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The Seismological Bulletin of Pakistan is a monthly publishing data of seismological stations in Pakistan.

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Particulars of Stations and Instruments

(a) Stations

Station	Symbol	Latitude	Longitude	Height (a.s.l.)	Ground
Quetta	Qt	30° 11'·3 N	66° 57'·0 E	1719 meters	Cretaceous Limestone
Lahore	Lh	31° 33'·0 N	74° 20'·0 E	210 "	Alluvium
Karachi	Kr	24° 49'·8 N	67° 02'·2 E	30 "	Alluvium
Chittagong	Ch	22° 21'·5 N	91° 49'·0 E	15 "	Alluvium
Warsak	Wr	34° 09'·0 N	71° 25'·0 E	343 "	River Terrace

(b) Instruments

Instruments	Components	Period Seismo. & Galvo.	Damping	Max. Magnification
Quetta (Central Station)				
Sprengnether	Z	1·9 sec.	Critical	5,500
"	N	1·95 "	"	4,500
"	E	1·95 "	"	5,800
"	N	15·8 "	"	15,000
"	E	16·5 "	"	16,000

(Contd).

Instruments	Components	Period Seismo. & Galvo.	Damping	Max. Magnification
Willmore	Z, N & E	{ Seismo = 1 sec. Galvo = 1/4 "	—	—
Milne-Shaw	E	12.0 sec.	20:1	250
Sprengnether Pen recorder	E	1.0 "	—	—
Lahore Sprengnether	Z	1.8 "	Critical	4,900
"	N	1.7 "	"	4,200
"	E	1.6 "	"	4,100
Karachi Sprengnether	Z	1.8 sec.	Critical	5,890
"	N	1.6 "	"	4,700
"	E	1.4 "	"	4,700
Chittagong Sprengnether	Z	1.7 "	Critical	5,200
"	N	1.8 "	"	5,700
"	E	1.5 "	"	3,600
"	N	7.0 "	"	6,600
Willmore	Z	{ Seismo = 1 sec. Galvo = 1/4 "	—	—
Warsak Sprengnether	N	2.0 sec.	Critical	4,000
Willmore (with Sprengnether galvo. & recorder)	Z	1.0 "	—	—

* indicates long period seismographs, Sprengnether or Milne-Shaw.
 c=compression, d=dilatation, X=unidentified phase.
 Mu=Actual ground motion of the indicated phase in microns.
 Sec=Period of the indicated phase in seconds
 (Pas), (Berk), (Up), (Ki) stand for seismological observatories Pasadena (U.S.A.),
 Berkley (U.S.A.), Uppsala (Sweden) and Kiruna (Sweden) respectively.
 All times are in Greenwich Mean Time.

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		ePZ	02	04	49		Lh	ePZN	06	40	d
1	Ch	ePZ	02	49	58		Wr	iPZ			40 d
	Qt	ePZ		51	49		Qt	ePZ			07 16 d
		USCGS H 02 41 37						eSNEN*			16 20
		35 N 140 1/2 E						USCGS H 13 56 08			
		Near east coast of						50 1/2 N 160 E			
		Honshu, Japan						Off east coast of			
1	Kr	ePZ	07	22	12			Kamchatka			
		iSE			29	1	Qt	ePZ	21	45	15
	Qt	ePnZ			23 07	2	Qt	ePKPZ	06	48	58
		eSnNE			24 04			USCGS H 06 29 52			
		eS*ZE			25			33 1/2 S 179 W			
		eSgN			34			Kermadec Islands			
		H 07 21 47						region			
		Mekran coast				2	Ch	iPZE	08	19	00
		West Pakistan					Qt	ePZ			20 54
1	Qt	ePZ	12	06	53			USCGS H 08 10 15			
		eSN*			12 37			39 N 140 E			
		eLN*			15.2			Near west coast of			
	Wr	ePZ	07	14		2	Ch	ePZE	23	47	34
	Ch	ePZ	09	53				ePPZE			49 07
		ePPZ			12 11			ePPPZ			32
		USCGS H 11 59 34						eSE			53 36
		35 N 23 1/2 E					Wr	ePZ			50 14
		Near west coast of					Qt	ePZ			41
		Crete						USCGS H 23 40 01			
1	Ch	iPZE	14	06	12 c			2 N 126 E			
		iXZE			25			Molucca Passage			
		ePcPZE			07 01	2	Ch	ePZE	23	55	39
		ePPZE			08 23			ePPZE			51
		eSZE			14 18			ePPPZE			56 01
		ePSE			29		Wr	ePZ			57 43
		eScSE			15 59		Qt	ePZ			58 23
								eLN*			00 04. 9

Date	Station	Phase	h	m	s
		USCGS H 23 51 57			
		34½ N 104½ E			
		Kansu Province			
		China			
3	Wr	iPZ	00	45	03 d
	Qt	ePZ			36 d
3	Ch	ePKPZ	02	38	51
	Wr	ePKPZ			39 50
	Qt	ePKPZ			55
		ePPZE			41 37
		USCGS H 02 20 55			
		37 S 179 E			
		Off coast of North			
		Island, New Zealand			
	Qt	ePZ	12	03	43
		USCGS H 11 50 48			
		5 S 153 E			
		Near Britain region			
3	Ch	ePZE	12	57	17
		eSE			13 03 57
3	Qt	ePZ	12	58	52
		USCGS H 12 48 53			
		43 N 138½ E			
		Off west coast of			
		Hokkaido, Japan			
3	Ch	ePE	13	39	36
		ePcPE			40 01
		ePPE			42 07
		ePPPE			43 47
		eSE			48 38
		ePSE			49 01
		ePPSE			11
	Wr	ePZ			41 24
	Qt	ePZ			41

