	41		
			iS		49	23		
			i		50	29		
	Bombay	EN	PP	10	40	07	9780	
		N	e		47	42		
			e		49	09		
			PS		49	22		
		NE	PPS		50	13		
			i		50	50		
		E	e		51	08		
			SS		55	01		

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
03	Shillong	Z	e	10	40	23		
	Cont'd.	ZNE	i		41	43		
			i		51	14		
	Kodaikanal	E	e	10	40	51		
	Madras	E	e	10	40	51		
			i		50	37		
	Chatra	ZNE	ePKP	10	41	01	12220	
		NE	PP		41	39		
			PPP		43	43		
			SKS1		47	32		
			SKKS		43	23		
			PS		50	50		
			SS		53	33		
			SSS	11	00	32		
		N	Mn	11	29	-		
	Visakhapatnam	NE	e	10	41	03		Distant
	Bokaro	NE	iP	10	41	19		Distant, initial ground movement towards East.
			i		50	51		
	Calcutta	E	e	10	41	34		
			i		51	14		
	Hyderabad	EN	e	10	41	54	10430	
			e		50	09		
	Port Blair	ZE	i	10	42	28		Compression, initial ground movement towards East.
		E	e		45	24		
			e		52	32		
03	Shillong	ZNE	iPg Sg	11	12	10	80	Slight
					12	19		
03	Shillong	ZE	iP	12	44	14		Slight, distant, compression
03	Delhi	ENZ	iPg iSg	14	43	29	10	Slight, initial ground motion South East, compression. Mag. 2.0
					48	40		
03	Shillong	ZE	iP	13	41	00		Slight, distant, compression
03	Chatra	Z	iP	13	41	14		Slight, distant, compression
	Dehra Dun	Z	iP	13	41	25		Rarefaction
03	Delhi	NZ	iP	13	41	34		Slight, compression
03	Shillong	ZNE	iP	13	49	55	210	Slight
		NE	Sg		50	23		
03	Shillong	ZNE	iPg Sg	13	18	23	100	Slight, rarefaction
					13	40		
	Dehra Dun	Z	eP	19	33	40		Slight
	Delhi	ENZ	eP	19	33	53		Slight
03	Delhi	ENZ	iPg iSg	19	42	26	40	Slight, compression, initial ground motion towards South.
					42	31		

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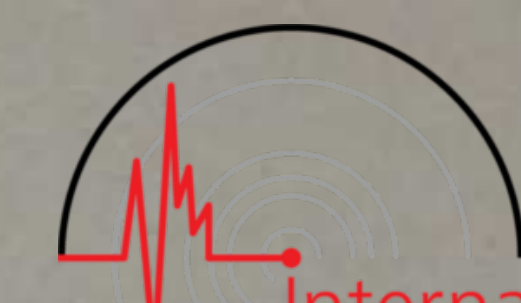
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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
03	Delhi	Z	iP	20	27	01		Slight, compression
04	Epc 25.4°N, 92.4°E. In Assam Region. -H=03h 19m 31s (New Delhi)							
	Shillong	ZNE	iP	03	20	00		Slight, near, compression
	Chatra	Z E	iP e	03	20 22	59 13		Slight
04	Dehra Dun	Z	eP	03	22	55		Slight
	Delhi	EZ	iP i i	03	23 23 23	01 04 09	1310	Slight, compression
		ENZ	iS		25	44		
04	Delhi	ENZ	iPg iSg	04	17 17	38 47	30	Slight, North, West compression
04	Delhi	Z	e	05	50	19		
04	Shillong	ZNE	iP	07	13	20		Slight, distant, compression
04	Chatra	Z	eP	07	13	49		Slight, distant
04	Delhi	ENZ	iP	07	17	45		Slight, compression
04	Dehra Dun	Z	eP	07	17	50		Slight
04	Delhi	Z	eP	07	25	00		Slight, rarefaction
04	Dehra Dun	Z	e	11	52	23		Slight
04	Delhi	ENZ	iP	11	52	30		Slight, initial ground motion towards Northeast, compression
04	Delhi	Z	eP	12	27	05		Slight, rarefaction
	Dehra Dun	Z	eP	12	27	06		Slight
	Chatra	Z	eP	12	27	13		Slight
04	Shillong	ZNE	iP	13	09	39		Slight, distant, compression
	Delhi	Z	eP	13	11	11		Slight, compression
04	Port Blair	E	i	17	19	55		
04	Delhi	Z	iP	18	33	38		Slight, rarefaction
04	Delhi	Z	eP	21	52	22		Slight
04	Delhi	NZ	eP	22	21	10		Slight, near, initial ground motion towards South.
05	Shillong	ZNE	iP	00	03	50		Slight, distant, compression
23-54	Chatra	Z	eP	00	11	13		Slight, distant
	Delhi	Z	eP	00	11	47		Slight, compression

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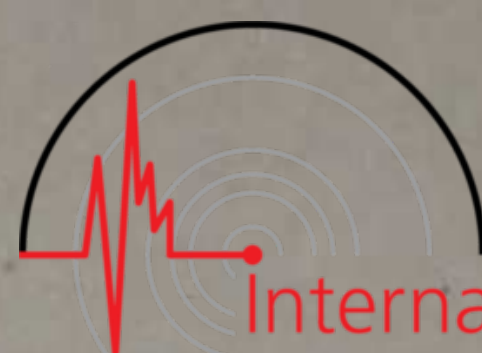
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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
05	Chatra	Z NZE	iP iS	08	08 09	44 02	140	Slight, rarefaction
05	Shillong	ZNE	iP Sg	03	09 10	32 30	390	Slight
05	Delhi	Z	eP eS	08	10 11	15 41	330	Slight, rarefaction
05	Delhi	Z	eP i	09	03 03	45 51		Slight
05	Delhi	Z	eP	09	24	17		Slight
05	Shillong	ZNE	iP Sg	15	00 00	03 34	240	Slight
05	Port Blair	E	i i	15	55 13	27 29		
05	Shillong	ZNE	iP	19	12	30		Slight, near, compression
03	Delhi	NZ	iP	01	02	23		Slight, North, compression
06	Delhi	Z	iP	03	31	31		Slight, compression
03	Chatra	Z ZNE	iP eSg	10	13 13	08 51	300	Slight, compression
03	Shillong	ZNE	eP	10	13	42		Slight, near
03	Delhi	Z	eP	13	43	23		Slight, compression
	Chatra	Z	iP	13	49	01		Slight, distant, compression
	Shillong	ZNE	eP	13	49	14		Slight, distant
03	Chatra	Z	ePg iSg	13	22 23	59 12	110	Slight
06	Delhi	NZ	iPg iSg	18	33 33	38 41	20	Slight, North, compression
06	Shillong	ZNE	iP	23	20	27		Slight, near, rarefaction
07	Shillong	ZNE	iP	00	03	14		Slight, distant, compression
07	Delhi	NZ	iPg iSg	01	00 00	53 53	40	Slight, South, compression
07	Shillong	ZNE	iP	04	42	09		Slight, distant, compression
	Chatra	Z	iP	04	42	23		Slight, distant, compression
	Delhi	Z	eP	04	42	55		Slight, compression
07	Chatra	Z	iP	04	57	28		Slight, distant, compression
07	Chatra	Z	iP	07	13	11		Slight, distant, compression
07	Shillong	ZNE	iP	07	54	20		Slight, near, compression

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Date	Station	Compt	Phase	G	M	T	Δ	Remarks
				h	m	s	km	
07	Chatra	Z	eP eS	07	55	17	720	Slight
	Contd.				56	33		
07	Bokaro	NE	iP	09	10	41		Slight, local
07	Chatra	Z	eP eS	12	27	25	520	Slight
					28	21		
08	Epc 54.2°N, 168.1°E. Fox Islands, Aleutian Islands. h about 33 km Mag. 5.5 - H = 02h 14m 51.4s							
	Delhi	ENZ	iP	02	24	50		Slight, compression, initial ground motion towards South West.
	Chatra	Z ZNE	iP iS	02	25	24	7030	Compression
	Port Blair	Z	iP	02	26	18		Distant, rarefaction
	Madras	E	eP PP PPP eS SKS ScS PS PPS SS SSS Lq Lr M	02	26	53	9030	
					30	01		
					31	53		
					37	09		
					37	15		
					37	23		
					37	56		
					38	13		
					42	18		
					45	40		
					43	51		
					52	53		
					59	42		
	Poona	N	e eS SS SSS PKKP1 Lq Lr M	02	29	35		Initial ground movement South and compression.
					33	21		
					42	29		
					45	13		
					45	43		
					47	27		
					50	27		
					55	57		
	Port Blair	E	i iS i M	02	30	32		
					33	14		
					47	34		
					57	40		
	Delhi	Z	iP	03	40	53		Slight, rarefaction
08	Delhi	Z	iP	03	43	45		Slight, rarefaction
08	Port Blair	Z	iP	11	18	33		Slight, distant, rarefaction
	Shillong	Z	iP	11	23	51		Slight, distant
	Delhi	Z	eP eS	11	28	09	8730	Slight
					38	03		
08	Port Blair	E	e	11	35	03		



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Date	Station	Compt	Phase	G	M	T	Δ	Remarks
				h	m	s	km	
08	Shillong	Z	iP	11	48	02		Slight, distant, rarefaction
08	Delhi	ENZ	iP	11	49	44		Slight, rarefaction, initial ground motion towards East
08	Shillong	Z	iP	14	01	53		Slight, distant, rarefaction
08	Delhi	ENZ	iP	14	02	25		Slight, rarefaction, initial ground motion towards North East.
08	Delhi	ENZ	eP	14	11	18		Slight, compression, initial ground motion towards North East.
08	Dehra Dun	Z	e	17	22	03		Tremor
08	Delhi	EZ E	iP iS	18	20	25	1170	Slight, initial ground motion towards East
					22	25		
08	Delhi	ENZ	iP	19	20	31		Slight, compression
08	Shillong	Z	iP	19	29	39		Slight, near, compression
09	Shillong	ZNE	iP Sg	02	55	20	240	Slight, compression
					55	55		
09	Delhi	Z	eP	03	14	47		Compression, initial ground motion towards South.
09	Shillong	ZNE	iP	03	15	22		Slight, near, rarefaction
	Chatra	Z ENZ	iP eS	03	15	47	590	Slight
					13	49		
09	Bokaro	E	eP	03	17	40		Slight, near
09	Shillong	ZNE	iP Sg	03	37	13	190	Slight, compression
					37	29		
09	Shillong	ZNE	iP	12	31	03		Slight, distant, rarefaction
09	Shillong	ZNE	iP	14	20	32		Slight, near
09	Shillong	ZNE	eP	15	23	20		Slight, distant
09	Delhi	ENZ	eP eS	13	03	25	990	Slight, compression
					10	03		
09	Delhi	Z	iP	17	02	27		Tremor, rarefaction
10	Delhi	Z	iP	00	03	43		Tremor, compression
10	Delhi	EZ N E	iP e e	04	32	17		Slight, rarefaction, initial ground motion towards West.
					33	12		
					33	13		
	Shillong	ZNE	iP	04	33	36		Slight, near, compression
10	Shillong	ZNE	iP	03	41	15		Slight, distant.



