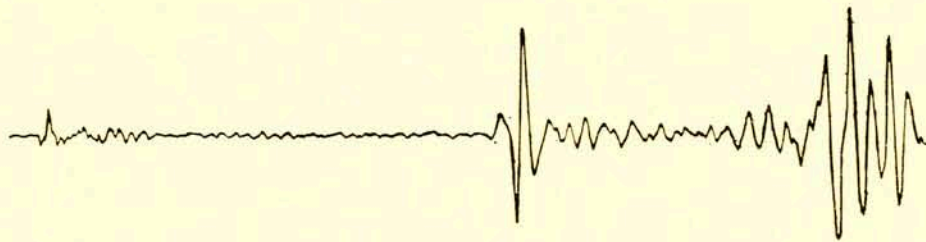


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JOHN CARROLL UNIVERSITY
SEISMOLOGICAL OBSERVATORY
CLEVELAND OHIO
U S A

SEISMOLOGICAL BULLETIN



1 JANUARY 1965 - 31 DECEMBER 1965

OBSERVATORY DIRECTOR
EDWARD J. WALTER

JANUARY, 1965, BULLETIN

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
1	iP	ze	21 ^h 49 ^m 12.4 ^s	d	
2	i	n	12 19 32.6		
6	iP	n	02 06 35.7		Δ = 5000 km
	iS	n	02 13 19.9		
6	iP	z	18 35 50.4	d	
7	iP	n	12 15 59.7		
7	i	n	19 09 44.2		
8	iP	n	23 03 07.1		
9	i	e	21 30 32.2		
10	iPP	e	13 56 08.9		USCGS: 13.5°S, 166.6°E H = 13 ^h 36 ^m 30.7 ^s h = 32 km ca
	iSKS	e	14 02 58.7		
10	i	n	14 42 59.0		
10	i (P)	n	16 23 31.3		
10	i (P)	n	22 28 32.0		
11	i	n	19 56 25.4		
11	i	n	21 51 18.0		
14	iP	n	08 33 43.6		USCGS: 5.5°S, 81.3°W H = 08 ^h 25 ^m 17.5 ^s h = 32 km
	eS	E	08 40 33		
	iSS	E	08 43 36.2		
15	i	n	16 01 15.9		
15	i	n	20 14 43.4		
17	iPKP	z	21 16 48.5	d	USCGS: 6.8°S, 109.1°E H = 20 ^h 57 ^m 41.3 ^s h = 242 km ca
	ipPKP	z	21 17 44.5	d	
	iPP	z	21 20 08.0	d	

JANUARY, 1965, BULLETIN

(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
18	iP	z	00 ^h 15 ^m 12.3 ^s	c	
23	iPKP ₁	z	23 30 32.5	c	Δ = 16800 km
	iPKP ₂	z	23 30 43.0	c	
	iSKP ₂	N	23 34 01.0		
	iPP	z	23 34 06.0	c	

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FEBRUARY, 1965, BULLETIN

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
4	iP	z	03 ^h 29 ^m 50.5 ^s		
4	iP	z	05 12 06.8	c	USCGS: 51.1°N, 178.4°E H = 05 ^h 01 ^m 21.8 ^s h = 40 km ca Mag: 7.75 (PAS, BRK)
	iP	zne	05 12 09.1	d	
	eS	E	05 21 22.8		
4	iP	z	08 25 51.8	d	Aftershock
4	iP	z	08 54 30.4	d	"
4	iP	z	09 17 01.5	c	"
4	iP	z	09 44 28.0	c	"
4	iP	z	09 51 14.9	c	"
4	iP	z	10 10 05.0	c	"
4	iP	z	13 16 55.3	c	"
4	iP	z	15 26 27.7	c	"
4	iP	z	15 29 19.6	c	"
4	iP	z	16 02 16.7	c	Aftershock USCGS: 53.1°N, 170.8°E H = 15 ^h 51 ^m 25.5 ^s h = 40 km Mag: 6.25 (PAS)
	iS	e	16 11 09.1		
4	iP	z	16 43 23.3	d	Aftershock
4	iP	z	16 43 34.0	d	"
4	iP	z	19 52 00.3	c	"
4	iP	z	22 40 52.1	d	"
5	iP	z	06 50 34.8	d	"
5	iP	z	09 42 52.0	c	Aftershock USCGS: 52.3°N, 174.3°E H = 09 ^h 32 ^m 09.3 ^s h = 41 km ca Mag: 6.5 (PAS)
	iPP	z	09 43 03.4		
	iS	n	09 51 36.7		
5	iP	z	13 49 32.9	d	Aftershock
5	iP	z	20 57 58.8	d	"

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Page 2.