Date	Station	Phase	h	m	s
		USCGS H 13 28 29			
		7 S 154½ E			
		Solomon Islands			
		depth slightly			
		greater than normal			
3	Qt	ePKPZ	14	47	44
		USCGS H 14 28 39			
		19 S 173½ W			
		Tonga Islands			
3	Ch	ePZ	18	05	23
		USCGS H 17 53 03			
		19½ S 169½ E			
		New Hebrides Islands			
4	Ch	ePZE	03	57	2
		iXZE			38
		ePcPZE			50
		ePPZE			59 48
		ePPPZE	04	01	23
		eSZE			06 09
		ePSE			31
		ePPSE			39
		eScSE			07 13
	Lh	iPZ	03	58	55 c
	Wr	ePZ			59 12 c
	Kr	ePZ			22
	Qt	ePZ			30 c
		iXZ			46
		ePPZNEN*	04	03	00
		ePPPNEF*			04 58
		eSKSZNE			09 56
		eSKKSZNEN*	10	06	
		eSNE			13
		iScSNN*			27
		ePSNE	11	24	
		ePPSE			49

Date	Station	Phase	h	m	s
		eSSN			16 10
		eLN*			23.1
		USCGS H 03 46 30			
		4½ S 153½ E			
		New Ireland region			
		Mag 6½-6¾ (Pas)			
4	Qt	ePZ	07	10	32
		eSN*			13 03
		eSSN*			19
		eLN*			13.7
	Wr	ePZ			10 58
	Ch	ePZ			13 57
		USCGS H 07 07 20			
		Southern Iran			
4	Ch	ePZE	09	38	11
		ePcPZE			35
		epPZ			41
		esPZE			56
		ePPZE			40 41
		eSE			46 58
		esSE			47 53
	Lh	ePZ			39 49
	Wr	ePZ			40 00
	Qt	ePZ			17
		esPZ			51
		eSKSN*			50 37
		eSN*			51 01
		esSN*			40
		epPSN*			52 26
		esPSN*			48

Date	Station	Phase	h	m	s
		USCGS H 09 27 23			
		5 S 154 E			
		New Ireland region			
		depth about 100 km			
4	Lh	iPZ	10	21	54 d
		iSN			22 45
	Wr	ePZ			21 59
	Qt	ePZ			23 07
		esPZNE			23
		iSNE			24 55
	Kr	iPZ			23 55
		eSE			26 17
		H 10 20 49			
		35½ N 77 E			
		Kashmir			
		depth about 100 km			
		USCGS H 10 20 39			
		35½ N 78 E			
		Northern India			
		depth about 100 km			
4	Ch	ePZE	11	12	10
		ePcPZE			40
		ePPZE			14 38
		eSZE			20 59
	Qt	ePZ			14 19
		USCGS H 11 01 18			
		4½ S 153½ E			
		New Britain region			
4	Ch	iPZE	16	58	56 c
		eXZE			59 06
		ePcPZE			17 00 22
		ePPPZE			01 31
		e(S)ZE			05 56

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
	Lh	ePZ	00	07				USCGS H 20 57 55			
		e(S)N	08	09				39½ N 142½ E			
	Wr	iPZ	00	11	c			Near coast of			
	Qt	ePZ	47	c				Honshu, Japan			
		eXZN	01	02		5	Qt	ePKPZ	02	22	21 c
		ePPZNE	03	03				eXZ	23	13	
		ePPPZ	04	29				USCGS H 02 02 14			
		i(S)NEN*	09	30				37 S 95½ W			
		iScSN*	10	35				South Pacific Ocean			
		eXN*	12	39							
	Kr	ePZ	01	05		5	Ch	ePZ	05	50	40
		eSE	10	05				ePcPZE	51	10	
								ePPZE	53	09	
								ePPPZE	54	45	
								eSZE	59	31	
							Lh	ePZ	52	20	
								eXZ	49		
4	Qt	ePKPZ	20	56	11		Qt	ePZ	47		
								eXZN	53	20	
								eSKSE	06	03	17
								eSKKSN*	26		
								eSN*	36		
								eSSN*	09	33	
								eLN*	16	0	
								USCGS H 05 39 46			
								4½ S 153½ E			
								New Britain region			
						5	Qt	ePZ	08	53	06
								USCGS H 08 43 36			
								32½ N 131½ E			
								Near coast of			
								Kyushu, Japan			
						5	Qt	ePZ	22	10	26



Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
6	Ch	ePZE	17	03	35 d			iSN	23	40	
		ePPZE		42			Kr	iPZ	16	47	d
		eSZE	05	20				epPZ	18	43	
		eSSE		33				iSE	23	57	
	Qt	ePZ	06	03			Qt	iPZE	16	55	d
		ePPZ		23				ePcPZ	17	38	
		ePPPZ		34				epPZ	18	51	
		eSN*	09	53				ePPZ	19	15	
		eLN*	11	3				esPE	48		
								cXZE	20	41	
								ePPPZE	51		
								esPPZE	20	00	
								iSNEN*	24	11	
								Mu Sec			
								PZ 0.6 1.5			
								Δ = 58.°5			
								USCGS H 10 07 50			
								5 N 123 E			
								Celebes Sea			
								depth about 600 km			
								Mag 5.6 (Qt)			
						7	Qt	ePKPZ	11	35	57 d
								USCGS H 11 16 54			
								15½ S 173½ W			
								Samoa Islands region			
						7	Ch	ePZ	22	44	35
								USCGS H 22 33 46			
								6 S 148½ E			
								New Britain			
						8	Ch	ePZ	04	16	30
								eSZE	25	32	
								USCGS H 04 05 30			
								Solomon Islands			