Date	Station	Compt	Phase	G M T			Δ km.	Remarks
				h.	m.	s.		
11	Dehra Dun	Z	iP	19	42	48		Slight
Contd.	Chatra	Z	eP	19	44	35		Slight, distant
	Shillong	ZNE	iP	19	45	23		Slight, distant, compression
12	Delhi	Z	eP i	01	25	13 25 22		Slight
12	Shillong	ZE	eP	03	04	41		Slight, distant
12	Delhi	ENZ	eP	07	24	42		Slight
12	Shillong	ZE	iP	10	13	49		Slight, distant, compression
	Delhi	ENZ	iP	10	20	19		Slight, initial ground motion towards South, East, compression
12	Shillong	ZE	iP	14	41	51		Slight, near
12	<i>Epc 24.4°N, 64.4°E. In Arabian Sea. -H=18h 29m 46s</i>							
	Bombay	NZ	i	18	32	22		Slight
			i		34	59		
			i		35	33		
			i		35	40		
	Delhi	ENZ	eP iS	18	32	45 35 04	1370	Slight, initial ground motion towards West, compression
	Dehra Dun	Z	iP i	18	33	01 33 08		Slight, rarefaction
		ENZ	iS			35 38		
	Bokaro	NE	eP	18	34	23		Slight, distant
	Chatra	ZNE	iP i	18	34	31 33 33		Slight, compression
	Shillong	ZE	iP	18	35	14		Slight, distant, compression
	Hyderabad	N	M	18	40	04		Per. = 21 secs, $\mu = 9$
12	Visakhapatnam	NE E	iP ePP ePPP	19	34	23 34 45 34 55	2250	Slight, distant, initial ground motion North, East.
		NE	eS			33 11		
12	Shillong	ZE	iP Sg	19	22	29 23 07	270	Slight, rarefaction
12	Delhi	Z	eP	20	57	42		Slight, compression
13	Shillong	ZE	eP	03	38	57		Slight, distant
	Chatra	Z	e	03	33	03		Slight, distant
	Delhi	Z	iP	03	29	17		Slight, rarefaction
13	Shillong	Z	iP	05	01	21		Slight, distant, rarefaction

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
13	Delhi	EZ	iP	05	02	59		
13	Delhi	ENZ	eP	05	10	13		Slight, initial ground motion towards South, East, compression
13	Chatra	Z ZNE	iP eS	05	23	13	210	Slight, compression
	Shillong	Z	iP	05	24	02		Slight, near
	Dehra Dun	Z	iP iS	05	24	27	730	
	Delhi	ENZ	iP iS	05	24	33	800	Slight, initial ground motion towards North, East, compression
	Bokaro	IE	eP	05	24	41		Slight, near
13	Dehra Dun	Z	iP	07	05	51		Slight, compression
	Delhi	ENZ	iP iS	07	03	01	930	Slight, initial ground motion North, West, rarefaction
	Chatra	Z ZNE	iP eS	07	07	23	1740	Slight, compression
	Bokaro	E	iP S	07	07	43		Slight
	Shillong	Z	iP S	07	03	15	2300	Slight, compression
	Visakhapatnam	NE	eP eS	07	09	45	1250	Slight, near
13	Delhi	NZ Z	eP eS	09	23	11	990	Slight, initial ground motion South.
13	Dehra Dun	Z	iP i	10	57	03		Slight, compression
	Delhi	NZ E	eP e	10	57	31		Slight
13	Shillong	Z	eP	11	36	52		Slight, near.
13	Shillong	Z	iP	12	03	10		Slight, distant, compression
13	Dehra Dun	Z	iP j	15	17	13		Slight, compression
13	Delhi	ENZ E	eP iS	15	17	43	210	Slight
13	Shillong	Z	iP	16	53	55		Slight, near, compression
13	Chatra	Z	e	17	55	50		Slight, distant
13	Shillong	Z	iP	23	07	46		Slight, distant, rarefaction



Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
13	Delhi	ENZ	iP	23	09	14		Slight, initial ground motion towards South, East, rarefaction
13	Shillong	Z	iP	23	36	47		Slight, distant, compression
14	Shillong	ZNE	iP	03	43	15		Slight, distant, compression
	Delhi	EZ	eP	03	44	33		Slight, rarefaction
14	Shillong	ZNE	iP	04	47	23		Slight, near
14	Shillong	ZNE	iP	07	20	25		Slight, distant, compression
14	Shillong	ZNE	iP	03	38	45		Slight, distant, compression
14	Delhi	Z	iP	03	53	49		Tremor, rarefaction
14	Delhi	ENZ	eP	09	27	25		Slight, initial ground motion towards South, compression.
14	Shillong	ZNE	iPg Sg	11	28	58	120	Slight, rarefaction
14	Delhi	Z	iP	14	52	09		Slight, rarefaction
14	Shillong	ZNE	eP	13	24	07		Slight, distant
14	Chatra	Z	eP	16	24	45		Slight, distant
14	Delhi	Z	iP	16	25	57		Slight, rarefaction
14	Delhi	ENZ	eP	16	53	35		Slight, rarefaction
14	Dehra Dun	Z	eP iS	17	25	35	940	
	Delhi	Z NZ EN	eP i iS	17	25	43	990	Slight
14	Delhi	Z	iP	17	53	53		Slight, compression
14	Shillong	ZNE	iP	13	52	57		Slight, distant, compression, initial ground motion towards North, West.
14	Chatra	Z	iP	18	53	31		Slight, distant, compression
	Delhi	ENZ Z	iP e	18	54	29		Slight, initial ground motion North West, compression.
	Dehra Dun	Z	iP	18	54	31		Slight, compression
15	Chatra	Z	iP	02	25	02		Slight, distant, rarefaction
	Dehra Dun	Z	iP	02	25	52		Slight, rarefaction
	Delhi	ENZ	iP	02	25	59		Slight, initial ground motion North East, rarefaction
	Delhi	ENZ	iP	04	07	12		Slight, initial ground motion towards South, compression.
		NE	i	07	14			
		NEZ	eS	08	57			
15	Epc 37.9°N, 141.6°E. Near East Coast of Honshu, Japan. h about 59 km - H = 06h 11m 34.6s							

Date	Station	Compt	Phase	G h	M m	T s	A km	Remarks
15	Shillong contd.	ZNE	iP PcP PcS ScP S ScS Lr M	06	19 21 25	24 23 14	4780	Moderate, compression, initial ground motion towards South, West.
	Chatra	ZNE NE	iP PcP PP PPP iS ScS Lq SS SSS M	03	20 21 21 22 23 29 31 31 33 37	01 30 44 25 17 55 25 24 21 10	5120	Moderate, initial ground motion towards South, West and compression
	Calcutta	E	iP PP iS	03	20 21 27	07 51 00	5220	Moderate
	Bokaro	NE	iP PP PPP S PPS ScS SS Lq	03	20 22 23 27 27 29 31 32	20 13 25 32 47 50 01 31		Slight, initial ground movement towards South, West.
	Port Blair	ZN	iP i PP PPP i iS SS Lq SSS Lr M Mn	03	20 22 22 23 24 27 31 32 32 34 38 41	32 15 28 18 45 45 09 10 23 23 35 41 00	5300	Moderate, rarefaction, initial ground movement North. Per.=23 secs, Amp.=70
	Dehra Dun	ENZ E EN	iP PP eS PS PPS SS M	03	20 22 28 29 29 31 41	41 42 03 14 23 53 15	5750	Moderate, initial ground motion towards South West, compression
	Delhi	ENZ Z ENZ E ENZ E ENZ Z	iP i PP i iS PS PPS ScS SS Lr M	03	20 21 22 24 29 29 29 29 32 33	52 02 41 14 14 34 03 57 54 24 -	5750	Moderate, initial ground motion towards South West, Compression Per.=80 secs, Amp.=21 mm

