

599

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International Seismological Centre

MATSUSHIRO SEISMOLOGICAL OBSERVATORY, JAPAN.

Seismological Bulletin

for May 1 to June 30, 1960

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
1.	P	Z	01	23	22.5	continued					
	i	NEZ			23.4	26 S., 176 W.					
	i	Z			31	Kermadec Is. region.					
	i	N			49.7	H=04 16 27 USCGS					
	eS	N	24	37							
	i	N			50.7	2.	P	Z	04	43	25
	i	E			53		P:D				
	P:D										
1.	iP	EZ	03	02	59.6	2.	P	Z	06	19	18.9
	i	Z		03	04.2		eL	E		28	29
	52 1/2 N., 166 W. Fox Is.						1/2 S., 121 E. Celebes.				
	H=02 55 10 USCGS						H=05 11 46 USCGS				
1.	iP	NZ	04	19	21.7	2.	iP	EZ	06	03	27.7
	i	E			21.9		P:E,C				
	eSS?	N	28	25							
	P:N,C					2.	e	N	09	53	35
	O., 122 E. Celebes.						e	E		57	19
	H=04 11 47 USCGS						e	N	10	04	00
							e	E		06	47
1.	iP	NEZ	09	51	10.2	2.	P	NEZ	10	04	14.1
	S	N			31		i	Z			14.8
	i	Z			33						
	P:S,E,D					2.	eS	N	10	50.3	
1.	iP	NEZ	17	29	12.6		eL	N		52	00
	i	Z			22.7		eL	E			50
	eS	E	30	06			Samar Is., P.I. I				
	i	N			10		H=10 39 57 USCGS				
	e	N			47	2.	e	N	11	58.1	
	P:S,E,D						eL	N	12	00.4	
1.	P	Z	17	59	36	2.	P	NZ	11	59	07.1
	e	Z			45		i	E			12.8
	eS	N	18	01	32		iPcPoriPPP Z		12	01	13
	e	E			34		eSS?	N		08	12
2.	eP	Z	01	07	45		P:N,C				
	e	Z			50		O., 121 1/2 E. Celebes.				
	eL	N		22	20		H=11 51 34 USCGS				
	eL	N		23	57	2.	iP	NZ	12	17	46.1
	44 N., 84 1/2 E. Shinkiang Province, China.						i	NEZ			46.3
	H=01 00 00 USCGS						PP	Z		19	21
							i	E			46
2.	P	Z	02	46	32		iPPDoriPcP Z				53
	i	E			33		S	NE		23	43
	i	Z		47	11		Lq	E		26	43
							Lr	Z		28	45
							P:N,C				
2.	eP	Z	04	28	30		Mag. 5 3/4 - 6 (Matsushiro)				
	e	Z			38		O., 121 1/2 E. Celebes.				
	e	N		39	29		H=12 10 11 USCGS				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
2.	P	Z	14	17	06.8
	S	EZ		18	48
2.	eP	Z	14	46	27
	eS	NE		51	05
	eL	N		54	10
2.	iP	NEZ	18	12	07.8
	eS	E		13	10
	i	EZ			16
	i	NN			22
	P:S,W,C 40 N., 143 E. Near east coast of Honshu, Japan. H=18 10 49 USCGS				
2.	iP	NZ	20	09	28.8
	i	E			29.0
P:N,C					
2.	eP	Z	21	12	11
	i	EZ			29
	S	NZ			44
2.	i	Z			52
	e	NEZ	21	14	14
	e	E			20
2.	e	EZ			39
	e	EZ			15
					23
2.	iP	NEZ	22	33	02.4
	i	Z			12
	e	N			59
	eS	NZ			34
P:S,W,C					
2.	P	EZ	23	48	39.7
	S	NE			55
P:E,D					
3.	iP Z,P	NE	03	00	16.2
	S	NE			34
P:C					
3.	P	EZ	03	54	55.8
	e	E			55
	iS	N			41
P:W,C					
3. ✓	eP	Z	07	09	03
	i	Z			04
	eS	NE			26
3. ✓	eP	Z	08	01	48
	eS	E			07
	e	N			09
	eL	E			12
	eL	N			18
(cont.)					

continued

Mag. 5 $\frac{1}{4}$ (Matsushiro)
29 N., 99 $\frac{1}{2}$ E. China.
H=07 58 07 USCGS

Date	Phase	Comp.	Time(GMT)		
			h	m	s
3.	iP NZ,P E		08	07	17.8
P:N,C					
24 S., 179 $\frac{1}{2}$ W. Tonga Is. region. H=07 55 54 USCGS					
3.	iP Z,P N		08	18	34.6
	i	E			35.1
P:S,D					
24 S., 179 $\frac{1}{2}$ W. Tonga Is. region. H=08 07 08 USCGS					
3.	iP	NEZ	09	05	07.3
	i	N			17
	eS	NE			06
	i	NE			27
P:S,W,C					
3.	P	Z	11	09	14
	i	NZ			33
	i	EZ			46
3. ✓	iP Z,P	NE	13	29	41.2
	PoP	Z			31
	S	E			35
	L	E			38
	P:N,E,D				
	Mag. 5 $\frac{1}{4}$ - 5 $\frac{1}{2}$ (Matsushiro) 0., 121 $\frac{1}{2}$ E. Celebes. H=13 22 07 USCGS				
3.	iP	NEZ	14	33	50.2
	S	E			54
	i	NE			35
	i	E			15
	P:S,W,C				
Mag. 5.0 (Matsushiro) 40 N., 143 E. Near east coast of Honshu, Japan. H=14 32 34 USCGS					
3.	iP	NEZ	15	05	22.6
	i	Z			38
	i	N			50
	S	NE			07
	i	N			21
P:S,W,C					
3.	iP NZ,P E		15	17	51.5
	i	E			57
	S	N			18
	i	Z			43.0
	P:S,D				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
3.	P	Z	15	21	09.0
	i	Z			10.5
	i	E			10.9
	i	E			22
	S	NE			36
3.	i	E			44
	iP	NEZ	18	10	55.2
	iS	NE			11
3.	i	N			09
	P:N,E,C				
	iP	NEZ	18	22	37.4
3.	iS	N			45.7
	P:N,E,C				
	P	NE	20	43	56.7
	i	NE			59.2
3.	S	E			44
	i	N			24
	i	E			24.7
	P:N,C				
3. ✓	iP	NEZ	22	23	49.2
	i	Z			57.9
	i	N			24
	iS	E			40
	i	NE			45
P:S,E,D					
Mag. 5.4 (Matsushiro) 33.0 N., 141.5 E. South of Honshu, Japan. h: 60 km ca. J.M.A.					
4.	iP NZ,P E		00	07	52.1
	P:S,D				
	19 $\frac{1}{2}$ S., 178 $\frac{1}{2}$ W. Fiji Is. h: 600 km ca. USCGS				
4.	P	Z	01	48	28.2
	eS	Z			37
	i	Z			40
	P:C				
4.	iP	NEZ	06	27	55.0
	S	N			29
	P:S,W,C				
4.	P	Z	09	01	03
	i	Z			12.1
	S	NZ			19.4
	i	N			24
	e	N			02
4.	P	Z	11	03	15.6
	i	E			20.6
	i	Z			40.0
	P:C				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
4.	iP	NEZ	11	09	11.6
	iS	NEZ			13.9
	P:N				
4.	P Z,eP	N	14	20	20.3
	i	NZ			21.3
	i	N			29.1
	iS	NE			21
P:C					
4.	P	Z	18	34	10.8
	i	Z			32
P:C					
0., 122 E. Celebes. H=18 26 37 USCGS					
4. ✓	P	EZ	18	40	28
	e	N			42
	e	E			43
	S	E			49
	i	NE			18
	L	NE			56
	L	E	19	00	34
	L	E			07
	Mag. 5 $\frac{1}{2}$ - 5 $\frac{3}{4}$ (Matsushiro) 20 S., 173 E. Loyalty Is. region. H=18 29 40 USCGS				
	4.	P	Z	21	26
i		N			50.1
S		E			27
P:C					
5.	P	Z	04	05	21.8
	eS	N			55
5.	i	N			06
	P:C				
5. ✓	iP	NEZ	11	30	45.5
	i	E			51
	S	NE			34
	iPcP?	N			35
	Lq	NE			59
5.	Lr	NEZ			37
	P:S,W,C				
Mag. 5 $\frac{1}{4}$ - 5 $\frac{3}{4}$ (Matsushiro) 52 $\frac{1}{2}$ N., 159 $\frac{1}{2}$ E. Near east coast of Kamchatka. H=11 26 00 USCGS					
5.	P	NEZ	13	13	42.9
	i	E			14
	S	N			12
5.	P	NEZ	14	35	29.8
	P:D				
5.	iP	EZ	14	57	17.0
	i	NZ			29.0
	P:W,C				

Date	Phase	Comp.	Time(GMT)
			h m s
5.	iP	NEZ	17 15 53.4
	S	E	16 55
	i	N	17 04
	eL	E	25

P:S,W,C
42.2 N., 144.4 E.
Near east coast of Hokkaido,
Japan.
h:40 km ca. J.M.A.

5.	iP	Z	22 22 23.7
	i	NE	24.0
	eS	NE	23 52
	P:C		

5.	e	N	23 18 03
	Lr	NZ	22 25

5.	iP	NEZ	23 35 10.6
	S	NEZ	32
	P:S,E,D		

5.	eS	N	25 39 14
	Lq	N	41 27
	Lr	N	42 00

6.	P	Z	05 23 14
	i	N	22
	iS?	N	48

6.	ePKP 1	Z	06 39 12
	PKP 2	Z	37.8
	21 1/2 S., 71 W.		
	Near coast of Chile.		
	H=06 19 20	USCGS	

6.	P	Z	13 11 53.4
	i	NE	53.9
	P:C		

6.	iP	NZ	18 41 25.9
	i	E	26.2
	i	Z	50.4
	S	NE	50.7
	P:S,D		

6.	P	Z	18 52 37.1
	i	NZ	37.2
	i	NEZ	37.7
	i	Z	43.7
	S	N	56 44
	i	E	47
	L	NE	58 51
	P:D		

Mag. 5 (Matsushiro)
54 N., 161 E.
Near east coast of Kamchatka.
H=18 47 26 USCGS

Date	Phase	Comp.	Time(GMT)
			h m s
7.	iP	NEZ	04 36 34.5
	i	N	57
	i	Z	44
	eS	E	56
	P:S,E,D		

7.	iP	NZ	14 13 07.4
	i	E	08.0
	S	NE	14 28
	e	E	54
	L	E	15 14
	P:S,C		

42.1 N., 143.1 E.
Hokkaido, Japan.
h:40 km ca. J.M.A.

8.	eL	E	04 15 37
	eL	E	20 26
	eL	Z	28 19

Pacific Ocean, about 900 miles
southwest of Galapagos Is.
H=03 22 41 USCGS

8.	P	Z	07 30 06.9
	e	N	48
	S	N	51 00.8
	i	E	02.3

8.	P	Z	12 32 47.8
	i	E	48.2

P:D
27 N., 71 E. Hindu Kush.
h:200 km ca.
H=12 23 37 USCGS

8.	iP	NEZ	13 02 45.6
	i	Z	54
	eS	NE	03 08
	P:S,W,C		

8.	P	NEZ	14 32 23.5
	i	Z	35.3
	i	NE	38.8
	eS	E	35 02
	L	NE	39
	L	E	36 22
	P:S,W,C		

45 1/2 N., 151 E. Kurile Is.
H=14 29 14 USCGS

8.	eP	NE	18 58 22
	e	Z	24
	i	E	27
	e	EZ	39 06

8.	iP	EZ,P N	20 06 30.4
	i	Z	39.8
	i	E	53.8
	eS?	E	07 33
	P:E,D		

Date	Phase	Comp.	Time(GMT)
			h m s
8.	P	Z	21 26 12.8
	i	NE	13
	i	Z	21.8
	i	Z	59.1
	P:C		

