

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
2.	iP	Z	02	08	45.4	3.	P	Z	10	32	39
	i	NEZ			46.1		i	NE			39.5
	eS	E	09	52			S	NEZ	33	06	5
	e	E	10	07		3.	iP	NZ	10	39	14.2
	i	Z			29		i	Z			35.5
	e	E			43		S	NEZ			47.5
	P:C						P:N,C				
	42.8 N., 143.1 E. Hokkaido, Japan. h:151 km ca. H=02 07 14.4										
	USCGS										
2.	iP	NZ, P E	02	21	38.4	3.	iP	NEZ	14	01	50.1
	i	Z			22 15		S	NEZ			52
	P:S,C						P:S,D				
2.	iP	NEZ	10	12	52.1	3.	iP	NEZ	14	03	22.0
	S	NEZ			55		S	NEZ			23.6
	P:N,E,D						P:W				
2.	eP	Z	10	14	09	3.	iP	EZ, P N	14	27	29.7
	i	NEZ			10.9		S	NE			31.0
	i	N			16 33		P:W,D				
	S	E			53	3.	iP	EZ, P N	14	27	29.7
	20.7 N., 142.6 E. Bonin Is. h:64 km ca. H=10 10 16.3						S	NE			31.0
	USCGS						P:W,D				
2.	iP	NEZ	15	39	39.3	3.	iP	Z	14	33	10.3
	S	NE			40.7		S	NEZ			12.0
	P:S,W,D						P:D				
2.	iP	NEZ	15	51	34.6	3.	P	EZ	16	23	46
	S	NEZ			36.3		i	E			48
	P:W						i	N			52
2.	P	Z	16	57	05.6		i	N			52
	i	NE			07	3.	S ?	NZ	24	27	37
	i	Z			38		i	N			
	S	N	17	05	06	3.	iP	E, P Z	20	23	33.5
	eScS	E			07 00		S	NEZ			35.3
	eL	N			11 46		i	N			36
	eLr	E			12 20		P:W				
	P:C					3.	iP	Z	20	32	18.3
	Mag. 5 - 5 1/2 (Mat.) 13.9 S., 166.1 E. New Hebrides Is. h:33 km ca. H=16 47 22.7						S	NEZ	20	32	20.0
	USCGS						P:D				
3.	iP	EZ	06	49	08.8	3.	iP	NEZ	23	15	01.2
	S	NEZ			10.5		S	EZ			21
	P:C						P:N,W,C				
3.	iP	NZ	09	30	40.5	4.	iP	NEZ	00	06	37.1
	i	E			41.5		i	NE			41.2
	S	NE	31	00			S	NE			48
	P:N						P:S,E				
						4.	P	NEZ	06	15	06.5
							i	NEZ			07.8
							i	Z			11.5
							i	Z			24
							i	Z			35
							S	NEZ			46
							PcP	NEZ			55
							e	E			20 50
											(cont.)

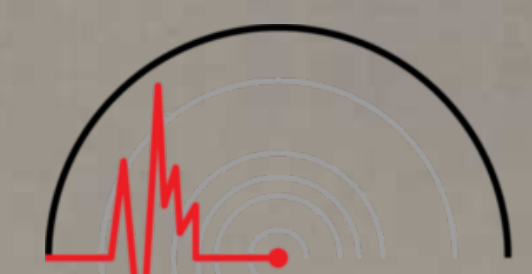
Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
	continued					5.	e	N	01	47	58
	ScS	NE	06	26	33	5.	P	Z	02	24	28
	P:C						i	Z			45
	Mag. 6 1/2 (Mat.) 17.9 N., 146.4 E. Mariana Is. h:145 km ca. H=06 10 44.8						eS	E			26 29
	USCGS						e	N			44
4.	iP	Z	08	24	16.6		29.2 N., 129.5 E. Ryukyu Is. h:97 km ca. H=02 22 02.9				
	P:C						USCGS				
4.	iP	Z	09	02	43.5	5.	eSKS	E	02	53	32
	i	NE			44.0		e	E	03	07	00
	i	NE	03	34			e	E			08 40
	P:D						eLq	N			10 00
4.	iP	Z	14	14	13.0		eLr	Z			15 00
	i	NE			13.2		Mag. 5 1/2 - 5 3/4 (Mat.) 58.2 S., 150.4 E. Southwest of Macquarie I. h:25 km ca. H=02 28 38.2				
	i	N			26		USCGS				
	S	E			36.8	4.	iP	NEZ	14	31	40.3
	P:D						i	N			54
4.	iP	NEZ	14	31	40.3		i	EZ			57
	i	N			54		S	NE	32	03	
	i	EZ			57		P:N,E,D				
	S	NE			32 03	4.	P	Z	15	17	49
	P:N,E,D						i	Z			53
4.	P	Z	15	17	49	5.	iP	Z	06	53	33.3
	i	Z			53		e	E	07	01	30
	P:D						P:D				
4.	eSKS ?	NE	19	42	07	5.	P	Z	20	27	34
	eLq	E			55 00		S	NEZ			36
	eL	N			20	5.	P	EZ	22	09	57
	eL	Z	20	03	43		S	NEZ			10 05
	Mag. 5 1/2 - 5 3/4 (Mat.) 55.8 S., 147.4 E. Macquarie I. region. h:39 km ca. H=19 17 46.7						USCGS				
4.	P	EZ	22	15	14	5.	iP	Z	23	40	13.9
	i	N			40		eLr	E			54 48
5.	P	NEZ	00	24	18		eL	N			55 44
	S	NEZ			37		P:C				
5.	P	NEZ	00	46	01		Mag. 4 3/4 - 5 (Mat.) 10.6 S., 161.2 E. Solomon Is. h:60 km ca. H=23 31 07.9				
	i	NE			25		USCGS				
	i	E			36	6.	P	NEZ	00	58	33
5.	P	Z	00	47	33		i	N			37.5
	i	N			47		i	Z			38.5
	i	NE			55		i	N			39.5
5.	P	Z	00	47	33	6.	iP	NZ	02	14	40.7
	i	N			47		P:N,C				
	i	NE			55	6.	iP	NZ	09	04	56.1
5.	iP	NEZ	01	29	45.4		S	NZ			05 34
	S	NE			49.4		i	E			35
	P:N,E,D						P:N,C				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
6.	P S	Z NEZ	10	04	46.4 50.4	7.	P i S L	Z Z NE N	07	50	54 51 36 57 53 08 05 47
6.	iP S i P:N,W,C	NEZ N E	11	23	58.2 24 08 11						
6.	eL eL	N E	17	16	28 22.0	7.	iP i eS eL eL P:C	Z NE N N Z	08	08	23.4 24.5 11 30 12 16 32
		7.0 S., 13.1 W. Ascension I. region. h:19 km ca. H=16 08 20.8						9.4 S., 155.2 E. D' Entrecasteaux Is. region. h:174 km ca. H=07 42 22.5			USCGS
6.	P i S	Z NEZ E	18	13	44 57.5 14 32	7.	iP i eS eL eL P:C	Z NE N N Z	08	08	23.4 24.5 11 30 12 16 32
								46.7 N., 153.0 E. Kurile Is. h:106 km ca. H=08 05 03.5			USCGS
6.	iP NZ, P E P:N,C		18	42	14.2	7.	iP i S P:E,D	EZ N EZ	09	40	45.8 46 57
		7.0 S., 120.4 E. Flores Sea. h:598 km ca. H=18 34 35.4									USCGS
6.	P S	Z NEZ	19	51	37 39	7.	iP i i i P:E,D	EZ N Z Z	11	19	41.7 42.0 49 20 23
6.	iP PP PP iS SS G G eLr eLr eLr PKP 1PKP 1 Z PKP 2PKP 2 Z PKP 2PKP 2 NE P:N,W,C	NEZ E Z NE N N E E N Z	22	20	02.1 30 40 38 32 55 35 52 54 38 50 39 10 16 48 44 57.4 59	7.	iP i i eS eL P:D	Z NEZ NE E E	12	44	12.6 13 52 47 13 04 33
		Mag. 6 1/2 - 6 3/4 (Mat.) 20.0 S., 169.0 E. New Hebrides Is. h:47 km ca. H=22 09 31.4						20.2 S., 169.6 E. Loyalty Is. region. h:25 km ca. H=12 33 37.1			USCGS
7.	P	Z	00	50	57	7.	iP i i i PP PPP i i S i L Lr Lr L L P:C	Z NEZ NE Z E N NE Z N N E N E Z	13	18	47.5 50 52.5 19 05 20 46 21 07 23 47 24 26 25 11 43 28 22 30 16 40 31 58 32 12
7.	eS ? eL	N N	05	11	26 14 29						
7.	iP i S P:C	Z NEZ NZ	05	26	05.4 16 58						
											Mag. 6 3/4 (Mat.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
						continued					
						5.7 S., 149.7 E. New Britain. h:57 km ca. H=13 10 43.8					
						USCGS					
7.	iP NZ, P E P:N,W,C		14	52	20.0	8.	P P:D	Z	03	35	56.7
		20.4 S., 169.2 E. Loyalty Is. region. h:100 km ca. H=14 41 53.0						20.0 S., 166.8 E. Loyalty Is. h:52 km ca. H=02 35 20.1			USCGS
7.	iP Z, P N i P:D	E	15	33	23.8 25	8.	iP i i eS e P:C	Z NEZ EZ E NE	06	03	05.2 06 19 04 16 44
		53.5 N., 159.9 E. Near east coast of Kamchatka. h:20 km ca. H=15 28 14.5						20.6 S., 169.1 E. Loyalty Is. region. h:25 km ca. H=03 25 19.5			USCGS
7.	P i i	Z NZ Z	15	53	36 47.5 54 07	8.	P e	Z E	11	20	30.6 25 38
								18.5 N., 145.4 E. Mariana Is. h:193 km ca. H=11 16 16.1			USCGS
7.	P eL eL eL	Z N N E	17	08	50 17 12 19 00 40	8.	P e	Z N	14	17	21.6 24 29
		24.8 N., 98.5 E. Burma-China border. h:25 km ca. H=17 01 52.3									
7.	iP i i eS eG eL eL PKPPKP? P:N,C	NZ E N NE E Z Z	22	29	58.7 59 30 10 38 30 45 48 48 40 51 54 59 22	8.	iP i i S ScS ? G ? P:N,C	NZ E Z NE E NE	15	45	06.6 06.8 46 25 53 40 55 05 16 00 46
		Mag. 5 1/2 (Mat.) 20.1 S., 169.2 E. Loyalty Is. region. h:89 km ca. H=22 19 34.2						Mag. 6 1/4 (Mat.) 20.1 S., 169.8 E. Loyalty Is. h:44 km ca. H=15 34 38.5			USCGS
7.	iP S P:E,C	EZ NEZ	23	32	08.7 25	8.	P eS eG	Z N N	15	50	42.6 59 14 16 06 28
8.	iP S Lq or G Lq or G P:C	Z NE E N	02	45	49.6 54 22 01 30 02 22	8.	P 1 iP 2 S P 1:D P 2:S,E,C	EZ NEZ NE	16	16	33.3 34.4 52
		Mag. 5 3/4 - 6 (Mat.)									
						8.	P	Z	21	24	27.5
											(cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued											
eS	N		21	32	56	10.	eL	E	01	27	42
e	E			33	07		eL	N		28	00
eG	NE			41	00		L	E	02	09	46
P:C							L	N		10.2	
Mag. 5 $\frac{1}{2}$ - 5 $\frac{3}{4}$ (Mat.)						10.	iPKP 1	EZ	04	09	40.8
20.2 S., 169.0 E. Loyalty Is.							iPKP 2	Z		10	10.8
h:56 km ca.							ePP	E		13	40
H=21 13 59.4		USCGS					ePSKS	E		23	50
							SS	E		32	48
8. iP	NZ		21	59	14.1		eL	E		59	10
i	E				15		PKP:E,D				
i	NZ				24		19.2 S., 68.4 W.				
eS	N		22	07	36		Chile - Bolivia border.				
eLq or eG ? NE				15	48		h:117 km ca.				
P:N,C							H=03 49 56.4	USCGS			
Mag. 5 $\frac{1}{2}$ - 5 $\frac{3}{4}$ (Mat.)											
20.2 S., 169.0 E.											
Loyalty Is. region.											
h:68 km ca.											
H=21 48 46.2		USCGS									
9. P	Z		02	50	32	10.	e	E	09	28	14
S	NEZ			51	14		eL	E	10	17	42
						10.	iP NZ, P	E	12	07	52.6
							i	Z		09	37.8
							P:S,D				
9. iP	NEZ		05	09	23.8	10.	iP	Z	12	48	08.1
S	EZ				40.5		i	NE			08.3
i	N				41.1		S	NEZ			38.8
P:S,E,D							P:C				
9. P	Z		08	16	43	10.	P	Z	17	14	20
28.8 N., 54.7 E. Iran.							e	E		18	27
h:25 km ca.							eL	N		23	41
H=08 05 45.9		USCGS					eL	E		24	34
9. iP	EZ		09	22	12.3	11.	P	EZ	01	24	07.6
S	NEZ				23.6		i	Z			17.3
P:E,D							e	E		27	00
9. iP	NEZ		12	08	30.5		P:E,D				
iS	NE				32.7	11.	P	Z	05	57	17.0
P:N,W,D							e	E		06	29.0
9. P	NEZ		15	12	00		P:C				
S	EZ				25		27.3 S., 177.1 W.				
							Kermadec Is. region.				
							h:58 km ca.				
							H=05 45 29.5	USCGS			
9. P	Z		16	22	44	11.	P	NEZ	08	10	34
i	Z			23	00		e	Z		11	09
9. P	Z		16	52	17.9	11.	iP	Z	09	40	37.9
eL	E			58	20		i	E			38.3
eL	N		17	00	22		e	NE			39
P:D							i	Z			57.3
51.7 N., 176.2 E. Rat Is.							i	E			58.2
h:33 km ca.							ePP	E		42	48
H=16 46 02.0		USCGS					S	NEZ		47	45
9. iP	Z		17	11	34.8		eSS	E		51	27
S	EZ				53.7						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued											
L	NE		09	53.2		continued	PcP	Z	04	56	46.7
e	NE			55	52		P:C				
e	EZ			57	43		3.3 N., 127.9 E.				
P:D							Molucca Passage.				
Mag. 6 $\frac{1}{4}$ - 6 $\frac{1}{2}$ (Mat.)							h:92 km ca.				
8.3 N., 93.3 E.							H=04 47 29.0	USCGS			
Nicobar Is. region.											
h:163 km ca.											
H=09 31 57.2		USCGS				12.	P	NZ	06	52	47
11. P	Z		10	34	51.0		e	E			48
e	N				53		S	EZ		53	02.7
i	E				53.8	12.	P	Z	06	55	52.0
i	Z				58		e	N			56 18
e	N				35 25		e	Z			19
i	Z				40		e	NE			22
i	N				54		P:D				
11. iP	NZ		11	35	52.6	12.	iP	Z	06	58	09.4
i	E				53.8		i	NE			09.5
i	Z				36 07.8		P:C				
e	E				37 22	12.	e	E	11	35.5	
e	N				29		e	E			44.1
e	E				33						
P:N,D						12.	P	NZ	13	33	04.6
11. e	E		14	56	20		e	E			15
11. e	E		16	28.1			i	N			17.9
e	E			33.9			i	Z			18.2
11. iP	NZ		18	43	22.8		eS	NE			35 29
i	E				23.1		eL	E			36 15
i	E				44 13.8		eL	N			19
PcP or pPZ					54.0		P:N,D				
PP	Z				45 19.3		45.2 N., 151.0 E. Kurile Is.				
eS	NE				49 20		h:40 km ca.				
P:S,D							H=13 29 56.6	USCGS			
6.7 S., 125.8 E. Banda Sea.						12.	eP	Z	13	46	04
h:579 km ca.							eP	Z	14	47	46
H=18 35 54.6		USCGS					eS	E			56 40
11. e	E		20	09.1			e	E	15	05.2	
11. iP	NEZ		21	57	15.9		Lr	E			07.4
e	NE				58 02		22.8 S., 171.3 E.				
e	E				22 26.3		Loyalty Is. region.				
e	E				45.1		h:65 km ca.				
e	E				48.1		H=14 36 57.4	USCGS			
P:S,W,D						12.	e	E	18	25.4	
12. e	NE		00	20.2			e	E			39.1
12. e	NE		01	32.3			e	E			41.4
12. P	Z		04	54	13.2	13.	e	E	00	36	10
e	Z				54		e	E	00	54	03
e	E				55	13.	e	E	01	10	00
(cont.)											



