

SEISMOLOGICAL BULLETIN

IGC SUPPLEMENT SOUTH POLE - BYRD

JANUARY-MARCH, 1959

MSI - 217A

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U. S. DEPARTMENT OF COMMERCE

Luther H. Hodges, Secretary

COAST AND GEODETIC SURVEY—WASHINGTON

H. Arnold Karo, Director

FOR OFFICIAL DISTRIBUTION

SEISMOLOGICAL BULLETIN

IGC SUPPLEMENT

January - March
1959

The instrumental results tabulated in this supplement are from the following seismographic stations.

Station	Latitude	Longitude	Foundation	Elevation	Instruments	Components	T ₀ (Sec.)	T _g (Sec.)	Time Scale
South Pole (SPA) In Charge: W.S. Jacobs	90° S.	0°	1995 meters of ice.	2800 meters.	Benioff Paper. Wilson-Lamison (30°E.-150°W.) Horizontal Film.	Z	1.6	0.5	60mm/min.
							6.0	0.5	15mm/min.
Byrd (BYR) In Charge: L.E. Davis	80°01'S.	119°31'W.	2570 meters of ice.	1515 meters.	Benioff. Wilson-Lamison with G.E. Galvo. Wilson Lamison with G.E. Galvo.	Z N E	1.2 6.2 7.2	0.5 3.5 3.5	60mm/min. 30mm/min. 30mm/min.

These stations were first established by the Coast and Geodetic Survey for the IGY to provide additional control for locating teleseismic epicenters in regions inadequately covered by previously existing stations and to provide data for studies in regional seismicity, crustal structure and other pertinent earth science problems.

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Jan. 1 SPA iP	h m s 02 04 53	Jan. 2 BYR eP	h m s 06 22 07	Jan. 3 BYR iP	h m s 11 28 42	Jan. 4 BYR eP	h m s 10 08 00
Jan. 1 SPA eP'	02 26 43	SPA iP	06 22 25	1PcP	29 03	SPA iP	10 08 24
eP'	28 22	Jan. 2 BYR e(P)	10 30 49	iS	38 21	Jan. 4 BYR eP	16 17 50
ePP	32 13	SPA eP	10 31 26	i	40 48	SPA iP	16 17 52
Jan. 1 SPA iP	04 35 38	Jan. 2 SPA e(P)	12 25 43	eP'P'	57 04	Jan. 4 BYR eP	18 31 31
Jan. 1 BYR iP	07 37 02	Jan. 2 BYR iP	13 03 37	Jan. 3 BYR iP	13 53 58	SPA eP	18 31 09
eS	45 35	SPA iP	13 04 07	BYR iP	15 24 45	Jan. 4 SPA eP	19 46 23
SPA iP	07 37 35	Jan. 2 BYR iP	20 15 54	SPA iP	15 24 47	Jan. 4 BYR eP	20 09 25
Jan. 1 BYR iP	08 00 30	SPA iP	20 16 36	Jan. 3 BYR iP	15 55 58	Jan. 4 BYR iP	21 20 48
ePP	03 21	Jan. 2 BYR iP	22 25 45	BYR e(P)	17 19 16	e(PcP)	21 33
eS	09 05	SPA iP	22 26 11	Jan. 3 BYR iP	19 01 33	SPA iP	21 19 45
SPA iP	08 01 03	Jan. 3 SPA eP	02 23 15	SPA eP	19 02 18	i	21 14
Jan. 1 SPA eP'	08 07 02	Jan. 3 SPA iP	02 46 00	Jan. 3 BYR iP	19 05 22	Jan. 4 BYR eP'	23 33 04
Jan. 1 BYR eP	09 19 10	Jan. 3 BYR iP	04 21 09	SPA iP	19 06 07	Jan. 5 BYR iP	09 47 27
SPA iP	09 18 04	SPA iP	04 20 50	Jan. 3 BYR iP	22 21 05	SPA iP	09 47 31
Jan. 1 BYR iP	11 58 12	Jan. 3 BYR iP	04 26 54	Jan. 3 SPA iP	22 21 25	Jan. 5 BYR iP	09 57 23
SPA iP	11 58 46	ePP	30 30	Jan. 4 SPA iP	00 58 28	1PcP	57 48
Jan. 1 BYR eP	13 35 30	SPA iP	04 27 36	Jan. 4 BYR iP	03 29 21	i	10 01 49
SPA iP	13 36 04	Jan. 3 BYR eP	04 57 39	SPA iP	03 28 47	iS	05 56
Jan. 1 SPA iP	14 58 41	SPA e(P)	04 58 20	Jan. 4 BYR iP	03 42 52	iScS	07 07
Jan. 1 BYR iP	18 52 19	Jan. 3 BYR eP	05 52 14	Jan. 4 SPA iP	03 43 27	eSS	10 14
SPA iP	18 52 48	SPA iP	05 52 34	Jan. 4 BYR eP'	04 16 59	eP'P'	25 59
i	53 43	i	52 52	Jan. 4 BYR iP	06 25 28	SPA iP	09 57 45
Jan. 1 BYR eP	20 51 34	Jan. 3 SPA eP'	08 18 14	Jan. 4 BYR iP	07 30 05	1PcP	58 09
Jan. 1 SPA iP	23 38 44	Jan. 3 BYR iP	08 50 28	SPA eP'	07 30 11	1PP	59 52
Jan. 2 BYR iP	02 10 33	Jan. 3 SPA iP	09 15 31	Jan. 4 BYR i(P)	08 18 56	iS	10 06 35
SPA iP	02 11 15	Jan. 3 BYR eP	10 17 04	Jan. 4 SPA eP'	08 15 30	ePKKP	16 25
Jan. 2 BYR eP'	03 35 02	SPA iP	10 16 48	Jan. 4 BYR i(P)	18 59	e	24 14
Jan. 2 SPA eP	06 11 13			SPA eP'		1P'P'	25 04

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Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)	
SPA	iP	h m s	Jan. 6	h m s		Jan. 7	h m s		Jan. 9	h m s	
		14 01 22	SPA e(P')	22 11 11		BYR eP'	18 22 39		SPA eP	16 33 41	
Jan. 5			Jan. 7			Jan. 7			Jan. 9		
BYR e(P)	14 04 40		BYR eP	02 27 37		SPA eP'	20 48 39		BYR eP'	17 16 44	
	e 04 57										
	e 05 06		Jan. 7			Jan. 7			SPA iP	17 17 09	
SPA e(P)	14 06 24		BYR iP	02 36 15		SPA eP'	22 40 51		Jan. 10		
	e 06 30		e(S)	43 07					BYR eP	03 19 34	
			SPA iP	02 36 46		Jan. 8			Jan. 10		
Jan. 5						BYR eP	04 19 49		BYR iP	06 05 26	
BYR eP	20 01 24		Jan. 7			SPA iP	04 19 09		i(pP)	05 50	
			BYR iP	02 46 26		ipP	19 48				
Jan. 5			SPA iP	02 46 56		Jan. 8			SPA iP	06 05 27	
BYR eP	20 17 48					SPA iP	05 00 03		e(PcP)	05 34	
SPA eP	20 18 08		Jan. 7						i(pP)	05 50	
			BYR eP'	05 32 12		Jan. 8					
Jan. 5			SPA iP'	05 31 51		SPA eP	08 12 18		Jan. 10		
SPA eP	21 25 10		ePP	32 55		e	13 17		BYR iP	06 15 03	
									SPA iP	06 15 33	
Jan. 6			Jan. 7			Jan. 8			Jan. 10		
BYR eP'	01 45 27		BYR eP	05 36 36		BYR eP	15 04 10		SPA iP	09 27 17	
SPA eP'	01 45 27		SPA iP	05 38 01		Jan. 8			Jan. 10		
						BYR eP	16 07 08		SPA eP	17 10 50	
Jan. 6			Jan. 7			SPA eP	16 07 55		Jan. 10		
SPA iP	03 13 40		BYR eP	06 03 36					BYR iP	23 30 26	
						Jan. 8			SPA iP	23 30 42	
Jan. 6			Jan. 7			BYR iP	18 13 46				
BYR eP	04 28 04		SPA eP	06 43 31		SPA iP	18 13 50		Jan. 11		
SPA e(P)	04 28 09		i	43 42					BYR iP	01 10 47	
						Jan. 8			SPA iP	01 11 15	
Jan. 6			Jan. 7			BYR iP	22 49 00		Jan. 11		
BYR iP	05 00 28		BYR eP'	06 47 54		eL	23 23 28		BYR eP	05 23 41	
			SPA eP'	06 47 42							
Jan. 6			i	47 51		SPA iP	22 48 48		Jan. 11		
BYR eP	06 00 17					i	48 55		BYR eP	07 35 48	
SPA iP	05 59 21		Jan. 7						epP	36 34	
			BYR eP	07 33 52		Jan. 8			ePP	39 16	
Jan. 6			SPA iP	07 33 53		SPA iP	23 03 59				
BYR iP	12 05 51					Jan. 9			Jan. 11		
SPA iP	12 05 54		Jan. 7			BYR eP	00 38 34		BYR eP'	07 55 13	
			BYR eP'	08 48 18		SPA iP	00 38 22		Jan. 11		
Jan. 6			SPA eP'	08 48 05					BYR eP	10 06 21	
BYR eP'	12 24 59					Jan. 9					
SPA eP'	12 25 06		Jan. 7			BYR eP	00 59 03		Jan. 11		
			SPA iP	10 40 19					BYR iP	13 36 35	
Jan. 6						Jan. 9			e	36 49	
BYR iP	14 27 58		Jan. 7			BYR iP	06 06 30		SPA iP	13 37 09	
SPA iP	14 28 37		SPA eP	13 22 20		SPA eP'	02 13 55				
									Jan. 11		
Jan. 6			Jan. 7			Jan. 9			BYR iP	16 36 46	
BYR iP	15 01 05		BYR iP	13 40 30		BYR iP	06 06 30		i(pP)	36 56	
	i 01 19		SPA iP	13 41 00							
SPA iP	15 00 29					Jan. 9			SPA iP	16 36 49	
			Jan. 7			SPA e(P')	06 59 36		i(pP)	36 58	
Jan. 6			BYR iP	15 02 15							
SPA e(P)	20 33 49		SPA iP	15 03 01		Jan. 9					
i	34 49					SPA iP'	15 43 44				
			Jan. 7								
			SPA iP	15 55 16							

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Jan. 11 BYR eP'	h m s 17 03 12	Jan. 13 BYR eP	h m s 12 01 51	Jan. 14 SPA iP	h m s 14 15 01	Jan. 16 BYR eP	h m s 08 27 38
SPA eP'	17 03 52	SPA eP	12 01 54	Jan. 15 BYR iP	05 49 16	Jan. 16 BYR iP	11 02 36
Jan. 12 BYR eP	03 13 16	Jan. 13 BYR iP'	14 51 15	e i	49 42 50 13	SPA iP	11 02 56
SPA iP	03 13 09	i	51 31	SPA iP	05 49 55	Jan. 16 BYR iP	15 27 29
Jan. 12 SPA e	07 50 07	SPA eP'	14 51 16	Jan. 15 BYR iP	06 44 49	SPA iP	15 28 05
Jan. 12 SPA eP	08 31 39	Jan. 13 BYR eP	16 45 28	SPA iP	06 45 22	Jan. 16 SPA iP'	17 10 11
Jan. 12 BYR iP'	14 35 39	Jan. 13 BYR iP	19 17 24	Jan. 15 BYR e(P)	07 43 08	Jan. 16 SPA iP	20 52 00
iSKP	38 56	ipP	18 05	SPA iP	07 43 28	e	53 18
SPA eP'	14 35 27	SPA iP	19 18 04	Jan. 15 BYR eP	08 44 46	Jan. 16 SPA eP	22 51 07
epP'	35 38	epP	18 31	SPA eP	08 45 18	Jan. 17 BYR eP	07 09 42
eSKP	38 55	Jan. 13 BYR iP	20 44 38	Jan. 15 BYR eP'	15 58 04	SPA e(P)	07 10 00
ePKS	39 09	ipP	45 02	Jan. 15 BYR iP	16 50 27	e	10 05
eSKKP	48 13	eS	51 40	epP	50 50	Jan. 17 BYR e(P)	09 39 04
Jan. 12 SPA eP'	17 59 09	SPA iP	20 45 23	Jan. 15 SPA iP	18 28 30	ePP	42 36
Jan. 13 BYR iP	00 04 04	epP	45 50	Jan. 15 BYR iP	20 28 25	e(PKKP)	54 30
Jan. 13 BYR e(P)	01 29 48	eS	53 02	Jan. 15 SPA iP	20 28 24	SPA eP	09 38 23
ePP	33 48	Jan. 13 SPA eP	24 04 03	Jan. 15 BYR iP	21 29 50	ePP	41 27
SPA eP	01 29 19	Jan. 14 BYR iP	03 17 56	ipP	31 30	e(SKS)	48 56
ePP	33 45	Jan. 14 SPA iP	04 54 21	iS	37 28	e(PKKP)	54 40
ePKKP	45 45	Jan. 14 SPA iP	06 08 28	iScS	38 54	Jan. 17 BYR eP'	10 36 46
eP'P'	54 37	Jan. 14 BYR eP	07 35 21	esS	40 29	Jan. 17 SPA eP	11 35 52
Jan. 13 BYR iP	04 43 44	Jan. 14 BYR iP	09 38 34	iSS	41 40	Jan. 17 BYR iP	11 42 48
Jan. 13 BYR eP'	07 40 19	Jan. 14 BYR iP	09 56 48	e	52 31	SPA iP	11 42 57
SPA eP'	07 40 24	Jan. 14 BYR eP	07 35 21	iP'P'	58 51	Jan. 17 SPA eP	12 17 37
Jan. 13 BYR eP	07 46 59	Jan. 14 BYR iP	11 03 50	SPA iP	21 30 19	Jan. 17 BYR iP	13 53 18
SPA iP	07 46 19	eS	07 19	iPcP	30 43	SPA iP	13 53 34
i	46 23	eL	08 23	ipP	32 06	Jan. 17 SPA eP	14 47 17
e	51 39	Jan. 14 BYR e(P)	12 13 15	iSS	38 21	SPA eP	14 48 37
Jan. 13 BYR eP	08 47 09	Jan. 14 BYR iP'	13 25 48	eP'P'	58 30	Jan. 17 SPA e(P)	17 17 18
i	47 20	Jan. 14 BYR eP	13 27 17	Jan. 15 SPA iP	23 15 36	e	17 24
SPA eP	08 47 41	epP	29 18	Jan. 16 BYR eP'	01 50 31	Jan. 16 SPA eP	05 34 16
Jan. 13 BYR eP	09 15 59	Jan. 14 BYR e(P)	12 13 15	ePP	54 08		
SPA iP	09 16 24	Jan. 14 BYR iP'	13 25 48	eSKKP	02 02 53		
Jan. 13 BYR eP	09 50 26	Jan. 14 BYR eP	13 27 17	eL	33 21		
SPA eP	09 49 40	epP	29 18	SPA iP'	01 50 48		
				ipP'	50 57		
				iPP	54 27		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Jan. 17 SPA eP e	h m s 20 03 34 03 47	Jan. 19 BYR e(P)	h m s 02 33 10	Jan. 21 SPA 1P	h m s 16 48 17	Jan. 23 BYR 1P	h m s 01 49 12
Jan. 18 BYR 1P	01 48 33	Jan. 19 BYR 1P	04 33 52	Jan. 21 BYR eP	20 05 30	Jan. 23 BYR 1P	06 31 25
SPA 1P	01 48 49	ipP 34 19		SPA eP	20 06 01	Jan. 23 BYR eP'	07 38 08
Jan. 18 BYR e(P)	03 08 05	1sP 34 31		i 06 11		e 38 29	
SPA 1P	03 08 00	Jan. 19 BYR eP	07 57 27	Jan. 22 SPA e(P)	01 31 39	Jan. 23 BYR 1P	08 00 51
Jan. 18 BYR 1P	03 35 01	Jan. 19 BYR 1P'	08 31 47	Jan. 22 SPA 1P	05 13 49	Jan. 23 SPA eP	11 40 24
SPA 1P	03 35 34	Jan. 19 BYR 1P	10 35 47	Jan. 22 BYR 1P'	05 29 33	Jan. 23 BYR eP'	19 11 31
Jan. 18 BYR 1P'	07 56 51	Jan. 19 BYR 1P	10 55 03	ePP 31 34		SPA eP'	19 11 46
SPA 1P'	07 56 55	SPA 1P	10 55 19	eSKP 33 00		ipP'	12 00
Jan. 18 SPA e(P)	10 54 58	Jan. 19 BYR 1P	14 31 31	e 34 22		Jan. 23 SPA eP	23 16 41
Jan. 18 BYR 1P	12 52 02	SPA 1P	14 31 14	1(SKS) 37 33		Jan. 24 BYR eP	00 39 01
Jan. 18 BYR 1P	14 53 44	Jan. 19 BYR 1P	23 41 45	i 38 52		SPA 1P	00 39 26
ePP 56 57		SPA 1P	23 41 46	eSP 42 24		Jan. 24 BYR 1P'	05 27 40
eS 15 04 04		Jan. 20 BYR 1P	01 35 30	e(P'P') 48 55		epP'	28 05
SPA 1P	14 53 45	SPA eP	01 35 05	eL 06 02 49		ePP 29 40	
ePKKP 15 11 42		Jan. 20 SPA eP	11 59 59	SPA 1P'	05 29 30	Jan. 24 BYR eP	08 04 13
Jan. 18 BYR eP'	16 07 23	Jan. 20 BYR eP	12 00 14	ePP 31 34		ePP 07 53	
SPA eP'	16 07 29	e 00 27		e 41 47		ePKKP 20 46	
i 07 33		Jan. 20 BYR 1P	16 58 49	1SP 42 15		SPA 1P	08 03 46
Jan. 18 BYR eP	19 22 02	eS 17 09 22		Jan. 22 BYR eP	05 49 41	Jan. 24 SPA eP	09 40 33
SPA eP	19 21 42	eP'P' 27 12		SPA 1P	05 49 25	e(pP) 40 51	
i 21 56		SPA 1P	16 58 26	Jan. 22 BYR eP'	07 52 20	Jan. 24 BYR 1P	10 09 36
Jan. 18 BYR eP	19 38 31	Jan. 20 BYR 1P	21 36 08	i 52 35		SPA eP	10 08 35
SPA eP	19 38 25	eP'P' 27 12		eSKP 56 05		Jan. 24 BYR eP	10 57 46
e(P'P) 42 17		Jan. 20 BYR 1P	21 37 30	SPA eP'	07 52 29	SPA 1P	10 58 13
ePKKP 56 19		Jan. 21 BYR 1P	02 41 47	ePP 54 58		Jan. 24 BYR 1P	12 13 10
Jan. 18 BYR 1P	22 33 23	Jan. 21 SPA eP	08 09 51	e(SKP) 55 41		SPA 1P	12 13 20
ipP 35 02		Jan. 21 BYR 1P	13 20 00	Jan. 22 BYR 1P'	10 05 36	Jan. 24 BYR 1P	12 20 05
eS 41 34		Jan. 21 BYR 1P	21 09	SPA eP'	10 05 32	Jan. 24 BYR 1P	15 46 28
esS 44 40		1(pP) 22 39		Jan. 22 BYR eP	18 03 50	SPA 1P	15 46 27
1P'P' 23 01 22		Jan. 21 BYR 1P	13 19 38	SPA eP	18 03 51	epP 46 50	
eSKPP' 03 41		i 19 55		Jan. 22 BYR 1P	23 23 17		
SPA 1P	22 33 51						
ipP 35 30							
1S 42 32							

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Jan. 24 BYR 1P	h m s 16 02 36	SPA 1P 1(pP)	h m s 22 39 29 39 49	Jan. 27 BYR eP'	h m s 03 56 26	Jan. 28 SPA 1(P) e	h m s 21 34 36 35 06
SPA 1P ipP esP i	16 03 07 03 26 03 52 04 29	Jan. 26 BYR 1P	02 35 45	SPA 1P'	03 56 16	Jan. 29 BYR 1F	01 44 36
Jan. 24 BYR 1P	19 38 30	SPA 1P	02 36 36	Jan. 27 BYR 1P	06 58 39	Jan. 29 BYR 1P 1	05 39 16 40 18
Jan. 24 BYR 1P'	20 14 20	Jan. 26 BYR 1P	03 28 37	SPA eP	06 58 47	SPA eP e	05 38 56 39 34
ePP eSKP	16 16 18 07	SPA 1P	03 29 20	Jan. 27 BYR eP'	07 04 23	Jan. 29 BYR 1P	05 41 10
SPA eP'	20 14 17	Jan. 26 BYR 1P ipP	05 59 03 06 00 04	SPA eP'	07 04 26	Jan. 29 BYR 1P 1	07 21 00 21 32
Jan. 24 SPA 1P	21 20 09	SPA 1P epP	05 59 36 06 00 41	Jan. 27 BYR eP	09 41 48	Jan. 29 SPA 1P'	20 40 52
Jan. 25 SPA 1P	01 15 32	Jan. 26 SPA eP	07 45 54	SPA 1P	09 42 06	Jan. 29 BYR 1P'	21 17 37
Jan. 25 BYR 1P	02 47 56	Jan. 26 SPA eP	14 54 40	Jan. 27 SPA 1P	12 46 53	Jan. 29 BYR 1P ePP	21 17 37 21 21
SPA 1P	02 48 37	Jan. 26 BYR 1P epP	17 55 21 55 48	Jan. 27 BYR 1P	15 32 59	SPA 1P'	21 17 45
Jan. 25 BYR 1P	05 26 55	SPA 1P	17 54 54	SPA eP epP	17 34 22 36 31	Jan. 29 BYR 1P	22 46 19
SPA 1P	05 26 57	Jan. 26 BYR 1P epP	17 53 48 59 30	Jan. 27 BYR 1P	20 20 20	SPA 1P	22 46 55
Jan. 25 SPA eP	08 23 14	SPA 1P	17 59 25	Jan. 27 BYR eP epP	21 18 52 22 19	Jan. 29 BYR 1P'	23 44 33
Jan. 25 SPA 1P	11 59 06	Jan. 26 BYR eP	18 58 32	SPA eP ipP	21 18 31 19 09	Jan. 30 BYR 1P ipP	00 25 07 25 18
Jan. 25 BYR eP	16 12 40	SPA eP	19 00 02	Jan. 28 BYR eP'	01 40 06	SPA 1P	00 25 47
SPA eP	16 13 22	Jan. 26 BYR 1P epP eP'P'	21 09 43 10 02 36 51	SPA eP'	01 40 28	Jan. 30 BYR 1P	00 31 27
Jan. 25 SPA eP	16 49 19	SPA eP	21 10 24	ipP	42 50	SPA 1P	00 31 37
Jan. 25 BYR 1P ipP isP	17 57 56 58 21 58 31	Jan. 26 BYR 1P	22 08 52	Jan. 28 BYR 1P iPcP	10 13 23 14 34	Jan. 30 BYR eP'	05 37 09
SPA 1P ipP isP	17 58 34 58 59 59 10	Jan. 27 SPA eP	00 34 40	Jan. 28 BYR 1P'	14 17 48	Jan. 30 BYR eP	09 32 10
Jan. 25 BYR eP	21 25 29	Jan. 27 BYR 1P	02 23 00	e(PP)	20 32	Jan. 30 BYR 1P	09 50 46
SPA eP	21 25 45	Jan. 27 BYR 1P	02 31 46	SPA 1P'	14 17 42	Jan. 30 BYR 1P epP	13 54 17 54 46
Jan. 25 BYR eP	22 08 44	SPA eP	02 31 47	Jan. 28 SPA 1P	16 31 04	SPA eP	13 53 48
SPA 1P	22 09 01	Jan. 27 BYR 1P	02 31 47	Jan. 28 BYR 1P	17 20 47		
Jan. 25 BYR 1P	22 39 10	SPA eP ePcP ipP e(S)	32 01 32 11 42 11	1	21 13		
				SPA eP	17 20 22		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Jan. 30 BYR	h m s 1P' 13 59 49 e 14 00 10	Feb. 1 BYR	h m s eP' 03 32 18	Feb. 3 BYR	h m s 1P 16 10 25	Feb. 6 SPA	h m s eP 09 19 06
Jan. 30 BYR	1P 15 20 34 1P' 20 45	Feb. 1 BYR	1P' 03 32 08 eP 04 28 54	Feb. 3 BYR	e(P) 16 11 35 1P 17 21 02	Feb. 6 BYR	eP' 14 52 19 ePP 55 47
SPA	eP 15 20 47	SPA	eP 04 28 36	SPA	eP 17 21 58	SPA	eP' 14 52 26 epP' 52 56 e 56 05 eSKP 56 39 e(SKKP) 15 04 25
Jan. 30 BYR	1P 16 25 27 1P' 25 42	Feb. 1 BYR	1P' 05 41 51	Feb. 3 BYR	1P 22 46 24	Feb. 6 SPA	eP 20 43 21
Jan. 30 BYR	1P 18 18 35 1PcP 19 33 ePP 20 38 i(PPP) 22 41 iS 25 40 iScS 27 32 1P'P' 48 39 eSKPP' 50 43	Feb. 1 BYR	1P' 06 49 57	Feb. 3 BYR	1P 23 31 37 epP 32 09 e(PP) 33 43 eScP 36 40	Feb. 7 BYR	1P 09 48 50 ePP 51 38 eP'P' 10 15 28
SPA	1P 18 19 05 1P' 19 26 eP'P' 48 11	SPA	1P 08 50 21	SPA	1P 23 32 03 1P' 32 37	SPA	1P 09 49 35 e(S) 10 00 14 ePKKP 07 31 eP'P' 15 34
Jan. 30 BYR	1P 20 36 54	Feb. 1 BYR	1P' 11 59 41	Feb. 4 SPA	eP' 00 25 56	Feb. 7 BYR	eP 13 07 10
Jan. 30 BYR	1P' 20 57 30 1P'P' 58 17	Feb. 1 SPA	eP 17 04 45	Feb. 4 SPA	eP 08 46 20	SPA	eP 13 06 54
Jan. 30 BYR	1P' 22 36 09 e(PP) 38 37	Feb. 1 SPA	eP 17 05 26	Feb. 4 SPA	eP 13 51 39	Feb. 7 SPA	ePP 14 55 56
SPA	eP' 22 35 56	Feb. 1 BYR	e(P) 19 39 44	Feb. 4 BYR	eP 19 27 18	Feb. 7 BYR	eP 15 00 57
Jan. 30 BYR	1P' 22 59 57	Feb. 1 SPA	1P 21 32 18	Feb. 4 SPA	eP' 20 39 29	SPA	1P 15 01 27
Jan. 31 SPA	eP 01 20 17	Feb. 2 BYR	1P 04 08 49 1P' 09 14	Feb. 4 SPA	eP 23 04 28	Feb. 7 BYR	1P 16 57 37 epP 59 41
Jan. 31 BYR	1P 04 01 36	Feb. 2 SPA	1P 04 08 28 epP 08 53	Feb. 5 BYR	eP' 01 24 05 ePP 27 34	SPA	1P 16 57 07 e(PcP) 57 34
Jan. 31 BYR	1P 05 56 22 epP 58 04 eP'P' 06 24 39	Feb. 2 BYR	eP 08 56 04	SPA	eP' 01 24 20 epP' 24 48 esP' 24 58 ePP 27 52	Feb. 7 BYR	eP 21 35 23
SPA	1P 05 56 53 epP 58 38 eP'P' 06 24 36	Feb. 2 BYR	eP 14 06 06 e 06 53	Feb. 5 BYR	eP 04 09 12	SPA	eP 21 36 40
Jan. 31 BYR	1P 07 45 32	Feb. 2 SPA	eP' 20 09 19	Feb. 5 SPA	eP 04 09 42	Feb. 7 BYR	eP 23 47 33
SPA	1P 07 45 39	Feb. 3 BYR	eP' 22 52 24	Feb. 5 BYR	eP 07 21 16	SPA	eP 23 47 14 e 49 41
Jan. 31 BYR	eP' 11 26 24	Feb. 3 SPA	eP 02 39 10	Feb. 5 SPA	eP 07 21 50	Feb. 7 BYR	eP 23 53 18
Feb. 1 BYR	1P 02 59 44	Feb. 3 BYR	1P 11 10 52 e(S) 15 06	Feb. 5 SPA	eP 18 55 12	SPA	1P 23 53 02
		SPA	1P 11 11 23	Feb. 6 BYR	eP 05 06 04	Feb. 8 BYR	eP' 01 21 47 ePP 24 38 e(PKS) 25 15
						SPA	eP' 01 21 47 ePP 24 29