9.	iP	Z	00 13 44.8
	S	NE	15 31
	i	N	50
	P:D		
	30 1/2 N., 129 1/2 E. Ryukyu Is.		
	H=00 11 10	USCGS	

9.	eP	Z	02 52 58
	eS	N	58 28
	L	E	05 00 42
	5 1/2 N., 122 E. Celebes Sea.		
	H=02 46 08	USCGS	

9.	eP	Z	06 58 29
	e	Z	48
	eS	E	07 02 55
	e	N	58
	i	N	05 29
	Lr	Z	06 28
	Lr	N	39

12 N., 144 E. Mariana Is.
region. h:100 km ca.
H=06 53 11 USCGS

9.	e	Z	07 50 47
	e	E	51
	e	E	51 03
	e	E	52 23
	i	Z	54 07

9.	eP	Z	09 07 53
	i	N	55
	7 S., 155 E. Solomon Is.		
	H=08 59 25	USCGS	

9.	P	NZ	10 14 54.9
	i	Z	56
	i	E	15 00.8
	eS?	E	53
	P:C		

9.	P	EZ	13 37 28.8
	i	N	29.5
	eS	N	38 46
	i	N	58
	P:E,C		

9.	iP	EZ	14 44 19.8
	i	EZ	28
	i	N	35
	e	N	58 21
	e	N	15 00 37

P:E,C
25 1/2 N., 89 1/2 E.
East Pakistan-India border.
H=14 36 27 USCGS

Date	Phase	Comp.	Time(GMT)
			h m s
9.	iP	EZ	19 31 03.2
	i	E	08
	eS	E	25
	i	EZ	34
	i	N	38
	P:W,C		

9.	eP?	Z	20 44 10
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9.	eSS	Z	20 48 55
	ePSPS	E	49 28
	eL	N	21 00 59
	eL	N	04 21
	Lr	E	05 29

Mag. 6 - 6 1/2 (Matsushiro)
Pacific Ocean, about 900 miles
southwest of Galapagos Is.
H=20 13 25 USCGS

10.	P	Z	03 44 05.8
	i	Z	11.6
	i	N	12.8
	eS	E	45 14
	P:C		

10.	iP	NEZ	06 20 51.6
	e	E	22 12
	P:S,W,C		

10.	iP	NZ,P E	17 40 52.3
	eL	E	47 37
	eL	N	48 39
	eL	E	50 25

P:S,C
51 1/2 N., 159 1/2 E.
Off southeast coast of
Kamchatka.
H=17 36 03 USCGS

10.	iP	NEZ	23 19 24.0
	i	E	20 28
	S	N	30
	i	Z	42
	i	Z	21 19

P:S,W,D
Mag. 5.3 (Matsushiro)
34.1 N., 131.8 E.
Honshu, Japan.
h:80 km ca. J.M.A.

11.	iP	NEZ	03 15 43.6
	i	Z	46
	S	E	57
	i	N	59
	P:N,W,C		

11.	e	N	04 30 43
	e	N	36 36
	e	E	38 35



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Date	Phase	Comp.	Time(GMT) h m s
11.	P	Z	05 59 14.6
	i	E	15.8
	i	N	37.3
	i	E	53.8
11.	eP	Z	06 02 02
	i	E	04.3
	i	Z	13.0
11.	iP	Z	11 11 15.7
	i	E	15.9
	i	N	16.2
	S	N	36.5
	i	N	44
	i	E	56
	P:C		
11.	iP	NEZ	18 43 56.9
	i	E	57.5
	PP	N	45 27
	S	E	49 37
	i	N	50 08
	i	N	52 48
	i	E	54
	Lq	E	53 14
	Lr	NE	56 15
	P:C		
	Mag. 6 1/4 (Matsushiro)		
	3 S., 131 E. Ceram Sea.		
	H=18 36 00 USCGS		
11.	P	Z	20 20 38.6
	i	NE	39.0
	i	N	52.0
	i	Z	55.0
11.	P	EZ	21 03 38.3
	i	N	38.9
	i	N	04 18.0
	i	N	29.5
	eL	N	34 32
	eL	E	35 46
12.	iP	Z,P E	06 31 17.7
	i	Z	46.6
	P:C		
	5 1/2 S., 105 1/2 E. Sunda Strait.		
	h:100 km ca. H=06 22 15 USCGS		
12.	P	E	15 54 24.7
	i	Z	54
	i	E	54.1
	i	N	58.6
	i	Z	55 00.1
	eL	N	16 37 34
12.	P	Z	19 06 34.2

Date	Phase	Comp.	Time(GMT) h m s
	continued		
	i	NE	19 06 34.3
	i	E	40.6
12.	P	Z	19 19 46
	e	N	28 51
	eL	N	38 03
	3 1/2 S., 130 1/2 E. Ceram Is.		
	H=19 12 08 USCGS		
12.	e	Z	21 31 48
	i	NE	48.9
	e	N	37 54
12.	iP	Z	21 51 05.0
	i	N	05.4
	i	E	22 00 53.6
	P:D		
12.	PKP	Z	22 52 29.7
	i	E	37.2
	e	N	56 48
	eSKS	N	58 35
	e	N	59 48
	e	E	23 03 13
	ePS	N	04 49
	SS	N	10 16
	i	E	17
	Lq	N	26 12
	Lr	N	31 20
	Lr	E	25
	Mag. 6 - 6 1/4 (Matsushiro)		
	7 1/2 N., 81 W. Panama.		
	H=22 32 32 USCGS		
13.	P	EZ	03 12 21.4
	i	E	14 01.8
13.	e	N	08 04 37
13.	eL	N	10 40 22
	20 N., 109 W. Revilla Gigedo Is. region.		
	H=10 00 40 USCGS		
13.	e	N	10 55 10
	e	E	56 14
13.	P	EZ	13 53 34.4
	i	Z	36.3
	i	NE	37.9
	S	E	56.1
	i	N	59.4
	i	E	54 01.4
	P:E,C		
13.	iP	Z,P NE	14 45 44.7
	i	N	57.2
	S	Z	46 00
	P:N,E,D		

(cont.) - 6 -

Date	Phase	Comp.	Time(GMT) h m s
13.	iP	NEZ	16 15 26.4
	i	Z	41
	PP	Z	17 28
	PcS	Z	21 17.7
	i	NE	18.9
	S	E	58
	ScS	NE	25 39.2
	i	E	41
	i	NE	45
	Lr	Z	28 11
	P:S,W,C		
	Mag. 5 3/4 - 6 (Matsushiro)		
	55 N., 161 1/2 W. Alaska Peninsula.		
	H=16 07 12 USCGS		
13.	P	EZ	16 43 29.8
	i	N	30.5
	i	N	44 00.3
	i	N	09.6
	P:E,D		
13.	P	Z	17 15 52.2
	i	E	52.5
	i	N	53.8
	i	NEZ	18 12
	i	Z	13
13.	P	Z	20 50 28.8
	i	NE	29.5
	S	NEZ	52
	P:D		
13.	eP	Z	20 58 43
	e	N	21 08 28
	eS	N	08 38
	e	E	09 16
	L	EZ	23 51
	L	N	56
	Mag. 5 3/4 (Matsushiro)		
	32 1/2 S., 179 W. Kermadec Is. region.		
	H=20 46 35 USCGS		
13.	iP	EZ	22 26 59.7
	i	N	27 00.5
	S	N	29.0
	P:W,C		
14.	P	Z	00 14 45.5
	i	NZ	46.4
	i	E	48.0
	i	EZ	49.0
	iS?	N	15 29.0
	e	N	33
	i	N	40.2
	i	N	45
14.	iP	NEZ	08 39 29.1

(cont.)

Date	Phase	Comp.	Time(GMT) h m s
	continued		
	i	N	08 59 40.1
	S	NE	42.9
	P:S,E,C		
14.	iP	NEZ	11 28 36.4
	i	N	53
	e	N	29 37
	P:N,E,D		
14.	iP	NEZ	17 45 01.0
	S	E	46 15
	i	NZ	50
	i	E	52
	i	N	58
	P:N,D		
	42.7 N., 142.5 E. Hokkaido, Japan.		
	h:90 km ca. J.M.A.		
14.	e	N	20 20 10
14.	P	EZ	21 32 20.3
	i	N	21.1
	S	E	46.2
	i	N	47.3
14.	iP	NEZ	22 24 52.7
	PP	Z	25 45.4
	S	E	28 55.5
	i	E	56
	i	N	58
	i	N	58.5
	L	NE	30 02
	Lr	Z	31 20
	P:S,W,C		
	53 1/2 N., 159 1/2 E. Kamchatka.		
	H=22 19 55 USCGS		
15.	iP	EZ	03 38 35.1
	i	N	55.8
	i	N	39 05.0
	P:E,D		
15.	P	Z	07 57 17
	i	E	17.4
	i	N	40.2
	i	N	58 24.1
	i	N	31.3
	e	N	38
	P:C		
16.	P	Z	08 14 00.3
	i	NE	00.9
	i	N	01.5
	i	N	35.5
	iS?	N	38.5
	i	E	41.7
	i	N	43.3
	i	Z	45.2
	i	E	48

7

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
15.	iP i i P:S,W,D	NEZ N N	08	32	27.8 32.7 41.7	16.	iP i S i	Z NE E N	19	00	00.2 00.3 08.1 09.1
15.	iP S P:N,E,D	NEZ E	10	08	00.5 25.2	16.	P S P:W	EZ N	20	10	31.1 52.4
15.	P i i i i y eS Lq Lq Lr	Z E N Z N E NE E N Z	15	34	42.7 47.5 49.4 51.5 20.9 55.7 39 12 39 24 48 40 51	16.	P i e	Z NEZ E	21	19	35.6 40.8 37 29
Mag. 5.1 - 5.2 (Matsushiro) 24 N., 121.5 E. Near east coast of Formosa. H=13 50 20 USCGS						17.	iP i P:N,C	NEZ Z	03	51	56.6 15
15.	iP Z/P E i i eLq eLq P:C	N Z N E	21	45	08.1 08.9 46 58.9 57 19 48	17.	iP e iS? P:S,W,C	NEZ E N	11	01	41.4 44.1 02 06.2
54.5 N., 164.5 W. Alaska Peninsula. H=21 37 08 USCGS						17.	iP i P:W,D	NEZ N	13	15	26.9 23 00.2
16.	iP P:N,W,C	NEZ	04	29	33.0	17.	P i i i	Z E Z NE	17	36	09.5 11.0 13.9 14.4
16.	iP S P:N,E,C	NEZ EZ	04	51	47.1 52 13	17.	iP i iS P:S,D	NE E Z	22	15	00.5 00.7 20.4
35.6 N., 136.3 E. Honshu, Japan. h:20 km ca. J.M.A.						18.	P i i i iS Lr i PcP ScS P:S,W,D	NEZ Z Z Z E Z NE NE	06	37	30.7 35 43 39 18 40 29 31 43 54 50 44.7
Mag. 6.2 (Matsushiro) 29.0 N., 129 E. Ryukyu Is. h:100 km ca. J.M.A.						18.	P i P	NEZ Z	08	52	20.1 (cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
			continued						continued		
			i 27 N., 52.5 E. Persian Gulf. H=08 40 57 USCGS						i E P:W,C		
18.	e	E	12	48	41	19.	P i iP i i i S i G L Lr P:C	Z NEZ N Z Z NE NE Z E Z E E Z	10	24	37.4 56.1 58.5 25 05 27 30 43 30 45 35 44 36 09 48 28 54 36 57 22
			Celebes. H=18 08 45 USCGS						Mag. 6 - 6.1 (Matsushiro) 17 S., 66 E. Mascarene Is. region. H=10 11 51 USCGS		
18.	P i i P:D	Z NE	14	46	55.1 55.6	18.	P i i i L	Z N E NZ E	21	00	42.2 42.7 43.0
18.	P i i i i L	Z E E NZ E	18	16	16.8 21.0 36.7 37.1 25 01	18.	P i i i P:C	Z N E	16	53	48
			Celebes. H=18 08 45 USCGS						53 N., 166 W. Fox Is. H=16 46 10 USCGS		
18.	P i i i P:C	Z N E	23	45	25.6 26.1 26.6 46 23.9 24.3	19.	eP i i i i iScP eS L P:D	Z N E Z E Z E E	10	57	11 13.7 27.4
			36 N., 71 E. Hindu Kush. h:200 km ca. H=02 07 00 USCGS						16 53 48 17 50 34.2 51 00.5 02.4 09.2 16		
19.	iP i i i i iScP eS L P:D	Z NE Z N E Z E E	02	16	01.8 02.1 32 32.5 17 00.6 20 54.1 23 25 35 35	19.	P i i i i i S P:C	EZ E N Z Z NE N	18	42	52.8 53.2 43 30 35 36.8
			36 N., 71 E. Hindu Kush. h:200 km ca. H=02 07 00 USCGS						Near north coast of New Guinea. H=00 23 22 USCGS		
19.	iP i i i i S	EZ N E N N	08	45	17.9 18.2 43 26 (cont.)	19.	eP i	EZ N	02	23	31 31.2

