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MATSUSHIRO SEISMOLOGICAL OBSERVATORY, JAPAN.

Seismological Bulletin

for January 1 to February 28, 1961

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
1.	eP e	Z Z	00	33	59 34 26	2.	iP P:S,W,C	NEZ	16	26	11.7
1.	P e eS e	Z NE EZ N	14	46	17 18 47 02 03						
1.	iP S P:N,E,C	EZ Z	15	40	03.0 08.8	2.	P i eS eL	NZ Z E E	21	00	10 01 54.2 06 49 11 28
1.	iP P:D 18.3 S.,178.2 W. Fiji Is. region. h:663 km ca. H=16 38 27.8	Z	16	48	30.8						
1.	iP i S P:E,D	EZ N NEZ	20	20	29.3 29.8 42	2.	iP i P:S,W,C	NEZ Z	21	50	30.8 51 57
2.	iP e P:N,E,D	NEZ N	02	31	33.7 33 00	3.	iP i S i SS P:C	NZ E NE Z E	11	48	47.0 47.4 55 08.7 09.2 59 10
2.	iP S P:N,W,C	NEZ NEZ	03	39	34.8 48						
2.	iP i ePPP e e iS i e eLq eL eLr eLr P:N,W,C Mag. 6 1/2 - 6 3/4 (Mat.) 12.4 S.,166.4 E. Santa Cruz Is. region. h:161 km ca. H=10 11 56.9	NEZ Z N E N NEZ E NZ E NZ N EZ	10	21	20.2 38.7 24 29 37 28 30 58 51 26 32 01 34 56 35 02 37 28 31	3.	eP i i i i	NZ Z N Z NE	12	30	49 51.2 51.5 31 21 23
						3.	iP i e e e e e P:S,E,D	EZ, P N N Z E Z NZ E	16	11	48.7 50.3 12 33 13 40 44 14 03 06

Date	Phase	Comp.	Time(GMT)		
			h	m	s
3.	iP	Z	17	22	26.2
	i	NZ			28.5
	e	E	23	20	
	e	N			23
	P:C				
3.	iP	NZ	19	34	57.0
	e	EZ	35	15	
	iP	N			25
	e	E	44.6		
	P:D				
	6.4 S., 130.4 E. Banda Sea. h:100 km ca. H=19 27 00.4 USCGS				
3.	iP	NZ, P E	20	13	58.5
	SS or sSS	NE	24	37	
	P:S, W, D				
	7.3 S., 123.0 E. Banda Sea. h:154 km ca. H=20 05 33.8 USCGS				
3.	iP	EZ	21	28	51.2
	i	N			51.7
	i	Z			58.7
	P:C				
3.	iP	NEZ	23	13	53.2
	e	N			56
	P:N, E, D				
4.	P	NEZ	19	24	04.0
	P:N, E, D				
	5.5 S., 128.7 E. Banda Sea. h:173 km ca. H=19 16 19.5 USCGS				
4.	P	NEZ	20	40	43
4.	iP	NZ, P E	22	19	15.9
	i	Z			22
	P:C				
5.	e	Z	02	43	54
5.	e	N	07	06.7	
5.	iP	EZ	11	17	18.6
	i	N			18.7
	i	Z			36.7
	P:D				
5.	iP	EZ	14	13	26.8
	i	N			27.2
	i	Z			36.2
	i	Z	14	38	
	e	N			41
	(cont.)				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	e	E	14	14	43
	e	Z			15 33
	S	Z			18 49
	e	N			59
	e	E			19 00
	Lq	E			20 59
	Lq	N			21.4
	e	Z			21 40
	eLr	NEZ			23 05
	e	E			47
	e	N			48
	P:W, C				
	Mag. 7 - 7 1/4 (Mat.) 51.6 N., 176.3 W. Andreanof Is. h:37 km ca. H=14 06 25.9 USCGS				
5.	eP	NE	15	12	44
	eS	E			14 59
	e	N			15 19
	45.7 N., 149.3 E. Kurile Is. h:19 km ca. H=15 09 37.9 USCGS				
5.	iP	NZ	16	01	30.7
	PcP ?	Z			03 28
	PPP	N			50
	e	E			04 17
	eS	N			07 23
	e	E			25
	e	Z			33
	eLq	E			10 17
	e	NE			11 05
	eLr	NEZ			13.3
	P:N, C				
	Mag. 6 1/2 - 6 3/4 (Mat.) 4.1 S., 143.0 E. New Guinea. h:108 km ca. H=15 53 56.0 USCGS				
5.	iP	NZ	18	08	26.2
	i	E			26.7
	eS	EZ			17 05
	e	N			07
	e	E			19 07
	eSS ?	E			21 47
	sSS	N			51
	P:N, C				
	Mag. 6 3/4 (Pas.) 21.2 S., 169.3 E. Loyalty Is. region. h:123 km ca. H=17 57 56.6 USCGS				
5.	iP	Z	18	25	21.9
	e	N			30 17
	e	E			27
	(cont.)				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	e	Z	18	30	57
	e	N			32 58
	S	EZ			33 52
	SS	NE			38 33
	P:C				
	Mag. 7 - 7 1/4 (Mat.) 21.0 S., 169.1 E. Loyalty Is. h:124 km ca. H=18 14 43.0 USCGS				
5.	iP	Z	18	44	48.7
	i	NE			49.7
	P:D				
	51.3 N., 176.6 W. Andreanof Is. h:30 km ca. H=18 37 48.3 USCGS				
6.	iP	Z	01	22	18.5
	i	NE			18.7
	i	Z			40
	eS	E			23 40
	e	Z			45
	eL	N			25 22
	eL	E			25
	P:D				
	42.5 N., 143.4 E. Hokkaido, Japan. h:21 km ca. H=01 20 30.8 USCGS				
6.	P	EZ	04	06	15.8
	i	Z			26.7
	i	Z			37.2
6.	e	E	06	06.3	
	e	E			09.7
6.	iP	EZ	06	28	33.9
	P:C				
	51.8 N., 176.2 W. Andreanof Is. h:48 km ca. H=06 21 38.6 USCGS				
6.	eP	Z	07	06	23
	e	N			30
	i	Z			37
6.	eP	Z	07	10	49
	i	E			50.3
	i	Z			50.7
	i	N			50.9
	e	E			14 56
	L	E			17.5
	53.3 N., 159.7 E. Kamchatka. h:24 km ca. H=07 25 47.7 USCGS				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
7.	P	Z	07	58	51.9
	e	N			52
	e	N			59 15
7.	iP	NEZ	08	20	04.9
	P:N, W, C				
7.	iP	EZ	10	43	20.2
	i	N			20.5
	P:C				
	35.9 N., 27.0 E. Dodecanese Is. h:127 km ca. H=10 30 58.0 USCGS				
7.	iP	NEZ	13	29	20.2
	i	Z			38
	S	EZ			30 16
	e	E			29
	e	N			31
	P:S, W, C				
7.	e	N	19	04.7	
	e	E			08.6
	e	E			22.2
	e	N			34.7
	L	E			35.7
	L	N	20	01.0	
	57.2 S., 25.3 W. Sandwich Is. h:94 km ca. H=18 16 51.2 USCGS				
7.	iP	Z	23	52	27.8
	e	N			28
	i	Z			32
	P:C				
8.	iP	NZ	01	21	58.2
	e	E			59
	e	N			30 19
	P:S, D				
	4.1 N., 129.3 E. Halmahera region. h:106 km ca. H=01 15 25.6 USCGS				
8.	iP	Z	03	03	06
	i	Z			09
	eS	NE			08 28
	e	Z			35
	eL	E			10 39
	eL	N			47
	P:D				
	3.5 N., 129.6 E. Halmahera region. h:117 km ca. H=02 56 34.1 USCGS				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
15.	e	E	09	53	.1	16.	P	Z	07	45	19
15.	iP	NEZ	11	54	23.2	16.	iP	Z	07	49	25.4
	iS	E		55	18.2		S	N		50	08
	P:S,W,C						P:C				
	Mag. 6 (Mat.)					16.	P	Z	08	00	43
	39.5 N., 143.3 E.					16.	iP	Z	08	01	24
	Near east coast of Honshu, Japan.						P:C				
	H=11 53 10.9		USCGS								
15.	e	N	12	30	.7	16.	P	Z	08	22	13
15.	e	E	13	38	.1	16.	iP	EZ	08	31	04.0
	P:W,C						P:W,C				
15.	iP	Z	16	02	50.8	16.	P	Z	08	39	04 ca.
	e	NZ		04	26		P:C				
	P:C					16.	eP	Z	08	41	26
15.	P	Z	16	55	03	16.	P	Z	08	47	47
	i	N			03.8		P:C				
	PcP	Z			30	16.	iP	Z	08	48	54.7
	S	N	17	03	27		S	N		49	33
	sS	E		04	51		P:D				
	SSS	E		10	41		P:D				
	P:D						P:D				
	Mag. 5 1/2 - 5 3/4 (Mat.)						35.0 N., 141.3 E.				
	20.4 S., 169.5 E.						Near east coast of Honshu, Japan.				
	Loyalty Is. region.						h:188 km ca.				
	h:182 km ca.						H=08 48 17.7		USCGS		
	H=16 44 44.8		USCGS			16.	eP	Z	08	57	28
15.	iP	NZ	18	34	34.1	16.	iP	Z	09	01	30.9
	i	NZ			59.2		P:D				
	P:N,C					16.	eP	Z	09	14	28
15.	iP	Z	20	42	17.2	16.	iP	Z	09	23	50.1
	PcP	Z		43	30		P:C				
	e	NE		49	01	16.	eP	Z	09	55	42
	P:S,W,D					16.	eP	Z	10	00	46
	5.2 S., 110.0 E. Java Sea.					16.	eP	Z	10	03	18
	h:565 km ca.					16.	eP	Z	10	10	25.7
	H=20 34 14.3		USCGS				P:N,W,C			11	08
16.	iP Z, P	NE	03	09	50.2	16.	iP EZ, P	N	10	10	25.7
	P:D						S	Z		11	08
16.	iP EZ, P	N	05	09	54.0		P:N,W,C				
	P:E,C					16.	iP	NEZ	10	14	47.2
	P:D						S	N		15	28
16.	iP	Z	07	20	56.5		P:N,W,C				
	i	NEZ			57.6		36.4 N., 141.4 E.				
	S	N		21	37		Near east coast of Honshu, Japan.				
	P:D						h:131 km ca.				
	Mag. 6.4 (Mat.)						H=10 14 09.6		USCGS		
	36.0 N., 141.1 E.						Near east coast of Honshu, Japan.				
	h:131 km ca.						H=10 14 09.6		USCGS		
	H=07 20 18.6		USCGS								