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
8	Ch	ePZE	09	30	33		Kr	ePZ			05
		ePcPZE		57				esPZ			46
		epPZE	31	03				eSE		59	05
		ePPZE	33	06			Ch	ePZE			22
		eSE	39	20				esPZE	19	00	15
		esSE	40	16				eSE		03	23
	Qt	ePZ	32	40				H 18 54 33			
		epPZ	33	10				35½ N 70½ E			
		USCGS H 09 19 45						Hindukush			
		5 S 155 E						depth about 150 km			
		Solomon Islands						USCGS H 18 54 23			
		depth about 100 km						36½ N 70½ E			
8	Kr	ePKPZ	13	04	53			Afghanistan			
		ePKSZ	08	22				depth about 150 km			
	Qt	ePKPZ	04	56		8	Qt	ePKPZ	19	25	25
		ePPZ	07	37			Ch	ePKPZ		26	02±
		ePKSZNE	08	39				USCGS H 19 06 16			
	Ch	ePKPZE	05	10				8½ S 74½ W			
		ePKSZE	08	46				Peru			
		ePPPE	11	35				depth about 200 km			
		eSKSZE	12	16		9	Qt	ePZ	02	05	22c
	Lh	ePKPZ	05	18±				USCGS H 01 54 05			
		USCGS H 12 45 34						6½ S 129½ E			
		58 S 67 W						Banda Sea			
		Drake Passage				9	Ch	ePZ	03	10	35
8	Ch	ePZ	14	22	17		Qt	ePZ		12	44
		USCGS H 14 11 16						USCGS H 02 59 42			
		Solomon Islands						5 S 155 E			
8	Lh	ePZ	18	55	48			Solomon Islands			
		eSN		56	40	9	Qt	ePZ	11	19	31
	Qt	ePZ		04	c	9	Ch	iPZE	12	04	25o
		esPZN*		42				ePPZE		06	10
		iSNN*		57	15			ePPPZE			46

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		eSZE	10	56				eSE	10	33	
		ePSE	11	04				ePSE		40	
	Lh	ePZ	06	35	c			ePKPPKPZ	35	40	
		eSN	14	56			Lh	iPZ	06	15	c
	Kr	ePZ	06	59	c			eSN	14	34	
	Qt	ePZ	07	11	c		Wr	iPZ	06	33	c
		iXZE		25			Kr	ePZ		35	c
		ePcPZ		40				ePPZ	08	59	
		ePPZN	09	37				eSE	15	27	
		ePPPE	11	12				ePKPPKPZ	35	21	
		ePcSZN*		41			Qt	iPZ	06	47	c
		eSNEN*	16	03				ePcPZ	07	20	
		ePSN*		28				iPPZN	09	19	
		iScSN*	17	03				ePPPZE	10	54	
		eSSN*	20	28				ePcSZN	11	19	
		eLN*	24	3				iSN*	15	37	
		Mu Sec						ePSE	16	08	
		PZ 0.5 1.5						ePPSE		18	
		Δ=67°4						eScSNE		44	
		USCGS H 11 56 12						ePKPPKPZ	35	10	
		4 S 128 E						Mu Sec			
		Banda Sea						PPZ 0.8 2.0			
		Mag 6.5 (Qt)						Δ=67°4			
9	Ch	ePZE	16	45	01			USCGS H 23 55 49			
	Qt	ePZ		47	25			4 S 128 E			
		USCGS H 16 34 45						Ceram			
		6 S 147 E						Mag 6½-6¾ (Pas),			
		Near north coast of						6.8 (Qt)			
		New Guinea				10	Ch	iPZE	00	04	01c
10	Ch	iPZE						ePZ	01	23	56
		iXZE						ePZ		26	42
		ePPZE		05	44			ePcPZ		27	09
		ePcPZE		48				ePPZ		29	10
		ePPPZE		06	22						

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		USCGS H 01 15 44 3½ S 128 E Ceram				11	Ch	iPnZ ePgZ eSnZE eSgZE	02	06	40 c
10	Ch	ePZE ePcPZE ePPZE ePPPZE cSE ePSE ePPSE	02	07	17		Qt	ePZ ePPZ ePPPZ			
		USCGS H 01 59 05 3½ S 128 E Ceram						H 02 05 56 East Pakistan-Burma border			
	Kr	ePZ ePcPZ	09	51		11	Qt	ePZ USCGS H 08 28 58 6 S 155 E Solomon Islands depth about 100 km	08	42	23
	Qt	ePZ ePcPZ ePPPZ	10	20	04 c						
10	Wr	iPZ ePZ epPZ esPZ	15	57	32	11	Qt	ePKPZ epPKPZ esPKPZ ePPZE ePKSZ ePKPZ	13	13	27 c
	Qt				48 c		Wr				
		USCGS H 15 44 54 4½ S 154½ E Solomon Islands region depth about 100 km					Lh	iPKPZ			43
10	Qt	ePZ	22	03	40			USCGS H 12 53 59 34 S 70½ W Chile depth about 100 km			
		USCGS H 21 50 45 3½ S 151½ E Bismack Sea				11	Qt	iPgZ iSgZN H 14 40 09 Quetta, Baluchistan slightly felt	14	40	12.1 c
10	Qt	ePKPZ	23	38	55						14.0
		USCGS H 23 19 55 15½ S 173 W Samoa Islands region				11	Lh	ePZ	21	09	46
							Wr	ePZ			57
							Qt	ePZ			10 15

