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QUETTA





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Particulars of Stations and Instruments

(a) Stations

Station	Symbol	Latitude	Longitude	Height (a.s.l.)	Ground
Quetta	Qt	30° 11' N	66° 57' E	1721 meters	Cretaceous Limestone
Lahore	Lh	31° 33' N	74° 20' E	210 "	Alluvium
Karachi	Kr	24° 50' N	67° 02' E	30 "	Alluvium
Chittagong	Ch	22° 21' N	91° 49' E	35 "	Alluvium
Warsak	Wr	34° 09' N	71° 25' E	343 "	River Terrace

(b) Instruments

Instruments	Components	Period		Damping	Max. Magnification
		To	(Sec.) Tg		
<b>Quetta</b>					
Sprengnether	Z	1.9	1.9	Critical	5,500
"	N	51.8	15.8	"	15,000
Benioff	Z	1.0	0.77	"	2,00,000
"	N	1.0	0.76	"	2,00,000
"	E	1.0	0.77	"	2,00,000

(Contd.)

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Major Shocks



Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		Mu			Sec	4	Qt	ePKPZ	07	41	42.2
	MH	5.4			20		Wr	ePKPZ			51.0
		$\Delta = 15^\circ .3$						USCGS H 07 23 04.2			
	Wr	ePZ	25	34	.3			21.8 S 65.6 W			
	Lh	ePZ	26	09				Southern Bolivia			
	Ch	ePZ	28	54				depth about 300 km			
		H 22 21 30.0				4	Qt	ePZ	17	35	16.7
		35.4 N 49.8 E				4	Qt	ePZ	17	41	22.1
		Iran				4	Qt	ePZ	18	04	40.0
		depth about 33 km						epPZ			47.5
		USCGS H 22 21 29.5						ePcPZ			55.0
		35.8 N 50.1 E						USCGS H 17 53 27.5			
		Iran, Felt Tehran						3.8 S 131.4 E			
		depth about 36 km						Ceram Islands region			
		Mag 5.3 (Qt)						depth about 33 km			
2	Wr	PZ	22	46	52.0 c	4	Ch	ePZ	19	37	34 d
	Qt	ePZ			57.5		Lh	ePNE	39	51	
2	Qt	ePZ	23	40	03.0		Wr	ePZ	40	13	.3
		eSSN			43 11.0		Qt	ePZ			30.3 d
		Mu			Sec			USCGS H 19 31 31.5			
	MH	1.9			20			4.9 N 122.8 E			
		$\Delta = 15^\circ .2$						Celebes Sea			
	Wr	ePZ	40	30	.8			depth about 627 km			
		USCGS H 23 36 23.7				4	Ch	ePZ	20	34	37
		35.5 N 50.1 E					Qt	ePZ			35 49.5
		Iran, Felt Tehran					Wr	ePZ			36 01.5
		Mag 5.1 (Qt)				5	Wr	ePZ	00	06	47.7
3	Qt	ePZ	01	33	26.5			iSZ			07 22.4
	Wr	ePZ			28.8		Qt	ePZ			45.9
3	Qt	ePZ	22	12	04.5			eSN			09 05.7
4	Qt	ePZ	00	17	05.0			H 00 06 08.0			
4	Qt	ePZ	06	25	41.0			Hindukush region			
		USCGS H 06 15 35.6				5	Ch	ePZ	00	22	41
		36.9 N 141.0 E						eSZ			24 36
		Off coast of Honshu, Japan					Lh	ePNE			03
		depth about 77 km					Wr	ePZ			26.3

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		Qt			ePZ	25	08	.1			
		epPZ			16.0			USCGS H 06 44 17.0			
		esPZ			23.1			45.6 S 73.4 W			
		ePPZ			31.2			Near coast of southern Chile			
		eSN			29 07.0	6	Qt	ePZ	09	02	36.0
		eSSSE			59.7			USCGS H 08 52 46.8			
		Mu			Sec			53.5 N 153.5 E			
		PPZ 0.05			1.0			Sea of Okhotsk			
		$\Delta = 22^\circ .3$						depth about 480 km			
		H 00 20 13.0				6	Wr	ePZ	10	23	10.6
		32.9 N 93.7 E						eSZ			44.9
		China					Qt	ePZ			24 08.5
		depth about 33 km						eSN			25 31.0
		Mag 5.3 (Qt)						H 10 22 22.0			
								Hindukush region			
5	Qt	ePZ	05	11	51.5	6	Wr	iPZ	13	24	47.1 d
6	Wr	ePZ	02	23	19.4			eSZ			25 20.4
	Qt	ePZ			52.4		Qt	ePZ			43.6
		epPZ			24 03.5			eSE			27 05.0
		USCGS H 02 13 25.1						H 13 23 59.0			
		30.7 N 142.0 E						Hindukush region			
		South of Honshu, Japan				6	Qt	ePZ	17	27	09.0
		depth about 33 km						USCGS H 17 16 08.5			
6	Ch	ePZ	04	13	42 d			55.0 N 161.7 E			
	Qt	ePZ			14 52±			Near east coast of Kamchatka			
		USCGS H 04 04 09.8						depth about 33 km			
		49.0 N 154.3 E				6	Ch	ePZ	18	03	49
		Kurile Islands					Qt	ePZ			06 32.0
		depth about 85 km						USCGS H 17 55 18.5			
6	Wr	ePZ	05	32	07.0			3.7 S 131.4 E			
		eSZ			55.2			Ceram Island region			
	Qt	ePZ			33 13.0			depth about 33 km			
		eSNE			34 58.9	6	Qt	ePKPZ	22	56	14.5 c
6	Qt	ePZ	05	42	30.5			USCGS H 22 36 45.8			
		eSN			43 46.1			34.0 S 71.1 W			
6	Qt	ePKPZ	07	03	55.5			Near coast of Central Chile			
	Wr	ePKPZ			04 09.6			depth about 88 km			











Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		ePPZ	25	09	.0			Mu Sec			
		eSKSE*	31	54	.0			PZ 0.1 1.0			
		eSN*	32	16	.0			$\Delta=37^\circ.8$			
		esSE	57	.0				USCGS H 22 55 45.8			
		Mu Sec						4.6 N 96.5 E			
		PZ 0.3 1.0						Sumatra			
		$\Delta=90^\circ.0$						depth about 138 km			
	Kr	ePZ	21	35				Mag 5.4 (Qt)			
		epPZ	22	05		13	Ch	ePZ	00	28	27
		USCGS H 10 08 48.5						ePPZ		39	
		4.8 S 153.8 E						ePPPZ		47	
		New Britain						eSN		31	06
		depth about 94 km						Wr ePZ		42.3	
		Mag 6.5 (Qt)						Qt iPZ		45.1d	
12	Qt	ePKPZ	14	15	17.0			epPZ		52.0	
		epPKPZ	28	.0				ePPZ		32	53.0
		USCGS H 13 56 32.4						ePcPZ		34	22.0
		60.3 S 25.9 W						H 00 25 03.0			
		Sandwich Island region						7.4 N 93.2 E			
		depth about 33 km						Nicobar Island			
12	Ch	ePZ	23	00	50			depth about 33 km			
		epPZ	01	09				USCGS H 10 25 02.5			
		ePPZ	13					7.2 N 93.1 E			
		ePPPE	23					Nicobar Islands			
		eSE	04	06				depth about 33 km			
		isSN	33			13	Wr	ePZ	04	33	13.3
		isSE	40				Ch	ePZ		39	
	Lh	ePZ	03	17	c			ePcPZ		44	
		eSNE	08	38				ePPZ		36	52
	Wr	ePZ	03	46	.9			eSN		43	50
		ePZ	50	.5				eScSN		44	03
		epPZ	04	19	.0			Qt ePZ		33	40.3c
		esPZ	47	.0				USCGS H 04 21 21.2			
		ePPZ	05	26	.5			63.3 N 149.7 W			
		ePcPZ	06	00	.0			South central Alaska			
		eSN	09	39	.5			depth about 47 km			



Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s	
13	Qt	ePZ	06	59	29.4c			USCGS H 22 45 28.4				
13	Ch	ePZ	08	24	16			35.2 N 28.3 E				
	Qt	ePZ	26	21	.8c			Dodecanese Island				
		esPZ	52	.0				depth about 39 km				
		USCGS H 08 13 34.4				13	Lh	ePZ	23	28	37.0	
		4.7 S 153.8 E						Qt ePZ		29	27.0c	
		New Britain						epPZ		00	00	00.1
		depth about 112 km						USCGS H 23 20 42.6				
13	Wr	iPZ	15	09	27.5d			20.4 N 122.0 E				
	Lh	ePZ			38			Batan Islands, P. I.				
		epPZ			50			depth about 147 km				
	Ch	ePZ			54d	14	Qt	ePZ	07	46	38.9	
		ePcPZ			58	14	Qt	ePZ	09	06	36.2c	
		epPZ	10	17		14	Qt	ePZ	13	11	49.5	
		esPZ	30			14	Qt	ePZ	13	16	51.6	
		ePPZ	13	13		14	Wr	iPZ	16	57	37.0c	
		eSN	20					Lh ePZ		46		
		eScSN	18					Ch ePZ		58	28 ±	
	Qt	ePZ	09	56	.7			Qt ePZ		29.5		
		ePPZ	13	21	.0			epPZ		38.5		
		USCGS H 14 57 29.9						esPZ		46.5		
		61.4 N 147.2 W						ePPZ		59	13	5
		Kenai Peninsula Alaska						eSN*		17	03	06.0
		depth about 69 km						Mu Sec				
13	Ch	ePZ	16	53	38 ±			MH 2.7 20				
	Lh	ePZ			55 50			$\Delta=27^\circ.0$				
		epPZ			58			USCGS H 16 52 49.8				
	Qt	ePZ	56	30	.0c			50.3 N 90.6 E				
		epPZ	36	.5				Outer Mongolia - U.S.S.R. border				
		USCGS H 16 45 59.1						depth about 33 km				
		2.8 N 127.9 E						Mag 5.4 (Qt)				
		Halmahera region				14	Lh	ePZ	18	11	14	
		depth about 33 km						epPZ		52		
13	Qt	ePZ	22	52	03.0			Qt ePZ		45 ±		
	Wr	ePZ			24.2			USCGS H 18 01 30.8				
	Lh	ePZ			51			43.8 N 148.3 E				
								Kurile Islands				
								depth about 125 km				







Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		ePPZ	09	32		21	Ch	ePZ	00	51	28
		ePPPZ	11	10				epPZ			48
		eSE	15	43				esPZ			52 02
		eScSE	16	43				ePPZ			53 01
Wr		ePZ	08	52.3				ePPPZ			22
Qt		ePZ	09	09.2				ePcP			41
		ipPZ		38.0				iSN			57 11
		eSN*	19	50.0				esSE			51
		USCGS H 12 56 19.7						eSSN			59 54
		4.7 S 154.0 E						eScS			01 01 28
		Solomon Islands					Lh	ePZ	00	53	39
		Felt Rabaul, Metlik						eSN	01	01	12
		depth about 98 km					Wr	iPZ	00	54	04.0
20	Qt	iPZ	02	11	46.5c			iSZ	01	01	55.0
20	Qt	ePZ	08	56	25.5		Qt	iPZ	00	54	10.0
20	Qt	ePKP	09	05	16.0			epPZ			31.0
		USCGS H 08 47 22.4						esPZ			41.0
		23.4 S 17 9.3 E						ePcPZ			55 07.0
		Fiji Islands region						ePPZ			56 21.0
		depth about 512 km						eSN	01	02	08.1
20	Wr	ePZ	15	59	41.8			esSN*			39.8
		eSZ	16	00	17.0			Mu Sec			
	Qt	ePZ		47.5				MH 17.3 20			
		eSN		01 15.0				$\Delta = 58^\circ.5$			
20	Qt	ePZ	18	22	43.5			USCGS H 00 44 19.7			
		eXZ		23 14.5				9.0 S 112.4 E			
20	Wr	ePZ	19	43	18.6			Near south coast of Java			
	Qt	ePZ		45.4				depth about 64 km			
		USCGS H 19 32 27.4						Mag 6.2 (Qt)			
		17.8 N 144.6 E									
		Mariana Islands					21	Wr	ePZ	01	23 52.5
		depth about 33 km						Qt	ePZ		24 01.9
20	Qt	ePZ	22	10	42 $\pm$		21	Qt	ePZ	01	39 13.7
21	Qt	ePZ	00	04	32.1c				USCGS H 01 26 31.5		
									4.2 S 152.9 E		



Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
		New Britain region						52.8 N 168.6 W			
		Felt Rabaul						Fox Islands, Aleutian Islands			
		depth about 150 km						depth about 33 km			
21	Ch	ePZ	02	22	48	21	Ch	ePZ	08	54	46
	Qt	ePZ		23 24.5				epPZ			56
		USCGS H 02 11 20.7						esPZ			55 00
		51.2 N 179.8 E						ePPZ			57 45
		Anderanof Islands						ePPPZ			59 34
		Aleutian Islands						eSE			09 04 36
		depth about 60 km						esSN			55
21	Ch	ePZ	06	39	46			eScS			05 00
		ePcPZ			57			ePSN			24
		ePPZ			42 02			eSSN			09 40
		ePPPZ			44 32		Wr	ePZ	08	54	50.4
		eSN			49 39		Lh	ePZ			58
		eScS			50 03			eSE			09 05 00
	Wr	ePZ	39	52.2				eZKSN			11
	Qt	iPZ	40	20.3c			Qt	iPZ	55	19.6c	
		epPZ			31.0			ePPZ			58 33.0
		esPZ			42.0			ePPPZ			09 00 24.0
		ePPZ			43 33.0			eSN			05 45.0
		eSN			50 45.1			eSKS			50.0
		eScSN*			57.0			eScS			55.0
		USCGS H 06 27 49.1						Mu Sec			
		52.5 N 168.7 W						MH 40.1 20			
		Fox Islands, Aleutian Islands						$\Delta = 84^\circ.6$			
		depth about 33 km						USCGS H 08 42 48.3			
21	Qt	ePZ	06	44	13.5			52.4 N 168.5 W			
21	Qt	ePZ	07	19	35.0			Fox Islands, Aleutian Islands			
		USCGS H 07 07 05.9						depth about 33 km			
		52.8 N 168.8 W						Mag: 6 $\frac{1}{4}$ (Brk), 6 $\frac{1}{2}$ (Pas),			
		Fox Islands, Aleutian Islands						6 $\frac{3}{4}$ (Pal), 6.6 (Qt)			
		depth about 33 km									
21	Qt	ePZ	08	46	32.0		21	Ch	ePZ	09	02 04
21	Qt	ePZ	08	49	23.5				ePcPZ		14
		USCGS H 08 36 53.9						Qt	ePZ		37.5
									USCGS H 08 50 08.2		



Major Shocks

Date	Station	Phase	h m s	Date	Station	Phase	h m s
		52.8 N 168.1 W				epPZ	51
		Fox Islands, Aleutian Islands				esPZ	56
		depth about 33 km				ePPZ	43 30
21	Ch	ePZ	09 12 40			eSN	48 25
		ipPZ	50			eScSN	51 29
		esPZ	54	Lh		ePZ	42 41
		ePPZ	15 40			eSN	50 10
		ePPPZ	17 29	Wr		ePZ	42 45.3
		iSN	22 32	Qt		ePZ	43 22.3
Wr		ePZ	12 44.1			ePPZ	45 31.0
Lh		ePZ	51			eSN	51 32.5
Qt		iPZ	13 13.7c			esSN	47.2
		USCGS H 09 00 41.4				USCGS H 09 33 15.5	
		52.4 N 168.5 W				42.4 N 142.3 E	
		Fox Island, Aleutian Islands				Near south coast of Hokkaido	
		depth about 33 km				Japan	
21	Ch	ePZ	09 22 01			depth about 27 km	
		ePcPZ	07	21	Ch	ePKPZ	10 02 23
		epPZ	10			epPKPZ	03 19
		esPZ	15			ePPZ	06 46
		ePPZ	25 00			USCGS H 09 42 46.0	
		ePPPZ	26 50			22.8 S 66.5 W	
		eSN	31 53			Bolivia - Argentina border	
		eSKSE	32 07			depth about 200 km	
		esSNE	10	21	Qt	ePZ	10 12 42.1
		eScSE	14		Wr	ePZ	44.0
Wr		iPZ	22 05.3c	21	Qt	ePZ	12 49 00.6
Lh		ePZ	11	21	Qt	ePZ	14 53 15.6
		eSKSN	32 27			USCGS H 14 40 40.3	
Qt		ePZ	22 31.7			52.6 N 168.3 W	
		eSN	33 01.4			Fox Islands, Aleutian Islands	
		USCGS H 09 10 01.6				depth about 16 km	
		52.5 N 168.5 W		21	Qt	ePZ	15 22 55.5
		Fox Island, Aleutian Islands				USCGS H 15 10 22.9	
		depth about 33 km				52.5 N 168.7 W	
21	Ch	ePZ	09 41 41			Fox Islands, Aleutian Islands	



