

Helwan Observatory, Egypt

Seismological Bulletin

July, 1957



No.	Date	Comp	Phase	G. M. S.			Per. s.	Amplitude			Remarks
				h.	m.	s.		N	E	Z	
1	1	Z	ePn	13	10	55					Very weak
		Z	eX		11	12					
2	1	Z	iP	19	39	51.0				6000	Compression
		Z	iX		40	09					
		EN	eS		47	24					
		N	eX		48	04					
		N	eX		50	10					
3	2	Z	iP	00	46	47.0				2220	Compression
		N	iS		50	27					
4	2	Z	eP	5	00	33					Very weak
		Z	eX		01	18					
		Z	eX		08	42					
5	2	Z	eP	14	27	05					" "
		Z	eX		28	34					
6	3	Z	eP	2	00	24.8					" "
7	3	Z	eX	11	27	46					" "
		N	(sn)			51					
		EN	eX		28	06					
8	3	Z	eP	12	38	08					" "
		Z	eX		42	09					
9	4	Z	iP	8	40	59.2					Compression
		Z	eX			52					
10	5	EN	iX	1	08	31.6					Very weak
11	5	Z	eIP	15	38	33.0				3720	
		Z	eX		39	24					
		Z	S		43	54					
12	5	Z	eIPn	23	37	47.7				511	
		EN	sn		38	42.7					
13	7	Z	eIP	6	01	42.2					
		Z	eX		02	08					
		Z	eX		03	06					
		Z	eX		04	12					
		Z	eX		05	06					
		N	eX			48					
14	7	Z	iP	16	30	14.3					Dilatation
		Z	eX			24					
		Z	eX			40					
15	9	Z	iP	10	10	07.0					Compression
		Z	eX			19.9					
		N	(eS)		19	57					
16	9	Z	eX	22	39	51					Very weak
		Z	eX		40	18.6					
		Z	iX			36					
		Z	iX		41	30					



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude			Remarks
				h.	m.	s.		s.	N	E	
17	10	Z	eX	9	21	50					Very weak International Seismological Centre
		Z	iX		22	54					
		N	eX		30	36					
		N	eX		38	00					
18	10	Z	eIP	23	39	39.8				1000	
		Z	eX		40	13					
		EN	S		41	23					
19	11	Z	ePn	3	39	30				444	Not felt
		EN	esn		40	18					
20	11	EN	eX	7	18	14					Very weak
21	11	Z	eX	8	05	00					" "
		EN	eX		06	51					
22	11	EN	eX	8	19	14					" "
23	11	EN	eX	19	03	42					" "
24	13	Z	eX	3	34	32					" "
		Z	eX		35	02					
		EN	eX		36	42					
25	13	Z	Pn	21	40	24.0				667	
		EN	sn		41	35					
26	14	Z	Pn	4	32	31.0				667	
		EN	sn		33	41					
27	14	Z	iP	6	43	30.0					Dilatation
		Z	eX			54					
		Z	eX		47	50					
28	14	Z	iP	8	30	40.5					Compression
		Z	eX		34	32					
29	14	Z	eP	10	02	23					Very weak
		Z	eX			40					
30	15	ENZ	eX	17	28	07					" "
31	15	Z	eP	19	12	00				1000	
		EN	S		13	43					
32	15	N	M	23	30						" "
33	16	Z	ePn	9	00	17				667	" "
		E	sn		01	27					
34	16	Z	eX	11	30	26					" "
		Z	eX		32	08					
35	17	Z	iX	11	29	29					Compression
		Z	eX		30	00					
		EZ	eX		32	00					
		EN	eX		33	00					
36	17	Z	iP	18	49	13				5945	Compression
		Z	eX			30					
		Z	PP		51	11					
		EN	eS		56	44					
37	18	Z	iPn	8	34	57.0					Compression
		Z	eX		35	48					Very weak
		Z	eX		36	14					



No.	Date	Comp	Phase	G. M. T.			Per. s.	Amplitude			Km.	Remarks
				h.	m.	s.		N	E	Z		
38	18	Z	iP	12	18	54.4					Dilatation	
39	19	Z	iP	13	14	09					Dilatation	
		Z	iX			11.4						
		Z	eX			55						
		N	(S)		24	00						
		N	eX			48						
40	19	EN	eX	16	58	49					Very weak	
41	20	Z	eX	5	13	04					" "	
		Z	eX			10						
42	20	Z	ePn	5	28	04				778	" "	
		EN	eSn		29	28						
43	20	Z	eP	10	04	43				5665	" "	
		E	S		12	00						
44	20	Z	eX	10	22	22					" "	
		Z	eX			54						
45	20	Z	P	11	25	32					" "	
46	20	Z	iP	14	20	54.8					Compression	
		Z	eX		21	05						
		Z	eX		24	12						
47	20	Z	eP	15	58	53					Very weak	
		Z	eX		59	07						
48	20	Z	eP	19	16	35.8					" "	
		Z	eX		17	06						
49	21	Z	eP	15	12	08					" "	
		Z	eX			24						
		N	eX		16	19						
50	21	Z	eX	19	56	55					" "	
		Z	eX		57	26						
51	22	Z	eIP	6	36	51.4					" "	
		Z	eX		40	02						
		Z	eX		42	09						
52	22	Z	eIPn	11	10	51.0				744		
		EN	sn		12	09						
53	23	Z	iP	00	58	36.8				9945	Compression	
		N	eSKS	1	09	12						
		N	S			27						
54	24	Z	iPn	00	23	59.5				566	Dilatation	
		EN	eSn		25	00						
55	24	E	eX	2	24	30					Very weak	
		E	eX		26	48						
		E	M	3	08							
56	24	Z	eX	11	22	04					" "	
		E	eX		25	03						
57	24	Z	iP	7	55	51.8					Dilatation	
		N	(S)	8	06	40						