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
16.	iP	Z	10	23	24.7	16.	e	E	12	18	.21
	eS	N		24	03	16.	e	E	12	20	.8
	e	N			09	16.	e	E	12	25	18
	P:C					16.	e	E	12	28	.7
16.	P	Z	10	32	59	16.	iP	Z	12	32	05.2
	P:D						P:C				
16.	iP	EZ	10	58	14.2	16.	iP	Z	12	35	41.7
	eS	N			56		P:C				
	P:W,C					16.	iP	Z	12	37	35
16.	P	Z	11	19	32	16.	iP	Z	12	43	19.2
	P:C						P:D				
16.	iP	Z	11	20	21.9	16.	iP	Z	12	45	38.2
	i	NEZ			22.2		P:C				
	P:D					16.	P	NEZ	12	58	39
	Mag. 6.2 (Mat.)						P:C				
	35.7 N., 140.6 E.					16.	P	NEZ	12	58	39
	Near east coast of Honshu, Japan.					16.	eP	Z	13	02	32
	h:157 km ca.						P:D				
	H=11 19 46.5		USCGS			16.	iP	Z	13	04	55.2
16.	iP	Z	11	53	08.4	16.	P	NEZ	13	09	54
	P:C						Z			55.2	
16.	iP	NEZ	11	41	45.2	16.	i	N	10	33	
	S	N		42	22		i	E		34	
	P:N,W,C						Mag. 5 1/2 (Mat.)				
	Mag. 5 1/2 (Mat.)						35.6 N., 140.8 E.				
	35.2 N., 141.0 E.						Near east coast of Honshu, Japan.				
	h:149 km ca.						h:144 km ca.				
	H=11 41 06.2		USCGS				H=13 09 17.7		USCGS		
16.	eP	Z	11	55	15	16.	eP	Z	13	17	21
16.	iP	Z	12	00	47.2	16.	eP	Z	13	17	53
	eS	N		01	27	16.	P	Z	13	20	21
	P:D					16.	P	Z	13	31	42
16.	iP	Z	12	06	11.7	16.	iP	Z	13	41	38.2
	eS	N			56		P:C				
	P:D					16.	eP	Z	13	48	22
16.	P	Z	12	08	47	16.	eP	Z	13	49	20
16.	iP	Z	12	13	12.2	16.	iP	E	13	51	33.9
	i	NEZ			13		i	NZ		34.2	
	S	E			51		P:C				
	i	N			54		Z			52	21
	P:C						Mag. 6.2 (Mat.)				
	Mag. 6.2 (Mat.)						36.2 N., 141.7 E. Honshu, Japan.				
	h:105 km ca.						h:105 km ca.				
	H=12 12 34.4		USCGS				H=12 12 34.4		USCGS		

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
16.	iP P:C	Z	13	56	49.5	16.	P	Z	15	05	47
16.	iP i P:W,C	EZ Z	14	01	08.3 08.9	16.	iP i P:C	Z E	15	09	23.0 23.2
16.	iP i S P:N,W,C Mag. 5.7 (Mat.) 36.3 N.,141.2 E. Near east coast of Honshu, Japan. h:127 km ca. H=14 04 05.3 USCGS	NEZ Z N	14	04	43.2 43.7 05 23	16.	P P:C	Z	15	21	08
16.	eP ? S	E N	14	07	56 08 33	16.	iP i i P:C	Z Z E	15	26	54.2 27 25 27
16.	P	Z	14	13	15	16.	iP S P:C	Z NZ	15	36	44.2 37 19
16.	e	Z	14	16	.8	16.	iP i S i P:W,C Mag.6.2 (Mat.) 36.4 N.,140.6 E. Near east coast of Honshu, Japan. h:147 km ca. H=15 41 23.3 USCGS	Z EZ NEZ E N	15	41	56.3 57.2 42 26.7 28
16.	P P:C	Z	14	17	39	16.	iP P:C	Z	16	05	25.0
16.	P	Z	14	23	48	16.	eP	Z	16	14	08
16.	eP	Z	14	24	35	16.	iP	EZ	16	21	34.9
16.	P P:D	Z	14	26	08	16.	iP i i P:N,W,C	NEZ Z N	16	22	40.2 23 07 10
16.	iP P:D	Z	14	32	20.2	16.	iP i eS P:W,C	EZ N NE	16	41	07.7 08.2 44
16.	P	EZ	14	36	59	16.	P i	EZ N	17	04	13 05 35
16.	P S	NEZ Z	14	38	04 46	16.	iP	Z	17	13	39.2
16.	iP EZ, P N eS i P:N,W,C Mag. 5 1/4 - 5 1/2 (Mat.) 36.7 N.,141.8 E. Honshu, Japan. h:108 km ca. H=14 44 15.1 USCGS	N E	14	44	54.2 45 33 35						
16.	iP P:C	Z	14	52	05.6						
16.	iP P:C	Z	14	52	16.7						
16.	iP P:D	Z	15	02	57						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
16.	P i S e P:C	Z EZ N E	17	35	30.2 30.7 36 06 08	16.	P e eS	N N N	21	18	28 ca. 38 19 05
16.	iP i S P:E,C	EZ N N	18	29	54.2 54.7 30 50	16.	iP e P:C	Z N	21	40	17.9 47
16.	iP i S P:E,C	Z N N	18	58	43.5 59 20 29	16.	iP i S i P:W,C	EZ N E N	22	34	35.0 35.4 35 02 03
16.	iP i P:C	Z E Z	18	59	20.5 21.2	16.	P i S i	EZ NEZ N Z	22	46	09.6 09.8 39 41
16.	iP i P:W,C	EZ N	19	35	20.5 21.2	16.	iP S i	NEZ Z	23	53	36.2
16.	iP E, P Z eS P:E,D	Z E	19	47	00.8 28	17.	iP P:C	Z	00	30	04.1
16.	iP i e P:C	Z E NE	19	52	03.5 03.7 23	17.	iP i e i P:C	Z NEZ N E	00	30	16.9 17.2 49 57
16.	i	N	19	54	43						
16.	P e e	Z E N	20	03	47 04 11 21	17.	iP e P:N,W,C	NEZ N	00	41	47.2 42 14
16.	iP Z, P NE P:N,E,D	Z N,E,D	20	07	48.2	17.	iP e P:N,W,C	NEZ N	01	36	06 55.0 37 01 29
16.	iP EZ, P N e S P:S,E,D	EZ Z N	20	31	51.7 32 24 33	17.	iP i i i P:D	NEZ Z N N	01	46	40.4
16.	iP i e P:C	EZ N N	20	35	49.2 49.8 36 22	17.	P P:C	Z	01	46	40.4
16.	iP i S e i P:W,C	EZ N N E	20	42	30.7 31.2 43 07 12 22	17.	iP S P:W,C	EZ NE	01	54	43.3 55 19
16.	iP i S i P:E,C	EZ N NE Z	20	48	54.8 55.0 49 31 37	17.	P S i P:C	Z E N	02	16	23.2 17 02.7 04