Date	Phase	Comp.	Time(GMT)		
			h	m	s
20.	eP S i	Z N E	02	25	45.7 18.2 21.2
20.	eP	Z	04	25	50
Persian Gulf. H=04 14 18 USCGB					
20.	iP i S i e i i P:E,C	EZ NE N Z N N Z	05	27	09.3 09.4 47.7 48 28 24 30.3 33
20.	P i e eL P:E,C	EZ E N	07 08	56 57 58 00	25.4 02.9 56 06
20.	iP Z,P N i i i PPA S i ScS i SS Lq Lr PKPKP P:S,C Mag. 6 3/4 - 7 (Matsushiro) 28 S., 167 1/2 E. Norfolk Is. H=11 12 31 USCGB	NE Z E E N N E Z Z Z	11	23	48.8 49.1 48 58 26 45 33 04 07 34 10 12 38 13 42 32 45 24 51 52
20.	iP i i i P:D	Z NE N E	13	26	07.3 07.9 24.7 29.3
20.	eP	Z	18	06	01
45 N., 111 W. Hebgen Lake. H=17 54 02 USCGB					
20.	iP i S i P:N,E,C	NEZ E N Z	19	03	24.5 24.7 43.0 45.6

Date	Phase	Comp.	Time(GMT)		
			h	m	s
21.	iP i eS? i P:E,D	EZ N E N	00	44	51.7 52.0 45 13 14
21.	iP i P:W,C	NEZ N	02	14	01.2 21.0
21.	P N,iP Z e i e P:C	E N N N	04	26	27.9 59 27 02.5 40 28 ca.
21.	P iS i.	EZ NE E	04	30	54.4 51.8 53.2
21.	e	N	05	57	14
21.	iP i iS iS P:N,C	NZ N NEZ NEZ	06	14	25.1 25.5 45.5
21.	e e	N NE	07	05	24 29 21
37 1/2 N., 21 E. Near west coast of Greece. H=06 41 10 USCGB					
21.	P i i cS eL 15 1/2 N., 121 1/2 E. Luzon Is., P.I. H=08 17 01 USCGB	Z E N NE E	08	22	32.0 51 23 05.7 27 11 34 48
21.	ePKP 1 e i i i i e iPKP 2 i i iPP? i i e iS i e eS eS P:E,D	Z Z Z N N E Z Z Z Z N N E N E N E	10	22	46 52 23 03.4 14 17 23 24.4 33 37 27 05 08 25 31 08 35 22 55 54 58 51

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
21.	i e e eSS eSSS e eG eLr eLr	E N E NE N N E N	10	38	16 39 34 42 06 ca. 47 43 52 53 11 03 28 04 18 14 22 15 02
Mag. 8 1/2 (Matsushiro) 37 1/2 S., 73 1/2 W. Near coast of Chile. H=10 02 50 USCGB					
21.	eP iS i	NEZ E Z	10	31	49 32 14.5 15.3
21.	iP i i i i P:C	Z E Z N Z	10	53	57.8 54 16.6 20.3 25.0 28.9
21.	iP i i P:C	Z N E	11	08	07.3 08.2 08.6
21.	ePKP 1 i i iPKP 2 i i ePP 37 1/2 S., 72 1/2 W. Chile. H=10 53 51 USCGB	Z N E Z Z N Z	11	13	51 14 12.1 12.6 24.1 25.8 26.1 17 47
21.	P i i	Z E N	11	23	25.6 25.9 46.7
21.	P e	Z NE	11	55	52 54
21.	ePKP 1 iPKP 2 i	Z Z E	12	41	17 43.3 43.9
37 1/2 S., 73 W. Chile. H=12 21 16 USCGB					
21.	ePKP e e i e	Z N Z Z E	13	20	02 20 23 23.3 30

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
37 1/2 S., 72 1/2 W. Chile. H=12 59 58 USCGB					
21.	iP iS e P:S,W,C	NEZ E N	13	25	58.0 27 17 20
21.	iP i i i P:S,W,C	NEZ E N E	13	49	12.8 30.7 50 44 46
21.	iP i i e e P:C	Z N E E N	14	06	54.9 55.1 55.3 12 14 13 58
21.	iP P:D	Z	14	09	26.6
21.	ePKP i e e	Z Z E N	14	19	17 24.5 42 51
37 1/2 S., 72 1/2 W. Chile. H=13 59 17 USCGB					
21.	ePKP i L 37 1/2 S., 72 1/2 W. Chile. H=14 31 55 USCGB	Z Z N	14	51	47 52 15.5 15 47 17
21.	iP i i i P:D	Z N E N	15	26	45.2 45.9 46.1 27 36.9
21.	ePKP eL 37 1/2 S., 73 W. Chile. H=15 08 45 USCGB	Z N	15	28	50 16 25 15
21.	iP i i iS i i P:E,D	EZ N Z N E Z	18	02	40.0 40.6 49.6 03 15.7 16.1 20.4
21.	eL eL	N E	20	17	21 18 29

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued	aL	N	20	24	24
	Chile. H=19 06 21				
	USCGS				
22.	iP	Z	00	48	23.5
	i	N			27.8
	i	E			28.0
	i	N			35.7
	P:C				
22.	iP	Z	01	09	19.6
	i	N			20.0
	i	Z			27.7
	eS	N	18	35	
	eLq	E	27	39	
	eLq	N			46
	eLr	E	31	20	
	P:C				
22.	ePKP	Z	04	06	25
	i	Z			44.3
	eSS	N	20	41	ca.
	eL	N	05	00	2
	Lr	N			02 36
	eLr	Z			04 43
	eLr	E			53
	37 1/2 S., 73 W. Chile. H=03 46 22				
	USCGS				
22.	P	NZ	06	20	12.7
	P:N,D				
22.	e	Z	06	27	25
	eL	N	07	09	18
	eL	E			22 47
22.	e	E	07	49	1
	eL	N			57 56
22.	eP	Z	07	55	58
22.	ePKP 1	Z	08	50	54
	i	Z			31 04.4
	iPKP 2	NZ			20.5
	iPKP 2	E			20.3
	iPP	Z			34 54
	eSSS	E	09	00	35
	eL	E			12 28
	eL	E			22 23
	eL	N			23 50
	37 1/2 S., 73 W. Chile. H=08 10 53				
	USCGS				
22.	ePKP	Z	10	50	33
	e	Z			41
	i	N			48.0
	i	E			51 04.6
	e	NZ			06 ca.

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued	e	E	10	51	55
	Mag. 7 1/4 - 7 1/2 (Matsushiro)				
	38 S., 73 1/2 W.				
	Near coast of Chile.				
	H=10 30 39				
	USCGS				
22.	ePKP?	Z	10	52	33
	i	Z			37.9
	i	Z			43.5
	e	E			48
	e	N			50
	i	NEZ	53	15	
	iPP	N	56	31	
	i	Z			59.0
	e	E			46
	e	N			48
	iSKKS	E	11	05	24
	e	E			28
	iSKSP	E			07 03
	iPPS	Z			09 58
	eSS	E			16 00
	e	N			42
	i	Z			17 20
	eSSS	E			22 40
	eSSS	N			44
	eL	E			43.0
	L	Z			44 43
	L	N			50
	L	N			50.0
	Mag. 8 - 8 1/4 (Matsushiro)				
	37 1/2 S., 73 W.				
	Near coast of Chile.				
	H=10 52 43				
	USCGS				
22.	PKP	N	11	01	24.0
	i	Z			25.7
	i	E			26.1
	i	Z			27.5
	i	Z			42.8
22.	P	Z	11	40	40.8
	i	N			41.2
	i	E			42.0
22.	iP	EZ	12	15	00.9
	i	N			01.5
	S	N			48
	e	E			52
	P:W,C				
22.	ePKP 1	Z	12	36	43
	e	Z			53
	iPKP 2	Z			37 15
	iPP	Z			40 34
	38 S., 73 W. Chile. H=12 16 43				
	USCGS				
22.	ePKP 1	Z	13	23	18

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued	ePKP 2?	Z	13	23	51
22.	e	Z	17	32	46
	e	Z			33 00
22.	iP	NEZ	18	45	59.8
	P:S,W,C				
22.	PKP	Z	19	15	51.6
	i	E			53.7
	i	N			58.8
	i	Z	16	00	8
	i	E			12.8
	i	N			13.3
	i	NE			32
	i	E			33.1
	i	NE			36
	i	N			17 40.5
	ePP	E	20	02	
	iPP	Z			03
	i	EZ			05
	i	N			46
	eSKKS	N	26	51	
	iSKKS	E			37
	i	E			41
	eSS	N			40 58
	eSSS?	N			47 39
	iL	E			55 44
	eL	N			53
	Mag. 8 1/2 (Matsushiro)				
	38 S., 73 1/2 W.				
	Near coast of Chile.				
	H=18 55 57				
	USCGS				
22.	ePKP	Z	19	30	35
	i	N			41.0
	i	Z			51.7
	eSKS?	E			38 04
	iSKKS	E			41 25
	38 S., 73 1/2 W. Near coast of Chile. H=19 10 47				
	USCGS				
22.	iPKP	N	19	51	22.4
	iPP	E			35 06
	eL	E	20	22	18
	eL	Z			23 51
	eL	N			24.1
	eL	E			32 18
	PKP:N				
	Mag. 8 3/4 (Matsushiro)				
	38 S., 75 1/2 W.				
	Near coast of Chile.				
	H=19 11 20				
	USCGS				
22.	PKP	Z	20	02	41
	i	Z			57.5
	i	EZ			03 17

Date	Phase	Comp.	Time(GMT)		
			h	m	s
22.	ePKP?	Z	20	08	11
	i	Z			29
	e	Z			09 15
22.	ePKP	EZ	20	11	09
	i	N			10
	i	Z			42.5
22.	e	Z	20	15	40
	i	Z			16 19.2
	i	Z			31.1
22.	e	Z	20	18	30
	e	Z			58
22.	eP	Z	20	25	37
	e	Z			26 58
22.	e	Z	20	36	12 ca.
	i	Z			41.0
	e	NE			49
22	i	Z	20	45	09
22.	ePKP	Z	20	51	46
	i	Z			56.6
22.	iP	Z	21	50	44.0
	i	NE			46.5
	P:C				
22.	iP	Z	22	12	26.5
	i	Z			34.2
22.	e	Z	22	27	36 ca.
	iPKP 2?	Z			28 06
	e	E			10
22.	PKP	E	22	34	08.9
	i	Z			09.3
	i	N			11.8
	i	Z			23.8
22.	P	E	22	41	42
	i	Z			42.5
	i	Z			50.4
22.	ePKP	Z	22	52	23
22.	PKP	Z	23	23	48.5
	i	Z			24 33.2
	i	N			40.3
22.	ePKP	Z	23	26	52
	i	Z			27 13.7
22.	ePKP?	Z	23	49	20
	i	Z			44