Major Shocks

Date	Station	Phase	h m s	Date	Station	Phase	h m s	
21	Ch	ePZ	15 40 11			Mag 5.3 (Qt)		
		Lh	22	21	Ch	ePZ	18 26 41	
		Qt	46.3			esPZ	27 16	
		USCGS H 15 28 17.6				ePPZ	39	
		52.7 N 168.8 W				eSN	31 30	
		Fox Islands, Aleutian Islands		Lh		ePZ	29 05	
		depth about 49 km		Wr		ePZ	26.6	
21	Lh	ePZ	15 53 22	Qt		ePZ	52.0	
		Qt	54 07.5			USCGS H 18 20 44.7		
21	Lh	ePZ	17 48 15			15.3 N 121.7 E		
		epPZ	44			Near west coast of		
		Qt	44.5			central Luzon		
		epPZ	49 14.0			Philippine Islands		
		USCGS H 17 35 56.1				depth about 55 km		
		4.6 S 153.8 E		21	Qt	ePZ	20 39 44.5	
		New Britian region				USCGS H 20 27 13.3		
		depth about 95 km				52.4 N 168.5 W		
21	Kr	ePZ	17 50 30			Fox Islands, Aleutian Islands		
		Qt	52 19.7d			depth about 40 km		
		esPZ	30.0	21	Wr	ePKPZ	21 47 06.4	
		ePPZ	45.0		Qt	ePKPZ	15.7	
		iSN*	56 20.0			ePPZ	50 00.0	
		Mu Sec		Lh		ePKPZ	47 20±	
		PZ 0.14 1.5		Ch		ePKPZ	43	
		$\Delta = 21^\circ.6$				ePPZ	51 33	
Wr		ePZ	53 13.1			USCGS 21 27 51.6		
Lh		ePZ	15			0.9 S 80.9 W		
Ch		ePZ	54 56			Near coast of central Ecuador		
		epPZ	55 06			depth about 33 km		
		esPZ	11	21	Qt	ePZ	22 55 55.5	
		ePPZ	56 31	22	Ch	ePZ	01 05 15	
		eSN	18 00 51			ePPZ	08 46	
		USCGS H 17 47 30.8				eSKS	15 41	
		14.2 N 51.7 E				eSE	16 01	
		Gulf of Aden				Qt	ePKPZ	11 03
		depth about 27 km						



Major Shocks

Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
	USCGSH 00 52 23.4							ePPZ	11	50	0
	22.0 S 170.1 E							ePPPZ	12	51	0
	Loyalty Islands region							eSN	17	14	0
	depth about 33 km							esSN	18	11	0
22	Ch	ePZ	01	25	55			eSSN	21	30	0
	USCGS H 01 13 02.6							ePKPPKPZ	39	32	0
	22.0 S 170.1 E							Mu Sec			
	Loyalty Islands region							PZ 0.2 1.6			
	depth about 33 km							$\Delta=58^{\circ}.5$			
22	Ch	ePZ	01	41	39			USCGS H 01 59 50.3			
		epPZ		49				9.2 S 112.4 E			
		esPZ		53				Near south coast of Java			
		ePPZ		45	07			depth about 69 km			
		eSKSN		52	02	22	Qt	iPZ	06	44	23.1c
		eSE		20		22	Ch	ePZ	09	32	05
		eScSN		27			Wr	ePZ	34	49	4
		esSE		40			Qt	ePZ	35	06	6
	USCGS H 01 28 48.9							ePcPZ		43	0
	21.9 S 170.1 E							ePPZ	37	25	5
	Loyalty Islands region							USCGS H 09 24 41.5			
	depth about 33 km							0.9 N 125.8 E			
22	Ch	ePZ	02	06	59			Molucca Sea			
		epPZ		19				depth about 33 km			
		esPZ		32		22	Wr	ePZ	10	52	17.7
		ePPZ		08	32		Qt	ePZ			22.6
		eSN		12	41	22	Ch	ePZ	15	32	27
		ePcSE		13	00			ePcPZ			32
		esSN		17				ipPZ			42
	Kr	ePZ	08	21				isPZ			52
	Lh	ePZ	09	12				ePPZ			35
		eSN		16	40			eSE			42
	Wr	iPZ	09	37.1d				iSKSE			31
	Qt	iPZ		42.0d				eScSN			38
		epPZ		57.0				esSE			44
		eSPZ		10	04.0			ePSE			43
		ePcPZ		34.0			Wr	ePZ	32	30	8