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Feb. 8 BYR iP	h m s 05 55 45	Feb. 9 SPA eP	h m s 09 26 35	Feb. 11 BYR iP	h m s 21 47 56	Feb. 15 SPA iP	h m s 04 05 40
epP	57 37	Feb. 9 BYR iP	10 04 52	SPA iP	21 48 31	e	06 20
eS	06 03 32	SPA eP	10 05 33	e	49 00	ePP	06 39
SPA iP	05 56 15	Feb. 9 BYR iP	15 13 10	Feb. 12 BYR eP	00 13 48	e(PPP)	06 56
iPcP	56 35	SPA eP	15 12 53	Feb. 12 BYR eP	17 13 52	Feb. 15 BYR iP	04 49 07
i	56 56	Feb. 9 BYR iP	21 25 50	SPA iP	17 14 14	e	49 37
epP	58 14	SPA iP	21 25 43	ePP	16 06	ePP	51 31
ePKKP	06 13 30	ipP	26 16	Feb. 12 BYR eP	18 57 42	eS	54 13
eP'P'	21 21	ePP	29 10	Feb. 12 SPA eP	20 52 57	e	55 35
eSKPP'	24 29	Feb. 10 BYR eP	00 43 03	Feb. 12 BYR eP	21 31 42	e	05 00 30
Feb. 8 SPA eP	09 23 39	Feb. 10 SPA iP	04 03 53	SPA eP	21 32 18	SPA iP	04 48 50
Feb. 8 SPA eP	10 08 53	Feb. 10 BYR iP	12 56 05	Feb. 13 BYR iP	01 54 59	Feb. 15 BYR iP	05 17 46
Feb. 8 BYR eP	12 34 41	SPA eP	12 55 29	ePcP	56 44	SPA iP	05 18 26
SPA eP	12 35 14	Feb. 10 BYR eP	18 40 34	SPA iP	01 55 29	Feb. 15 SPA eP	11 23 36
Feb. 8 BYR eP	12 40 40	SPA eP	18 40 46	e	55 57	e	24 55
SPA eP	12 41 12	Feb. 11 BYR eP	02 54 37	ePcP	57 15	Feb. 15 BYR eP	15 01 10
Feb. 8 BYR eP	13 15 45	Feb. 11 BYR eP	08 42 52	Feb. 13 BYR iP	02 12 14	Feb. 16 BYR eP	00 51 52
SPA eP	13 16 59	SPA eP	21 11 23	SPA iP	15 19 39	SPA eP	00 52 32
Feb. 8 SPA eP	15 32 53	Feb. 10 BYR eP	23 28 59	Feb. 13 BYR eP	19 44 23	Feb. 16 SPA eP	06 03 30
Feb. 8 BYR iP	16 03 25	Feb. 11 BYR eP	09 03 28	Feb. 14 BYR eP	04 49 00	Feb. 16 BYR eP	08 03 56
e	03 50	Feb. 11 BYR eP	13 00 54	SPA iP	04 48 41	SPA iP	08 04 25
SPA iP	16 04 01	SPA eP	13 01 09	Feb. 14 BYR eP	07 42 02	epP	06 09
e	04 14	Feb. 11 BYR eP	14 05 47	Feb. 14 BYR eP'	22 29 45	Feb. 17 BYR eP	01 27 40
Feb. 8 BYR eP'	17 14 09	Feb. 11 BYR iP	20 09 06	SPA eP'	22 29 33	SPA eP	01 27 22
SPA eP'	17 14 07	SPA iP	20 09 47	Feb. 14 BYR eP'	22 44 51	Feb. 17 SPA eP	03 04 52
Feb. 8 BYR iP	20 29 10	Feb. 11 BYR eP	20 09 06	SPA eP'	22 44 37	Feb. 17 SPA eP	07 58 52
SPA e(P)	20 27 58	Feb. 11 BYR eP	20 09 06	e	45 37	Feb. 17 BYR eP	11 32 42
e	28 36	Feb. 11 BYR eP	20 09 06	Feb. 15 BYR iP	04 05 58	SPA iP	11 33 00
Feb. 9 BYR eP'	05 01 51	Feb. 11 BYR eP	20 09 06	e	06 15	Feb. 17 SPA eP'	12 05 23
ePP	05 14	Feb. 11 BYR eP	20 09 06	ePP	06 51	Feb. 17 BYR eP'	12 22 20
SPA eP'	05 01 56	Feb. 11 BYR eP	20 09 06	ePcP	08 26	SPA iP'	12 22 28
Feb. 9 BYR iP	05 44 50	Feb. 11 BYR eP	20 09 06	e	11 04	ePP	26 15
Feb. 9 BYR eP	08 58 18	Feb. 11 BYR eP	20 09 06	e(S)	12 21	eSKS	29 33
SPA eP	08 58 47	Feb. 11 BYR eP	20 09 06			e(SKKS)	33 37

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Feb. 17 BYR	eP' 13 08 09	SPA	iP 12 12 29	SPA	iP 16 24 35	Feb. 23 BYR	eP 04 07 03
SPA	iP' 13 08 07	Feb. 20 BYR	eP 12 26 20	Feb. 25 SPA	iP 10 13 17 iPcP 13 28	SPA	eP 04 06 46
Feb. 17 SPA	iP' 16 10 10	SPA	iP 12 26 49	Feb. 25 SPA	iP' 11 36 52	Feb. 23 BYR	e(P) 06 10 15 i 11 35
Feb. 18 BYR	iP 00 43 35	Feb. 21 BYR	eP 04 09 16	Feb. 25 SPA	eP 16 28 30	Feb. 28 SPA	eP 06 12 05
SPA	eP 00 44 15	Feb. 21 BYR	eP 13 07 15	Feb. 25 SPA	eP 18 37 33 ePP 39 45	Feb. 28 SPA	eP 06 18 23 e 20 28
Feb. 18 BYR	eP 02 06 55 iP' 08 36	Feb. 21 BYR	eP 16 02 27	Feb. 25 SPA	iP 20 20 42 e 22 54 e 24 36	Feb. 28 BYR	eP 07 01 34
SPA	iP 02 07 25 epP 09 09	SPA	eP 16 02 55	Feb. 25 SPA	iP 23 48 16 i 48 23 iPcP 50 28	SPA	iP 07 02 08
Feb. 18 SPA	eP 08 49 05	Feb. 22 BYR	eP' 03 50 11	Feb. 26 SPA	iP 04 53 32 i 53 48	Feb. 28 BYR	eP 11 51 19 e(PcP) 53 13
Feb. 18 BYR	eP' 12 24 42	Feb. 22 BYR	eP' 03 54 59	Feb. 26 SPA	iP 15 41 32	SPA	iP 11 51 05 e 51 18 ePP 52 19
Feb. 18 SPA	iP 12 59 11	Feb. 22 BYR	eP 10 38 57	Feb. 26 SPA	eP' 21 40 19	Feb. 28 SPA	eP 22 33 38
Feb. 19 BYR	eP 00 48 12	SPA	eP 10 38 39 e 39 18	Feb. 27 SPA	eP 00 43 38	March 1 BYR	eP 00 28 38
Feb. 19 BYR	eP' 21 32 44	Feb. 23 SPA	iP 02 11 12 iP' 11 25 eS 21 33	Feb. 27 SPA	iP 13 59 05	March 1 BYR	eP' 00 52 37 ePP 56 26
SPA	eP' 21 33 01	Feb. 23 SPA	eP' 10 50 34 ePP 54 08	Feb. 27 SPA	e(P) 14 50 50	SPA	eP' 00 52 19 ePP 56 27
Feb. 20 BYR	eP 01 42 42	Feb. 23 SPA	iP 15 52 36	Feb. 27 SPA	eP 15 31 29	March 1 SPA	eP 01 53 16
SPA	eP 01 42 24	Feb. 23 SPA	eP' 16 24 12	Feb. 27 SPA	eP 18 58 35	March 1 SPA	eP 09 22 14
Feb. 20 BYR	eP' 03 34 05	Feb. 23 SPA	eP 18 07 44	Feb. 27 BYR	eP' 21 15 27 i 15 42 ePP 17 07 ePKKP 25 33	March 1 SPA	eP 13 24 15
Feb. 20 BYR	eP 04 02 38 e 03 04	Feb. 23 SPA	iP 18 45 17	Feb. 27 SPA	iP' 21 15 17 e 15 32 ePP 16 42 ePKKP 25 38	March 1 BYR	iP 17 02 19 iP' 02 35 ePP 06 00 iS 12 52 eP'P' 28 21
SPA	eP 04 03 18	Feb. 23 SPA	iP 18 45 17	Feb. 28 BYR	eP' 01 13 56	SPA	eP 17 02 05 ePP 05 39 eS 12 12 eL 40 13
Feb. 20 BYR	iP 04 22 10 epP 22 30 ePP 24 33 eP'P' 52 10	Feb. 23 SPA	iP 22 31 21 iP' 31 34 e(P'P') 23 00 28	Feb. 28 SPA	eP' 01 51 53		
SPA	iP 04 22 55 epP 23 22 e 24 24 e 24 58 ePP 25 49 eP'P' 52 29	Feb. 24 SPA	eP 07 36 37				
Feb. 20 BYR	eP' 04 45 38	Feb. 24 SPA	eP 11 03 59 e 05 38				
Feb. 20 BYR	iP 12 12 00 epP 14 03	Feb. 24 SPA	eP 12 59 18				
		Feb. 24 BYR	iP 16 25 14				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
March 1 BYR e	h m s 18 37 00	March 4 BYR eP	h m s 11 06 50	March 6 SPA eP	h m s 13 27 15	March 10 BYR eP'	h m s 07 18 08
SPA eP	18 36 46	SPA eP	11 07 25	March 6 BYR eP	20 40 40	March 10 BYR eP	12 02 30
March 1 BYR eP	20 55 27	March 4 SPA eP	11 54 13	SPA eP	20 40 51	March 10 BYR eP	18 00 52
SPA eP	20 55 12	March 4 BYR e(P)	17 52 29	March 6 BYR eP	20 53 50	March 10 BYR eP	18 47 26
March 1 SPA eP	21 23 45	March 4 BYR eP	19 05 33	SPA eP	20 54 00	March 11 BYR eP	00 41 54
March 1 SPA eP'	23 53 12	SPA iP epP	19 06 07 06 53	March 6 BYR eP	21 16 09 21 12	March 11 BYR eP	07 19 46 24 56
March 1 SPA eP	23 45 50	March 4 SPA eP'	20 15 15	SPA eP	21 16 41	March 11 BYR eP	20 50 48 53 28
March 2 BYR iP	01 50 57	March 4 SPA eP	21 22 28	March 7 BYR eP	09 13 48	March 13 SPA eP	10 58 37
SPA iP	01 50 20 50 29	March 4 SPA iP	22 12 58	SPA eP	09 14 14	March 13 BYR eP	13 30 32
March 2 BYR eP	06 02 24	March 4 SPA e(P)	22 21 32	March 7 BYR eP	09 25 51	March 13 BYR eP	16 50 30 51 19
March 2 BYR eP	09 26 25	March 4 SPA eP	22 47 18	SPA eP	09 25 17	March 13 BYR eP	16 51 04
SPA eP	09 26 05	March 5 SPA eP'	00 34 38 34 53	March 7 BYR eP	14 57 03	March 13 SPA eP'	19 27 07
March 2 BYR eP	10 13 20	March 5 SPA eP	03 08 41	SPA eP	14 57 43	March 13 SPA eP'	20 46 51
March 2 BYR eP'	11 41 52	March 5 SPA eP	03 53 35	March 7 SPA eP'	16 01 46	March 13 BYR eP	23 14 11
SPA eP'	11 41 32	March 5 SPA eP	05 53 25 53 37	March 7 SPA iP	16 19 03	SPA eP	23 14 47
March 2 BYR eP'	16 10 34 13 49	March 5 SPA eP	13 07 09	March 8 SPA eP	15 00 18	March 14 SPA eP	07 07 51 08 01
SPA eP'	16 10 17 13 10	March 5 SPA eP'	14 29 23 32 24	March 8 SPA eP	17 19 02	March 14 SPA eP	12 37 19
March 2 SPA eP	21 23 46	March 5 SPA eP	14 57 17	March 8 SPA eP	23 14 47	March 14 SPA eP	14 31 54
March 3 SPA eP	05 33 01	March 5 SPA eP	16 01 27	March 9 BYR eP	01 47 01	March 14 SPA eP	17 16 28
March 3 SPA e(P)	06 15 12	March 5 SPA eP	16 39 08	March 9 BYR eP	02 42 34	March 15 SPA eP	04 59 32
March 3 SPA eP	06 55 15	March 5 SPA eP	23 08 40	March 9 BYR eP'	19 03 30	March 15 BYR iP	05 43 25
March 3 SPA eP	10 58 05	March 6 SPA iP	03 49 06	March 9 BYR e(P)	21 41 28 42 19	SPA eP	05 43 09
March 4 SPA eP'	01 12 58	March 6 SPA eP	07 20 23			March 15 SPA eP	07 35 16
March 4 SPA eP	06 55 14 55 25						

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
March 15 SPA iP	h m s 08 26 23	March 17 BYR iP i(pP)	h m s 10 43 59 44 09	March 19 BYR iP	h m s 02 11 43	March 20 SPA eP	h m s 15 00 04
March 15 BYR eP	12 15 12	SPA iP	10 44 15	SPA iP e e(PP)	02 11 16 12 44 15 03	March 20 SPA eP'	15 43 56
SPA iP	12 15 00	March 17 BYR iP	13 05 51	March 19 BYR eP'	07 43 14	March 20 BYR eP'	16 03 17
March 15 SPA eP	18 37 41	i eS eScS eL	05 33 11 41 15 36 17 44	SPA eP'	07 45 04	March 20 SPA eP	18 53 59
March 15 BYR i(P)	19 09 54	SPA iP eS	13 05 34 11 23	March 19 BYR eP' e(PP)	08 44 34 46 23	March 20 BYR iP	19 12 43
SPA iP e	19 09 38 12 15	March 17 SPA eP	13 45 03	SPA eP'	08 44 41	SPA eP	19 13 28
March 15 BYR e(P)	21 36 00	March 17 BYR eP ePP	15 11 12 12 26	March 19 BYR eP'	09 57 23	March 20 BYR eP	23 25 23
March 15 BYR eP	21 39 58	SPA iP	15 10 58	SPA iP'	09 57 47	SPA eP	23 25 13
SPA iP	21 39 33	March 17 SPA eP	16 30 55	March 19 BYR eP'	10 34 43	March 20 BYR eP	24 06 04
March 16 SPA eP'	01 56 22	March 17 BYR eP	17 17 28	March 19 BYR eP'	14 33 53	March 21 BYR iP ipP	04 37 20 39 21
March 16 SPA eP	04 52 28	SPA iP	17 17 31	March 19 BYR eP i(PcP)	19 00 55 01 03	SPA iP ipP	04 37 51 39 52
March 16 BYR eP	06 43 07	March 17 SPA eP	19 15 08	SPA eP	19 01 13	March 21 BYR eP	05 05 33
SPA eP	06 42 53	March 17 BYR iP i	23 11 14 11 29	March 19 BYR iP	19 43 18	March 21 BYR eP	08 44 25
March 16 SPA eP	07 55 32	SPA iP	23 10 55	March 19 BYR eP	22 29 04	SPA eP	08 44 16
March 16 BYR eP'	08 21 35	March 18 BYR iP	00 01 13	March 19 BYR eP	23 14 21	March 21 BYR eP'	09 11 13
SPA eP'	08 21 32	SPA eP	00 01 29	March 20 BYR iP e(pP)	00 59 07 01 00 08	March 21 BYR iP	10 17 56
March 16 BYR eP	22 17 58	March 18 SPA eP'	01 00 05	SPA iP	00 58 43	SPA iP	10 17 46
SPA eP	22 18 33	March 18 BYR iP'	07 45 42	March 20 BYR eP'	01 22 19	March 21 BYR eP	16 48 37
March 16 BYR eP'	23 54 02	March 18 BYR eP e(pP)	15 07 37 08 15	SPA eP'	01 21 58	SPA eP	16 48 10
March 17 BYR iP	00 28 33	March 18 BYR iP	16 03 08	March 20 BYR iP	02 21 12	March 21 SPA eP'	19 55 41
SPA eP	00 28 40	SPA eP	16 02 48	SPA iP	02 21 47	March 21 BYR iP	19 56 37
March 17 BYR eP'	08 02 58	March 18 BYR eP	19 20 54	March 20 BYR iP	07 26 11	SPA iP	19 56 08
March 17 BYR iP'	08 44 13	SPA iP	19 21 22	SPA eP	11 02 59	ePcP eS	56 25 20 05 13
i iPP ePKKP e(PPS)	44 32 45 35 54 23 56 56	March 18 BYR eP	19 20 54	March 20 BYR eP	11 02 34	March 22 SPA eP	12 08 50
SPA eP'	08 44 07	March 18 BYR eP	19 20 54	March 20 BYR eP	11 02 34	March 22 SPA iP	14 45 57
iPP ePKKP	45 23 54 13						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
March 22 BYR eP	h m s 15 45 27	March 24 BYR eP'	h m s 21 01 36	March 27 SPA eP	h m s 06 53 52	March 29 SPA e(P)	h m s 12 53 54
March 22 BYR eP	17 26 40	March 25 SPA eP	00 10 31	March 27 SPA eP	07 31 33	March 29 SPA eP' ePP	19 28 55 31 25
SPA eP	17 27 12	March 25 SPA iP	00 23 53	March 27 SPA eP	07 51 48	March 29 SPA eP	21 12 47
March 22 SPA eP	23 04 05	March 25 SPA eP	04 01 35	March 27 SPA eP	08 04 35	March 29 SPA eP	23 05 46
March 23 BYR eP	02 57 24	March 25 SPA eP	07 13 32	March 27 SPA eP	09 33 22	March 30 BYR eP	02 46 18
March 23 BYR eP	06 14 25	March 25 SPA eP	09 12 00 18 07	March 27 SPA eP	16 40 12	March 30 BYR eP	07 30 20
SPA iP	06 14 04	March 25 SPA eP	11 26 21	March 27 SPA eP ePP	23 10 41 14 39	March 30 BYR iP	08 11 20
March 23 BYR eP' ePKKP	07 29 16 39 29	March 25 SPA eP	15 04 33 06 51	March 28 BYR eP	03 45 57	SPA iP	08 12 15
SPA eP' ePKKP	07 30 35 38 03	March 25 SPA iP	16 25 46	SPA eP	03 47 11	March 30 SPA eP	11 50 32
March 23 SPA eP	08 30 57	March 25 SPA eP	17 04 20	March 28 SPA iP	06 43 52	March 30 BYR i(P)	12 03 22
March 23 SPA eP	10 25 35	March 25 SPA eP	20 45 38	March 28 BYR eP'	08 04 25	March 30 SPA eP	14 24 48
March 23 BYR iP epP	13 35 12 35 48	March 25 SPA eP	23 13 01	March 28 SPA iP	11 28 18	March 30 SPA iP	18 30 32
SPA eP	13 36 27	March 26 SPA iP	02 36 35	March 28 BYR iP	15 02 07	March 30 SPA eP e	20 50 00 50 44
March 23 BYR e(P)	13 55 20	March 26 SPA eP	04 58 36	SPA iP	15 02 20	March 30 SPA eP	22 40 00
March 23 SPA eP	19 34 41	March 26 SPA eP'	05 13 04	March 28 BYR iP epP eS	19 56 36 58 31 20 04 38	March 31 SPA eP'	01 24 55
March 23 SPA eP	22 58 19	March 26 SPA iP	05 37 45	SPA iP ePP eS eP'P'	19 57 26 59 22 20 05 45 24 45	March 31 SPA eP	02 14 28
March 24 BYR iP	01 24 43	March 26 SPA iP	08 00 54	March 28 BYR eP'	19 01 34	March 31 SPA eP	03 33 46
SPA eP	01 24 54	March 26 SPA eP	09 05 45	SPA eP'	19 01 31	March 31 SPA eP	05 20 41
March 24 BYR iP ePcP	05 15 20 15 48	March 26 SPA iP	11 54 50	March 28 SPA eP	24 03 09	March 31 BYR iP	07 32 01
SPA iP	05 16 06	March 26 SPA eP	14 13 12	March 29 SPA e(P)	00 33 03	SPA iP e	07 32 28 33 29
March 24 BYR e(P)	15 52 01	March 27 SPA eP	00 34 45	March 29 SPA eP	00 52 17	March 31 SPA eP	08 43 05
March 24 BYR eP	17 24 01	March 27 SPA eP	03 48 05	March 29 SPA eP	09 44 22	March 31 SPA eP	09 20 29
March 24 BYR eP'	17 37 27	March 27 SPA eP	06 21 00	March 29 SPA eP	12 20 02	March 31 SPA eP	10 03 54

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IGC SUPPLEMENT SOUTH POLE - BYRD

APRIL-JUNE, 1959

MSI - 220A

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U. S. DEPARTMENT OF COMMERCE

Luther H. Hodges, Secretary

COAST AND GEODETIC SURVEY—WASHINGTON

H. Arnold Karo, Director

FOR OFFICIAL DISTRIBUTION

SEISMOLOGICAL BULLETIN

IGC SUPPLEMENT

April-June
1959

The instrumental results tabulated in this supplement are from the following seismographic stations.

Station	Latitude	Longitude	Foundation	Elevation	Instruments	Components	To (Sec.)	Tg (Sec.)	Time Scale
South Pole (SPA) In Charge: W.S. Jacobs	90° S.	0°	1995 meters of ice.	2800 meters.	Benioff Paper. Wilson-Lamison (30°E.-150°W.) Horizontal Film.	Z	1.6	0.5	60mm/min.
							6.0	0.5	15mm/min.
Byrd (BYR) In Charge: L.E. Davis	80°01'S.	119°31'W.	2570 meters of ice.	1515 meters.	Benioff. Wilson-Lamison with G.E. Galvo. Wilson Lamison with G.E. Galvo.	Z N E	1.2 6.2 7.2	0.5 3.5 3.5	60mm/min. 30mm/min. 30mm/min.

These stations were first established by the Coast and Geodetic Survey for the IGY to provide additional control for locating teleseismic epicenters in regions inadequately covered by previously existing stations and to provide data for studies in regional seismicity, crustal structure and other pertinent earth science problems.

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 1 BYR eP' 00 53 17 ePKKP 01 03 34	h m s	April 2 SPA eP' 04 53 33	h m s	April 4 SPA eP 06 58 25	h m s	April 5 BYR eP 23 07 53 e 13 47	h m s
SPA eP' 00 53 06 ePP 54 19 ePKKP 01 03 31		April 2 SPA eP 06 16 38		April 4 BYR eP 09 36 05		SPA iP 23 09 25 e 09 52 i 15 19	
April 1 BYR eP 10 43 24 e 44 15		April 2 SPA eP 10 36 11		April 4 SPA eP 13 15 39		April 5 BYR iP 23 41 55 e 42 37 e 43 06 eS 52 22	
SPA iP 10 42 58		April 2 BYR eP 12 13 42		April 4 SPA eP 14 02 09 e 03 17		SPA iP 23 42 00 e 42 33 e 43 12 ePP 45 15 eS 52 21	
April 1 SPA eP' 12 39 06 e 48 26		April 2 SPA iP 12 13 13		April 4 SPA eP 17 58 14		April 6 SPA eP 03 16 28	
April 1 BYR eP 14 20 42		April 2 BYR iP 17 19 16		April 4 SPA eP 18 14 19		April 6 SPA eP 05 13 38	
SPA eP 14 19 28 e(PcP) 20 36 ePP 21 03		April 2 SPA iP 17 18 44 e 19 05		April 4 BYR eP' 19 24 19		April 6 BYR eP' 05 43 38	
April 1 BYR iP 14 59 29 ePcP 15 00 09		April 2 SPA e(P) 19 34 48 eP' 38 38 ePP 40 09		April 4 SPA eP 23 17 09		SPA eP' 05 43 38	
SPA eP 14 59 39 epP 15 00 09		April 2 BYR iP 21 59 01		April 4 SPA eP 23 17 01		April 6 SPA eP 08 11 10	
April 1 BYR eP 16 41 12		April 2 SPA iP 21 59 26 e 59 44 eS 22 08 28		April 5 BYR eP 03 05 10		April 6 BYR iP 13 03 30	
SPA eP 16 39 59		April 3 SPA eP 00 35 03		April 5 SPA eP 03 06 40		SPA eP 13 04 20 e 19 06	
April 1 SPA eP 17 02 52		April 3 BYR eP' 01 46 23		April 5 SPA eP' 05 56 58		April 6 BYR iP 14 05 27	
April 1 SPA eP' 18 39 39		April 3 SPA eP' 01 46 31		April 5 SPA eP' 11 07 14		SPA iP 14 06 11	
April 1 BYR iP 19 26 45		April 3 SPA iP 04 11 26 i 39 13		April 5 SPA eP 12 42 17		April 6 BYR eP 14 25 05 ePP 27 25 e 28 24 eS 35 35	
SPA iP 19 27 12		April 3 SPA eP 10 37 03 i 37 46		April 5 BYR eP' 20 19 32		SPA iP 14 24 49 e 25 35 ePP 27 50 e(S) 34 44	
April 1 BYR iP 22 59 09 e 59 18 epP 59 33		April 3 BYR iP 14 34 32		April 5 SPA eP' 20 19 09		April 6 SPA iP 19 34 55	
SPA eP 22 59 13 epP 59 29		April 3 SPA iP 14 34 51		April 5 BYR eP 20 41 31		April 6 SPA eP 22 31 54	
April 1 BYR eP 23 11 29		April 3 BYR iP 17 58 55		April 5 BYR iP 21 03 39		April 7 SPA eP 01 04 48 e 05 46	
April 1 BYR iP 23 46 16		April 3 SPA iP 19 45 46		April 5 SPA eP 21 05 04			
SPA iP 23 46 10 e 46 51		April 3 SPA iP 19 46 32		April 5 BYR iP 21 17 09 e(pP) 17 44			
April 2 SPA eP' 04 21 08		April 3 SPA iP 22 38 07		April 5 SPA iP 21 17 22 epP 17 40			
April 2 SPA eP 04 45 30		April 4 SPA eP 02 59 47 e 03 01 07					
		April 4 SPA e(P) 03 20 22 e 21 08					