Date	Phase	Component	GMCT		Remarks
6	iP	zne	01 ^h 49 ^m 46.9 ^s	d	USCGS: 53.2°N, 161.9°W H = 01 ^h 40 ^m 33.2 ^s h = 33 km ca
	iPP	z	01 51 48.5	d	
	iS	E	01 57 14.1		
6	iP	z	04 13 35.1	d	Aftershock of Feb. 4
6	iP	z	07 25 35.1	d	"
6	iP	z	08 57 38.8	c	"
6	iP	zne	16 59 43.0	c	USCGS: 53.3°N, 161.8°W H = 16 ^h 50 ^m 29 ^s h = 33 km ca
	iPP	z	17 01 43.0	d	
	eS	NE	17 07 12		
7	iP	z	02 27 59.9	c	Aftershock of Feb. 4
7	iP	z	04 22 03.1	d	"
7	iP	z	09 36 23.1	d	"
7	iP	z	12 32 11.3	c	"
8	iP	z	15 57 48.1	c	USCGS: 55.1°N, 165.7°E H = 15 ^h 46 ^m 49.9 ^s h = 40 km ca
	iS	n	16 06 47.6		
9	iP	ze	17 48 04.6	d	Aftershock of Feb. 4
12	iP	z	01 05 48.7	d	"
	iS	E	01 14 53.0		
14	iP	z	21 28 19.4	c	"
15	iP	z	01 35 37.9	c	"
15	iP	z	05 12 24.0	d	"
15	iP	z	12 47 27.2	c	USCGS: 53.6°N, 81.3°E H = 12 ^h 34 ^m 54.8 ^s h = 11 km ca
23	iP	zn	22 22 38.7	d	
	iS	E	22 31 29.7		
24	iP	z	08 15 09.2	c	USCGS: 14.0°N, 92.2°W H = 08 ^h 09 ^m 17.2 ^s h = 56 km ca
25	iP	z	05 33 03.4	d	
	iS	NE	05 41 51.6		

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>	<u>Remarks</u>
26	iP	z	09 ^h 15 ^m 19.3 ^s	d
27	iP	ze	07 52 21.6	c
	iPP	e	07 53 02.5	
	iS	E	07 57 14.6	
27	iP	z	11 41 26.5	c

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>			<u>Remarks</u>
1	iP	z	19 ^h	32 ^m	48.7 ^s	d
1	iP	ze	21	37	52.3	c
	ipP	zne	21	38	16.2	
	iS	E	21	42	25.2	
						USCGS: 15.4°N, 92.5°W H = 21 ^h 32 ^m 11.8 ^s h = 93 km ca
3	iP	ze	16	58	18.4	c
	iS	e	17	07	18.7	
						Aftershock
6	iP	e	21	12	10.8	
	iS	n	21	13	11.5	
						4 = 565 km
9	iP	zne	17	29	32.4	c
	eS	NE	17	39	08.4	
14	iP	NE	16	06	11.2	
	iP	zn	16	06	11.7	e
	ipP	z	16	07	04.7	e
	isP	zn	16	07	23.2	e
	iPP	z	16	09	43.6	e
						USCGS: 36.3°N, 70.7°E H = 15 ^h 53 ^m 06.6 ^s h = 219 km ca
16	iP	n	16	59	07.4	
	iP	z	16	59	07.7	d
	iS	E	17	09	48.2	
						USCGS: 40.8°N, 142.9°E H = 16 ^h 46 ^m 15.5 ^s h = 34 km ca
17	iP	z	14	38	02.5	d
						USCGS: 52.8°N, 171.9°E H = 14 ^h 27 ^m 12.4 ^s h = 23 km ca
21	iPKP	z	11	27	42.0	c
	iPP	z	11	30	07.3	d
	iSKP	n	11	31	08.5	
						USCGS: 1.5°S, 126.5°E H = 11 ^h 08 ^m 16.2 ^s h = 33 km ca
22	iP	z	15	16	05.1	d
						USCGS: 8.8°N, 39.7°W H = 15 ^h 11 ^m 01.5 ^s h = 28 km ca
22	iP	z	23	07	56.6	c
						USCGS: 31.9°S, 71.5°W H = 22 ^h 56 ^m 26.5 ^s h = 46 km ca
25	iP	ze	13	01	47.1	c
	iS	z	13	03	31.8	
						USCGS: 36.4°N, 89.5°W H = 12 ^h 59 ^m 28 ^s h = 18 km ca
28	iP	zN	16	44	46.2	d
	ipP	z	16	45	04.3	d
	isP	z	16	45	12.6	d
	iPP	z	16	47	28.6	c
	iS	NE	16	53	52.2	
						USCGS: 32.4°S, 71.2°W H = 16 ^h 33 ^m 14.6 ^s h = 61 km ca