Date	Station	Phase	h	m	s	Date	Station	Phase	h	m	s
	Lh	ePZ			38	23	Wr	ePZ	06	29	09.8
		eSZ*			42 37			eSZ			58.9
		eSKSN*			42		Lh	ePZ			37
	Qt	esSN			53		Qt	iPZ	30	17	1c
		ePZ			33 00.2			eSN	32	01	1
		ePcPN			05.0		Ch	ePZ			52
		epPN			15.2			H	06	28	04.0
		esPN			20.0			38.0 N 73.3 E			
		ePPZ			36 11.0			Hindukush			
		ePPPZ*			38 07.2			depth about 200 km			
		eSN			43 25.5			USCGS H 06 28 07.0			
		eScSN*			34.0			37.9 N 73.1 E			
		ePSE			44 25			Hindukush			
		eSSN*			49 02.0			depth about 196 km			
		Mu Sec				23	Qt	iPZ	07	11	52.8
		MH 33.4 20						eSN			12 30.5
		$\Delta=84^{\circ}.5$						Mu Sec			
		USCGS H 15 20 31.0						PZ 0.13 0.5			
		52.5 N 168.8 W						$\Delta=3^{\circ}.3$			
		Fox Islands-Aleutian Islands					Wr	ePZ			32.4
		depth about 47 km						Mag 4.5 (Qt)			
		Mag 6 $\frac{1}{2}$ (Pas), 6.4 (Qt)				23	Wr	ePZ	08	27	44.4
22	Qt	ePZ	15	41	09.5		Qt	ePZ	28	10	8
22	Qt	ePZ	19	18	04.5			epPZ			22.0
22	Ch	ePZ	23	38	52 $\pm$			USCGS H 08 20 09.2			
	Qt	ePZ	40	37	0			26.7 N 116.4 E			
		USCGS H 23 27 59.5						Fukien Province China			
		1.5 S 151.2 E						depth about 33 km			
		New Britain region				23	Wr	ePZ	10	30	38.0
		Felt Rabaul					Qt	ePZ	31	03	5
		depth about 105 km						USCGS H 10 21 55.3			
23	Qt	ePZ	00	51	21.0			15.3 N 121.7 E			
		USCGS H 00 43 56.3						Near east coast of Luzon			
		41.3 N 20.4 E						Philippine Islands			
		Albania-Yugoslavia border region						Felt Manila			
		depth about 33 km						depth about 52 km			



Major Shocks

Date	Station	Phase	h m s	Date	Station	Phase	h m s
23	Qt	ePZ	11 00 44.2			depth about 0 km	
23	Qt	ePZ	15 17 09.5			Mag 5.7 (Qt)	
		USCGS H 15 04 37.6		24	Wr	iPZ	17 47 45.0c
		52.5 N 168.3 W			Qt	ePZ	48 50.0
		Fox Islands-Aleutian Islands				eSN	50 15.9
		depth about 33 km		24	Wr	ePZ	20 24 12.7
23	Qt	ePZ	19 05 10.3		Qt	ePZ	25 11.3
		USCGS H 18 52 38.8				eSN	26 23.5
		52.5 N 169.0 W		25	Qt	ePZ	07 29 45.0
		Fox Islands-Aleutian Islands		25	Qt	ePKPZ	12 29 52.5
		depth about 33 km				ePKP <sub>2</sub> Z	30 57.2
23	Qt	ePZ	19 11 52.2			USCGS H 12 09 45.6	
24	Qt	ePKPZ	00 42 35.6d			36.2 S 100.2 W	
		USCGS H 00 23 53.1				South Pacific Ocean	
		59.1 S 26.0 W				depth about 33 km	
		Sandwich Islands region		25	Qt	ePZ	13 42 35.5
		depth about 33 km		25	Qt	ePZ	14 03 22.0
24	Ch	ePZ	03 50 41	25	Lh	ePZ	18 32 58
	Qt	ePZ	52 35 ±		Qt	ePZ	33 32.6c
		USCGS H 03 42 42.1		25	Qt	ePZ	20 27 15.1
		39.1 N 139.0 E		25	Qt	ePZ	21 17 59.2
		Near west coast of Honshu		26	Qt	ePZ	05 41 07.6
		Japan				epPZ	19.0
24	Wr	ePZ	03 54 09.0			USCGS H 05 28 36.7	
	Qt	ePZ	55 18.0			52.5 N 168.4 W	
		eSE	56 54.5			Fox Islands-Aleutian Islands	
24	Qt	ePZ	11 19 53.5			depth about 33 km	
		ePPZ	21 36.5	26	Wr	ePZ	06 01 29.5
		ePcPZ	40.0		Qt	ePZ	02 22.9
		ixZ	55.8			eSN	03 39.3
		Mu Sec		26	Qt	iPZ	09 08 36.5d
		MH 3.3 20				esPZ	48.4
		Δ = 44°.1				ePcPZ	09 14.0
	Ch	ePZ	21 16		Wr	ePZ	08 43.8
		USCGS H 11 11 42.0			Lh	ePZ	09 07
		73.6 N 57.5 E				USCGS H 08 58 11.1	
		Novaya Zemlya					