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
22.	ePKP	Z	25	52	55	continued					
	i	Z			49.2			01	14	13.5	
	i	Z			49.7					13.7	
22.	PKP	Z	23	58	37					14.3	
	i	Z			44.1					17 55	
	i	E			44.7			02	11	06	
	a	E		59	00					14 46	
								Mag. 6 3/4 ~ 7 (Matsushiro) Chile.			
23.	ePKP	Z	00	15	59	23.	PKP	Z	01	21	42
	i	Z		16	08.1		i	Z			59.2
	i	Z			08.9		i	N		22	11.3
	i	Z			24.1	23.	e	Z	01	45	48
	e	E		56	17	23.	PKP	Z	01	45	08.1
	eL	N		59	22		i	Z			18.9
23.	eP	Z	00	17	34		i	NZ			19.7
	i	N			54.1	23.	ePKP	Z	01	54	55
	i	Z			34.5		i	Z		55	10.6
23.	ePKP	Z	00	45	38		i	E			11.2
	i	Z			45.6		i	N			12.0
	i	Z			46.0		i	Z			16.5
	i	E			49.3						39 1/2 S., 74 W. Near coast of Chile. H=01 34 53 USCGS
	i	N			50.5	23.	ePKP	Z	02	02	38
	PP	Z		49	35		i	Z		03	50.7
	eL	E		01	46		i	Z		03	12.0
	eL	N			50		i	Z		04	06.9
							e	N			07
							e	E			24
23.	ePKP	Z	01	01	33	23.	iPKP	Z	03	06	33.0
	i	Z			43.0		e	E			50
	i	Z			58.7		i	N			07 06
23.	ePKP	Z	01	04	19		ePP	Z			10 23
	e	Z			30		PKP:D				
23.	iP	Z	01	04	51.5						41 1/2 S., 73 1/2 W. Southern Chile. H=02 46 30 USCGS
	i	N			51.8	23.	PKP	E	03	16	17
	iS	E		05	10.0		i	N			19.1
	i	N			10.9		i	EZ			50.0
	P:C						PP	Z		20	03
23.	ePKP	Z	01	11	18						43 S., 75 1/2 W. Near coast of Chile. H=02 56 17 USCGS
	i	Z			25.3	23.	iPKP	Z	03	23	10.3
	e	E			40		i	Z			23.5
	i	Z			43.7		PKP:C				
	i	Z			45.2	23.	iPKP	Z	03	23	10.3
	i	N			55.7		i	Z			23.5
							PKP:C				
23.	PKP	Z	01	13	54	23.	iPKP	Z	04	47	05.5
	i	N			55.7		i	Z			10.2
	i	Z			58.0						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)				
			h	m	s				h	m	s		
23.	iP	Z	05	07	58.0	continued							
	i	Z		08	12.3		eL	N		11	05	52	
	P:D						Mag. 6 1/4 - 6 1/2 (Matsushiro) 37 1/2 S., 73 W. Chile. H=09 52 20 USCGS						
23.	ePKP 1	Z	05	33	30	23.	ePKP	Z	10	58	02		
	i	Z			38.2		i	Z			16.8		
	i	Z			39.8		i	Z			17.2		
	e	E			49		i	E			17.6		
	i	Z			51.0		ePP	Z		11	01	50	
	iPKP 2	Z		34	04.2		eL	E			47	45	
	iPP?	Z		37	42.0		eL	N			48	16	
	eL	E		06	25	28		eL	Z			49	38
	eL	N			26	19		Mag. 6 - 6 1/2 (Matsushiro) 43 1/2 S., 73 1/2 W. Chile. H=10 37 59 USCGS					
	eL	N			31	32	23.	iP	Z	11	42	45.8	
	eL	E			34	16		i	Z			53.5	
								P:C					
23.	iP	EZ	05	55	19.8	23.	iP	NZ	11	52	26.4		
	i	N			20.3		i	E			33.6		
	S	N			56	01	S	NE			50		
	P:W,C						i	Z			53	13.9	
23.	e	Z	06	07	55		P:N,D						
	i	Z		08	03	23.	iP	Z	12	22	46.9		
	i	Z			13		i	Z			23	47.5	
							P:C						
23.	iPKP	Z	07	29	14.7	23.	iPKP	Z	14	20	19.9		
	e	NE			16		i	N			21.6		
	i	EZ			25.4		i	Z			30.9		
	i	Z			35	15.6	eSS	E			45	15 ca.	
	eL	Z		08	20	11	e	N			48	42	
	PKP:D						eL	NE		15	10	13 ca.	
							eL	Z				35	
							PKP:C						
							Mag. 6 (Matsushiro) Chile.						
23.	eP	Z	07	52	57	23.	iPKP	Z	14	21	51.7		
23.	ePKP	Z	08	33	15		e	N			53		
	i	Z			30.2		i	EZ			58.8		
	e	N			36		Near coast of Chile. H=14 01 50 USCGS						
23.	iP	Z	09	46	26.4	23.	iPKP	Z	16	05	07.4		
	P:C						eL	N			59	27	
23.	PKP	Z	10	12	22		PKP:D						
	i	Z			31.2	23.	iPKP	Z	16	21	16.2		
	i	Z			47		i	NE			16.8		
	i	Z			48.4		i	Z			17.1		
	ePP	Z		16	15		e	Z			57		
	eL	E		11	04	08		eL	N		17	34	13
	eL	Z			15 ca.		PKP:C						



Table with columns: Date, Phase, Comp., Time (GMT) (h m s), Date, Phase, Comp., Time (GMT) (h m s). Contains multiple rows of seismic event data across dates 23 and 24.

Table with columns: Date, Phase, Comp., Time (GMT) (h m s), Date, Phase, Comp., Time (GMT) (h m s). Includes notes like 'continued', 'South Is., New Zealand.', 'Southern Chile.' and contains multiple rows of seismic event data.

Table with columns: Date, Phase, Comp., Time (GMT) (h m s), Date, Phase, Comp., Time (GMT) (h m s). Contains multiple rows of seismic event data.

Date	Phase	Comp.	Time (GMT)			Date	Phase	Comp.	Time (GMT)		
			h	m	s				h	m	s
continued						continued					
e	E		08	57	42	eL?	Z		13	54	00
e	E		09	00	47	P:S,D					
iSKKS?	E		05	22		Mag. 5 3/4 (Matsushiro)					
iSKSP	E		08	56		1 N., 129 1/2 E. Halmahera.					
e	E		11	21		H=13 38 28 USCGB					
ePPS	N		12	00							
e	E		14	45		25. iP	Z	14	34	47.1	
e	N			52		i	Z			53.0	
iSS	N		19	11		e	E			56	
iSS	E			17		eS	E	40	31		
eSSS	N		23	01		iSS	NE	43	09		
iSSS	E			09		eL	N	47	25		
G	E		36	21		P:C					
G	N		38	11		1 N., 128 1/2 E. Halmahera.					
Lr	E		44	17		H=14 27 38 USCGB					
Lr	N			22							
Lr	Z			36		25. iP	NZ	15	09	36.9	
L	N		52	38		i	E			37.3	
PKP 1:D						i	Z			43.4	
Mag. 7 1/2 (Matsushiro)						i	N			47.8	
45 S., 76 W.						e	Z	10	43		
Off coast of Chile.						iPP	Z	12	17.3		
H=08 34 33 USCGB						P:S,D					
25. iP	NEZ		09	04	55.3	22 S., 179 1/2 W. Fiji Is.					
iS	NEZ		05	47.8		h: 600 km ca.					
P:N,E,C						H=14 59 12 USCGB					
25. iP	EZ		09	50	36.8	25. P	NEZ	15	15	35	
i	N				37.2	i	Z			36.3	
i	N				39.7	25. eP	Z	17	06	47	
i	E				39.9	i	E			57.3	
i	Z				42.9	i	Z	07	01.4		
eS	NZ		51	01		i	Z			08.1	
i	E			04		25. eP	Z	17	34	28	
P:W,D						i	N			32.6	
25. e	Z		10	19	39	i	EZ			32.8	
eL	E		11	10	50	i	Z			43.2	
25. P	Z		10	25	29.5	i	Z	38	09.1		
i	N				32.9	i	E			09.6	
e	EZ				41	eS	NE	42	54		
25. i	Z		12	30	45	eSS	N	47	00		
eL	N		13	28	42	25. eP?	Z	18	40	23	
25. iP	NZ		13	45	31.9	e	N			45 26	
i	E				32.3	25. iPKP	Z	19	41	48.4	
iPP	Z				46 55	i	E			50.5	
i	Z				47 02.5	i	Z			57.4	
i	Z				48 33	i	Z	42	00.8		
i	Z				38.6	i	Z			10.1	
i	NE				38.8	e	N	20	15	18	
iS	E		51	20		PKP:D					
e	E		55	35		40 S., 75 1/2 W. Chile.					
SS	NE			50		H=19 21 48 USCGB					