Date	Station	Compt	Phase	G h	M m	T s	A km	Remarks
15	Visakhapatnam contd.	NE E NE E	iP iPP ePPP iS iPS iPPS iSS eSSS	06	20 22 24 23 28 29 32 35	59 57 17 38 51 01 25 03	6080	Moderate, distant, initial ground motion North East.
	Behore	E	eP	06	21	12		Distant shock
	Hyderabad	N	iP PcP PP PPP PcS iS SS Lr M	03	21 21 23 24 26 29 32 33 41	27 53 28 47 11 27 53 23 53	6440	Moderate intensity, initial ground motion towards South West. Per.=21 secs, $\mu = 15$
	Madras	E	iP PP PPP iS PS PPS ScS e Lq Lr M	03	21 23 25 29 29 30 31 31 36 39 44	35 48 15 45 58 03 12 41 23 22 17	6630	Moderate, initial ground motion towards East.
	Bombay	ENZ EN E	iP PcP PPP PcS eS PPS e e e	03	21 22 25 26 30 30 31 32 33 34	50 29 40 31 07 33 05 52 13 41 28 23	3760	Slight Per.=14 secs, $\mu = 6$ Per.=13 secs, $\mu = 6$
	Kodaikanal	E	iP eS i	03	21 30 32	59 41 11	7220	Slight, distant, initial ground movement towards West.
	Poona	E	iP	03	22	33	6670	Moderate shock, initial ground movement West, and South and compression. Epc. Mainland of Japan
15	Shillong	ZNE	iP	08	07	01		Slight, distant, compression
15	Delhi	Z	eP	08	08	49		Slight, rarefaction
15	Shillong	ZNE	iP	12	05	52		Slight, near, rarefaction



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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
15	Delhi	Z	eP	14	55	42		Slight, rarefaction
15	Shillong	ZNE	iP	15	15	15		Slight, distant, rarefaction
15	Delhi	Z	eP	15	23	20		Slight
15	Shillong	ZNE	iP Sg	15	41	02 44 52	210	Slight, compression

15 Epc 13.8°S, 69.3°W. Peru Bolivia border. h about 543 km
Mag 7 $\frac{1}{4}$ (Pas), 8 (Bks). - H = 17h 25m 05.9s.

✓	Bombay	ENZ N	ePKP1 e	17	43	41 45 24 53 13		
✓		EN	e	18	00	35		
✓		N	e		05	12		
✓		EN	SSS e		10	20 14 37		
✓	Delhi	ENZ N E Z E EZ E	iPKP1 iPKP2 iPKP2 PP SKS i SS	17	43	44 44 04 44 05 47 25 54 41 18 00 17 23 42	17530	Initial ground motion North East, compression
✓	Dehra Dun	ENZ	iPKP1 iPKP2	17	43	44 43 59		Initial ground motion towards North, West, compression
✓	Sehore	NE	ePKP1	17	43	49		
✓	Tocklai	E	ePKP1 i i PP	17	43	47 44 02 44 33 47 52		
✓	Madras	E	ePKP1 e e e e	17	43	55 47 35 53 50 18 00 29 05 45 13 13		Moderate
✓	Chatra	Z NE	iPKP1 PKP2 i PP e i i SS i	17	43	59 44 41 43 48 48 34 57 16 59 59 13 00 33 07 54 03 23	17900	Rarefaction
✓	Shillong	ZNE	iPKP1 iPP PS	17	44	02 43 43 54 22		Rarefaction, initial ground motion South.



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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
15 contd.	Visakhapatnam	NE	ePKP1 i	17	44	02 50 04		
15	Hyderabad	N	ePKP1 i i PPP PS SS SSS Lr M	17	44	03 43 53 43 07 50 37 58 13 18 03 14 12 04 25 22 32 37		Per. = 27 secs, u = 22
✓	Bokaro	NE	iPKP1 i i PS i i	17	44	03 43 21 52 50 54 12 58 18 58 52		
✓	Port Blair	ZNE Z E	iPKP1 i PP	17	44	11 44 27 47 01 49 09		Great rarefaction, initial ground movement towards South West.
✓	Kodaikanal	E	iPKP1 i e i	17	44	13 46 37 55 13 57 33		Initial ground movement towards East.
✓	Calcutta	E	iPKP1 i i	17	44	21 45 01 54 15		
✓	Poona	Z	iPKP2 e	17	45	30 55 35		
16	Shillong	ZNE	iP	02	43	23		Slight, distant, rarefaction
16	Delhi	Z	iP	17	13	22		Slight, rarefaction
16	Shillong	ZNE	iP	20	57	23		Slight, distant, rarefaction
16	Delhi	Z	eP	20	59	10		Slight, compression
16	Shillong	ZNE	iP Sg	22	17	15 220 17 43		Slight
16	Shillong	ZNE	iP	23	31	35		Slight, distant
16	Delhi	Z	eP	23	32	15		Slight, distant, compression
17	Delhi	EZ	eP	00	54	50		Slight
17	Delhi	NZ	iP	03	21	11		Slight, compression
17	Shillong	ZNE	iP	03	23	13		Slight, distant, compression
17	Delhi	Z	iP _g iS _g	08	09	47.5 09 54.5	60	Slight, rarefaction

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
17	Shillong	ZNE	iP _g S _g	09	52	38	120	Slight
17	Epc 30.6°N, 130.9°E. Ryukyu Islands Region. h about 33 km Mag 5.6 SD 0.3 (CGS). - H = 11h 12m 41.2s (USCGS).							
✓	Shillong	ZIE	iP PP	11	19	30	4040	Compression, initial ground motion East.
✓		ZE	PPP S		21	00		
✓		Z	Lr M		21	22		
✓					25	12		
✓					29	44		
✓					32	11		
✓	Chatra	Z	iP	11	20	04		Rarefaction
✓			i		22	20		
✓			i		23	58		
✓			i		23	20		
✓			iSSS		23	50		
✓			i		29	24		
✓			i		33	15		
✓			i		33	19		
✓	Port Blair	E	iP	11	20	13		
✓			i		22	12		
✓			i		23	10		
✓			i		27	02		
✓	Bokaro	NE	iP	11	20	19	4450	Initial ground movement towards West
✓			PP		21	57		
✓			S		23	30		
✓			SS		29	23		
✓		E	Lq		29	52		
✓		NE	SSS		30	14		
✓		E	Lr		31	52		
✓	Visakhapatnam	E	iP	11	20	58	5310	Initial ground movement North East.
✓		N	eP					
✓		E	ePP		22	44		
✓			ePPP		23	44		
✓		NE	eS		27	55		
✓		E	eSS		31	09		
✓			eSSS		32	34		
✓			eLr		35	24		
✓			eM		40	34		
✓	Dehra Dun	ENZ	iP	11	20	59		Initial ground motion towards North West.
✓			i		31	12		
✓	Delhi	EZ	iP	11	21	03	5420	Moderate, initial ground motion North-West compression
✓		E	i		21	13		
✓		Z	i		22	52		
✓		E	PP		23	07		
✓			PPP		23	52		
✓		EN	S		28	02		
✓		N	PS		28	13		
✓		EN	PPS		28	40		
✓			SS		31	15		
✓			Lr		35	12		
✓		E	i		40	24		
✓		Z	A		-	-		

Per. = 105 secs, Amp. = 17 mm

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
17	Madras cont'd.	E	eP	11	21	32	5330	
			PP		23	11		
			PPP		24	22		
			PcS, ScP		23	35		
			eS		23	47		
			PS		28	53		
			PFS		29	02		
			ScS		31	24		
			Lq		32	43		
			Lr		33	14		
			M		40	34		
✓	Hyderabad	EN	iP	11	21	32	5810	Initial ground motion towards South West.
✓		E	PcP		22	51		
✓			PP		23	29		
✓			PPP		24	31		
✓			iS		23	57		
✓			ScS		31	29		
✓			SS		32	42		
✓			Lr		33	12		
✓		N	Lr		33	33		
✓			M		40	23		Per. = 19 secs, μ = 13
✓		E	M		40	31		Per. = 13 secs, μ = 24
✓	Bombay	ENZ	iP	11	21	57	3110	Slight
✓		E	PcP		23	09		
✓		NE	e		23	43		
✓		E	PP		24	23		
✓		NE	PPP		25	20		
✓			PcS		27	23		
✓			eS		29	33		
✓		N	e		33	42		
✓		NE	SSS		36	31		
✓		E,	Lr		39	22		
✓		N	M		45	24		Per. = 19 secs, μ = 15
✓		E	M		47	23		Per. = 16 secs, μ = 12
✓	Kodaikanal	E	eP	11	22	05		Slight, distant
✓			i		25	03		
✓			e		23	50		
✓	Poona	NEZ	iP	11	23	46	7930	Initial ground movement South West and compression
✓			eS		33	05		
17	Shillong	ZNE	iP	13	21	42		Slight, near
17	Delhi	Z	eP	21	13	23		Slight
			i		13	27		
17	Dehra Dun	Z	e	22	02	49		Slight
17	Chatra	Z	eP	22	04	21		Slight, distant
18	Shillong	ZNE	iP _g	00	13	34	220	Slight
			Sn		18	54		
			S _g		19	00		
	Dehra Dun	Z	eP	02	52	13		Tremor
			e		53	55		
18	Shillong	ZNE	iP	02	54	43		Slight, distant, compression.