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Date	Phase	Comp.	Time(GMT)	Date	Phase	Comp.	Time(GMT)
			h m s				h m s
16.	eP e e	Z N Z	20 12 27 28 13 00	17.	P 41.2 N., 72.4 E. Kirghiz. S.S.R. h:67 km ca. H=14 53 28.4	EZ	15 02 20
			USCGS				USCGS
16.	P S eL L	Z E E Z	21 12 55.9 16 16 17 00 18 50	17.	eP e eS eL e	Z N N E N	15 12 12 13 18 10 22 40 47
			USCGS				USCGS
			P:N,E,D 49.3 N., 155.1 E. Kurile Is. h:29 km ca. H=21 08 45.6				USCGS 2.6 S., 141.9 E. Near coast of New Guinea. h:60 km ca. H=15 04 46.8
16.	iP P:S,E,D	NEZ	23 13 32.4	17.	P S e	EZ N EZ	15 34 53.0 35 13.6 15
			USCGS				USCGS
			18.0 S., 178.3 W. Fiji Is. region. h:591 km ca. H=23 03 26.9				P:E,C
17.	e	E	01 27.1	17.	iP S	NEZ NE	16 21 00.5 44
17.	e	E	01 54.9				USCGS
17.	e	E	03 44.0				P:E,D Mag. 5.9 (Mat.) 35.7 N., 141.2 E. Near east coast of Honshu, Japan. h:75 km ca. H=16 20 22.6
17.	e	E	04 23.0	17.	eP	Z	16 27 56
17.	P e eL	Z E E	05 24 25.6 26 50.1	17.	eP	EZ	16 31 53
			USCGS	17.	eP	Z	16 34 10
			27.1 N., 54.5 E. Iran. h:59 km ca. H=05 13 20.3	17.	P	N	16 37 40.5
17.	iP S e	NEZ NE Z	06 46 48.4 51.6 51.7				USCGS
			USCGS	17.	P	NZ	16 39 23
			P:N,D				USCGS
17.	iP P:N,W,D	NEZ	09 03 51.0	17.	e S	E E	16 38 14 40 06
17.	P S	NEZ NE	09 16 10 24.6	17.	iP Z, P E e eS ? P:C	EZ N	17 07 10.6 15 54
17.	P i e	EZ NEZ E	13 55 36.5 48.3 14 01.0	17.	P e e e	Z NE Z NE	17 12 37 13 19 46 14 22
			USCGS				USCGS
			P:E,D	17.	e	E	18 49.8
17.	eP	Z	14 00 45				USCGS

Date	Phase	Comp.	Time(GMT)	Date	Phase	Comp.	Time(GMT)
			h m s				h m s
17.	e e	E N	19 33 19 33.6	18.	iP S L	NFZ N NE	14 05 45.8 07 30 08 00
			USCGS				USCGS
17.	e e	N E	19 58 43 52				P:N,E,C Mag. 6.9 (Mat.) 29.4 N., 131.6 E. Northern Ryukyu Is. h:21 km ca. H=14 03 36.5
17.	e	E	21 09.3	17.	e	E	21 14.3
17.	e	E	21 22 50	17.	e	E	21 23 29
17.	P e e	EZ N EZ	21 22 50 23 29 34	17.	iP EZ, P N e e P:N,W,C	N E NZ	21 25 38.5 26 16 22
			USCGS				USCGS
			P:N,E,D	17.	P e P:D	NZ NEZ	21 50 19.7 27
17.	iP e e	EZ N EZ	21 22 50 23 29 34	17.	e	E	21 59.4
			USCGS	18.	iP EZ, P N i i e i eS ? e P:N,W,C	N N NEZ N E N E	01 44 18.7 19.2 23.2 51 52.2 45 02 12
			P:N,E,D				USCGS
			Mag. 5.9 (Mat.) 29.9 N., 131.2 E. Northern Ryukyu Is. h:72 km ca. H=14 34 07.3	17.	iP P:E,D	EZ	04 04 04.5
17.	P e P:D	NZ NEZ	21 50 19.7 27	18.	iP P:N,W,D	NEZ Z	14 36 09.4 09.4
			USCGS				USCGS
			Mag. 5.9 (Mat.) 29.9 N., 131.2 E. Northern Ryukyu Is. h:72 km ca. H=14 34 07.3	18.	eP e e	Z N Z	14 45 49 46 49 50
17.	e	E	21 59.4	18.	iP i e i eS ? e P:N,W,C	NEZ Z N E N E	15 18 21.4 31.2
18.	iP i i e i eS ? e P:N,W,C	N N NEZ N E N E	01 44 18.7 19.2 23.2 51 52.2 45 02 12				USCGS
			USCGS	18.	eP ? e e i	EZ E NZ E	15 29 20 38 39 30 38
			P:N,E,D				USCGS
			Mag. 5.9 (Mat.) 29.5 N., 131.3 E. Northern Ryukyu Is. h:35 km ca. H=15 16 12.5	18.	iP i i P:D	Z NE Z	15 38 55.6 55.8 39 05.2
18.	iP P:E,D	EZ	04 04 04.5				USCGS
18.	e e	E E	05 24 06 27 22	18.	eP ? e e i	EZ E NZ E	15 29 20 38 39 30 38
18.	P e P:C	Z E	07 28 47.6 48				USCGS
			USCGS	18.	iP i i e P:D	Z NE Z	15 38 55.6 55.8 39 05.2
			27.8 S., 176.8 W. Tonga Is. region. h:60 km ca. H=07 16 59.2				USCGS
18.	iP i i e P:D	EZ Z NE Z	12 13 29.5 39 14 01.7 02	18.	iP P:S,W,D	NEZ Z	16 22 13.0 13.0
			USCGS				USCGS
			29.5 N., 131.7 E. Northern Ryukyu Is. h:25 km ca. H=15 36 45.4	18.	iP P:N,W,D	NEZ Z	16 22 13.0 13.0
18.	iP e P:D	Z Z	13 11 49.2 12 25				USCGS
			USCGS	18.	P P:N,E,C	NEZ	16 37 36.2
			5.9 S., 128.5 E. Banda Sea. h:25 km ca. H=13 03 28.3				USCGS