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		USCGS H 20 56 08 11½ S 166½ E Santa Cruz Island						Qt	ePZ		49 22
11	Lh	ePZ	21	35	25			USCGS H 09 36 46 52½ N 169 W Fox Islands Aleutian Islands			
	Qt	ePZ			36 20						
11	Wr	iPZ	22	26	25 d	13	Ch	iPZ ePPZ ePcPZ ePPPZ eSZ	15	48	51 d
		iSZ			54						
	Lh	ePZ			27 05		Wr	iPZ iSZ			51 26 d
	Qt	ePZ			30		Kr	ePZ ePcPZ ePPZ eSE iPZ ePcPZ ePPN iSNEN* eXN* iScSN* eSSN* eLN*			51 36 d
		esPZ			28 18						52 10
		eSNE			51		Qt				53 52
		H 22 25 46 36 N 71¼ E Hindukush depth about 220 km									59 53
12	Qt	ePZ	01	42	43						51 43 d
		USCGS H 01 29 42 4½ S 153½ E New Irelands									52 18
12	Ch	ePZ	08	02	05						54 02
	Wr	ePZ			11						16 00 07
	Qt	ePZ			03 02						31
12	Wr	ePZ	11	48	51						01 26
	Qt	ePZ			50 01						04 09
12	Lh	ePN	13	06	37						07.4
		eSN			07 29						
	Qt	ePZ			37						
		eS E			09 17	13	Qt	ePKPZ			20 59 20
		H 13 05 27 Kashmir						USCGS H 20 40 06 17½ S 70 W Peru depth about 150 km			
13	Ch	ePZ	09	48	48						
		ePcPZ			56						
		ePPZ			51 46	14	Ch	ePZ			12 53 33 d

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		ePPZ			41			USCGS H 22 17 54			
		eSZ			55 20			52 N 171½ W			
Lh		ePZ			56 41			Fox Islands			
Qt		ePZ			57 26			Aleutian Islands			
	H 12 51 14					15	Qt	ePKPZ	07	55	25
	13 N 94¼ E							eXZ		58	15
	Andaman Islands							ePKSZ			59
	USCGS H 12 51 15						Ch	ePKPZ		55	52
	Andaman Islands							ePKSZ		59	24
14	Qt	ePKPZ	15	58	49			USCGS H 07 36 08			
	USCGS H 15 39 43							12 N 87 W			
	29 S 177 W							Nicaragua			
	Kermadec Islands					15	Qt	ePKPZ	22	37	32
14	Qt	ePZ	19	38	34			USCGS H 22 18 27			
	USCGS H 19 28 59							29½ S 176½ W			
	Indian Ocean							Kermadec Islands			
	about 800 miles south										
	east of Mascarene					16	Qt	ePKPZ	01	28	34
	Islands							USCGS H 01 09 29			
14	Ch	ePZ	20	41	37			29½ S 176½ W			
		ePcPZ			42 07			Kermadec Islands			
		ePPZ			44 08	16	Ch	ePZ	05	09	11
	Qt	ePZ			43 46			ePcPZ			10 32
	USCGS H 20 30 44							ePPZ			11 11
	5 S 154½ E						Qt	ePZ			39
	Solomon Islands							USCGS H 05 00 14			
14	Qt	ePZ	21	15	40			18½ N 146 E			
	USCGS H 21 04 36							Mariana Islands			
	18½ N 145½ E					16	Qt	ePKPZ	05	40	47
	Mariana Islands							USCGS H 05 21 52			
	depth about 200 km							32½ S 179½ W			
14	Ch	ePZ	22	29	47			Kermadec Islands			
		ePcPZ			59	16	Ch	ePZ	10	46	27
14	Qt	ePZ	30	23				ePPZ			49 00
								ePPPZ			50 36

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		eSZ			55 28			ePPPZN*	13	00	26
	Qt	ePZ			48 33			eSKKSZN*		03	29
		USCGS H 10 35 22						eSKSPN*		07	04
		6½ S 154½ E						ePPSN*		10	08
		Solomon Islands						eSSN*		16	55
16	Qt	iPgZ	11	48	05.3 c		Qt	ePKP1Z	12	52	24
		iSgN			19.9			ePKP2Z		54	18
		H 11 47 43						ePKSZN*		55	55
		Near Sibi						ePPZN*		58	03
		Eastern Baluchistan						eSKSNE		59	22
16	Qt	ePZ	15	16	36		Kr	ePKPZ	52	27±	
		USCGS H 15 06 14						USCGS H 12 32 10			
		36 N 141½ E						30 S 112½ W			
		Off east coast of						Easter Islands region			
		Honshu, Japan						Mag 6½ (Pas)			
17	Lh	ePZ	08	06	46						
		eSN			07 51	17	Ch	ePZ	16	36	30
	Qt	ePZ			20		Qt	ePZ			38 04
		eSNE			08 50			USCGS H 16 27 40			
	Kr	ePZ			23			43½ N 145½ E			
		eSE			10 42			Near east coast of			
	Ch	ePZ			18			Hokkaido, Japan			
		ePPZ			44	17	Ch	ePZ	16	59	32
		eSZ			14 14			ePcPZ			17 00 26
		H 08 05 23						ePPZ			01 41
		36½ N 72 E						ePPPZ			03 01
		Pakistan-Afghanistan						eSZ			07 26
		border					Qt	ePZ			01 59 c
17	Ch	ePKP1Z	12	52	12			eSN*			12 12
		ePKP2Z			42			eScSN*			25
		ePKSZ			55 43			USCGS H 16 49 42			
		ePPZ			56 43			5 S 142½ E			
		eSKSZ			59 17			New Guinea			

Date	Station	Phase	h	m	s
18	Lh	ePZ	02	00	11
	Qt	ePZ			54
		eSNE	02	11	
	Kr	ePZ	01	54	
		ePPPZ	02	08	
		eSE	03	54	
		eSSE	04	06	
		H 01 59 13			
		34 $\frac{3}{4}$ N 72 $\frac{1}{4}$ E			
		Sawat,			
		West Pakistan			
18	Wr	iPZ	11	51	39 c
	Qt	ePZ	52	53	
		eSNE	54	11	
		H 11 51 11			
		Pakistan-Afghanistan			
		border			
18	Wr	iPZ	18	21	35 d
	Qt	ePZ	22	32	
		eSZN	23	50	
		H 18 20 50			
		Hindukush			
18	Ch	ePZ	20	35	14
	Lh	ePZ	37	08	
	Wr	iPZ	42		
	Qt	ePZ	38	20	
		eSN*	43	00	
		H 20 32 30			
		China-Burma border			
		USCGS H 20 32 40			
		China-Burma border			