Date	Phase	Comp.	Time(GMT)		
			h	m	s
17.	iP i S P:D	Z E NE	02	22	40.2 40.4 23 13.2
17.	P e e i P:D	Z E Z N	02	28	29.2 46 29 01 03
17.	P e e P:W,C	EZ N N	02	41	29.0 42 02 10
17.	P i	EZ EZ	03	04	30 55.0
17.	eP e	EZ N	04	26	11 55
17.	P S i P:D	Z N Z	04	30	54.5 31 27 29
17.	P eS	EZ N	04	54	43 55 22
17.	iP P:E,D	EZ	05	47	45.6
17.	eP	Z	06	39	02
17.	iP i S i P:W,C	EZ N N E	06	42	16.7 17.1 52 53
36.2 N., 141.6 E. Honshu, Japan. h:99 km ca. H=06 41 36.8 USCGS					
17.	iP e P:W,C	EZ NE	08	58	24.8 47
17.	iP S i P:W,C	EZ E N	09	35	43.5 36 11 19
17.	P	Z	10	32	11.5
17.	iP i iS P:C	Z E N	10	40	09.3 09.7 45.5

Date	Phase	Comp.	Time(GMT)		
			h	m	s
17.	eP	Z	10	42	38
17.	iP E, P Z		12	12	02.5
17.	P S	EZ N	13	12	13.2 45
17.	iP i S e P:E,D	EZ N E N	13	22	09.4 09.6 36 40
17.	iP Z, P E i e P:C	E N	13	40	26.7 55.8 41 11
17.	eP e	Z E	13	50	00 53 19
17.	iP e i P:W,C	EZ E E	14	08	26.8 57 09 06
17.	iP e e e P:C	Z N NE N	14	30	35.4 31 07 13 15
17.	P eS P:E,D	EZ E N	14	38	15.6 45 54
17.	iP EZ, P N P:E,C		15	00	30.2
17.	iP eS P:W,C	EZ N	16	01	14.7 51
17.	iP Z, P E S P:C		16	32	02.7 37
17.	P eS	EZ N	17	36	36 37 16
17.	iP i i e P:C	Z Z N N	22	23	22.0 30 31.0 44 24 02

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
17.	P i S i eS Lq Lr	Z NZ E N E E E	23	16	07 22 24 41 49 26 06 32 03 36 01	18.	iP Z, P N eS P:C	NE	07	28	35.0 29 16
Mag. 5 1/2 - 5 3/4 (Mat.) 21.4 S., 169.3 E. Loyalty Is. region. h:84 km ca. H=23 05 32.5 USCGS						18.	iP i e e	Z EZ N Z	07	42	49.3 49.5 43 20 29
18.	iP Z, P NE P:C		00	06	47.7	18.	iP E, P Z e i	Z N	08	01	45.2 02 25 30.7
18.	iP i e P:C	Z Z N	00	08	17.4 48 09 00	18.	iP i P:E,D	EZ N	08	50	10.2 45
18.	iP NZ, P E S	E N	01	48	22.2 49.2	18.	iP e e P:C	Z Z N	10	15	22.6 50 58
18.	eP e	Z N	02	17	05 44	18.	e E	E	10	19	45
18.	e E	E	03	05	32	18.	P i i e P:E,D	EZ Z N N	13	02	53 03 12 24 25
18.	e E	E	03	28	1	18.	P i E	Z E	13	47	44.5 44.8
18.	e E	E	04	12	3	18.	P i P:C	Z E	13	47	44.5 44.8
18.	P S	EZ N	05	33	34 34 13	18.	P i P:C	Z E	13	47	44.5 44.8
18.	iP E, P Z i i i e e P:E,D	Z Z Z N NZ	06	04	45.4 48.0 55.7 04.7 18 30	18.	eP P S	EZ N	14	22	49 15 56
18.	iP i e i P:D	Z N Z N	06	59	14.5 14.7 26 38	18.	iP EZ, P N eS P:N,W,C	Z N	14	52	14.2 44
18.	iP Z, P E i eS i i P:C	Z N NE Z NZ	07	13	25.2 25.9 14 00 03 22	18.	P S P:W,C	EZ N	16	18	37.7 19 00.7
36.1 N., 141.4 E. Near east coast of Honshu, Japan. h:100 km ca. H=07 12 46.0 USCGS						18.	iP eS P:W,C	EZ Z	16	33	43.2 34 18

Date	Phase	Comp.	Time(GMT)		
			h	m	s
18.	iP S	NEZ NE	16	49	13.2 49
P:N,W,C 35.9 N.,141.7 E. Near east coast of Honshu, Japan. h:137 km ca. H=16 48 34.5 USCGS					
18.	iP	NEZ	18	27	08
P:N,E					
18.	e eL e	N N E	21	23	02 26 25 35.9
18.	iP i iS i P:D	Z NZ E N	22	56	13.7 14.1 24.9 25.2
19.	iP iS P:N,E,D	NEZ E	00	25	30.9 42.4
19.	iP iS P:E,C	EZ NE	03	26	51.7 38.9
19.	P S Lq eLr	NEZ E E N	04	31	06 39 04 45 02 47.5
Mag. 5 3/4 - 6 (Mat.) 14.4 S.,166.7 E. New Hebrides Is. region. h:26 km ca. H=04 21 16.0 USCGS					
19.	iP i S P:W,C	EZ Z NE	05	14	27.2 58 02
19.	eP e Lq Lq Lr Lr	Z E N N E NZ	06	05	03 13 49 51 21 25 31 25 03 28
Mag. 5 3/4 (Mat.) 21.5 S.,170.3 E. Loyalty Is. h:100 km ca. H=05 54 25.5 USCGS					
19.	P i	EZ NE	12	24	50 25 24