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 18 SPA eP	h m s 04 52 03	April 19 SPA eP	h m s 11 15 58	April 21 SPA iP i	h m s 22 56 40 23 04 45	April 22 SPA eP	h m s 15 23 10
April 18 SPA eP	05 31 51	April 19 BYR iP	13 04 07	April 21 SPA iP i	01 37 48 39 42	April 22 SPA iP e e	15 48 55 55 13 16 04 10
April 18 BYR iP ePcP epP	06 30 30 30 48 30 56	April 19 SPA iP	13 04 48	April 21 BYR eP	09 46 33	April 22 BYR eP	17 37 09
SPA iP ipP eS	06 30 32 30 51 41 02	April 19 BYR iP	15 06 58	SPA iP	09 46 37	SPA eP	17 37 42
April 18 SPA eP	08 04 09	SPA eP	15 06 59	April 21 BYR eP'	10 20 47	April 22 BYR eP	19 14 53
April 18 BYR e(P)	08 27 48	April 19 BYR eP	15 22 48	SPA eP'	10 21 50	SPA eP	19 14 35
SPA iP	08 28 17	SPA eP'	15 23 10 23 36	April 21 BYR eP'	11 16 38	April 22 BYR eP	19 39 35
April 18 SPA eP	13 16 56	April 19 SPA eP	16 24 40	SPA eP'	11 16 32	SPA eP	19 39 12
April 18 SPA iP e	14 04 44 05 13	April 19 BYR iP e e	19 54 07 54 17 54 35	April 21 BYR ePP	13 05 28	April 22 BYR iP eS eL	20 35 01 44 51 50 01
April 18 SPA eP	16 12 33	SPA iP e	19 54 43 55 08	SPA iP'	13 02 26 03 10 05 47 12 09	SPA iP ePcP	20 36 13 37 16
April 18 SPA eP	16 52 18	April 19 SPA iP e	20 17 36 18 00	April 21 BYR iP	15 30 47	April 22 SPA eP	22 48 15
April 18 SPA iP	18 10 09	April 20 SPA eP	00 19 27	SPA eP	15 30 53 31 25	April 22 SPA eP	23 30 13
April 18 SPA eP e	21 38 04 38 26	April 20 SPA eP	02 35 45	April 21 BYR iP	16 47 22	April 23 SPA iP	00 35 13
April 18 SPA iP e	22 25 51 38 07	April 20 BYR iP epP e eS	03 40 21 40 37 45 33 50 44	SPA iP	16 48 03	April 23 SPA eP e	01 25 13 29 05
April 18 SPA eP	22 57 54	SPA iP ipP i(P) eS	03 40 19 40 37 41 55 50 40	April 21 SPA eP	21 20 10	April 23 BYR eP	03 57 59
April 19 BYR e(P)	00 53 58	April 20 BYR eP	04 34 28	April 22 SPA iP	02 43 40	April 23 SPA P	15 42 36
April 19 SPA iP	04 28 15	April 20 BYR eP	04 34 50	April 22 BYR e(P)	04 17 55	April 23 BYR iP	19 22 08
April 19 BYR iP	06 33 37	SPA eP	04 34 50	April 22 BYR iP	05 40 34	SPA e(P)	19 21 47
SPA eP	06 34 48	April 20 BYR eP	11 55 56	SPA iP	05 40 53	April 23 BYR e(P)	21 53 33
April 19 BYR iP	07 33 09	SPA iP	11 55 26	April 22 SPA iP	07 44 19	April 24 SPA eP	01 15 18
SPA eP e ePP	07 34 30 35 01 36 06	April 20 BYR eP'	19 45 13 45 31	April 22 BYR eP'	11 14 18 17 49	April 24 BYR eP	02 38 20
April 19 SPA eP	08 40 05	SPA iP'	19 45 31	April 22 BYR ePP e	11 14 36 18 09 25 33	SPA eP	02 38 52
		April 20 BYR iP	22 57 33				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 14 BYR eP e	h m s 00 31 12 31 18	April 14 SPA eP	h m s 22 30 47	April 16 BYR eP	h m s 03 39 33	April 17 BYR iP	h m s 01 00 56
SPA eP	00 32 08	April 15 BYR eP' ePP e	00 34 35 37 11 37 57	SPA eP	03 40 09	SPA iP	01 01 16
April 14 BYR eP	01 00 33	SPA eP' ePP	00 34 33 37 53	April 16 SPA eP e e	04 16 56 17 35 18 38	April 17 SPA iP	03 31 41
SPA eP	01 01 28	April 15 SPA iP	01 04 31	April 16 BYR iP	05 32 20	April 17 BYR eP	07 44 02
April 14 SPA eP e e	01 31 47 32 03 32 43	April 15 BYR eP	01 42 36	SPA iP	05 31 57	SPA eP	07 42 57
April 14 SPA e(P)	03 09 09	SPA iP	01 42 27	April 16 BYR iP e epP ePP	07 36 58 38 24 39 05 39 16	April 17 SPA eP	07 58 58
April 14 BYR eP	05 42 17	April 15 BYR eP e e(PP)	05 04 57 05 07 05 54	SPA iP	07 37 27	April 17 BYR eP	10 41 24
SPA iP	05 42 52	SPA eP	05 06 19	ipP ePP eS	39 23 39 54 45 33	SPA iP	10 41 55
April 14 BYR eP i	06 29 56 30 11	April 15 BYR eP e	05 40 01 40 41	April 16 SPA eP	08 05 55	April 17 BYR eP e	11 01 10 11 25 42
SPA iP i	06 30 37 30 52	April 15 SPA eP e	10 52 45 51 55	April 16 BYR eP e	09 43 00 43 21	April 17 SPA eP	14 43 13 43 44
April 14 BYR eP' e	07 39 41 39 49	April 15 SPA eP	13 23 16	SPA eP	09 42 43	April 17 BYR iP	16 03 19
SPA eP' i e	07 40 02 40 08 41 18	April 15 SPA iP	17 36 18	April 16 SPA iP i	10 43 54 44 29	SPA iP i	16 02 43 03 48
April 14 BYR eP	08 31 53	April 15 SPA iP e	18 17 03 22 11	April 16 BYR eP	11 58 51	April 17 SPA eP	18 23 13
SPA iP	08 32 36	April 15 BYR eP	18 43 41	SPA iP	11 59 33	April 17 BYR eP	20 01 07
April 14 BYR eP i ePP	09 49 18 49 25 51 43	April 15 SPA eP' e(PP)	19 30 42 34 17	April 16 BYR eP	12 56 11	April 17 SPA eP	20 19 44
SPA iP ePP	09 48 40 50 58	April 16 BYR iP epP	00 02 09 03 55	April 16 SPA iP	14 21 53	SPA eP	20 20 01
April 14 BYR eP e	15 00 58 18 06	SPA iP epP	00 02 39 04 32	April 16 SPA eP i	15 48 56 49 31	April 17 SPA eP	22 44 30
SPA iP e	15 01 50 17 55	April 16 SPA eP	00 46 53	April 16 BYR eP ePP	16 27 54 32 29	April 18 SPA eP	01 06 05
April 14 BYR iP	16 10 03	April 16 BYR iP i	01 23 18 23 25	SPA eP iPP e(PKKP)	16 27 48 31 53 43 00	April 18 SPA iP	02 05 31
SPA iP	16 10 33	SPA iP	01 23 46	April 16 BYR eP	17 27 49	April 18 SPA eP	02 30 38
April 14 BYR eP e	17 29 21 49 39	April 16 BYR iP i	03 18 01 18 27	SPA iP	17 27 35	April 18 BYR iP	03 15 04
SPA eP	17 29 02	April 16 SPA eP	21 05 51	April 16 SPA eP	23 35 14	SPA iP	03 45 09
April 14 SPA e(P)	22 23 26	SPA iP e	03 18 44 19 12				03 45 37

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 7 SPA	eP 02 16 17	April 9 SPA	eP 03 33 00	April 11 SPA	eP 08 43 31	April 12 SPA	eP 15 05 37
April 7 SPA	eP 02 56 57	April 9 SPA	iP 04 55 36	April 11 BYR	eP 09 38 17	April 12 BYR	iP 15 35 20
April 7 SPA	iP 08 20 12		ipP 55 59				epP 35 43
April 7 SPA	eP 08 57 09		esP 56 12	April 11 BYR	eP 11 42 07		eS 45 43
April 7 SPA	eP 10 35 22	April 9 SPA	iP 06 27 59		e 42 13	SPA	eP 15 35 06
April 7 SPA	eP 13 07 56		e 28 44		e 42 32		e 35 14
April 7 SPA	iP 18 11 12		ePcP 29 54	SPA	eP 11 41 59	April 12 BYR	eP 20 56 19
April 8 SPA	iP 01 32 40		ePP 30 01		i 41 52		
	e(PcP) 33 28		eS 35 50		e 42 24	SPA	eP 20 56 36
	eS 40 07	April 9 SPA	eP' 11 31 15	April 11 BYR	eP 14 14 54	April 12 BYR	iP 21 05 10
	eP'P' 02 01 48						i(pP) 05 25
April 8 SPA	eP 03 00 37	April 9 SPA	eP' 12 43 34	April 11 SPA	eP' 14 41 03		ePcP 06 10
	ePP 03 17						e(S) 15 09
April 8 SPA	eP 06 36 00	April 9 SPA	eP' 17 27 14	April 11 BYR	eP 14 59 19	SPA	iP 21 05 45
	e 36 37	April 9 SPA	iP 17 49 42				e(pP) 05 59
April 8 SPA	eP 07 47 39		i 58 43	April 11 BYR	iP 18 07 04		ePcP 06 45
April 8 SPA	iP 08 13 01	April 9 SPA	iP 19 45 25		ePcP 07 27	April 12 BYR	e(P) 22 18 16
	ipP 13 33	April 10 BYR	eP 00 02 20	SPA	iP 18 07 39		e(P) 22 19 12
April 8 SPA	iP 11 52 02	April 10 SPA	iP 04 48 08	April 11 SPA	eP 18 44 31	April 13 BYR	iP 07 10 38
	ePP 53 29						
	eS 58 01	April 10 BYR	iP 05 57 51	April 11 SPA	eP 22 12 25	April 13 SPA	iP 07 11 12
	e 12 14 24		ePcP 58 03	April 12 SPA	eP 05 31 22		
April 8 SPA	eP 14 16 27		epP 59 53		e 32 30	April 13 BYR	eP' 18 50 47
April 8 SPA	iP 15 25 38		ePP 06 00 21	April 12 BYR	eP 06 15 22		e 51 03
			eS 05 27			SPA	eP' 18 50 31
April 8 SPA	eP 15 47 27		eP'P' 26 38	SPA	eP 06 15 59	April 13 BYR	eP 19 59 05
April 8 SPA	eP 18 16 05	SPA	iP 05 57 19	April 12 BYR	eP 07 11 15	April 13 SPA	iP 21 23 02
April 8 SPA	eP 20 02 16		ePP 59 46				
April 8 SPA	eP 20 54 34		eS 06 06 12	April 12 SPA	iP 07 11 49	April 13 BYR	eP 21 23 31
April 8 SPA	iP 22 58 43		iP'P' 25 18	April 12 BYR	iP 08 21 05	April 13 SPA	eP 22 18 51
April 9 SPA	iP 00 57 11		i 25 48		e 21 23		
		April 10 SPA	eP 07 45 49		e 21 32	April 13 BYR	eP' 22 51 59
		April 10 SPA	iP 13 44 23		ePcP 21 43		i 52 08
			e 46 29		e 22 16		ePP 53 14
		April 10 SPA	eP 14 53 37		e 22 31	SPA	eP' 22 51 58
		April 10 SPA	e(P) 19 17 28	SPA	iP 08 21 44	April 13 SPA	eP 23 25 54
		April 11 SPA	eP 02 38 22		ePcP 22 11		e 27 30
		April 11 BYR	eP 03 52 56		e 22 22		
				April 12 BYR	eP 10 09 01		
		April 11 SPA	iP 05 08 04		i 09 18		
					eP' 13 34		
				SPA	eP 10 09 00		
					eP' 13 30		

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 24 BYR eP	h m s 09 44 47	April 25 BYR iP	h m s 15 26 27	April 27 BYR iP	h m s 10 00 53	SPA eP'	h m s 14 37 43
April 24 BYR eP	11 40 45	SPA iP	15 27 06	epP	01 32	e(PP)	41 16
SPA iP	11 41 38	April 25 SPA eP	18 22 25	ePP	04 22	e	49 38
April 24 SPA iP	12 05 47	April 25 BYR eP	20 45 16	eS	11 06	April 28 BYR eP	16 10 47
i	06 39	SPA eP	20 45 05	SPA iP	10 00 36	SPA iP	16 10 42
April 24 BYR iP	18 07 28	April 25 BYR iP	21 47 17	epP	01 00	April 28 BYR eP'	17 30 29
ePP	09 15	SPA iP	21 47 52	esP	01 15	SPA eP'	17 30 39
eS	15 05	April 25 SPA eP	23 10 40	ePP	03 40	April 28 BYR eP'	22 19 58
eP'P'	37 28	e	10 46	iS	10 40	SPA eP'	22 19 55
SPA iP	18 08 02	April 26 BYR iP	05 28 50	ePKKP	18 59	April 29 SPA iP	03 40 39
ePP	10 01	e	33 17	April 27 BYR iP	13 00 30	April 29 SPA eP	07 47 48
ePPP	11 35	April 26 BYR eP	06 31 21	SPA iP	13 00 09	April 29 BYR iP	10 11 03
eS	16 04	April 26 BYR eP	08 59 50	April 27 SPA eP'	13 28 20	SPA iP	10 10 45
eP'P'	37 17	April 26 SPA eP	15 04 42	April 27 SPA iP	14 03 25	April 29 BYR iP	11 14 12
i	37 35	April 26 SPA eP	17 41 48	April 27 SPA eP	14 37 42	SPA iP	11 14 42
April 24 BYR eP	22 16 36	April 26 BYR eP	20 55 44	e	41 17	April 29 BYR iP	16 55 10
SPA eP	22 16 48	epP	55 59	e	49 38	SPA eP	16 55 26
April 24 SPA eP	22 50 35	eP'	58 48	April 27 SPA eP	17 30 39	April 29 BYR eP	17 00 33
April 25 BYR eP	00 26 17	i	59 42	April 27 SPA eP	18 17 23	SPA iP	17 00 48
SPA eP	00 26 22	ePP	21 00 23	e	31 46	April 29 BYR iP	18 04 22
e(PP)	29 09	ePPP	02 37	April 27 BYR eP	20 25 16	SPA iP	18 04 56
April 25 BYR eP'	00 46 00	eSKS	05 45	April 27 SPA e(P)	22 19 55	April 29 BYR eP	20 04 39
e(PP)	48 33	eSKKS	07 19	April 28 BYR eP	01 57 17	SPA eP'	20 04 32
SPA eP'	00 45 44	eS	08 17	SPA eP	01 57 03	April 29 SPA iP	22 32 57
ePP	47 44	ePKKP	09 28	e(P')	02 06 05	April 30 SPA e(P)	00 27 50
e	59 01	eSKSP	10 05	April 28 BYR eP	04 49 23	April 30 BYR eP	01 17 12
April 25 BYR eP'	01 25 02	eSKKP	12 41	April 28 SPA eP	11 22 55	April 30 SPA eP	02 09 42
SPA eP'	01 24 45	SPA eP	20 55 10	BYR eP	11 22 55	e	19 57
ePKKP	32 08	eP'	58 56	eS	33 29		
April 25 SPA eP	04 48 42	iPP	21 00 10	ePKKP	39 48		
e	50 48	iPKKP	09 45	SPA eP	11 23 37		
April 25 BYR eP	05 34 58	eSKKP	13 07	e	28 11		
SPA iP	05 34 46	April 27 SPA eP	00 50 50	April 28 BYR iP	13 13 26		
April 25 BYR eP	07 24 14	April 27 BYR eP	02 43 03	epP	13 46		
April 25 BYR eP	11 59 12	SPA iP	02 43 33	SPA iP	13 13 27		
April 25 BYR e(P)	13 43 48	April 27 SPA eP	05 31 20	i(pP)	14 05		
		April 27 BYR eP	09 16 07	April 28 BYR eP'	14 37 39		
				e(PP)	41 01		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
April 30 SPA iP e	h m s 07 06 01 18 30	SPA eP	h m s 08 15 30	May 2 SPA e(P)	h m s 10 22 25	SPA eP	h m s 17 01 16
April 30 BYR eP	07 18 30	May 1 BYR eP	08 31 11	May 2 SPA e(P)	12 10 17	May 3 SPA eP	18 45 29
April 30 SPA e(P)	09 47 05	SPA iP	08 31 47	May 2 SPA eP	13 34 15	May 3 SPA iP	21 19 00
April 30 SPA iP e e	12 02 16 15 07 16 09	May 1 BYR eP'	08 43 20	May 2 SPA eP e	16 12 16 12 28	May 4 BYR eP	05 00 28
April 30 BYR iP	13 32 40	SPA eP'	08 43 00	May 2 BYR iP	17 00 34	SPA iP	05 00 58
epP	33 08	May 1 BYR eP	08 58 15	May 2 BYR eP	18 03 05	May 4 SPA eP	06 07 16
ePP	34 06	May 1 SPA eP	09 13 21	SPA eP	18 03 40	May 4 BYR eP'	07 34 32
ePcP	35 05	May 1 SPA iP	13 33 39	May 2 SPA eP	18 58 36	epP'	34 59
eS	38 37	May 1 BYR eP	13 54 02	May 2 SPA eP	21 42 48	ePP	37 52
SPA iP	13 32 25	SPA eP	13 53 43	May 2 SPA iP	23 11 20	ePPP	41 06
epP	32 50	May 1 BYR iP	15 09 28	May 3 SPA eP	00 14 11	eSKS	41 44
esP	33 03	epP	09 50	May 3 BYR eP	04 54 34	eSKKP	45 40
ePP	34 03	SPA eP	15 09 30	epP	14 00	eSKSP	46 45
eS	38 26	epP	09 50	May 3 SPA iP	03 13 46	ePSKS	47 00
eScS	42 21	ePcP	10 07	May 3 BYR eP	04 54 34	eSPP	48 54
April 30 BYR eP	20 32 20	May 1 SPA eP	16 42 52	May 3 BYR epP	55 00	ePPS	49 36
SPA eP	20 32 04	e	45 04	May 3 SPA eP	07 45 17	eSS	50 44
e	34 35	May 1 SPA eP	17 05 03	May 3 BYR eP	10 40 31	eSSS	57 18
April 30 SPA eP	21 48 46	May 1 SPA eP	18 16 41	May 3 SPA eP	10 41 48	eP'P'P'	03 11 14
e	22 24 38	May 1 SPA eP	20 18 07	May 3 BYR eP	11 26 49	SPA iP'	07 35 07
May 1 BYR eP	01 18 57	May 1 SPA iP	20 48 42	May 3 SPA eP	11 26 47	ePPP	41 37
i	19 24	May 1 SPA eP	21 32 16	May 3 BYR eP'	11 26 49	eSKS	42 10
SPA iP	01 19 39	May 1 SPA iP	23 08 12	May 3 SPA eP	13 42 23	eSKKS	44 45
e	20 06	May 1 SPA eP	23 32 55	May 3 BYR eP	15 35 31	iSKKP	46 56
May 1 BYR e(P)	04 29 16	May 2 SPA iP	04 50 42	May 3 SPA eP	17 01 31	eSKSP	47 45
SPA e(P)	04 29 17	May 2 BYR eP'	05 44 34	May 3 BYR e	01 46	eSPP	40 17
May 1 SPA eP'	06 12 42	May 2 SPA eP'	05 44 27	May 3 BYR eP'	17 37 39	eP'P'	47 44
May 1 SPA eP	06 40 30	May 2 SPA eP'	06 17 03	May 4 SPA eP	09 02 14	May 4 BYR eP	10 21 05
May 1 BYR eP	06 58 46	May 2 SPA iP	08 53 39	May 4 BYR eP	10 21 05	SPA iP	10 20 48
epP	59 11			May 4 SPA iP	11 42 34	i	21 30
SPA iP	06 59 27			May 4 SPA eP	14 23 26	May 4 BYR eP	15 28 40
epP	59 52			May 4 BYR eP	15 28 40	SPA iP	15 28 40
May 1 BYR eP	07 32 14			May 4 BYR eP	16 39 26	May 4 SPA iP	16 39 00
SPA eP	07 32 01			May 4 BYR eP'	17 37 39		
May 1 BYR iP	08 14 26						

Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)	
		h m s			h m s			h m s			h m s
SPA	eP'	17 37 21	SPA	iP e(S)	11 37 31 40 21	May 7 BYR	eP	11 30 08	SPA	iP	08 54 39
May 4 BYR	eP	19 15 08	May 6 BYR	eP	14 13 49	SPA	eP	11 30 02	May 9 SPA	eP'	13 05 49 06 06
May 4 SPA	iP	22 55 26	SPA	eP	14 12 38	May 7 SPA	eP	13 11 28	May 9 BYR	iP'	24 16 19
May 4 BYR	eP e	23 58 36 59 17	May 6 SPA	eP	14 53 33	May 7 BYR	eP	14 44 34	May 10 SPA	eP'	00 16 22
SPA	eP	23 58 52	May 6 SPA	eP	17 09 27	May 7 BYR	iP	15 32 12	May 10 SPA	eP	02 37 46
May 5 BYR	iP	00 34 06	May 6 BYR	eP epP	17 39 26 41 32	May 7 BYR	eP i	16 49 06 49 16	May 10 BYR	eP	03 20 12
SPA	iP	00 34 23	SPA	iP epP	17 39 55 41 59	SPA	eP	16 48 51	SPA	e(P) e	03 21 27 22 28
May 5 BYR	e(P) e	04 54 33 56 36	May 6 BYR	eP epP	19 05 31 05 38	May 7 BYR	eP eS	20 35 26 46 02	May 10 BYR	eP	05 13 19
May 5 SPA	eP	05 42 29	SPA	iP	19 05 10	SPA	iP i	20 35 02 36 14	SPA	eP	05 13 15
May 5 BYR	eP e	07 54 41 55 18	May 6 BYR	eP	20 07 14	May 7 BYR	eP epP	23 50 06 50 26	May 10 BYR	eP	07 23 21
SPA	iP	07 55 21	SPA	iP e	20 06 55 07 42	SPA	eP	23 49 36	SPA	eP	07 22 20
May 5 BYR	eP'	09 30 41	May 6 SPA	eP	20 18 34	May 8 BYR	eP' i	07 05 47 05 51	May 10 SPA	e(P) eP' ePP	07 49 50 10 02 39 05 35
May 5 BYR	eP' ePP	11 59 37 12 00 10	May 6 BYR	eP	21 15 27	SPA	iP'	07 05 49	May 10 BYR	eP'	11 08 29
SPA	eP'	11 59 16	SPA	eP	21 15 11	May 8 SPA	e(P)	09 23 00	May 10 BYR	e(P)	20 20 10
May 5 SPA	eP	13 43 28	May 7 BYR	eP	00 16 58	May 8 BYR	iP' ipP' iPP eSKP	11 54 06 54 17 57 47 58 06	May 10 BYR	iP	23 08 15
May 5 BYR	iP' ePP	19 23 41 27 11	May 7 BYR	eP	05 01 47	SPA	eP' ePP eSKKP	11 54 15 57 55 12 06 35	SPA	eP	23 08 46
SPA	eP' ePP	19 23 46 27 15	May 7 BYR	eP	06 02 01	May 8 BYR	eP' epP'	15 48 16 48 31	May 11 BYR	eP'	02 01 11
May 6 SPA	eP	05 57 37	May 7 BYR	eP	09 16 37	SPA	eP'	15 48 18	SPA	iP'	02 01 44
May 6 SPA	e(P)	07 23 41	May 7 BYR	eP	09 16 31	May 8 BYR	eP' epP'	22 33 00 05 36 52	May 11 SPA	eP	05 47 24 48 56
May 6 BYR	eP	07 41 16	May 7 BYR	eP e	09 49 07 49 23	May 8 BYR	eP'	22 33 00	May 11 SPA	eP	05 54 54
May 6 BYR	eP'	08 03 51	SPA	iP	09 49 10	SPA	eP'	22 33 00	May 11 SPA	eP	09 02 37
SPA	eP'	08 03 57	May 7 BYR	eP	10 23 30	May 9 BYR	eP	05 36 52	May 11 SPA	iP	13 29 48
May 6 BYR	iP eS	11 36 16 40 20	May 7 BYR	eP	10 39 15	SPA	e(P)	05 37 27			
			SPA	eP i	10 39 45 39 56	May 9 BYR	eP	08 54 46			

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
May 11 SPA	eP 16 17 25	May 12 BYR	eP 14 42 54	May 13 BYR	eP 20 13 04	May 14 SPA	eP 14 12 54
May 11 BYR	eP' 16 48 13 ipP' 48 39 ePP 52 02	May 12 SPA	eP 14 42 31	May 13 SPA	iP 20 13 04	May 14 SPA	eP 15 38 27
SPA	iP' 16 48 17	May 12 SPA	iP 15 56 52	May 13 SPA	eP 22 38 24	May 14 BYR	eP 17 01 42
May 11 SPA	eP 20 59 22	May 12 BYR	eP 18 07 04	May 14 BYR	eP 01 02 24	SPA	eP 17 01 44
May 12 BYR	eP' 00 55 08	SPA	eP 18 07 34	May 14 SPA	eP 04 17 14	May 14 BYR	iP 20 09 15 ePcP 09 42 epP 09 57
SPA	iP' 00 54 49	May 12 BYR	eP 18 32 22	May 14 BYR	eP 04 32 14 epP 32 32	SPA	eP 20 09 53 ipP 10 22 e(S) 15 58
May 12 SPA	iP' 00 54 53	SPA	eP 18 32 52	SPA	iP 04 32 48 epP 33 11	May 15 SPA	eP 00 46 37
May 12 BYR	eP 03 55 50	May 12 BYR	eP 21 32 04	May 14 SPA	eP' 05 46 31	May 15 SPA	eP 01 12 52
SPA	eP 03 56 20	SPA	eP 21 32 33	May 14 SPA	eP' 06 46 00	May 15 BYR	eP' 01 50 03
May 12 BYR	eP' 05 17 09 ePP 20 38	May 12 BYR	eP' 21 59 45	May 14 BYR	eP' 06 56 11 ePP 59 35 eSKSP 07 08 32	SPA	eP' 01 50 04
SPA	iP' 05 17 10 e 18 08 ePP 20 49	SPA	eP' 21 59 55 ePKKP 22 10 07 eP'P' 20 58	May 14 SPA	eP' 06 55 54	May 15 SPA	eP 04 07 35
May 12 SPA	eP 06 56 40	May 12 BYR	eP' 22 19 19 ePP 22 50	May 14 BYR	eP 08 30 39	May 15 SPA	eP 06 49 54
May 12 BYR	eP 08 18 05 epP 18 28	SPA	eP' 22 19 21	SPA	eP 08 30 43	May 15 SPA	eP 08 54 20
SPA	eP 08 18 08	May 12 BYR	eP 22 53 21	May 14 BYR	eP 09 44 34 eS 53 31	May 15 SPA	eP 09 32 05
May 12 BYR	iP 09 57 17 ePcP 57 47 ePP 59 35 ePPP 10 01 10 eS 05 42 eSS 09 38	May 12 SPA	eP 23 54 57	SPA	eP 09 44 43 eS 54 03	May 15 BYR	eP 13 18 05
SPA	iP 09 57 47 ePP 10 00 18 eS 06 38 eP'P' 26 12	May 13 BYR	eP 00 58 56	May 14 BYR	iP 10 52 50	SPA	eP 13 18 46
May 12 BYR	eP 10 24 13 ePcP 24 47 ePP 26 42	May 13 SPA	iP 00 59 00	May 14 SPA	eP 10 51 47 epP 53 10	May 15 SPA	eP 19 01 24
SPA	iP 10 24 42 ePP 27 16	May 13 BYR	eP 01 12 01	May 14 BYR	eP 12 00 14	May 15 SPA	eP 21 54 06
May 12 SPA	iP 12 03 27	May 13 BYR	eP 01 12 20	May 14 SPA	eP 12 00 33	May 15 BYR	eP 22 58 01
May 12 BYR	eP 13 14 54	May 13 BYR	eP 01 36 49	May 14 BYR	eP 12 56 18	SPA	iP 22 57 45
SPA	eP 13 15 25	May 13 SPA	eP 01 35 22	May 14 SPA	eP 12 56 32	May 16 BYR	eP 00 09 09
		May 13 BYR	iP 10 03 03	May 14 BYR	eP 13 30 20 epP 30 57	SPA	eP 00 11 36
		May 13 SPA	iP 10 03 34	May 14 SPA	iP 13 30 39 epP 30 43 ePKKP 17 40 eP'P' 58 31	May 16 SPA	eP 01 35 30
		May 13 BYR	eP 16 41 14 iPcP 41 39 ePP 43 20				
		May 13 SPA	eP 16 41 47				
		May 13 BYR	eP 19 21 13				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
May 16 SPA	eP' 05 18 19	May 17 SPA	eP 06 07 29	May 18 BYR	iP 19 09 24	SPA	eP' 10 29 43
May 16 BYR	eP 06 28 55	May 17 SPA	eP 12 12 14	BYR	ipP 10 00	BYR	ipPKKP 36 45
	ipP 29 14	May 17 SPA	eP 13 56 33	SPA	iP 19 09 53	May 20 BYR	eP' 11 44 40
	ePP 32 18	May 17 SPA	eP 14 33 25	BYR	epP 10 24	BYR	epP' 46 22
	epPP 32 44	May 17 BYR	eP 16 36 35	SPA	ePcP 10 59	SPA	ePP 47 18
	ePPP 34 20	May 17 SPA	eP 16 37 14	May 18 BYR	iP 22 02 01	May 20 BYR	iP' 11 44 34
	iS 39 24	May 17 SPA	eP 17 22 25	BYR	e 02 13	May 20 BYR	eP 12 41 30
	isS 39 55	May 17 BYR	eP' 19 35 02	SPA	iP 22 02 19	SPA	e 48 36
	ePKKP 47 05	May 17 SPA	eP' 19 35 09	May 19 BYR	iP 03 04 43	May 20 SPA	iP 12 41 13
SPA	iP 06 28 56	May 17 SPA	i 35 23	BYR	epP 05 13	May 20 BYR	i 41 19
	ipP 32 27	May 17 BYR	eP' 19 35 09	SPA	eP 03 04 43	May 20 BYR	eP 14 08 49
	ipPP 34 28	May 17 SPA	eP' 19 35 09	May 19 BYR	eP 08 46 26	May 20 BYR	eP 16 30 15
	eS 39 24	May 17 SPA	i 35 23	BYR	ePcP 46 51	SPA	eP 16 29 54
	ePKKP 47 04	May 17 SPA	eP 21 23 05	SPA	iP 08 47 00	May 20 SPA	eP' 16 55 54
May 16 BYR	eP 07 43 50	May 17 SPA	eP 22 20 58	May 19 BYR	iP 09 38 31	May 20 SPA	ePP 58 09
	epP 44 11	May 17 BYR	eP 02 03 01	SPA	iP 09 38 13	May 20 BYR	iP 18 39 08
SPA	iP 07 43 51	May 17 SPA	eP 02 00 34	May 19 BYR	eP 10 32 19	SPA	eP 18 39 47
	ipP 44 07	May 17 BYR	eP' 04 11 10	May 19 BYR	eP 11 33 53	May 20 BYR	iP' 19 54 24
May 16 BYR	eP' 08 22 09	May 17 SPA	eP' 04 11 35	SPA	eP 11 33 48	BYR	i 54 40
SPA	eP' 08 22 05	May 18 BYR	eP 05 52 38	May 19 BYR	eP' 15 37 00	SPA	e 54 59
May 16 BYR	eP 08 55 04	May 18 SPA	eP 04 53 01	BYR	ePP 40 27	May 20 SPA	ePP 58 11
May 16 SPA	eP 11 47 26	May 18 BYR	eP 05 52 40	SPA	eP' 15 36 38	May 20 BYR	eP' 20 08 40
May 16 BYR	eP 12 12 52	May 18 SPA	ipP 52 56	May 19 BYR	iP 17 02 52	BYR	ePP 11 30
SPA	iP 12 12 49	May 18 BYR	eP 06 22 31	May 19 SPA	iP 01 01 01	SPA	eP' 20 08 25
May 16 SPA	eP 12 56 51	May 18 BYR	ePcP 23 32	BYR	iP 19 53 09	May 20 BYR	ePP 11 50
May 16 BYR	eP 14 36 37	May 18 SPA	iP 06 22 23	BYR	e 53 31	May 20 SPA	eP' 20 30 13
SPA	eP 14 36 25	May 18 BYR	i 22 29	May 20 BYR	eP 00 59 05	May 20 SPA	eP 21 02 46
May 16 BYR	eP' 15 18 14	May 18 SPA	eP' 07 43 32	May 20 SPA	e(PcP) 59 56	May 20 BYR	eP 21 45 31
May 16 BYR	eP 20 10 02	May 18 SPA	ePP 47 05	May 21 SPA	iP 02 26 11	May 20 BYR	eP' 22 25 11
SPA	eP 20 09 46	May 18 BYR	eP' 07 43 36	May 20 BYR	eS 33 59		
May 17 BYR	eP 02 23 36	May 18 SPA	eP 08 58 16	May 20 SPA	eP 08 41 02		
SPA	e(P) 02 20 08	May 18 BYR	iP 14 00 09	May 20 BYR	ipPKKP 10 35 28		
May 17 SPA	eP 03 07 16	May 18 SPA	eP 17 00 03				
May 17 SPA	eP 04 02 06	May 18 SPA	eS 09 24				
May 17 SPA	eP 06 26 15						