Date	Station	Phase	h	m	s
18	Ch	ePZ	21	45	18
	Lh	ePZ			35
	Qt	ePZ	46	15	
	Kr	ePZ			39
		USCGS H 21 35 11			
		52 $\frac{1}{2}$ N 160 E			
		Near east coast of			
		Kamchatka			
18	Ch	ePZ	22	33	09
		ePcPZ			19
		ePPZ	41	04	
	Lh	ePZ	38	14	
	Qt	ePZ			44
	Kr	ePZ	39	05	
		USCGS H 22 26 10			
		52 N 170 W			
		Fox Islands			
		Aleutian Islands			
19	Qt	ePZ	05	21	57
		USCGS H 05 09 23			
		60 $\frac{1}{2}$ N 151 W			
		Kenai Peninsula			
19	Wr	iPZ	10	37	38
	Lh	iPZ	38	16	
		eSN	39	16	
	Qt	iPZ	38	37	
		i'sPZN	39	23	
		i'sSN*			53
		Mu Sec			
		PZ 7-1 1-2			
		$\Delta=6^{\circ}7$			
	Kr	ePZ	10	39	38
		esPE	40	29	
		i'sE	41	46	
		Mu Sec			
		PZ 3-3 1-0			
		$\Delta=11^{\circ}4$			
	Ch	iPZN*	41	41	c
		ipPZN*	42	22	
		iPPZN*	28		
		ePPPZ*	39		
		isPZN*	50		
		iXN*	45	16	
		iSN*	38		
		isSZN*	46	54	
		H 10 37 00			
		35 $\frac{3}{4}$ N 71 E			
		Hindukush			
		depth about 230 km			
		USCGS H 10 36 46			
		36 N 70 $\frac{1}{2}$ E			
		Hindukush			
		depth about 200 km			
		Mag 6 $\frac{3}{4}$ (Qt, Kr)			
		Felt Warsak,			
		Peshawar, Rawalpindi,			
		Kohat, Chaklala,			
		Sargodha, Lahore &			
		Kakul			
19	Qt	ePZ	16	48	20
		eSNE	49	31	
		H 16 46 47			
		Hindukush			
20	Ch	ePZ	14	37	14
		ePcPZ	38	02	
	Qt	ePZ			14
		USCGS H 14 27 10			
		52 N 159 E			
		Near east coast of			
		Kamchatka			
20	Qt	ePZ	23	32	04 d
		eSZNE	33	17	
	Kr	eSZ	35	11	
		H 23 30 28			
		Hindukush			
21	Qt	ePKPZ	01	05	45
		epPKPZ	06	01	
		ePPZ	07	18	
		USCGS H 00 46 56			
		42 S 173 E			
		South Islands,			
		New Zealand			
		depth about 60 km			
21	Qt	ePZ	01	15	51
21	Qt	ePZ	08	22	44
		ePcPZ	23	58	
		ePPZE	24	43	
		eSEN*	30	14	
		eScSN*	32	26	
		eSSN*	33	54	
		eLN*	35	7	
	Ch	ePZ	25	22	
		ePcPZ	37		
		iXZ	27	51	
		ePPZ	28	11	
		ePPPZ	30	03	
		eSN*	35	05	
		USCGS H 08 13 31			
		36 N 4 $\frac{1}{2}$ E			
		Northern Algeria			

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
21	Qt	ePZ	09	34	20			depth about 150 km			
		ePPZE			53			USCGS H 23 25 43			
		ePPPZN		35	04			40½ N 72 E			
		eSN*		38	25			Kirghiz, S.S.R.			
		iLN*		39	0	22	Qt	ePKPZ	01	12	20 c
	Kr	ePZ		34	51			ePPZ		13	55
	Ch	ePZ		37	40			USCGS H 00 54 30			
		ePPZ		39	25			20 S 178½ W			
		ePPPZ		40	12			Fiji Islands			
		eSZ		44	23	22	Wr	depth about 600 km			
		USCGS H 09 29 15						iPZ	01	39	20 d
		38 N 42 E						iSZ			53
		Turkey						ePZ		40	12 d
21	Qt	ePZ	17	34	25		Qt	eSN		41	28
		USCGS H 17 21 59				22	Qt	H 01 38 35			
		52 N 175 W						Hindukush			
		Aleutian Islands						ePZ	05	26	56
21	Kr	ePZ	22	53	40			USCGS H 05 17 18			
	Qt	ePZ			47			71½ N 2½ E			
		USCGS H 22 43 11				22	Qt	Jan Mayen Islands			
		2½ N 128½ E				22	Qt	region			
		Halmahera						ePZ	05	38	51
21	Wr	iPZ	23	27	20 c			ePZ	05	40	50
		iSZ		28	33			USCGS H 05 28 19			
	Lh	ePZ		27	56			51½ N 175 W			
	Qt	ePZ		28	21 c	23	Wr	Aleutian Islands			
		esPZE			59			iPZ	02	10	32 d
		eSZN		30	22			iSZ		11	03
	Ch	ePZ		31	10			ePZ		12	
		ePPZ			48			eSN		12	07
		ePPPZ			58			ePZ		11	32 d
		eSZ		35	32			isPEN*		12	18
		H 23 25 46						iSNEN*		50	
		40½ N 72 E						ePZ		34	
		Kirghiz, S.S.R.						esPZ		13	21
								eSE		14	41
								ePZ		38	
								eSZN		18	36