No.	Date	Comp	Phase	G. M. T.			Per. s.	Amplitude			Remarks
				h.	m.	s.		N	E	Z	
8	27	Z	eX	9	19	15					Very weak
		Z	eX		20	12					
		Z	eX		21	21					
9	27	Z	eX	14	17	24					" "
		Z	eX		18	05					
0	28	Z	eX	7	11	18					" "
		Z	eX		16	34					
1	28	Z	eP	8	55	06				12780	
		Z	PKP		58	48					
		EZ	PP		59	36					
		N	eX	9	05	48					
		EN	PS	09	24						
2	29	Z	eX	1	23	33					" "
		Z	eX			57					
		Z	eX		24	13					
		Z	eX		25	15					
3	29	Z	eIP	9	31	35.8					" "
		Z	eX			51					
4	29	Z	eX	17	33	21					" "
		Z	eX			56					
		Z	eX		34	25					
		Z	eX		36	41					
		E	eX		44	06					
		E	eX		45	18					
5	30	Z	eP	1	46	45.5					" "
		Z	eX		47	12					
		E	eX		51	40					



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International  
Seismological  
Centre

No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude			Remarks
				h.	m.	s.		s.	N	E	
1	4	E EN	eX eX	1	08	00 06					Very weak
2	4	Z NE N	eiP S SKS	21	20	38.0 20 40				8390	
3	6	Z Z NE	iPn iX Sn	15	06	29.0 44 39				667	Compression
4	7	Z Z Z Z	eX iX iX eX	19	59	37 44 56 48					Very weak
5	8	Z Z NE E	iPn eX eSn eX	1	13	41.7 48 42 36				566	Dilatation
6	8	Z Z NE	eX eX eX	22	42	55 28 50					Very Weak
7	9	Z Z	eX eX	2	47	49 52					" "
8	10	Z	eiX	00	14	15.4					" "
9	10	Z Z Z Z	eiX iX eX eX	2	37	30.5 42 46 51					" "
10	10	Z Z	eX eX	4	16	07 27					" "
11	10	Z Z Z	eP eX eX	19	25	22 29 10					" "
12	10	Z Z NE	eiP PPP S	20	33	15.0 29 04				1055	
13	11	Z NE	(Pg) (Sg)	2	17	36.0 51				133	" "
14	11	Z Z Z	iP eX eX	5	32	31.0 16 37					Compression
15	11	Z E	ePn iSn	9	08	10.7 19				644	
16	11	Z Z EN	Pn P* Sn	12	13	23.7 36 29				622	



No.	Date	Comp	Phase	G. M. T.			Per. s.	Amplitude			Remarks
				h.	m.	s.		N	E	Z	
17	11	Z	eX	15	36	55					Very Weak
		Z	eX		37	06					
		E	eX		38	35					
18	11	Z	eIP	21	57	39.0					" "
		Z	eX	22	00	45					
		Z	eX		01	39					
19	13	Z	eX	12	13	01					" "
		Z	iX			13					
20	13	Z	iP	16	03	04.3					Compression
		Z	eX			07.3					
21	14	Z	iPn	2	45	58.8				655	Compression
		E	iSn		47	08.0					
22	14	Z	ePn	5	16	17.8				667	
		Z	eX			29					
		NE	Sn		17	28					
23	14	Z	Pn	8	46	31.0				655	
		Z	P*			43					
		E	Sn		47	40					
24	14	Z	ePn	9	49	09				677	
		Z	eX			17					
		E	Sn		50	20					
25	14	Z	eX	10	55	18					Very Weak
26	14	Z	ePn	14	33	59.5				667	
		Z	eX		34	08					
		E	Sn		35	09					
		E	eX			20					
27	14	Z	eX	13	46	23					" "
		Z	iX			31					
		Z	iX			44					
		Z	eX		47	29					
28	14	Z	eX	20	37	28					" "
		E	eX		39	18					
29	16	Z	eX	25	50	56					" "
		Z	eX		52	17					
		Z	eX		53	12					
		Z	eX			42					
		Z	eX		54	51					
		EN	eX		58	00					
		EN	eX		59	26					
30	17	Z	eP	7	54	51.4					" "
		N	eX		56	41					
		E	eX		57	18					
31	18	Z	Pn	3	22	57.5				655	
		E	Sn		24	06					
32	18	Z	eX	6	54	03					" "
		Z	eX			21					
33	18	Z	eIP	8	49	41.5				9780	
		N	(S)	9	00	24					