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
30	iP	z	02 ^h 37 ^m 45.5 ^s	c	USCGS: 50.6°N, 177.9°E H = 02 ^h 27 ^m 07.2 ^s h = 51 km ca
	iPP	n	02 40 13.5		
	iS	n	02 46 32.7		
31	iP	ze	09 59 02.3	c	USCGS: 38.6°N, 22.4°E H = 09 ^h 47 ^m 30.7 ^s h = 78 km ca
	ipP	z	09 59 24.3		
	iS	neNE	10 08 33.8		

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APRIL, 1965, BULLETIN

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>	<u>Remarks</u>
3	eP	NE	11 ^h 26 ^m 47 ^s	USCGS: 16.0°N 97.9°W H = 11 ^h 20 ^m 43.5 ^s h = 16 km ca
	eS	NE	11 31 43	
4	iP	z	13 41 19.2 c	USCGS: 51.9°N 175.2°E H = 13 ^h 30 ^m 37.8 ^s h = 40 km ca
4	iP	z	20 18 25.3 c	USCGS: 8.8°S 74.5°W H = 20 ^h 09 ^m 41.1 ^s h = 143 km ca
	ipP	z	20 18 59.9 c	
	iS	n	20 25 27.4	
5	iP	ze	03 24 36.3 c	USCGS: 37.7°N, 21.8°E H = 03 ^h 12 ^m 54.2 ^s h = 34 km ca
5	iP	z	14 04 27.6 d	USCGS: 44.6°N, 151.1°E H = 13 ^h 52 ^m 13.4 ^s h = 81 km ca
	ipP	n	14 04 48.0	
8	iP	ze	13 54 45.8 d	USCGS: 52.2°N, 173.5°E H = 13 ^h 43 ^m 52.8 ^s h = 46 km ca
	iS	NE	14 03 36.5	
9	iP	z	24 08 57.4 c	USCGS: 35.1°N, 24.3°E H = 23 ^h 57 ^m 03.2 ^s h = 51 km ca
	ipP	z	24 09 10.9 d	
	iS	NE	24 18 47.4	
11	iPKP	z	00 30 11.7 c	USCGS: 42.7°S, 173.9°E H = 00 ^h 11 ^m 08.8 ^s h = 7 km ca
	iPP	e	00 32 04.5	
16	iP	z	23 30 55.7 d	USCGS: 64.7°N, 160.1°W H = 23 ^h 22 ^m 18.6 ^s h = 5 km ca
	iS	N	23 38 00.5	
18	iP	e	06 40 47.6	d
	iP	z	06 40 48.2	
	iS	E	06 46 12.7	
20	iS	zne	20 32 35.7 c	Local
26	iP	n	02 05 01.2	USCGS: 58.9°N, 142.7°W H = 01 ^h 57 ^m 14.4 ^s h = 33 km ca
	iP	z	02 05 02.2 c	

APRIL, 1965, BULLETIN

(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>	<u>Remarks</u>
26	iP	z	15 ^h 27 ^m 35.0 ^s	d
	iS	n	15 28 26.0	= 470 km
27	iP	z	11 16 59.2	c

MAY, 1965, BULLETIN

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>	<u>Remarks</u>
1	iP iP	e z	21 ^h 35 ^m 54.7 ^s 21 35 55.2	d USCGS: 60.4°N, 146.0°W H = 21 ^h 27 ^m 54.4 ^s h = 33 km ca
2	iP	z	17 57 53.7	d
3	iP	zn	01 21 01.6	c USCGS: 32.5°S, 70.6°W H = 01 ^h 09 ^m 31.5 ^s h = 77 km ca
3	iP iP eS	n z E	10 07 36.9 10 07 37.3 10 12 25.9	d
4	iS	n	17 55 21.0	
4	iP iS	ne e	19 24 51.5 19 25 09.6	
6	iS	n	16 58 15.4	
6	iP	e	20 57 47.8	
7	iP	ne	00 44 50.5	
7	iP	z	24 07 09.0	d USCGS: 22.2°S, 68.5°W H = 23 ^h 56 ^m 11.6 ^s h = 84 km ca
11	iP iP	e z	08 12 48.2 08 12 50.1	d USCGS: 19.1°N, 65.2°W H = 08 ^h 06 ^m 44.2 ^s h = 68 km ca
11	iP eS	zne N	17 46 00.6 17 52 40.7	c USCGS: 61.4°N, 149.6°W H = 17 ^h 37 ^m 38.3 ^s h = 58 km ca
13	iP	z	00 14 16.8	c USCGS: 19.6°N, 65.4°W H = 00 ^h 08 ^m 16.6 ^s h = 30 km ca