Date	Phase	Comp.	Time (GMT)			Date	Phase	Comp.	Time (GMT)		
			h	m	s				h	m	s
25. e	N		20	40	15	26. iP	EZ		15	28	51.3
e	E				43 28	i	Z				56.9
L	N				48 59	P:W,C					
25. P	Z		22	29	26	26. iP	Z		15	54	49.6
i	Z				27.8	i	E				50.0
i	E				28.0	i	Z				55.5
25. e	Z		23	21	18	P:D					
i	Z				25.6	26. iPKP	Z		17	23	33.4
26. iP	Z		00	21	39.0	i	Z				40.0
P:C						e	N				42
26. e	Z		01	51	08	i	Z				47.4
eL	E		02	21	18	eL?	E		18	31	48
eL	E				32 28	PKP:C					
26. eP?	Z		19	33	44	26. eP?	Z		19	33	44
26. eP	E		01	49	12	26. iP	Z		19	37	03.4
i	EZ				24.5	i	Z				17.7
i	Z				30.6	P:C					
26. iP	EZ		03	53	50.5	26. P	Z		19	53	59
i	N				50.8	i	Z				54 14.9
i	Z				53.6	i	E				20.1
i	E				57.0	26. iP	EZ		20	12	40.3
iS	N				54 21.6	i	N				40.8
i	E				22.6	i	EZ				54.5
P:W,C						e	Z				14 28
26. P	NEZ		05	22	44.8	e	E				39
i	N				48.1	iPcP	Z				46.9
iPP	Z				26 16.6	i	Z				15 40.2
S	E				33 06	eS	E				18 41
eSS	E				38 45	eL	E				21 26
eSSS	E				42 50	P:E,C					
eL	E				44 36	27 N., 93 E. Eastern India.					
eL	E				50 09	H=20 05 07 USCGB					
eL	Z				53 25 ca.	26. ePKP	Z		20	18	10
Mag. 6 1/2 - 6 3/4 (Matsushiro)						e	Z				29
40 N., 20 E. Albania - Greece border.						i	Z				19 10.7
H=05 10 05 USCGB						e	Z				26
26. iP	NEZ		07	08	52.5	eL	E		21	09	49
S	N				09 40.3	eL	E				30 47
P:N,E,C						Mag. 5 3/4 (Matsushiro) Chile.					
26. iP	Z		13	51	40.1	27. iP	Z		00	35	56.5
i	N				41.0	i	NE				57.9
i	E				42.7	i	Z				36 15.8
i	Z				53.4	i	Z				38.7
e	E				52 37	eS	E				45 07
i	E				57.8	eL	E				55 54
i	N				58.3	P:D					
P:D						26. eP	Z		15	26	35 ca.
26. eP	Z		15	26	35 ca.	i	Z				42.5
27. iP	Z		00	35	56.5	22 S., 172 W. Loyalty Is. region.					
i	NE				57.9	H=00 25 03 USCGB					
i	Z				36 15.8						
i	Z				38.7						
eS	E				45 07						
eL	E				55 54						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
27.	eP	Z	00	56	17	27.	iP	NEZ	15	52	35.9
							iS	E			56.1
27.	P	Z	01	19	41		i	N		53	58.1
	i	N			44.0		i	E			14.7
	i	Z			53.6		i	N			25.9
								P:S,W,C			26.9
27.	e	Z	02	06	18	27.	iP	NE, P	16	58	16.8
	eL	E		09	31		i	N			28.1
27.	iPKP	Z	03	37	20.5		i	N		59	25.8
	i	N			23.0		i	EZ			40.6
	i	Z			34.6		e	Z		17	00
	ePP	EZ		41	09 ca.			P:N,E			23.0
	eSS ?	E	04	01	20 ca.	27.	iP	Z	20	17	53.5
	eL	E		27	39		i	NE			54.0
	iPKP:D						i	Z		18	03.4
	Mag. 5 3/4 - 6 (Matsushiro)						iPP	Z		19	42.1
	41 S., 76 W.						i	N			49.6
	Off coast of Chile.						e	E		25	14
	H=03 17 21	USCGS					iSS	E		27	56
27.	iP	NEZ	04	12	36.4		eL	E		28	49
	i	E		13	14			5 1/2 S., 153 E. New Britain region.			
	P:S,W,C							h:150 km ca.			
27.	eP	Z	04	43	28			H=20 10 00	USCGS		
	e	Z		45	18	27.	PKP	Z	21	09	10
	eL	E		54	23		i	Z			24.6
27.	iP	Z	04	52	03.1		i	Z			32.4
	e	Z			37			Northern Chile - Bolivia			
	P:C							border.			
								H=20 49 12	USCGS		
27.	eP ?	Z	05	17	29	27.	ePKP	N	25	26	48
	S	E			32.2		e	Z			52
	i	NZ			32.7		i	E			56.0
27.	P	Z	05	36	43.7		i	N			58.2
	i	NZ			45.5		ePP	EZ		30	38
	i	E			48.1		eSKKS	E		37	33
	i	Z			48.5		eSS	E		50	27
	P:C						eLr	E		00	16
27.	P	Z	06	00	33			Mag. 6 1/2 (Matsushiro)			
	e	E			44			45 S., 77 W.			
								Off coast of Chile.			
								H=23 06 55	USCGS		
27.	iP	NZ	06	27	35.0	27.	iP	Z	23	40	32.4
	i	E			35.2		i	E			36.1
	i	N			39.4		i	N			40.6
	i	Z			42.6		i	Z			44.6
	P:N,C							P:D			
27.	ePKP	EZ	07	48	29	28.	eP	Z	01	46	16
	i	E			59.6		i	Z			29.6
	i	N			10.6	28.	P	Z	01	55	09.0
27.	iP	Z	08	17	21.4		i	NZ			10.2
	P:C						i	E			10.4

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
28.	ePKP	Z	03	26	02	29.	P	Z	01	24	44.5
	i	Z			12.2		i	Z			46.7
	i	NE			12.8		i	Z			57.1
	eL	E	04	18	36		eS	NE		25	23
	eL	E		30	32	29.	iP	EZ	02	38	50.3
							i	N			50.8
							eS	E		39	11
							i	N			13.2
								P:W,C			
28.	eP	Z	06	07	35	29.	ePKP	Z	07	59	23
	i	Z			45.2		i	N			37
	eS	NZ	08	04			i	Z			43.2
	i	E			05		e	E		08	00
28.	eP	E	06	25	35		iPP	Z		03	34
	e	Z		26	05		iSKKS	Z		09	59
	e	N			17		i	E		10	11
28.	eP	E	08	38	31		eSKSP	E		14	03
	i	Z			44.5		e	E		21	15
28.	iP	EZ	09	50	44.8		eSS	E		24	00
	P:W,D						e	E		32	29
28.	eP	Z	11	04	08		eLq ?	E		40	06 ca.
	i	Z			13.2		iLr	E		51	22
	i	Z			26.0			Mag. 6 3/4 - 7 (Matsushiro)			
	e	NE			27			38 S., 72 1/2 W. Chile.			
								H=07 39 29	USCGS		
28.	ePKP	Z	11	25	48	29.	eP	EZ	08	24	01
	e	N			26 01		e	N			32
	e	E			29 24		i	Z			25 20.3
	ePP	Z			50			25 1/2 N., 124 1/2 E. Ryukyu Is.			
	iSKKS	E			35 25			H=08 20 01	USCGS		
	eSS	E			36 27	29.	e	Z	08	54	36
	eSSS ?	E			49 27			37 1/2 S., 73 W. Southern Chile.			
	eL	E	12	16	09			H=08 34 20	USCGS		
	eL	Z			17 43	29.	ePKP	Z	14	25	32
							eL	E		15	19
								37 1/2 S., 73 W.			06 ca.
								Near coast of Chile.			
								H=14 05 25	USCGS		
28.	iP	Z	17	23	26.4	29.	iP	NZ	20	05	03.9
	i	N			26.9		i	E			05.7
	i	Z			32.8		eL/?	E		13	34
	iS	N			42.3			P:N,C			
	i	EZ			42.6			C., 121 1/2 E. Celebes.			
	P:C							H=19 57 30	USCGS		
28.	eL	E	19	32	56 ca.	29.	eP	Z	21	43	54
28.	eP	NZ	21	54	27		i	E			57.2
	i	E			27.3		e	E			44 18
	i	Z			28.6		i	N			25.5
	i	N			30.1		ePP	E			47 42
	i	E			31.2		eSKSP	E			58 06
	eS	E	57	06				(cont.)			
	e	N			11						

Date	Phase	Comp.	Time(GMT)
continued			h m s
30.	eP	EZ	05 25 20
	i	Z	42.2
30.	eP	Z	07 08 47
	eL	E	21 34
53 1/2 N., 164 W. Unimak Is. region. H=07 01 15 USCGS			
30.	eP ?	Z	10 13 24 ca.
	i	E	25.5
	i	N	27.1
	i	Z	31.4
30.	P	Z	16 08 04
	i	NE	04.8
30.	eP	Z	16 11 35
	eL	E	17 26
Near southwest coast of Luzon, P.I. H=16 05 59 USCGS			
30.	iP	Z	19 41 46.2
	i	E	46.6
	S	NE	42 18
	P:C		
31.	iPKP	Z	02 59 52.3
	i	Z	03 00 00.4
	i	N	04.4
	i	EZ	12.3
	eSKKS	E	10 25
	e	E	16 51
	i	E	19 35
	eSS	E	24 06
	eSSS	E	28 24
	eLq	E	41 06
	eLr	E	49 32
	iPKP:C		
Mag. 6 1/4 - 6 1/2 (Matsushiro) 39 1/2 S., 75 W. Chile. H=02 40 00 USCGS			
31.	iP	Z	05 02 46.9
	i	E	47.9
	e	E	09 28
	P:C		
18 S., 168 1/2 E. New Hebrides Is. H=04 52 28 USCGS			

Date	Phase	Comp.	Time(GMT)
			h m s
31.	iP	NEZ	06 05 06.6
	iS	NEZ	06.6
31.	iP	NEZ	06 12 14.7
	e	E	23
	i	Z	23.2
P:S,W,C			
31.	P	Z	07 26 47.0
	i	Z	48.6
	i	E	49.8
	i	Z	51.6
	iS	N	27 53.7
	i	EZ	54.1
31.	P	Z	08 49 49.1
	iS ?	Z	53.0
	i	NE	53.7
31.	iPKP	Z	11 21 14.3
	i	NEZ	15.1
	i	Z	28.0
	i	Z	48.0
	eS	E	30 51
	eFS	E	32 57
	eSS	E	39 10
	eL	E	51 28
	eL	E	12 01 28
PKP: C Mag. 6 1/4 - 6 1/2 (Matsushiro) 18 N., 62 W. Leeward Is. H=11 02 20 USCGS			
31.	iP	NZ	13 19 33.0
	i	E	34.1
	i	Z	34.8
	i	N	36.6
	iPcP	Z	21 07.1
	iPP	Z	24.3
	e	N	31
	e	E	24 23
	eL	E	30 48
P:N,C 7 1/2 S., 156 E. Solomon Is. H=13 11 02 USCGS			
31.	iP	Z	13 47 07.9
	i	E	08.1
	i	N	29.0
	i	E	31.2
	P:C		
31.	iP	NEZ	15 35 00.7
	S	NZ	15
	P:N,C		
31.	iP	NEZ	17 10 40.3

Date	Phase	Comp.	Time(GMT)
continued			h m s
	i	N	17 10 41.7
	iS	NE	53.0
P:S,W,C			
31.	iP Z, P E		21 08 40.0
	i	E	42.1
	i	Z	09 32.1
	iPcP	N	52.8
	iPcP	EZ	53.8
	i	Z	54.6
	ipP	Z	10 22.5
	eS	E	15 03 ca.
	eSS	E	18 18
	P:D		
5 1/2 S., 109 1/2 E. Java Sea. h: 500 km ca. H=21 00 40 USCGS			
31.	iP	NEZ	22 05 33.5
	i	E	39.6
	iS	NE	06 04.2
	i	E	04.2
P:S,C			

Date	Phase	Comp.	Time(GMT)
			h m s
June			
1.	eP	EZ	05 57 02
	e	NZ	39
1.	PKP	Z	05 23 00
	eSKKS	E	33 36
	e	E	45 44
	eSSS	E	52 26
	eL	E	06 14 48
	eL	Z	15.0
Mag. 6 - 6 1/2 (Matsushiro) 78 S., 73 W. Chile H=05 02 10 USCGS			
1.	P	Z	08 39 37
	e	Z	54
	eL	NE	40 01
1.	iP	Z	11 00 01.4
	i	NE	01.6
	i	Z	05
	P:D		
1.	e	E	12 28.2
1.	iP	EZ	12 33 54.5
	iS	NE	34 09
	i	Z	10
	P:E,D		
1.	eP	NEZ	13 15 53
	e	E	16 58
	i	Z	18 50.9
1.	eP?	Z	14 27 02
	i	Z	10.0
1.	eP	Z	15 42 24
1.	eP	NZ	17 47 17
	e	E	51 14
	eL	E	54 27
1.	iP	NEZ	21 23 29.9
	eS	NEZ	49
P:N,E,D			
1.	e	E	22 27.2
	eL	E	34 27
Mag. 5 3/4 - 6 (Matsushiro) 42 S., 74 W. Near coast of Chile. H=21 12 30 USCGS			
1.	i	Z	23 44 36.1
	e	Z	49

Date	Phase	Comp.	Time(GMT)		
			h	m	s
2.	iP	Z	01	58	59.6
	i	N			59.8
	i	E		59	00.1
	e	NE	02	03	53
	i	Z		04	19
	P:C				
	Near south coast of Mindanao, P.I. H=01 58 58 USCGS				

2.	e	Z	02	59	00
	e	Z			14
2.	iP	Z	03	42	00.5
	e	NZ			43
	e	E			44

2.	ePKP	Z	06	17	54
	i	Z		18	05
	e	E			06
	ePP	Z		21	52
	e	E			25 44
	eSKMS	E			28 38
	eSKSP	E			32 06
	eSS	E			41 43
	L	E	07	01	19
	L	EZ		08	42
	Mag. 6 - 6 1/4 (Matsushiro) 46 1/2 S., 74 W. Southern Chile. H=05 58 03 USCGS				