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
18.	ePKP 28.0 S., 66.4 W. Catamarca Province, Argentina. h:80 km ca. H=16 22 48.9	Z	16	42	50	18.	P e	EZ EZ	20	15	04 18
18.	eP e i	Z Z NE	16	46	27 46 47.2	18.	eP e e e e	Z Z E N E	21	38	12
18.	iP P:S,W,D 29.5 N., 131.8 E. Northern Ryukyu Is. h:60 km ca. H=16 48 34.8	NEZ	16	50	43.4	18.	iP e e e e	NEZ Z E N E	21	58	43.9 52 53 59 02 22 00 47 58
18.	P e P:N,E,C	NEZ E	18	18	52 19 00	18.	P e eS e P:E,C	EZ N E EZ	23	44	44.5 45 00 46 32 50.0
18.	P e e	NEZ NEZ E	18	35	44.5 52 37 08	18.	P e e P:S,W,C	EZ N E E	23	44	44.5 45 00 46 32 50.0
18.	P P:N,E,C	NEZ	18	43	15.2	19.	iP i i S e P:S,D	NEZ N E Z	00	12	05.4 56 13 12
18.	e e	NZ E	18	44	30 35	19.	eP ? e	Z E	00	30	46 32 24
18.	P e i i eS ? eL ? e e Mag. 5.5 (Mat.) 29.3 N., 131.6 E. Northern Ryukyu Is. h:60 km ca. H=19 29 04.8	EZ NEZ Z Z E N Z E	19	31	14 25 32 07.2 17.2 44 57 34 46 37.0	19.	eP ? e e e P:D	Z E Z E N	05	08	12 14 13 19
18.	P	EZ	19	34	47	19.	P i e e P:D	Z NE E E	05	32	04.7 05.2 33 42 50
18.	P	Z	19	35	56	19.	P i e e P:D	Z NE E E	05	32	04.7 05.2 33 42 50
18.	P i	EZ NEZ	19	47	57 59	19.	P e e P:S,D	Z NE E NE	06	22	54 23 46
18.	P e P:E,C	NEZ Z	19	54	34.2 43						

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
19.	P e e e e P:S,W,D 29.6 N., 131.7 E. Northern Ryukyu Is. h:27 km ca. H=06 33 18.1	NEZ Z NE E N E	06	35	25.9 36 31 40 37 00 17 24	19.	P eS ? e e P:D	N E N	10	38	30 39 30 38
19.	P P:E,C	NEZ	06	40	43	19.	iP eS ? e e e e P:S,W,D Mag. 5.6 (Mat.) 29.6 N., 131.5 E. Northern Ryukyu Is. h:31 km ca. H=11 58 43.7	NEZ Z E N Z E Z	12	00	52.7 02 31 33 49 04 22 34 05 11
19.	P i P:N,E,C	NEZ Z	06	41	37.8 42 03	19.	P e e e P:S,D	EZ N Z	06	53	19.7 29 33.7
19.	iP i i S e P:S,D	NZ E Z E Z	07	24	19.5 19.6 30 34 36	19.	P P e e P:D	EZ NE EZ N	12	07	32 30.7 39
19.	P e e P:D	NEZ Z N	07	45	59.6 46 14 15	19.	iP i e e P:D	Z NE EZ N	13	33	37.0 37.2 55 57
19.	eP e	Z NE	08	03	41 43	19.	P i i e P:E,D	EZ N Z E	13	35	14.4 14.7 35 48
19.	P i eS 37.5 N., 142.0 E. Off coast of Honshu, Japan. h:25 km ca. H=09 19 24.2	Z N NZ	09	20	14 15.9 53	19.	P e P:C	NEZ E	14	07	03 08 55
19.	P	Z	10	13	15	19.	P e P:D	NEZ E	14	40	04 43 00
19.	P i i i i i	Z NE NE Z Z	10	37	49.0 49.7 53.7 55 33 03 (cont.)	19.	P i e P:S,D	NZ E NE	15	27	15.2 15.6 29 12

Date	Phase	Comp.	Time(GMT) h m s	Date	Phase	Comp.	Time(GMT) h m s
19.	P e e e	Z Z Z NE	16 34 23.7 31 35 16 17	20.	P	EZ	01 48 10
19.	P i i e e e	NEZ Z Z NE N E	17 14 04.0 17.9 24.2 16 10 42 51	20.	P i e	NZ E E	01 59 54.4 54.9 02 02 00
19.	P i i	NZ E Z	18 11 52.2 52.7 12 03.7	20.	P e P:W,D	EZ Z	02 22 14.0 23 44
19.	P i i	NZ E Z	18 57 10 23.5 N.,179.9 E. Fiji Is. region. h:531 km ca. H=18 26 37.9	20.	P i P:D	Z NE	03 06 49.7 50.2
19.	P eS	Z N	18 54 01 43	20.	iP i i P:W,D	NEZ E E	04 03 49.2 59.7 04 24.4
19.	iP e eS e e	EZ, P N Z N E Z	19 47 38.2 48 15 49 27 28 51 04	20.	P e e	Z NE E	04 53 41.9 43 05 02 14
19.	iP iS P:S,W,C	NEZ NE	22 06 34.9 07 03	20.	P i i e	Z E E Z	06 47 36 36.5 44.7 45
19.	P P:W,C	EZ	22 11 38.0	20.	P i e i eS e eL eL eL e	NEZ NEZ N Z E N E N Z	06 53 34.2 45.7 54 20 55 18.3 56 49 58 35 59 17 20 07 01 34
19.	P eL eL	Z E N	22 43 44 51.7 N.,173.4 W. Andreanof Is. h:42 km ca. H=22 36 36.5	20.	P i e P:N,E,C	NEZ NEZ N Z E N Z	06 53 34.2 45.7 54 20 55 18.3 56 49 58 35 59 17 20 07 01 34
19.	eL eL	E N	23 48 10 15				

Date	Phase	Comp.	Time(GMT) h m s	Date	Phase	Comp.	Time(GMT) h m s
20.	P i eS e e eL P:S,W,D Mag. 5.6 (Mat.) 28.4 N.,133.6 E. Northern Ryukyu Is. h:25 km ca. H=09 02 31.9	NEZ Z N E E N N	09 04 46.2 05 23.8 06 20 22 33 38 07 10	20.	iP e P:W,D	NEZ E	23 43 44.9 44 12
20.	P i e e e	NEZ NEZ Z N N	09 54 15.2 15.4 24 56 20 57 24	21.	P e e	EZ, eP N E N	03 13 37 18 06 32
20.	P e e	Z E N	12 15 12.2 21 00 10	21.	P S	NEZ NEZ	04 59 25 05 00 40
20.	eP	EZ	12 17 31	21.	e e	E E	07 48 10
20.	eP eS ? e e e e e	NEZ E N E E N E	15 05 22 10 00 14 10 18 19 50 40 30 34	21.	P e e	EZ, eP N E E	07 53 28 08 00 50 46 40
20.	iP i e P:D	Z NE Z	15 20 29.8 30.0 54	21.	iP i i i S i P:C	Z, P N E N N Z	12 05 58.1 58.2 06 27 30 32 34
20.	eP	Z	15 37 14	21.	P eS eL	NEZ NE NE	13 17 37 26 06 33 18
20.	e P	E NZ	18 31 27 20 10 09	21.	P eS ? e i	NEZ E Z N	15 18 27 20 20 22 25 24 46
20.	P e e	NZ Z Z	20 10 09 31.8 S.,177.2 W. Kermadec Is. h:44 km ca. H=19 58 03.3	21.	P eS e i	NEZ E Z N	15 18 27 20 20 22 25 24 46
20.	eP e	Z Z	23 01 12 03 18				
20.	e e	E E	23 35 46 38 50				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
21.	iP Z, P NE		18	01	19.4	22.	P EZ, eP N		06	06	43
	i N				30		S NEZ			07	07
	i N				55	22.	iP NZ		06	13	47.3
	S N		03	09			i E			47.6	
	e E				18		i E		14	05	
	i NE		07	34			S EZ			12	
	P:W,D						i Z			46	
	30.0 N., 131.4 E.						i NE		15	42	
	Northern Ryukyu Is.						i EZ		16	26	
	h:38 km ca.						P:N,C				
	H=17 59 14.4										
	USCGS										
21.	P Z		18	36	23.9	22.	P NEZ		06	19	38
	i NE				24.2		iS EZ			20	03.2
	S ? N				38	22.	P Z		06	37	48
	L NE				20		i NE			49	
	i N		42	38			iS NEZ		38	13.9	
	i E				40						
21.	P EZ		18	52	24	22.	P Z		06	51	00
	i N				26		iS N, S EZ				24.9
21.	iP NZ, P E		18	52	58.7	22.	iP Z		07	25	02.0
	i E				53		i NE				02.2
	i N				09		S EZ				27
	i N				24		i Z		26	00	
	i Z		54	11			i E			55	
	eS ? Z				31		P:D				
	L NE, eL Z				40	22.	P NZ		08	59	12
	Lr Z				56		i E				13
	i NE		59	16							
	P:N,C					22.	iP EZ		08	59	37.9
	29.6 N., 131.6 E.						S EZ		09	00	06
	Northern Ryukyu Is.						i Z				40
	h:16 km ca.						P:D				
	H=18 50 50.3										
	USCGS										
21.	P NEZ		18	58	52	22.	P EZ		10	47	28
	i NZ				17		i N				33
21.	eP NEZ		18	59	50		L ? E			49	24
21.	iP Z		22	42	00.4		eL ? Z			50	43
	i NE				00.5		L 2 E			53	40
	i N				43	22.	L E		14	32.0	
	L E				32		36.8 N., 70.3 E.				
	L N				38		Northeastern Afghanistan.				
	L N				50		h:96 km ca.				
	L Z				45		H=13 53 45.5				
	P:D						USCGS				
	Mag. 5.1 (Mat.)					22.	P Z, eP NE		16	18	48
	29.6 N., 131.6 E.						e E			22	24
	Northern Ryukyu Is.						e N			23	14
	h:32 km ca.										
	H=22 39 53.2										
	USCGS					22.	P EZ		16	37	12.1
22.	P NEZ		03	55	16		i N				12.2
	i N						i N				40
	i Z						i E				44
	eS ? E				57		i N				55
	P:W										