MAY, 1965 BULLETIN

(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
17	iP	ne	17 ^h 05 ^m 04.0 ^s		
17	iPP iPS	NE NE	17 38 50.5 17 48 28.0		USCGS: 22.5°N, 121.3°E H = 17 ^h 19 ^m 25.9 ^s h = 21 km ca
17	iP	ne	18 17 23.3		
17	iP	e	18 38 42.3		
18	iP	z	22 59 03.3	c	USCGS: 43.7°N, 146.5°E H = 22 ^h 46 ^m 31.7 ^s h = 45 km ca
19	iP	z	06 23 28.3	c	USCGS: 27.6°N, 110.9°W H = 06 ^h 17 ^m 12.0 ^s h = 33 km ca
20	iPP iSKS	z neE	00 59 56.3 01 06 00.8	c	USCGS: 14.7°S, 167.4°E H = 00 ^h 40 ^m 10.9 ^s h = 16 km ca
23	iP ipP iS	zNE z NE	23 56 56.5 23 57 16.5 24 05 37.5	c c	USCGS: 52.2°N, 175.0°E H = 23 ^h 46 ^m 12.0 ^s h = 22 km ca
26	iP	z	05 04 35.4	c	USCGS: 13.7°N, 90.6°W H = 04 ^h 58 ^m 39.2 ^s h = 39 km ca

JUNE, 1965, BULLETIN

Date	Phase	Component	GMCT		Remarks
1	iP	e	19 ^h 39 ^m 43.3 ^s		
2	iP	zne	23 47 51.2	d	USCGS: 16.0°N, 46.8°W H = 23 ^h 40 ^m 24.4 ^s h = 33 km ca
	ipP	e	23 48 13.0		
	iS	e	23 53 47.2		
3	iP	zne	11 02 29.3	c	USCGS: 18.5°N, 70.3°W H = 10 ^h 57 ^m 08.8 ^s h = 27 km ca
4	iP	zne	19 48 27.0	d	Local
	iS _n	n	19 48 28.6		
8	eP	E	13 46 00.5		USCGS: 23.3°N, 108.5°W H = 13 ^h 39 ^m 58.2 ^s h = 33 km ca
	eS	N	13 50 51		
0	iP	n	19 01 07.0		Local
1	iP	z	02 48 21.8	d	USCGS: 51.8°N, 174.1°E H = 02 ^h 37 ^m 34.7 ^s h = 35 km ca
	eS	E	02 57 09		
	iP	z	03 46 07.3	c	USCGS: 44.7°N, 148.7°E H = 03 ^h 33 ^m 44.9 ^s h = 47 km ca
	ipP	z	03 46 24.6	c	
	eS	E	03 56 20		
	iP	z	05 53 22.8	c	USCGS: 44.0°N, 149.1°E H = 05 ^h 41 ^m 00.3 ^s h = 64 km ca
	iP	z	06 16 15.2	d	
	iP	z	19 00 26.1	d	USCGS: 20.3°S, 68.9°W H = 18 ^h 50 ^m 11.3 ^s h = 103 km ca
	ipP	z	19 00 54.1	c	
	iS	E	19 08 46.3		
	iP	ze	22 33 41.3	c	Local
	iS	ne	22 33 42.8		
	iS	E	07 29 37.4		USCGS: 41.9°N, 143.4°E H = 07 ^h 06 ^m 13.6 ^s h = 32 km ca
	iP	z	20 13 52.8	d	USCGS: 37.8°N, 29.4°E H = 20 ^h 01 ^m 48.1 ^s h = 18 km ca
	eS	NE	20 23 53		