Date	Phase	Comp.	Time(GMT)		
			h	m	s
19.	e	N	13	29	57
19.	iP e i i P:W,C	EZ E N Z	13	59	27.4 37 38 55.2
19.	e	E	16	23	51
19.	iP i S i i L i P:N,D	NZ E E N NEZ E	17	26	35.5 35.7 29 52 30 03 19 31 52 33 37
Mag. 6 - 6 1/2 (Mat.) 49.7 N.,155.8 E. Kurile Is. h:31 km ca. H=17 22 16.9 USCGS					
19.	iP P:C	Z	17	53	12.7
19.	P S P:D	EZ N	19	17	57 18 33
19.	iP i P:C	Z NE	20	29	18.1 18.5
19.	iP i S P:W,C	EZ N N	21	00	23.0 23.6 58.5
19.	eP	Z	21	03	07
19.	iP i i P:W,D	EZ N NZ	21	06	05.5 05.8 29
20.	P	EZ	00	37	21
20.	iP i S P:E,D	EZ NEZ E	00	45	36.4 37.1 46 11
20.	iP e P:C	Z Z	01	05	47.4 56
Mag. 6 1/4 - 6 1/2 (Mat.) 56.5 N.,152.1 W. Near Kodiak I. h:55 km ca. H=00 56 59.7 USCGS					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
20.	iP e e P:C	Z N NE	02	44	34.4 45 01 11
20.	P S i	Z E N	04	00	44.9 01 06 07
20.	P e P:C	Z Z	05	32	03.5 50
56.4 N.,152.0 W. Near Kodiak I. h:58 km ca. H=05 23 16.1 USCGS					
20.	eP e	Z Z	05	49	45 50 11
20.	iP Z, P E i eS P:C	Z Z N	06	00	41.4 01 00 16
20.	P	Z	06	08	40
20.	P	Z	08	23	32
20.	iP i i P:C	Z NEZ Z	08	59	17.0 17.4 24
59.4 N.,154.3 W. Southern Alaska. h:91 km ca. H=03 50 34.0 USCGS					
20.	eP eS	NEZ NE	09	26	53 27 10
20.	P i e e	Z N NE N	12	02	26 37 58 30
20.	iP iS P:E,D	Z N	12	56	03.7 47.7
20.	P S	EZ N	13	05	31 06 07
20.	P	Z	13	42	01
56.5 N.,152.2 W. Near Kodiak I. h:44 km ca. H=13 33 12.8 USCGS					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
20.	P e e e	Z Z Z N	14	06	37 46 08 28 31
20.	P e e e	Z Z N E	15	40	23 35 42 15 35
20.	eP i e	Z NEZ NE	15	59	44 44.4 18
20.	iP i i e P:C	EZ NEZ E Z N	16	33	40.8 41.2 07 12 15
20.	eP P:C	EZ	17	10	50
20.	iP S SS eL i P:C	Z NE NE N NE	17	18	04.7 25 15 29 01 31 59 33 13
Mag. 6 1/4 - 6 1/2 (Mat.) 56.4 N.,152.3 E. Sea of Okhotsk. h:46 km ca. H=17 09 15.7 USCGS					
20.	P P:C	Z	17	21	59
20.	iP eS P:W,C	EZ E	19	01	46.1 02 22
20.	eP e e e eL eL	Z E E E E N	19	52	16 56 48 59 31 20 03 17 05.8 07 01
20.	iP E, P Z e e	Z N N	19	55	59.2 56 18 35
20.	P	Z	21	06	16
20.	eP	Z	21	39	56
56.8 N.,152.1 W. Near Kodiak I. h:43 km ca. H=21 31 08.7 USCGS					

Date	Phase	Comp.	Time(GMT)	Date	Phase	Comp.	Time(GMT)			
			h m s				h m s			
20.	eP eL	Z NE	21 46 17 54.1	21.	iP S	EZ N	18 07 38.0 08 15			
			56.5 N., 153.1 W. Near Kodiak I. h: 14 km ca. H=21 37 23.4				21.	eL	NE	20 18 05 ca.
20.	iP i i i S i P:C	Z NEZ Z N Z E	21 47 09.9 10.3 24.6 33 47 53	21.	iP P:S,E,C	NEZ	20 33 47.0			
20.	iP Z, P E S P:W,C	N	21 57 28.8 58 03	22.	iP i PPP S i L L	NZ E NZ NE N E N	03 33 35.2 36.2 37 10 41 23 43 17 46 49 47 18			
20.	eP	Z	22 07 50				Mag. 7 - 7 1/4 (Mat.) 11.9 S., 166.2 E. Santa Cruz Is. region. h: 25 km ca. H=03 24 04.5			
20.	iP i i i S i	EZ N N E NE NE	22 35 30.5 30.6 58 36 02 08 13	22.	P eS	NEZ NE	10 34 04 45			
			Mag. 5 1/2 (Mat.) 38.1 N., 141.2 E: Near east coast of Honshu, Japan. h: 52 km ca. H=22 34 51.1				22.	eP eS	Z NZ	12 10 54 11 25
21.	P	NEZ	02 56 15	22.	eP eS	NEZ N	13 34 38 52			
21.	eP e	NEZ N	05 32 00 33 21	22.	eP S e eL	NEZ E E E	16 21 33 31 30 44 42 05 ca.			
21.	iP S P:S,E,D	NEZ NE	14 11 31.4 12 15				Mag. 5 1/2 (Mat.) 28.5 S., 174.8 W. Kermadec Is. region. h: 68 km ca. H=16 09 37.3			
21.	P i P:W,D	EZ N	17 42 39 39.7	22.	iP i PcP eS eL eL P:C	Z N Z E E Z	19 14 25.5 26.6 15 28 22 09 28 21 31 05 ca.			
21.	P	Z	17 43 37.2				Mag. 5 1/4 - 5 1/2 (Mat.) 12.3 S., 166.1 E. Santa Cruz Is. h: 35 km ca. H=19 04 54.1			
21.	iP i S eL P:D	Z NE Z N	17 43 44.2 45.7 44 25 32				36.3 N., 141.7 E. Honshu, Japan. h: 25 km ca. H=17 42 56.2			
			USCGS				USCGS			

Date	Phase	Comp.	Time(GMT)	Date	Phase	Comp.	Time(GMT)			
			h m s				h m s			
22.	iP P:D	Z	19 28 24.2	24.	iP S	Z NE	03 00 40.8 01 07			
			10.9 N., 124.6 E. Leyte P.I. h: 185 km ca. H=19 22 51.0				24.	P	Z	05 55 49
			USCGS				24.	iP	NEZ	07 34 45.4
22.	iP Z, P E P:C		23 20 32.2				PPP S L L	N NE E N	38 29 42 37 49 17 39	
22.	P eS	NEZ E	23 55 38 56 11				P:N,W,C Mag. 5 3/4 - 6 (Mat.) 15.6 S., 167.6 E. New Hebrides Is. region. h: 198 km ca. H=07 25 03.5			
23.	iP S P:E,D	EZ N	01 26 22.7 58.7	23.	P i i i S eL	NZ NEZ Z NEZ E NE	04 50 29 31.2 40.3 41.2 52 07 53 05			
			42.9 N., 145.3 E. Hokkaido, Japan. h: 46 km ca. H=04 48 21.4				Mag. 5 3/4 - 6 (Mat.) 61.1 S., 152.1 E. Antarctic Ocean. h: 25 km ca. H=08 02 28.7			
			USCGS				USCGS			
23.	iP e e e eL P:E,C	EZ N E N E	15 23 53.1 24 31 26 11 15 28 49	24.	iP i P:S,D	NZ N	10 12 12.6 38.6			
24.	iP e i eS e P:S,W,C	NEZ NE E N Z	00 03 56.5 04 11 32. 51 05 09	24.	iP i S P:W,C	NZ N E	10 12 12.6 38.6 20 09.6			
24.	iP i i i i i P:S,E,D	NEZ E E E E NE	01 24 23.4 24.1 27.1 36.4 51.1 53	24.	iP i S P:E,D	NEZ E NEZ	12 43 13.3 25.3 41			
			USCGS				USCGS			
24.	iP i i i i P:S,W,C	NEZ E E E NE	01 24 23.4 24.1 27.1 36.4 51.1 53	24.	iP i S P:E,D	EZ N NE	14 32 07.5 07.8 19			
24.	iP Z, P N i S i P:C	N E E N	02 06 54.6 55.8 21.8 24	24.	iP i S P:D	EZ N NEZ	16 30 17.9 18.4 20 03			
24.	iP iS P:S,W,C	NEZ NE	02 53 08.1 37.1				USCGS			

Date	Phase	Comp.	Time(GMT)		
			h	m	s
24.	iP iS P:S,E,D	NZ NE	22	36	00.2 28
25.	iP sPP PPP S eL eL P:N,C Mag. 5 3/4 - 6 (Mat.) 14.1 S., 165.4 E. New Hebrides Is. region. h:195 km ca. H=05 21 42.2	NZ N N N E N	05	31	08.3 33 48 34 31 39 07 45 21 47
25.	P Z, eP e e P:D	NE N N	07	26	12 28 01 31 35
25.	iP Z, P eS P:D	E N	12	02	45.0 03 21
25.	iP P:N,E,D	Z	16	12	26.0
25.	eP S eL	Z N N	17	27	54 33 41 36 35
		1.2 N., 121.3 E. Celebes. h:56 km ca. H=17 20 34.7			USCGS
25.	iP P:C	Z	19	08	33.0
		49.8 N., 156.0 E. Kurile Is. h:98 km ca. H=19 04 22.8			USCGS
26.	iP P:N,C	NEZ	00	41	02.9
26.	iP S P:S,C	NEZ Z	04	16	46.6 53.2
26.	P EZ, eP	N	04	32	57
26.	eP i	NZ Z	10	56	24 32.9
26.	eP	NZ	11	21	17
26.	P	Z	12	58	32