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
19	Chatra	Z	e	02	53	59		Slight
18	Delhi	N	e	06	01	21		
18	Shillong	ZNE	iP	06	04	23		Slight, distant, compression
	Tocklai	E	eP	06	04	03		Slight, distant
			i	04	32			
18	Chatra	Z	iP	03	05	23	970	Slight, compression
			eS	07	03			
18	Shillong	ZNE	iP	07	17	23		Slight, distant, compression
18	Delhi	ENZ	iP	07	13	43		Slight, initial ground motion towards South West, compression
18	Shillong	ZNE	iP	13	43	26		Slight, distant, compression
18	<i>Epc 50.3°N, 176.9°W. In Andreanof Islands, Aleutian Islands. h about 33 km, - H = 18h 43m 13.1s (USCGS). Mag. 5.5 SD 0.5 (CGS).</i>							
	Shillong	ZNE	iP	18	54	35		Distant, rarefaction
	Chatra	Z	eP	18	54	47		Distant, rarefaction
	Dehra Dun	Z	eP	13	55	02		
	Bokaro	ZE	iP	18	55	04		Distant
		E	i	19	04	50		
	Delhi	ENZ	iP	13	55	10	3340	Initial ground motion North West, rarefaction
			eS	19	05	02		
	Poona	Z	iP	13	57	51		Slight
18	Dehra Dun	EN	e	13	04	50		Slight
18	Delhi	ENZ	iP	19	25	22		Slight, rarefaction
19	Dehra Dun	Z	eP	23	11	04		Slight
19	Delhi	ENZ	eP	23	11	13	930	Slight
			iS	12	54			
19	Delhi	Z	iP	23	27	35		Slight, distant
19	Shillong	ZNE	iP	07	40	57		Slight, distant, compression
19	Shillong	ZNE	iP	12	00	42		Slight, distant
19	Shillong	ZNE	iP _g	14	48	45	70	Slight
			S _g	43	52			
19	Shillong	ZNE	eP	14	52	55		Slight, distant
19	Shillong	ZNE	iP	19	13	35		Slight, distant, compression
19	Shillong	ZNE	iP	19	23	26		Slight, near, rarefaction



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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
19	Delhi	Z	iP	21	28	17		Slight, rarefaction
20	Shillong	ZNE	iP	07	00	09		Slight, distant, compression
	Chatra	Z	eP	07	00	33		Slight, distant
	Delhi	NZ	iP	07	01	25		Slight, initial ground motion towards North, compression
	Dehra Dun	Z	e	07	01	33		Slight
	Port Blair	E	M	07	12	00		
20	Shillong	ZNE	iP	07	22	46		Slight, distant, rarefaction
20	Bokaro	NE	iP	08	32	03		Slight, local
20	Delhi	NZ	iP	13	43	55	1000	Slight, initial ground motion towards South, compression
		Z	iS	45	38			
20	Shillong	ZNE	iP	15	53	21		Slight, distant, compression
20	Chatra	Z	iP	15	53	47		Slight, distant, rarefaction
20	Dehra Dun	Z	eP	15	57	21		Slight
20	Delhi	EZ	eP	15	57	32		Slight, initial ground motion towards South
		ENZ	i	57	23			
			i	57	43			
20	Poona	Z	eP	13	00	03		Slight, compression
20	Shillong	ZNE	iP _n	13	37	31	90	Slight, compression
			S _g	37	39			
			S _n	37	44			
20	Port Blair	Z	e	18	03	21		
			i	03	45			
		ZNE	i	03	48			
			i	03	54			
	Dehra Dun	Z	eP	19	13	03		Slight
20	Delhi	ENZ	eP	19	13	27		Slight, rarefaction
			i	14	00			
20	Delhi	Z	eP _g	22	07	29.5	30	Slight
		ENZ	iS _g	07	30			
20	Dehra Dun	Z	e	23	19	22		Slight
	Delhi	NZ	eP	23	19	39	1180	Slight, initial ground motion towards South.
		ENZ	iS	21	39			
1	Shillong	ZNE	iP	00	43	29	240	Slight, rarefaction
			S _g	44	04			
1	Dehra Dun	Z	eP	02	57	35		Slight
			i	57	48			
			e	53	33			
			i	53	59			

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
21	Delhi	ENZ Z	eP i i	02	57	51		Slight, initial ground motion towards South.
	Contd.				58	10		
					58	53		
21	Shillong	ZNE	iP Sg	05	47	23	290	Slight
					48	05		
21	Shillong	ZNE	iP	03	49	04		Slight, near
	Chatra	Z	e	03	51	13		Slight, distant
21	Bokaro	NE	iP	07	09	34		Slight, local
21	Bokaro	NE	iP	08	59	45		Slight, local
21	Bokaro	NE	eP	09	14	33		Slight, tremor
21	Delhi	Z	i	11	34	24		
21	Chatra	Z	iP iSg	13	51	22	180	Slight, rarefaction
					51	43		
21	Dehra Dun	Z	e	17	13	00		Slight
21	Shillong	ZNE	iP	18	12	21		Slight, distant, rarefaction
21	Delhi	Z	eP	18	12	12		Slight, rarefaction
21	Chatra	Z ZNE	eP iSg	18	13	40	120	Slight
					13	54		
21	Shillong	ZNE	eP	18	17	37		Slight, distant
21	Shillong	ZNE	iP	18	32	13		Slight, distant, rarefaction
21	Shillong	ZNE	iP	18	53	42		Slight, near
21	Chatra	Z ENZ	iP eSg	20	13	03	150	Slight
					19	25		
21	Shillong	ENZ	iP	20	19	49		Slight, distant
22	Delhi	ENZ	iPg iSg	03	05	13.2	40	Slight, initial ground motion South East, compression
					05	20.9		
22	Delhi	Z	eP	04	10	51		Slight, rarefaction
22	Shillong	ZNE	iP	05	09	49		Slight, distant, compression
	Dehra Dun	Z	e	05	11	22		Slight
	Delhi	Z	eP	05	11	25		Slight, compression
22	Shillong	ZNE	ePg Sg	10	33	03	150	Slight
					33	20		
22	Delhi	Z	e	11	42	03		
	Chatra	Z	iPg eSg	11	44	23	80	Slight, rarefaction
					44	22		



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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
22	Shillong	ZNE	iP	14	43	10		Slight, distant, rarefaction
22	Shillong	ZNE	iP	17	12	48		Slight, distant, rarefaction
22	Shillong	ZNE	eP	17	43	25		Slight, near
22	Bokaro	E	iP PeP PP i PPP i S PPS SS SSS	19	04	24	11120	Slight, initial ground movement towards East.
					04	31		
					07	21		
					07	24		
					09	03		
					10	29		
					14	13		
					15	14		
					19	27		
					22	33		
22	Epc 94° S, 158° E. In Solomon Islands. h about 33 km Felt. - H = 19h 52m 25s (USCGS). Mag. 6¼ - 7(Pas), 6-6¼(Brk), 6.1 SD 0.2 (CGS).							
	Shillong	ZNE ZN	iP iPP S Lr	20	03	50	3100	Initial ground motion towards West, compression
					03	22		
					13	19		
					24	03		
	Port Blair	ZE E	eP i iS PS PPS SS SSS Lq Lr M	20	03	52	3310	
					03	07		
					13	30		
					14	07		
					14	13		
					17	59		
					21	22		
					23	03		
					23	34		
					32	52		
	Chatra	Z NE	iP iS	20	04	22	3710	Compression
					14	18		
	Visakhapatnam	NE	eP eS	20	04	33	3750	
					14	31		
	Macras	E	iP PeP PP PPP iS SAS PS PPS SS SSS Lq Lr M	20	04	51	3300	Initial ground motion towards East.
					05	01		
					07	51		
					09	43		
					14	51		
					15	04		
					15	34		
					15	50		
					20	03		
					23	13		
					23	03		
					29	43		
					33	13		
	Calcutta	E	i i	20	04	54		
					13	12		
	Kodaikanal	E	eP	20	05	01	9000	Distant

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
22	Dehra Dun	Z	eP iS	20	05	05 15 33	9420	
22	Delhi	EN	iP PoP eS	20	05	07 05 14 15 30	9310	Initial ground motion towards West, compression
	Sehore	E	eP	20	05	12		Distant, other phases not clear
	Bombay	EN E	eP e e PP SKS eS ScS PS PPS	20	05	20 03 03 07 02 03 31 15 32 15 47 13 03 13 33 17 21	9400	Slight
		NE E NE E	e e e e			19 00 19 14 19 33 21 02		
			e e SSS M M			22 30 24 45 52 00 59 23		
	Poona	N	eP iS	20	07	11 17 43	9510	Initial ground movement South East and rarefaction
	Hyderabad	N	S M	20	15	03 46 25		Per.=11 secs, $\mu = 3$
	Kocai kanal	E	iS FS	20	15	10 15 58		
	Shillong	ZNE	iP	22	41	52		Slight, near, initial ground motion towards North East, rarefaction
	Tocklai	E	e e	22	41	53 42 15		Slight, near
	Chatra	Z NE	eP eS	22	42	33 43 52	720	Slight
	Bokaro	E	iP S	22	43	15 45 08		Slight
	Dehra Dun	Z	e	22	44	23		Slight
22	Delhi	Z EZ	eP iS	22	44	27 43 49	1290	Slight
22	Chatra	Z	iP eSg	22	53	15 53 33	130	Slight, compression
23	Delhi	ENZ	iP	23	53	59		Slight
23	Bokaro	NE	iP	27	50	03		Slight, local
23	Dehra Dun	Z	eP e	12	16	47 17 47		Slight

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
23	Delhi	ENZ	iP iS	12	17	05 18 21	720	Slight, initial ground motion West, rarefaction.
23	Shillong	ZNE	iP	13	19	03		Slight, distant, rarefaction
23	Shillong	ZNE	iP	15	21	19		Slight, distant, rarefaction
23	Dehra Dun	Z	e	19	20	50		Slight
23	Delhi	ENZ	iP iS	19	31	03 32 22	730	Slight, initial ground motion North West, rarefaction
23	Shillong	ZNE	iP	21	37	09		Slight, distant, compression.
23	Shillong	ZNE	iP	23	30	22		Slight, distant, rarefaction
	Delhi	EZ	iP	23	31	50		Slight, initial ground motion towards East, rarefaction
23	Shillong	ZNE	iP	23	25	02		Slight, near
24	Dehra Dun	Z	e	00	34	29		Slight
	Delhi	EZ ENZ	eP i i	00	34	44 35 19 35 32		Slight
24	Delhi	Z	eP i	02	01	20 01 49		Slight, compression
24	Delhi	Z	iP i	02	47	43 47 50		Slight, compression
24	Port Blair	Z	iPg iSg	05	57	33 57 42	50	Slight, rarefaction
24	Delhi	Z	eP	07	41	25		Slight
24	Bokaro	NE	iP	07	55	22		Slight, local
24	Delhi	Z	iP	11	05	59		Slight, initial ground motion towards South East, compression
24	Shillong	ZNE	iP	11	09	33		Slight, distant, compression
24	Shillong	ZNE	iP	15	49	30		Slight, near
24	Shillong	ZNE	iP	21	51	02		Slight, distant, compression
25	Shillong	ZNE	iPg Sg	00	30	33 30 43	110	Slight
25	Shillong	ZNE	iP	02	23	51		Slight, distant, compression
25	Delhi	N	eP	02	29	43		Slight, distant, initial ground motion towards South East.
25	Delhi	N	eP	02	29	43		Slight, distant, initial ground motion towards South.
25	Delhi	EZ ENZ	iPg iSg	05	23	44.3 23 49.4	50	Initial ground motion towards South East, compression
	Dehra Dun	Z	iP	05	31	11		Slight, compression