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude				
				h.	m.	s.		s.	N	E	Z	
34	18	Z	iP	21	55	15.0					10055	h = 100 Km. Compression
		Z	pP			42						
		N	SKS	22	05	32						
		N	S		06	00						
		N	PS		07	06						
35	19	Z	eX	7	26	20.5						Very weak
		Z	eX			36						
		N	eX		29	48						
		Z	eX		31	34						
36	19	Z	eiP	21	45	27.8						" "
		Z	eX			43						
37	20	Z	eP	5	07	58						" "
		Z	eX		08	04						
38	20	Z	eX	6	48	27						" "
		Z	eX		51	15						
		N	eX		05	26						
39	20	Z	eX	12	21	08.0						" "
		Z	iX		24	06						
		N	eX		40	38						
40	20	Z	iP	15	27	31.5						Compression
		Z	eX		29	00						
41	20	Z	eX	18	29	34.0						Very weak
		E	eX		31	05						
		E	eX			24						
42	20	Z	eP	22	41	18						" "
		Z	eX			25						
43	21	Z	iP	6	07	49.0						Compression
		Z	eX			57						
44	21	Z	iP	15	46	36.2						Dilatation
45	22	Z	iP	3	50	30.6						Compression
		Z	eX			50						
46	22	E	eX	10	01	05						Very weak
		E	eX		02	04						
47	22	E	eX	18	08	53						" "
		EN	eX		15	42						
48	25	E	eX	1	44	14.5						" "
		E	eX			19.5						
49	25	Z	eP	2	20	33						" "
		N	eX		29	00						
50	25	Z	iP	11	54	38.0						Compression
		Z	eX			45						
51	23	Z	eP	23	03	38.5						Very weak
52	24	Z	eP	1	21	57						" "
		Z	eX		22	11						
53	25	Z	iP	21	24	28.6						Dilatation
		Z	eX			45						



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Remarks
				h.	m.	s.			
34	26	Z	iPn	2	10	47.4		644	Compression
		Z	eX		11	06			
		Z	eSn			55			
35	26	NE	eX	6	00	56			Very weak
		Z	eX		01	17			
36	26	Z	eP	11	43	00		11780	
		Z	iPP		47	15			
		Z	SNS		53	23			
		Z	PS		56	30			
		Z	eSS	12	02	36			
		Z	SSS		06	36			
		Z	M		30				
37	26	Z	eX	14	18	30			Confused with the preceding earthquake
		Z	eX		27	30			
		Z	M	15	08				
38	27	Z	eX	11	59	48			Very weak
		Z	eX	12	00	04			
39	27	Z	iP	21	15	15.0			Dilatation
		Z	iX			25.0			Very weak
		Z	iX		17	33.4			
		Z	iX			39.6			
40	28	Z	Pn	5	08	18		600	" "
		Z	eX			20			
		Z	Sn		09	21			
41	28	Z	eX	8	39	10			" "
		Z	eX			40			
42	29	Z	eX	9	26	29.8			" "
		Z	eX		27	08			
43	29	Z	eX	14	21	37			" "
44	30	Z	iP	16	24	54.4			Compression
		Z	iX		25	05.7			Very weak
		N	eX		30	30			
		N	eX		33	00			
45	30	Z	eIP	20	16	13.5			" "
		Z	eX			31			
46	31	Z	eIP	1	51	54.0			" "
		N	(S)		56	21			
47	31	Z	eIP	11	59	13.0			" "
		Z	eX			32			
		NE	eX	12	01	33			



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No.	Date	Comp.	Phase	G.	M.	T.	Per.	Amplitude			Dist. Km.	Remarks
				h.	m.	s.		s.	N	E		
1	1	Z EN	eX SN	1	58 59	16 25						Very weak
2	1	Z Z	eP eX	12	57 59	00 25						" "
3	1	Z EN N Z Z	eX eX eX eX eX	16	46 46 50 51	46 25 18 24 15						" "
4	2	Z Z	eX eX	3	45 46	44 06						" "
5	2	Z Z	eX eX	5	58	03 32						" "
6	2	Z	eIP	1	10	16.8						" "
7	2	Z Z Z Z	ePKP iX iX PP	10	06	20.8 29.4 39 15				17000		" "
8	2	Z Z Z	iP eX PP	14	33 37	46.8 59 45				10780		Compression Very weak
9	2	Z Z Z N N Z	eP PP PP eX eX eX	21	34 35 47 50 51	00 33 10 33 18 30				3720		h=200 Km.
10	3	Z Z	eP eX	14	14 16	45 32						Very weak
11	3	Z Z Z	iP iX iX	14 15	59 01	14.8 26.6 39						Dilatation Very weak
12	3	Z Z Z	eP eX eX	20	48 53 54	50 24 30						" "
13	4	Z	eP	00	47	11.5						" "
14	4	Z	eX	4	46	57.8						" "
15	4	Z Z Z	eX eX eX	8	13 14 18	46 26 27						" "
16	5	Z	eX	4	15	58.0						" "
17	5	Z Z	eX eX	7	31 38	18 00						" "