2.	P	EZ	07	13	25
2.	iP Z,P	NE	07	30	16.6
	P:D				
	19 S., 175 W. Tonga Is. h:150 km ca. H=07 19 10 USCGS				

2.	e	Z	07	32	51
	33 1/2 N., 60 E. Iran. H=07 22 30 USCGS				

2.	iP	Z	07	55	18.6	
	e	NE			20	
	e	Z			32	
	e	Z			53	
	i	Z	08	00	58	
	eS	E			02 02	
	eL	E			05.7	
	eL	Z			08.5	
	P:C					
	Mag. 6 1/2 - 6.3/4 (Matsushiro) 5 1/2 S., 151 1/2 E. New Britain. H=07 47 11 USCGS					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
2.	iP	Z	08	24	16.3
	i	NE			16.6
2.	iPKP	Z	08	56	12.8
	eL	E	10	00.5	
	P:C				
	Mag. 5 3/4 - 6 (Matsushiro) 40 S., 74 W. Near coast of Chile. H=08 36 10 USCGS				

2.	iP Z,P	E	12	53	57
	P:D				
38 1/2 N., 49 E. Iran. H=12 42 38 USCGS					

2.	P	NEZ	15	06	48
	e	Z		08	11

2.	iP	NEZ	19	01	55.9
	e	E		03	05
P:S,W,C					

2.	P	Z	19	09	24.9
	e	NE			25
20 1/2 S., 178 1/2 W. Fiji Is. h:550 km ca. H=18 59 05 USCGS					

2.	e	Z	21	51	46
	38 1/2 S., 74 W. Near coast of Chile. H=21 30 58 USCGS				

2.	iP	NEZ	22	38	37.1
	e	E		39	49
	e	Z		40	03
	P:N,E,C				

2.	e	E	23	26	35
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2.	P	NEZ	23	28	02
	e	Z		29	50

2.	iP	Z	02	07	44.1
	e	N		08	06
	e	E			07
P:D					

3.	iP	EZ	03	01	43.9
	e	N			44
	e	NZ		02	08
	P:E,D				

3.	iP	EZ	03	34	24.8
	i	N			25.3
	P:E,C				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
3.	P	NZ	07	46	22
	e	Z		48	07
	eS	E		53	09
	eL	E		57	17
	eL	E	08	00	17
	P:D				
5 1/2 S., 151 E. New Britain. H=07 38 14 USCGS					

3.	iP	Z	10	47	10.2
	i	Z			19.1
P:C					

3.	iP	NZ	13	24	40.0
	i	E			40.4
	e	Z			26 40
	eS	E			32 41
	P:S,D				
17 1/2 S., 179 1/2 W. Fiji Is. h:600 km ca. H=13 14 38 USCGS					

3.	iP	NEZ	13	33	39.0
	e	Z		41	42
	i	E			49
	eL	E			49 02
	P:N,W,C				
Mag. 6 - 6 1/2 (Matsushiro) 17 1/2 S., 179 W. Fiji Is. h:600 km ca. H=13 23 37 USCGS					

3.	iP	Z	14	52	58.7
	i	N			59.0
	i	E			59.4
	e	NE			54 35
	e	Z			39
	P:C				

3.	iP	NEZ	16	19	29.9
	S	EZ		20	34
	eL	EZ			55
	P:N,E,D				
41 1/2 N., 141 1/2 E. Near south coast of Hokkaido, Japan. h:100 km ca. H=16 13 04 USCGS					

3.	iP	NEZ	17	14	51.2
	e	N		16	43
	P:N,E,D				

3.	ePKP	Z	18	57	37
	e	NE			59
(cont.) - 25 -					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
42 1/2 S., 75 W. Off coast of southern Chile. H=18 17 36 USCGS					
3.	eP	NZ	21	50	35
	31 1/2 N., 114 W. Gulf of California. H=21 38 02 USCGS				

3.	eP	Z	22	08	48
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4.	eP	Z	02	40	13
	20 N., 104 1/2 W. Near coast of Jalisco, Mexico. H=02 27 06 USCGS				

4.	PKP	Z	03	23	09.2
	P:C				
39 S., 73 1/2 W. Near coast of Chile. H=03 02 49 USCGS					

4.	eP	Z	03	31	08
----	----	---	----	----	----

4.	iP	NEZ	05	41	49.8
	e	Z			43 05
P:N,E,D					

4.	eP	Z	07	32	43
----	----	---	----	----	----

4.	eP	Z	09	36	45 ca.
	e	Z		37	24

4.	eP	Z	09	55	39
----	----	---	----	----	----

4.	iP EZ,P	N	10	17	20.9
	e	NE		19	42
	e	Z			44
	eS	E			49
	eL	E			20 41
	P:E,D				
24 N., 143 E. Volcano Is. region. H=10 14 11 USCGS					

5.	P	Z	06	15	10.2
	e	E			10
	i	Z			42.2

5.	iP	EZ	08	01	29.7
	i	N			30.2
	S	Z			02 02
	e	Z			13
P:E,D					

5.	eP	NEZ	11	12	58.7
	P:N,W,C				



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Date	Phase	Comp.	Time(GMT) h m s
5.	e	E	16 06 41
5.	eP	NEZ	19 42 45
	eS	E	52 50
	e	E	57 09
	L	E	20 04 09
Mag. 5 1/2 - 5 3/4 (Matsushiro) 31 1/2 S., 177 W. Kermadec Is. H=19 30 30 USCGS			
5.	eP	Z	20 47 53
	e	Z	58
6.	e	E	00 11 31
6.	P	EZ	01 29 12
	e	NZ	23
	e	E	30 45
	S	E	38 38
	e	E	46 16
	L	E	49 41
Mag. 6 (Matsushiro) 41 N., 125 W. Off coast of northern California. H=01 17 48 USCGS			
6.	eP	NEZ	04 53 30
6.	PKP 1	Z	06 15 40
	e	Z	16 13
	ePKP 2	NE	31
	e	NEZ	20 25
	eSKKS	NE	27 03
	eSS	N	40 40
	eG	NE	59 31
	eLr	E	07 03 09
	eLr	N	13
Mag. 7 3/4 - 8 (Matsushiro) 45 1/2 S., 73 1/2 W. Near coast of Chile. H=05 55 44 USCGS			
6.	eP	NZ	07 05 10
	i	Z	22.4
6.	eP	Z	12 56 41
	e	N	53
	i	Z	54.0
	e	NEZ	57 34
6.	eP	NEZ	23 40 40
	e	E	49.2
23 1/2 S., 180 South of Fiji Is. h:600 km ca. H=23 30 08 USCGS			

Date	Phase	Comp.	Time(GMT) h m s
7.	P	Z	02 06 32.6
	e	NE	33
	S	EZ	49.6
7.	ePKP	Z	05 42 57
40 1/2 S., 72 W. Southern Chile. H=05 22 34 USCGS			
7.	eP	NEZ	07 11 13
16 S., 174 1/2 W. Tonga Is. region. h:150 km ca. H=07 00 17 USCGS			
7.	iP	NEZ	08 07 47.6
	eS	EZ	59
	i	N	08 00.1
P:W,C			
7.	P	NEZ	11 15 01.8
P:S,W,D			
7.	P	Z	11 28 33.6
	e	NE	34
	e	Z	47
7.	P	Z	12 02 06.4
	e	E	06.6
	i	NEZ	10.1
P:D			
7.	iP	Z	12 50 51.1
	i	NE	51.3
	i	NE	51 46.3
P:D			
7.	iP	NEZ	13 02 12.3
	i	Z	39.0
	e	Z	54
	iS	NE	06 03.7
	eL	E	08 27
	ScP	Z	09 30
P:S,W,C 53 N., 158 1/2 E. Near east coast of Kamchatka. H=12 57 15 USCGS			
7.	iPKP	NZ	13 15 55.3
	i	E	55.8
	i	Z	16 07.7
	e	E	44 37
P:N,C Off coast of southern Chile. H=12 55 51 USCGS			

Date	Phase	Comp.	Time(GMT) h m s	Date	Phase	Comp.	Time(GMT) h m s
7.	iP	NZ	13 38 16.6	9.	P	NEZ	05 13 34
	i	E	17.1		i	N	14 37.0
	e	Z	39 49	P:N,E,C 9 S., 112 1/2 E. Near south coast of Java. h:350 km ca. H=05 05 01 USCGS			
	e	E	40 04	9.	iP	Z,P NE	11 34 15.2
P:N,C 20 S., 177 1/2 W. Fiji Is. h:500 km ca. H=13 27 49 USCGS					i	Z	35 25.2
7.	eP	Z	14 22 17		iS	NE	42 37.2
	i	Z	31.8		i	E	44 17
7.	eP	Z	15 46 31		SS	E	47 18
	eSS	E	16 00 55		L	N	49 31
	eL	E	14 20		L	E	57.0
14 N., 57 E. Arabian Sea. H=15 34 50 USCGS					L	E	57.1
7.	P	NEZ	16 46 10.9	P:D Mag. 6 1/2 - 6 1/2 (Matsushiro) 18 S., 139 E. New Hebrides Is. H=11 25 51 USCGS			
	e	E	41		iP	NEZ	12 46 00.6
P:N,W,C					P:S,E,C		
7.	iP	NEZ	19 05 37.8	9.	iP	NEZ	14 58 45.9
	i	E	46		i	Z	59 09
	i	NZ	43.1		S	E	15 00 16
P:N,E,D					P:S,W,C		
8.	P	Z	05 18 16.4	9.	P	Z	16 05 22.9
	i	NE	17.0		S	EZ	41
	e	NZ	19 48	P:C Explosion at Mihoro, central Japan..			
P:C 3 1/2 S., 127 E. Boeroe I. H=05 10 25 USCGS				9.	e	N	18 15.5
8.	e	Z	10 38 22		e	N	21.1
	eL	E	17 01 35 ca.		e	N	43.3
	e	E	23 15	10.	P	EZ	04 13 40
35 N., 35 W. North Atlantic Ocean. H=16 19 48 USCGS				10.	iP	NEZ	05 42 22.9
8.	iP	NZ	18 09 45.2		iS	NE	25.4
	i	E	45.4	P:S,W			
	i	Z	58.2	10.	iP	NEZ	06 14 37.6
	iS	Z	10 10.2		SP	NE	56
P:S,D				P:S,W,C			
9.	iP	NEZ	03 51 13.2	10.	P	NEZ	09 29 37.8
	S	N	26		eS	N	30 16
P:S,W,C				P:S,E,D			
9.	iP	NEZ	04 21 22.6	10.	iP	EZ,P N	10 08 00.7
	S	NE	46	P:N,E,D			
P:N,W,C				10	P	NEZ	12 07 13
					eS	N	13 42

Date	Phase	Comp.	Time(GMT)
			h m s
continued			
e	N		12 16 27
eL	N		22 55
Pt: N, W, D 6 1/2 S., 131 E. Banda Sea. H=11 59 06 USCGS			
10.	PKP	Z	14 49 48
e	NE		15 00 36
e	N		03.8
e	E		03.9
eL	N		47 39
eL	E		47.9
Mag. 5 1/2 - 5 3/4 (Matsushiro) 37 S., 75 W. Near coast of Chile. H=14 29 47 USCGS			
10.	P	EZ	17 46 04.8
e	N		49
P: E, D			
10.	eP	Z	21 23 10
eS	N		32 07
e	E		15
e	N		34 41
eSS	N		36 56
eL	N		40 47
e	E		41 48
e	E		44 47
Mag. 6 (Matsushiro) 15 1/2 S., 174 W. Samoa Is. region. H=21 12 05 USCGS			
11.	PKP 1	Z	00 54 10
i	N		18
i	EZ		19.7
iPKP 2	NZ		53.6
pPKP 1	Z		55 51
esPKP 1			
or			
epPKP 2	N		56 00
sPKP 2	Z		43
PP	Z		58 06
e	E		23
e	E		01 06 20
e	N		09 45
e	E		13 14
esSS	N		19 19
i	E		49
e	N		26 55
Mag. 5 3/4 - 6 (Matsushiro) 21 S., 84 1/2 W. Southern Bolivia. h: 300 km ca. H=00 34 48 USCGS			