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
22.	P	NEZ	18	22	02	continued					
							i	NE	03	33	24
							S	NE			47.5
22.	eP Z		18	25	26	23.	P NEZ		04	04	27
	S ? NE				36		i Z				37
	e E				49		i EZ				49
	iLq E, eLq N				51		S ? N		05	08	
	54.0 S., 141.2 E.										
	South of Tasmania.					23.	e E		05	29	30
	h:84 km ca.						e E				31
	H=18 12 31.1						i E				33
	USCGS						i N				10
22.	P NEZ		20	31	15.7		i Z				42
	i E				25	23.	e E		05	57	55
	i N				27						
	S NE				33	23.	eP Z		11	40	37
	e Z				49		i NE				38
	L E				37		S NE				41
					00						
22.	P NEZ		21	03	55	23.	eP NEZ		12	54	44
	i E				04		iS NEZ				55
	e E				05						
					36	22.	eP NEZ		22	30	08
							i E				17
							e E				31
											34
											ca.
22.	P NEZ		22	31	34	23.	P Z		13	26	11
	i E				33		i N				13
					30		S ? N				42
							i N				51
22.	P NZ		23	11	45.7	23.	P Z		14	13	57
	i E				46.2		ePP N				16
	S NE				12		i Z				18
					38		S NE, S Z				22
							SS N				25
							Lq NE				29
							Lr Z				33
							Lr E				34
							Mag. 6 1/4 (Mat.)				
							18.5 S., 168.2 E.				
							New Hebrides Is.				
							h:44 km ca.				
							H=14 03 39.8				
							USCGS				
23.	P EZ		00	58	55.0	23.	P Z		14	26	50
	i N				55.2						
	S E, eS N				59		18.4 S., 168.1 E.				
	P:E,D						New Hebrides Is.				
							h:48 km ca.				
							H=14 16 34.3				
							USCGS				
23.	P EZ		01	51	32	23.	P Z		14	36	52.5
	e NE				57						
	e NE				02						
	eL NE				14.0						
23.	e N		03	30	46	23.	P EZ		14	51	04
	e E				31		i N				09
					25						
							Mag. 5 3/4 - 6 (Pas.)				
							6.9 N., 123.5 W.				
							Pacific Ocean, about 2000 miles				
							northwest of Galapagos Is.				
							(cont.)				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)									
			h	m	s				h	m	s				h	m	s							
26.	iP S i P:N,W,C	EZ, P N EZ N	10	52	37.9	27.	P i S i eLq eLr P:D	NZ E NE Z E Z	22	50	24.7	28.	P i i S	Z N Z NZ	06	49	35	continued i P:N,C 20.5 S.,169.9 E. Loyalty Is. h:147 km ca. H=17 17 07.8 USCGS						
26.	P i i i i i	Z E N NZ N E E	13	42	15.4	28.	P i i S i i	NEZ E NEZ N E Z	00	37	26	28.	eP i i eS i eSS Lq Lr Lr	EZ Z NE E N NE EZ N	10	27	13	28.	iP i S P:S,E,D	NEZ Z NEZ	19	48	28.7	
26.	P i S i P:D	EZ N NE Z	19	25	47.2	27.0 N.,126.6 E. Ryukyu Is. h:136 km ca. H=00 34 18.3 USCGS	28.	ePKP i i pPKP i	Z E N EZ N	01	24	30	28.	iP iS P:N,E,C	NEZ NZ, S E	11	19	25.1	29.	P i i P:D	Z NE NEZ	02	59	03.5
26.	P i i S e P:N,W,C	NEZ E N E Z	20	40	21.9	Mag. 6 1/4 (Pas.) 2.2 S.,77.1 W. Ecuador. h:136 km ca. H=01 05 30.0 USCGS	28.	P i i i i S SS Lq Lr	Z NE N E NE E NE NE E	01	27	44.4	28.	P i S Lq Lq Lr Lr Lr	NZ E E N E Z N E	13	28	05.2	29.	P S eLq Lq Lr eLr Lr	NE NE E N E Z N	10	42	07
27.	P eS eL P:N,E,C	NEZ NE E	02	32	08.5	28.	P i i i i S SS Lq Lr	Z NE N E NE E NE NE E	01	27	44.4	28.	P i S Lq Lq Lr Lr Lr	NZ E E N E Z N E	13	28	05.2	29.	P S eLq Lq Lr eLr Lr	NE NE E N E Z N	10	42	07	
27.	iP iS P:N	NEZ NZ	06	39	20.3	Mag. 5 1/4 - 5 1/2 (Mat.) 0.6 S.,122.4 E. Celebes. h:35 km ca. H=13 20 33.8 USCGS	28.	P i i i i S SS Lq Lr	NZ N E NE E NE NE NE E	05	46	57.2	28.	P i S Lq Lq Lr Lr	NEZ E N E E Z N	15	21	55.2	29.	P i eS SS SS Lq Lq Lr Lr Lr	Z E NE N E N E E N Z	16	34	52.7
27.	iP i PcP? P:C	Z, P E N Z	11	43	56.8	28.	P i i i i S SS Lq Lr	NZ N E NE E NE NE NE E	05	46	57.2	28.	iP i S i Lq Lq Lr Lr	NEZ E N E E N Z N	15	21	55.2	29.	P i eS SS SS Lq Lq Lr Lr Lr	NZ E NE N E N E E N Z	16	38	55.9	
27.	P e e eL eL P:S,W,C	NEZ E N E N	15	37	38.0	19.1 S.,169.3 E. New Hebrides Is. h:158 km ca. H=11 33 48.4 USCGS	28.	P i i i i S ScS i Lq Lr Lr Lr	NZ N E NE E E E Z E N E Z	06	21	56	28.	P i S i Lq Lq Lr Lr	NEZ E N E E N Z N	16	13	01 ca.	29.	P iP P:D	NEZ Z NE Z	21	28	33.9
27.	eP 35.2 N.,25.4 E. Aegean Sea. h:65 km ca. H=18 35 48.5 USCGS	NEZ	18	48	24	Mag. 5 3/4 (Berk.) 18.6 S.,167.7 E. New Hebrides Is. h:41 km ca. H=06 11 38.7 USCGS	28.	P i i i i S ScS i Lq Lr Lr Lr	NZ N E NE E E E Z E N E Z	06	21	56	28.	P i S i Lq Lq Lr Lr	NEZ E N E E N Z N	16	13	01 ca.	29.	iP P:D	Z Z	21	28	33.9

Date	Phase	Comp.	Time(GMT)		
			h	m	s
29.	P	NZ	22	29	18.0
	i	E			18.2
	S	N	30	42	
P:S,C					
29.	P	EZ	22	41	10.2
	i	N			10.3
P:W,C					
30.	P	Z	11	32	05
	i	NEZ			13
	S	NE			45
30.	P	NEZ	14	00	51.1
	eS	N	15	04	05
	eL	NE	06	39	
	P:W,C				
30.	P	NEZ	14	16	32
	18.1 S., 168.7 E. New Hebrides Is. h:48 km ca. H=14 06 17.9				
	USCGS				
30.	P	Z	15	54	03
	i	N			03.4
	i	E			16
	eS	NE			25
30.	P	Z	16	09	04.2
	i	NE			04.6
	i	NE			23
	eS	NE	11	11	
	eL	Z	14	23	
	P:D				
31.	eP	NEZ	04	17	33
	iS	E			37
	i	N			39
31.	P	NEZ	05	03	21.3
	S	E	04	07	
	P:S,E,D				
31.	iP	NEZ	17	15	15.8
	S	NEZ			33
	P:S,E,D				
31.	P	NEZ	19	17	33.6
	P:N,E,C				
	9.7 S., 117.6 E. Flores. h:32 km ca. H=19 08 41.5				
	USCGS				

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)				
			h	m	s				h	m	s		
August.						1.	e	E	16	13	07		
							e	N	17	20	ca.		
1.	iP	Z	01	27	34.2	1.	P	NZ	19	40	27.8		
	i	NE			34.6		i	E			28.5		
	L	E	41	14			e	E			43 07		
	L	N	42	38			L	E			50 21		
	P:C						P:S,D						
	14.2 S., 166.7 E. New Hebrides Is. region. h:26 km ca. H=01 17 44.7						2. eL E 02 04.4 eL N 13.1 53.3 S., 134.9 W. South Pacific Ocean. h:22 km ca. H=01 17 08.1						
	USCGS						USCGS						
	1.	P	Z	05	48		50.1	2.	iP	NEZ	02	12	20.1
		i	NZ				51.1		i	N			29.7
		i	Z	49	39				i	E			30.9
ePP		Z	50	45		S	NEZ				40.9		
S		N	56	04		P:S,E,D							
Lq		NE	06	01	16	2.	P		Z	02	14	18.9	
Lr		N	03	34			18.9 S., 168.0 E. New Hebrides Is. region. h:18 km ca. H=02 03 56.0						
P:C						USCGS							
Mag. 6 3/4 - 7 (Mat.) 9.8 S., 160.5 E. Solomon Is. region. h:50 km ca. H=05 39 53.2						USCGS							
1.	iP	Z	06	16	02.8	2.	ePKP	Z	02	51	42		
	i	NE			03		e	E	03	01	34		
	S	E			23		56.7 S., 24.8 W. Sandwich Is. h:25 km ca. H=02 31 24.8						
	i	N			24		USCGS						
	i	Z	17	07			2.	eP	Z	09	52	00 ca.	
	P:D							eL E 57 59					
1.	eP	Z	07	41	16	2.	P	NZ	12	14	44.9		
	e	NE			40		eS	NE			16 44		
	e	E	08	05	05		i	E			47.5		
	iSS	E	08	05	05		i	N			54		
	eSSS	E	11	49			P:S,C 44.5 N., 148.7 E. Kurile Is. h:74 km ca. H=12 12 03.8						
Mag. 6 1/2 - 6 1/2 (Mat.) 56.8 S., 25.1 W. Sandwich Is. region. h:44 km ca. H=07 21 12.3						USCGS							
1.	eP	Z	09	54	32	2.	iP	NEZ	14	36	17.2		
	e	Z			59		P:N,W,D						
	SS	NE	10	18	30		2.	iP	NEZ	14	37	08.8	
	eSSS	E	24	22				eS	E			40 48	
	57.1 S., 26.1 W. Sandwich Is. h:31 km ca. H=09 34 40.7							P:S,W,C 51.9 N., 157.8 E. Near coast of Kamchatka. h:50 km ca. H=14 32 27.9					
USCGS						USCGS							
1.	P	Z	10	32	00	2.	P	NZ	20	24	14.7		
	i	E			13		(cont.)						
	eS?	E	33	09									
	32.9 N., 131.5 E. Kyushu, Japan. h:120 km ca. J.M.A.												