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
May 21 SPA	eP' 03 59 19 ePKKP 04 10 48	May 23 SPA	eP 12 30 20 e 34 49	May 24 BYR	eP 20 17 20	May 26 BYR	eP' 06 55 14
May 21 BYR	eP' 07 10 56	May 23 BYR	iP 20 59 08	May 24 SPA	eP 20 17 08	May 26 SPA	eP' 06 55 03 1PP 56 59
May 21 SPA	eP' 07 11 04	May 23 SPA	eP 20 59 21	May 24 SPA	eP 22 47 01 e 48 51	May 26 SPA	eP 07 34 23
May 21 BYR	eP 07 15 07	May 23 BYR	eP 21 25 58	May 25 SPA	eP 01 56 40	May 26 SPA	eP 16 57 44
May 21 SPA	iP 07 15 45 i 16 06	May 23 SPA	iP 21 25 38	May 25 BYR	eP 02 21 54	May 26 BYR	eP 21 52 23 epP 53 07 1sP 53 22
May 21 SPA	eP 08 57 28	May 23 BYR	eP 21 54 54	May 25 BYR	eP 02 28 23	May 26 SPA	eP 21 53 02 epP 53 40
May 21 BYR	iP 11 44 01 ipP 44 17 iS 51 24 eP'P' 12 14 12	May 23 SPA	eP 21 55 28	May 25 SPA	eP 02 29 24	May 27 BYR	eP' 05 10 46 epP' 10 58
May 21 SPA	iP 11 44 42 epP 44 54 e(P) 46 03 eP'P' 12 14 13	May 24 SPA	eP' 00 28 11 ePP 31 24	May 25 BYR	iP 05 15 08	May 27 SPA	eP' 05 10 47
May 21 BYR	eP 12 23 16	May 24 BYR	eP 04 49 05 epP 51 23	May 25 SPA	iP 05 14 38	May 27 BYR	eP 10 23 21 e 24 10
May 21 SPA	iP 12 24 04	May 24 SPA	iP 04 49 35 eS 57 53	May 25 BYR	eP 09 13 28 e 14 41	May 27 SPA	eP 10 23 02
May 21 SPA	eP' 18 48 21	May 24 BYR	eP 10 23 01	May 25 SPA	eP 07 49 10	May 27 BYR	eP 11 40 47 e 41 39
May 21 SPA	eP' 22 50 56	May 24 SPA	eP 10 23 28	May 25 BYR	eP 11 02 23	May 27 SPA	eP 11 40 36
May 22 SPA	eP 03 53 50	May 24 BYR	eP' 11 47 19	May 25 SPA	eP 11 02 08	May 27 BYR	eP 16 30 59
May 22 SPA	eP 05 01 22	May 24 SPA	iP' 11 47 02	May 25 BYR	eP 12 21 47	May 27 SPA	eP 16 31 29
May 22 SPA	iP 06 34 12	May 24 BYR	eP' 13 38 25	May 25 SPA	eP 14 28 32 epP 28 45	May 27 BYR	eP 16 50 18
May 22 BYR	iP 07 05 30 epP 05 46 1PP 07 06 ePcP 07 21 eScP 10 53	May 24 BYR	eP 13 51 30	May 25 SPA	eP 14 28 29 ipP 28 44	May 27 SPA	eP 20 52 24
May 22 SPA	iP 07 05 55 epP 06 11 esP 06 17 eScP 11 03	May 24 SPA	iP 13 51 07	May 25 SPA	iP 14 50 29	May 27 BYR	eP 20 53 06
May 22 SPA	eP' 08 49 46	May 24 BYR	eP 18 45 33	May 25 BYR	eP' 19 39 23	May 27 SPA	eP 22 25 14
May 22 SPA	eP 16 50 49	May 24 BYR	eP 19 31 11 epP 31 32 1PP 35 12 ePPP 38 09 iS 41 47 esS 42 38 ePKKP 47 41 eP'P' 56 43	May 25 SPA	eP' 19 39 05	May 28 BYR	eP 01 57 03
May 23 SPA	eP 09 30 53	May 24 BYR	eP 19 31 54 epP 32 15 ePP 35 28 ePPP 39 00 ePKKP 47 13 eP'P' 55 05 eSKPP' 20 01 08	May 25 SPA	eP 23 26 23	May 28 SPA	eP 01 56 34 e 57 18 e 58 28
May 23 SPA	eP 11 06 09	May 26 BYR	e(P) 05 41 49	May 26 BYR	eP' 04 31 45 epP' 32 10 ePP 33 08	May 28 BYR	eP 03 20 03
		May 26 SPA	eP' 05 46 18	May 26 SPA	eP' 04 32 36 epP' 33 44	May 28 SPA	eP 04 19 36

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
May 28 BYR	eP 05 15 16 epP 15 28	SPA	eP 10 53 59 epP 54 26 ePP 56 38 eS 11 03 08 esS 04 37 eP'P' 19 38	May 31 BYR	eP' 12 35 15	June 1 BYR	eP 18 40 13
SPA	eP 05 15 57 epP 16 09			SPA	eP' 12 35 06 ePP 38 21	SPA	eP 18 41 41
May 28 BYR	eP 06 40 29	May 29 SPA	eP 13 28 58	May 31 BYR	eP 14 29 05	June 1 BYR	eP 19 35 08
May 28 SPA	eP 08 27 40	May 29 SPA	eP 14 38 41	SPA	eP 14 28 18	SPA	iP 19 35 35
May 28 BYR	eP 13 26 15	May 29 BYR	eP' 18 48 47 i 49 09	May 31 BYR	eP 15 32 56 epP 35 09	June 1 SPA	eP 20 34 54
SPA	eP 13 26 55	SPA	eP' 18 48 48 e 49 22	SPA	eP 15 33 26	June 1 BYR	eP 20 45 07
May 28 BYR	eP 16 08 14	May 29 SPA	eP 19 53 44	May 31 BYR	eP 17 57 28	SPA	eP 20 45 13
SPA	eP 16 07 40	May 30 BYR	eP 03 16 21 epP 17 54	SPA	eP 17 57 32	June 1 SPA	eP 21 44 21
May 28 BYR	eP 18 04 31	SPA	eP 03 17 15 epP 18 11	May 31 BYR	eP 19 05 29	June 1 SPA	eP 22 26 12
May 28 BYR	i(P) 19 41 26 i 41 47	May 30 BYR	eP 04 17 52 e 18 21	May 31 BYR	eP 22 39 08	June 1 BYR	eP 22 41 29
SPA	eP 19 42 33	SPA	eP 04 18 34	SPA	eP 22 39 22	SPA	i(P) 22 41 58
May 28 SPA	eP 21 02 14	May 30 BYR	eP 07 26 38	June 1 SPA	eP 01 27 28	June 1 SPA	eP' 23 04 42 i 05 10
May 28 BYR	eP 22 39 59 epP 40 26	SPA	eP 07 27 09	June 1 BYR	eP 05 01 52	June 2 SPA	eP 00 52 31
SPA	iP 22 39 51	May 30 BYR	eP 17 17 45	SPA	eP 05 00 40	June 2 BYR	iP' 01 06 18
May 28 BYR	eP 22 49 07 i(pP) 49 30	SPA	eP 17 18 22 e 18 32	June 1 BYR	eP 05 43 29 e 44 15	SPA	e(P') 01 06 11
SPA	eP 22 48 45 i(pP) 49 08 e(S) 53 30	May 30 BYR	eP 18 30 51 e 31 12	SPA	eP 05 43 32	June 2 SPA	e(P) 01 34 54 e 37 22
May 29 BYR	eP 05 03 55	May 30 BYR	eP 18 30 57 e 31 14	June 1 SPA	eP 07 46 29	June 2 BYR	eP 02 09 35 epP 10 13 esP 10 17
SPA	eP 05 04 36	May 31 BYR	eP 06 47 24	June 1 BYR	eP 12 44 11 epP 45 42 e(S) 53 54	SPA	eP 02 09 13 epP 09 55 eS 19 19
May 29 BYR	eP 08 00 45 i 01 13	SPA	eP 06 48 30	SPA	iP 12 44 14	June 2 BYR	eP' 02 56 27
SPA	e(P) 08 01 52	May 31 BYR	eP 09 13 33	June 1 SPA	eP 13 34 19	SPA	eP' 02 56 22
May 29 BYR	eP 10 53 41 epP 54 06 isP 54 18 ePP 56 15 epPP 56 43 is 11 02 36 esS 03 23 eSS 05 21	May 31 BYR	eP 09 40 33 ePP 43 49 eS 51 12	June 1 BYR	eP 17 19 41 eS 30 23	June 2 BYR	iP 03 04 38 e 05 27
		SPA	iP 09 40 39 epP 41 03 eS 51 15	SPA	eP 17 19 42	SPA	iP 03 04 19 i 04 58
				June 1 SPA	eP 17 38 00	June 2 BYR	iP 03 33 19 eS 40 08
				June 1 BYR	eP 18 07 22		
				SPA	eP 18 06 20		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
SPA	eP ePP h m s 03 33 58 36 31	June 2 SPA	iP h m s 17 50 06	June 3 SPA	iP h m s 14 05 29	June 4 SPA	iP h m s 19 07 49
June 2 BYR	iP eS 03 42 01 50 11	June 2 BYR	iP 18 44 34	June 3 SPA	eP 15 45 21	June 4 BYR	eP 19 18 37
SPA	eP 03 42 37	SPA	e(P) 18 44 50	June 3 SPA	eP 16 29 43	SPA	iP 19 19 10
June 2 BYR	iP 03 58 20	June 2 SPA	iP 18 52 10	June 3 BYR	iP 16 55 37	June 4 BYR	eP 20 25 32
SPA	iP 03 58 56	June 2 SPA	eP' 19 34 00	SPA	eP 16 55 26	SPA	iP 20 26 08
June 2 BYR	iP eS 04 02 13 10 15	June 2 SPA	e(P) 21 25 14	June 3 BYR	iP 19 36 45 36 48	June 4 BYR	iP 21 45 02
SPA	iP eS 04 02 48 11 22	June 2 BYR	iP e 21 45 53 46 03	June 3 SPA	e(P) 21 20 48	SPA	iP 21 45 32
June 2 BYR	eP' 05 16 01	SPA	i(P) 21 46 38	June 3 SPA	iP 22 08 48	June 4 BYR	eP 22 03 27
SPA	eP' 05 15 53	June 2 SPA	iP 22 00 37	June 3 SPA	iP 23 15 14	SPA	iP 22 04 03
June 2 BYR	eP 05 33 08	June 2 SPA	eP 23 06 34	June 3 BYR	iP 22 30 21 30 31	June 5 SPA	e(P) 00 58 21
SPA	eP 05 33 34	June 3 BYR	eP 03 15 36	SPA	iP 22 30 49	June 5 BYR	eP 03 35 02
June 2 BYR	eP ipP eS 05 49 59 50 34 56 10	SPA	iP 03 16 11	June 4 BYR	iP 02 01 49	SPA	iP 03 47 09
SPA	iP epP esP 05 50 52 51 37 52 10	June 3 BYR	iP e 03 56 26 56 56	SPA	iP 02 02 18	June 5 BYR	iP e 06 01 16 01 23
June 2 SPA	e(P) 08 50 12	SPA	iP ePP 03 57 02 04 01 09	June 4 BYR	iP 02 10 58	SPA	e(P) 06 00 41
June 2 SPA	e(P') 11 02 01	June 3 BYR	eP' 06 02 47	SPA	e(P) 02 11 31	June 5 BYR	iP 06 10 50
June 2 SPA	e(P') 12 14 46	SPA	eP' i 06 02 54 03 10	June 4 BYR	iP 05 59 20 59 26	SPA	iP ipP isP 06 10 53 11 43 12 16
June 2 BYR	iP 12 55 06	June 3 BYR	eP' 08 55 31	June 4 SPA	eP 06 00 08	June 5 SPA	eP 06 45 01
SPA	eP 12 55 39	SPA	iP' 08 55 40	June 4 BYR	iP 07 52 13	June 5 BYR	iP 07 57 01
June 2 BYR	iP 15 37 36	June 3 BYR	iP 10 51 09	SPA	eP 11 38 51	SPA	iP 07 57 32
SPA	iP e 15 38 06 40 11	SPA	iP 10 51 41	June 4 BYR	iP' 12 51 07	June 5 BYR	eP 09 00 40
June 2 BYR	iP 16 45 04	June 3 SPA	eP' 11 58 25	SPA	iP' ipP' isP' 12 51 35 51 59 52 15	SPA	eP 09 00 35
SPA	eP 16 45 55	June 3 BYR	iP 12 04 39	June 4 SPA	eP 16 15 57	June 5 BYR	iP e 09 32 53 34 47
June 2 BYR	eP epP ePP 17 26 31 27 21 28 53	SPA	eP 12 04 07	June 4 SPA	e(P) 17 52 41	SPA	iP 09 32 38
SPA	iP epP 17 26 57 27 47	June 3 BYR	eP 12 10 37	June 4 SPA	eP 18 33 19		
		SPA	e(P) 13 13 41				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
June 5 BYR	iP 10 35 30	SPA	iP 11 26 30	June 8 SPA	iP 09 56 33	SPA	eP 00 57 32
SPA	iP 10 35 34		e 27 16				
June 5 SPA	iP 14 43 18	June 6 SPA	iP 14 24 10	June 8 SPA	eP 10 57 17	June 10 BYR	iP 02 08 46
June 5 BYR	iP 17 55 38	June 6 SPA	eP 15 06 49	June 8 SPA	iP 11 44 35	SPA	iP 02 09 28
SPA	iP 17 56 07	June 6 BYR	iP 21 03 43	June 8 BYR	eP 14 23 08	June 10 BYR	iP' 04 35 14
June 5 SPA	eP 18 42 18		e 03 55		ipP 23 22		ePP 38 42
June 5 BYR	iP 19 16 57	SPA	iP 21 03 47	SPA	eP 14 23 50	SPA	iP' 04 35 05
	epP 17 09					June 10 SPA	eP 07 35 09
SPA	iP 19 17 38	June 7 BYR	eP 02 45 33	June 8 BYR	iP 22 11 31	June 10 SPA	iP 11 00 46
June 5 BYR	iP 20 09 06		e 45 44	SPA	iP 22 12 22		epP 02 51
	e 09 24	SPA	eP 02 45 53	June 8 BYR	eP 23 55 23	June 10 BYR	eP 13 16 32
SPA	iP 20 09 05	June 7 BYR	eP 04 14 59	SPA	iP 23 56 14	SPA	iP 13 16 41
June 5 BYR	eP 20 50 30		e 15 30	June 9 BYR	eP 04 46 50	June 11 BYR	iP 00 04 62
SPA	eP 20 51 09	June 8 SPA	iP 05 59 11	June 9 SPA	iP 06 32 27		iPP 06 51
June 6 SPA	eP 00 31 14	June 7 SPA	eP 08 11 20	June 9 SPA	eP 09 21 29	SPA	iP 00 05 33
June 6 BYR	eP 00 59 55	June 7 BYR	iP 08 43 33	June 9 BYR	eP 09 38 20	June 11 BYR	iP 01 19 50
SPA	iP 00 59 50	SPA	iP 08 42 24	June 9 SPA	iP 09 46 36		ePcP 20 22
June 6 SPA	iP 01 42 10	June 7 BYR	eP 08 59 08	June 9 BYR	iP 13 44 56	SPA	iP 01 20 26
June 6 BYR	iP 01 56 45	SPA	iP 08 59 46	SPA	iP 13 45 33	June 11 BYR	iP' 02 28 46
June 6 SPA	eP 04 45 07	June 7 SPA	eP 12 40 17	June 9 BYR	iP 14 28 27	June 11 BYR	iP 07 25 25
June 6 BYR	eP' 05 38 00	June 7 BYR	eP 13 52 54	SPA	eP 14 28 19		e 25 36
SPA	iP' 05 38 04	SPA	iP 13 52 42		e 34 25	SPA	eP 07 25 47
June 6 SPA	e(P) 06 19 52	June 7 SPA	eP 15 18 00	June 9 SPA	iP 15 03 17	June 11 BYR	eP' 08 43 18
June 6 SPA	eP 08 41 49	June 7 BYR	iP 16 11 58		ePP 05 12	June 11 BYR	eP 12 09 44
June 6 BYR	eP 09 02 05	June 7 BYR	epP 17 47 07	June 9 BYR	eP 16 27 38	SPA	eP 13 16 17
SPA	iP 09 01 49		47 20	SPA	iP 16 29 05	June 11 BYR	eP 22 37 10
June 6 BYR	eP 10 25 51	SPA	iP 17 47 43	June 9 BYR	iP 23 17 49		i 37 22
SPA	eP 10 26 23	June 8 BYR	eP 07 52 00		iS 23 15	June 11 BYR	iP 23 43 14
June 6 BYR	eP 11 26 14	June 8 BYR	eP 06 32 25	SPA	iP 23 17 08		ePcP 43 50
		June 8 SPA	eP 08 02 10	June 10 BYR	iP 00 57 40		

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Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)	
		h m s			h m s			h m s			h m s
SPA	iP	23 43 53	June 13 BYR	iP e	21 12 23 12 44	June 14 SPA	iP epP ePP	21 12 54 13 13 15 35	SPA	eP	12 54 58
June 12 BYR	eP'	01 05 14	June 13 BYR	iP e	21 52 59 53 07	June 14 SPA	eP	21 53 53	June 16 SPA	eP'	15 03 21
SPA	eP'	01 05 07	June 13 SPA	eP' i	22 16 09 16 14	June 14 SPA	iP	23 18 28	June 16 BYR	iP epP isP	17 03 04 03 31 03 43
June 12 SPA	iP	06 03 50	June 13 SPA	iP e	22 28 06 28 42	June 15 BYR	iP	01 34 13	SPA	iP	17 03 46
June 12 SPA	eP	07 59 11	June 14 SPA	eP	00 23 02	June 15 BYR	iP'	02 57 38	June 16 BYR	iP	17 59 27
June 12 eP		08 35 28		epP ePP ePPP iS eScS esS eP'P'	23 37 25 37 27 26 32 05 32 36 32 49 51 07	SPA	eP	01 34 51	SPA	eP	17 59 39
June 12 BYR	eP	11 54 41	June 14 SPA	eP	01 28 18	June 15 SPA	iP'	02 57 28	June 17 SPA	eP	04 59 34
SPA	iP	11 54 43	June 14 SPA	iP	01 42 01	June 15 BYR	iP i(pP)	15 39 22 39 30	June 17 SPA	iP	05 17 16
June 12 BYR	eP'	13 32 05	June 14 SPA	iP	02 19 10	June 15 SPA	iP	13 39 18	June 17 SPA	e(P)	10 20 11
	epP'	33 05		e	21 21	June 15 BYR	eP	19 17 33	June 17 BYR	eP	10 56 41
	iPP	35 26	June 14 SPA	eP'	05 00 18	SPA	eP	19 18 02	SPA	iP	10 56 32
SPA	iP'	13 32 08	June 14 SPA	eP	08 23 10	June 15 BYR	iP	23 42 01	June 17 SPA	eP	12 18 27
	ipP'	33 02	June 14 SPA	iP	11 14 42	SPA	eP	23 42 04	June 17 BYR	eP	18 22 19
	isP'	33 26	June 14 SPA	iP'	11 43 48	June 16 SPA	eP'	00 51 32	SPA	iP	18 21 46
	iPP	35 29	June 14 SPA	iP	15 08 12	June 16 SPA	eP	01 45 11	June 17 BYR	eP	20 57 18
June 12 BYR	eP	21 23 06	June 14 SPA	eP	15 14 56	June 16 BYR	iP	02 53 22	SPA	iP	20 57 42
	e	23 20	June 14 SPA	eP'	16 34 55	SPA	iP i(pP)	02 53 16 53 40	iPP		21 00 40
SPA	iP	21 23 48	June 14 SPA	iP	17 25 55	June 16 BYR	eP	04 29 18	June 18 BYR	iP epP	00 44 44 44 56
June 12 SPA	iP	22 37 49	June 14 SPA	eP	18 31 51	SPA	eP	04 28 58	SPA	eP	00 45 10
June 13 BYR	eP	01 41 46	June 14 SPA	eP	20 00 20	June 16 SPA	iP	11 01 58	June 18 BYR	iP ipP	02 50 18 50 28
June 13 BYR	eP'	05 00 03	June 14 SPA	eP	20 40 33	June 16 SPA	iP	11 37 19	SPA	iP	02 51 07
June 13 BYR	eP	08 23 24	June 14 SPA	iP	21 02 54	June 16 BYR	eP	12 55 08	June 18 BYR	eP i ePcP eS	06 56 04 56 44 59 32 07 00 33
June 13 SPA	eP'	12 20 57									
June 13 SPA	iP epP	13 08 11 10 27									
June 13 BYR	iP	15 07 33									
June 13 SPA	iP e	16 28 43 30 32									
June 13 SPA	eP	20 07 50									
June 13 BYR	iP	21 03 18									

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
	h m s		h m s		h m s		h m s
SPA eP	06 57 36	June 19 SPA iP	12 11 58	SPA iP	04 17 40	June 23 SPA eP'	11 04 10
ePP	59 19						
ePcP	07 00 18	June 19 BYR eP	15 01 02	June 21 BYR iP	06 00 06	June 23 BYR iP	12 07 28
June 18 BYR iP	07 07 59	SPA eP	15 01 08	SPA eP	06 00 06	SPA iP	12 07 52
SPA iP	07 09 35	June 19 SPA eP	15 54 03	June 21 BYR iP	11 23 57	June 23 SPA eP	13 50 32
June 18 BYR eP	09 01 13	June 19 BYR iP	17 49 48	SPA iP	11 24 30	June 23 SPA eP'	14 54 11
SPA iP	09 01 34	June 19 SPA eP	20 56 10	June 21 SPA iP	13 07 10	June 23 BYR iP	19 25 23
June 18 BYR eP	13 03 25	June 20 BYR iP	00 48 02	June 21 SPA iP	13 27 01	SPA iP	19 25 41
June 18 BYR eP'	15 50 44	SPA iP	00 48 01	June 21 BYR iP	14 26 47	June 23 BYR iP	21 50 31
e	51 29	June 20 SPA iP	01 11 50	SPA iP	14 26 25	ipP	51 21
SPA iP'	15 50 57	June 20 SPA iP	02 51 59	June 21 BYR eP	15 11 56	isP	51 29
iPP	53 35	SPA iP	02 52 03	epP	12 31	SPA iP	21 51 22
June 18 BYR eP'	16 17 58	June 20 SPA iP	04 39 35	SPA iP	15 12 32	e(pP)	51 51
ePP	21 39	June 20 BYR iP	06 43 28	epP	13 15	June 24 SPA eP	02 41 32
SPA eP'	16 18 07	BYR iP	06 43 34	June 21 SPA eP'	16 24 44	June 24 SPA iP	03 42 17
i(PP)	21 31	June 20 SPA iP	06 51 30	iPP	27 13	June 24 BYR eP'	04 43 26
June 18 SPA eP	16 59 09	June 20 BYR eP	06 52 21	June 21 BYR eP	16 57 01	SPA iP'	04 43 45
June 18 SPA iP	17 15 53	June 20 SPA eP	06 52 21	i	17 01 21	June 24 BYR eP'	04 45 44
June 18 BYR eP'	18 11 26	June 20 BYR eP'	08 30 42	SPA iP	16 58 32	SPA iP'	04 46 04
SPA eP'	18 11 30	SPA iP'	08 30 58	June 21 BYR iP	18 47 32	June 24 BYR eP'	07 34 37
June 18 BYR iP	22 04 37	June 20 BYR iP	10 13 48	SPA iP	18 48 55	SPA eP'	07 35 55
SPA eP	22 04 39	ePP	15 52	June 21 BYR iP	19 13 30	June 24 BYR eP	11 02 41
June 19 BYR eP	01 50 44	SPA iP	10 14 17	SPA iP	19 14 07	SPA iP	11 03 24
SPA eP	01 51 23	iPP	16 22	June 21 BYR iP	22 23 38	June 24 BYR iP	12 27 36
June 19 SPA eP	02 21 08	June 20 SPA iP'	14 35 53	SPA iP	22 23 53	e	28 07
June 19 BYR iP	04 00 42	June 20 SPA iP'	17 01 21	June 21 BYR eP	23 35 33	SPA eP	12 27 33
June 19 BYR iP	06 06 02	June 20 BYR eP	20 14 27	SPA iP	23 36 05	June 24 SPA eP'	16 21 30
SPA iP	06 06 30	June 20 SPA iP	20 14 25	June 21 BYR iP	23 41 23	June 24 SPA iP	18 49 23
June 19 BYR iP	07 57 50	June 21 BYR eP	03 41 02	SPA iP	23 41 02	June 24 BYR eP	22 15 34
ipP	57 55	SPA eP	03 41 00	iPP	43 30	SPA iP	22 16 24
SPA iP	07 57 35	June 21 SPA eP	04 17 09	June 23 SPA iP	03 02 18		
June 19 SPA eP	10 50 17			June 23 SPA eP	04 47 14		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
June 25 SPA	iP 01 06 47	June 26 SPA	eP 03 21 08	June 27 BYR	iP 09 39 38	June 28 BYR	eP 11 30 02
June 25 BYR	eP 03 06 22	June 26 BYR	eP 03 41 07	June 27 SPA	iP 09 39 22 e 40 10	June 28 SPA	eP 11 30 01
June 25 SPA	eP 03 06 57	June 26 SPA	eP 03 40 09	June 27 SPA	iP 11 18 32	June 28 BYR	eP 13 49 41
June 25 SPA	eP' 03 31 34	June 26 BYR	eP 04 07 04	June 27 BYR	eP 12 06 11	June 28 BYR	iP 13 56 17 e 56 44
June 25 BYR	eP 05 59 29	June 26 SPA	eP 04 08 01	June 27 SPA	eP 12 05 25	June 28 SPA	iP 13 56 56
June 25 SPA	eP 06 00 40	June 26 BYR	eP 04 26 18	June 27 SPA	eP 17 43 25	June 28 BYR	iP 15 17 17
June 25 BYR	eP' 07 04 38	June 26 SPA	eP 04 26 48	June 27 BYR	iP 19 13 38	June 28 SPA	eP 15 18 18
June 25 SPA	eP' 07 04 42	June 26 SPA	eP 04 48 07	June 27 BYR	epP 14 14 eP 14 41 ePcP 15 26 ePP 15 38 ePPP 16 44 iScP 18 25 ePcS 18 33 iS 20 57 iSs 21 56 iScS 23 12 eSS 24 14 esSS 24 58 eG 26 14	June 28 BYR	iP 19 56 03 epP 56 22 ePP 58 56 epPP 59 25 esPP 59 55 ePPP 20 01 10 iS 06 30 esS 07 01 ePS 07 32 eSPS 08 32 ePKKP 13 07 eP'P' 29 55 eSKPP' 33 21
June 25 BYR	eP' 07 06 40 ePP 10 23	June 26 BYR	eP 05 12 00	June 27 SPA	iP 19 14 09 ePP 16 36 epPP 16 53 ePPP 17 30 eS 21 50 esS 23 41 eScS 24 22 eSS 25 48 esSS 26 13 iP'P' 43 35	June 28 SPA	iP 19 55 38 ipP 56 03 esP 56 26 ePP 58 53 epPP 58 59 eS 20 05 39 esS 06 11
June 25 SPA	eP' 07 06 39	June 26 SPA	eP 05 11 34	June 27 BYR	eP' 19 30 44	June 29 SPA	eP 00 50 52
June 25 BYR	eP' 07 36 20	June 26 BYR	eP 05 33 44	June 28 BYR	eP' 02 40 34	June 29 SPA	eP 04 11 13
June 25 SPA	eP' 07 36 23	June 26 SPA	eP 05 34 19	June 28 SPA	eP' 02 40 35	June 29 BYR	iP 06 01 05 e 01 40
June 25 SPA	eP' 10 10 21	June 26 SPA	eP 08 38 04	June 28 SPA	eP 06 35 15	June 29 BYR	eP 07 28 31 eS 38 46
June 25 BYR	iP 11 38 58	June 26 BYR	iP 08 53 59	June 28 BYR	eP 07 45 03	June 29 SPA	eP 07 28 33
June 25 SPA	eP 11 38 02	June 26 SPA	iP 08 53 55	June 28 SPA	iP 08 04 33	June 29 SPA	eP' 09 40 55
June 25 BYR	iP 14 47 21	June 26 BYR	iP 11 09 24	June 28 BYR	iP 10 03 08 epP 03 21	June 29 SPA	eP 10 04 51
June 25 SPA	iP 14 47 21 epP 47 54	June 26 SPA	eP 11 08 43	June 28 SPA	iP 10 02 47 epP 03 17		
June 25 SPA	eP 19 23 26	June 26 BYR	iP 14 01 58 epP 02 12 esP 02 21				
June 25 BYR	eP 21 36 58	June 26 SPA	iP 14 02 37 ipP 03 04				
June 26 SPA	eP 01 06 03	June 26 BYR	iP 22 35 13				
June 26 BYR	eP 01 39 17	June 26 SPA	iP 22 35 44 epP 37 26				
June 26 SPA	iP 01 39 39 e 39 47	June 27 BYR	iP 03 48 51				
June 26 BYR	eP 02 02 02	June 27 SPA	eP 05 46 41				
June 26 SPA	eP 02 02 53	June 27 BYR	iP 06 23 46				
June 26 BYR	eP 02 56 02	June 27 SPA	iP 06 23 43				
June 26 SPA	iP 02 56 35						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
June 29 BYR	iP 13 33 21 epP 34 07						
June 29 SPA	iP 13 33 02 epP 33 50 esP 34 03						
June 29 SPA	eP 13 43 32						
June 29 SPA	iP 14 33 02						
June 29 BYR	iP 18 58 07						
June 29 SPA	eP 20 20 59						
June 30 BYR	iP 04 29 08 e 29 54						
June 30 SPA	iP 04 27 57 e 28 35						
June 30 BYR	iP' 07 45 51						
June 30 SPA	eP' 07 45 34						
June 30 BYR	iP 09 49 04						
June 30 SPA	iP 09 49 45						
June 30 BYR	iP 10 32 24 epP 33 51						
June 30 SPA	iP 10 32 58 ipP 33 16						
June 30 SPA	eP 13 33 15						
June 30 SPA	iP 16 09 13						
June 30 BYR	eP 17 41 03						
June 30 SPA	iP 17 40 53						
June 30 SPA	eP 18 17 58						
June 30 SPA	eP 19 06 05						
June 30 SPA	eP 19 26 32						
June 30 SPA	eP 22 11 00						
June 30 BYR	iP 22 54 51						
June 30 SPA	eP 22 55 39						

SEISMOLOGICAL BULLETIN

IGC SUPPLEMENT SOUTH POLE - BYRD

JULY-SEPTEMBER, 1959

MSI - 223A

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U. S. DEPARTMENT OF COMMERCE

Luther H. Hodges, Secretary

COAST AND GEODETIC SURVEY-WASHINGTON

H. Arnold Karo, Director

FOR OFFICIAL DISTRIBUTION

SEISMOLOGICAL BULLETIN

ICC SUPPLEMENT

July-September
1959

The instrumental results tabulated in this supplement are from the following seismographic stations.