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		H 02 09 52						eLN*			31.4
		36 N 71 E					Kr	ePZ			19 22
		Hindukush						USCGS H 08 10 28			
		depth about 200 km						23½ N 121½ E			
		USCGS H 02 09 42						Formosa			
		36 N 70 E				23	Ch	ePZ		09	31 43
		Afghanistan					Qt	ePZ			33 48
23	Qt	ePZ	07	41	56			USCGS H 09 23 37			
		ePPE		43	28			34½ N 139½ E			
		ePPPNE			52			Honshu, Japan			
		ePcPZNE		44	10			depth about 100 km			
		eSNEN*		47	58			ePKPZ		11	49 04
		eLN*		50	7	23	Qt	eXZ			51 20
	Kr	ePZ		42	24			USCGS H 11 31 04			
	Ch	ePZ		44	51			19 S 178 W			
		ePcPZ		45	33			Fiji Islands			
		ePPZ		47	08			depth about 500 km			
		eSZN*		53	12	23	Ch	ePZ		16	15 55 c
		USCGS H 07 34 30						ePcPZ			16 24
		39 N 20 E						ePPZ			18 21
		Greece						ePPPZ			20 01
23	Ch	ePZ	08	16	19			eSZN*			24 47
		iXZ			27		Qt	ePZ			17 56 c
		ePPZ		17	06			eXZ			18 10
		ePPPZ			19			eSKSN*			28 28
		eSZN*		20	58			eSN*			52
		eSSZN*		22	15			ePPSN*			30 31
	Qt	ePZ		19	17 c			eSSN*			34 54
		ePcPZE		20	39			eLN*			42.8
		ePPZNE		21	09			USCGS H 16 04 50			
		eSN*		26	20			6 S 154½ E			
		eSSN*		29	48			Solomon Islands			
								Mag 6-6¼ (Pas)			

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
24	Ch	ePZ	08	53	33			iPSN*	02	40	
		USCGS H 08 41 00						iXN*			
		17½ S 168 E						iSSN*	07	41	
		New Hebrides Islands						ePKPPKPZ	15	32	
24	Qt	ePZ	19	00	27			Mu Sec			
		ePPZNE			58			PZ 0.8 1.8			
		ePPPZN	01	10				Δ=92°·7			
		eLN*	06	·3				USCGS H 21 37 04			
		USCGS H 18 55 20						71½ S 156 E			
		38 N 41 E						Solomon Islands			
		Turkey						Mag 6½-6¾ (Pas)			
24	Ch	iPZN*	21	48	16 c	25	Wr	iPZ	08	10	38
		iPcPZ			40			iSZ	11	01	
		ePPZN*	50	51			Lh	ePZ			21
		ePPPZN*	52	29			Qt	ePZ			37
		iSN*	57	21				eSNE	12	54	
		ePSN*	46					H 08 09 56			
		iPPSN*	58					36½ N 69¾ E			
		eScSN*	58	14				Northern Afghanistan			
		ePKPPKPZ	22	16	24	25	Ch	ePZ	12	52	20
	Lh	ePZ	21	49	53 c		Qt	ePZ			55 28
		eSKKSN	22	00	25			USCGS 12 45 44			
	Kr	ePZ	21	50	15 c			11 N 124 E			
		eSKKSE	22	01	03			Cebu,			
		eScSE			29			Philippine Islands			
	Qt	iPZ	21	50	19 c	25	Wr	iPZ	14	08	12
		iXZ			54		Lh	ePZ			50
		ePPZ	54	03			Qt	ePZ	09	14	
		ePPPEN*	56	04				esPZ			58
		eSKSEN*	22	00	55			iSZNE	10	30	
		eSKKSNN*	01	07				H 14 07 29			
		eSN*	19					36½ N 71¼ E			
		iScSN*	38					Hindukush			
								depth about 200 km			

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
25	Qt	ePZ	21	08	57	26	Ch	ePZ	23	40	59 c
		eSN*	19	45				ePcPZ			41 16
		USCGS H 20 56 05						ePPZN*			43 44
		7 S 154 E						ePPPZN*			45 26
		Solomon Islands						eSN*			50 27
		depth about 300 km						eScSN*			51 05
25	Qt	ePZ	23	42	09			ePPSN*			14
26	Kr	iPZ	01	17	37 d		Wr	iPZ	41	12	c
	Qt	iPZ			48 d		Lh	ePN			16
		ePcPZ	18	20				eSN			50 57
		eSNE	26	40				eScSN			51 22
		H 01 06 53					Qt	iPZ	41	42	c
		USCGS H 01 03 23						iPcPZNE			49
		2½ S 128 E						ePPZE			44 47
		Ceram Sea						ePPPZ			40 43
26	Ch	ePZ	02	17	46			eSNEN*			51 49
	Wr	ePZ			19 58			iScSN*			52 06
	Qt	ePZ			20 16			ePSN*			37
		eSN*			29 51			iPPSN*			49
		eScSN*			30 25			eLN*			00 03·0
		ePPSN*			52			Mu Sec			
		USCGS H 02 08 31						PZ 0.4 1.1			
		1 S 138 E						Δ=80°·8			
		New Guinea						ePZ	23	42	04
26	Ch	ePKPZ	06	50	39		Kr				
	Qt	ePKPZ			51 40			USCGS H 23 29 25			
		USCGS H 06 32 36						51½ N 178 W			
		20 S 174 W						Aleutian Islands			
		Tonga Islands						Mag 6-6½ (Pas)			
26	Wr	ePZ	10	29	15			6·3 (Qt)			
		iSZ			55						
	Qt	ePZ	30	19		26	Qt	ePZ	23	45	01 c
		eSZNE	31	49		27	Ch	ePZ			18 44
		H 10 28 22						ePcPZ			19 00
		Northern Afghanistan					Qt	ePZ			28 c
							Kr	ePZ			49