Date Phase Comp. Time(GMT)
h m s

continued.

12.6 S., 165.5 E.
New Hebrides Is. region.
h:129 km ca.
H=20 14 50.2 USCGS

2. P Z 23 08 25.7
i NE 33
S NE 52
P:D

3. P NZ 00 59 01.7
iS NE 17.5
P:S,D

3. P Z 06 59 23.0
i E 25.0
i Z 07 01 29
S N 05 26
L E 08 50
Lr Z 10 33
P:D

Mag. 5 3/4 - 6 (Mat.)
3.5 S., 130.8 E.
Ceram.
h:22 km ca.
H=06 51 44.1 USCGS

3. P Z 14 31 03.5
eL NE 37 12
52.2 N., 174.0 E.
Near Is.
h:41 km ca.
H=14 24 58.2 USCGS

3. P EZ 20 28 45.6
P:W,C

3. P NEZ 23 38 59.0
i N 39 03.1
S E 43 15
i N 25
L E 44 27
L Z 45 25
P:C

12.1 N., 143.8 E.
Mariana Is. region.
h:20 km ca.
H=23 33 37.7 USCGS

4. iP NEZ 07 19 43.4
i Z 54.7
eS NE 21 12
e E 38
eL NE 22 20
P:N,E,D

(cont.)

Date Phase Comp. Time(GMT)
h m s

continued.

43.0 N., 145.4 E.
Eastern Hokkaido, Japan.
h:60 km ca.

J.M.A.

4. iP EZ,P N 10 43 21.5
eS E 48 48
eL NE 51 34
P:E,D

51.4 N., 177.4 W.
Andreanof Is.
h:20 km ca.
H=10 36 25.7 USCGS

4. P Z 18 01 34.3
i Z 43
e N 11 32
eL N 22 18
eL N 26 35

4. P EZ 18 40 11.5
i N 11.7
S NE 23
P:E,D

4. eL E 19 21.0
eL E 35.9
34.8 N., 38.7 W.
North Atlantic Ocean.
h:26 km ca.
H=18 35 20.8 USCGS

4. P Z 22 55 56
i N 58
i E 59
i Z 56 09
S E 58 18
L E 30
L NE 23 01 00
43.0 N., 150.5 E.
Kurile Is.
h:0 km ca.

J.M.A.

5. P Z 01 17 31
i Z 43
13.7 S., 166.0 E.
New Hebrides Is. region.
h:40 km ca.
H=01 07 49.1 USCGS

5. eP Z 02 35 19
i NE 22
i Z 30
eL E 52 08
(cont.)

Date Phase Comp. Time(GMT)
h m s

continued.

eLr EZ 02 54 45
60.5 N., 148.6 W.
Kenai Peninsula, Alaska.
h:105 km ca.
H=02 26 22.4 USCGS

5. P Z 06 15 09.5
i NE 10.0
P:C
50.5 N., 160.5 E.
Off east coast of Kamchatka.
h:25 km ca.
H=06 10 16.3 USCGS

5. P Z 06 54 55
eL E 07 20 17
28.2 S., 176.7 W.
Kermadec Is. region.
h:66 km ca.
H=06 43 05.0 USCGS

5. iP NEZ 09 37 57.5
S? N 38 23.5
P:S,E,D

5. PKP EZ 09 47 30.0
i Z 48 01.5
i E 04.1
e E 10 06 22
esSS E 10 56
eL E 36 10
P:E,D

19.8 S., 68.2 W.
Near Chile-Bolivia border.
h:113 km ca.
H=09 27 45.5 USCGS

5. eL N 19 21 47
21.7 N., 93.9 E.
Burma.
h:50 km ca.
H=19 00 20.1 USCGS

6. iP Z,P NE 03 23 04.7
S E 24 59
L E 25 17
P:D

26.7 N., 141.8 E.
Bonin Is. region.
h:36 km ca.
H=03 20 39.0 USCGS

6. P Z 07 11 00
e NE 13 32

Date Phase Comp. Time(GMT)
h m s

6. P Z 10 42 20
e E 52 12

2.7 S., 122.0 E.
Celebes.
h:69 km ca.
H=10 34 33.4 USCGS

6. iP EZ 15 52 29.2
i N 29.4
i N 43.0
eS N 53
P:E,D

7. P Z 02 52 36.0
i Z 44
i N 46
S E 53 33

7. P NEZ 04 03 48
i E 52
eS E 04 55
e E 57

41.9 N., 142.3 E.
South coast of Hokkaido,
Japan.
h:20 km ca.

J.M.A.

7. P Z 04 30 10.5
i EZ 11.2
i N 34 39
S E 36 27
L E 39 31
P:C

Mag. 5 3/4 (Mat.)
2.7 S., 121.6 E.
Celebes.
h:18 km ca.
H=04 22 20.5 USCGS

7. P Z 10 46 53.6
S NE 47 23.1
P:D

7. iP Z 10 50 41.1
i NE 42.0
eL E 59 20
eL E 11 08 48
P:C

0.3 N., 124.0 E.
Celebes.
h:76 km ca.
H=10 43 20.9 USCGS

7. P NZ 11 14 38.3
S NEZ 48.6

Date	Phase	Comp.	Time(GMT)		
			h	m	s
7.	P	Z	12	34	15.3
	i	NE			16.6
	S	E	44	04	
	i	N			09
	SS	NE	49	08	
	L	N	54	46	
Lr	Z	59	50		
P:C					
Mag. $5\frac{1}{2}$ - $5\frac{3}{4}$ (Mat.)					
28.1 S., 176.5 W.					
Kermadec Is. region.					
h:39 km ca.					
H=12 22 23.3 USCGS					

7.	eS	E	16	37	02
	eSS	N			43.8
	eL	N			53 18
	L	E	17	58	36
61.1 S., 160.4 E.					
North of Balleny Is.					
h:49 km ca.					
H=16 11 41.4 USCGS					

7.	P	Z	17	09	38
	i	E			39
	i	N			41.0
	i	Z			47.7
	27.5 S., 177.1 W.				
Kermadec Is. region.					
h:60 km ca.					
H=16 57 50.0 USCGS					

7.	P	NZ	18	32	18.6
	S	NEZ			33 16.4
	P:S,D				

7.	P	EZ	23	26	45.5
	i	E			51
	i	N			27 16
	i	Z			24.1
	P:W,C				

7.	P	NEZ	23	41	58	
	i	NZ			42 09	
	28.2 S., 176.7 W.					
	Kermadec Is. region.					
h:25 km ca.						
H=23 30 01.7 USCGS						

8.	P	Z	00	30	44.0	
	i	E			44.6	
	S	NE			40 31	
	ScS	E			41 10	
	eSS	N			45 53	
	eL	E			56 13	
	eLr	Z	01	02	06	
	P:D					
	Mag. $5\frac{1}{4}$ - $5\frac{1}{2}$ (Mat.)					
	(cont.)					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued.					
28.1 S., 176.5 W.					
Kermadec Is. region.					
h:51 km ca.					
H=00 18 52.3 USCGS					

8.	P	NZ	05	43	21.4
	i	Z			38
	e	E			49 17
	eL	N			51 45
	P:C				
51.9 N., 176.3 W.					
Andreanof Is.					
h:57 km ca.					
H=05 36 28.9 USCGS					

8.	eP	Z	07	27	09
	eS	E			33 47
	e	N			38 17
	L	E			38 50
	L	N			41 17
	8.1 S., 156.6 E.				
Solomon Is. region.					
h:61 km ca.					
H=07 18 34.9 USCGS					

8.	P	NEZ	07	51	37.7
	i	E			45
	P:D				

8.	P	NEZ	08	33	40.6
	S	E			35 22.6
	L	N			55
	P:S,E,D				

8.	iP	NZ	09	15	31.6	
	i	E			31.8	
	P:S,D					
	6.8 S., 125.9 E.					
	Banda Sea.					
h:437 km ca.						
H=09 07 53.3 USCGS						

8.	iP	NEZ	12	25	46.5	
	PP	NEZ			27 19	
	S	EZ			31 44	
	Lq	NE			34 35	
	Lr	N			36 37	
	L	E			41 38	
	P:N,E,D					
	Mag. $6\frac{1}{2}$ (Mat.)					
	50.9 N., 170.7 W.					
	Fox Is.					
h:24 km ca.						
H=12 18 18.9 USCGS						

8.	eP	Z	12	32	05
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8.	P	Z	13	45	15
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Date	Phase	Comp.	Time(GMT)			
			h	m	s	
8.	P	Z	15	50	46	
8.	P	EZ	19	02	24.3	
	P:D					
	34.1 N., 74.6 E.					
	Northern India.					
h:23 km ca.						
H=18 53 15.7 USCGS						

8.	P	Z	23	56	38
	e	E	00	05	52
	eL	E			12 48
	50.9 N., 170.5 W.				
Fox Is.					
h:25 km ca.					
H=23 49 11.9 USCGS					

9.	iP	NEZ	04	03	50.6
	i	E			55
	S	E			05 09
	i	Z			17
	P:S,W,C				
Mag. 5.3 (Mat.)					
41.0 N., 143.0 E.					
Near coast of northern					
Honshu, Japan.					
h:40 km ca.					

9.	P	NE	07	49	58.2
	i	NZ			58.7
	i	E			50 06
	eS	E			51 41
	P:N,E				
42.0 N., 142.6 E.					
Near south coast of Hokkaido,					
Japan.					
h:50 km ca.					