Station	Latitude	Longitude	Foundation	Elevation	Instruments	Components	T ₀ (Sec.)	T _g (Sec.)	Time Scale
South Pole (SPA) In Charge: W.S. Jacobs	90° S.	0°	1995 meters of ice.	2800 meters.	Benioff Paper. Wilson-Lamison (120° E.-60° W.) Horizontal Film.	Z	1.6	0.5	60mm/min.
							5.6	0.48	15mm/min.
Byrd (BYR) In Charge: L.E. Davis	80°01'S.	119°31'W.	2570 meters of ice.	1515 meters.	Benioff. Wilson-Lamison with G.E. Galvo. Wilson Lamison with G.E. Galvo.	Z N E	1.2 6.2 7.2	0.5 3.5 3.5	60mm/min. 30mm/min. 30mm/min.

These stations were first established by the Coast and Geodetic Survey for the IGY to provide additional control for locating teleseismic epicenters in regions inadequately covered by previously existing stations and to provide data for studies in regional seismicity, crustal structure and other pertinent earth science problems.

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
July 1 BYR	iP' 02 45 36 epP' 47 41 epPP 48 22 e 48 41 ePKKP 55 52 ePPS 57 57	SPA BYR	iP 11 44 33 ePcP 44 49 epP 46 37 eP'P' 12 12 19	SPA July 4 SPA	eP 05 04 56 e(pP) 05 27 eP 05 33 22	July 6 BYR	iP 09 32 33 ePcP 33 15 e 10 01 27 eP'P' 04 13
SPA	iP' 02 45 33 ePP 46 57 epP' 47 36 ipPP 48 18	July 2 BYR	eP 16 26 03	July 4 BYR	e(P) 07 20 11	SPA	iP 09 33 05 eS 40 47 ePKKP 51 06 e 10 01 13 i 01 53 eSKPP' 04 07
July 1 BYR	iP 05 23 26	July 2 SPA	eP' 20 03 05	July 4 BYR	eP 13 46 21	July 6 BYR	eP 16 49 51
July 1 BYR	eP 05 53 14	July 2 SPA	eP 20 18 45	July 5 BYR	eP 03 14 49	July 6 SPA	eP 21 58 24
July 1 BYR	eP 06 47 06	July 3 BYR	iP 04 02 07 epP 02 31	July 5 BYR	eP 06 53 50	July 6 SPA	eP 21 59 45
July 1 BYR	eP 09 39 57	SPA	iP 04 02 46 epP 03 11	SPA	eP 06 53 39	July 7 BYR	iP 00 56 35
July 1 BYR	eP 10 43 06 iPcP 43 29 epP 43 45	July 3 BYR	eP' 05 40 36	July 5 BYR	iP 14 18 18	July 7 BYR	iP 03 01 28 e 01 42
SPA	eP 10 43 44 ePcP 44 05 epP 44 23	SPA	eP' 05 40 58 e 41 07	SPA	iP 14 18 14	July 7 BYR	iP 03 50 27 e 50 33
July 1 BYR	eP 13 19 10	July 3 SPA	iP 18 06 46 i 06 58 i 09 17 iPP 09 57 i 11 01 e(PPP) 11 45 eS 17 28 i 29 27 eP'P' 32 37	July 5 BYR	iP 16 05 02 ePcP 05 15 epP 05 41	SPA	eP 03 51 08
SPA	iP 13 19 38	July 3 SPA	iP 18 07 28 e 08 05 ePP 10 39 e(PPP) 12 38 ePKKP 26 45 eP'P' 34 20	July 5 BYR	eP 20 58 02	July 7 BYR	iP 05 53 01 epP 53 32 ePcP 53 48
July 1 BYR	eP' 14 27 31	July 3 SPA	iP 18 07 28 e 08 05 ePP 10 39 e(PPP) 12 38 ePKKP 26 45 eP'P' 34 20	July 6 BYR	eP 05 26 11	SPA	eP 05 53 37
July 1 BYR	eP 19 17 50	July 3 SPA	iP 18 07 28 e 08 05 ePP 10 39 e(PPP) 12 38 ePKKP 26 45 eP'P' 34 20	July 6 BYR	eP 06 36 49	July 7 BYR	eP' 07 44 18
July 1 SPA	eP 20 06 39	July 3 BYR	iP 19 58 16	July 6 BYR	eP 08 39 22	July 7 BYR	eP 09 41 40
July 2 BYR	eP 02 34 06	July 3 SPA	iP 19 58 35	July 6 BYR	iP 09 19 21 ePcP 20 04 epP 21 23 ePP 21 40 eS 22 27 eScP 23 03 ePcS 24 03 esPP 24 25 eS 26 40 iScS 28 06 esS 30 06	July 7 BYR	eP 11 01 11
July 2 SPA	e(P) 03 56 13	July 3 BYR	eP 23 06 24	July 6 BYR	iP 09 19 21 ePcP 20 04 epP 21 23 ePP 21 40 eS 22 27 eScP 23 03 ePcS 24 03 esPP 24 25 eS 26 40 iScS 28 06 esS 30 06	July 7 BYR	eP 11 15 08
July 2 BYR	eP 05 23 32	July 4 BYR	eP 04 11 38	SPA	iP 09 19 54 iS 27 33 eP'P' 48 24	July 7 BYR	e(P) 11 52 03
July 2 BYR	eP 11 34 49	July 4 BYR	eP 05 04 22 epP 04 40 ePcP 05 05			July 7 BYR	iP 12 17 37 e 18 03
SPA	iP 11 35 27					SPA	iP 12 17 22 i 17 31 i 19 56
July 2 BYR	iP 11 37 28 epP 39 35					July 7 BYR	iP 12 23 35
SPA	iP 11 37 58						
July 2 BYR	iP 11 44 03 epP 46 04						

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
July 7 BYR	iP 13 40 08 ePcP 40 35 epP 40 55	July 9 BYR	eP 12 17 06	SPA	eP 03 18 39	July 12 BYR	iP 09 19 07
SPA	iP 13 40 46 iPcP 41 17	July 9 BYR	iP 16 15 45 epP 16 14 esP 16 26 ePcP 16 32 i 22 48 e 23 19 eS 24 19 e(P'P') 44 26	July 11 BYR	eP 03 33 20	July 12 BYR	iP 09 31 48
July 7 BYR	eP' 15 00 12	SPA	iP 16 16 23 ipP 16 54 iS 25 28 eP'P' 44 18 i 44 32 i 45 00	SPA	iP 03 33 02	SPA	iP 09 31 50
July 7 BYR	iP 16 46 24	July 9 SPA	eP 17 34 47	July 11 BYR	iP 05 02 37 i 02 52 i(PcP) 03 13 e 04 06 e 04 36	July 12 SPA	eP 10 38 27
SPA	eP 16 46 38 e 46 48	July 9 SPA	eP 21 51 47	SPA	iP 05 02 54	July 12 BYR	eP 10 58 50
July 8 BYR	eP' 02 24 32 e 24 41	July 10 BYR	eP 02 23 22 e(PcP) 24 03	July 11 BYR	eP 08 39 35	July 12 BYR	eP 11 15 22
July 8 BYR	eP' 04 19 44	SPA	iP 02 23 56 e(PcP) 24 33	July 11 BYR	eP 12 12 12 ePcP 12 49 e(PP) 14 09 ePPP 16 04 eS 20 48 e 21 50 eL 27 34 eP'P' 41 15	July 12 SPA	eP 15 38 00
July 8 BYR	eP 06 42 56	July 10 BYR	eP 04 22 23 e 22 36 ePcP 22 55 ePP- 24 33	SPA	eP 12 11 01	July 12 BYR	eP' 19 41 22
July 8 BYR	eP 12 02 48	SPA	eP 04 23 02 i(PcP) 23 21	July 11 BYR	eP 16 45 25	SPA	eP' 19 41 09 e 44 34
July 8 BYR	eP 13 16 55 e 17 09	July 10 BYR	eP 14 19 50	July 11 BYR	eP 18 42 17 e(SKp) 45 47	July 13 BYR	eP 04 10 57
SPA	iP 13 16 39	SPA	iP 14 19 47	July 11 BYR	iP 20 15 09 e 15 38	July 13 SPA	iP 04 41 47
July 8 BYR	eP 13 42 28	July 10 BYR	iP 16 07 03	July 11 BYR	eP 22 51 36	July 13 BYR	eP 04 48 47 e 49 21
July 8 SPA	eP 17 38 49	SPA	eP 16 06 28	July 12 BYR	iP 00 34 27 ePcP 34 56 epP 35 48 esP 36 25 eP'P' 01 02 55	SPA	iP 04 48 20
July 8 BYR	eP 20 58 33	July 10 BYR	eP' 18 00 12	July 12 BYR	eP 00 25 46	July 13 BYR	eP' 12 47 49 e 48 12 ePP 50 39 e 51 33 e 13 00 21
SPA	iP 20 58 14	July 10 BYR	eP 18 04 26	July 12 BYR	eP 01 02 55	SPA	eP' 12 48 10 i 48 27 i(PP) 51 51 e 58 20
July 9 SPA	iP 01 40 40	SPA	eP 18 04 22	July 12 BYR	eP 05 38 09	July 13 BYR	eP 15 33 59 epP 35 36
July 9 BYR	iP 02 43 24 e 43 32 e(PcP) 43 51	July 10 SPA	eP 21 04 40	SPA	iP 05 38 27	SPA	iP 15 34 32 eS 42 34
SPA	iP 02 44 06	July 10 SPA	eP 21 12 40	July 12 BYR	eP 08 53 13		
July 9 BYR	eP 09 18 22	July 10 BYR	eP 23 45 35				
SPA	iP 09 18 56	SPA	eP 23 45 09				
July 9 BYR	iP 10 30 07	July 11 BYR	iP 03 18 17				
SPA	eP 10 30 06						
July 9 BYR	eP 11 15 30						
SPA	eP 11 16 05						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
July 13 BYR	iP 16 03 01	July 15 BYR	eP 01 39 53	SPA	eP 17 24 33	July 18 BYR	eP 20 09 22
July 13 BYR	eP 18 19 55	SPA	eP 01 39 37	July 17 BYR	eP 17 30 29	epP 10 10	
	e 20 24	July 15 BYR	eP' 08 39 42	July 17 BYR	eP 19 15 54	eP' 13 22	
July 13 BYR	eP 19 48 50		e 39 56	SPA	eP 19 14 48	e 15 32	
July 13 BYR	iP 20 58 23	July 15 SPA	eP 20 13 48	July 17 BYR	eP 21 45 41	eSKS 19 48	
SPA	eP 20 57 51	July 15 SPA	eP 22 07 45	SPA	iP 21 45 52	eSKKS 20 46	
July 14 BYR	eP' 00 19 15	July 16 BYR	eP 04 47 59	July 17 BYR	iP 22 29 03	e 21 21	
July 14 BYR	eP 03 06 45	SPA	iP 04 48 14	SPA	iP 22 29 39	epS 22 56	
July 14 BYR	eP 06 09 38	July 16 BYR	e(P) 05 06 24		i 29 53	e(PKKP) 24 18	
SPA	iP 06 10 09	July 16 BYR	iP 05 59 52	July 17 BYR	iP 23 05 13	e(PPS) 25 11	
July 14 BYR	eP' 09 00 10	July 16 SPA	eP' 07 19 20	SPA	eP 23 05 47	eSS 29 10	
SPA	eP' 09 00 12	July 16 BYR	e(P) 09 47 09	July 17 BYR	eP' 23 40 42	eSSS 33 33	
July 14 SPA	eP' 11 53 26	July 16 BYR	eP 11 33 31	July 18 BYR	eP 03 36 06	SPA	eP 20 09 04
	e 53 49		e 33 41	July 18 SPA	eP' 04 10 48	iP' 12 27	
July 14 BYR	eP 13 11 32	SPA	eP 11 32 55	July 18 BYR	eP 07 10 16	i 13 18	
	ePcP 11 47		i 33 04	epP 12 13		eSKS 19 31	
	epP 11 52	July 16 BYR	eP' 15 36 40	SPA	iP 07 10 49	epS 21 17	
SPA	iP 13 11 53		i 36 46	epP 12 52		e(PPS) 24 38	
July 14 BYR	eP 17 33 34		e 36 59	July 18 BYR	eP 08 03 59	July 19 BYR	eP 03 55 09
SPA	iP 17 33 25		e 37 20	July 18 BYR	eP 08 15 55	i 55 22	
July 14 BYR	eP 18 24 32	SPA	eP' 15 36 50	SPA	iP 08 16 25	ePP 58 41	
SPA	iP 18 25 01		e 37 38	July 18 BYR	eP 12 45 12	e 04 12 35	
July 14 BYR	iP 18 30 21		e 48 47	July 18 SPA	eP 14 23 41	SPA	eP 03 54 32
SPA	iP 18 30 51	July 16 BYR	eP 19 24 47	July 18 BYR	eP 16 29 38	e 54 45	
July 14 BYR	eP 20 40 12		e 24 57	SPA	eP 16 30 12	July 19 BYR	iP 05 15 16
July 14 BYR	eP 21 38 46	ePcP 25 12		July 18 BYR	iP 19 39 23	e 16 00	
July 14 BYR	eP 22 44 38	SPA	iP 19 25 07	July 18 SPA	eP 19 40 57	SPA	eP 05 15 52
	ePP 48 37		e 25 16			e 16 37	
SPA	eP 22 44 23	July 16 BYR	e(P) 19 53 33			July 19 BYR	eP 07 18 02
	e 44 36	July 17 BYR	iP 07 45 27			July 19 BYR	eP 13 26 06
			e 45 42			July 19 BYR	iP 13 54 21
		SPA	iP 07 46 02			epP 56 06	
			i 46 07			SPA	iP 13 54 51
		July 17 BYR	eP 17 23 52			July 19 BYR	eP 14 54 57
			i 24 06			July 19 BYR	iP 15 16 55
						epP 17 40	
						ePP 19 27	
						epPP 19 59	
						ePPP 21 11	
						e(pPPP) 22 09	
						eS 25 45	
						eScS 26 34	
						esS 27 09	
						e 29 29	
						e 32 12	
						eSSS 32 54	
						eP'P' 42 36	
						e 44 39	

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Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)		Date and Station	Phase (GCT)	
		h m s			h m s			h m s			h m s
SPA	iP	15 17 32	SPA	iP	17 03 36	SPA	iP	11 28 47	July 23		
	iPP	20 22		i	04 37		eS	39 12	BYR	eP	08 24 20
	e(ScS)	26 55		e(S)	11 47						
	eP'P'	44 57									
July 19			July 20			July 22			July 23		
BYR	eP	15 47 03	BYR	eP	18 26 42	BYR	eP	16 46 14	BYR	iP	11 20 56
	epP	47 48		e	27 01		e	46 31	SPA	eP	11 20 40
				e	27 37		ePcP	47 15			
SPA	iP	15 47 41	SPA	eP	18 25 55	SPA	eP	16 46 49	July 23		
	i	47 53					e	46 56	BYR	eP'	14 04 30
July 19			July 21			July 22					
BYR	eP	16 15 17	SPA	eP	00 35 01	BYR	eP	18 29 38	July 23		
									BYR	eP	14 16 54
July 19			July 21			July 22					
BYR	eP	19 16 41	BYR	eP	00 55 56	BYR	iP	18 39 56	July 23		
									BYR	eP	14 36 33
July 20			SPA	eP	00 55 53	July 22			SPA	eP	14 36 19
BYR	iP	00 55 51				BYR	eP'	19 42 32			
	e	56 01	July 21				i	42 54	July 23		
	i(PcP)	57 17	BYR	eP	01 45 07		epP'	44 54	BYR	eP	15 06 53
							iSKP	45 14			
SPA	eP	00 56 36	SPA	eP	01 45 02		esP'	45 50			
							e(PPP)	48 37			
July 20			July 21				e	51 56			
BYR	eP	01 17 31	BYR	eP	07 54 42						
				e	55 23	SPA	eP'	19 42 36	SPA	iP	15 07 26
				ePP	57 29		e	43 09		ipP	07 45
July 20			SPA	iP	07 55 01		e	44 09		isP	08 12
BYR	eP	02 53 18					iSKP	45 17		i	09 02
	epP	55 12	July 21				e	53 34		eScS	17 17
	ePP	56 59	BYR	eP	09 31 53					i(SS)	20 28
	ePPP	58 59				July 22				eP'P'	35 53
	esPP	59 27				BYR	eP	23 14 59		i	36 16
	eSKS	03 03 01	July 21				epP	15 16	July 23		
	e(S)	03 53	SPA	eP	10 19 20		iS	25 21	BYR	iP	15 19 54
	eSP	04 27					e(sS)	26 21			
	e(pS)	05 51	July 21				ePS	27 01	July 23		
	esS	06 53	BYR	eP	12 42 39				BYR	eP	15 24 57
	ePKKP	10 26		iP'P'	13 07 39	SPA	eP	23 15 01			
	eP'P'	18 53		i	07 46		eS	25 16	July 23		
SPA	iP	02 52 47	July 21						BYR	eP	17 21 22
	i	54 08	BYR	i(P)	13 08 10	July 23					
	ipP	54 38		e	09 38	SPA	eP	00 17 24	SPA	eP	17 21 06
	iSP	03 02 29	SPA	iP	13 08 21						
	esSS	10 56				July 23			July 23		
	e	21 33				BYR	eP	00 30 18	BYR	eP'	21 44 19
July 20			July 21								
BYR	eP	09 17 41	SPA	iP'	17 58 33	SPA	iP	00 30 19	July 24		
	e	18 10							BYR	eP	01 11 03
SPA	iP	09 18 16	July 21			July 23					
			BYR	eP	21 16 14	BYR	iP	02 21 05	July 24		
July 20									BYR	iP'	01 42 05
BYR	eP	12 53 23	July 21			SPA	eP	02 21 04	SPA	eP'	01 42 23
			BYR	eP	21 24 44		e	29 12		e	42 37
July 20						July 23					
BYR	eP	13 37 41	July 21			BYR	eP	02 57 04	July 24		
			BYR	eP	22 56 02				BYR	eP	02 16 34
SPA	eP	13 38 17	July 22			July 23				i	16 48
			SPA	eP	01 17 27	BYR	eP	04 00 49	SPA	iP	02 16 42
July 20							epP	01 13		e	16 57
BYR	eP	17 03 07	July 22			SPA	eP	04 01 22	July 24		
	ePcP	03 39	BYR	eP	03 04 49		e	01 30	BYR	eP'	03 04 14
	epP	05 05	SPA	eP	03 06 00	July 23					
	e(PP)	05 26				BYR	eP	04 37 16	July 24		
			July 22						BYR	eP	05 23 09
			BYR	eP	11 29 07					i(PcP)	23 38
				ePP	32 57						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
	h m s		h m s		h m s		h m s
SPA iP	05 23 47	SPA eP'	19 43 18	July 29 SPA eP	05 21 51	SPA eP	06 09 36
e(PcP)	24 12	e	46 54	July 29 BYR eP	19 06 36	July 31 BYR eP	10 51 16
		e	47 01	SPA iP	19 06 38	SPA iP	10 52 01
July 24 SPA eP	06 31 17	July 25 BYR iP'	21 39 28	July 29 BYR eP	21 04 11	July 31 BYR eP	12 14 41
July 24 BYR eP	11 16 33	ipP'	39 52	SPA iP	21 04 49	SPA eP	12 15 18
July 24 BYR eP	13 17 17	SPA eP'	21 39 22	i	05 18	July 31 BYR eP	13 05 34
July 24 BYR eP'	16 36 21	e	39 26	e	05 31	July 31 BYR eP	15 35 08
e	37 01	ePP	41 23	July 30 BYR iP	00 38 17	July 31 BYR eP	15 56 08
SPA eP'	16 36 05	July 26 BYR eP	12 40 00	SPA eP	00 38 50	July 31 BYR eP	15 57 00
July 24 BYR eP	19 32 40	SPA eP	12 40 40	July 30 BYR eP	06 22 28	July 31 BYR eP'	18 42 37
SPA eP	19 32 38	July 26 BYR iP	14 59 40	SPA iP	06 20 01	July 31 BYR eP	18 47 41
July 24 BYR eP	23 10 07	SPA eP	14 58 38	July 30 BYR eP	13 03 27	SPA eP	18 47 44
ePP	11 26	July 26 SPA eP'	17 26 15	SPA iP	13 04 01	e	47 57
ePPP	11 46	July 26 SPA iP'	19 57 08	i	04 07	July 31 BYR eP'	20 12 26
ePcP	12 26	i	57 21	e(S)	12 10	SPA eP'	20 12 11
eS	15 33	July 27 SPA eP	05 39 24	ePP	14 51	i	15 32
SPA eP	23 09 51	July 27 BYR eP	15 09 58	i	14 58	July 31 BYR eP	20 48 48
e	10 13	SPA eP	15 10 36	July 30 SPA iP	14 24 12	epP	49 31
e(PP)	10 29	July 27 SPA eP	18 44 43	July 30 BYR eP	17 14 50	ePcP	50 02
ePcP	12 27	July 27 SPA iP	19 36 02	SPA iP	17 14 45	e(PP)	51 03
e(S)	16 01	July 28 SPA eP	05 18 40	July 30 BYR iP	18 19 44	SPA iP	20 49 12
e	16 48	July 28 SPA eP	08 05 05	SPA iP	18 19 40	ipP	49 52
July 25 BYR eP	01 32 20	July 28 BYR eP	10 58 41	July 30 BYR eP	23 54 58	eS	56 07
eS	36 37	SPA iP	10 59 19	SPA iP	23 54 26	July 31 BYR eP	21 13 19
SPA eP	01 33 41	e	59 35	July 31 BYR iP	02 02 28	Aug. 1 SPA iP	01 45 48
July 25 BYR eP	03 57 26	i	59 56	BYR eP	23 54 58	Aug. 1 BYR eP	01 50 20
SPA iP	03 58 46	e	11 00 35	SPA iP	02 03 08	SPA iP	01 49 58
July 25 BYR eP	12 11 06	i	01 23	July 31 BYR iPcP	02 52	Aug. 1 SPA iP	04 26 37
e	11 44	e	06 29	ipP	03 03	Aug. 1 SPA iP	05 35 43
e	12 55	July 28 SPA iP	21 26 39	SPA iP	02 03 08		
SPA eP	12 10 34	July 28 SPA eP	21 55 31	ipcP	03 19		
e	12 26	July 29 SPA eP	00 41 17	ipP	03 43		
July 25 BYR eP	13 17 15	epP	43 16	July 31 BYR eP	05 11 58		
July 25 BYR eP	15 49 42			SPA eP	05 11 58		
SPA eP	15 50 06			July 31 BYR eP	06 09 20		
July 25 BYR eP	19 37 21						
SPA eP	19 37 21						
July 25 BYR eP'	19 43 25						