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		USCGS H	00	07	10			USCGS H	09	05	25
		51½ N 178 W						6½ S 102½ E			
		Aleutian Islands						Off south coast of			
27	Ch	ePZ	08	21	38			Sumatra			
		ePcPZ			53	27	Qt	ePKPZ	09	15	08
		ePPZ			24 23			USCGS H	08	56	00
		eSN*			31 06			30½ S 179½ W			
	Wr	ePZ			21 49			Kermadec Islands			
	Qt	ePZ	22	20	c	27	Qt	ePZ	10	46	21
		ePcPZE			27	27	Qt	ePZ	14	05	11
		ePPZN			25 26	27	Qt	ePZ	14	11	03
		eSN*			32 26			USCGS H	13	57	56
		ePSN*			33 16	27		27 S 156½ E			
		ePPSN*			34			Solomon Islands			
		eLN*			43.7			depth about 150 km			
		Mu Sec				27	Ch	ePZ	14	34	24
		PZ 0.4 1.5					Qt	ePZ			36 30
		Δ = 80°·8						USCGS H	14	23	29
	Kr	ePZ	08	22	42			7 S 156 E			
		USCGS H	08	10	03			Solomon Islands			
		51½ N 178 W						depth about 150 km			
		Aleutian Islands				27	Ch	ePZ	23	12	59
		Mag 6.2 (Qt)					Wr	iPZ			15 43
27	Ch	ePZ	09	11	43		Qt	ePZ			58
		ePPZ			12 44			ePcPZN			16 40
		ePPPZ			57			ePPZ			18 08
		eSZ			16 45			ePPPZ			19 36
	Kr	ePZ			13 56			eSN*			24 02
	Wr	iPZ	14	21	d			ePSN*			22
	Qt	ePZ			21 d			ePPSN*			32
		ePcPZE			15 43			eScSN*			25 45
		ePPZE			16 03			eSSN*			28 08
		ePPPNE			17 13			eLN*			30.8

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		USCGS H	23	05	49			USCGS H	05	22	53
		2 N 123 E						14 N 120 E			
		Celebes						Near southwest			
								coast of Luzon			
28	Qt	ePZ	09	44	45			Philippine Islands			
		USCGS H	09	34	12			depth about 150 km			
		44½ N 147½ E									
		Kurile Islands									
28	Wr	iPZ	10	08	42 d						
		iSZ			09 14						
	Qt	ePZE			40						
		eSNE			10 58	29	Ch	iPnZN*	08	35	16 c
		H 10 07 58						ePgZN*			24
		Hindukush						iSnN*			50
28	Ch	ePZ	23	15	28			eSgN*			36 01
		ePPZ			17 35		Wr	iPZ			39 33
		eSN*			23 21		Qt	ePZ			59
	Wr	iPZ	17	36	d			H 08 34 31			
	Qt	ePZ			53 d			23½ N 94¼ E			
		ePcPZ			59			Western Burma			
		ePPZE			20 55			USCGS H	08	34	30
		ePPPZE			22 51			23½ N 94½ E			
		eSN*			27 57			Western Burma			
		eScSN*			28 23						
		USCGS H	23	05	39	29	Qt	ePZ	23	04	40
		3 S 142 E				29	Qt	ePZ	23	50	55
		New Guinea						ePcPZ			51 27
29	Wr	iPZ	00	04	19			ePPZ			53 22
	Qt	ePZ			37			ePPPZ			54 55
		USCGS H	23	52	27			ePcSZE			55 32
		3 S 142½ E						eSN*			59 28
		Near north coast of						iPPSN*	00	00	03
		New Guinea						eSSN*			03 46

Date	Station	Phase	h	m	s
		Mu			Sec
		PZ	0.3		1.8
		$\Delta = 54^\circ 9'$			
Wr		ePZ	23	51	09
Lh		ePZ			25
		eSN	00	00	39
	USCGS H		23	40	12
	30 N		9 W		
	Morocco				
	Mag	$6\frac{1}{2}$ (Pas), $6\frac{1}{4}$ (Qt)			

Date	Phase	h	m	s	Date	Phase	h	m	s
	Quetta								
1	ePgZ	02	49	59	9	eSZN		06	42
	eSgNE		50	04	10	eXZ		08	24.7
1	ePZ	16	54	19	10	eXZ		17	47.3
2	ePZ	06	36	31	10	ePZ		17	50 48
2	ePZ	06	52	51	10	eSNE		51	07
3	ePZ	01	08	03	10	ePZ		23	10 31
3	ePZ	19	19	32	11	eSN			56
4	ePZ	03	58	06	11	eXZ		16	44.0
	eSN			25	11	ePgZ		19	17 49
4	ePZ	07	01	08	12	eSgN			51
4	ePgZ	10	56	33 c	12	ePZ		10	22 04
	eSgNE			37	12	eSN			29
5	ePgZ	04	15	08	13	ePgZ		10	36 47
	eSgE			20	13	eSgN			56
5	ePgZ	14	50	05	15	iPgZNE		15	08 34.7c
	eSgE			16	15	iSgNE			37.0
5	ePZ	15	22	23	15	iPgZNE		22	46 23.5d
	ePZ	16	05	20	15	iSgNE			36.2
6	cPZ	07	16	38	16	ePgZ		11	47 10
	eSNE			17 02	16	eSgNE			25
6	ePZ	12	38	42	16	iPgZ		11	48 05 c
	eSN			39 32	16	iSgN			20
7	ePgZ	14	09	12	16	ePgZ		11	50 21
	eSgNE			25	16	eSgN			34
7	ePZ	21	26	27	16	iPgZ		11	55 59
	eSN			27 10	16	ePgZ		11	57 54
7	ePZ	21	57	23	16	ePgZ		12	00 13
7	ePZ	23	07	54	16	eSgN			27
8	ePZ	04	00	17	16	ePgZ		12	02 08
8	ePZ	07	19	23	16	eSgN			23
8	ePZ	08	11	50	16	ePgZ		12	10 14
9	ePZ	03	05	41	16	eSgN			29
					16	ePgZ		13	34 01.3
						eSgE			03.8