9.	iP	NEZ	13	09	12.8
	iS	N			15.9
	i	EZ			16.5
	P:N,E,D				

9.	iP	EZ,P N	13	49	25.7
	S	E			50 00
	P:S,W,C				

9.	iP	Z	16	12	56.0	
	i	NE			56.1	
	S	N			21 11	
	i	E			19	
	Lq	NE			28 16	
	Lr	Z			32 35	
	P:C					
	Mag. $5\frac{3}{4}$ - 6 (Mat.)					
	(cont.)					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued.					
19.1 S., 168.7 E.					
New Hebrides Is. region.					
h:69 km ca.					
H=16 02 36.1 USCGS					

9.	iP	EZ	19	59	40.6
	i	N			40.8
	i	Z			48.7
	i	N			49.7
	S	N			55.6
i	Z			56.1	
P:E,D					

10.	e	E	00	50	17
	eL	E			54
	eL	N			53 13

10.	P	Z	01	05	06.7
	i	E			09
	e	N			06 04
	P:S,E,C				

10.	P	NEZ	01	32	48.6
	i	N			33 44
	e	E			42 32
	L	N			43 17
	P:S,E,C				

10.	P	NZ	01	38	34
	i	Z			43
	i	EZ			39 09
	eL	E			42 32

54.1 N., 131.9 E.					
Eastern U.S.S.R.					
h:25 km ca.					
H=01 34 19.5 USCGS					

10.	P	Z	01	43	08
	i	NE			09
	S?	NE			44 05
	P:D				

10.	eP	Z	02	31	10
	i	NE			11.5
	S	N			32 07.9

10.	P	NZ	03	43	26.2
	S	E			44

10.	P	Z	05	39	21.9
	i	N			27.6
	i	E			30

10.	P	Z	05	46	15.2
	i	E			15.7
	i	NZ			15.9
	i	N			40
	S	E			47 05

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
12.	P iS	EZ E	09	21	25.7 57.0	13.	P i i	EZ Z N	07	43	35 44 09 34
12.	ePKP	Z	13	25	22	13.	iP iS? e	Z Z N	08	24	50.3 13 41
	21.4 S., 67.7 W. Chile-Bolivia border. h:97 km ca. H=13 05 30.2 USCGS										
12.	iP Z,P i P:C	NE N	13	50	53.5 08.9	13.	P P:C	EZ	10	21	27.3
12.	P	Z	14	43	37.4	13.	e	Z	10	26	56
12.	P i S i	EZ N E N	18	02	04.3 06.1 38.6 49	13.	P Z,eP P Z,eP E	E	12	53	50.6
	P:E,D						7.7 S., 127.5 E. Banda Sea. h:160 km ca. H=12 45 51.8 USCGS				
13.	iP S	EZ N	01	29	01.2 29.2	13.	eP eL eL	Z Z N	13	36	22 55.2 55.3
13.	iP NZ,P eL P:S,D	E E	02	40	56.2 03	13.	P EZ,eP	N	13	59	28
	5.6 S., 130.3 E Banda Sea. h:39 km ca. H=02 32 58.3 USCGS					13.	eP	Z	15	14	30
13.	P i e	Z NE E	03	59	58.0 58.4	13.	iP EZ,P P:D	N	15	42	22.2
	27.4 S., 178.5 W. Kermadec Is. h:601 km ca. H=03 49 06.1 USCGS					13.	P	Z	16	02	04.5
13.	P i	EZ N	05	52	41.7 00.2	13.	P P:D	Z	16	02	04.5
	52.5 N., 166.6 W. Fox Is. h:75 km ca. H=15 54 24.5 USCGS					13.	iPKP P:C	Z	18	42	19.0
13.	P i eS e eL eL eL	EZ N Z E N Z E	06	05	20 24.3 49 51 57 23 43	13.	P Z,eP	NE	21	27	34.3
	Mag. 5 - 5 1/4 (Mat.) 25.3 N., 121.5 E. Near north coast of Formosa. h:25 km ca. H=06 01 02.0 USCGS					13.	P i i i	Z NE NZ NE	21	45	26 49.3 11.3 55.4

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
13.	iP S P:S,W,D	EZ NE	21	50	56.3 08	14.	iP i S ScS eSS L L L	NZ E N NE N E N Z	19	02	28.2 28.5 02 42 53 23 56 30
	24.8 S., 179.1 E. South of Fiji Is. h:488 km ca. H=21 58 40.9 USCGS						P:N,C Mag. 6 - 6 1/4 (Mat.) 24.2 S., 175.7 W. Tonga Is. region. h:21 km ca. H=18 50 50.3 USCGS				
13.	P i i	Z E N	22	24	08 08.3 37.4	14.	eP i	Z E	21	12	37 45.2
13.	P	Z	23	35	33.5	14.	iP i i i i i P:D	Z N E E E Z	22	06	47.1 47.4 47.6 08 17 25 30
14.	P S	Z NE	00	58	17 59	14.	iP P:D	Z	06	47	42
	19.6 S., 178.1 W. Fiji Is. h:535 km ca. H=06 37 19.6 USCGS						Mag. 5.4 (Mat.) 31.7 N., 131.8 E. Near south coast of Kyushu, Japan. h:20 km ca. J.M.A.				
14.	P e	Z E	11	09	17 13 45	14.	P i S i G L L Lr PKPPKP P:C	Z NEZ NE N E N Z Z	23	39	11.5 12.5 46 48 49 42 53 57 58 00 00 08 10
	Mag. 6 1/4 (Mat.) 20.3 S., 169.4 E. New Hebrides Is. region. h:97 km ca. H=23 28 46.5 USCGS					14.	iP Z,P i i S P:C	E N E EZ	15	08	26.6 26.9 38.4 49
14.	iP S i P:N,W,C	NEZ N N	16	40	00.2 29 39	15.	iP i i S i P:N	NZ E E N Z	02	43	26.8 27.2 49.3 49.5 49.8
	Mag. 5 - 5 1/4 (Mat.) 25.3 N., 121.5 E. Near north coast of Formosa. h:25 km ca. H=06 01 02.0 USCGS					14.	iP S i P:N,W,C	NEZ E N	16	45	17.7 47 57

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)								
			h	m	s				h	m	s				h	m	s						
15.	iP i i P:D	Z N E	08	37	47.9 48.2 48.5	15.	iP i S i P:C	Z N E N	23	27	53.8 54.2 50 51	16.	iP i P:D	Z NE	10	35	57.6 58.2	17.	iP i eS P:D	Z E E	00	17	36.3 36.6 57
15.	iP iS i	NZ NE Z	10	23	27.2 49 50	16.	eP e e	Z E N	01	42	32 48 15 54	16.	P P:D	EZ Z	11	03	51 06.5	17.	eP iP Z,P N P:D	Z	02	51	07 04 45 43.1
15.	eP e	N Z	13	45	13 18	16.	P i S P:C	Z NE NE	02	34	54.6 54.8 51	16.	iP Z,P E P:D		12	46	26.0	17.	P i	Z N	06	36	15 37 18.7
15.	eP e	Z N	13	49	59 50 01	16.	P S	Z NE	02	38	08 39 03	16.	iP Z,P E P:D		12	46	26.0	17.	iP S	NEZ NE	06	52	20.9 53 19
15.	P i P:D	NEZ N	13	56	15 57 13	16.	P S	Z NE	02	38	08 39 03	16.	P	Z	13	09	55.3	17.	iP S	NEZ NE	06	52	20.9 53 19
15.	iP i i e e P:S	N Z E N E	15	39	28.3 28.9 29 44 38 46	16.	iP Z,P N i S i P:S,D	N E NE Z	02	48	19.2 19.7 15 21	16.	P S	Z	13	09	55.3	16.	P	Z	14	04	14
					47.6 N.,155.3 E. Kurile Is. h:34 km ca. H=15 35 31.0 USCGS												16.	iP Z,P N P:D		14	18	24.5	
15.	iP iS	NZ Z	17	00	54.6 01 03.9	16.	P N,eP Z S	NE	02	51	19 52 14	16.	iP Z,P N P:D		14	18	24.5	16.	iP S	NEZ NEZ	15	54	42.4 55 28
15.	P Z	Z	18	01	12	16.	P eL eL	Z E E	03	45	53.6 07.3 14.5	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
					14.9 S.,167.7 E. New Hebrides Is. h:198 km ca. H=17 51 35.5 USCGS	16.	P S	Z NE	04	54	15 55 11	16.	iP Z,P N P:D		14	18	24.5	16.	iP S	NEZ NEZ	15	54	42.4 55 28
15.	iP S	NEZ E	19	05	10.3 06 05	16.	P S	Z NE	04	54	15 55 11	16.	iP Z,P N P:D		14	18	24.5	16.	iP S	NEZ NEZ	15	54	42.4 55 28
					Mag. 5.9 (Mat.) 33.0 N.,142.6 E. South of Honshu, Japan. h:60 km ca. J.M.A.	16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
15.	eP i	Z Z	19	54	11 19.5	16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
					23.3 S.,180.0 South of Fiji Is. h:595 km ca. H=19 43 54.8 USCGS	16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
					Mag. 5.3 (Mat.) 32.2 N.,142.1 E. South of Honshu, Japan. h:32 km ca. H= 08 57 36.9 USCGS	16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	16.	iP S	NEZ NEZ	15	54	42.4 55 28
						16.	P S i	Z E N	08	52	52 53 16 17	16.	iP S	NEZ NE	15	54	42.4 55 28	1					

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
19.	P S	Z Z	13	47	26 32	19.	PKP P:D	Z	16	19	54
19.	P S	Z Z	13	52	58 04	11.4 S., 70.6 W. Peru - Brazil border. h:645 km ca. H=16 01 25.6 USCGS					
19.	P S P:D	Z Z	14	04	43 59	19.	P S	Z Z	16	33	27 46
19.	P S	Z Z	14	09	22 40	19.	P S	Z Z	16	39	03 22
19.	P S	Z Z	14	09	47 53	19.	P S P:D	Z Z	16	43	49 09
19.	P	Z	14	13	13	19.	P	Z	16	50	25
19.	P S	Z Z	14	15	37 55	19.	P S	Z Z	16	58	07
19.	P S	Z Z	14	17	41 59	19.	P S	Z Z	17	07	23 40
19.	P S	Z Z	14	20	15 21	19.	P S	Z Z	17	15	49 07
19.	P S	Z Z	14	30	17 23	19.	P	Z	17	38	34
19.	P	Z	14	36	21	19.	P	Z	17	51	05
19.	P	Z	14	51	10	19.	P S	Z Z	17	53	09 28
19.	P S	Z N	14	55	45 04	19.	P	Z	17	55	06
19.	iP e P:D	Z NE	14	59	15.6 12	19.	P P:C	Z	18	11	54
19.	P S	Z Z	15	00	24 30	19.	P P:D	Z	18	53	49
19.	PKP	Z	15	11	09	19.	P S P:C	Z Z	19	05	07 26
18.0 N., 68.8 W. Mona Passage. h:146 km ca. H=14 52 31.4 USCGS					19.	P	Z	19	07	11	
19.	P S	Z Z	15	53	08 26	19.	P	Z	19	08	54
19.	P S	Z Z	16	14	39 45	19.	P	Z	19	11	31
P:S,W,D					19.	P	Z	19	13	42	
19.	P	Z				19.	P P:C	Z	19	25	35