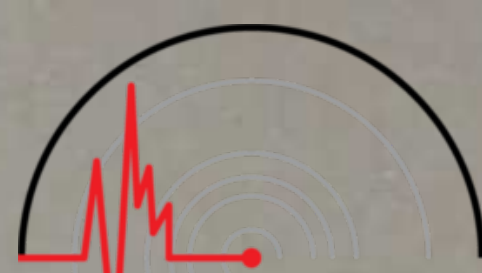
Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
25	Delhi	ENZ	iP	05	31	21		Slight, initial ground motion North West, compression
25	Delhi	ENZ	eP	03	13	22		Slight
	Chatra	Z	eP	03	19	39		Slight, distant
	Shillong	ZNE	eP	03	20	09		Slight, distant
25	Shillong	ZNE	iP	03	16	43		slight, near, compression
25	Epc 17.5°S, 178.8°W. Fiji Islands region. h about 565 km Mag 6-6½(Brk) 6.1(CGS), 6½(Pas) (USCGS. - H = 12h 18m 12.5s							
	Port Blair	ZNE	iP	12	30	23		8330 Rarefaction, initial ground movement East, probably deep.
		E	i		31	13		
		Z	i		32	22		
		ZNE	PP		33	13		
		Z	PPP		34	57		
		ZNE	iS		40	01		
		E	PS		40	41		
			PPS		40	57		
			i		43	05		
	Shillong	ZNE	iP	12	30	45		9350 Rarefaction
		Z	i		32	50		
			iPP		33	40		
			i		34	43		
			i		35	31		
		ZNE	i		40	23		
			iSKS		41	20		
			i		44	00		
			i		52	04		
	Chatra	Z	eP	12	31	03		
		NE	i		35	23		
			i		40	49		
			i		41	25		
			i		44	52		
			i		49	14		
			i		13	01	22	
	Delhi	Z	eP	12	31	44		Rarefaction
			i		35	42		
	Dehra Dun	Z	eP	12	31	47		
			e		33	19		
	Calcutta		e	12	31	50		
			i		35	50		
			i		41	31		
	Bokaro	NE	e	12	35	04		Other phases not clear
			iS		40	53		
	Madras	E	ip	12	35	11		4230 Initial ground motion towards East.
			i		35	23		
			i		35	33		
			PP		36	42		
			PPP		37	03		
			e		37	17		



Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
25	Madras	E	iS	12	41	05		
			e		41	50		
			e		43	06		
			e		44	01		
			ScS		45	15		
			Lr		45	34		
			M		49	01		
	Hyderabad	E	iPP	12	36	01	5550	
			PPP		36	44		
			PcS		39	44		
			iS		41	16		
			i		42	04		
			SS		44	23		
			Lq		45	03		
			SSS		45	51		
			Lr		47	51		
			M		53	52		Per. = 13 secs, u = 6
	Delhi	EN	eP	12	33	19	5180	
		E	PP		33	12		
			PPP		39	13		
		EN	ScS, PcP		41	25		
			iS		43	08		
		E	i		45	17		
		EN	ScS		46	15		
			Lq		47	07		
		N	Lr		51	04		
	Bombay	ENZ	ePKP	12	33	23	9450	
		NE	e		39	28		
			e		39	34		
		EN	PP		41	33		
			eSKS		42	41		
			e		43	34		
		ES	PPP		44	23		
		EN	PcP, PKP		45	40		
			e		46	13		
			e		49	04		
			e		51	24		
			PPS		53	22		
			e		53	30		
		E	SSP	13	00	44		
	Poona	Z	eP	12	37	37		Moderate shock
		E	iS?		43	23		
23	Delhi	Z	iP	01	36	30		Short rarefaction
23	Dehra Dun	Z	e	05	45	09		Slight
	Delhi	ENZ	iP	05	45	17		Slight, initial ground motion towards North East, compression
			i		50	55		
	Shillong	ZNE	iP	05	47	45		Slight, distant, rarefaction
26	Delhi	ENZ	iP	05	57	23		Slight, initial ground motion towards South East, compression
23	Shillong	ZNE	iP	06	42	59	240	Slight
			S _g		43	26		

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
23	Shillong	ZNE	iP ₂ S ₂	03	03	10	120	Slight
26	Visakhapatnam	NE	eP iS	12	31	13	4430	Moderate, distant
26	Delhi	ENZ	iP iS	13	11	27	1000	Slight, initial ground motion towards South East compression
23	Shillong	ENZ	iP	22	45	36		Slight, distant, rarefaction
26	Shillong	ZNE	iP	23	41	01		Slight, distant, compression
26	Delhi	Z	iP	23	42	31		Slight, rarefaction
26	Shillong	ZNE	iP	23	46	03		Slight, distant, compression
27	Delhi	Z	eP	03	43	23		Slight, distant
27	Delhi	Z EZ	eP i	13	40	43		Slight, rarefaction
	Dehra Dun	Z	eP	13	40	45		Slight
27	Delhi	Z ENZ	iP ₂ S ₂	15	43	18	20	Slight
27	Delhi	Z	iP	22	12	32		Slight, initial ground motion towards South East, rarefaction
28	Chatra	Z ZNE	iP ₂ iS ₂	00	25	23	50	Slight, rarefaction
28	Delhi	ENZ N NZ	iP i i	01	24	25		Slight, initial ground motion towards North West compression
28	Delhi	ENZ Z	eP eS	03	21	11	970	Slight, initial ground motion towards South West, compression
23	Delhi	Z	eP	12	23	57		Slight
28	Delhi	Z	eP	13	20	23		Tremor, rarefaction
23	Shillong	ZNE	iP	15	59	03		Slight, distant, compression
28	Shillong	ZNE	iP S ₂	17	15	32	130	Slight
28	Shillong	ZNE	iP S ₂	17	17	55	130	Slight
28	Shillong	ZNE	iP S ₂	17	52	20	120	Slight
29	Delhi	Z EN	iP eP	13	51	01		Slight, rarefaction



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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
29	Shillong	ZNE	iP	00	03	35		Slight, distant, compression
29	Shillong	ZNE	iP	01	29	27		Slight, distant, compression
	Delhi	Z	iP e	01	31	03		Slight, initial ground motion towards South East, compression
29	Fort Blair	ZNE	iP ₂ iS ₂	03	13	03	50	Slight
29	Epc 36.6°N, 74.2°E. Sinkiang Province, China. h about 31 km. Mag 5.5 SD 0.4 (CGS). - H = 08h 53m 48.4s.							
	Dehra Dun	ENZ	iP PP PPP Lq iS SS Lr SSS M	08	53	12	1070	Initial ground motion towards South West, rarefaction
	Delhi	ENZ EN NZ Z N E ENZ EN ENZ E	iP PP PPP i i Lq iS SS SSS M	08	53	27	1130	Initial ground motion towards South East, compression.
	Sehore	N E N	iP PP PPP iS Lq	03	57	37	1810	
	Chatra	ZNE NE E	iP PP PPP iS SS Lr PcP M Mn	03	57	38	1830	Initial ground motion towards South East and compression
	Bokaro	EN E NE E	iP PPP S SS SSS Lr M	08	58	04	2020	Initial ground movement towards South West
	Shillong	ZNE ZN	iP PP PPP S	03	53	23	2170	Compression, initial motion South.

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Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
29	Shillong contd.	ZNE	Lq M	09	02	03		
	Calcutta	E	iP iS	03	58	30	2300	
	Bombay	ENZ	iP PP PPP	03	53	31	2330	
		EN	e		59	52		
		E	e	09	00	15		
		ENZ	iS		02	23		
		EZ	SS		02	55		
		Z	SSS		03	03		
		E	Lr		03	31		
			M		04	43		
		N	A		07	01		
	Tocklai	E	eP	08	58	32		Moderate
	Poona	N	iP PP PPP	08	58	37	2380	Initial ground movement South West and compression
			iS	09	02	31		
			Lq		03	01		
			SS		03	43		
			SSS		04	09		
			Lr		04	50		
			A		09	43		
	Hyderabad	N	iP PP iS SS Lr M	03	53	52	2520	Initial ground motion towards South East.
					59	15		
				09	02	57		
					03	47		
					05	02		
					05	41		Per.=12 secs, μ = 63
	Visakhapatnam	NE	iP iS	03	59	54	2700	Distant, initial ground movement South East.
	Kodaikanal	E	eP i iS	08	58	59	4220	Initial ground movement of S phase towards West.
				09	00	53		
					04	53		
	Madras	E	iP PP PPP e PcP iS Lq SS SSS Lr M	09	59	30	3190	Initial ground movement towards West
				09	00	22		
					00	34		
					01	10		
					02	27		
					04	19		
					05	32		
					05	42		
					03	01		
					03	53		
					09	29		
	Port Blair	ZE E	iP PP	09	00	22	3310	Compression, initial ground movement towards West
					01	34		