Date	Phase	h m s	Date	Phase	h m s
16	eXZ	14 27.2	26	ePgZE	17 57 13
17	ePZ	07 15 25		eSgNE	27
	eSNE	42	27	ePZE	12 58 01
17	ePgZ	15 23 55		eSE	19
	eSgN	24 02	27	ePE	13 15 55
18	ePZ	11 05 11	28	ePgZE	00 41 10
	eSNE	06 30		eSgE	24
19	ePZ	01 27 49		Warsak	
	eSZN	28 26			
19	ePgZ	15 27 25.7	1	ePZ	07 23 23
	eSgN	27.3	1	ePZ	10 28 49
20	eXZ	14 45.5		iSZ	29 36
20	eXZ	14 55.0	1	ePZ	11 58 14
22	ePZ	01 54 09		iSZ	39
23	ePZN	01 51 53	1	iPZ	17 24 48
	eSN	52 27		iSZ	25 07
23	eXZ	07 46.0	2	iPZ	09 32 43
23	ePgZ	11 18 42	2	iPZ	11 40 27
	eSgN	44	2	iPZ	14 31 28
23	ePZ	19 56 28		iSZ	49
	eSNE	57 08	2	ePZ	14 25 44
24	ePZ	14 30 34	3	ePZ	03 39 26
24	ePgZN	17 09 14		iSZ	40 19
	eSgNE	16	3	ePZ	03 46 07
24	ePgE	18 15 11		iSZ	25
	eSgE	18	6	iPZ	12 29 57
24	ePgZ	23 17 12 d		iSZ	30 23
	eSgE	23	6	eXN	17 04 46
25	eXZ	21 12.7	7	iPN	08 20 28
26	ePgZNE	05 04 50		iSN	21 02
	eSgNE	53	7	ePN	21 25 44
26	ePgZE	07 43 07		eSN	26 00
	eSgNE	12	9	iPZ	16 16 44

Date	Phase	h m s	Date	Phase	h m s
	iSZ	17 12		iSZ	27 07
9	iPZ	18 52 15 d	24	eIZ	16 15 54
	iSZ	52		iSZ	16 30
10	ePN	00 34 58	24	ePZ	16 29 17
10	ePZ	09 28 19		iSZ	50
10	iPZ	10 43 19 c	25	ePZ	06 24 52
10	iPZ	11 41 35 c		iSZ	25 37
	iSZ	42 08	25	ePZ	20 08 19
10	iPZ	15 57 32 d		iSZ	54
11	iPZ	16 42 55 c	25	ePZ	21 40 14
	iSZ	43 32		iSZ	49
11	iPZ	17 19 50 c	25	ePZ	22 43 13
	iSZ	20 24		iSZ	49
12	ePZ	00 56 20	26	ePZ	01 17 09 d
	iSZ	54	26	ePZ	22 41 41
12	ePZ	02 08 35		iSZ	42 02
12	ePZ	04 56 35	27	ePZ	12 00 32
	iSZ	57 15		iSZ	01 29
12	ePZ	07 38 49	28	ePZ	21 30 32
	iSZ	39 06		iSZ	31 18
12	iPZ	13 06 42	29	ePZ	00 33 08
12	ePZ	14 52 19	29	ePZ	14 37 38
12	iPZ	21 09 43 d	29	ePZ	16 59 56
	iSZ	10 24		iSZ	17 00 27
13	ePZ	16 40 21	29	ePZ	19 49 40
	iSZ	41 03		iSZ	50 13
13	ePZ	20 53 46			
	iSZ	54 15		Lahore	
18	ePZ	07 28 37	1	eXN	07 26 15
18	ePZ	12 27 39	2	eXN	23 53 26
	eSZ	59	3	eXN	03 10 00
21	ePZ	20 36 16	7	eXZ	08 21 59
	iSZ	51	7	eXZ	21 26 34
24	ePZ	08 26 20	10	eXZ	01 25 49



Date	Phase	h m s	Date	Phase	h m s
10	eXZ	02 09 23	10	ePZ	22 01 10±
13	eXN	15 51 40	12	eXZ	13 11 10
15	eXN	20 10 19	14	eXZ	05 41 21
18	eXN	11 56 03	15	ePZ	04 54 58
18	eXZ	18 22 49	15	eXZ	19 35 19
21	eXN	08 30 23	16	ePZ	15 14 31±
22	eXZ	01 39 51	17	eXZ	00 19 18
26	eXN	10 30 56	18	ePZ	10 18 29
	Karachi		18	e(P)Z	19 32 24
6	iPZ	12 37 49.1 d	19	eXZ	05 21 38
	iSE	38 05.1	19	eXZ	07 11 00
7	ePZ	07 11 11.1 d	19	eXZ	16 52 2)
	eSE	31.0	20	e(P)Z	23 35 32
9	eXZ	03 05 20	21	eXZ	01 04 32
23	e(P)Z	11 57 58	22	eXZ	05 29 16
23	eXZ	16 17 41	22	eXZ	05 42 15
23	eXZ	19 58 19	23	ePZN*	09 14 02
26	eXZ	02 20 18	23	ePZ	10 42 06
29	eXZ	23 17 59	23	ePZ	16 07 32
	Chittagong		23	oPZ	19 55 23
1	ePZE	02 00 34	25	ePZ	21 07 19
2	e(P)ZE	08 20 02	26	e(P)Z	01 14 47
2	eXZ	09 14 26	27	ePZ	05 26 03
3	ePZ	00 41 54±	27	eXZ	09 05 54
3	eXE	14 46 27	27	eXZ	14 09 39
4	ePZ	10 25 12±	29	eXN*	23 55 22
5	eXZ	08 54 28			
6	ePZ	01 32 39			
7	eXZ	10 10 40			
8	eXZ	17 52 00			
9	eXZ	17 14 26			