Date	Phase	Comp.	Time(GMT)		
			h	m	s
26.	iP P:D	Z	13	12	47.7
26.	iP Z, P P:C	NE	13	22	54.6
		21.3 S., 169.5 E. Loyalty Is. region. h:77 km ca. H=13 22 22.6			USCGS
26.	iP EZ, P P:W,C	N	16	10	31.9
26.	iP eS ? L P:C	NEZ E E	16	23	54.9 32 35 39 47
		Mag. 6 1/2 - 6 3/4 (Mat.) 21.4 S., 169.5 E. Loyalty Is. h:119 km ca. H=16 13 25.1			USCGS
26.	iP NZ, P i iS P:N,C	E Z Z	17	28	48.9 51.9 10.5
26.	iP i i P:C	Z Z Z	18	59	23.4 33.9 59
		20.7 S., 169.5 E. Loyalty Is. region. h:106 km ca. H=18 48 56.9			USCGS
27.	iP P:N,W,C	Z	03	46	00.5
27.	iP i e P:W,C	EZ N N	11	30	04.6 04.8 41
27.	eP e e	Z E N	15	16	27 21 38 ca. 32 13 ca.
27.	iP eS P:S,E,C	NEZ E	20	09	49.5 11 58
		45.4 N., 149.3 E. Kurile Is. h:60 km ca. H=20 07 00.4			USCGS
28.	iPKP 1 iPKP 2	Z Z	03	44	05.0 30.0

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	eL eL PKP 1:C Mag. 5 3/4 - 6 (Mat.) 13.6 S., 76.6 W. Near coast of Peru. h:35 km ca. H=03 24 39.2	E Z	04	29	8 30.7
					USCGS
28.	eP S	Z E	05	02	11 53
28.	eP i i	Z EZ N	05	23	03 07.8 08.7
28.	iP e S ? P:N,E	NZ N NE	06	12	17.2 31 47
28.	iP iS P:S,E	NEZ NE	07	26	48.7 51.7
28.	PKP i i e e i SS e e L L	Z Z NE N N Z N E E N	14	25	36.6 31 43.7 44.3 39 36 43 50 44 30 45 43 15 00 23 01 18 06 08 25
		Mag. 6 - 6 1/4 (Mat.) 45.0 S., 105.8 W. South Pacific Ocean about 1200 miles south of Easter Islands. h:144 km ca. H=14 06 21.0			USCGS
28.	eP i i i i	Z N N N Z	15	00	17 19 26 27.5 32
28.	iP iS P:S,E,C	NEZ E	16	11	55.3 12 05
28.	iP EZ, P i eS e P:W,C	N N NE Z	17	27	11.5 20 58 28 02

Date	Phase	Comp.	Time(GMT)		
			h	m	s
28.	iP P:D	EZ	18	03	52.0
28.	iP Z, P i PP i S SS L L L P:D	NE NE Z Z NEZ N E N Z	19	53	37.5 42 55 52 56 12 20 02 15 07 01 09 05 10 15 13 45
		Mag. 6 1/4 - 6 1/2 (Mat.) 21.3 S., 169.5 E. Loyalty Is. region. h:50 km ca. H=19 43 01.4			USCGS
28.	P S	EZ NE	20	35	55 36 44
28.	iP NZ, P iS P:N,D	E E	23	27	28.5 01.4
28.	iP iS P:N,E,C	NEZ NEZ	23	38	54.3 39 01.0
29.	iP P:C	Z	00	26	39.0
29.	iP EZ, P eS P:E,D	N N	03	04	03.6 41
29.	iP S ? i P:S,W,C	Z Z E	04	16	31.3 41.0 17 03.6
29.	iP Z, P iS P:D	NE NEZ	06	38	00.2 03.0
29.	iP i PcP S eL P:C	Z NE Z NE NE	13	30	52.0 52.8 33 19.8 36 25 39 05
		51.8 N., 175.9 W. Andreanof Is. h:41 km ca. H=13 23 54.7			USCGS
29.	iP EZ, P eS P:E,D	N N	13	40	32.3 41 18

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
30.	iP	NE	05	58	32.5	31.	iP	EZ	13	38	18.3
	eS	N		59	09		i	N			18.7
	e	N			17		P:W,C				
	i	Z			31						
	P:N,W,D										
30.	iP	EZ, P N	06	11	07.3	31.	P	NEZ	16	00	46
	eS	N			36		P	NEZ	18	06	27
	P:E,D						P	NEZ	18	39	05
30.	P	NEZ	08	16	06			51.4 N., 178.4 W. Andreanof Is.			
	i	Z			07.7			h:53 km ca.			
	i	Z			12.6			H=18 32 19.5	USCGS		
	S	N			22	31.	P	NEZ	22	00	24
	i	E			24		eS	N			43
30.	iP	NZ	08	18	47.2	31.	P	N	22	31	52
	i	EZ			48.3						
	i	Z			53.3						
	i	N			54.8						
	S	E		19	04.9						
	P:N										
30.	iP	NZ	12	21	32.4						
	i	E			32.8						
	S	E			28 36						
	L	E			33 12						
	L	N			35 40						
	L	E			36 50						
	P:S,C										
	Mag. 5 ¹ / ₂ - 5 3/4 (Mat.)										
	65.2 N., 149.9 W.										
	Central Alaska.										
	h:34 km ca.										
	H=12 12 39.7			USCGS							
30.	iP	NE	16	24	37.7						
	iS	NE			54.2						
	P:N,W										
31.	P	Z	00	29	30.5						
	P:C										
31.	iP	Z, P NE	00	57	22						
	S	E			04 28						
	L	E			07 20						
	L	N			08 05						
	P:C										
	Mag. 6 ¹ / ₂ (Mat.)										
	55.8 N., 153.9 W.										
	Near Kodiak I.										
	h:26 km ca.										
	H=00 48 36.5			USCGS							
31.	P	Z	02	10	48						
31.	P	Z	03	31	14						
	i	Z			21						
	S	Z			55						

February

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
1.	P	NEZ	04	22	52.5		continued				
	i	Z		23	25		i	N	22	45	22.5
	S	NE			45		i	Z			39
	i	Z			47.5		i	Z			46 16
	P:S,C						P:W,C				
1.	iP	Z	04	59	00.0	2.	P	Z	00	53	36
	i	NE			01		i	N			40
	eS	E	05	03	32		i	N			54 16
	Lq	E		04	49	2.	iP	Z	01	04	11.0
	Lr	N		07	35		S	NE			58.5
	P:C						P:E,D				
	11.9 N., 143.7 E.						P ?	Z	01	49	07
	Mariana Is. region.						S ?	E		55	05 ca.
	h:95 km ca.						L	N		58	35 ca.
	H=04 53 44.4			USCGS							
1.	iP	NEZ	10	50	10.7	2.	P	NZ	06	53	59
	P:S,E,D						S	N		54	10
							P:N				
1.	iP	NEZ	15	23	21.0	2.	iP	NZ	06	57	38.7
	iS	NEZ			45.0		S ?	N			59
	P:S,W,D						P:S,C				
1.	iP	NEZ	18	39	21.8	2.	iP	NEZ	08	09	05.6
	S	NE			37.4		S	NE			21.0
	i	NEZ			43.0		P:S,W,D				
	P:S,W,C										
	Mag. 5 - 5 ¹ / ₄ (Mat.)					2.	iP	Z	11	18	32.5
	37.4 N., 138.4 E.						i	NE			34.1
	Nagaoka city.						pP	Z			49
	h:38 km ca.						sP	Z			59
	H=18 39 03.6			USCGS			i	Z		19	03
1.	iP	NEZ	18	51	26.3		PP	Z			20
	S	E			40		S	NE			22 37
	P:S,C						i	Z			55.5
							eL	E			24 09
1.	iP	NEZ	19	08	25.7		eL	N			35
	S	NE			40.0		i	Z			25 43
	i	Z			46.3		P:C				
	P:S,W,C						13.6 N., 145.5 E. Mariana Is.				
1.	iP	NEZ	19	13	41.5						
	S	NE			56						
	i	Z			14 02						
	P:S,W,C										
1.	iP	NEZ	21	40	19.0	2.	iP	NEZ	12	08	23.0
	S	NEZ			33		S	NE			36.5
	P:N,W,C						P:S				
1.	P	Z	22	32	14						
1.	P	EZ	22	45	21.0						
	i	Z			22						
	(cont.)										