29 Port Blair Z ePg 15 48 14 50
ZNE iSg 48 31

29 Epc 7.1°S, 81.3°W. Off Coast of Peru, h about 23 km
Mag. 6½ (Pas), 0.1 SD 0.2 (CGS). - H = 15h 30m 31.4s (USCGS).

Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
29	Kodaikanal contd.	E	e i	15	50	15		
					54	51		
	Delhi	ENZ	iPKP iPP i	15	50	19	13890	Initial ground motion South West, rarefaction
					53	52		
				13	04	18		
		NZ	SS		13	18		
		E	SSP		14	20		
		EN	SSS		19	18		
	Dehra Dun	ENZ	iPKP i PP i	15	50	19		
					51	32		
					53	53		
					13	04	10	
	Bombay	ENZ	iPKP1 PP E N EN N	15	50	23	13380	
					54	14		
					53	11		
					57	23		
					53	46		
					59	08		
					16	01	35	
					03	09		
		EN	SKSP		04	31		
			SKAS1		05	29		
		N	SKAS2		06	13		
			SKAKS1		07	34		
		EN	e		09	29		
		N	SS		13	50		
			SSP		14	38		
			e		25	42		
		E	M	13	53	24		Per.=23 secs, μ = 11
		N	M	17	00	43		Per.=19 secs, μ = 8
	Poona	N Z	ePKP1 ePP	15	50	27		
					54	25		
	Chatra	ZNE NE	iP i i	15	50	29		Distant
					54	39		
					58	41		
	Bokaro	EN NE E	iPKP PP e PPP	15	50	32		
					54	47		
					55	27		
					58	32		
	Shillong	ZNE NE	iPKP i iSKAS i M/Lq	15	50	32		Distant, rarefaction, initial ground motion towards North East.
					54	55		
					13	00	44	
					03	20		
					43	40		
	Calcutta	E	i	15	50	32		
	Hyderabad	N	iPKP e e PP PPP i i	15	50	35		
					50	43		
					53	31		
					54	47		
					58	35		
					13	08	59	
					09	47		

Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
29 contd.	Visakhapatnam	E NE	eP eS	15	50	37 55 09	2930	Moderate, distant
	Macras	E	ePKP PKP2 PAS PP SKS PPP SKAS SKAS SKSP SS SSS Lr M	15	50	42 51 19 54 22 55 00 57 48 53 38 13 01 47 02 34 05 24 14 53 21 09 45 13 53 24	17310	
	Port Blair	ZE Z E	iPAP i i e	15	50	43 52 07 53 17 55 53		Rarefaction, initial ground movement East.
29	Port Blair	E	Mn	17	04	28		
30	Shillong	ZNE	iP	00	23	13		Slight, distant, compression
	Dehra Dun	Z	iP	00	25	20		Slight, rarefaction
30	Delhi	ENZ	iP	00	25	14		Slight, initial ground motion towards North West, compression
30	Delhi	ENZ	eP	00	32	07		Slight
30	Delhi	Z	iP	01	02	35		Slight, rarefaction
30	Dehra Dun	Z EN E	eP e i	04	49 52 54	47 25 19		
30	Delhi	ENZ Z	iP i	04	50 53	07 34		Slight, initial ground motion North, East, rarefaction
	Chatra	Z	eP	04	50	47		Slight, distant
30	Shillong	ZNE	iP i	04	51 53	11 45		Slight, compression
	Bokaro	E	i(P) i	04	51 55	13 10		Slight
	Visakhapatnam	E	e e	04 05	57 01	41 19		Slight, distant
30	Shillong	ZNE	iP ₂ S ₂	09	32 32	10 22	100	Slight, rarefaction
30	Shillong	ZNE	iP	10	34	32		Slight, distant, compression
	Delhi	Z	eP	10	36	10		Tremor, rarefaction
30	Shillong	ZNE	eP	13	45	24		Slight, distant

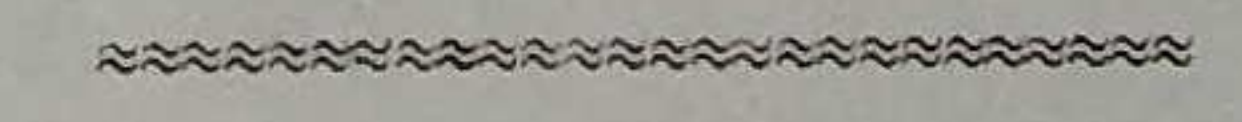


Date	Station	Compt	Phase	G h	M m	T s	Δ km	Remarks
30	Bokaro	E	iP iS	17	07	27 03 13	370	Slight
30	Shillong	ZNE	iP	19	06	23		Slight, near, compression
	Chatra	ZNE NE	iP iS ₂	19	03	44 07 18	240	Slight, compression
	Delhi	ENZ	eP	19	58	42		Slight
31	Dehra Dun	Z	eP i	08	37	02 38 53		Slight
	Delhi	N EN ENZ	iP eP e	08	37	19 29 18	1170	Slight, initial ground motion towards North.
	Chatra	Z	eP	08	33	42		Slight, distant
	Shillong	ZNE	eP	08	39	23		Slight, distant
31	Port Blair	Z	iP	09	17	03		Slight, distant, compression
31	Port Blair	Z ZNE	eP ₂ iS ₂	09	35	33 35 44	100	Slight
31	Delhi	Z	iP	10	50	20		Slight, compression
31	Delhi	Z	iP	12	55	23		Slight, rarefaction
31	Shillong	ZNE	iP	13	21	13		Slight, distant, compression
31	Chatra	Z	iP ₂ iS ₂	15	25	11 25 20	80	Slight, compression
31	Shillong	ZNE	iP	17	01	27		Slight, distant, rarefaction

Earthquake Reports
(Non Instrumental Reports)

Following is the list of earthquakes that were reported by Voluntary Observers from different stations during the month of August, 1963.

Station	Date in GMT	Time in GMT h. m.	No. of shocks	Duration in secs.	Intensity in R.F. Scale	Remarks
Shillong	08	13 13	1	3	IV	-
Gondia	11	13 50	1	-	V	-
Shillong	21	06 50	1	5	IV	-
Srinagar	21	07 23	1	5	V	-
Banihal	23	19 30	1	15	VIII	Appears to come from East.



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Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Bombay (Colaba)				
05	03	3	1.9	3.3
contd.			0.8	2.1
	12	3	1.8	3.8
			0.6	2.0
	18	3	2.0	3.9
			0.5	2.0
06	00	3	1.6	4.0
			0.8	2.0
	03	3	1.8	3.9
			0.9	2.2
	12	3	1.8	4.0
			1.3	2.7
	18	3	1.9	4.0
			1.0	2.4
07	00	3	1.9	4.0
			0.9	2.7
	03	3	1.9	4.0
			1.0	2.2
	12	3	1.9	4.0
			0.6	2.0
	18	3	2.2	4.0
			0.3	2.0
08	00	3	2.1	4.0
			0.6	2.0
	03	3	1.9	4.1
			0.7	2.0
	12	3	2.0	3.7
			0.8	2.0
	18	3	2.0	3.2
			0.7	2.0
09	00	3	2.0	4.0
			0.5	2.0
	03	3	2.0	4.0
			0.7	2.0
	12	3	2.1	3.7
			0.5	1.9
	18	Record defective		
10 to 11	Partly sticking of galvanometer.			
12	12	3	2.7	4.0
			0.7	2.0
	18	3	2.1	4.0
			0.3	2.0
13	00	3	2.1	4.3
			1.0	2.0
	03	3	2.0	4.0
			0.7	2.0
	12	3	1.9	4.1
			0.6	2.0
	18	3	1.3	4.1
			0.5	2.0

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Bombay (Colaba)				
14	00	3	1.5	4.0
			0.5	1.9
	03	3	1.3	3.3
			0.5	2.0
	12	3	1.5	2.9
			0.6	2.0
			2.0	3.7
	18	3	1.3	4.1
			0.5	2.0
15	00	3	1.5	4.0
			0.4	2.0
	03	3	1.4	3.9
			0.5	2.0
	12	3	1.5	3.9
			0.7	2.1
	18	.	.	.
16	00	3	1.5	4.2
			0.4	1.3
	03	3	1.3	3.8
			0.5	2.0
	12	.	.	.
	18	3	1.3	3.9
			0.5	2.0
17	00	3	1.2	4.1
			0.4	1.4
	03	Defective record		
	12	3	1.2	3.7
			0.4	1.4
	18	3	1.3	4.0
			0.5	2.0
18	00	.	.	.
	03	.	.	.
	12	3	1.4	4.0
			0.4	1.9
	18	3	1.4	4.2
			0.5	2.2
19	00	3	1.3	4.3
			0.5	2.3
	03	3	1.1	4.0
			0.4	2.0
	12	3	1.2	4.0
			0.4	2.0
	18	3	1.2	4.1
			0.5	2.0
20	00	3	1.1	4.0
			0.4	1.5
	03	3	1.1	4.2
			0.5	2.0
	12	3	1.1	4.2
			0.4	1.9
	18	3	1.3	4.0
			0.5	2.0

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Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Bombay (Colaba)				
21	00	3	1.2	4.2
			0.4	2.0
	03	3	1.2	4.0
			0.4	1.7
	12	3	1.1	3.7
			0.5	1.7
	18	3	1.2	4.0
			0.4	1.3
22	00	3	1.2	4.1
			0.5	1.3
	03	3	1.2	4.4
			0.4	1.6
	12	3	1.2	4.0
			0.5	2.0
	18	3	1.1	4.1
			0.7	2.0
			0.4	1.5
23	00	3	1.1	4.0
			0.7	2.9
			0.4	1.5
	03	3	1.2	3.9
			0.5	2.0
	12	3	1.4	4.0
			0.8	3.0
			0.5	2.0
	18	3	1.2	4.0
			0.5	2.0
24	00	3	1.5	4.2
			0.5	2.0
	03	3	1.4	4.0
			0.5	2.0
	12	3	1.2	4.3
			0.6	2.2
	18	3	1.1	4.0
			0.4	1.5
25	00	3	1.0	4.0
			0.5	2.0
	03	3	1.1	4.0
			0.4	1.7
	12	3	1.3	4.2
			0.5	2.4
	18	3	1.5	5.0
			0.4	1.5
26	00	3	1.0	4.0
			0.4	1.5
	03	3	1.0	4.2
			0.5	2.0
	12	3	1.2	3.8
			0.5	1.8
	18	3	1.3	4.0
			0.4	1.8