No.	Date	Comp.	Phase	G. M. T. Per.				Amplitude			Dist. Km.	Remarks
				h.	m.	s.	s.	N	E	Z		
18	5	Z	iP	11	40	34.9				2165	Dilation	
		Z	iX		42	11						
		N	S		44	12						
		N	iX		46	54						
19	7	Z	P	10	20	9.2				10445	Very weak	
		Z	PP		24	00						
		N	SKS		30	42						
20	7	NE	eX	19	45	26.4					" " (Near)	
21	9	Z	PKP	9	20	24				17000	" "	
		Z	PKS		24	04						
22	11	N	eX	17	42	44.6					" "	
		N	eX		43	13						
23	11	Z	PKP	23	42	04				17335	" "	
		Z	eX			13.4						
		Z	PKKP			29						
		Z	PP		46	02						
24	12	Z	ePn	00	13	14				777	" "	
		EN	eSn		14	24.7						
		E	eX			28						
25	12	Z	eX	00	46	04					" "	
		Z	eX			13						
		N	eX		52	42						
26	12	Z	ePn	00	59	46				766	" "	
		N	sn	01	00	56						
		N	eX		01	17						
27	12	Z	ePn	17	23	35.0				788	" "	
		N	eSn		24	47.6						
28	14	ZN	eX	00	56	54					" "	
		Z	eX		57	24						
29	15	Z	P	04	54	20.0				9110	" "	
		Z	eX		55	17					h=300 Km.	
		Z	PP			30						
		Z	eX		37	09						
		N	S		44	00						
30	15	Z	P	22	20	55.0				10555	Very weak	
		Z	eX		21	08						
		Z	PP		24	48						
		N	SKS		31	30						
		N	eX			42						
31	17	E	eX	20	29	15					" "	
		Z	eX			29						
32	19	NE	eX	10	34	26					" " , very near.	
33	20	Z	P	2	22	17.6				1220	Very weak	
		Z	ePP			24.0						
		E	S		24	22						
		E	SS			56						
34	20	Z	eX	14	51	40					" " , (Near)	
		NE	(sn)		52	19						
35	20	Z	Pn	22	22	19.2				799	" "	
		Z	eX			29						
		N	sn		23	43						



No.	Date	Comp.	Phase	G.M.T			Per.	Amplitude			Dist.	Remarks
				h.	m.	s.		s.	N	E		
36	21	Z	iP	20	19	34.4				1220	Dilatation	
		N	S		21	39						
		Z	SSS		22	12						
		N	eX			24						
37	23	Z	eX	04	15	29					Very weak	
		N	eX		23	18						
38	23	Z	eX	19	04	15.0					" "	
		Z	eX			26						
39	24	Z	ePn	8	12	7.8				477		
		ZR	eX			14						
		EN	isn			59						
40	24	Z	eP	8	34	20				10055		
		NE	SKS		44	52						
		N	S		45	14						
41	25	Z	P	6	00	56				6500	" "	
		NE	S		09	00						
42	25	Z	P	16	49	49.0				10220	" "	
		NE	S	17	00	48						
43	25	Z	iP	22	30	17.0					Dilatation Very weak	
44	25	Z	P	23	46	45.8					" "	
45	26	Z	P	2	45	16.0						
46	26	Z	iPKF	12	22	33.5					Dilatation Very weak	
47	26	Z	P	18	59	53.5						
		Z	iX	19	00	12						
48	27	Z	eX	4	21	53					" "	
		Z	eX		22	04						
		Z	eX		25	39						
		Z	eX			45						
		N	eX		23	08						
49	27	Z	iP	5	11	18.2					Compression Very weak	
		Z	eX		14	29						
50	27	Z	eX	6	14	15					" "	
51	27	Z	eX	11	30	24					" "	
		Z	eX			43						
52	27	Z	eX	14	33	30					" "	
		Z	eX		34	02						
53	27	Z	P	19	20	24					" "	
		Z	eX			37						
54	28	Z	iP	00	39	31.0				8390	Compression	
		Z	eX			49.5						
		Z	eX		41	13						
		EN	is		49	12						
		EN	SKS			30						





No.	Date	Comp.	Phase	G. M. T.			Per.	Amplitude			Dist.	Remarks
				h.	m.	s.		s.	N	E		
54	28	Z	iPKP	14	38	44.0				16665	Dilatation h=650 Km.	
		Z	PPKP		41	12						
		E	eX		42	04						
		E	FP			36						
		EN	iX		48	30						
		E	eX		52	22						
		Z	PSKS			30						
55	29	Z	P	2	28	21.2					Very weak	
		Z	eX			54						
56	29	Z	Pn	4	04	43.3				622	" "	
		NE	eSn			05 49						
57	29	Z	iPKP	8	32	07.0				16665	Dilatation, very weak h=600 Km.	
		Z	iX			15						
		Z	iX			23						
		Z	PPKP			34 26						
		Z	FP			35 54						
58	29	Z	eip	13	43	23.2					compression Very weak	
		Z	eX			35.0						
59	30	Z	eP	14	36	39					" "	
		Z	eX			51						
		Z	eX			37 04						
60	30	Z	eX	17	17	34.5					" "	
		Z	eX			18 18						
		Z	eX			48						
61	30	Z	eX	18	59	35					" "	
		Z	eX			50						