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Aug. 1 BYR	iP e epP 10 11 01 11 11 11 54	Aug. 3 BYR	eP' 13 28 13	Aug. 5 SPA	eP 15 02 09	SPA	iP 03 06 41
SPA	iP ipP 10 11 40 12 18	Aug. 3 BYR	eP e 15 45 52 46 38	Aug. 6 BYR	eP 02 39 41	Aug. 8 SPA	iP 12 32 25
Aug. 1 SPA	iP 10 27 47	SPA	eP 15 44 47	Aug. 6 BYR	iP e 04 01 22 01 49	Aug. 8 BYR	eP 15 47 13
Aug. 1 BYR	iP 15 01 05	Aug. 3 BYR	eP 16 19 06	Aug. 6 BYR	iP 11 27 51	SPA	eP 15 47 03
SPA	eP 15 01 42	SPA	eP 16 18 03	Aug. 6 BYR	eP 12 12 36	Aug. 8 SPA	iP 16 32 14
Aug. 1 BYR	eP e 16 25 34 25 43	Aug. 3 BYR	eP 20 15 40	Aug. 6 BYR	eP 18 36 48	Aug. 8 BYR	eP 17 10 30
Aug. 1 BYR	i(PP) 18 05 10	Aug. 3 BYR	eP 22 32 13	Aug. 6 BYR	eP 03 23 37	Aug. 8 BYR	eP i 20 19 11 19 31
SPA	eP' 18 01 42	Aug. 4 BYR	e(P) e 00 49 28 50 37	Aug. 7 BYR	eP 09 06 41	SPA	eP 20 20 26
Aug. 1 BYR	eP 21 59 16	SPA	iP i 00 50 26 51 19	Aug. 7 BYR	iP e 10 44 55 47 50	Aug. 8 SPA	eP 23 35 20
SPA	eP 21 59 45	Aug. 4 BYR	iP e 03 10 23 11 06	SPA	eP 10 44 39	Aug. 9 BYR	eP e 00 08 29 09 06
Aug. 1 SPA	eP' 23 38 55	SPA	eP i 03 11 06 11 49	Aug. 7 BYR	eP' 11 02 54	Aug. 9 SPA	eP 00 30 51
Aug. 2 SPA	eP 00 52 31	Aug. 4 SPA	eP i 03 48 47 48 50	SPA	iP' 11 03 12	Aug. 9 BYR	eP ePP 02 48 12 52 06
Aug. 2 BYR	eP 12 10 23	Aug. 4 BYR	eP e 08 12 01 12 27 13 58	Aug. 7 SPA	eP' 11 08 14	SPA	iP 02 47 54
SPA	eP e e 12 10 26 10 38 10 49	SPA	eP e(PP) e(S) 08 12 31 14 29 20 33	Aug. 7 BYR	eP 11 16 56	Aug. 9 SPA	eP 05 01 20
Aug. 2 BYR	eP e 15 11 22 14 57	Aug. 4 BYR	eP 08 40 30	Aug. 7 BYR	eP 12 28 47	Aug. 9 SPA	eP 11 00 55
Aug. 2 BYR	eP 15 56 00	SPA	eP e 08 40 10 40 24	SPA	iP 12 29 22	Aug. 9 SPA	eP 11 35 35
Aug. 2 BYR	eP ePcP 20 18 50 20 57	Aug. 4 BYR	eP 13 09 43	Aug. 7 BYR	eP' e 22 04 42 04 53	Aug. 9 BYR	iP 12 33 40
SPA	eP i ePcP iPP 20 19 51 19 58 21 18 21 24	SPA	eP 13 09 10	SPA	iP' 22 05 06	SPA	iP 12 33 23
Aug. 2 BYR	iP 21 33 41	Aug. 4 BYR	iP 17 11 24	Aug. 8 BYR	eP i i 01 07 04 07 11 07 26	Aug. 9 SPA	iP 15 01 04
SPA	eP 21 34 24	Aug. 4 SPA	iP 19 02 20	SPA	eP' e 01 07 12 08 09	Aug. 9 SPA	eP 20 14 23
Aug. 3 BYR	eP e 01 27 44 27 54	Aug. 4 BYR	iP 21 27 30	Aug. 8 BYR	iP iPcP 03 05 37 06 01		
Aug. 3 SPA	eP i 12 04 18 04 35	SPA	eP 21 26 33				
		Aug. 5 SPA	eP 11 53 45				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Aug. 9 BYR	iP ePcP h m s 20 41 24 41 30	Aug. 11 SPA	iP h m s 12 01 35	Aug. 13 BYR	iP h m s 13 43 08	SPA	eP h m s 13 25 31
SPA	iP ipP 20 41 33 42 01	Aug. 11 BYR	eP' ipP' 15 43 48 44 01	Aug. 13 SPA	eP 15 50 16		i 25 43 iPcP 26 09
Aug. 9 BYR	eP 22 32 57	SPA	eP' 15 43 50	Aug. 14 BYR	eP 01 09 21	Aug. 15 SPA	eP 17 14 12
SPA	iP 22 33 06	Aug. 11 BYR	eP 16 30 18	SPA	iP i 01 09 45 09 50	Aug. 15 BYR	eP 18 40 57
Aug. 9 BYR	eP 23 52 09	Aug. 11 BYR	iP e 22 01 37 01 44	Aug. 14 SPA	eP 04 17 33	SPA	eP e 18 41 22 41 38
SPA	eP e 23 52 16 52 32	SPA	iP i 22 01 48 01 55	Aug. 14 BYR	iP i 04 52 31 52 50 i(PPP) 58 51	Aug. 15 BYR	iP' e 19 01 31 01 43
Aug. 10 BYR	eP 00 43 47	Aug. 11 BYR	eP 23 40 09	SPA	iP e 04 52 10 52 29 i 59 21	SPA	eP' i 19 01 29 01 42
SPA	iP ePP 00 43 26 44 37	Aug. 12 BYR	eP 00 46 39	Aug. 14 SPA	eP 09 53 18	Aug. 15 BYR	iP 21 40 44
Aug. 10 SPA	eP 04 40 37	Aug. 12 BYR	eP 00 48 41	Aug. 14 BYR	iP 16 47 06	SPA	iP 21 41 13
Aug. 10 SPA	iP e 05 22 36 23 15	Aug. 12 BYR	eP 02 12 59	Aug. 14 SPA	iP 17 23 25	Aug. 15 BYR	iP 23 09 39
Aug. 10 BYR	eP 06 23 45	SPA	eP i 02 13 39 13 44	Aug. 14 SPA	iP 21 18 40	Aug. 16 BYR	eP 00 37 42
Aug. 10 BYR	eP 13 53 33	Aug. 12 BYR	eP i 04 17 52 17 57	Aug. 14 SPA	eP 21 27 35	Aug. 16 BYR	eP eS 01 02 32 11 23
Aug. 10 BYR	eP 17 59 42	SPA	iP i 04 17 06 18 16	Aug. 14 SPA	iP 23 41 47	SPA	eP e 01 02 49 02 57 ePP 05 35 i 06 28
SPA	eP 17 58 43	Aug. 12 BYR	eP e 10 09 26 37 48	Aug. 15 BYR	iP e 03 35 33 36 35	Aug. 16 SPA	eP' 01 40 22
Aug. 10 BYR	eP 18 51 04	SPA	eP iPcP 10 09 58 10 20	SPA	iP i 03 35 14 35 25	Aug. 16 BYR	iP 10 03 53
Aug. 10 SPA	eP 20 15 20	Aug. 12 SPA	eP 13 55 10	Aug. 15 SPA	eP i 03 36 00 36 13	SPA	iP iPcP 10 04 24 04 35
Aug. 10 SPA	eP 22 00 21	Aug. 13 BYR	eP 00 08 15	Aug. 15 BYR	eP' ePP eSKS e ePS 09 15 40 16 40 22 38 26 21 26 37	Aug. 16 SPA	eP 11 15 31
Aug. 10 BYR	iP' ePP 23 26 44 29 01	Aug. 13 BYR	eP 00 45 29	SPA	e(P) eP' e(PP) e e(PPP) e e e eP'P' 09 11 49 14 46 16 19 16 35 18 32 22 13 26 42 30 48 34 16	Aug. 16 BYR	eP e 11 20 22 23 45
SPA	iP' 23 26 30	Aug. 13 BYR	iP' 00 52 39			SPA	eP 11 20 17
Aug. 11 BYR	eP 01 12 05	SPA	eP' 00 52 17			Aug. 16 SPA	eP e 12 24 58 25 42
Aug. 11 SPA	iP 07 39 06	Aug. 13 BYR	eP 01 02 21			Aug. 16 BYR	eP 18 02 44
Aug. 11 BYR	iP 09 47 57	SPA	eP 01 02 25				
SPA	iP 09 47 37	Aug. 13 SPA	eP 02 17 38				
		Aug. 13 BYR	eP 11 06 06	Aug. 15 BYR	eP 13 24 56		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Aug. 21 BYR	eP 04 47 11	Aug. 22 SPA	e(P) 18 31 30	Aug. 24 BYR	eP 10 35 01	Aug. 25 BYR	eP 06 13 56
SPA	eP 04 47 21	Aug. 22 BYR	eP 19 19 02	Aug. 24 BYR	eP' 12 48 42 i 48 51 i 49 04 iPP 52 20	Aug. 25 BYR	eP 06 51 46
Aug. 21 SPA	iP' 07 32 32	SPA	iP 19 20 32 e 21 37	SPA	iP' 12 48 48 i 49 02	SPA	eP 06 52 29
Aug. 21 BYR	eP 08 11 14 i 11 20 ePP 13 01	Aug. 22 BYR	eP 20 30 00	Aug. 24 BYR	iP 13 41 26 i 41 36	Aug. 25 BYR	iP 11 54 18
SPA	eP 08 10 51 i 10 53 i 11 34 iPP 12 24 iPcP 13 12 iPPP 13 35	SPA	eP 20 30 24	SPA	eP 13 42 09	Aug. 25 BYR	iP 12 34 07 e 34 36
Aug. 21 BYR	eP 08 13 32 i(PcP) 15 24	SPA	eP 21 39 17 e 41 15	Aug. 24 BYR	eP 14 35 16	SPA	iP 12 34 50 i 34 58 i 35 07 iPcP 35 15
SPA	iP 08 13 10	Aug. 23 SPA	iP 01 04 39	Aug. 24 BYR	iP 15 53 40 i 53 48	Aug. 25 SPA	eP 13 00 52
Aug. 21 BYR	iP 09 45 49 e 46 09 ePP 47 34 ePcP 47 46	Aug. 23 SPA	eP 01 49 49	SPA	eP 15 53 49 i 53 58	Aug. 25 SPA	eP 13 03 44
SPA	eP 09 45 25 i 45 28 iPP 47 00 ePcP 47 21 iPPP 53 31	Aug. 23 SPA	eP 03 37 47	Aug. 24 BYR	iP 16 04 38	Aug. 25 BYR	iP 13 52 33 i 52 46
Aug. 21 SPA	eP 10 16 25	Aug. 23 BYR	eP 11 33 34	SPA	eP 16 04 47	SPA	iP 13 52 37 i 52 49 i 53 00
Aug. 21 SPA	eP 10 31 26	Aug. 23 BYR	eP 11 47 37	Aug. 24 BYR	eP 16 52 04 i 52 16	Aug. 25 SPA	iP 16 59 02
Aug. 21 BYR	eP 16 49 50	Aug. 23 SPA	eP 15 27 16	Aug. 24 BYR	eP 18 27 00	Aug. 25 BYR	iP 18 01 35 i 01 43
SPA	iP 16 50 39 i 51 00	Aug. 23 BYR	eP 20 26 22	Aug. 24 BYR	eP 21 42 44 e 46 50 e 51 19 eS 52 42	SPA	eP 18 02 17 iPcP 02 49 eS 10 07
Aug. 21 SPA	iP 17 53 48	SPA	eP 20 26 57	SPA	eP 21 42 52 i 43 00 e 43 54	Aug. 25 BYR	eP 19 49 12
Aug. 21 SPA	iP 19 03 14	Aug. 23 BYR	iP' 22 40 40 ePP 42 50	Aug. 24 BYR	eP 22 27 31	Aug. 25 SPA	eP 20 11 39
Aug. 22 BYR	iP 02 09 12	SPA	eP' 22 40 31	Aug. 24 SPA	e(P) 23 36 28	Aug. 25 BYR	eP 23 56 34
SPA	iP 02 09 55	Aug. 24 SPA	eP 01 38 47	Aug. 24 BYR	iP 23 44 23	SPA	eP 23 57 17
Aug. 22 BYR	eP 10 31 26	Aug. 24 SPA	eP 04 02 30	SPA	iP 23 44 33	Aug. 26 BYR	eP 01 59 15
Aug. 22 BYR	eP 11 28 02	Aug. 24 BYR	iP 08 32 27	Aug. 24 BYR	eP 23 53 34	Aug. 26 BYR	eP 02 42 00 e 42 34
Aug. 22 BYR	iP 16 16 40 i 16 48	Aug. 24 BYR	eP 10 06 54	SPA	eP 23 53 43		
SPA	iP 16 17 21 e 17 43	Aug. 24 BYR	eP 10 21 32	Aug. 25 BYR	eP 02 14 53		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
SPA	eP e	Aug. 27 BYR	iP	Aug. 28 BYR	iP	SPA	iP
	h m s 02 42 00 42 31		h m s 02 15 19		h m s 16 03 21		h m s 21 24 47
Aug. 26 BYR	iP	SPA	eP	SPA	iP	Aug. 29 BYR	eP
	03 07 39		02 16 04		16 03 38		21 29 47
Aug. 26 SPA	eP	Aug. 27 BYR	iP	e(PcP)	04 01	e	30 25
	03 56 17		05 17 51	i	04 11		
Aug. 26 BYR	eP	SPA	eP	e	05 18	SPA	eP
	05 05 33		05 17 49				21 27 18
e	07 32		19 38	Aug. 28 SPA	eP	Aug. 29 BYR	eP
SPA	eP	Aug. 27 BYR	iP	e	17 31 46	i	21 31 45
	05 05 34		ipP	e	31 58		31 47
Aug. 26 BYR	eP		08 03 36	Aug. 28 BYR	eP	SPA	eP
	07 29 16		04 24		17 52 52	i	21 32 02
Aug. 26 BYR	iP	SPA	iP	Aug. 28 BYR	eP		32 40
	08 39 15		ipP		21 27 00	Aug. 29 BYR	iP
ePP	43 25		i		29 37		22 21 34
e(S)	50 16	Aug. 27 BYR	eP	Aug. 28 BYR	eP	SPA	eP
SPA	eP		i		23 21 43		22 21 49
	08 40 59		ePP	Aug. 29 BYR	eP	Aug. 30 BYR	iP
e	43 53	SPA	eP		03 33 09		00 19 43
iP'	44 40		e	SPA	eP	SPA	eP
e	45 22		45 34		03 33 18	i	00 18 27
ePP	46 00		45 45		33 29		20 20
i(S)	55 07		ePcP	Aug. 29 SPA	eP	Aug. 30 BYR	eP'
e	59 15	Aug. 27 BYR	eP		06 20 50		01 50 22
eSS	09 03 03		15 14 35	Aug. 29 BYR	eP	Aug. 30 BYR	eP
Aug. 26 BYR	eP	Aug. 27 BYR	eP		11 04 24		03 05 26
	10 34 00		15 37 33	SPA	eP	SPA	iP
Aug. 26 BYR	eP	Aug. 27 BYR	iP		11 04 32		03 05 29
	10 38 11		22 59 47	Aug. 29 BYR	eP	Aug. 30 BYR	eP
Aug. 26 BYR	eP'	Aug. 28 BYR	eP'		12 11 29		11 20 41
	10 46 57		00 12 09	SPA	eP	SPA	eP
ePP	49 14	Aug. 28 BYR	eP'		12 11 38	i	11 20 24
SPA	eP'		e	Aug. 29 SPA	eP		20 48
	10 47 11		i		13 12 32	Aug. 30 SPA	iP
e	47 19		19 50	Aug. 29 SPA	eP	iPcP	11 33 29
Aug. 26 BYR	eP	SPA	eP'		13 26 48		34 10
	11 05 06		i	Aug. 29 BYR	eP	Aug. 30 BYR	iP'
SPA	iP	Aug. 28 BYR	iP		27 18		14 03 42
	11 04 46		02 48 57	Aug. 29 BYR	eP	SPA	eP'
i	04 59	SPA	iP		14 26 23	i	14 03 55
i	05 36		i	SPA	eP		04 05
Aug. 26 BYR	iP	Aug. 28 BYR	eP	Aug. 29 BYR	iP	Aug. 30 BYR	eP
	12 21 12		07 30 57		14 48 50		14 59 13
i	21 30	SPA	eP	Aug. 29 BYR	iP'	Aug. 30 BYR	eP
i	25 25		07 31 35		17 22 57		16 33 40
e	25 42	Aug. 28 BYR	iP'	i	23 01	SPA	iP
SPA	eP		12 27 15	i(PP)	26 41		16 33 49
	12 21 55	SPA	iP'	e	34 20	Aug. 30 BYR	eP
Aug. 26 SPA	eP		12 27 29	SPA	eP'		18 59 12
	12 26 08		e		17 22 42	SPA	eP
Aug. 26 BYR	eP		27 42		23 46	i	18 59 31
	19 46 06		28 09	iPP	25 46		59 40
Aug. 26 BYR	iP		28 28	i	26 24	Aug. 30 BYR	eP
	20 11 03		32 51	Aug. 29 BYR	eP		21 55 39
SPA	eP		39 03		21 24 08		
e	12 04	Aug. 28 BYR	iP	e	24 32		
			12 39 32				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
	h m s		h m s		h m s		h m s
SPA iP	21 54 30	Sept. 1 BYR eP	11 03 52	Sept. 3 BYR eP	06 40 35	SPA eP	22 55 31
iPcP	55 40			i	42 56		
iPP	56 38	Sept. 1 BYR eP'	11 08 09	i	49 43	Sept. 4 BYR eP	23 30 15
Aug. 30 SPA eP'	23 16 07	SPA eP'	11 08 18	SPA eP	06 40 10	SPA eP	23 31 00
Aug. 30 BYR eP'	23 56 29	Sept. 1 BYR eP'	11 57 00	e	40 47	i	31 04
SPA eP'	23 56 10	iPP	12 00 01	e	41 34	i	31 35
Aug. 31 BYR eP	04 50 35	SPA eP'	11 56 52	iS	42 34	Sept. 5 BYR eP	01 55 54
		i	57 27	Sept. 3 BYR eP	13 28 13	Sept. 5 SPA eP	04 09 16
Aug. 31 BYR eP	08 43 50	iPP	59 18	Sept. 3 SPA eP	13 32 23	Sept. 5 BYR eP	06 21 03
SPA eP	08 43 15	i	59 23	i	33 27	e	22 12
Aug. 31 BYR iP	09 28 39	i	12 00 16	Sept. 3 BYR eP	17 25 44	SPA eP	06 20 45
SPA eP	09 25 30	Sept. 1 BYR eP	18 42 42	Sept. 3 SPA eP	19 51 19	e	21 47
Aug. 31 BYR eP	13 35 49	SPA eP	18 42 43	BYR eP	19 51 49	ePP	24 23
SPA eP	13 36 12	Sept. 1 SPA eP	19 39 31	Sept. 3 BYR eP	22 00 06	eS	31 34
Aug. 31 SPA eP	15 06 39	Sept. 2 BYR iP	00 18 21	SPA eP	22 00 38	Sept. 5 BYR eP	07 06 34
		Sept. 2 SPA iP	04 12 15	i	00 43	e	07 01
Aug. 31 SPA eP	17 36 14	Sept. 2 BYR eP'	08 22 25	Sept. 4 SPA eP	01 19 12	SPA iP	07 06 26
Aug. 31 BYR eP	18 35 57	SPA eP'	08 22 46	i	19 15	i	07 12
i	36 06	i	23 15	Sept. 4 BYR eP	06 37 04	i(PcP)	09 42
SPA iP	18 36 40	Sept. 2 BYR eP	09 31 32	Sept. 4 BYR iP	09 05 26	iS	11 07
Aug. 31 BYR eP	20 36 21	Sept. 2 BYR eP'	13 11 48	SPA iP	09 05 26	iL	12 43
Aug. 31 BYR eP	20 45 07	SPA iP'	13 11 55	Sept. 4 BYR eP	12 39 28	Sept. 5 SPA iP	15 47 50
SPA iP	20 45 23	i	12 06	SPA eP	12 40 03	Sept. 5 BYR eP	16 38 51
Sept. 1 BYR iP	00 49 51	i	12 31	i	40 16	Sept. 5 SPA eP	16 49 35
i	49 57	Sept. 2 BYR iP	14 56 25	iPcP	40 40	Sept. 5 BYR eP'	21 31 22
SPA eP	00 50 30	Sept. 2 BYR eP	21 24 43	Sept. 4 SPA eP	15 00 27	e	31 35
Sept. 1 BYR iP	01 03 29	Sept. 2 BYR iP	23 09 08	Sept. 4 BYR eP	17 26 42	Sept. 5 BYR eP'	21 48 00
i	03 37	Sept. 3 BYR iP	00 52 51	SPA eP	17 26 57	i	48 18
SPA eP	01 04 09	Sept. 3 BYR eP	21 24 43	Sept. 4 BYR eP	18 39 45	SPA eP'	21 48 12
Sept. 1 SPA eP	02 39 38	Sept. 3 BYR iP	02 48 56	e	40 43	Sept. 5 BYR eP'	22 12 40
i	40 15	epP	50 44	ePP	43 14	e	14 08
Sept. 1 SPA e(P)	07 14 24	SPA eP	02 49 25	SPA iP	18 39 39		
Sept. 1 BYR eP'	07 47 50	i	49 38	e	40 35		
SPA eP'	07 47 55	epP	51 21	i	41 29		
		Sept. 3 SPA iP	04 34 09	Sept. 4 BYR eP	22 55 14		

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Sept. 5	h m s	Sept. 8	h m s	Sept. 10	h m s	Sept. 12	h m s
BYR	iP 23 15 06	SPA	eP 19 30 22	SPA	eP 21 09 16	BYR	eP 07 14 36
	epP 17 01		ePP 31 50			SPA	eP 07 14 34
SPA	iP 23 15 35		iPcP 32 45	Sept. 10			ePP 17 54
	ipP 17 33		iL 39 03	BYR	iP 22 16 16		
	eS 24 16				e 16 26		
Sept. 6		Sept. 8		Sept. 10		Sept. 12	
BYR	eP 00 41 50	BYR	iP 20 25 21	SPA	iP 23 19 16	SPA	eP' 08 37 10
	ePP 45 49		e 25 47				
SPA	eP 00 41 29		iPcP 28 00	Sept. 11		Sept. 12	
	i 41 44	SPA	iP 20 25 02	SPA	eP 02 43 29	BYR	eP 09 00 28
	ePP 45 21		iPP 25 56			SPA	e(P) 09 00 21
Sept. 6			iPPP 26 30	Sept. 11		Sept. 12	
BYR	e(P) 04 22 53		iPcP 27 54	BYR	eP 04 14 11	SPA	eP 10 02 45
	i 23 10		eL 31 45				e 02 52
SPA	eP 04 23 04	Sept. 9		SPA	eP 04 13 55		
		BYR	eP' 02 09 36	Sept. 11		Sept. 12	
Sept. 6			i 09 46	SPA	eP 12 27 32	BYR	eP 11 36 37
SPA	iP 18 16 41	Sept. 9		Sept. 11			e 36 54
		BYR	eP 16 40 07	SPA	e(P') 14 37 32		e 37 21
Sept. 6				Sept. 11			e 38 21
BYR	iP 19 05 35	Sept. 9		Sept. 11		SPA	eP 11 36 39
	ipP 06 18	BYR	eP 17 32 18	SPA	e(P) 18 56 15		e 38 06
SPA	eP 19 06 01		i 32 44	Sept. 11		Sept. 12	
	i 06 15	Sept. 9		BYR	eP 19 55 24	BYR	iP 12 21 05
	ePcP 06 20	BYR	iP 20 40 18	SPA	eP 19 55 27	SPA	eP 12 21 25
	ipP 06 52		e 42 10	Sept. 11		Sept. 12	
Sept. 7		Sept. 10		BYR	eP 20 41 17	BYR	eP 13 01 04
BYR	eP 04 16 23	BYR	eP 01 06 35		e 44 48	SPA	eP 13 01 48
		SPA	eP 01 07 16	SPA	eP 20 41 29		
Sept. 7		Sept. 10		Sept. 11		Sept. 12	
BYR	eP 19 21 37	SPA	e(P) 04 40 40	BYR	eP 20 52 05	SPA	eP 14 50 29
SPA	eP 19 20 49	Sept. 10		SPA	eP 20 52 18	Sept. 12	
Sept. 8		BYR	iP 05 47 31			BYR	eP 14 52 51
SPA	eP 03 57 58		i 47 43	Sept. 12		SPA	iP 14 52 51
			e 49 29	BYR	eP 00 34 57		i 53 07
Sept. 8		SPA	eP 05 47 35		e 35 20		
BYR	eP' 10 22 28		i 47 46	SPA	eP 00 34 14	Sept. 12	
	i 22 46		e 49 52		i 34 43	SPA	eP 18 51 34
SPA	eP' 10 22 26		i 56 47		i 34 48		
		Sept. 10		Sept. 12		Sept. 12	
Sept. 8		BYR	eP 10 45 38	BYR	iP 01 51 26	BYR	eP' 21 38 59
BYR	iP 11 37 29		ePcP 47 41		iPcP 52 05		epP' 39 54
		SPA	eP 10 45 51		e 52 25		ePP 42 11
Sept. 8				SPA	eP 01 52 40	SPA	eP' 21 38 39
BYR	eP 13 20 34	Sept. 10			i 52 44		epP' 39 33
	iPP 22 25	BYR	eP 14 36 13		e(PP) 55 16		
SPA	eP 13 19 23	SPA	eP 14 36 25	Sept. 12		Sept. 13	
	iPP 20 41			BYR	eP 02 06 40	SPA	eP 01 44 54
	iPcP 21 47	Sept. 10			e 06 59		e 45 53
	eS 25 09	BYR	iP 16 30 17		ePP 10 34	Sept. 13	
Sept. 8		Sept. 10		SPA	eP 02 06 35	BYR	e(P) 04 50 59
BYR	eP 13 32 32	BYR	eP 17 06 34		i 06 48	SPA	eP 04 50 51
	e 33 11	SPA	eP 17 07 13		ePP 10 10		
SPA	iP 13 33 10			Sept. 12			
Sept. 8		Sept. 10		SPA	eP 02 27 27		
BYR	eP 19 31 34	BYR	eP 20 49 02				
	ePP 33 27						
	eS 38 48						
	i 39 04						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Sept. 13 BYR	eP 05 48 24	SPA	iP 16 32 22	SPA	eP 22 34 11	SPA	eP 06 27 49
SPA	eP 05 47 17		i 32 30		i 34 19		e 27 53
	e 47 52		e 32 48		i 34 37		e 32 46
Sept. 13 BYR	eP 13 36 32		ePcP 33 01		e 35 36		eS 36 33
SPA	eP 13 37 41		ePPP 36 15		eS 42 48	Sept. 15 BYR	eP 06 39 18
			e 36 27		e 48 33		
Sept. 13 SPA	eP 18 55 49	Sept. 14 BYR	eP 17 05 56	Sept. 14 SPA	eP 23 03 09	SPA	e(P) 06 38 54
Sept. 13 BYR	e(P') 19 35 20	SPA	eP 17 06 14		e 03 25		i 39 15
SPA	eP' 19 35 07		e 06 32	Sept. 14 SPA	iP 23 07 46	Sept. 15 SPA	eP 06 51 20
Sept. 13 BYR	eP 22 54 03		iPcP 07 12		i 07 52		e 57 00
SPA	eP 22 53 44		i 07 25	Sept. 14 SPA	eP 23 18 35	Sept. 15 SPA	iP 07 01 36
Sept. 14 BYR	eP 02 01 36		i 07 37				i 01 43
SPA	eP 02 01 21	Sept. 14 BYR	eP 17 15 59	Sept. 15 SPA	iP 00 42 33	Sept. 15 SPA	eP 07 19 40
Sept. 14 SPA	eP 04 27 40		i 16 13				e 21 06
Sept. 14 BYR	iP 13 26 05		i 16 33	Sept. 15 SPA	eP 01 21 40	Sept. 15 SPA	eP 07 30 35
SPA	eP 13 26 38	SPA	eP 17 16 34	Sept. 15 SPA	eP 01 40 41	Sept. 15 BYR	eP 08 10 09
	iPcP 27 04		i 16 36			SPA	eP 08 10 44
	e 27 43		i 16 42	Sept. 15 SPA	iP 02 34 32		i 10 50
Sept. 14 BYR	iP 14 19 26		i(PcP) 17 04		i 34 43		ePcP 11 30
	i 19 58		i 17 50	Sept. 15 SPA	eP 04 26 53		e 11 39
	iPcP 20 28		iPP 19 15		i 26 54		i(PP) 12 37
	iPP 21 33		eS 24 56	Sept. 15 SPA	eP 06 07 11	Sept. 15 BYR	eP 10 58 28
	e 39 17		e(PKKP) 36 08		e 07 24	SPA	eP 10 59 03
SPA	eP 14 20 01		i 37 38				i 59 14
	i 24 10	Sept. 14 BYR	i(P') 17 41 47	Sept. 15 SPA	eP 04 45 25	Sept. 15 BYR	iP 11 15 11
	iS 28 26	SPA	e(P') 17 41 39		e 45 35		epP 17 12
	e 41 38	Sept. 14 BYR	eP 17 45 07	Sept. 15 SPA	eP 06 08 01		iP'P' 44 02
	eP'P' 48 58		e 45 42		eS 18 22	SPA	eP 11 15 33
Sept. 14 BYR	iP 15 08 27		e 48 15	Sept. 15 BYR	eP 06 08 33		i 15 41
SPA	iP 15 09 01		e 48 25		e 08 44		iPcP 16 02
Sept. 14 SPA	eP 15 50 49		i 48 47		i 08 54		iPP 17 45
Sept. 14 SPA	eP 15 59 12	Sept. 14 BYR	eP 19 44 43	Sept. 15 BYR	iP 06 09 28	Sept. 15 BYR	eP 11 43 21
Sept. 14 BYR	eP 16 05 50	SPA	eP 19 45 19		e 14 00		e 43 48
SPA	eP 16 06 25		iPcP 45 55	Sept. 15 SPA	eP 06 09 00	SPA	iP 11 43 42
Sept. 14 BYR	eP 16 31 46	Sept. 14 SPA	eP 19 59 12		i 09 04		i 43 50
		Sept. 14 BYR	eP 20 36 53		e 13 56		e 45 50
		SPA	eP 20 37 30		eS 18 58		i 46 13
		Sept. 14 BYR	eP 22 33 36	Sept. 15 BYR	eP 06 27 13	Sept. 15 SPA	eP 12 10 06
			e 34 04		ePcP 28 20		i 10 52
			ePcP 34 51				e 11 02