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Bombay (Colaba)				
27	00	3	1.3	3.8
			0.5	2.0
	03	3	1.2	3.9
			0.6	2.1
	12	3	1.5	3.5
			1.0	2.6
	18	3	1.4	3.6
			0.5	2.0
28	00	3	1.5	4.0
			0.4	1.4
	03	3	1.2	4.0
			0.4	1.5
	12	3	0.7	2.3
			0.4	1.4
	18	3	0.9	3.0
			0.5	1.9
29	00	3	0.9	3.0
			0.4	1.5
	03	3	1.2	3.5
			0.6	2.0
	12	3	0.9	3.0
			0.5	2.0
	18	.	.	.
30	00	3	0.7	2.2
			0.4	1.4
	03	3	0.6	2.5
			0.4	1.9
	12	3	0.7	2.2
			0.4	1.5
	18	Galvanometer partially sticking		
31	00	.	0.6	2.0
			0.7	2.6
	03	3	0.4	1.8
			0.6	2.5
	12	3	0.4	1.4
			0.6	2.0
	18	Galvanometer partially sticking.		
Station Visakhapatnam				
A Earthquake in progress.				
B Microseisms very feeble				
C Thunderstorm in progress.				
01	00	2	0.4	3.9
			0.8	4.3
	03	2	0.7	5.6
			0.6	5.1



Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec	Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Visakhapatnam									
02	00	2	0.7	5.7	13	12	2	0.7	4.2
	03	2	0.6	5.8	Contc.	13	2	0.6	4.1
	12	2	0.6	5.9	14	00	2	0.6	3.5
	13	2	0.6	5.3		03	2	0.6	3.5
03	00	2	0.5	5.7		12	2	0.7	2.9
	03	2	0.7	5.5		13	2	0.7	4.0
	12	...	A	-	15	00	2	0.3	3.7
	13	2	0.7	5.7		03	2	0.5	4.0
04	00	2	0.3	5.5		12	2	0.5	3.3
	03	2	0.7	5.3		13	...	A	-
	12	2	0.6	5.6	16	00	2	0.5	3.5
	13	2	0.6	5.2		03	2	0.7	3.7
05	00	2	0.5	3.6		12	2	0.8	3.3
	03	2	0.7	3.9		13	2	0.7	3.9
	12	2	0.5	3.7	17	00	2	0.6	3.5
	13	2	0.7	3.3		03	2	0.7	4.0
03	00	2	0.6	4.1		12	...	A	-
	03	2	0.5	3.7		13	2	0.6	3.8
	12	2	0.5	3.3	18	00	2	0.6	4.1
	13	2	0.6	3.8		03	2	0.6	3.6
07	00	2	0.8	3.3		12	2	0.3	3.3
	03	2	0.7	3.8		13	2	0.7	3.9
	12	2	0.6	4.0	19	00	2	0.5	3.9
	13	2	0.5	3.8		03	2	0.6	3.8
03	00	2	0.6	4.0		12	2	0.5	4.2
	03	2	0.8	4.3		13	2	0.6	3.7
	12	2	0.7	3.3	20	000	0,0 B	-	-
	13	2	0.8	3.3		03	2	0.6	3.8
09	00	2	0.5	3.3		12	2	0.5	4.5
	03	2	0.3	3.6		13	2	0.5	3.6
	12	2	0.3	4.2	21	00	2	0.5	3.3
	13	2	0.7	4.5		03	2	0.6	3.4
10	00	2	0.8	4.2		12	2	0.5	3.3
	03	2	0.7	3.9		13	2	0.6	3.7
	12	2	0.8	4.3	22	00	2	0.4	3.4
	13	2	0.3	4.4		03	2	0.7	3.4
11	00	2	0.7	4.0		12	2	0.6	3.9
	03	2	0.7	3.7		13	2	0.6	3.3
	12	2	0.3	3.9	23	00	2	0.5	3.7
	13	2	0.8	4.1		03	2	0.5	3.0
12	00	2	0.6	3.7		12	2	0.5	4.1
	03	2	0.7	4.3		13	2	0.4	3.5
	12	2	0.9	4.2	24	00	2	0.5	4.0
	13	2	0.3	4.3		03	2	0.5	4.1
13	00	2	0.7	4.1		12	2	0.5	4.3
	03	2	0.3	4.3		13	2	0.5	3.3



Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec	Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Visakhapatnam									
25	00	0,0	-	-	Station Madras				
	03	2	0.5	3.9	03	03	1	1.1	5.6
	12	2	0.7	3.7		12	2	0.3	2.7
	13	2	0.8	4.1		13	1	1.1	5.3
26	00	2	0.7	3.9		1	1	0.4	2.3
	03	1	1.0	4.0		3	3	0.2	1.3
	12	1	1.0	3.8	04	00	1	1.0	5.2
	13	1	1.0	3.8		1	1	0.5	2.7
27	00	2	0.8	3.9	03	03	3	1.0	5.2
	03	2	0.7	3.8		1	1	0.5	2.3
	12	2	0.6	3.3	03	03	3	1.0	5.0
	13	2	0.6	4.1		1	1	0.5	2.9
28	00	2	0.6	3.9	12	3	3	0.9	5.2
	03	2	0.6	4.0		1	1	0.6	2.9
	12	2	0.5	3.5	18	1	1	0.6	2.8
	13	2	0.5	4.0	05	00	...	No record	
29	00	2	0.6	3.7		03	...	No record	
	03	2	0.3	4.1	03	03	3	0.9	4.7
	12	2	0.6	4.1		1	1	0.8	2.9
	13	0,0	-	-	12	1	1	0.9	4.3
30	00	2	0.3	3.4		1	1	0.8	3.1
	03	2	0.5	3.9	18	1	1	0.3	4.5
	12	2	0.4	3.9		1	1	0.7	3.2
	13	2	0.3	1.3	06	00	1	0.8	4.6
31	00	2	0.5	3.6		1	1	0.7	3.7
	03	2	0.4	3.6		1	1	0.5	2.8
	12	2	0.5	4.2	03	03	1	0.9	3.3
	13	2	0.5	3.3		1	1	0.5	2.7
Station Madras									
01	00	1	1.1	5.5	03	03	1	0.3	4.0
	03	1	1.1	5.5		1	1	0.7	3.2
	03	1	1.1	5.6	12	1	1	0.4	2.8
	12	1	1.1	5.9		1	1	0.7	4.6
	13	1	1.1	5.8		1	1	0.6	3.4
02	00	1	1.1	5.3	13	1	1	0.4	2.8
	3	3	0.2	2.3		1	1	0.8	4.5
	03	1	1.1	5.6		1	1	0.7	3.5
	3	3	0.3	2.3		1	1	0.4	2.3
	03	1	1.2	5.6	07	00	1	0.8	4.5
	3	3	0.3	2.3		3	3	0.3	2.7
	12	1	1.1	5.6	03	03	3	0.8	4.4
	3	3	0.3	2.7		3	3	0.4	2.3
	18	1	1.2	5.3	03	03	3	0.9	4.5
	3	3	0.3	2.8		3	3	0.5	2.3
03	00	1	1.0	5.6	12	3	3	0.9	4.7
	3	3	0.3	2.8		3	3	0.5	2.9
	03	1	1.1	5.7	18	3	3	0.9	4.6
	3	3	0.3	2.7		3	3	0.4	2.8
	03	1	1.1	5.7	08	00	3	0.8	4.7
	3	3	0.3	2.7		3	3	0.4	2.3
	03	1	1.1	5.7	03	03	3	0.8	4.5
	3	3	0.3	2.7		3	3	0.4	2.7
	03	1	1.1	5.7	03	03	1	0.5	2.9
	3	3	0.3	2.7		1	1	0.9	4.6
	03	1	1.1	5.7		1	1	0.5	2.9
	3	3	0.3	2.7		1	1	0.9	4.6

August 1963

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Madras				
08	19	1	0.9	4.3
Contd.		1	0.5	2.9
09	00	1	0.9	4.7
		1	0.5	2.9
	02	2	0.8	4.4
		1	0.4	2.8
	03	2	0.8	4.5
		1	0.4	2.7
	12	1	1.0	4.5
		1	0.5	2.8
	18	1	0.9	4.7
		1	0.5	2.3
10	00	1	1.0	4.8
		1	0.4	2.8
	02	1	1.0	4.3
		2	0.4	2.8
	03	1	1.1	4.8
		2	0.4	2.8
	12	1	1.2	5.0
		2	0.3	2.6
	18	1	1.1	4.9
		2	0.4	2.7
11	00	1	1.1	4.9
		2	0.4	2.7
		2	0.1	1.7
	02	1	1.2	4.8
		2	0.2	2.5
	03	1	1.2	4.7
		2	0.4	2.6
	12	1	1.3	4.3
		2	0.4	2.6
	18	1	1.2	4.7
		2	0.3	2.6
12	00	1	1.2	4.6
		1	0.3	2.7
	03 to 18	No record		
13	00 to 03	No record		
	12	1	1.0	4.6
		2	0.4	2.7
	18	1	1.0	4.3
		2	0.4	2.7
14	00	1	1.1	4.6
		2	0.2	2.5
	02 to 03	No record		
	12	1	1.0	4.5
		1	0.3	2.8
	18	1	1.1	4.6
		1	0.7	2.9
15	00	1	1.1	4.2
		1	1.0	2.9