Date	Phase	Comp.	Time(GMT)		
			h	m	s
2.	iP i P:S,W,C	NEZ E	12	16	51.6 17 08
2.	eL	E	12	34	41
2.	iP i S i P:S,W,C	NEZ N E NE	14	22	31.5 43.5 45.5 46
2.	iP S P:S,W,C	NEZ NE	16	07	58.0 08 12
2.	iP S P:W	EZ, P N N	16	54	37.5 55 13
2.	iP S	NEZ NE	17	06	05 19
2.	iP S P:S,C	NEZ NE	18	16	11.2 25
2.	P S i	NEZ NZ N	18	17	12 17 32
2.	P i i	NEZ NEZ NE	18	18	35 48 57
2.	iP iS i P:S,W,C	NEZ EZ N	22	01	15.4 30 33
2.	P S P:E,C	NEZ NE	23	14	53.5 15 08
2.	P i	NEZ NE	23	21	42 22 21
3.	iP i P:N,E,D	NEZ E	02	26	39.0 27 15
3.	P e e	Z E E	07	13	35. 20 05 22 15
3.	iP P:C	Z	12	45	10.7

(cont.) - 20 -

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
Off north coast of North I., New Zealand. h:300 km ca. H=12 33 22.8 USCGS					
3.	iP i S P:S,E,D	NEZ NEZ NE	13	32	20.1 35 51
36.4 N., 141.0 E. Honshu, Japan. h:103 km ca. H=13 31 44.7 USCGS					
3.	iP i P:E,D	EZ N	14	40	42.8 41 19
3.	iP S P:D	NEZ NE	20	09	59.8 10 15
4.	iP i P:E,D	EZ E	01	13	19.8 24
4.	iPKP 1 i i iPKP 2 i PKP 1:C	Z Z NE Z Z	01	32	31.8 36.8 37.3 33 02 09
18.3 S., 69.3 W. Chile-Bolivia border. h:178 km ca. H=01 13 05.0 USCGS					
4.	P i i	Z E N	02	05	31 33 06 04
4.	eP i	Z NZ	02	52	51 53 20
4.	iP S P:D	Z NEZ	04	22	53.4 58.1
4.	iP P:N,C	NZ	05	17	14.7
4.	iP S P:S,W	NEZ NEZ	07	08	49.4 55.9
4.	iP i P:E,D	E, P N	08	17	16.1 44

Date	Phase	Comp.	Time(GMT)		
			h	m	s
4.	iP i ipP PcP S ScP sS L eL e P:E,C Mag. $5\frac{1}{4}$ - $5\frac{1}{2}$ (Mat.) 24.7 N., 95.3 E. Northern Burma. h:162 km ca. H=08 51 48.9 USCGS	EZ N Z Z E NE Z N E E	08	58	58.0 59.2 59 40 09 01 11 04 34 42 05 58 07 33 44 10 38
4.	iP S P:D	Z Z	10	22	37.0 48
4.	iP S eL P:S,W,C 50.3 N., 156.4 E. Kamchatka. h:161 km ca. H=12 49 37.7 USCGS	NEZ E E	12	53	39.5 57 10 59 19
4.	iP i S P:C	Z NEZ NEZ	14	00	52.7 55.2 01 04.2
4.	iP eL eL	Z E N	15	40	09.6 56 47 57 49
17.0 S., 176.8 W. Fiji Is. region. h:57 km ca. H=15 29 11.7 USCGS					
4.	eP e e eL	Z Z N E E	15	44	29 47 32 56 31
4.	P i i i i S i L L Mag. 6 - $6\frac{1}{4}$ (Mat.)	Z Z Z Z Z N NE E N	19	13	29 34 38 46 15 00 16 52 17 02 18 00 16

(cont.)

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
24.0 N., 122.7 E. Off east coast of Formosa. h:14 km ca. H=19 09 12.9 USCGS					
4.	iP i i i P:C	Z NE NZ N	20	24	12.3 13.8 15 48
5.	iP i i e P:S,W,C	NEZ NE Z E	00	01	47.0 51 02 01 05 57
45.3 N., 148.2 E. Kurile Is. h:25 km ca. H=23 58 52.4 USCGS					
5.	iP i S i P:C	Z N Z NE	01	37	36.0 36.9 38.4 38.9
5.	iP i i	NEZ E Z	03	30	10 ca. 17 20.8
5.	iP S P:C	Z, P NE NEZ	04	36	09.0 25
5.	P i i S ? i	Z E Z E N	05	22	30 31 32.2 23 01 03
5.	iP P:S,D	NEZ	07	50	05.5
17.7 S., 178.4 W. Fiji Is. h:590 km ca. H=07 39 57.9 USCGS					
5.	iP P:C	EZ	08	02	35.1
5.	iP i S P:C	Z NZ NE	12	22	46.3 47.3 23 59.6
5.	PKP 1 PKP 2 PP ePS	Z Z Z E	15	57	27 38 58 52 16 09 00

(cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
continued			h	m	s	continued			h	m	s
28.2 S., 177.5 W. Kermadec Is. h:41 km ca. H=21 01 06.4						4.1 S., 127.3 E. Banda Sea. h:111 km ca. H=15 21 17.9					
11.	iP eS P:C	NEZ NEZ	22	15	11.4 14	12.	iP i S P:N,W,C	NEZ E N	16	23 24	43.3 04 20
11.	iP i S	NEZ NEZ NEZ	22	18	41.1 42.0 44	12.	iP i S i P:C	Z NE EZ N	16	27	12.8 13.1 57 58
11.	iP i i P:C	Z Z E	23	03	51.1 08.0 08.5	12.	iP S P:N,E,C	NEZ E	19	23	20.7 22.4
24.2 S., 66.6 W. Salta Province, Argentina. h:176 km ca. H=22 44 04.8						12.	iP i i S e P:S,C Mag. 6.3 (Mat.)	NZ E NEZ N NE	21	56	08.8 09.2 10 02 05
12.	eL eL	E E	02	12.0 18 37	12.	eP eS	EZ E	22	30 31	01 49	
34.8 S., 106.9 W. Easter I. region. h:100 km ca. H=01 19 21.8						12.	iP i i eS P:S,D 15.0 S., 175.2 W. Samoa Is. region. h:281 km ca. H=12 09 22.0	Z Z Z E	09	53	50.2 53.7
12.	P	Z	09	53	50.2	12.	iP i i eS	NEZ E N E	22	54	00 26.8 55 54
12.	iP P:S,D	Z	12	19	53.7	12.	iP i i eS P:N,E,D Mag. 6.1 (Mat.)	NEZ E N NE	22	54	00 26.8 55 54
12.	iP i i S ? P:C	Z NZ E Z	12	55	35.1 46 48.9 03	12.	P i	NZ Z	23	15	34.8 46.2
12.	iP i i P:N,C	NZ E NZ	13	06	19.8 20.2 30.0	12.	iP i eS P:N,E,D Mag. 6.1 (Mat.)	NEZ NZ NE	23	29	03.6 42 56
13.1 S., 171.8 E. New Hebrides Is. region. h:598 km ca. H=12 57 15.3						13.	eP P:N,E,D Mag. 6.1 (Mat.)	NZ	00	34	24
12.	iP S P:S	NEZ NE	14	55	56.5 58.5	13.	iP S P:C	Z NE	02	11	06.6 29
12.	P	Z	15	28	40	13.	eP P:N,E,D Mag. 6.1 (Mat.)	NEZ	02	32	34