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No.	Date	Comp.	Phase	G. M. T.			Per.	Amplitude			Dist. Km.	Remarks
				h.	m.	s.		N	E	Z		
1	1	Z	P	2	25	44.4						Very weak
		Z	eX		28	22						
2	2	Z	eipn	00	47	34.9				688		
		NE	sn		48	46.4						
3	2	Z	eip	11	37	14.0						" "
4	2	Z	eip	12	40	48.0				9780		" "
		Z	FP		44	15						
		Z	eX			35						
		N	S		51	34						
		ZN	eX		52	06						
5	2	Z	ip	13	13	48.2						Dilatation, very weak
6	2	Z	epn	14	39	31.3						Very weak
		NE	eX		40	50						
7	2	Z	ip	20	55	36.6						Dilatation, very weak
		Z	ix			54						
8	2	Z	P	21	07	48.8						Very weak
		Z	eX			58						
		N	eX		15	12						
9	4	Z	eX	1	20	16.0						" "
		Z	eX			29						
10	4	Z	ip	5	38	58.0				9890		Compression
		Z	FP		42	31						
		NE	S		49	45						
		Z	PS		50	52						
11	5	Z	ipn	11	38	15.0				655		Dilatation
		EN	sn		39	24						
12	5	Z	epn	15	53	16				644		
		Z	P*			27						
		NE	sn		54	22						
13	6	Z	oP	10	31	21.0						Very weak
		Z	eX			29.5						
		EN	eX		32	54						
14	6	Z	ip	21	40	34.8						Dilatation, very weak
		Z	eX			43.5						
15	7	Z	oP	1	02	24.0						Very weak
		Z	eX			28						
		Z	eX		04	34						
16	7	Z	ip	13	32	34.8				9720		Compression, very weak
		N	S		43	15						
		N	eX			26						





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No.	Date	Comp.	Phase	G. M. T.			Per.	Amplitude			Dist.	Remarks
				h.	m.	s.		s.	N	E		
17	7	Z	iPKP	17	07	34.0					Dilatation, very weak h=650 Km.	
		Z	iX			44						
		Z	pPKP		10	03						
18	8	ENZ	eX	13	04	5.6					Local, very weak (not felt)	
		N	eX			11						
19	10	Z	iPKP	4	05	38.9					Dilatation, very weak h=650 Km.	
		Z	iX			48						
		Z	pPKP		08	09						
20	11	Z	P	19	48	30					Near, very weak	
		Z	eX			44						
		Z	eX		50	05						
21	12	Z	iP	19	09	39.0				9245	Compression, very weak	
		E	S		20	00						
22	13	Z	eP	4	32	02				10000		
		NE	SKS		42	33						
		NE	S			54						
23	14	Z	Pg	21	20	17.5					Strongly felt in Cairo	
24	14	Z	iPg	21	32	45.8				41	Compression, Probably replica	
		NE	Sg			50.4						
25	15	Z	iPg	00	09	48.9				41	Dilatation, not felt, replica AZ.=56° N.E.	
		NE	isg			53.6						
26	15	N	eX	1	32	54.8						
		Z	eX		35	15						
27	16	Z	iPg	10	29	23.8				75	Compression, not felt. AZ.=63° N.E.	
		NE	isg			32.6						
28	17	Z	eX	14	38	03					Very weak	
29	17	Z	iP	14	46	15					Compression, very weak	
		Z	eX		48	03						
30	17	Z	eP	17	45	09.8					Very weak	
		Z	eX			15						
31	18	Z	eX	00	44	34					" "	
		Z	eX			49						
32	18	Z	P	1	53	31.0				1200	" "	
		Z	eX		54	12						
		E	S		55	34						
		Z	eX		56	39						
33	18	Z	eP	3	54	26					" "	
34	18	Z	eX	5	08	10					" "	
		Z	eX			19						
		Z	eX			28						
35	18	Z	eX	14	28	28					" "	
		Z	eX			41						
36	19	Z	eX	3	17	02					" "	
		NE	eX			46						