Major Shocks

Date	Station	Phase	h m s	Date	Station	Phase	h m s
		39.3 N 10.6 W				ePPPZ*	41 08.5
		Off coast of Portugal				eSE	46 02.0
		depth about 19 km				eScSN*	44.0
26	Wr	ePZ	14 55 42.1			eSSN*	50 50.0
	Qt	ePZ	56 47.7			eSSSN*	55 44.0
26	Wr	iPZ	15 00 05.6d		Kr	ePZ	37 04
	Qt	ePZ	01 13.1			Mu Sec	
		eSE	03 12.0			PZ 0.2 1.0	
		USCGS H 14 58 56.5				PH 0.1 1.0	
		38.6 N 72.8 E				Δ = 72°.9	
		Tadzhik, S.S.R.				USCGS H 22 25 15.5	
		depth about 188 km				53.9 N 168.7 E	
26	Ch	ePZ	22 35 52			Komandorskie Islands	
		ipPZ	36 02			depth about 33 km	
		isPZ	06			Mag-6½ (Pas), 6.6 (Qt)	
		ePcPZ	28	26	Kr	ePZ	23 25 50
		ePPZ	38 16		Qt	iPZ	26 51.0c
		ePPPZ	39 51		Lh	ePZ	27 53
		iSN	44 29			esPZ	28 02
		isSE	47			eSN	29 52
		eScSE	45 37		Wr	ePZ	28 00.1
		eSKSE	45			eSN	30 05.6
		ePKPPKZ	23 04 45		Ch	ePZ	35
		iPZ	26 35 06.2c			ipPZ	44
	Wr	ePZ	10			isPZ	48
	Lh	epPZ	20			ePPZ	31 12
		esPZ	28			ePPPZ	21
		ePPZ	38 44			ePcPZ	34 12
		eSN*	45 04			eSN	52
		ePSN*	32			esSE	35 08
		eScSN*	46 07			H 23 25 19.0	
		eSSN*	49 27			24.3 N 64.8 E	
	Qt	iPZ	36 40.7c			Mekran coast, West Pakistan	
		epPZ*	50.7			depth about 33 km	
		esPZ*	56.0			USCGS H 23 25 16.7	
		ePPZ*	39 21.0			23.9 N 65.4 E	











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Date	Station	Phase	h m s	Date	Station	Phase	h m s
		ePcPZ*	52.5				
		eSN*	15 24.2				
		eSSN*	18 30.5				
01 09 02	USCGS H 11 00		59.5				
01 09 12	0.1 S 99.3 E						
7.00	Near coast of Sumatra						
	depth about 33 km						
31	Qt	ePZ	14 18 46.6				
31	Qt	ePZ	15 48 55.5				
31	Qt	ePZ	17 32 00.0				
31	Qt	ePZ	18 37 31.0				
	USCGS H 18 28		24.6				
	15.3 N 121.5 E						
	Luzon, Philippine Islands						
	depth about 67 km						
31	Qt	ePZ	19 58 45.6				



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Date	Phase	h m s	Date	Phase	h m s
	Quetta		5	ePZ	07 28 01.0
1	ePZ	05 25 40.4		eSNE	29 21.5
1	ePZ	15 08 39.0	5	ePZ	19 33 56.0c
1	ePZ	21 20 34.8		eSNE	34 06.5
1	ePZ	22 31 28.5	5	ePZ	19 41 47.6
1	ePZ	22 49 55.6		e(S)N	42 31.0
2	ePZ	02 17 21.5	5	ePZ	23 57 59.2
2	ePZ	02 49 33.0	6	ePZ	04 54 10.9±
2	ePZ	11 46 20.5	6	ePZ	05 30 28.0
	eSNE	58.6	7	ePZ	05 59 18.0
2	ePZ	20 21 05.5	7	ePZ	09 17 56.5
3	ePZ	02 20 02.5		eSNE	18 24.1
	eSNE	23.0	7	ePZ	09 54 15.0±
3	ePgZ	08 25 47.7		eSN	48.5
	eSgNE	52.0	7	ePZ	19 34 40.2
3	ePgZ	15 24 52.0		ePgZ	21 44 57.8
	eSgNE	25 02.0	7	eSgNE	45 04.5
3	ePgZ	21 30 57.2d	7	ePZ	22 06 13.5
	eSgNE	02.7	7	ePZ	23 35 23.5
4	ePgZ	00 00 32.3		eSNE	37.4
	eSgNE	34.4	8	ePZ	00 54 13.0
4	ePZ	01 12 37.1	8	ePZ	01 40 08.0
4	ePZ	07 44 36.5	8	ePZ	21 23 34.5
	exZ	45 00.0		eSNE	54.5
4	ePZ	10 47 05.9	9	ePZ	04 26 11.0
4	ePZ	11 00 46.1		eSN	47.0
	eSNE	02 06.7	9	ePZ	09 17 53.0
4	ePgZ	11 21 56.5d		eSN	19 09.5
	eSgNE	22 07.8	9	ePZ	11 51 25.5
4	ePZ	16 58 37.5		eSNE	39.8
4	ePgZ	18 48 32.0	9	ePZ	13 13 27.6
	eSgNE	33.4	11	ePgZ	02 59 41.1
4	ePZ	19 02 41.5		eSgNE	43.0
5	ePZ	01 57 32.0	11	ePZ	03 58 07.1
5	ePZ	06 30 21.0	11	ePZ	04 28 49.5±
	eXE	22.0	11	ePZ	05 51 42.6