JUNE, 1965, BULLETIN

(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>	<u>Remarks</u>
14	eS	E	09 ^h 52 ^m 33 ^s	USCGS: 44.6°N, 129.5°W H = 09 ^h 40 ^m 09.5 ^s h = 33 km ca
15	iPP	n	23 ^h 29 ^m 55.0 ^s	USCGS: 20.9°S, 173.7°E H = 23 ^h 10 ^m 25.2 ^s h = 22 km ca
17	i	n	18 18 18.1	
17	i	ne	18 49 53.1	
17	iP	ne	22 05 41.1	Δ = 120 km
	iS	e	22 05 53.9	
18	iP	z	49 14 05.0	d
20	iP	zn	02 09 47.5	c
			18 20 50.0	
			18 20 05.9	
20	iP	ze	18 11 09.7	d
			18 13 04.5	
			18 14 21.1	
20	eS	NE	19 31 19	USCGS: 25.4°N, 109.4°W H = 19 ^h 16 ^m 21.2 ^s h = 33 km ca
21	iP	zne	18 54 52.0	d
23	iP	e	11 17 46.2	USCGS: 56.6°N, 152.9°W H = 11 ^h 09 ^m 15.3 ^s h = 36 km ca
	iP	z	11 17 47.4	
	iS	NE	11 24 36.2	
25	iP	n	15 35 48.7	Δ = 170 km
	iS	n	15 36 06.5	
27	eP	E	11 22 49.5	
	eS	NE	11 29 59.5	

JULY, 1965, BULLETIN

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>GMCT</u>		<u>Remarks</u>
5	iP iPP iS	ze e E	08 ^h 38 ^m 37.6 ^s 08 39 37.3 08 44 03.8	c	USCGS: 52.9°N, 34.2°W H = 08 ^h 31 ^m 58.9 ^s h = 33 km ca
6	iP iS	ze N	03 30 22.4 03 40 02.5	d	USCGS: 38.7°N, 22.6°E H = 03 ^h 18 ^m 44.6 ^s h = 28 km ca
6	iP	neNE	19 00 42.7		
7	iPKP ipPKP	z z	23 19 32.7 23 19 54.8	d c	USCGS: 6.9°S, 105.6°E H = 23 ^h 00 ^m 06.8 ^s h = 109 km ca
8	iPKP	z	04 18 19.3	d	USCGS: 6.8°S, 105.5°E H = 03 ^h 58 ^m 51.2 ^s h = 92 km ca
14	iP iS	n n	18 58 50.0 18 59 05.8		Δ = 150 km
15	iP iS iS	ze z e	14 17 52.1 14 19 01.5 14 19 01.0	c d	USCGS: 37.3°N, 74.3°W H = 14 ^h 16 ^m 07.1 ^s h = 0 km
15	iP	zne	17 55 14.8	d	
16	iP	zne	11 08 19.1	c	Local
19	iP iS	n E	04 20 01.7 04 25 24.2		USCGS: 9.2°N, 70.4°W H = 04 ^h 13 ^m 20.4 ^s h = 33 km ca
20	iP iS	n n	01 00 11.2 01 07 48.0		Δ = 5950 km
21	eS	N	03 17 48		USCGS: 20.8°S, 175.8°W H = 02 ^h 51 ^m 39.0 ^s h = 57 km ca
21	iP	z	18 03 25.2	c	USCGS: 53.3°N, 170.4°E H = 17 ^h 52 ^m 30.5 ^s h = 26 km ca
23	iP	z	17 05 44.1	c	

AUGUST, 1965, BULLETIN

Date	Phase	Component	G. M. C, T.				Remarks
2	iPKP ePP	zne E	13 ^h 39 ^m 25.5 ^s 13 42 29		d		USCGS: 56.2°S, 158.2°E H = 13 ^h 19 ^m 54.7 ^s h = 33 km ca
3	iP	zne	02 10 34.8		d		USCGS: 7.7°S, 81.3°W H = 02 ^h 01 ^m 52.2 ^s h = 49 km ca
5	iPKP	zne	00 26 40.4		d		USCGS: 5.3°S, 151.7°E H = 00 ^h 07 ^m 50.5 ^s h = 47 km ca
8	iP	zn	06 42 45.0		c		USCGS: 20.3°S, 68.4°W H = 06 ^h 31 ^m 56.9 ^s h = 89 km ca
8	iP	zne	12 59 32.4		d		USCGS: 51.9°N, 175.3°W H = 12 ^h 49 ^m 23.1 ^s h = 53 km ca
1	iPKP iSKS ePS	z N NE	03 59 41.7 04 06 29.7 04 10 28		d		USCGS: 15.4°S, 166.9°E H = 03 ^h 40 ^m 56.2 ^s h = 26 km ca
1	iP eS	z E	06 37 38.2 06 44 15		d		
1	iPKP iPKP eS	e z E	08 11 31.2 08 11 32.0 08 21 58		c		
1	iPKP	z	10 50 44.9		c		
2	iPKP	z	08 21 29.9		d		USCGS: 15.9°S, 167.5°E H = 08 ^h 01 ^m 43.3 ^s h = 25 km ca
2	iPKP ePP eSKS	zn E NE	13 16 11.5 13 17 23 13 23 01		d		USCGS: 5.3°S, 152.2°E H = 12 ^h 57 ^m 09.7 ^s h = 41 km ca
	iP iS	z ne	13 16 07.0 13 17 30.9		d		Δ = 790 km