No.	Date	Comp.	Phase	G. M. T.			Per.	Amplitude			Dist.	Remarks
				h.	m.	s.		s.	E	N		
37	19	Z	eX	4	35	42					Very weak	
		Z	eX		34	15						
		EN	eX			50						
38	19	Z	iP	18	40	56.0				8665	Compression	
		Z	PP		45	50						
		Z	eX		45	54						
		N	S		50	50						
		NE	SKS		51	08						
39	19	Z	eIP	21	54	22.6				9445	h=150 Km.	
		Z	PP		55	00						
		NE	S	22	04	34						
40	20	Z	P	12	15	37.2				7890	Very weak	
		Z	iX			45						
		EN	eS		24	54						
41	21	Z	iP	14	35	40.0					Dilatation, very weak	
42	23	Z	iP	6	10	21.6				9555	Compression, very weak	
		N	eS		20	56						
43	24	Z	eP	2	35	40.6				1077		
		Z	eX			45						
		Z	PP			58						
		N	S		37	32						
44	24	Z	PKP	9	26	20				16665	Very weak	
		Z	iX			29					Dilatation	
		Z	iPKP			41					Compression	
		Z	PPIP		28	50					h=550 Km.	
		Z	PP		30	15						
45	24	Z	P	22	04	06					Very weak	
		N	eX		19	54						
		N	M		50							
46	25	Z	P	2	21	24.5				1220		
		N	S		23	29						
		N	eX		24	24						
47	25	Z	eIP	6	31	15.8					Very weak	
		Z	eX			25.0						
48	25	Z	P	7	44	29.5				4290		
		Z	iX			34.8						
		NE	eS		50	27						
		NE	iX			34						
49	25	Z	eX	8	28	42					Very weak	
		Z	eX			49						
50	25	Z	iP	10	16	15.0				9555	Compression	
		Z	iX			52						
		N	SKS		26	36						
		N	S			48						
		N	(PPS)		28	06						
51	25	Z	eX	10	50	19					Very weak, near	
		Z	eX			35.6						
		Z	eX		51	10						
		Z	eX			17						



No.	Date	Comp.	Phase	G. M. T.			Per.	Amplitude			Dist.	Remarks
				h.	m.	s.		s.	N	E		
52	26	Z	ePKP	8	45	00				16665	h=650 Km	
		Z	iX			7.5						
		Z	PKKP			21						
		Z	PPKP		47	28.5						
53	26	Z	eip	14	29	42.8				9610		
		Z	PP		33	05						
		E	eS		40	18						
		E	ePS		41	18						
54	27	Z	iP	22	44	58.5				9390	Compression	
		Z	iX		45	36						
		Z	PP		48	16						
		E	eX		55	12						
		E	PS		56	18						
55	28	Z	iPg	15	01	17.2					Compression (Tura Blast)	
56	29	Z	eP	2	34	18				9665	Very weak	
		Z	PP		37	43						
57	30	Z	epn	1	44	36				655		
		ZN	Sn		45	45						
58	30	Z	P	2	26	38.8					Very weak	
		Z	eX			52						
59	30	Z	Pn	2	57	32.5				733	" "	
		Z	(Pg)		58	12						
		Z	eX			17						
		Z	eX			35						
		Z	(Sn)			50						
60	30	Z	ePn	7	31	51.0				688		
		Z	eX		32	09						
		N	ign		33	03						
61	30	Z	eX	11	49	53					" "	
		Z	eX		50	43						
		Z	eX		51	51						
62	30	Z	Pn	18	05	24.2				677		
		Z	Sn		06	35						
63	30	Z	eX	20	35	38					" ", near	
		Z	eX		36	50						
64	31	Z	eX	1	23	8.5					" " "	
		Z	iX			14						
65	31	Z	eX	2	49	32						
		Z	eX			51						
		Z	eX		50	08						
66	31	Z	ePKP	10	26	43				12220	Very weak	
		E	eX		36	00						
		E	PS			42						

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No.	Date	Comp	Phase	G.	M.	T.	Per.	Amplitude	Dist.	Remarks			
				h.	m.	s.					s.	Km.	
1	1	Z	Pn	20	58	49.4			667				
			eX								59	06	
			Pg									16	
			Sn								21	00	00
2	2	Z	ePn	5	35	30			500	Very weak			
			P*									40	
			Sn									36	23
3	2	Z	eX	10	23	46				" "			
			eX									24	58
4	2	Z	eP	16	30	05				" "			
5	2	Z	eX	18	13	26				" "			
			eX										42
6	2	Z	PXP	18	49	48.0			15000	" "			
			PP									52	28
			PKS									53	19
7	3	Z	iPn	9	57	52.5			788	Compression			
			eX									58	15
			Sn									59	14
8	3	Z	Pn	14	05	42.7			667	Very weak			
			eSn									06	53
			Sg									07	31
9	3	Z	eX	23	03	17				" "			
			eX										25
10	4	Z	(Pn)	2	24	40.4			610	" "			
			(Sn)									25	45
11	4	Z	eX	11	23	05.8				" " (Near)			
			eX									24	18
12	4	Z	eX	19	52	14.3				" " "			
			iX										30
13	4	Z	eX	23	15	52				" " "			
			iX									17	04
14	6	Z	P	13	25	42.6				" "			
15	6	Z	eX	22	01	47.0				" " "			
			eX									02	07
			eX									03	12.5
			eX										30
16	7	Z	eiPKP	3	18	42.0				" "			
			eX									19	11
17	7	Z	P	22	24	04				" "			
			eX									25	08
			eX									28	11
			eX										40