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Sept. 15 SPA	eP e 12 19 13 19 24	Sept. 15 BYR	eP 22 44 26	Sept. 16 SPA	eP 11 39 51	Sept. 16 SPA	eP 08 49 30 49 54
Sept. 15 SPA	iP e 12 26 15 26 24	Sept. 16 BYR	eP 01 38 32	Sept. 16 SPA	eP 12 35 25	Sept. 17 SPA	eP 09 10 47
Sept. 15 SPA	eP 12 36 10	Sept. 16 SPA	eP 01 39 04	Sept. 16 SPA	eP 13 05 31	Sept. 17 BYR	eP 10 47 32
Sept. 15 BYR	eP 13 05 03	Sept. 16 SPA	eP 01 48 45	Sept. 16 SPA	eP 13 44 30 44 40	Sept. 17 SPA	eP 10 48 05 48 17
Sept. 15 SPA	eP 13 05 33	Sept. 16 SPA	eP 01 58 59 59 39 59 48	Sept. 16 BYR	eP 16 06 49	Sept. 17 BYR	eP 14 17 43
Sept. 15 SPA	eP i 13 25 42 25 47	Sept. 16 SPA	eP 02 09 08 09 16	Sept. 16 SPA	eP 16 07 24 08 09	Sept. 17 SPA	eP i 14 18 18 18 32
Sept. 15 SPA	eP 13 42 09	Sept. 16 SPA	eP 02 13 16	Sept. 16 SPA	eP 21 36 30	Sept. 17 BYR	eP iS 14 45 56 53 55 15 01 27
Sept. 15 BYR	eP 13 56 02	Sept. 16 BYR	eP 02 13 16	Sept. 17 SPA	eP 00 36 51 36 59	Sept. 17 SPA	eP e 14 46 32 46 44 46 54 47 34
Sept. 15 SPA	eP e i(PcP) i eS 13 56 37 56 43 57 05 57 51 14 05 20	Sept. 16 SPA	eP e(P'P') 44 39	Sept. 17 BYR	eP 01 09 32	Sept. 17 SPA	eP i 15 02 03 02 15
Sept. 15 SPA	e(P) 14 10 09	Sept. 16 BYR	eP 02 45 41	Sept. 17 SPA	eP 01 10 09	Sept. 17 SPA	eP 16 20 05
Sept. 15 SPA	eP i 14 13 59 14 06	Sept. 16 SPA	eP i 02 46 16 46 26	Sept. 17 BYR	eP 01 47 35	Sept. 17 SPA	eP 16 26 23
Sept. 15 SPA	eP 14 25 42	Sept. 16 SPA	eP 03 09 38	Sept. 17 SPA	eP 03 30 45	Sept. 17 SPA	eP 16 32 55
Sept. 15 SPA	eP 14 30 56	Sept. 16 SPA	eP 03 16 57	Sept. 17 SPA	eP 03 49 54 50 04 50 19	Sept. 17 BYR	eP 17 23 06
Sept. 15 SPA	eP 14 37 56	Sept. 16 SPA	eP i e 03 26 16 26 35 27 43	Sept. 17 SPA	eP iPcP 04 14 19 15 12	Sept. 17 SPA	iP i 17 23 39 23 50 24 01
Sept. 15 BYR	eP 14 57 59	Sept. 16 BYR	eP' 05 33 07	Sept. 17 BYR	eP 05 38 07	Sept. 17 SPA	eP 17 37 50
Sept. 15 SPA	eP ePcP 14 58 35 59 20	Sept. 16 SPA	eP' e 05 32 49 32 59	Sept. 17 SPA	eP e 05 38 42 39 03	Sept. 17 SPA	eP 17 51 16
Sept. 15 SPA	e(P) e i i 15 26 22 27 29 28 25 28 31	Sept. 16 SPA	eP 05 54 05	Sept. 17 BYR	eP 07 20 10	Sept. 17 SPA	eP i 17 54 24 54 31
Sept. 15 SPA	e(P) e 15 40 08 40 27	Sept. 16 SPA	eP 08 30 54	Sept. 17 SPA	eP i 07 20 43 20 56 21 04 21 46	Sept. 17 SPA	eP 19 18 17
Sept. 15 BYR	iP 16 05 51	Sept. 16 SPA	eP 08 43 34	Sept. 17 BYR	eP 07 45 39	Sept. 17 SPA	eP 19 56 01
Sept. 15 SPA	eP i 16 05 36 05 46	Sept. 16 BYR	eP 10 17 31	Sept. 17 SPA	eP 08 40 37	Sept. 17 SPA	eP 21 29 51
Sept. 15 SPA	eP 19 46 33	Sept. 16 SPA	eP 10 18 06 18 18 18 23	Sept. 17 BYR	eP 08 48 55		
		Sept. 16 SPA	eP 10 41 43				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Sept. 17 BYR	iP 21 37 43	Sept. 19 BYR	eP 10 09 26	Sept. 20 SPA	eP 14 56 39	Sept. 22 SPA	eP' 08 05 26 e 05 45
Sept. 18 BYR	e(P) 03 14 10	Sept. 19 BYR	eP 10 16 43	Sept. 20 SPA	iP 21 03 18 e 03 41 ePP 05 31 e 06 18	Sept. 22 BYR	iP 11 55 17
SPA	eP 03 15 02 e 15 13	SPA	eP 10 18 11	Sept. 20 SPA	eP 23 08 41	SPA	eP 11 55 52 ePKKP 12 16 33
Sept. 18 BYR	eP 09 34 20	Sept. 19 SPA	eP 12 12 05	Sept. 20 BYR	iP 23 27 42 iPcP 28 08 ipP 28 19	Sept. 22 SPA	eP 18 40 41 e 40 50
SPA	iP 09 34 56 i 35 12	Sept. 19 BYR	eP 13 47 33	Sept. 20 SPA	iP 23 28 21 iPcP 28 46 ipP 28 58	Sept. 23 SPA	eP 03 09 24
Sept. 18 BYR	eP 10 52 38	SPA	eP 13 48 09	Sept. 21 BYR	iP 02 20 46 i(PcP) 20 58	Sept. 23 SPA	eP 04 14 55 i 15 00 i 15 13
SPA	iP 10 53 14 i 53 27	Sept. 19 SPA	eP 15 48 13	Sept. 21 SPA	eP 02 20 43 e 22 04 e 23 10	Sept. 23 BYR	e(P) 19 51 31
Sept. 18 BYR	iP 12 08 03 e 08 25 i 09 42 iPcP 10 39	Sept. 19 SPA	eP 16 17 32	Sept. 21 SPA	eP 02 50 18	Sept. 23 SPA	eP 20 58 28
SPA	iP 12 07 46 i 07 55 iPP 10 32 e(S) 14 15	Sept. 19 BYR	eP 18 00 13	Sept. 21 SPA	eP 05 55 17	Sept. 23 SPA	eP 20 58 32 i 58 49 i 59 12 ePP 59 53
Sept. 18 BYR	eP 17 05 02	Sept. 19 SPA	eP 18 18 20	Sept. 21 SPA	eP 11 26 31 e 27 07	Sept. 23 SPA	eP 22 21 16 e 21 29
SPA	eP 17 04 58	Sept. 19 BYR	eP 18 33 14 i 33 21 i 33 27	Sept. 21 SPA	eP 12 25 22 e 25 31	Sept. 23 BYR	eP' 22 42 14 e 42 25
Sept. 18 SPA	eP 18 33 20	SPA	iP 18 33 54 i 34 08 i 34 51	Sept. 21 SPA	e(P) 12 37 11	SPA	eP' 22 42 10 e 42 16 ePP 44 02
Sept. 18 BYR	iP 18 39 45	Sept. 19 SPA	eP 19 42 02	Sept. 21 BYR	eP' 12 39 08	Sept. 24 SPA	eP 02 27 32 i 28 26
SPA	eP 18 39 27 e 40 29	Sept. 19 SPA	eP 22 24 30	Sept. 21 SPA	eP' 12 38 46 e 42 12	Sept. 24 BYR	eP 04 56 49
Sept. 18 BYR	eP 20 16 50	Sept. 19 SPA	eP 23 08 31	Sept. 21 BYR	iP 13 22 16	Sept. 24 SPA	e(P') 06 05 30
SPA	eP 20 17 19 e 17 27 i 17 52	Sept. 19 BYR	iP 23 23 05	Sept. 21 SPA	e(P) 15 03 06	Sept. 24 SPA	eP 08 09 55 e 10 32
Sept. 18 SPA	eP 21 20 56 i 21 03	Sept. 20 SPA	eP 02 57 09	Sept. 21 SPA	eP' 16 36 16 i 36 22 i 36 42	Sept. 24 BYR	eP 10 07 43
Sept. 19 SPA	iP 02 02 28 i 02 43	Sept. 20 BYR	iP 06 18 54	Sept. 22 SPA	e(P) 02 07 04	Sept. 24 SPA	eP 11 19 23 e 19 42
Sept. 19 SPA	eP 06 07 49	SPA	eP 06 19 55	Sept. 22 SPA	eP 03 50 50		
Sept. 19 BYR	eP 07 47 21	Sept. 20 SPA	iP 09 27 03 i 27 14				
SPA	iP 07 48 12						
Sept. 19 BYR	eP 09 28 57						

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Sept. 24 SPA eP	h m s 16 48 37	Sept. 25 SPA iP	h m s 22 24 56	Sept. 27 BYR eP	h m s 10 33 10	SPA eP	h m s 14 41 18
		e	25 16	i	33 57	ePP	43 14
Sept. 24 SPA iP	19 03 24	Sept. 25 SPA eP	23 45 17	SPA eP	10 32 51	Sept. 29 BYR eP	15 41 41
i	03 41			i	33 00	eS	49 36
Sept. 24 BYR eP	19 54 10	Sept. 26 SPA e(P)	02 20 41	ePP	36 38	SPA eP	15 42 15
		e	21 26	e(PPP)	39 21	i	42 32
SPA eP	19 54 45	Sept. 26 BYR iP	02 44 46	e	42 55	e L	58 40
e	55 06			Sept. 27 BYR eP	10 59 20	Sept. 29 BYR eP	15 51 04
e	55 11	Sept. 26 SPA eP	03 21 46	Sept. 27 BYR eP	14 46 47	e	55 47
ePcP	55 33	Sept. 26 SPA iP	04 06 04	Sept. 27 BYR eP	16 00 17	SPA eP	15 51 40
Sept. 24 SPA e(P)	21 05 32	Sept. 26 BYR eP	06 55 04	i	01 32	i	51 50
i	05 35	e	59 09	SPA eP	16 01 17	e L	16 08 07
Sept. 25 BYR eP	00 27 20	Sept. 26 SPA e(P)	05 15 48	Sept. 27 SPA e(P)	16 17 19	ePKKP	11 41
e	27 38	Sept. 26 BYR eP	08 39 53	Sept. 27 BYR eP	21 47 15	e	12 22
SPA iP	00 26 48	eP'	08 40 02	i	47 28	Sept. 29 BYR eP	16 23 33
Sept. 25 BYR eP	01 48 50	i	40 12	Sept. 27 BYR iP	22 56 38	SPA eP	16 24 13
e	49 05	i	40 21	SPA eP	22 55 41	i	24 23
SPA eP	01 49 25	Sept. 26 BYR iP	10 28 32	Sept. 27 BYR eP	21 47 32	i	24 28
i	49 32	ipP	29 00	Sept. 28 BYR eP	12 11 39	Sept. 29 SPA eP	17 02 18
iPcP	50 25	eP'P'	57 41	Sept. 28 BYR eP	13 40 29	Sept. 29 SPA eP	17 17 33
Sept. 25 BYR eP'	02 55 34	SPA iP	10 29 10	Sept. 28 BYR eP	18 34 01	SPA iP	17 18 08
ePP	56 38	ipP	29 41	Sept. 28 BYR eP	18 34 30	Sept. 29 BYR eP	17 48 03
e(PKKP)	03 06 03	eP'P'	58 36	Sept. 28 SPA eP	21 30 22	SPA eP	17 48 38
SPA e(P)	02 51 27	e	59 06	Sept. 28 BYR eP	22 33 31	Sept. 29 SPA eP	18 02 37
eP'	55 26	Sept. 26 BYR eP	15 41 35	Sept. 29 SPA eP	01 42 33	i	02 47
e(PP)	56 00	SPA iP	15 41 51	Sept. 28 BYR eP	13 06 52	Sept. 30 BYR iP'	01 58 13
iPKKP	03 06 18	Sept. 27 BYR iP	01 13 28	i	07 34	SPA eP'	01 57 56
i	06 27	e	29 37	e	07 46	Sept. 30 BYR eP'	03 48 57
Sept. 25 SPA iP	04 23 07	SPA eP	03 28 35	Sept. 29 BYR eP	13 06 52	Sept. 30 BYR eP	04 21 57
i	23 24	i	28 59	i	07 34	Sept. 30 BYR eP	05 06 08
Sept. 25 BYR iP	11 22 27	Sept. 27 BYR eP	07 16 38	i	07 46	SPA eP	05 06 43
e	22 44	e	17 08	e	08 04	i(PcP)	07 07
Sept. 25 SPA eP	12 18 20	SPA eP	07 16 41	SPA eP	13 07 30	Sept. 30 BYR eP	05 18 50
Sept. 25 BYR eP	16 01 14	Sept. 27 BYR eP	07 29 07	Sept. 29 BYR iP	14 41 06	SPA eP	05 17 54
Sept. 25 BYR eP	18 08 53	SPA e(P)	07 29 11	ePcP	43 10		
SPA eP	18 08 35	i	29 24				
Sept. 25 BYR eP	19 06 44						
SPA e(P)	19 06 30						
e	07 15						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Sept. 30 SPA eP	h m s 08 47 38		h m s		h m s		h m s
Sept. 30 SPA eP	10 43 36						
Sept. 30 SPA eP	12 40 44						
Sept. 30 BYR eP	13 41 15						
SPA iP iPcP	13 41 51 42 24						
Sept. 30 SPA eP	13 58 42						
Sept. 30 SPA iP i	14 24 36 24 48						
Sept. 30 BYR eP	15 03 07						
SPA eP e	15 03 43 03 53						
Sept. 30 SPA e(P) i	16 34 29 37 41						
Sept. 30 BYR eP	16 40 08						
SPA eP	16 40 44						
Sept. 30 BYR eP	17 41 49						
Sept. 30 BYR iP	19 40 13						
Sept. 30 BYR eP	20 35 20						
SPA eP	20 34 54						
Sept. 30 BYR eP i iPcP eP'P'	20 37 08 37 19 37 37 21 05 18						
SPA eP i e	20 37 25 38 21 41 48						
Sept. 30 BYR eP	22 29 37						
Sept. 30 BYR iP e	23 41 18 41 35						
SPA iP	23 40 42						

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IGC SUPPLEMENT SOUTH POLE - BYRD

OCTOBER-DECEMBER, 1959

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U. S. DEPARTMENT OF COMMERCE

Luther H. Hodges, Secretary

COAST AND GEODETIC SURVEY—WASHINGTON

H. Arnold Karo, Director

FOR OFFICIAL DISTRIBUTION

SEISMOLOGICAL BULLETIN

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IGC SUPPLEMENT

October - December
1959

The instrumental results tabulated in this supplement are from the following seismographic stations.

<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Foundation</u>	<u>Elevation</u>	<u>Instruments</u>	<u>Components</u>	<u>T₀</u> <u>(Sec.)</u>	<u>T_g</u> <u>(Sec.)</u>	<u>Time Scale</u>
South Pole (SPA) In Charge: W.S. Jacobs	90° S.	0°	1995 meters of ice.	2800 meters.	Benioff Paper. Wilson-Lamison (120° E.-60° W.) Horizontal Film.	Z	1.6 5.6	0.5 0.48	60mm/min. 15mm/min.
Byrd (BYR) In Charge: L.E. Davis	80°01'S.	119°31'W.	2570 meters of ice.	1515 meters.	Benioff. Wilson-Lamison with G.E. Galvo. Wilson Lamison with G.E. Galvo.	Z N E	1.2 6.2 7.2	0.5 3.5 3.5	60mm/min. 30mm/min. 30mm/min.

These stations were first established by the Coast and Geodetic Survey for the IGY to provide additional control for locating teleseismic epicenters in regions inadequately covered by previously existing stations and to provide data for studies in regional seismicity, crustal structure and other pertinent earth science problems.

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Oct. 1 BYR	iP 03 17 43	SPA	eP 00 52 28	SPA	eP 09 24 13	Oct. 7 BYR	eP' 08 50 01
SPA	eP 03 18 16	Oct. 3 SPA	eP 01 29 53	Oct. 5 BYR	eP 10 08 37	i 50 10	ePP 53 01
Oct. 1 SPA	i(P) 05 53 03	Oct. 3 SPA	iP 02 49 21	SPA	iP 10 10 05	SPA	eP' 08 49 52
Oct. 1 SPA	i 53 30	i 49 55	Oct. 5 BYR	e(P') 11 53 23	ePP 52 10	ePKS 53 17	
Oct. 1 SPA	e(P) 05 56 53	e 50 51	Oct. 3 SPA	eP' 11 53 27	Oct. 7 BYR	eP 11 47 11	
i 57 30		Oct. 3 SPA	e(P) 03 12 23	Oct. 5 BYR	eP 15 53 50	SPA	eP 11 48 06
Oct. 1 SPA	e(P) 09 55 10	Oct. 3 BYR	eP 05 05 22	e 54 07	Oct. 7 SPA	iP 13 20 27	
e 55 34		Oct. 3 SPA	e(P) 10 28 01	SPA	eP 15 53 31	Oct. 7 SPA	eP 20 24 12
Oct. 1 BYR	iP 19 04 57	Oct. 3 SPA	iP 12 16 47	i 53 50	Oct. 5 BYR	eP 16 24 38	
Oct. 1 BYR	eP 19 08 29	Oct. 3 SPA	eP 12 30 30	Oct. 5 BYR	ePP 20 56 24	Oct. 7 SPA	eP 22 34 10
Oct. 2 SPA	e(P) 01 01 54	Oct. 3 BYR	eP 21 54 08	SPA	eP' 20 53 19	Oct. 7 SPA	eP 23 07 38
Oct. 2 SPA	eP 01 25 57	SPA	eP 21 53 44	ePP 56 40	Oct. 8 BYR	iP 00 14 33	
e 26 18		Oct. 3 BYR	eP 23 24 25	Oct. 6 BYR	eP 05 57 45	e 14 48	
Oct. 2 BYR	eP 04 27 53	Oct. 3 SPA	eP 23 24 34	e 58 32	SPA	iP 00 14 51	
SPA	eP 04 28 15	e(PcP) 26 33	Oct. 6 BYR	ePP 06 01 33	Oct. 8 SPA	iP' 02 54 47	
Oct. 2 BYR	eP 11 34 35	Oct. 4 BYR	eP 00 47 38	SPA	eP 05 57 22	i 55 02	
Oct. 2 BYR	iP 15 28 16	SPA	iP 00 48 21	iPP 06 00 56	Oct. 6 SPA	eP 06 52 32	
i 28 36		Oct. 4 BYR	eP 11 02 30	Oct. 6 BYR	eP 12 50 31	Oct. 8 BYR	eP 12 19 20
SPA	iP 15 29 06	ipP 02 59	Oct. 6 BYR	eP 12 51 04	SPA	eP 12 18 57	
e 29 21		esP 03 13	Oct. 6 BYR	eP 13 53 01	Oct. 8 SPA	eP 13 30 10	
Oct. 2 SPA	i(P) 16 10 45	SPA	eP 11 03 13	i 53 13	Oct. 8 BYR	eP' 14 33 57	
Oct. 2 BYR	eP 17 55 11	epP 03 43	Oct. 6 BYR	eP 19 15 30	SPA	eP' 14 33 37	
Oct. 2 SPA	eP 19 38 34	isP 04 00	Oct. 6 BYR	e 15 40	Oct. 8 BYR	eP 16 27 44	
Oct. 2 BYR	eP 19 46 15	Oct. 4 SPA	eP 14 11 09	Oct. 6 BYR	iP 15 23 08	Oct. 8 SPA	eP 21 26 32
e 48 05		Oct. 4 BYR	eP 19 34 20	SPA	eP 15 22 39	Oct. 9 BYR	iP 01 28 55
SPA	eP 19 45 27	Oct. 4 BYR	eP 22 28 48	e 24 19	Oct. 6 BYR	eP 19 15 30	
Oct. 2 SPA	i(P) 21 47 49	e 28 54	Oct. 5 BYR	eP 01 18 34	Oct. 7 SPA	eP 00 58 09	
e 49 23		SPA	eP 22 29 36	Oct. 5 BYR	e(P) 09 24 01		
Oct. 2 SPA	iP 22 10 28	i 29 44	Oct. 5 BYR	e(P) 09 24 01			
i 11 06		Oct. 5 BYR	eP 01 18 34				
Oct. 3 BYR	eP 00 52 49	Oct. 5 BYR	e(P) 09 24 01				

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Oct. 9 SPA	iP 14 04 21	Oct. 12 SPA	eP 10 25 38	Oct. 15 BYR	eP 06 29 00	Oct. 16 SPA	eP' 08 33 05
Oct. 9 SPA	e(P) 17 15 38	Oct. 12 SPA	e(P) 12 27 07		e 29 03	Oct. 16 BYR	eP 09 06 04
Oct. 9 SPA	eP 22 21 26	Oct. 12 BYR	eP 13 18 35		ePP 32 53	Oct. 16 BYR	eP 11 01 23
Oct. 10 SPA	iP 01 24 35		e 18 52		e 39 32	SPA	eP 11 00 25
Oct. 11 SPA	e(P) 03 06 30	Oct. 12 SPA	eP 13 18 14		i(S) 40 17	Oct. 16 BYR	eP 16 28 46
Oct. 11 SPA	e(P) 06 51 37	Oct. 12 BYR	iP 19 34 16	Oct. 15 BYR	eP 07 33 17	SPA	eP 16 28 23
Oct. 11 SPA	eP' 09 53 00		i 34 29		eP 07 42 19		i 29 14
Oct. 11 BYR	eP 10 06 05	Oct. 12 SPA	eP 19 34 19	SPA	eP 07 42 59	Oct. 17 BYR	eP 01 28 03
SPA	eP 10 06 06	Oct. 12 SPA	e(P) 21 31 22				i 28 15
Oct. 11 BYR	eP 11 02 58	Oct. 13 BYR	eP 02 43 12	Oct. 15 BYR	iP' 07 59 44		e 29 14
SPA	e(P) 11 03 20		e 43 24		ePKS 08 03 08	SPA	eP 01 28 55
Oct. 11 BYR	eP 12 12 56	Oct. 13 BYR	eP 21 03 59	Oct. 15 BYR	eP 10 40 04	Oct. 17 SPA	eP 03 57 33
SPA	e(P) 12 13 22	SPA	eP 21 04 41	Oct. 15 BYR	iP 14 00 53	Oct. 17 BYR	eP 08 40 35
Oct. 11 SPA	iP 18 00 45		e 05 00		i 01 03		i 40 49
	e 01 03	Oct. 14 BYR	eP 01 23 57		ePP 02 10		iPP 41 01
Oct. 11 BYR	eP 20 13 13	Oct. 14 BYR	iP 07 32 08		e(S) 07 10		iPcP 44 04
SPA	eP 20 13 48	SPA	eP 07 32 13	SPA	eP 14 00 34	SPA	eP 08 41 36
Oct. 11 BYR	eP 20 15 49		e 32 42		i 00 44		iPcP 44 19
SPA	eP 20 15 25	Oct. 14 BYR	eP' 08 20 22	Oct. 15 SPA	eP 15 26 25	Oct. 17 SPA	eP' 11 04 59
Oct. 12 SPA	eP' 01 57 47	SPA	eP' 08 20 30	Oct. 15 BYR	eP 19 25 41	Oct. 17 SPA	e(P) 15 40 14
Oct. 12 BYR	eP 03 35 42		e 20 38		i 26 49	Oct. 17 SPA	eP' 20 47 24
SPA	iP 03 35 05	Oct. 14 BYR	iP 11 07 18	SPA	eP 19 24 49	Oct. 18 SPA	eP 03 34 24
	e 35 42	SPA	iP 11 06 36	Oct. 15 SPA	eP' 20 53 12	Oct. 18 BYR	e(P') 06 03 03
Oct. 12 BYR	eP 03 54 15		iPcP 07 14	Oct. 16 BYR	eP 01 24 23	Oct. 18 SPA	eP 10 39 01
	ipP 54 45	Oct. 14 BYR	eP 11 54 46		ipP 24 51		i 39 22
	isP 54 58	SPA	eP 11 55 08		esP 25 03	Oct. 18 SPA	iP 11 04 28
	e 55 18	Oct. 14 SPA	iP 15 25 10		iPcP 25 27	Oct. 18 SPA	eP 12 27 28
	e 55 23				i 25 58	Oct. 18 BYR	eP' 17 25 49
SPA	eP 03 54 53	Oct. 14 BYR	eP 17 59 58	SPA	eP 01 25 05		i 25 53
	ePcP 55 13				ipP 25 33		i 26 23
	epP 55 23	Oct. 14 BYR	eP 20 45 14	Oct. 16 BYR	e(P) 03 20 35	SPA	eP' 17 25 47
		SPA	eP 20 45 44	Oct. 16 SPA	eP 03 37 33		i 26 19
		Oct. 15 BYR	eP 04 35 25				
		SPA	e(P) 04 35 19				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Oct. 18 SPA eP	h m s 19 25 30	Oct. 20 BYR e(P)	h m s 02 49 04	Oct. 23 BYR eP ePcP	h m s 06 28 16 28 44	SPA eP	h m s 19 45 38
Oct. 18 SPA e(P')	20 01 18	Oct. 20 SPA eP	05 39 16	Oct. 23 SPA eP	06 28 54	Oct. 27 SPA eP'	06 31 35
Oct. 18 BYR eP i epP	23 38 11 38 23 38 48	Oct. 20 BYR eP'	08 19 58	Oct. 23 BYR eP	17 58 36	Oct. 27 BYR eP'	07 11 51
SPA eP	23 37 34	Oct. 20 SPA eP	12 53 22	SPA eP i	18 00 01 00 10	ipP'	12 24
Oct. 19 BYR eP i	01 35 05 35 21	Oct. 20 BYR eP	13 35 51	Oct. 24 BYR eP	03 08 18	isP'	12 40
SPA eP i ePcP	01 35 39 35 44 36 26	SPA eP	13 36 07	Oct. 24 BYR eP	12 11 54	ipp	13 31
Oct. 19 BYR eP ePcP	02 23 06 23 57	Oct. 20 SPA eP	18 30 33	Oct. 24 BYR e(P)	17 29 34	i	15 28
SPA eP i	02 23 39 24 34	Oct. 20 BYR eP i	21 49 39 49 55	Oct. 25 BYR eP'	00 00 02 00 10 00 21	i	15 56
Oct. 19 BYR eP'	03 06 04	SPA eP	21 49 42	Oct. 25 BYR eP	01 59 22	e	23 03
SPA e(P')	03 06 07	Oct. 20 SPA eP	22 30 32	Oct. 25 SPA eP	01 59 09	SPA eP'	07 12 02
Oct. 19 BYR eP	04 45 29	Oct. 21 BYR eP i	01 17 25 17 57	Oct. 25 BYR eP	05 04 25 05 49	ePP	14 44
SPA eP	04 46 01	Oct. 21 BYR eP i e(PP)	06 12 52 13 17 16 39	Oct. 25 SPA eP	05 05 05	Oct. 27 SPA eP	09 21 15
Oct. 19 BYR eP eS	08 37 24 45 21	SPA eP e	06 13 01 13 56	Oct. 25 BYR e(P)	06 54 16	Oct. 27 BYR eP'	13 38 10 38 20
Oct. 19 BYR eP	09 25 10	Oct. 21 BYR iP i	06 14 07 14 40	Oct. 25 SPA e(P)	17 34 07	Oct. 28 BYR eP	08 26 28
SPA eP i	09 25 46 25 59	Oct. 21 BYR e(P)	21 03 57	Oct. 25 BYR eP e	18 43 03 44 48	i	26 39
Oct. 19 BYR eP	14 02 17	Oct. 21 BYR iP	22 03 04	Oct. 25 SPA eP	18 43 40	i	26 52
SPA eP epP	14 02 46 04 47	Oct. 22 BYR eP i	04 59 39 59 46	Oct. 26 BYR eP'	07 54 15 56 18	SPA eP	08 26 33
Oct. 19 BYR eP e	14 40 37 40 43	SPA eP e	04 58 50 58 56	Oct. 26 BYR eP'	10 48 13 48 25	Oct. 28 BYR eP	09 32 16
SPA eP	14 41 11	Oct. 22 BYR iP i	05 06 21 06 28	Oct. 26 SPA eP'	07 54 13 54 25	Oct. 28 BYR eP	09 32 45 33 50
Oct. 19 BYR eP i iPP iPcP eL	16 02 44 03 23 03 41 05 10 08 33	SPA eP e	05 05 52 05 59	Oct. 26 BYR eP	16 22 50	Oct. 28 BYR eP	09 45 14 45 38
SPA eP	16 02 30	Oct. 23 BYR eP	03 55 59	Oct. 26 BYR eP	19 45 19	Oct. 29 BYR iP	10 54 41 55 10
		Oct. 23 BYR iP	04 29 04			Oct. 29 BYR iP'	14 29 38 29 55
						SPA iP'	14 30 10
						Oct. 29 BYR eP'	14 48 35
						i	48 43
						ipP'	50 21
						Oct. 29 BYR eP	22 11 28
						ePP	13 09
						SPA eP	22 10 40
						Oct. 30 BYR eP'	04 20 21
						i	20 31
						SPA eP'	04 20 28