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Madras				
15	03	1	1.2	4.4
Contd.		1	1.3	2.9
	03	1	1.1	4.4
		1	1.0	3.0
	12	1	1.1	4.5
		1	0.8	2.2
	18	... Earthquake		
16	00	1	0.9	4.3
		1	0.5	2.8
	03	1	0.9	4.2
		1	0.7	2.1
	03	1	0.9	4.3
		1	0.7	2.2
	12	1	1.0	4.3
		1	0.8	2.2
	18	1	0.9	4.1
		1	0.8	2.1
		2	0.2	1.7
17	00	1	0.8	4.2
		1	0.7	2.8
		2	0.2	2.2
	03	1	0.7	4.1
		1	0.3	2.9
	03	1	0.9	4.2
		1	0.7	2.8
	12	... Earthquake		
	18	1	0.8	4.1
		1	0.4	2.8
18	00	1	0.8	4.3
		1	0.4	2.9
	03	1	0.3	4.5
		1	0.5	2.9
	03	1	0.7	4.4
		1	0.4	2.8
	12	1	0.3	4.3
		1	0.4	2.9
	18	1	0.7	4.3
		2	0.2	2.7
19	00	1	0.7	4.2
		2	0.4	2.7
	02	1	0.7	4.2
		1	0.5	2.7
	03	1	0.7	4.2
		1	0.5	2.8
	12	1	0.7	4.3
		1	0.5	2.7
	18	1	0.7	4.2
		1	0.4	2.7
20	00	1	0.7	4.4
		2	0.3	2.6
	03	1	0.7	4.3
		2	0.3	2.3



August 1963

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Madras				
20	03	1	0.7	4.2
contd.		2	0.3	2.7
	12	1	0.6	4.2
		2	0.3	2.7
	18	1	0.8	4.5
		2	0.2	2.7
21	00	2	0.3	4.5
		2	0.2	2.7
		2	0.1	1.9
	02	2	0.3	4.2
		2	0.3	2.2
	03	2	0.3	4.4
		1	0.4	2.7
	12	2	0.7	4.4
		1	0.4	2.7
	18	2	0.6	4.5
		1	0.4	2.9
22	00	2	0.3	4.9
		1	0.4	2.8
	02	2	0.3	5.0
		1	0.4	2.9
	03	2	0.3	4.9
		1	0.5	2.9
	12	2	0.7	4.8
		1	0.5	2.0
	18	2	0.3	4.9
		1	0.5	2.9
23	00	2	0.7	4.9
		1	0.4	2.8
	02	2	0.6	4.8
		1	0.5	2.9
	03	2	0.3	4.3
		1	0.5	2.9
	12	2	0.6	4.7
		1	0.5	3.0
	18	2	0.7	4.8
		1	0.5	2.9
		2	0.2	1.9
24	00	2	0.7	5.0
		1	0.3	2.1
	02	2	0.7	4.7
		1	0.6	3.0
	03	2	0.7	4.3
		1	0.5	3.0
	12	2	0.3	4.6
		1	0.5	3.1
	18	2	0.3	4.3
		1	0.6	2.1
25	00	2	0.6	4.3
		1	0.7	3.0
	02	2	0.7	4.2
		1	0.6	2.1

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
Station Madras				
25	03	2	0.7	4.3
Contd.		1	0.3	2.1
	12	2	0.7	4.1
		1	0.5	2.9
	18	2	0.7	4.0
		1	0.5	2.9
26	00	2	0.7	3.7
		1	0.5	2.7
	02 to 12	No record		
	18	2	0.8	4.0
		2	0.5	2.7
		2	0.2	1.8
27	00	2	0.7	3.9
		2	0.5	2.9
	02	1	0.7	4.2
		2	0.5	2.0
	03	1	0.8	4.2
		2	0.6	2.1
		2	0.4	2.5
	12	2	0.5	3.0
		2	0.2	2.6
	18	1	0.9	4.2
		2	0.5	2.9
		2	0.1	1.5
28	00	1	1.1	4.2
		2	0.4	2.7
		2	0.2	2.1
	02	1	1.0	4.5
		2	0.5	2.8
	03	1	1.0	4.3
		2	0.5	2.9
	12	1	0.9	4.2
		2	0.4	2.8
	18	1	0.8	4.2
		2	0.4	2.9
29	00	2	0.7	5.3
		1	0.7	2.9
		2	0.2	2.5
	02	1	0.7	4.2
		1	0.3	4.5
		2	0.4	2.9
	12	1	0.7	4.2
		2	0.3	2.7
	18	1	0.7	4.5
30	00	2	0.7	3.1
		2	0.6	4.3
		2	0.7	3.7
		2	0.3	4.3
	12	2	0.8	7.3



Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
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Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
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Station Madras

30	12	3	0.6	4.1
contd.	13	3	0.7	7.2
		3	0.6	4.1
31	00	3	0.7	7.3
		3	0.6	4.0
	03	3	0.7	6.8
		3	0.5	4.0
		3	0.3	2.7
	03	3	0.7	6.9
		3	0.5	4.0
		3	0.3	2.7
	12	3	0.7	6.9
		3	0.5	3.9
		3	0.3	2.7
	18	3	0.5	4.0
		3	0.3	2.8

Station Bokaro

09	00	3	0.5	4.7
	03	3	0.5	4.7
	12	3	0.6	4.6
	18	3	0.7	4.4
10	00	3	0.6	4.5
	03	3	0.9	4.4
	12	3	0.9	4.4
	18	3	0.8	4.3
11	00	3	0.8	5.0
	03	3	0.7	4.8
	12	3	0.7	4.8
	18	3	0.7	4.5
12	00	3	0.7	4.5
	03	3	0.6	4.3
	12	3	0.7	4.5
	18	3	0.7	5.0
13	00	3	0.7	5.0
	03	3	0.7	4.7
	12	3	0.7	4.3
	18	3	0.6	4.6
14	00	3	0.5	4.2
	03	3	0.7	4.7
	12	3	0.5	4.4
	18	3	0.5	4.2
15	00	3	0.5	4.5
	03	3	0.5	4.8
	12	3	0.5	4.5
	18	...	-	-
16	00	3	0.5	4.1
	03	3	0.5	4.2
	12	3	0.4	4.2
	18	3	0.5	4.5
17	00	3	0.4	4.1
	03	3	0.4	4.1
	12	...	-	-
	18	3	0.4	4.0
18	00	3	0.3	4.5
	03	3	0.3	3.8
	12	3	0.4	4.3
	18	3	0.3	4.0
19	00	3	0.3	4.0
	03	3	0.3	4.5
	12	3	0.3	3.7
	18	3	0.3	4.2
20	00	3	0.3	4.5
	03	3	0.3	3.7
	12	3	0.4	3.9
	18	3	0.3	4.4

Station Bokaro

01	03	...	-	-
	12	3	0.7	5.1
	18	3	0.7	5.3
02	00	3	0.3	5.4
	03	...	-	-
	12	3	0.6	5.3
	18	3	0.6	5.3
03	00	3	0.6	5.3
	03	3	0.6	5.3
	12	...	-	-
	18	3	0.5	5.5
04	00	3	0.5	6.0
	03	3	0.3	5.8
	12	3	0.3	5.5
	18	3	0.5	5.4
05	00	3	0.5	5.5
	03	3	0.4	5.0
	12	3	0.4	4.3
	18	3	0.4	3.3
06	00	3	0.5	4.5
	03	3	0.5	4.3
	12	3	0.5	4.5
	18	3	0.3	4.3
07	00	3	0.6	5.2
	03	3	0.5	4.4
	12	3	0.5	4.5
	18	3	0.5	4.6
08	00	3	0.6	5.2
	03	3	0.5	4.5
	12	3	0.5	4.7
	18	3	0.4	4.5

Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
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Date	Hour GMT	K	Mean Amplitude in mm	Mean Period in sec
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Station Bokaro

21	00	3	0.3	4.4
	03	3	0.3	4.0
	12	3	0.3	4.7
	18	3	0.3	1.8
22	00	3	0.3	4.2
	03	3	0.3	4.6
	12	3	0.4	5.0
	18	3	0.3	5.0
23	00	3	0.3	5.0
	03	...	-	-
	12	...	-	-
	18	...	-	-
24	00	...	-	-
	03	3	0.3	4.0
	12	3	0.3	4.0
	18	3	0.3	4.0
25*	00	3	0.3	3.4
	03	3	0.3	3.0
	12	1	0.3	2.8
	18	1	0.3	3.0
26	00	3	0.3	3.0
	03	3	0.3	3.2

Station Bokaro

23	12	3	0.2	2.9
contd.	18	3	0.3	3.0
27	00	3	0.3	2.8
	03	3	0.3	2.8
	12	3	0.3	2.8
	18	3	0.3	2.8
28	00	3	0.2	2.6
	03	3	0.3	2.3
	12	3	0.3	2.3
	18	3	0.2	2.3
29	00	3	0.2	2.5
	03	3	0.2	2.7
	12	3	0.2	2.5
	18	3	0.2	2.5
30	00	3	0.1	2.6
	03	3	0.1	2.4
	12	3	0.1	2.7
	18	3	0.1	2.0
31	00	3	0.1	2.1
	03	3	0.1	2.1
	12	3	0.1	2.4
	18	3	0.1	2.2

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\* From 25th August the microseisms showed a sharp change. On check-up it was noticed that due to some unknown reason the back screw of the galvanometer was out of the groove of the base plate and that the period ( $T_g$ ) had come down to about 4.0s. It was readjusted on 1st September after which it functioned alright. Hence the microseisms from 25th to 31st may not be taken into account.

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