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist.	Remarks
				h.	m.	s.				
18	8	Z NE	ePn Sn	8	08 09	03 14.0		677		
19	8	Z NE	Pn Sn	18	18 19	28.0 39		677		
20	9/10	Z EZ Z	P S eX	23 24	58 00 01	35.0 41 24		1235		
21	10	Z Z N	PKP eX eX	2 3	55 56 15	22.4 57 00			Very weak	
22	10	Z Z Z Z	eX iX eX eX	5	48 49 50	08 33.4 20 21			" "	
23	10	Z Z	Pn eSn	6	04 06	55.7 03		633	" "	
24	10	Z N N	ePKP eX eX	6	08 16 24	43 30 42			" "	
25	10	Z Z	ePn eSn	6	43 44	14.8 25		667	" "	
26	10	Z N	P S	19	32 43	54.4 30		9500	" "	
27	12	Z Z NE	eP eX (S)	22	00 04	14.6 22.5 24		2600	" "	
28	13	Z NE	ePn Sn	3	26 27	38 46		544		
29	13	Z Z Z	iPKP PP PPP	17	42 46 50	34 35 06		17110	Compression	
30	14	Z Z E Z	Pn eX eSn eX	10	42 43 44	33.6 50.5 42 30		644		
31	14	Z E	Pn Sn	11	43 44	19 24		610		
32	14	Z Z N	P PPP S	14	19 20 22	54.0 12 20		1445		
33	15	Z Z N	eIP PP S	8	05 08 15	15.0 48 58		9780		
34	15	Z E	ePn Sn	15	31 32	11 22		677		
35	15	Z E	ePn Sn	15	50 51	37 46		655		
36	15	Z N N N	iP (SKS) S PPS	16	43 53 55	12.0 30 42 06		9520	Compression	





No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist. Km.	Remarks
				h.	m.	s.				
59	15	Z E E	ePn eX eX	17	57 58	07 12 24			Very weak	
60	16	Z Z E E	Pn eX Sn S*	9	56 57 58	41 56 52 12		677	" "	
61	16	Z N Z	eX eX eX	10	25 35	30 09 33			" "	
64	17	Z Z Z Z	iP pP eX S	6	09 11 13 19	42.0 06 00 32		9335	Compression h = 350 Km.	
65	17	Z NE	ePn Sn	19	53 54	42 54		688	Very weak	
66	17	Z NE	Pn Sn	20	26 27	04.0 14.5		667		
67	17	Z Z E E	ePn iX (Sn) eX	23	47 48 49	49 05.5 56 04		633	" "	
68	18	Z Z N Z	eiP eX eX eX	3	05 06 12 13	33.8 08 28 00			" "	
69	19	E E	eP eX	16	26	06 18			" "	
70	19	Z Z ZNE	Pn eX Sn	20	09 10	31.9 52 40		644		
71	19	Z E	ePn Sn	20	37 38	34 43		644		
72	20	Z Z Z N N N	P eX PP SKS SKKS PS	12 13	53 54 57 04 06	53.0 06 48 28 48 36		10665		
73	21	Z EN	Pn Sn	13	30 31	43 52.0		655		
74	22	Z Z	eP eX	16	25	12 21			" "	
75	23	Z Z N	P eX SKS	1	12 22	06.0 16 40		10665	" "	
76	23	Z Z	iP eX	22	23 24	54.4 08			Compression	
77	25	Z Z	eX eX	20	46 48	55 06			Very weak	



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist.	Remarks
				h.	m.	s.				
3	25	Z	iP	22	47	46.5		9535	Compression	
		Z	eX		49	36				
		Z	PP		51	05				
		N	S		58	18				
9	26	Z	eX	1	47	33.7			Very weak	
		Z	eX		48	37				
0	26	Z	eX	1	54	39			" "	
		Z	iX		55	10				
1	26	Z	iP	5	22	47.4		9555	Compression	
		Z	PP		26	09				
		Z	eX		28	15				
		EN	S		33	18				
		E	PS		34	18				
2	26	Z	eip	8	18	14.6		1290		
		Z	PP			29				
		EN	S		20	24				
3	26	Z	eip	11	49	12.0			Very weak	
4	26	Z	eP	11	52	56		1280		
		NE	S		55	02				
5	27	Z	iP	3	10	55.0		1300	Compression	
		ZN	S		13	04.5				
6	28	Z	PKP	21	09	39		15445	Very weak	
		Z	eX		12	27				
		E	PKS		13	12				
7	29	Z	Pg	1	08	36.4		75	Not felt	
		NE	Sg			46.4				
8	29	Z	Pg	9	02	47.8		10	Tura Blast	
		NE	Sg			49				
9	29	Z	Pg	9	09	48.7		10	" "	
		N	Sg			50				
0	29	Z	Pn	12	47	35		667		
		NE	Sn		48	45				
1	29	Z	eP	22	33	40.0		11890	h = 250 Km.	
		Z	PP		34	38				
		Z	iX		38	00				
		N	iX		39	00				
		N	SKS		43	57				
		N	S		45	20				
2	30	Z	iP	2	07	30.0			Dilatation	
		Z	eX		08	20				
3	30	Z	ePn	2	25	55.8		655		
		E	Sn		27	05				
4	30	Z	eP	22	07	00			Very weak	
		N	eX		17	42				