Minor Shocks

Date	Phase	h m s	Date	Phase	h m s
11	ePZ	13 00 30.2	17	ePZ	19 32 44.9
12	ePgZ	00 25 29.1	17	ePZ	23 59 31.5
	eSgNE	36.6		eSNE	42.9
12	ePZ	01 24 40.2	18	ePZ	11 13 56.0
	eSgNE	25 00.5	19	ePgZ	01 21 33.0
12	ePgZ	04 51 12.5		eSgNE	39.5
	eSgNE	21.3	19	ePZ	15 53 50.8
12	ePZ	07 31 16.9	19	ePZ	21 22 28.0
	e(S)E	32 13.0	20	ePZ	05 31 24.5
12	ePgZ	15 19 56.1	20	ePZ	05 39 03.0
	eSgNE	00 20 08.5	20	ePZ	14 16 09.5
12	ePZ	20 15 22.5±	20	ePgZ	23 02 04.3
12	ePZ	21 27 51.0		eSgNE	15.2
13	ePgZ	10 12 03.2	21	ePZ	06 58 01.3
	eSgNE	06.4	21	ePZ	18 14 02.1
13	ePZ	17 03 05.9	22	ePZ	01 21 51.0
13	ePZ	17 32 58.9	22	eXZ	02 39 31.3
13	ePZ	17 36 36.5	22	ePZ	05 20 35.6
	eSNE	37 22.2		eSNE	21 06.5
13	ePZ	23 51 41.1	22	ePZ	07 59 44.5
14	ePZ	00 18 21.5±	22	ePgZ	08 09 47.4
14	ePZ	02 00 18.5±		eSgNE	59.8
14	ePZ	04 20 25.5	22	ePZ	14 41 42.5
	eSN	21 38 0	22	ePZ	21 50 36.0
15	ePgZ	02 36 03.1	23	ePZ	01 21 14.6
	eSgNE	08.5		eSNE	38.0
15	ePZ	11 27 45.0	23	ePgZ	01 49 01.7
	eSNE	28 12.0		eSgNE	03.6
16	ePZ	04 13 40 ±	23	ePZ	02 49 55.5
16	ePZ	05 37 18.7	23	ePZ	10 24 23.5
16	ePgZ	07 18 39.8	23	ePZ	11 51 02.0
	eSgZNE	41.5	23	ePZ	13 50 33.2
16	ePZ	11 30 55.5	23	ePZ	16 05 26.7
	eXNE	31 24.5		eSNE	51.5
16	ePZ	13 25 25	23	ePZ	16 15 30.8
17	ePZ	12 29 33.3	23	ePZ	17 56 25.0



Minor Shocks

Date	Phase	h m s	Date	Phase	h m s
23	ePZ	19 36 55.2	27	ePZ	23 56 54.3
23	ePZ	22 48 41±	28	ePZ	00 16 48.5±
24	ePZ	15 27 49.2	28	ePZ	13 18 29.8
24	ePgZ	12 22 19.5		eSNE	56.6
	eSgNE	20.0	28	ePZ	14 56 35.9
25	ePZ	12 48 39.5		eSNE	57 02.5
25	eSNE	49 07.1	28	ePZ	15 27 03.5
	ePgZ	21 48 24.7		eSNE	28.9
	eSgNE	25.5	28	ePZ	16 22 48.0±
25	ePgZ	22 09 08.3	28	ePZ	22 32 27.0
	eSgNE	08.9		eSNE	52.0
25	ePgZ	23 02 37.3	29	ePgZ	01 16 32.0
	eSgNE	38.0		eSgNE	42.3
25	ePgZ	23 21 01.6	29	ePgZ	04 05 19.7
	eSgNE	02.7		eSgNE	32.2
25	ePZ	23 59 35.5	29	ePZ	05 00 02.7
	eSNE	36.0		i(Pg)Z	10.0
26	ePZ	00 06 07.6		e(Sn)ZNE	24.7
	eXNE	07 38 6	29	ePZ	05 27 59.0
26	ePZ	02 33 52.9		eSNE	19.7
26	ePgZ	07 32 55.2	29	ePZ	12 57 45.2
	eSgNE	57.0		eSZNE	59 02.0
26	ePZ	10 15 51.0	29	ePZ	13 45 27.0
26	ePZ	21 00 56.6		eSNE	46 42
	eSNE	20.4	29	ePZ	14 12 48.0±
26	eXZ	22 35 49.4		e(S)NE	13 27.7
27	ePZ	00 31 14.3	29	eXZ	18 32 43.6
27	ePZ	01 03 47.1	29	ePgZ	19 31 07.2
	eSNE	04 43.0		eSgNE	12.5
27	ePZ	01 48 08.6	29	eXZ	23 30 36.5
	e(S)NE	49 28 5		eSNE	31 52.0
27	ePZ	05 30 36.5	29	ePgZ	23 51 35.0
	e(S)N	31 55.0		eSgZNE	51.2
27	ePZ	14 02 22.5	30	ePZ	06 41 20.0±
27	ePZ	16 36 17.0±	30	ePZ	08 28 33.3
	eSNE	37 00.1	30	ePgZ	13 59 09.6



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Date	Phase	h m s	Date	Phase	h m s
	eSgNE	13.1	6	ePgZ	10 32 39.3
30	ePZ	16 34 09.9		eSgZ	51.4
30	ePZ	18 12 02.7	6	ePZ	10 55 20.4
30	ePZ	20 32 09.1d		eSZ	54.6
30	ePZ	22 31 04.8	6	ePZ	19 08 27.0
30	ePZ	23 07 25.0±		iSZ	51.4
31	ePZ	17 29 37.0	6	ePZ	23 20 53.6
31	ePZ	19 07 06.1		iSZ	21 24.2
31	ePZ	23 50 26.3±	7	ePZ	05 58 35.8
	<b>Warsak</b>			eSZ	59 14.1
1	ePZ	11 55 58.6	7	ePZ	08 04 51.9
1	eSZ	56 34.0		iSZ	05 36.2
	ePZ	12 09 06.1	7	iPZ	09 55 44.4
	eSZ	32.2		iSZ	56 17.1
2	ePZ	03 16 26.8	8	ePZ	07 58 41.8
2	ePZ	09 13 16.9		eSZ	59 47.9
	eSZ	41.1	8	ePZ	10 44 50.2
3	ePZ	12 33 41.2		eSZ	45 41.8
4	ePZ	02 35 05.8	8	ePZ	15 03 58.7
	eSZ	36 31.2		iSZ	04 25.4
4	ePZ	06 52 44.2	8	ePZ	17 52 50.5
4	ePZ	10 17 10.8	9	ePZ	09 16 24.7
	eSZ	18 35.9	9	iPZ	13 12 24.0
4	iPZ	10 59 41.5		iSZ	56.6
	iSZ	11 00 10.7	9	ePZ	14 40 05.0
4	ePZ	19 51 34.1	9	ePZ	20 11 12.5
	iSZ	52 05.8	10	ePZ	00 08 40.8
5	ePZ	01 56 24.5	10	ePZ	03 40 08.2
5	ePZ	08 20 24.2		iSZ	38.5
5	ePZ	08 28 53.8	10	ePZ	15 26 58.3
5	ePZ	16 57 02.3	10	ePZ	19 54 46.1
	eSZ	33.5		ePZ	20 15 15.1
5	ePZ	22 48 23.8		eSZ	55.7
	eSZ	59.0	10	ePZ	21 13 45.4
6	ePZ	04 14 15.7		eSZ	14 19.8
	iSZ	59.5	10	ePZ	23 11 35.5