AUGUST, 1965, BULLETIN

(Continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>			<u>Remarks</u>
15	iP iS	n ne	06 ^h 10 ^m 03.2 ^s 06 11 16.8			Δ = 690 km
16	iP	zn	12 23 57.3	c		USCGS: 5.2°N, 77.5°W H = 12 ^h 16 ^m 49.9 ^s h = 15 km ca
16	iP	zn	12 26 39.5	c		
16	iP iS	z z	18 35 05.9 18 35 09.3	c d		Local
17	e	zne	10 57 46			USCGS: 5.3°N, 96.2°E H = 10 ^h 35 ^m 04.1 ^s h = 33 km ca
17	iP ipP	z z	14 07 58.8 14 08 18.8	d d		USCGS: 15.2°N, 92.1°W H = 14 ^h 02 ^m 19 ^s h = 121 km ca
20	iPKP ipPKP iPP iSKP	z z z zne	06 13 34.7 06 14 58.5 06 16 10.4 06 16 31.6	c d c		USCGS: 5.7°S, 128.6°E H = 05 ^h 54 ^m 50.5 ^s h = 326 km ca
20	iP ipP iS	zn zn neNE	09 52 51.4 09 53 21.7 10 00 59.1	c d		USCGS: 19.0°S, 69.1°W H = 09 ^h 42 ^m 48.5 ^s h = 129 km ca
23	iP iP eS	z z N	19 21 53.3 19 21 58.0 19 26 42	c d		USCGS: 16.3°N, 95.8°W H = 19 ^h 16 ^m 02.9 ^s h = 28 km ca
24	iP eS	z N	01 02 17.7 01 07 14	c		USCGS: 15.9°N, 96.2°W H = 00 ^h 56 ^m 21.4 ^s h = 12 km ca
24	iP	z	01 06 53.1	c		
24	iP iS	e E	13 20 21.3 13 26 41.5			USCGS: 59.4°N, 145.6°W H = 13 ^h 12 ^m 19.4 ^s h = 19 km ca
29	iP ipP iS	zneNE z NE	01 51 43.9 01 52 03.2 01 56 28.9	c d		USCGS: 14.1°N, 90.5°W H = 01 ^h 45 ^m 57.3 ^s h = 107 km ca

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>		<u>Remarks</u>
2	iP iS	e nN	02 ^h 19 ^m 10.0 ^s 02 23 02.0		$\Delta = 2335 \text{ km}$
4	iP iS	ze n	14 41 10.9 14 47 53.7	d	USCGS: 58.2°N, 152.6°W H = 14 ^h 32 ^m 47.9 ^s h = 19 km ca
8	iP eS	ze E	03 34 53.2 03 41 55	c	USCGS: 57.5°N, 152.1°W H = 03 ^h 26 ^m 20.7 ^s h = 25 km ca
9	iP eS	z NE	10 09 17.8 10 14 52	d	USCGS: 6.5°N, 84.4°W H = 10 ^h 02 ^m 25.4 ^s h = 27 km ca
11	iPKP iSKS	z E	07 11 47.0 07 18 41.5	c	USCGS: 5.3°S, 153.0°E H = 06 ^h 53 ^m 01.5 ^s h = 67 km ca
12	e	N	09 17 04.5		USCGS: 6.3°S, 151.6°E H = 08 ^h 40 ^m 12.8 ^s h = 48 km ca
15	iP iS	z ne	17 58 32.3 17 59 10.2	c	$\Delta = 360 \text{ km}$
16	iP iS	z ne	19 52 54.2 19 54 15.3	c	USCGS: 37.2°N, 74.3°W H = 19 ^h 51 ^m 08.4 ^s h = 0
17	iP ipP iS	z zn NE	11 21 37.2 11 22 17.5 11 27 47.3	c c	USCGS: 1.4°S, 77.6°W H = 11 ^h 13 ^m 56.4 ^s h = 190 km ca
18	iP	n	12 40 34.5		
18	iP eS	zne E	20 54 34.8 21 01 00	c	USCGS: 59.5°N, 145.1°W H = 20 ^h 46 ^m 39.2 ^s h = 22 km ca
21	eS	N	02 03 50		USCGS: 29.1°N, 128.2°E H = 01 ^h 38 ^m 30.2 ^s h = 197 km ca