(cont.) - 26 -

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
continued			h	m	s	continued			h	m	s
43.5 N., 148.1 E. Kurile Is. h:60 km ca. H=02 31 19.4						5.1 S., 128.7 E. Banda Sea. h:66 km ca. H=16 17 20.1					
13.	iP i eS i P:C	Z, P E N E	02	33	44.3 58 37 40	13.	iP i S L P:N,E,D Mag. 6.0 (Mat.)	NEZ E NE NE	16	29	49.6 54.4 31 42 32 18
13.	P i S ?	NEZ Z N	04	45	50 01 50	13.	iP eS e e P:N,E,D	NEZ E N E	17	52	40.1 30 15 22
43.8 N., 147.4 E. Kurile Is. h:46 km ca. H=04 43 24.6						44.1 N., 147.4 E. Kurile Is. h:42 km ca. H=17 50 16.5					
13.	P i eS i eL eL eLr eLr	Z N E N E N	06	56	27 28.5 27 51 13.0 06 19 54	13.	iP iS P:N,E,C	NEZ Z	18	43	14.4 16.1
Mag. 6.1 (Mat.) 17.0 S., 173.7 W. Tonga Is. region. h:43 km ca. H=06 45 25.0						13.	eP P:N,E,D Mag. 6.1 (Mat.)	NZ	21	14	05
13.	P i eS i i i	Z N E N E	09	09	30.0 11 12 31 48	13.	iP i i i i e i P:N,D	NZ, P E N E EZ E N	22	39	43.1 50.5 41 24 27 52 58 42 07
43.8 N., 147.0 E. Kurile Is. h:25 km ca. H=09 06 55.9						43.6 N., 147.8 E. Kurile Is. h:51 km ca. H=21 11 40.9					
13.	iP i eS P:E,D	EZ N NE	12	35	30.1 30.5 13	13.	P eS P:N	NZ N	21	19	03.1 26
13.	iP P:E	NEZ	12	38	59.2	13.	iP i i i i e i P:N,D	NZ, P E N E EZ E N	22	39	43.1 50.5 41 24 27 52 58 42 07
43.6 N., 148.1 E. Kurile Is. h:40 km ca. H=22 37 12.9						43.6 N., 148.1 E. Kurile Is. h:40 km ca. H=22 37 12.9					
13.	iP P:E	NEZ	12	38	59.2	13.	iP i S e L	Z NE N E E	00	18	01.0 01.3 19 51 52 20 45
6.9 S., 155.7 E. Solomon Is. h:25 km ca. H=13 45 57.7						43.7 N., 147.5 E. Kurile Is. h:92 km ca. H=00 15 40.6					
13.	iP i i i P:N,C	NZ E N E	16	25	13.4 13.8 03 05.1	14.	iP i i	Z, P N Z	02	53	34.4 48 21

(cont.) - 27 -

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued			02	55	25
S	N			47	
e	E		56	13	
L	E				
P:C					
44.2 N., 147.8 E. Kurile Is.					
h: 98 km ca.					
H=02 51 15.3 USCGS					
14.	iP	Z	03	17	53.0
	i	NE			53.7
	i	N	18	12.2	
	eS	NE	19	45	
	L	NE	20	32	
P:D					
43.8 N., 147.4 E. Kurile Is.					
h: 25 km ca.					
H=03 15 25.0 USCGS					
14.	P	Z	03	24	31.7
	i	NZ			37.5
	S	NE	26	20	
	i	N			23
	i	Z	54	54	
	L	NE	27	10	
43.8 N., 147.9 E. Kurile Is.					
h: 20 km ca.					
H=03 22 00.7 USCGS					
14.	iP	NZ	05	54	18.4
	i	Z			44.3
	iS	N			47.1
	i	E			49
P:N,C					
14.	ePKP	Z	06	04	36
	e	Z			45
42.3 S., 73.1 W.					
Near coast of southern Chile.					
h: 58 km ca.					
H=05 44 24.3 USCGS					
14.	eL	E	16	21	54
15.4 S., 175.1 W.					
Samoa Is. region.					
h: 25 km ca.					
H=15 50 52.2 USCGS					
14.	iP	EZ	23	21	28.8
	i	N			29.4
	e	E			43
	i	Z			54
	e	N	22	04	
P:E,D					
15.	iP	NEZ	02	20	05.8
P:S,E,D					
22.3 S., 171.6 E.					
Loyalty Is. region.					
h: 64 km ca.					
H=02 09 20.4 USCGS					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
15.	iP	EZ, P N	05	48	45.0
	i	N			45.5
	e	Z	49	17	
	i	E			30
	e	N			43
P:E,D					
15.	iP	NEZ	10	09	52.7
	S	NEZ	10	03.1	
P:S,E,C					
15.	iP	NEZ	10	47	38.9
	S	N	49	32	
	i	Z			44
	i	E			53
	L	NE	50	06	
P:N,E,D					
Mag. 6 - 6 1/2 (Mat.)					
43.7 N., 147.4 E. Kurile Is.					
h: 69 km ca.					
H=10 45 15.9 USCGS					
15.	eP	NEZ	11	59	30
	i	E			46
	e	Z	12	00	19
	e	E			28
	e	E	02	12	
	e	N			22
15.	iP	Z, P E	19	47	16.9
	i	N			18.0
	S	NEZ			42.3
P:D					
15.	P	Z	20	15	23.9
	i	N			25.7
	eS	NE			47
15.	iP	EZ	22	53	06.7
	i	N			07.2
	S	N			45
	i	N			55
P:W,C					
16.	iP	NEZ	08	56	05.1
	i	Z			42.3
	iS	NE			47.5
	i	Z			48.5
	i	NEZ			49
P:S,W,D					
32.7 N., 137.7 E.					
South of Honshu, Japan.					
h: 303 km ca.					
H=08 54 59.9 USCGS					
16.	iP	EZ	11	15	22.3
	i	NZ			26.1
	i	E			26.5
	S	EZ	16	00	
P:E,C					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
16.	iP	NEZ	11	52	25.2
	S	NEZ			48
P:N,E,D					
16.	iP	NEZ	13	57	15.3
	i	Z			23.6
	eS	NE	59	12	
	L	N			54
	eL	Z	14	00	19 ca.
	L	E			54
P:S,W,C					
Mag. 5 3/4 (Mat.)					
43.2 N., 148.0 E. Kurile Is.					
h: 71 km ca.					
H=13 54 53.7 USCGS					
16.	iP	Z	14	56	50.9
	i	NE			51.7
P:C					
43.7 N., 147.5 E. Kurile Is.					
h: 25 km ca.					
H=14 54 23.3 USCGS					
16.	iP	EZ	16	18	25.4
	i	NE			
8.4 S., 111.3 E. Java.					
h: 189 km ca.					
H=16 09 32.4 USCGS					
17.	eP	Z	06	51	24
	i	E			36
	e	N			38
	eS	N	53	17	
	eL	E	54	06	
	eL	N			16
43.5 N., 148.0 E. Kurile Is.					
h: 25 km ca.					
H=06 43 58.5 USCGS					
17.	iP	NEZ	13	31	56.9
	iS	NE			32 12.4
P:S,E,D					
17.	iP	NEZ	13	36	47.3
	S	NEZ			37 03
P:N,W,D					
17.	iP	NEZ	13	38	46.8
	iS	E			39 02.4
	i	NZ			02.8
P:S,D					
17.	iP	NEZ	14	25	49.8
	iS	NEZ			26 05.1
P:S,E,D					
17.	iP	NZ	15	06	18.4
	i	E			20.4
	i	N			33.1
	e	NE	08	37	
P:N,C					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
17.	iP	NZ	15	07	51.7
	i	E			08 03.5
	i	Z			07.2
P:S,C					
17.	iP	Z	15	45	14.8
	i	NE			15.0
P:D					
5.0 S., 129.7 E. Banda Sea.					
h: 254 km ca.					
H=15 37 44.8 USCGS					
17.	iP	NZ, P E	17	29	02.0
	S	NEZ			17
P:S,D					
18.	iP	Z	01	06	26.8
	i	E			27.3
	i	E			46.2
	eS	E	08	23	
	i	N			34
	eL	NE			54
	eL	Z	09	23	
P:C					
44.0 N., 147.5 E. Kurile Is.					
h: 28 km ca.					
H=01 04 00.8 USCGS					
18.	iP	NEZ	01	50	58.2
	i	NZ			51 13.4
	i	Z			20
	iS	N			38
	i	Z			40
P:N,W,C					
18.	iP	Z	06	39	39.8
	i	E			39.9
P:D					
18.	iP	NZ	07	20	08.8
	e	N			21 47
	e	Z			22 14
	e	E			24 48
P:S,C					
18.	P	NEZ	07	46	50
	iS	N			47 35.8
	i	E			36.3
18.	iP	NZ	08	02	25.9
	S	NZ			42
P:S,D					
18.	eP ?	Z	08	15	22
	i	Z			33.5
	i	N			17 25.1
	e	E			32