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No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist.	Remarks
				h.	m.	s.				
1	1	Z	eP	1	13	18			Very weak	
2	1	Z	eiP	1	21	52.5			" "	
3	2	Z	Pn	5	50	21.0		810		
		Z	Sn		52	05				
4	4	Z	eX	00	40	18.0			" "	
		Z	eX			28.5				
		Z	eX			38				
5	4	Z	iP	3	47	15.0		5980	Compression	
		N	S		54	48				
6	4	Z	P	13	29	49.5			Very weak	
		Z	eX		30	48				
		N	eX		37	39				
7	5	Z	Pn	11	26	07.0		677		
		ZN	Sn		27	18				
8	5	Z	Pn	11	48	37.0		667		
		E	Sn		49	46.8				
9	5	Z	Pn	13	56	58.0		667		
		NE	Sn		58	08				
10	5	Z	Pn	19	44	37.0		655		
		NE	isn		45	46				
		E	is*		46	08.5				
11	6	Z	Pn	00	13	23		667		
		E	Sn		14	33.5				
12	6	EZ	eX	8	53	25			" "	
13	9	Z	eiP	22	20	17.0			" "	
14	10	Z	ePKP	14	54	56		13555	" "	
		Z	FP		56	35				
		E	ePS	15	06	30				
15	11	Z	iP	22	04	51.8			Dilatation	
16	12	Z	PKP	18	57	42		15055		
		Z	PP	19	00	23				
17	13	Z	iP	1	48	30.0		1610	Compression	
		E	PP			41				
		E	S		51	12				
18	13	Z	eX	4	20	11.0			Very weak	
		E	eX		25	03				
		E	eX			44				
19	13	Z	eP	10	02	27.5		1055	" "	
		Z	PPP			44				
		E	S		04	14				
		E	SS			26				



No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist.	Remarks
				h.	m.	s.				
20	13	Z	eP	20	39	53		10445	Very weak	
		Z	eX		40	04				
		N	SKS		50	30				
		N	SKKS			42				
21	14	Z	eX	00	22	53			" "	
		Z	eX		27	49				
		Z	eX		28	00				
22	15	Z	eX	14	51	45			" "	
		Z	eX		52	12				
23	15	Z	eX	18	38	09			" "	
		Z	eX			39				
		Z	eX		39	24				
24	16	Z	eX	2	42	55			" "	
25	16	Z	eX	4	05	17			" "	
		Z	eX			28				
26	16	Z	eX	11	30	30			" "	
27	16	Z	ePn	14	34	05		655	" "	
		N	eSn		35	14				
28	16	Z	ePn	15	02	02		655	" "	
		N	sn		03	12				
29	16	Z	eiP	17	34	04.4			" "	
		N	eX		38	36				
30	16	Z	eP	23	08	59.0				
		Z	eX		09	08				
		N	iX		13	59				
31	17	Z	iP	5	22	56.7		9610	Compression	
		Z	eX		23	09				
		N	S		33	32				
		N	eX		34	12				
		N	eX			48				
32	17	Z	PKP	14	09	16.0		15110		
		Z	eX			25				
		Z	PP		12	00				
		N	eX		13	00				
		N	SS		29	57				
33	18	E	eX	12	14	22			Very weak	
		NZ	eX			24				
		Z	eX			49.5				
34	18	Z	eP	13	25	35.0			" "	
		Z	eX		30	39				
35	19	Z	eX	16	02	05.3			" "	
36	20	Z	eX	11	42	30			" "	
		Z	eX			37				
37	23	Z	eiP	12	43	41.4		6220		
		Z	eX		44	12				
		N	S		51	30				
		N	eX		57	30				
38	23	N	eX	21	39	49			" "	
		N	eX		40	06				
39	24	Z	ePn	12	12	52		733		
		N	sn		14	09				





No.	Date	Comp	Phase	G. M. T.			Per.	Amplitude	Dist.	Remarks
				h.	m.	s.				
40	25	Z	P	11	30	05.0			Very weak	
		N	eX		34	45				
		Z	eX		35	10				
41	25	Z	P	13	54	50.6			" "	
42	25	Z	P	16	38	54.5		9890	"	"
		NE	S		49	42				
		N	eX		50	00				
		N	eX			36				
43	25	Z	eX	20	43	58			" "	
44	26	Z	PKP	12	29	04.9			"	"
		Z	eX			12.7				
		Z	(PKKP)			26.8				
		Z	eX		30	16				
45	26	Z	P	15	04	18.0			"	"
		Z	eX			28.8				
		E	eX		06	18				
46	27	Z	eX	15	13	31.3			"	"
		Z	eX			45				
47	28	NE	M	15	49				" "	
48	28	Z	PKP	19	21	18.2			"	"
		Z	eX			27.0				
		Z	(PKKP)			41				
49	30	Z	P	14	10	41			"	"
		Z	eX			50				
50	31	Z	eX	10	30	42.2			"	"
		Z	eX			52				
51	31	Z	PKP	14	47	42.7		15780	"	"
		Z	PP		50	51				
		Z	PKS		51	14				
		Z	eX		59	34				