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(Continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>				<u>Remarks</u>
21	iP	ze	03 ^h	31 ^m	47.0 ^s	c	△ = 2650 km
	iS	NE	03	36	05.5		
22	iP	e	21	21	25.6	d	USCGS: 36.4°N, 141.3°E H = 21 ^h 08 ^m 01.1 ^s h = 44 km ca
	iP	z	21	21	26.6		
	iS	N	21	32	36.8		
25	i	eE	17	58	32.5		
29	iP	e	20	41	36.7		△ = 50 km
	iS	e	20	41	42.0		
29	iP	z	23	27	40.2	d	USCGS: 45.1°N, 28.2°W H = 23 ^h 20 ^m 19.0 ^s h = 33 km ca

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>			<u>Remarks</u>
1	e e	E E	00 ^h 02 ^m 07 ^s 00 05 11			USCGS: 59.7°N, 143.4°W H = 23 ^h 47 ^m 40.7 ^s h = 19 km ca
1	iP iS	e e	09 02 46.7 09 11 30.2			USCGS: 50.1°N, 178.3°E H = 08 ^h 52 ^m 05.8 ^s h = 32 km ca
3	iP eS	zn E	14 57 12.4 15 06 51.4	c		USCGS: 49.5°N, 156.5°E H = 14 ^h 45 ^m 26.8 ^s h = 33 km ca
3	iP eS	zn E	16 27 25.7 16 37 48.4	c		USCGS: 42.9°S, 75.4°W H = 16 ^h 14 ^m 54.9 ^s h = 28 km ca
5	iS	e	00 36 47.1			USCGS: 65.4°N, 134.0°W H = 00 ^h 17 ^m 10.5 ^s h = 8 km ca
12	e	E	13 56 26			USCGS: 56.3°N, 153.7°W H = 13 ^h 40 ^m 55.9 ^s h = 11 km ca
13	iP	ne	20 30 52.8			
14	iP	e	10 54 09.9			USCGS: 72.3°N, 75.1°W H = 10 ^h 38 ^m 23 ^s h = 33 km ca
15	iP iP	n z	00 41 24.3 00 41 25.5	c		USCGS: 8.5°N, 103.0°W H = 00 ^h 34 ^m 09.3 ^s h = 33 km ca
18	iP iP	e z	21 46 18.5 21 46 19.3	d		
18	iP	n	22 12 52.4			
19	iP ipP eS	z z E	20 59 30.2 20 59 44.2 21 08 14	c d		USCGS: 52.3°N, 174.3°E H = 20 ^h 48 ^m 47.4 ^s h = 48 km ca

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(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>				<u>Remarks</u>
20	iP	zn	00 ^h	00 ^m	30.9 ^s	c	USCGS: 12.5°N, 87.4°W H = 23 ^h 54 ^m 29.9 ^s h = 70 km ca
21	iP	zneE	02	06	41.0	c	USCGS: 37.5°N, 91.0°W H = 02 ^h 04 ^m 38.3 ^s h = 22 km ca
	iS	zn	02	08	14.5	c	
22	iP	zne	20	46	32.9	c	Local
22	iP	zn	21	26	15.2	d	
25	iP	z	22	46	41.3	d	
	ipP	z	22	47	22.0	d	
	iS	eE	22	56	47.5		
29	iP	z	21	10	32.1	c	