Date	Phase	Comp.	Time(GMT)
continued			h m s
i	E		23 36 37
P:C			
O.1 S., 123.2 E. Celebes. h:133 km ca. H=23 28 34.9 USCGS			
22.	P	EZ	07 25 45.1
	S NE, eS Z		26 13
	P:C		
22.	P	Z	15 10 28
	i	N	29
	i	NE	58
	i	Z	11 04
	i	N	12
	i	Z	25
22.	e	Z	15 13 04
	e	E	08
	i	N	13
22.	eP	Z	16 13 18
	i	NEZ	26
	eS	NE	56
	i	Z	14 07
22.	P	NEZ	21 10 16
22.	P	Z	22 05 23.0
	i	N	23.7
	i	E	24.2
	S	N	15 28
	ScS ?	E	48
	SS N, eSS E		20 30
	Lq	NE	25 37
	Lr	Z	29 31
	Lr	E	33
	Lr	N	42
	P:D		
Mag. 5 3/4 (Mat.) 28.4 S., 177.2 W. Kermadec Is. region. h:78 km ca. H=21 53 34.5 USCGS			
22.	P	NZ	23 35 37.1
	i	E	38.6
	S	E	36 48
	e	EZ	57
	i	N	58
23.	P	NZ	01 05 14.5
	i	E	14.7
	i	Z	17.9
	i	Z	20.7
	P:S,C		

Date	Phase	Comp.	Time(GMT)
			h m s
23.	iP	NEZ	04 17 24.2
	i	NE	52
	iS	N	18 15
	i	N	27
	i	E	32
	P:S,W,C		
Mag. 6 1/4 (Mat.) 38.2 N., 142.7 E. Off east coast of Honshu, Japan. h:119 km ca. H=04 16 25.0 USCGS			
23.	eP	Z	04 23 43
23.	P Z, eP N		08 07 34
	i	NE	45
	i	N	51
	i	N	08 19
	i	E	21
23.	iP	NEZ	15 54 17.4
	S	NEZ	32
	P:S,E,D		
24.	P	EZ	03 07 50
	i	N	54
	i	NEZ	08 18
	i	Z	10 22
	i	NZ	34
	iS NE, S Z		46
	L	NE	11 28
	Mag. 6.1 (Mat.)		
26.1 N., 125.4 E. Ryukyu Is. h:25 km ca. H=03 04 11.7 USCGS			
24.	iP EZ, P N		15 26 49.2
	S	NEZ	27 07
	P:N,E,C		
24.	P	Z	21 03 49.4
	S E, eS NZ		04 09
25.	iP NZ, P E		05 05 44.4
	P:S,D		
21.7 S., 179.6 W. Fiji Is. region. h:608 km ca. H=04 55 25.1 USCGS			
25.	P	NEZ	05 37 44
	S	NEZ	38 11
25.	eP	NEZ	08 58 39
	i	N	44

Date	Phase	Comp.	Time(GMT)
			h m s
25.	iP	NEZ	09 58 18.8
	iS	NEZ	28.0
	P:N,E,C		
25.	P	NZ	10 16 17.7
	iS	NE	34.8
	P:D		
25.	P	EZ	15 12 59
	i	N	13 01
	eS	NE	22 04
	i	NE	20
	Lq	NE	29 28
	Lr	NEZ	33 08
	Mag. 5 3/4 - 6 (Mat.)		
15.4 S., 175.8 W. Samoa Is. region. h:62 km ca. H=15 02 04.8 USCGS			
25.	iP EZ, P N		15 23 31.6
	i	NEZ	32.7
	iS	NEZ	50.2
	P:E,D		
25.	P Z, eP	NE	18 53 17
	i	NE	55
	i	E	54 07
26.	P	Z	04 35 52
	S NZ, eS E		36 28
26.	PS	E	06 19 32
	PSPS	N	26 18
	i	N	40 17
	Lr	E	44 54
	Lr	Z	45 26
	Lr	N	50
	Mag. 6 1/4 - 6 1/2 (Mat.)		
32.7 S., 111.2 W. Easter Is. region. h:29 km ca. H=05 48 46.3 USCGS			
26.	iP Z, P	NE	06 32 37.8
	S	NE	56
	P:D		
26.	P	NZ	07 48 17.6
26.	P	Z	08 48 03.2
	iS	NEZ	06.6
26.	iP	NEZ	09 22 54.7
	i	E	23 02
	i	N	18
	i	EZ	20
	P:N,W,C		

Date	Phase	Comp.	Time(GMT)
			h m s
26.	P	NZ	12 11 53.9
	S	NE	13 22
	P:S,D		
26.	P Z, eP	NE	13 30 54
	S	NE	31 15
26.	iP	NEZ	17 50 53.0
	eS ?	NE	52 13
	P:N,E,D		
26.	iP 1	EZ	18 12 34.9
	i	N	35.2
	iP 2	NEZ	36.1
	i	E	13 50
	S ?	N	14 04
	i	N	20
	i	E	47
	P 1 :E,C		
Mag. 7 - 7 1/4 (Mat.) 31.4 N., 131.2 E. Near coast of Kyushu, Japan. h:54 km ca. H=18 10 48.7			
1 killed, several injured, and extensive property damage at Miyazaki. 3 ft. tsunami observed in southwest Shikoku. USCGS			
26.	P	NEZ	18 49 48
	i	Z	57
26.	eP	Z	19 02 25
	e	Z	03 17
26.	P	Z	19 18 45
	S ?	NE	19 10
26.	P	EZ	19 44 51
	e	E	45 27
	i	Z	46 56
	i	N	47 03.6
	i	Z	10
26.	iP NZ, P E		21 06 29.6
	PP ?	N	07 33
	PP ?	E	36.7
	P:N,C		
16.0 N., 121.6 E. Luzon, P.I. h:32 km ca. H=21 01 04.8 USCGS			
27.	iP	Z	00 29 12.0
	P:D		
27.	P	Z	01 13 13.5 ca.
			(cont.)

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	i	E	01	13	14.0
	i	NE			27
	S	NE			59
	i E, e N		14	03	
	i	Z			09
27.	eP	NZ	03	22	14
	i	E			15.4
	S ?	E	23	22	
27.	iP	EZ	03	54	09.7
	i	N			10.1
	i	NZ			30
	i	E			35
	P:E,D				
27.	eL ?	N	05	34	13
27.	P	Z	05	40	51
	i	Z			52.0
	e	N	41	06	
	S	E			08
	i	Z			09
27.	SSS	E	11	19	40
	eL	E	41	27	
	Mag. 5 3/4 - 6 (Mat.)				
	38.7 S., 72.4 W.				
	Southern Chile.				
	h:57 km ca.				
	H=10 29 48.3 USC GS				
27.	P	NZ	13	14	07
	i	EZ			21
	PPP	N			16 08
	PPP	Z			11
	PcP	Z			28
	S N, eS E		20	20	
	eL	NE	23	21	
	L	E	28	00	
	52.5 N., 168.8 W. Fox Is.				
	h:56 km ca.				
	H=13 06 35.8 USC GS				
27.	eL	E	15	51	15
	eL	N			33
27.	iP	Z	22	39	09.1
	i	Z			22
	S	NE	40	12	
	L	NE			38
	P:S,W,D				
28.	iP	EZ, P N	00	05	06.7
	i	Z			16
	i	E	06	12	
	i	N			17
	P:S,W,C				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
28.	iP	Z	12	37	00.8
	i	NE			01.0
	i	NZ			10.2
	S	N	39	26	
	i	E			32
	i	E			39
	i	N	40	00	
	L E, eL N				50
	P:D				
	46.5 N., 152.2 E. Kurile Is.				
	h:29 km ca.				
	H=12 33 32.1 USC GS				
28.	PKP	EZ	21	38	15.0
	i	EZ			30.4
	i	N			31
	PKP:D				
	24.1 S., 66.6 W.				
	Salta Province, Argentina.				
	h:30 km ca.				
	H=21 18 11.3 USC GS				

Takeshi Honda

Director