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Date	Phase	h m s	Date	Phase	h m s
10	ePZ	23 21 28.6	22	ePZ	22 04 17.3
10	ePZ	23 25 04.0	25	ePZ	05 36 22.7
11	ePZ	05 00 12.0	25	ePZ	20 26 16.3
	eSZ	59.6		eSZ	50.4
12	ePZ	03 11 21.1	25	ePZ	23 20 08.4
	eSZ	12 03.4	26	ePZ	01 06 13.3
12	ePZ	07 31 24.0	27	ePZ	04 56 36.1
12	ePZ	13 18 32.1		eSZ	57 17.3
13	ePZ	05 25 59.3	27	iPZ	11 18 13.2
13	iPZ	11 01 29.0	27	ePZ	14 01 46.3
	iSZ	02 05.7	28	ePZ	23 36 55.7
13	iPZ	15 56 28.4	29	ePZ	12 56 44.4
	iSZ	53.8		eSZ	52.4
13	ePZ	16 59 05.5	29	ePZ	13 43 24.6
14	ePZ	04 20 26.5	30	ePZ	07 58 17.6
16	ePZ	03 48 52.3	31	ePZ	05 09 16.0
16	ePZ	13 26 47.1	31	ePgZ	07 10 02.4
17	ePZ	12 29 27.8		iSgZ	10.4
	eSZ	30 24.9	31	ePZ	12 13 00.5
17	ePZ	22 09 23.1		eSZ	32.7
18	ePZ	11 11 13.0	31	ePZ	23 50 02.0
18	ePZ	22 47 34.1		iSZ	49.9
20	ePZ	05 29 20.0		<b>Lahore</b>	
	iSZ	30 54.9	2	eXE	10 02 46
20	ePZ	13 37 42.0	2	e(P)NE	17 48 14
	iSZ	38 16.9		e(sP)N	46
20	ePZ	21 10 55.4		e(S)NE	49 13
21	ePZ	00 48 02.3	4	eXE	07 45 14 ±
	eSZ	45.1	5	ePNE	00 08 29
21	ePZ	01 27 21.3		e(S)N	48
	eSZ	28 01.5		e(S)N	09 06
22	ePZ	01 10 06.6	7	eXNE	09 57 35
22	ePZ	03 50 01.8	10	eSNE	12 36 19
	eSZ	24.2	10	eXNE	18 49 51
22	ePZ	17 52 17.0	11	eXE	13 02 08
	eSZ	40.6		eXE	13



Date	Phase	h m s	Date	Phase	h m s
	eXN	16		eSKSZE	42 48
13	e(P)Z	00 31 08	8	eXZ	22 32 14
13	ePZN	15 56 32	9	eXZ	14 32 58
	eSNE	59	9	eXZ	15 18 50
14	ePZ	21 47 49d	10	e(P)Z	05 06 09
18	eXN	02 08 47	10	eXZEN	11 38 10
	eSNE	09 42	13	ePZN	10 48 25±
18	eXE	14 51 52		eXN	52
	eXE	52 11		iXN	49 14
	eSNE	47	14	eXZ	13 15 08
19	eXN	13 09 11	15	e(P)Z	14 33 28±
21	ePZ	03 45 52	15	eXN	15 42 32
22	eXZ	01 09 51	18	eXE	11 38 35
23	e(P)ZNE	01 09 51	20	eXZ	00 01 00
	eSZNE	13 30	20	eXZ	04 40 56
	eXNE	37		eSNEZ	41 10
26	eXZ	15 01 11	21	eXZEN	03 34 35
	<b>Karachi</b>		21	ePZ	10 03 02
27	ePZ	01 47 15	22	eXNE	19 19 38
	eSZ	36	23	e(P)Z	11 00 09
27	ePZ	03 39 23	23	ePZ	11 08 41
27	ePZ	05 29 38		iSZNE	53
	eSZ	30 20	24	eXZ	00 09 35
27	ePZ	23 55 56	24	eXZ	11 53 01
	eSZ	56 34	24	ePZN	22 56 05
30	ePZ	23 06 19		eSNE	36
	eSZ	34	25	eXZ	11 17 40
	<b>Chittagong</b>		26	eXZ	15 04 09
1	eXZ	07 58 41	27	eXZNE	13 59 56
4	eXZ	11 13 48	28	eXNE	11 57 27
6	eXN	04 39.0	29	eXZ	15 05 39
8	ePgZNE	04 09 40		eSNE	12 12
	eSgne	49	31	eXZ	02 56 38
8	eXZ	18 34 55			
	eXZ	35 29			
	eXZ	36 30			