Date	Phase	Comp.	Time(GMT)
			h m s
11.	iP	Z	11 53 55.2
i	N		55.6
e	N		12 00.6
P: C			
11.	P Z, eP	N	13 30 38
e	NE		41 00
11.	P	Z	15 22 46
i	NZ		51
iS	E		29 42
SS	NE		33 23
L	E		34 37
eLr	N		36 41
Lr	Z		37 10
Mag. 6 - 6 1/4 (Matsushiro) 9 S., 152 1/2 E. D'Entrecasteaux Is. H=15 14 07 USCGS			
11.	iP	Z	16 46 19.5
iS	E		53 13
ScS	NE		56 37
i	Z		42
L	E		58 21
Lr	NZ		17 00 25
W P	E		18 48.0
Mag. 6 - 6 1/4 (Matsushiro) 9 1/2 S., 152 1/2 E. D'Entrecasteaux Is. H=16 37 40 USCGS			
11.	iP	Z	17 16 31.4
P: D			
D'Entrecasteaux Is. H=17 07 52 USCGS			
11.	iP	Z	18 38 18.7
P: D			
11.	iP	NZ	20 34 28.7
S	N		51.6
i	Z		32.1
P: N, D			
12.	eL	N	01 17.0
Mag. 5 3/4 - 6 (Matsushiro) 37 S., 75 W. Off coast of Chile. H=00 02 55 USCGS			
12.	iP	NZ	02 24 38.1
i	E		38.3
iS	N, S E		59.1
P: N, D			
12.	iP	Z	04 07 02.4

Date	Phase	Comp.	Time(GMT)
			h m s
continued			
i	E		04 07 03.1
S	E		15 31
SPorScS	N		16 17
esSP	N		19 13
e	N		23 21
P: C 22 1/2 S., 179 E. South of Fiji Is. h: 600 km ca. H=03 56 44 USCGS			
12.	P	Z	05 04 57
i	N		57.6
12.	iP	Z	07 09 48.7
P: D 29 1/2 S., 179 W. Kermadec Is. h: 250 km ca. H=06 58 12 USCGS			
12.	ePKP	Z	07 38 57
e	NE		42.7
eS	E		46 44
e	E		52.1
PSFS	N		59 36
i	E		51
SSS	NE		08 04 29
G	E		15 03
G	N		07
L	NE		21 53
Mag. 6 1/2 - 6 3/4 (Matsushiro) 36 S., 98 W. South of Pacific Ocean. H=07 19 43 USCGS			
12.	P	Z	08 03 00
12.	iP Z, P N		08 51 00.7
S	NE		16
P: D			
12.	ePKP	Z	15 25 02
e	N		10
e	Z		16
Southern Chile. H=15 04 57 USCGS			
12.	iP	Z	15 27 13.7
i	Z		27.7
P: C 22 1/2 S., 172 E. Loyalty Is. region. H=15 16 20 USCGS			
12.	eP	Z	17 07 36
e	N		18 20
12.	iP	Z	17 37 40.5
e	NE		55
S	Z		38 47
P: D			
13.	PKP 1	Z	06 07 04
i	Z		15.2
PKP 2	Z		41
SKSP	E		21 17
eSS	NE		30 30
i	NE		31 35
SSS	N		36 19
e	E		31
e	N		39 32
e	E		42 01
eL	E		49.9
Lr	NE		56 55
P: D Mag. 6 1/2 - 6 1/2 (Matsushiro) 44 1/2 S., 76 1/2 W. Off coast of southern Chile. H=05 47 05 USCGS			
13.	iP NZ, P E		07 08 58.6
P: N, D			
13.	eP	Z	08 15 20
e	Z		16 24
13.	iP	NZ	10 42 29.7
P: N, D			
13.	P	Z	12 00 43
e	Z		50
e	N		07 37
eL	N		13.4
13.	P	Z	19 46 38
e	Z		48
13.	eP	Z	23 52 07
14.	e	N	00 51.6
14.	ePKP	Z	03 14 17
e	Z		21
i	Z		40.2
eL	N		04 06.7
43 S., 73 W. Near coast of southern Chile. H=02 54 13 USCGS			
14.	eP	Z	05 23 48
e	N		24 33
14.	iP	NZ	04 16 12.3
e	NZ		20
P: N, D			

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
14.	eP	NZ	04	28	58	15.	eP	NEZ	04	35	35
							e	E			37 23
							e	N			38 14
14.	eP	Z	04	29	44	15.	eP	Z	05	26	30
	eL	E		31	13		eS	N		30	59
	L	N		32.7			eL	E		33	13
	44 1/2 N., 149 E. Kurile Is. H=04 27 00						eL	N			33
14.	eP	Z	06	16	27	15.	iP	NEZ	05	38	26
	e	Z		17	51		iS	Z			36.7
							i	NEZ			37.2
							P:S,W,C				
14.	P	Z	06	56	09	15.	P	Z	07	46	42
14.	iP Z,P E		09	53	42.2		S	N		47	09
	eS	N		54	33	15.	eS?	N	08	24	47
	i	EZ			38		eL	N		32.1	
	P:C										
14.	eP	Z	10	30	42	15.	ePKP	Z	10	00	30
	e	Z		31	31		i	E			33
14.	P	Z	11	09	36		i	N			41
	e	Z			50		eL	NE			50.7
	eS?	N		12	36	15.	e	N	12	22.1	
	e	E			39		e	E			29.4
14.	eP	Z	14	33	20	15.	iP	NEZ	12	45	36.1
	eS	NEZ			33		iS	NEZ			37.8
	i	E		34	17		P:N,E,C				
					18.8						
14.	iP	NZ	16	09	00.1	15.	P	Z	13	51	02
	i	E			00.4		e	N			08
	S	N			57		i	N			16
	P:N,C						e	E			54
							S N, eS E				55 27
14.	P	NZ	19	36	36		L	E			57 38
							L	N			58 03
14.	eP	NZ	22	06	11	15.	iP	NEZ	15	58	08.7
	e	N		09	33		S	NZ			39 05
	eL	N		10	36		i	N			15
				13	11		i	E			17
14.	P	Z	23	46	50		P:S,W,C				
	S	NE		53	45		Mag. 6 - 6 1/4 (Matsushiro)				
	eSS	N		57	13		41 N., 142 1/2 E.				
	Lq	N		58	30		Near north coast of Honshu, Japan.				
	Lq	E			46		H=15 36 51				
	Lr	N		00	01		USCGS				
	Mag. 5 3/4 (Matsushiro)					15.	e	Z	23	00	30ca.
	9 S., 152 1/2 E.						S	N			07 22
	D'Entrecasteaux Is.						e	E			36
	H=23 38 13						eL?	N			14 50
							Solomon Is.				
							H=22 50 47				
							USCGS				
15.	eP	NEZ	04	27	31	15.	eP	Z	25	01	46
	eS	N		32	02		(cont.)				
	eL	N		34	20						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued						16.	e	E	09	43	27
	eS	NE					e	N			30
	eL	NE	23	11	45		35 S., 179 E.				
				23	10		Off northeast coast of North I., P.I.				
							H=09 05 07				
							USCGS				
15.	P	Z	23	34	54	16.	P	Z	10	00	52
	i	NZ			59		i	E			55
	e	E			36		e	Z			01 00
	pP	NZ			38		e	NZ			04
	i	E			33		eS	N			04 42
	sP	Z			57		e	E			05 27
	iS N, S E				40		eL	E			07 15
	i	N			43		eL	N			26
	sS	NE			21		11 1/2 N., 144 E				
	ScS	NZ			33		Mariana Is.				
	eSS	N			44		H=09 55 28				
	e	E			45		USCGS				
	e	N			21	16.	P	Z	10	31	47.5
	1/2 S., 133 E.						S	N			41 25
	Western New Guinea.						eSSS	NE			49 37
	H=23 27 40						eL	NE			51 55
							eL	E			55.5
							P:C				
15.	P	Z	23	43	32	16.	iP	NEZ	11	12	22.2
							i	Z			23.7
							iS	N			13 05
							i	EZ			09
	26 S., 178 1/2 E.						P:E,D				
	South of Fiji Is., I.					16.	e	E	12	00.6	
	h: 600 km ca.					16.	P	NEZ	12	02	15
	H=23 32 35						e	E			24
							e	S			33
							USCGS				
16.	e	N	02	09.6		16.	P	Z	12	27	46
16.	iP	NZ	03	29	56		i	E			47.0
	PP	N		50	45		iS	N			53.5
	S E, eS N			34	17		eS	E			28 29
	i	N			29		i	E			34
	L	E			55 29	16.	iP	NEZ	22	44	40.6
	L	NE			36 27		iS	NE			45 27.8
	P:N,C						i	Z			28.7
	12 N., 143 1/2 E.						P:N,E,C				
	Mariana Is.					16.	iP	NEZ	00	18	18.6
	h: 150 km ca.						iS	N			39.4
	H=03 24 42						P:S,E,D				
							USCGS				
16.	iP Z,P N		06	01	12.1	16.	iP	NEZ	02	54	59.4
	iS	NEZ			26.9		iS	N			
	P:C						USCGS				
16.	eL	E	08	50	42	17.	iP	NEZ	00	18	18.6
	eL	N			49		iS	N			39.4
	12 1/2 N., 125 E						P:N,E,C				
	Near coast of Samar, P.I.					17.	iP	NEZ	00	18	18.6
	H=06 37 48						iS	N			39.4
							USCGS				
16.	iP	Z	09	22	42	17.	iP	NEZ	02	54	59.4
	i	NE			49.9		iS	N			
	e	NE			24 08		P:N,D				
	P:C						USCGS				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
17.	P e e eS L	EZ NZ NZ NE N	04	18	46						
17.	iP Z, P N i e eP P:D	N Z N	05	12	43.8 50.0 05 09						
	18 S., 178 W. h: 600 km ca. H=05 02 54		Fiji Is. USCGS								
17.	iP S eL eL P:W,C	EZ N N E	05	14	44.9 16 46 17 05 19						
17.	P i i P:D	NEZ Z S	10	13	32 43 14 26.8						
17.	iP i eS P:C	Z NE NZ	10	31	09.2 09.4 32 25						
17.	eP e	Z Z	10	43	34 47						
17.	e e	N N	11	24.9 28.2							
17.	iP S P:S,W,C	NEZ NEZ	13	54 55	22.2 39						
17.	iP PcP P:S,E,D	NEZ NEZ	14	56 58	45.1 07						
17.	iP P:W,C	EZ	16	42	38.8						
17.	iP i PP S eL Sc3 i eL	NEZ Z NEZ E NEZ NE NE Z	16	42 43 44 48 51 52 53	48.5 01.2 11 35 21 59 14 54.6 (cont.)						
			continued								
			P:S,W,C Mag. 6 - 6.1 (Matsushiro) 52 1/2 N., 173 1/2 W Andreanof Is., Aleutian Is. H=16 35 32 USCGS								
17.	eP	NEZ	16	59	00						
17.	iP Z, P NE P:N,E,D		17	23	56.8						
17.	iP eS i P:S,W,C	NEZ N EZ	18	01	33.9 43 49						
17.	iP eS i P:S,W,C	NEZ N NEZ	18	06	31.7 41 46						
17.	e e e e	E N N E	19	01.4 03.0 09.7 10.1							
17.	iP Z, P NE i S P:C	Z Z E	20	04	54.6 55.8 06 20						
17.	P eL	EZ NE	20	43	17 51 52						
17.	P i e	EZ Z N	23	12	40 51 14 42						
18.	eP	Z	02	16	49						
18.	eP eS eSS eL L	Z NE N N E	02	44 54 59 03 06.1 12.7	34 36 49						
18.	P iS i	EZ N E	03	00	29 46 48						
18.	eP i e i	NEZ Z Z N	03	27	44 48 11 41.7						
			9 1/2 S., 152 1/2 E. D'Entrecasteaux Is. H=03 19 04 USCGS								
18.	iP Z, P E		08	03	03.1 (cont.)						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
			continued								
			P:E,D								
18.	iP i S i P:D	Z NE N Z	08	03	46.1 48	18.	eP e e	Z N E	02	59	51 10.2 16.4
18.	iP i S i P:D	Z NE N Z	08	29	25.3 25.6 30.4 30.8	19.	iP i e e P:D	Z E Z N N	05	03	31.2 36 43 24 25
18.	iP i e i i i i P:C	Z E Z N N Z Z	08	30	48.5 48.7 55 56.4 31 27 29 33.0	19.	iP i S P:W,C	EZ N N	07	57	55.7 55.9 13.7
18.	iP iS P:N,W,C	NEZ NE	12	34	17.0 29.0	19.	eP? eS eL eL	Z NE E N	09	18	07 22 28 24 43 25 00
18.	P i i	NZ E NZ	15	51	34 31.6 38.8	19.	iP i eS e P:C	Z E N N	09	52	44.1 45.4 12 04 19 03 39
			10 S., 161 E. Solomon Is. H=09 43 36 USCGS								
18.	iP i iS P:S,C	NZ N E	19	08	45.9 51.1 09 01.1	19.	e	Z	10	37	40
18.	iP P:C	NEZ	21	48	22.2	19.	iP i P:C	Z NEZ	12	31	53.7 54.2
18.	P S eL	Z N N	22	52	39 39 19.4		15 S., 178 1/2 W Fiji Is. region. h: 500 km ca. H=12 21 53 USCGS				
18.	iP iS P:C	Z NE	22	55	52.6 21.2	19.	iP i i S i L P:W,C	EZ N E Z NE	12	37	21.2 21.4 37 37 24 34 43
18.	iP i i i eL eL P:W,D	EZ N Z E N N	23	41	47.9 50 59.9 42 04 53.5 00 00.1		44 1/2 N., 149 E. Kurile Is. H=12 34 34 USCGS				
			Near south coast of Sumatra. H=23 32 39 USCGS								
19.	iP i i e e P:C	Z NE NZ Z N N	01	59	36.7 37.4 52.6 57 01 38 02 25	19.	iP eS i L i P:N,W,C	NEZ E N E NE	17	19	41.6 21 22 27 52 22 00
			28 N., 142 1/2 E. Benin Is. H=17 17 25 USCGS								



Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
19.	P e i	NZ Z N	17	25	57	20.	eP i S	Z NZ N	04	42	57
19.	iP Z,P iS P:C	NE NEZ	18	06	02.9 18.3	20.	P e	NZ N	04	45	55
19.	e i	NE NEZ	19	55	43 58	20.	eP e eS	Z N N	04	49	00 03 29
19.	P S	Z N	20	35	32 58	20.	iP i i S	Z NZ E NE	07	27	57.3 58.0 59.5 40
19.	P Z,eP e e e eL eL	E Z N E N E	21	29	07 30 34 45 47 27 40	20.	P i i	EZ E Z	11	58	35 12 20
19.	ePKP? i e e e eL	Z Z N NE E E N	22	03	03 10 14 27.2 32.8 38.6 56.3	20.	P S	EZ NE	12	05	16 45
20.	PKP 1 e i iPKP 2 i iPP PP i i i SKSP i e eSS e eSS Lr Lr	Z E E Z Z E E Z EZ E N E E E Z NE	02	21	01 05 23.4 36.1 41 25 09 10 31 49 55 34 22 35 20 40 05 17 44 25 46 23 50 53 12 35 41	20.	PKP 1 i i ePKP 2 e i iPP e SKKS i i SKSP SKKS PPS eSS eSSS Lr	Z Z E Z E NE EZ Z E Z Z E E N Z	13	19	35 39.0 48.7 20 08 23 20 26 44 27 20 30 10 26 32 47 33 59 31 15 36 52 42 55 49 29 14 11.2
											3 S., 129 E. Ceram I. H=12 05 09 USCGS
											Mag. 7 3/4 (Matsushiro) 38 S., 73 1/2 W. Near coast of Chile. H=02 01 06 USCGS
20.	iP i i i P:C	Z N Z Z	03	29	26.9 27 38.1 04	20.	iP i	NEZ Z	15	23	06.4 12.7
											Mag. 7 1/2 (Matsushiro) 39 1/2 S., 73 W. H=12 59 40 Chile. USCGS

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
20.	PKP i e i	Z N Z E	13	44	20 25 35 38	21.	P i i	NZ E NE	00	47	49 50 28
20.	ePKP 1 Near coast of southern Chile. H=14 23 30	Z	14	43	46	21.	P	NEZ	00	51	40
20.	P E,eP i e e	Z Z NE	15	34	51 53.2 37 08 21	21.	P Z,eP iP P:C	NE Z	05	44	45
20.	P e	Z N	17	05	10 18.3	21.	iP i i	Z	07	29	43.5
											57 N., 154 1/2 W. Kodiak I., Alaska. H=16 53 25 USCGS
20.	ePKP e i e e i e e e	Z N Z N E Z E Z N N	17	19	34 40 43.9 47 52 58.7 20 22 21 53 41 58 46 02	21.	iPKP NZ,PKP E iPS iPSPS eL L L	E E NE N E N	08	52	31.5 09 03 44 10 10 22 37 27 15 25
											Mag. 6 (Matsushiro) 4 1/2 S., 105 W. Pacific Ocean, southwest of Galapagos Is. H=08 34 59 USCGS
20.	iP Z,P e e e e e P:D	NE E NZ Z E E	17	49	13.2 15 15 22 14 47 20 27	21.	P i i	NEZ N	10	26	45 27 01.3
											38 1/2 S., 74 W. Off coast of Chile. H=16 59 35 USCGS
20.	P i i i	NEZ N N E	21	02	33 40.8 05 23.4 27	21.	P S L	Z NZ NE	12	41	58 43 40.4 44 40
20.	iP eS i i	NEZ NE E NZ	22	57	21.2 37 39 41	21.	P i PP PPF eL eL L L	NEE Z N Z E N N	12	50	24 24 33.4 51 55 56 00.4 58 08 20 59 11 21
											Mag. 5 - 5 1/2 (Matsushiro) 5 N., 126 1/2 E. Molucca Passage. H=12 45 31 USCGS
20.	eP	Z	23	08	30	21.	iP Z,P e eL eL P:C	E N N E	15	49	00.9 53 21 56 20 28
											Mag. 4.8 (Matsushiro) 56 1/2 S., 139 1/2 E. Honshu, Japan. H=22 56 49 USCGS

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
26.	iP i P:C	Z Z	06	36	55.4 07.9	continued					
26.	P iS	NEZ N	07	08	08.9 08.6	27.	iP iS	NEZ NEZ	19	18	41.7 42.6
26.	P e i e	Z N N N	07	26	50 52 13.8 20	27.	iP i i i P:N,C	NZ E E N	19	50	45.1 45.6 52 53
26.	P i eS	NEZ N NE	08	11	46 49.3 05	27.	iP Z,P N i P:C	E	20	47	26.5 26.9
26.	P P:C	Z	15	59	30.4	28.	iP Z,P N i e e P:D	E N N	01	12	49.5 50.7 23 24
26.	P Z,eP N i	Z	18	53	50 06	28.	iP i i S L L	NEZ N Z NE E N	03	07	12.9
26.	iP iS P:N,D	NEZ N	20	45	51.4 54.1	28.	iP i e e P:W,C	EZ N E N	10	25	38.6 39.1 26 45
27.	iP NZ,P E e P:N,D	N	02	08	20.9 05	28.	iP i e e P:W,C	EZ N E N	10	25	38.6 39.1 26 45
27.	iP EZ,P N i i P:C	N N	03	31	35.8 08 15.7	28.	iP NZ,P E i P:N,D	E Z	14	08	24.5 49
27.	P P:C	Z	06	28	00.6	28.	iP P:N,E,D	NEZ	14	12	56.1
27.	P i iS i	Z Z NE Z	09	02	37 47.6 10.6 11	28.	P e	Z N	14	35	09 10
27.	P i i	Z NZ E	09	34	09.5 10.1 10.9	28.	P P	EZ	15	50	16
27.	P i S i SS	Z Z N E N	17	02	34 41.6 36 09 43	28.	iP e e eL eL eL P:S,E,D	Z N N N E N	16	18	02.6 19 17 24 07 42 50 46 15 48 35

(cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued						29.	iP EZ,P N i S P:E,C	NEZ	05	16	37.4 38.6 17 57
Tonga Is. region, H=18 07 11.						USCGS					
28.	e eL eL	N N E	21	17	57 20 11 29	29.	P i i	EZ N N	05	54	40 42.4 55 02.1
29.	P S	Z NEZ	00	58	08 12.4	29.	iP Z,P N i i P:C	E N	06	01	14.4 14.8 56
29.	eP i	Z Z	01	36	15 21.6	29.	P i i	NEZ Z NE	07	59	35 08 00 59 01 04
29.	eP e	Z Z	01	56	15 46	29.	iP i P:E	NEZ N	08	25	54.9 26 01.9
29.	PKP i i i i i PP iSKKS iSKSP iSKSP i iSS iSSS L L L	Z E NZ N Z Z EZ NE E N NE E NE E N Z	02	17	13 30 31 42.6 13 22 36 09 27 50 31 30 53 36 11 41 15 46 40 05 07 40 08 10 40	29.	e eL L	N E N	14	25	21 29 26 25
						Mag. 6 1/4 - 6 1/2 (Matsushiro) Southern Chile. H=01 57 14	USCGS				
29.	iP i i i PP S ScS i ePPS SS i i i L L L P:C	Z N E N N N N E N N E N E N N E	04	41	14.4 16.4 17.3 44 19 51 05 43 48 52 21 56 21 29 59 21 05 03 09 04 05 06 49 55 07 05	29.	iP i S L L L P:W,C	EZ N NE E N NE	17	14	39.1 39.5 20 47 23 26 35 25 40
						53 N., 163 1/2 W. Fox Is., Aleutian Is. H=17 07 00	USCGS				
29.	iP i i i P:E,D	EZ N E	17	42	24.4 24.8 44 01	29.	iP i i P:E,D	Z E Z	23	33	34.5 17 04 18 02
						42.2 N., 143.8 E. Hokkaido, Japan. H=40 km	J.N.A.				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
29.	iP	NZ	23	55	37.7
	S	NEZ		56	07.7
	P:N,C				
30.	P	NEZ	05	48	52
	e	N		55	57
30.	iP	Z	05	54	54.8
	e	N		56	30
	P:D				
30.	eP	NE	07	20	28
	e	Z		21	03
30.	P	Z	07	30	01
	S	NE			43
	L	N		31	47
30.	P EZ, eP N		10	01	59
30.	iP	NZ	12	23	37.8
	i	NEZ			39.5
	i	E			45.9
	P:S,C				
30.	iP	NEZ	20	07	28
	iPP	N		09	40
	iScP	Z		12	39
	eS	N		14	28
	i	E			32
	V	N		18	42
	L	E			45
	P:N,E,D				
60 N., 151 W.					
Kenai Peninsula, Alaska.					
H=19 58 35 USCGS					
30.	P EZ, eP N		20	51	09
30.	P	Z	23	05	56
	i	NZ			59.4
	i	E		06	00

Takeshi Honda

Director