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<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>		<u>Remarks</u>
3	iP	zn	01 ^h 47 ^m 13.6 ^s	d	USCGS: 9.1°S, 71.4°W H = 01 ^h 39 ^m 02.5 ^s h = 583 km ca
	ipP	zn	01 48 19.1	c	
	iS	zneE	01 53 46.6	c	
3	iP	z	16 01 59.2	c	Local Δ = 30 km
	iS	e	16 02 02.4		
	iS	zn	16 02 02.8	c	
3	iP	zn	18 32 25.6	c	USCGS: 22.3°S, 114.1°W H = 18 ^h 21 ^m 05.0 ^s h = 12 km ca
4	i (P)	ne	07 48 07.6		d
	i (P)	z	07 48 09.8		
6	iP	z	09 32 58.7	c	USCGS: 22.1°S, 113.8°W H = 09 ^h 21 ^m 48.6 ^s h = 33 km ca
6	iP	ne	21 04 38.8		d
	iP	z	21 04 39.7		
	iS	n	21 05 18.0		
7	iP	zne	01 20 39.8	c	d
	iP	zne	20 59 41.5	d	
7	iS	z	21 00 54.4	c	Δ = 715 km
	iS	z	21 00 54.4	c	
10	iP	z	20 44 32.1	d	Δ = 420 km
	iS	zne	20 45 16.7	d	
12	iP	eNE	18 10 06.0	c	
	iP	z	18 10 07.3		
	iS	N	18 16 45.3		
13	iP	z	04 47 08.3	d	
	iS	e	04 57 37.8		
13	iP	zn	18 10 59.3	c	USCGS: 29.4°S, 68.1°W H = 17 ^h 59 ^m 41.7 ^s h = 48 km ca
15	iP	ze	11 30 04.2	c	USCGS: 0.3°S, 18.7°W H = 11 ^h 18 ^m 49.9 ^s h = 24 km ca
	iS	N	11 39 15.5		
16	iP	ze	15 31 27.0	c	USCGS: 31.0°N, 41.5°W H = 15 ^h 24 ^m 42.9 ^s h = 17 km ca
	ipP	ne	15 31 54.5		
	iPP	e	15 32 23.0		
	eS	NE	15 36 51.5		

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(continued)

<u>Date</u>	<u>Phase</u>	<u>Component</u>	<u>G. M. C. T.</u>		<u>Remarks</u>
18	iP	zn	22 ^h 09 ^m 32.0 ^s	d	USCGS: 53.9°N, 160.7°E H = 21 ^h 58 ^m 12.4 ^s h = 12 km ca
19	iP	e	21 07 55.1		
19	iP	zne	21 48 06.2	c	
20	iP	z	20 37 44.7	d	
21	i	ze	04 11 53.8	c	
21	i	z	10 54 12.3	c	
23	iP	z	02 28 16.4	d	USCGS: 51.4°N, 179.7°W H = 02 ^h 17 ^m 49.4 ^s h = 48 km ca
30	i (s)	ne	12 49 43.7		

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6	iP	z	11 ^h 41 ^m 12.6 ^s	c	USCGS: 18.9°N, 107.1°W H = 11 ^h 34 ^m 53.7 ^s h = 37 km
	iP	ne	11 41 13.4		
	eS	N	11 46 23.7		
7	iP	z	23 57 55.4	c	Local Δ = 375 km
	iS	n	23 58 21.4		
9	iP	z, n, e	06 13 43.1	c	USCGS: 17.3°N, 100.0°W H = 06 ^h 07 ^m 48.6 ^s h = 57 km
	iPR ₁	z, n, e	06 14 30.1		
	iS	n, e	06 18 42.6		
9	iP	z, n	22 08 34.3	d	Local Δ = 340 km
	iS	n, e	22 09 10.8		
13	iP	z	11 04 30.1	d	USCGS: 44.7°N, 150.1°E H = 10 ^h 52 ^m 08.5 ^s h = 35 km
	ipP	z	11 04 43.3		
	eS	E	11 14 42		
14	eS	NE	17 37 47		USCGS: 25.9°N, 109.7°W H = 17 ^h 27 ^m 01.7 ^s h = 33 km
15	iP	z, n	23 12 04.4	d	USCGS: 7.5°N, 82.2°W H = 23 ^h 05 ^m 20.7 ^s h = 15 km
	iS	N	23 17 29.4		
22	iP	e	19 49 47.5		USCGS: 58.4°N, 153.0°W H = 19 ^h 41 ^m 23.0 ^s h = 50 km
	iP	z, n	19 49 48.3	c	
	ipP	z	19 50 02.0		
	isP	z	19 50 07.4		
	eS	E	19 56 48		
23	iP	z, e	20 55 13.7	d	USCGS: 60.5°N, 141.0°W H = 20 ^h 47 ^m 37.5 ^s h = 33 km
	iP	n	20 55 14.1		
30	iP	z	02 15 53.2	c	USCGS: 54.1°N, 164.3°E H = 02 ^h 06 ^m 31.1 ^s h = 28 km
	iP	e	02 15 53.3		
	iP	n	02 15 54.4		
30	iP	z	06 25 50.3	c	USCGS: 16.8°S, 71.2°W H = 06 ^h 16 ^m 03.9 ^s h = 118 km
	ipP	z	06 26 18.9	d	
	isP	z	06 26 39.1	d	
	eS	E	06 33 44		
	esS	E	06 34 33		
30	iP	z	20 33 21.2	c	
30	iP	z	21 15 41.9	c	