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
19.	P S	Z Z	19	48	40 58	19.	P S	Z Z	22	54	13 31
19.	P S	Z Z	20	04	30 49	19.	P S	Z Z	22	56	50 09
19.	P	Z	20	12	04	19.	P S	Z Z	23	04	43 49
19.	P S	Z Z	20	13	36 54	19.	P eS	Z Z	23	11	32 51
19.	P	Z	20	16	09	19.	P eS P:C	Z Z	23	45	03 21
19.	P S	Z Z	20	24	55 14	19.	eP eS	Z Z	23	47	56 13
19.	P eS	Z Z	20	34	35 18	20.	PKP	Z	00	25	49
19.	P S	Z Z	20	38	01 19	10.5 S., 70.9 W. Peru - Brazil border. h:659 km ca. H=00 07 24.5 USCGS					
19.	eS e L	E E E	20	42	44 12 10	20.	P eS	Z Z	00	30	46 05
2.1 N., 96.9 E. Off west coast of Sumatra. h:25 km ca. H=20 26 18.0 USCGS					20.	eP	Z	00	43	31	
19.	P P:C	Z	21	04	15	20.	P S	Z Z	00	45	43 03
19.	P S	Z Z	21	47	25 42	20.	P S	Z Z	00	55	54 12
19.	P S	Z Z	21	50	02 21	20.	eP	Z	00	59	17
19.	P	Z	21	56	37	20.	iP S P:C	Z Z	01	09	03.8 21.6
14.5 S., 166.9 E. New Hebrides Is. h:96 km ca. H=21 46 52.8 USCGS					20.	P	Z	01	10	49.6	
19.	P S	Z Z	21	58	41 58	20.	iP S	Z Z	01	36	10 29
19.	P S P:C	Z Z	22	08	47 06	20.	iP e e e	NEZ E N E	01	39	27.8 48 58 55 49 52
19.	P	Z	22	10	10	20.	P	Z	01	55	36
19.	P S	Z Z	22	41	39 58	20.	iP	NEZ	02	12	19.1 (cont.)

Date	Phase	Comp.	Time(GMT) h m s	Date	Phase	Comp.	Time(GMT) h m s
continued	S	Z	02 12 38	20.	P	Z	06 36 02
	P:S,W,D			20.	P	Z	06 44 01
	Mag.4.5 (Mat.)			20.	P	Z	06 52 26
20.	P	Z	02 45 13	20.	P	Z	06 54 49
	S	Z	31	20.	P	Z	07 00 29
20.	P	Z	03 16 43	20.	iP	NEZ	07 54 19.1
20.	P	Z	03 19 01		S	Z	38
	S	Z	19		P:S,W,D		
20.	iP	Z	03 34 07	20.	iP	Z	08 07 44
	S	Z	24	20.	P	Z	08 23 22
	P:D				S	Z	40
20.	iP	Z	03 46 29	20.	P	Z	08 26 48
	S	Z	41		eS	Z	27 06
	P:D			20.	P	Z	08 42 51
20.	P	Z	04 13 00		S	Z	43 09
	S	Z	06	20.	P	Z	09 11 58
20.	P	Z	04 27 41		P:N,E,C		
	S	Z	59	20.	P	Z	09 28 25
20.	P	Z	04 28 14	20.	PKP	Z	09 28 38.0
	S	Z	32		11.4 S., 70.8 W.		
20.	iP	Z	05 14 18.1		Peru - Brazil border.		
	e	NEZ	17 16		h:678 km ca.		
	S	NE	22 35		H=09 10 11.7	USCGS	
	iScS	NE	23 32	20.	P	Z	09 35 00
	i	N	50		S	Z	19
	SS	N	27 18	20.	iP	EZ	10 07 00.4
	P:N,W,C				i	N	01.1
	17.8 S., 178.8 W.				iS	E	18.6
	Fiji Is.			20.	P	Z	10 13 52
	h:592 km ca.				S	Z	14 11
	H=05 04 14.3	USCGS			P:D		
20.	P	Z	05 19 56	20.	P	Z	10 19 02
	S	Z	20 14		S	Z	21
20.	P	Z	05 24 12	20.	eP	Z	10 21 25
20.	P	Z	05 41 57		S	Z	31
	S	Z	42 14				
20.	P	Z	06 13 16				
20.	P	Z	06 24 19				
	S	E	25 24				
	i	N	57				

Date	Phase	Comp.	Time(GMT) h m s	Date	Phase	Comp.	Time(GMT) h m s
20.	P	Z	10 52 33	20.	P	Z	15 14 15
20.	iP	NEZ	11 11 09.6	20.	eP	Z	15 51 07
	S	Z	27	20.	eP	Z	16 22 49
	P:S,W,D				S	Z	23 08
	Mag.4.3 (Mat.)			20.	P	Z	16 25 22
20.	P	Z	11 22 09		S	Z	40
	i	Z	24		P:N,E,C		
	S	Z	26	20.	P	Z	17 39 27
	i	Z	29		S	Z	45
	P:S,W,D			20.	P	Z	17 40 41
20.	P	Z	11 46 47		S	Z	59
	S	Z	47 05	20.	iP	Z	17 59 11.6
20.	P	Z	11 48 03		e	E	18 04 57
	S	Z	21		P:S,W,D		
20.	iP	NEZ	11 48 56.1	20.	iP	Z	18 33 11
	S	Z	49 14		S	Z	31
	P:N,E,C			20.	iP	Z	19 51 44
20.	P	Z	12 02 03		S	NE	52 02
	S	Z	22		P:S,W,D		
20.	P	Z	12 30 52	20.	iP	Z	21 02 39
	S	Z	31 11		S	Z	58
20.	iP	Z	12 58 58.4		P:S,W,D		
	i	E	58.7		Mag.4.6 (Mat.)		
	i	N	59.2	20.	P	Z	21 49 02
20.	P	Z	13 08 13		S	N	20
	S	Z	32	20.	P	Z	22 15 39
20.	eP	Z	13 16 38		S	Z	57
	eL	N	33 20	20.	iP	Z	23 44 53
	eL	N	25		S	NE	45 48
20.	iP	Z	13 31 30.8	21.	iP	NEZ	00 31 57.1
	P:N,E,C				eS	EZ	32 16
20.	iP	Z	14 12 17		P:S,W,D		
	S	Z	35	21.	P	NEZ	00 41 56
	P:C				S	NE	42 00.6
20.	P	Z	14 20 21	21.	P	EZ	00 45 40.7
	S	Z	40		S	NEZ	52
20.	P	Z	14 23 14		P:E,D		
	S	Z	33	21.	iP	EZ	01 17 56.7
20.	P	Z	15 10 46				(cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued.	ePcP	Z	07	09	24	26.	iP	Z	08	47	09.2
	eS	N		14	17		i	E			20.3
	eL	N		17	48		P:C				
	53.5 N., 161.2 W. Alaska Peninsula.						43.0 N., 144.6 E. Kurile Is.				
	h:36 km ca. H=06 59 30.2						h:25 km ca. H=08 45 06.5				
											USCGS
25.	P EZ, eP N	NEZ	11	34	45	26.	eP	Z	10	33	20
	S			35	04		eS	NE			49
25.	i	Z	15	07	26.5	26.	iP	Z	12	22	58.1
							i	E			58.3
							i	N			58.5
25.	iP	EZ	16	26	43.8		iS	NE	23	16.8	
	iS	NEZ			49.6		P:C				
	P:W,D					26.	eP	Z	13	18	02
							e	N			21
25.	iP	NZ	21	34	43.4		e	N			19 23
	P:N,C					26.	iP	EZ	13	35	16.6
	8.1 S., 122.8 E. Flores Sea.						i	N			16.8
	h:191 km ca. H=21 26 28.1						iS	NE			35.8
							P:E,C				
25.	P	Z	21	43	22.0	26.	iP	Z	14	03	43.5
	e	Z			40		eS	NEZ		04	03
26.	P	EZ	00	43	51	26.	P EZ, eP N		14	42	49
	S	NE		44	10		eS	NE		43	07
26.	eP	Z	02	55	52	26.	iP	NEZ	15	14	08.3
	20.1 S., 168.9 E. Loyalty Is.						eS	NEZ			27
	h:125 km ca. H=02 45 34.8						P:N,W				
											USCGS
26.	iP	NEZ	04	46	34.3	26.	P	Z	18	12	10.0
	S	NE			53		P:D				
	P:S,W						13.9 S., 166.2 E. New Hebrides Is.				
26.	iP	NEZ	06	17	27.3		h:66 km ca. H=18 02 35.9				USCGS
26.	iP	NEZ	06	18	35.6	26.	eP	Z	18	46	00
26.	iP	NEZ	06	23	10.0		eS	NEZ			16
	P:N,E,C					26.	P	Z	18	54	18
26.	iP	NEZ	06	39	43.0		i	E			23.0
	P:N,C						eS	EZ			58 00
26.	e	N	06	52.0			i	Z			07
26.	P	NZ	07	08	03		eL	N			39
	i	E			04.0		eL	E			41
							eL	Z			59 50
											(cont.)

Date	Phase	Comp.	Time(GMT)			Date	Phase	Comp.	Time(GMT)		
			h	m	s				h	m	s
continued.						27.	iP	EZ	16	25	49.0
							i	N			49.4
							S	E			28 46
							e	N			57
							eL	NE			29 54
							P:W,C				
							Mag. 6 - 6 1/4 (Mat.)				
							48.0 N., 153.0 E. Kurile Is.				J.M.A.
26.	iP	EZ	19	56	40.1	27.	P	NEZ	16	42	16
	i	N			40.6	27.	eP	NZ	16	52	17
	eS	NE			57 00		eS	N			56 00
	P:W,D						i	E			10
27.	eP	Z	00	03	28		eL	Z			57 38 ca.
27.	iP	Z	01	03	41.0		L	E			46
	i	NE			41.2		L	N			59
	S	NE			04 59.9		Mag. 6 1/4 (Mat.)				
	P:C						18.3 N., 146.6 E. Mariana Is.				
27.	iPKP	Z	02	11	32.6		h:27 km ca. H=16 47 44.8				USCGS
	i	N			35.6	27.	iP	NEZ	17	09	00.2
	i	Z			38.8		iPcP	Z		11	27.3
	ePP	Z			15 10		eS	NE		14	13
	e	E			20		P:N,E,C				
	eSS	E			34 08		2.2 N., 128.6 E. Halmahera.				
	eL	E			55 11		h:263 km ca. H=17 02 27.2				USCGS
	eL	N	03	11	51	27.	eP	Z	17	27	50
	eL	E			12 14		i	Z			53.7
	PKP:D						eS	NE			31 32
	Mag. 5 3/4 (Mat.)						18.0 N., 144.7 E. Mariana Is.				
	15.3 S., 13.1 W. South of Ascension I.						h:109 km ca. H=17 23 19.1				USCGS
	h:49 km ca. H=01 51 51.8										
27.	iP	EZ	04	05	29.5	27.	iP	Z	17	51	23.9
	i	N			29.7		i	NE			24.2
	S	Z			48		eS	NZ			42
	P:W,D						P:D				
27.	iP	EZ, P N	05	21	28.1	27.	eP	Z	18	02	26
	iS	NEZ			45.4		i	N			29.0
	P:E						i	Z			29.4
27.	iP	EZ	05	37	22.2		i	Z			03 38.5
	S	NEZ			39		eS	N			06 10
	P:E,C						i	E			12
27.	iP	Z	07	06	09.9		eL	N			08 20
	i	E			10.2		17.9 N., 146.4 E. Mariana Is.				
	S	NEZ			29		h:74 km ca. H=17 58 00.8				USCGS
	P:C										
27.	eP	EZ	07	14	06	27.	iP	NZ	16	01	11.1
	i	Z			18		P:S,C				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
27.	eL	E	19	35	24
27.	eP eL	Z E	19	54 58	24 29
	47.3 N., 154.0 E. Kurile Is. h: 45 km ca. H=19 50 47.2 USCGS				
27.	P i i eS eL	NEZ N Z E E	20 21	59 00	57.8 00.9 06.3 03 11 04 38
	P:D 46.8 N., 153.9 E. Kurile Is. h: 25 km ca. H=20 56 15.6 USCGS				
27.	P i	EZ N	22	21	24 24.6
	35.9 N., 23.7 E. Near west coast of Crete. h: 69 km ca. H=22 03 49.8 USCGS				
27.	eP e	EZ E	22	27 32	17 10
27.	iP e P:N,E,D	NEZ E	22	33 53	58.1 05
28.	eL	N	00	33	25
28.	iP i S i P:D	Z E N E	01	50 51	23.9 24.9 33.2 39
28.	iP i eS e P:W,D	EZ N NZ E	02	32	19.9 20.2 38 41
28.	iPKP i i ipPKP i PKP:D	Z N E Z Z	06	47 48 51	43.0 44.9 45.2 34.5 06.7

(cont.)

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	15.1 S., 70.2 W. Peru - Bolivia border. h: 185 km ca. H=06 28 19.4 USCGS				
28.	iP S i P:S,W,D	NEZ Z Z	07	19	18.1 37 38
28.	iP eS	EZ EZ	07	22	18.1 37
	P:W,C				
28.	iP ipP	NEZ Z	07	50 52	15.7 10.3
	P:N,W,C 12.7 S., 169.6 E. Santa Cruz Is. h: 662 km ca. H=07 41 24.5 USCGS				
28.	iP i eL eL P:C	Z,P N E E N	09	15	16.1 17.2 21.1 21 43
	53.6 N., 159.1 E. Kamchatka. h: 25 km ca. H=09 10 13.0 USCGS				
28.	iP epP	NEZ Z	09	54 56	25.9 22
	P:S,E,D 18.6 S., 178.0 W. Fiji Is. h: 574 km ca. H=09 44 13.5 USCGS				
28.	iP iS	NEZ E	11	01	34.9 36.3
28.	iP iS i P:E	EZ Z E	11	22	21.7 39.9 40.4
28.	P i i eS eL eL	NZ N E E N E	12	17	28 35 36.8 20 44 22 02 08

(cont.)

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued					
	46.7 N., 153.9 E. Kurile Is. h: 19 km ca. H=12 13 45.3 USCGS				
28.	P i i e e eL eL	EZ Z N E N E	13	11	44 51.9 52.2 15 21 31 16 19 24
	46.7 N., 154.0 E. Kurile Is. h: 30 km ca. H=13 08 02.3 USCGS				
28.	eP	NZ	14	31	21
28.	iP e P:D	Z EZ	16	43 44	34.5 47
28.	iP iS i P:N,W	NEZ EZ N	17	18	22.6 23.5 23.9
28.	iP iS P:S	NEZ NEZ	17	43	21.7 23.9
28.	P i eS eL eL	Z NZ NE N E	18	05	36 39.1 08 51 09 48 10 18
	46.8 N., 154.0 E. Kurile Is. h: 32 km ca. H=18 01 56.6 USCGS				
28.	ePKP ePS	Z E	20	44 55	56 51
	22.9 S., 113.4 W. Easter Is. region. h: 56 km ca. H=20 26 04.2 USCGS				
28.	P eL eL	Z E N	21	01	26 19 41 20.1
28.	PKP eL	Z E	21	46 22	38 40 49
	14.0 S., 74.4 W. Near coast of Peru. h: 73 km ca. H=21 27 12.1 USCGS				

Date	Phase	Comp.	Time(GMT)		
			h	m	s
29.	e i i e	NE Z Z E	00	07	09 13.5 25 13 20
29.	iP iS P:S,W,D	NEZ NEZ	00	41	38.5 40.9
29.	iP iS P:S,W,D	NEZ NE	01	10	41.2 43.5
29.	iP i i eS e eL eL eL	NEZ EZ N N E E N Z	05	57	38.9 47 49.3 54 59 10 13 06 00 01 16 01 18
	P:S,W,C 42.6 N., 145.6 E. Near east coast of Hokkaido, Japan. h: 30 km ca. J.M.A.				
29.	iP i i iS P:C	Z E N N	07	47	36.9 37.1 37.9 48 04.2
29.	eP i i S ?	EZ Z Z N	07	55	08 12.7 31.7 44
29.	iP S i P:E,C	EZ N E	07	59	39.0 57.5 59.0
29.	iP S P:W	NEZ NE	11	56	43.2 45.5
29.	P	EZ	14	11	57.0
29.	iP eS i	Z N Z	14	31	00.0 18 19
29.	P i	Z N	14	58	39.0 40.5

(cont.)

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued			15	00	20
ePP	Z			04	25
eS	N				36
e	E		07	27	
eL	E				34
eL	N				
P:C					
Mag. 5 1/2 - 5 3/4 (Mat.)					
52.2 N., 170.8 W. Fox Is.					
h: 41 km ca.					
H=14 51 14.2 USCGS					
29.	iP	Z	17	38	34.0
	i	NE			34.3
	P:D				
7.0 S., 125.2 E. Banda Sea.					
h: 551 km ca.					
H=17 31 04.2 USCGS					
29.	P	Z	19	53	36
	i	Z			39.5
	eL	N			57 46
	eL	E			58 19
46.8 N., 153.8 E. Kurile Is.					
h: 17 km ca.					
H=19 49 52.9 USCGS					
29.	P	Z	21	20	45.7
	S	NE			21 04
29.	iP	NZ	21	43	39.3
	i	Z			44 10
	P:S,D				
15.4 S., 168.1 E.					
New Hebrides Is.					
h: 25 km ca.					
H=21 33 43.0 USCGS					
29.	P	Z	22	44	05
52.9 N., 166.7 W. Fox Is.					
h: 66 km ca.					
H=22 36 23.1 USCGS					
30.	eP	Z	01	56	00
	e	Z			18
	eS	E			58
	i	N			59
30.	iP Z, P N		02	33	33.8
	e	Z			34 40
	i	N			41
	eL	E			43 08
	P:D				
53.7 N., 166.3 W. Fox Is.					
h: 67 km ca.					
H=02 25 45.4 USCGS					

Date	Phase	Comp.	Time(GMT)		
			h	m	s
30.	P	Z	03	02	21.3
	e	N			14 08
	P:D				
30.	e	E	04	15	17
	e	N			40
	eSSS	E			30 50
	eL	N			46 25
3.5 S., 77.7 W.					
Ecuador - Peru border.					
h: 25 km ca.					
H=03 45 25.7 USCGS					
30.	iP	NEZ	05	01	22.9
	eS	Z			02 06
	i	E			08
	P:N,E,D				
38.0 N., 142.1 E.					
Near east coast of Honshu,					
Japan.					
h: 45 km ca. J.M.A.					
30.	P	Z	09	59	14
30.	eP	Z	10	53	36
	i	Z			47.0
	e	N			57 32
30.	PKP	Z	18	01	52
	pPKP	Z			02 49
	P:D				
15.6 S., 69.4 W.					
Peru - Bolivia border.					
h: 250 km ca.					
H=17 42 30.3 USCGS					
30.	P	NEZ	20	38	30.5
	eS	NZ			49
	P:C				
30.	iP	NEZ	20	47	39.6
	S	NEZ			59
	P:N,E,C				
30.	iP	EZ	22	10	33.8
	i	N			34.3
	S	NZ			52.8
	i	E			53.8
	P:E,C				
30.	P	Z	23	58	56
	e	Z			59 15
31.	iP	NZ	00	34	37.9

Date	Phase	Comp.	Time(GMT)		
			h	m	s
continued			00	34	38.1
i	E				
eS	E				44 31
e	N				37
eLq	N				55 08
eLq	E				13
eLr	N				59 33 ca.
eLr	E		01	00	00 ca.
P:N,C					
28.1 S., 176.7 W.					
Kermadec Is.					
h: 56 km ca.					
H=00 22 47.3 USCGS					
31.	PKP	Z	02	07	02.8
	i	Z			03.8
	i	NE			04.3
	ipPKP	Z			09 19.8
	iPP	E			10 29
	i	N			30
	ipPP	N			13 03
	e	EZ			10
	PKP:D				
Mag. 7 - 7 1/4 (Pas.)					
10.6 S., 70.9 W.					
Peru - Brazil border.					
h: 626 km ca.					
H=01 48 37.5 USCGS					
31.	PKP	NZ	02	15	31.8
	i	E			32.5
	i	Z			18 18
	i	N			24
	PKS	E			19 19
	pPP	Z			20 58
	eSKKS	N			24 06
	eSKKS	E			18
	i	N			31
	i	E			44
	e	Z			45
	SKP	Z			28 03
	SKP	NE			04
	SS	E			36 36
	eSS	N			39
	SS	Z			53
	sSS	N			40 33
	sSS	E			41 04
	P:N,D				
Mag. 7 1/2 (Pas.)					
10.4 S., 70.7 W.					
Peru - Brazil border.					
h: 629 km ca.					
H=01 57 08.0 USCGS					
31.	eP	Z	02	43	23

Date	Phase	Comp.	Time(GMT)		
			h	m	s
31.	iP	Z	02	51	55.3
	e	Z			54 08
	P:C				
31.	iP	NEZ	04	13	52.8
	P:N,C				
31.	P	EZ	05	20	19
	eS	N			37
	i	E			38.3
31.	iP	Z	05	32	46.4
	i	E			54.9
	e	N			33 21
	P:C				
31.	iP	NEZ	12	06	01.7
	S	N			22
	i	EZ			23
	P:N,E,C				
31.	eP	Z	21	04	34
	e	E			07 29
	e	N			53
31.	iP	NZ	22	36	38.2
	i	E			38.7
	e	NE			37 20
	P:N,C				

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