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Oct. 30 BYR	iP i 05 32 38 33 55	Nov. 2 BYR	eP' 09 02 34	Nov. 4 BYR	eP 10 27 38	SPA	eP 01 23 55
SPA	eP e 05 33 47 34 32	SPA	eP' e 09 02 33 03 17	Nov. 4 BYR	e(P) 17 24 22	Nov. 6 BYR	e(P) 01 51 24
Oct. 30 BYR	eP i 06 37 35 38 57	Nov. 2 BYR	eP' 13 34 26	SPA	eP 17 25 01	Nov. 6 BYR	eP 02 21 38
Oct. 30 BYR	eP e 07 15 54 16 19	Nov. 2 SPA	e(P) e 13 50 29 50 47 51 06	Nov. 4 BYR	eP 17 55 47	Nov. 6 BYR	eP 05 15 45
SPA	eP 07 16 51	Nov. 2 BYR	e(P) 17 59 32	Nov. 4 BYR	eP e 18 32 50 34 33	Nov. 6 BYR	eP i 11 53 23 54 02
Oct. 30 BYR	eP ipP isP 11 22 46 22 59 23 06	Nov. 2 BYR	eP 19 24 07	SPA	eP e 18 33 19 35 03	SPA	eP iPP 11 53 59 55 43
SPA	iP ipP isP 11 22 49 23 02 23 11	Nov. 2 BYR	eP eP e e(P) eS 20 16 02 16 14 17 18 18 33 26 09	Nov. 4 BYR	eP 19 18 59	Nov. 6 BYR	eP e 12 37 06 37 32
Oct. 30 BYR	eP e(P) 11 34 04 35 02	SPA	eP ipP i 20 16 02 16 14 17 17	Nov. 4 SPA	eP e 04 57 54 58 16	Nov. 7 SPA	eP' 02 51 11
SPA	eP e(P) 11 33 46 34 31	Nov. 2 BYR	eP 22 03 26	Nov. 5 BYR	eP ipP 05 57 53 58 09	Nov. 7 BYR	eP 08 29 47
Oct. 30 BYR	eP 14 08 44	SPA	eP 22 04 00	SPA	eP 05 57 54	SPA	eP 08 30 02
SPA	eP e 14 09 19 09 45	Nov. 3 BYR	eP 00 45 59	Nov. 5 BYR	e(P) 11 13 06	Nov. 7 SPA	e(P) 15 30 42
Oct. 30 BYR	eP i 21 47 29 47 54	SPA	eP 00 45 40	Nov. 5 BYR	iP iPcP ipP 12 01 49 02 04 02 14	Nov. 7 BYR	eP 22 26 34
SPA	e(P) 21 48 00	Nov. 3 BYR	eP 06 07 50	SPA	eP 12 02 05	SPA	eP 22 27 09
Oct. 31 BYR	eP 03 03 59	Nov. 3 BYR	eP 09 15 20	Nov. 5 BYR	eP' 15 18 08	Nov. 7 BYR	eP 23 46 54
Oct. 31 BYR	iP epP i eP'P' 04 37 32 39 25 41 57 05 05 40	SPA	eP i 09 15 52 16 07	Nov. 5 BYR	eP 17 49 55	Nov. 8 BYR	e(P) 02 27 56
SPA	eP e 04 38 02 46 58	Nov. 3 BYR	eP ePP eS ePKKP eP'P' 09 52 48 57 19 10 03 11 10 51 18 39	Nov. 5 BYR	iP e(sP) ePKKP 17 50 23 51 35 18 09 01	Nov. 8 BYR	eP' i iPP 14 14 02 14 17 16 56
Oct. 31 SPA	e(P) 11 15 20	SPA	iP e eS e 09 52 13 57 47 10 02 07 03 53	SPA	eP 17 50 18	SPA	eP' ePP e 14 14 13 16 42 26 20
Oct. 31 SPA	eP 13 12 10	Nov. 4 SPA	eP 10 27 08	Nov. 5 SPA	eP 18 09 12	Nov. 8 BYR	eP epP esP 14 39 32 39 53 40 05
Oct. 31 BYR	eP epP 18 43 45 44 19	Nov. 3 BYR	eP 16 02 08	Nov. 6 BYR	eP 01 19 45	Nov. 8 BYR	e(P) 16 47 58
SPA	eP epP 18 44 20 44 49	Nov. 3 BYR	e(P) 17 30 29	Nov. 6 BYR	iP 01 23 50	SPA	e(P) 16 48 59

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Nov. 9	h m s	Nov. 12	h m s	Nov. 16	h m s	Nov. 19	h m s
BYR eP	04 24 32	BYR eP	20 42 05	BYR iP	01 08 04	BYR eP	11 21 11
ePP	25 30	i(PcP)	42 28	ipP	08 28	ipP	21 40
i(PPP)	26 09	SPA eP	20 42 19	SPA eP	01 08 49	isP	21 55
ePcP	27 20	Nov. 13		ipP	09 15	ePP	25 06
eL	32 38	BYR eP	03 10 03	isP	09 26	epPP	25 30
SPA eP	04 25 56	Nov. 13		eS	16 35	esPP	25 52
Nov. 9		Nov. 13		Nov. 16		iS	31 29
BYR eP	18 17 49	BYR eP	10 15 47	BYR eP	05 42 57	SPA iP	11 21 06
SPA e(P)	18 17 16	SPA eP	10 16 15	Nov. 16		ipP	21 24
Nov. 9		Nov. 13		BYR eP	10 34 27	i	22 06
BYR e(P)	19 38 20	BYR eP	18 05 34	ePP	38 01	i(PP)	24 04
Nov. 9		Nov. 14		SPA eP	10 34 23	eS	31 26
BYR eP	19 57 30	BYR eP	01 51 31	ePP	37 54	Nov. 19	
SPA eP	19 58 03	Nov. 14		Nov. 16		BYR e(P)	18 10 04
Nov. 9		Nov. 14		SPA i(P)	15 39 46	Nov. 20	
BYR eP	20 43 52	BYR eP	04 49 33	Nov. 17		SPA e(P')	00 13 12
e	43 16	Nov. 14		BYR eP	02 45 33	Nov. 20	
Nov. 10		Nov. 14		SPA i(P)	02 44 40	BYR eP	00 30 13
BYR e(P)	00 37 54	BYR eP	10 46 45	Nov. 17		i	30 29
SPA e(P)	00 37 53	Nov. 14		BYR eP	11 35 29	SPA eP	00 31 46
Nov. 10		Nov. 14		Nov. 17		Nov. 20	
BYR eP	06 19 20	BYR e(P)	20 32 07	BYR eP	15 29 44	SPA eP	07 44 28
Nov. 10		Nov. 14		Nov. 17		Nov. 20	
BYR iP	08 20 40	BYR eP	23 19 56	BYR eP	17 36 17	BYR eP	08 58 32
epP	21 28	SPA eP	20 32 17	SPA eP	17 36 06	Nov. 20	
SPA eP	08 20 41	Nov. 14		Nov. 17		BYR e(P)	10 11 55
Nov. 10		Nov. 14		BYR eP	23 20 36	i	12 20
BYR eP	09 48 53	Nov. 15		SPA eP	23 21 00	Nov. 20	
Nov. 10		Nov. 15		i	21 15	BYR eP	11 09 32
BYR eP	10 13 39	BYR e(P)	00 39 45	i	21 28	e	10 21
SPA eP	10 13 28	e	40 19	Nov. 18		SPA eP	11 09 32
Nov. 10		Nov. 15		BYR e(P)	05 37 21	Nov. 20	
BYR eP	16 53 09	Nov. 15		SPA eP	05 37 57	BYR eP	15 57 56
e	54 37	BYR eP'	10 44 31	ePcP	38 29	SPA eP	15 28 30
SPA eP	16 53 13	e	44 42	Nov. 18		i	28 54
Nov. 10		ePP	45 19	SPA e(P)	18 46 47	Nov. 20	
BYR eP	17 08 29	e	45 39	Nov. 18		BYR eP	19 42 49
Nov. 12		e	47 28	SPA eP	20 49 56	SPA eP	19 42 45
BYR eP	05 41 04	SPA eP'	10 44 18	Nov. 18		Nov. 21	
SPA eP	05 41 28	e	46 21	BYR eP	20 54 01	SPA eP	10 43 40
Nov. 12		e	56 31	Nov. 19		Nov. 21	
BYR eP	06 00 40	Nov. 15		SPA eP'	04 54 25	BYR eP	12 25 26
Nov. 12		BYR eP'	17 28 05	e	55 30	Nov. 22	
BYR eP	09 27 19	i(PP)	30 46	Nov. 19		BYR eP	05 46 55
Nov. 12		e	33 06	BYR eP	05 36 05	SPA eP	05 47 11
BYR eP	17 30 21	e	34 03	e	36 31		
		e	37 03	SPA eP	05 36 40		
		e	40 26	e	36 53		
		SPA eP	17 27 49	e	37 44		
		e	29 54				

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Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Nov. 22 BYR	eP 13 00 52	SPA	iP 16 26 04	Nov. 25 SPA	e(P) 04 35 27	SPA	eP 07 51 32
SPA	iP 13 00 41 i 00 55	Nov. 23 BYR	eP 18 16 26	Nov. 25 BYR	eP 05 33 37	Nov. 26 BYR	iP 09 44 18
Nov. 22 BYR	eP 15 47 25	SPA	eP 18 17 01	Nov. 25 BYR	e(P) 08 10 22	SPA	iP 09 44 17
SPA	eP 15 47 48	Nov. 23 BYR	eP 19 22 47	Nov. 25 SPA	e(P) 08 19 39	Nov. 26 SPA	eP 10 19 51
Nov. 22 BYR	eP 16 07 14	SPA	eP 19 23 21	Nov. 25 SPA	e(P) 09 38 37	Nov. 26 BYR	iP 16 16 27
SPA	eP 16 07 39	Nov. 23 BYR	e(P) 19 44 21	Nov. 25 SPA	eP 11 36 36 e 36 50	SPA	eP 16 17 03 e 17 23
Nov. 22 BYR	eP 16 28 07	Nov. 23 BYR	eP 20 48 53	Nov. 25 BYR	eP 15 43 46	Nov. 26 BYR	eP 16 47 32
Nov. 22 BYR	eP 16 32 11 iPP 32 41 e 33 03 ePcP 36 02 eS 36 36 eL 38 30	Nov. 23 BYR	eP' 21 24 10	SPA	eP 15 44 21	SPA	eP 16 47 50
SPA	iP 16 33 38 i 34 05 iPP 34 50 e 45 49	SPA	eP' 21 24 01	Nov. 25 BYR	eP 17 44 56	Nov. 26 BYR	iP 16 53 07
Nov. 22 BYR	eP 19 44 20 epP 46 07 eS 52 18 eP'P' 20 12 56	Nov. 23 BYR	eP 23 22 44	SPA	eP 17 45 34	SPA	eP 16 53 44
SPA	iP 19 44 50 iPcP 45 10 epP 46 39 e 50 44 iS 53 13 eP'P' 20 12 47 e 12 56	SPA	eP 23 24 03	Nov. 25 BYR	iP 20 11 23	Nov. 26 BYR	eP 23 22 37 ePP 25 51 eS 33 05
Nov. 22 BYR	eP 22 16 47	Nov. 24 BYR	eP 01 16 12	Nov. 25 SPA	eP 19 17 48	SPA	eP 23 22 00 i 22 11 iPP 25 23 e(S) 32 09
Nov. 22 BYR	eP 22 53 48	SPA	eP 01 17 37	Nov. 25 BYR	iP 20 12 01	Nov. 27 BYR	eP' 00 41 46
SPA	eP 22 54 07 i 54 22	Nov. 24 BYR	eP 09 37 48 e 38 13	Nov. 25 SPA	eP 22 39 22	Nov. 27 BYR	eP' 00 45 48
Nov. 23 BYR	eP 09 05 17	SPA	eP 09 38 25	Nov. 26 BYR	iP 00 52 24	Nov. 27 BYR	eP 06 02 59
Nov. 23 BYR	eP 14 55 02	Nov. 24 BYR	eP 12 51 13	Nov. 26 BYR	eP 00 54 02	Nov. 27 BYR	eP 06 19 35
SPA	eP 14 54 44	SPA	eP 12 51 46	Nov. 26 BYR	eP 06 06 49 e 07 22 iS 12 46	Nov. 27 BYR	iP 07 48 06
Nov. 23 BYR	eP 15 36 37 i 37 10	Nov. 24 BYR	eP 16 00 18	SPA	iP 06 06 37 i 07 05 e(P) 08 17	SPA	eP 07 48 37
SPA	eP 15 37 15	SPA	e(P) 16 00 13	Nov. 26 BYR	eP 07 19 38 eS 30 00 ePKKP 36 36 eP'P' 44 56	Nov. 27 BYR	eP 10 52 15 epP 53 18
Nov. 23 BYR	eP 16 25 41	Nov. 24 BYR	eP 19 42 55 i 43 45	SPA	iP 07 18 54 i 19 25 eS 29 08 ePKKP 37 08 eP'P' 45 08 eSKPP' 48 29	Nov. 27 BYR	eP 13 47 31
		Nov. 24 BYR	iP 21 50 21	Nov. 26 BYR	eP 07 51 00	SPA	eP 13 47 35 i 47 44
		Nov. 25 SPA	e(P) 03 44 19			Nov. 27 BYR	eP 17 06 18

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
	h m s		h m s		h m s		h m s
SPA eP	17 07 01	Nov. 29 BYR eP	18 42 22	Dec. 1 BYR eP'	12 58 07	SPA eP	09 46 59
Nov. 27 BYR iP	19 04 40	Nov. 29 SPA e(P)	18 54 17	Dec. 1 BYR iP	13 49 13	e	49 07
SPA eP	19 04 02	Nov. 29 BYR eP	19 23 00	Dec. 1 BYR eP	15 05 36	e	10 00 29
Nov. 28 BYR eP	00 25 53	eS	27 31	ePP	06 52	Dec. 2 BYR eP	12 11 00
iPcP	27 02	eL	29 21	ePcP	08 50	Dec. 2 BYR eP	20 10 44
SPA eP	00 26 25	Nov. 29 BYR eP	20 43 48	e	09 50	e	11 28
i	26 49	Nov. 29 BYR eP	21 46 05	eL	11 15	Dec. 2 BYR e(P')	23 12 11
iPcP	27 23	Nov. 29 BYR iP	23 15 47	SPA iP	15 05 32	Dec. 3 BYR eP	02 02 06
Nov. 28 BYR eP	02 56 39	Nov. 29 BYR iP	23 15 47	i	05 38	e(S)	08 23
SPA eP	02 57 02	Nov. 30 BYR eP	03 37 19	i	05 55	Dec. 3 SPA e(P')	12 58 04
i	57 14	Nov. 30 BYR eP	07 43 51	ePP	06 19	Dec. 3 BYR eP	13 27 29
Nov. 28 BYR eP'	03 39 22	SPA eP	07 44 00	i	06 32	e	19 42 08
Nov. 28 SPA eP	10 05 30	Nov. 30 BYR eP	07 53 31	e	07 58	e	43 05
Nov. 28 SPA eP	11 14 19	SPA e(P)	07 52 32	e	09 13	Dec. 4 BYR eP	00 25 45
Nov. 28 BYR iP	12 44 24	Nov. 30 BYR eP	08 22 04	Dec. 1 BYR eP	15 47 08	SPA eP	00 25 24
i	44 37	Nov. 30 BYR eP	08 21 05	e	47 37	Dec. 4 BYR eP	01 17 12
iPcP	45 39	Nov. 30 BYR eP'	11 32 30	epP	47 49	SPA eP	01 17 45
ePP	46 24	i	33 29	e	48 58	Dec. 4 BYR e(P)	07 12 07
eS	52 10	i	33 45	SPA eP	15 48 00	SPA iP	07 12 23
eL	13 00 41	iPKS	36 55	Dec. 1 BYR eP	18 46 21	Dec. 4 SPA eP	09 20 02
eP'P'	14 17	Nov. 30 BYR eP	14 36 01	Dec. 1 BYR eP	19 07 19	Dec. 4 BYR eP	09 33 46
SPA eP	12 45 13	Nov. 30 BYR eP'	15 38 00	epP	07 48	epP	35 40
i	45 21	SPA eP'	15 38 18	SPA eP	19 06 55	SPA eP	09 34 16
i	46 19	i	38 26	Dec. 2 BYR e(P)	04 28 10	epP	36 14
eP'P'	13 14 21	Nov. 30 BYR eP	21 16 29	Dec. 2 BYR eP'	04 37 56	Dec. 4 SPA eP	15 34 35
Nov. 28 BYR eP	16 16 38	Dec. 1 BYR eP	06 11 47	i	38 02	Dec. 4 SPA eP	18 18 44
Nov. 28 BYR eP	21 30 02	e	11 55	Dec. 2 BYR eP	06 11 16	Dec. 4 SPA eP	19 57 44
Nov. 28 BYR eP	22 51 52	Dec. 1 SPA e(P)	09 32 58	Dec. 2 BYR eP	07 14 28	Dec. 4 SPA iP	20 21 12
e	52 38	e	33 58	Dec. 2 BYR eP	07 43 01	Dec. 5 SPA eP	02 35 58
e	56 46	Dec. 1 BYR eP	09 56 21	e	43 12		
SPA eP	22 51 08	Dec. 1 BYR e(P)	11 32 00	epP	43 40		
i	51 45			Dec. 2 BYR eP'	08 02 53		
Nov. 29 BYR eP	04 02 58			Dec. 2 BYR eP	09 47 22		
Nov. 29 BYR eP	05 56 26			e	47 43		
i	57 11			ePP	51 12		
e	59 16			ePPP	53 15		
				e	57 57		
				eS	58 44		
				e(PS)	59 42		
				eSS	10 03 15		
				ePKKP	04 08		
				eSSS	08 00		
				e	13 09		

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Dec. 5 SPA	eP' 08 33 00	Dec. 8 SPA	e(P) 05 53 22 i 53 26	Dec. 9 BYR	eP 21 41 33	Dec. 11 BYR	iP 15 00 08
Dec. 5 BYR	e(P') 09 14 20	Dec. 8 BYR	eP 08 14 44	Dec. 10 BYR	iP 00 42 56	Dec. 12 BYR	e(P) 02 02 56
Dec. 5 BYR	iP 11 19 23	Dec. 8 SPA	eP 08 15 56	Dec. 10 SPA	eP 00 42 23 i 42 26	Dec. 12 SPA	eP 02 03 27
Dec. 5 SPA	iP 11 19 04	Dec. 8 SPA	e(P') 13 09 42	Dec. 10 BYR	eP 03 03 02 e(S) 09 13	Dec. 12 SPA	e(P) 02 10 50 e 10 59
Dec. 5 SPA	eP 19 05 53	Dec. 8 BYR	eP' 13 53 32	Dec. 10 SPA	e(P) 03 03 02 e 03 28	Dec. 12 BYR	e(P) 04 25 12
Dec. 6 SPA	iP 04 58 33	Dec. 8 SPA	eP' 13 53 12 ePP 55 35 e(SKP) 56 34	Dec. 10 BYR	eP 14 31 10	Dec. 12 SPA	eP 07 59 59
Dec. 6 SPA	eP 15 55 38	Dec. 8 BYR	eP 17 21 58	Dec. 10 SPA	eP 14 44 10	Dec. 12 SPA	eP 09 37 39
Dec. 7 BYR	e(P) 01 24 31	Dec. 8 SPA	eP 17 22 44	Dec. 10 SPA	eP 19 48 36	Dec. 12 BYR	iP 13 18 09
Dec. 7 SPA	e(P) 02 38 32	Dec. 8 BYR	eP 23 46 43	Dec. 10 BYR	eP 19 49 06	Dec. 12 SPA	iP 13 18 48 ePcP 19 22
Dec. 7 BYR	eP 03 11 43 epP 13 44	Dec. 9 BYR	eP 02 21 39	Dec. 10 SPA	eP 20 03 38	Dec. 12 BYR	eP 17 32 09
Dec. 7 SPA	eP 03 20 45	Dec. 9 SPA	e(P) 08 37 40 e 37 59	Dec. 10 SPA	eP 20 03 55	Dec. 12 BYR	e(P) 17 45 22
Dec. 7 BYR	eP' 05 34 23 e(pP') 34 52	Dec. 9 BYR	eP 08 45 31 e 46 29	Dec. 10 SPA	eP 22 10 32	Dec. 12 SPA	eP 17 45 58
Dec. 7 BYR	eP 07 33 53	Dec. 9 SPA	eP 08 46 46 e 47 41 e 47 49	Dec. 10 SPA	eP 22 20 45	Dec. 12 SPA	eP 21 22 09
Dec. 7 SPA	eP 07 35 06	Dec. 9 BYR	e(P) 10 59 13	Dec. 10 SPA	e(P) 22 25 23	Dec. 12 SPA	eP 22 16 09
Dec. 7 BYR	eP 07 58 58 e(S) 08 03 01	Dec. 9 BYR	eP 11 04 55	Dec. 10 SPA	eP 22 54 05	Dec. 12 BYR	e(P) 23 15 01
Dec. 7 SPA	eP 08 00 09	Dec. 9 SPA	eP 11 04 35	Dec. 11 BYR	eP 00 44 38 e 44 47 ePP 48 16 ePKKP 01 02 19	Dec. 13 SPA	e(P) 04 34 15
Dec. 7 BYR	eP 09 03 04	Dec. 9 SPA	eP 12 58 15	Dec. 11 BYR	eP 01 48 56 e 58 54 e(L) 02 05 03	Dec. 13 BYR	eP 05 52 21
Dec. 7 SPA	eP 17 04 33	Dec. 9 BYR	iP 14 14 47 e(pP) 16 21	Dec. 11 BYR	eP 02 42 26	Dec. 13 SPA	eP 05 51 44
Dec. 8 SPA	eP 03 16 59	Dec. 9 SPA	iP 14 15 18 e(pP) 16 56	Dec. 11 BYR	e(P) 03 52 24	Dec. 13 SPA	e(P) 06 36 10
Dec. 8 BYR	eP' 03 19 06	Dec. 9 SPA	eP 14 43 06	Dec. 11 BYR	iP 09 49 42	Dec. 13 SPA	eP 07 21 04
Dec. 8 SPA	eP' 03 19 04	Dec. 9 BYR	e(P) 14 55 37	Dec. 11 BYR	e(P) 10 17 34	Dec. 13 SPA	e(P) 07 25 26 i 25 42 i 25 54
Dec. 8 BYR	eP 03 32 43	Dec. 9 SPA	eP 14 55 36	Dec. 11 BYR	eP 10 33 23	Dec. 13 SPA	eP 07 33 02
Dec. 8 BYR	eP 04 43 27	Dec. 9 BYR	e(P) 16 47 08			Dec. 13 SPA	e(P) 07 45 18 e 45 50
Dec. 8 SPA	eP 04 43 03 i 43 11 e 43 39 e 44 25	Dec. 9 SPA	eP 16 46 45				

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Dec. 13 SPA	e(P) i	Dec. 14 SPA	eP e i i	Dec. 17 SPA	eP	Dec. 19 SPA	iP
	07 48 42 48 53		22 28 48 29 13 29 21 29 34		09 58 43		09 42 27
Dec. 13 SPA	iP e	Dec. 14 BYR	iP	Dec. 17 BYR	e(P)	Dec. 19 BYR	e(P)
	09 51 04 51 23		23 28 31		13 40 32		10 46 38
Dec. 13 SPA	eP	Dec. 14 SPA	iP	Dec. 17 SPA	eP	Dec. 19 SPA	eP
	10 39 33		23 28 11		13 40 08		10 46 08
Dec. 13 SPA	eP	Dec. 15 BYR	iP i(PP) ePcP e(L)	Dec. 17 SPA	eP e	Dec. 19 SPA	e(P) i
	15 49 57		12 22 24 23 22 25 10 28 50		16 58 21 58 32		12 52 51 53 03
Dec. 13 BYR	eP	Dec. 15 BYR	eP	Dec. 17 SPA	iP e e	Dec. 19 SPA	eP
	17 47 01		19 50 26		18 01 36 01 49 02 19		13 05 36
SPA	eP	Dec. 16 SPA	eP	Dec. 18 BYR	e(P)	Dec. 19 SPA	eP
	17 47 37		11 35 09		05 22 19		17 53 30
Dec. 13 BYR	e(P)	Dec. 16 BYR	e(P')	Dec. 18 SPA	eP e	Dec. 19 SPA	eP
	19 18 13		11 40 58		08 47 46 47 53		18 12 59
SPA	eP	Dec. 16 SPA	iP' e i	Dec. 18 BYR	eP	Dec. 19 SPA	eP
	19 18 30		11 40 36 41 03 41 13		09 03 05		18 54 27
Dec. 14 SPA	eP	Dec. 16 SPA	eP	Dec. 18 SPA	eP	Dec. 19 SPA	eP
	00 29 35		15 31 36		08 47 46 47 53		21 26 34
Dec. 14 BYR	iP	Dec. 16 BYR	iP	Dec. 18 BYR	e(P)	Dec. 19 SPA	eP
	06 49 06		16 55 29		09 25 07		22 25 08
Dec. 14 SPA	eP i	Dec. 16 SPA	eP	Dec. 18 SPA	eP	Dec. 20 SPA	iP
	08 16 37 17 03		17 26 34		09 25 35		01 32 12
Dec. 14 SPA	eP i	Dec. 17 BYR	eP'	Dec. 18 SPA	eP	Dec. 20 BYR	e(P)
	13 07 00 07 22		02 49 47		09 40 29		08 14 58
Dec. 14 SPA	eP	Dec. 17 BYR	eP	Dec. 18 SPA	eP	Dec. 20 SPA	eP
	13 37 40		03 00 18		10 05 26		08 15 31 15 37 16 44
Dec. 14 BYR	eP e epP e	Dec. 17 BYR	iP	Dec. 18 BYR	e(P) e(P)	Dec. 20 SPA	eP
	18 11 01 11 34 11 49 16 01		03 06 03		10 07 09 09 07		13 07 22
SPA	iP i ipP i ePP epPP e e i e(SKS)	Dec. 17 BYR	e(P) e(P)	Dec. 18 BYR	e(P) e	Dec. 20 BYR	e(P)
	18 11 41 12 02 12 27 13 35 15 31 16 24 19 37 20 26 21 03 21 58		06 00 13 06 00 49		16 44 02 47 40		13 35 54 13 36 30 14 27 45
Dec. 14 SPA	eP	Dec. 17 SPA	eP e	Dec. 18 SPA	eP' e	Dec. 20 SPA	eP
	21 38 08		06 06 22 06 59		16 44 18 48 01		15 09 08
Dec. 14 BYR	eP e	Dec. 17 SPA	eP	Dec. 18 SPA	iP	Dec. 20 SPA	eP
	22 02 31 02 37		07 52 07 07 52 44		19 09 28		17 20 04
SPA	eP ePP	Dec. 17 SPA	eP	Dec. 19 SPA	e(P)	Dec. 21 BYR	e(P)
	22 02 16 05 50		08 10 30		06 10 10		01 37 39
Dec. 14 BYR	eP' e e(PP)	Dec. 17 SPA	eP e	Dec. 19 BYR	e(P)	Dec. 21 BYR	iP
	22 20 05 20 13 23 41		08 27 27 27 36		09 19 53		10 30 25 11 24 08
		Dec. 17 SPA	eP	Dec. 19 SPA	iP		
			09 16 15		09 20 22		

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Dec. 21 BYR	eP' 11 38 49	Dec. 23 SPA	eP' 09 48 02	Dec. 25 BYR	eP 10 58 00	Dec. 27 BYR	eP' 16 12 30
Dec. 21 BYR	iP 12 36 36	Dec. 23 BYR	eP 14 08 54	Dec. 25 SPA	eP 10 57 45 i 58 06 i 58 37	Dec. 27 SPA	eP' 16 12 33 i 13 23 e 14 00
Dec. 21 BYR	e(P) 12 39 15	Dec. 23 SPA	iP 14 09 30 i 09 41	Dec. 25 BYR	eP 16 07 51	Dec. 27 BYR	e(P') 19 48 15
Dec. 22 BYR	eP 01 49 18	Dec. 24 BYR	e(P) 01 15 00	Dec. 25 SPA	eP 16 07 23	Dec. 27 SPA	iP' 19 47 40 i 48 17 i 48 28 i 48 35
Dec. 22 SPA	eP 03 11 48 i 12 23	Dec. 24 SPA	i(P) 02 16 10 i 16 20	Dec. 26 BYR	e(P) 08 57 48	Dec. 27 SPA	iP' 21 16 14
Dec. 22 BYR	eP 03 29 04	Dec. 24 BYR	eP 07 26 44	Dec. 26 BYR	eP 12 19 42 e 21 15	Dec. 28 BYR	eP 02 00 24
Dec. 22 SPA	eP 04 15 29	Dec. 24 SPA	eP 07 25 34 e 26 26 e 30 00	Dec. 26 SPA	iP 12 18 36 i 18 57 e(PcP) 19 47	Dec. 28 SPA	eP' 02 02 51 i 03 07
Dec. 22 BYR	e(P) 04 30 48	Dec. 24 BYR	eP 09 24 13	Dec. 26 SPA	eP 15 36 30	Dec. 28 BYR	eP' 07 39 56
Dec. 22 BYR	iP 11 37 53	Dec. 24 SPA	eP 09 24 50 ePcP 25 25	Dec. 26 BYR	e(P) 16 25 06	Dec. 28 SPA	eP' 07 40 00 i 40 19 i 40 36 i 41 24
Dec. 22 SPA	iP 11 37 38	Dec. 24 BYR	eP 13 01 48	Dec. 26 SPA	iP 16 25 42 i 25 52	Dec. 28 BYR	iP 10 13 23 ipP 13 49
Dec. 22 BYR	eP' 17 39 25	Dec. 24 SPA	eP 13 02 28	Dec. 26 BYR	iP 17 07 08	Dec. 28 SPA	iP 10 14 02 ipP 14 29 i 15 27
Dec. 22 SPA	eP' 17 39 24	Dec. 24 BYR	e(P) 18 50 34	Dec. 26 SPA	iP 17 08 00 e 08 16	Dec. 28 BYR	eP 11 56 57
Dec. 22 BYR	eP 20 35 00	Dec. 24 SPA	eP 18 51 09	Dec. 26 BYR	eP' 18 38 24	Dec. 28 BYR	eP' 13 23 51
Dec. 22 SPA	iP 20 35 04	Dec. 25 BYR	e(P') 01 19 49	Dec. 26 SPA	eP' 18 38 55 i 39 01 i 40 25	Dec. 28 SPA	eP' 13 23 57
Dec. 23 BYR	e(P) 02 47 49	Dec. 25 BYR	eP 03 58 48	Dec. 26 BYR	e(P') 22 21 50	Dec. 28 SPA	eP 13 40 36
Dec. 23 SPA	e(P) 02 46 14	Dec. 25 SPA	iP 03 59 25 iPcP 59 56	Dec. 27 BYR	e(P') 05 07 14	Dec. 28 SPA	iP 16 35 21
Dec. 23 BYR	e(P') 04 08 15 e(PP) 11 49	Dec. 25 BYR	eP 05 46 59	Dec. 27 BYR	e(P') 05 21 23	Dec. 29 BYR	eP 07 17 28
Dec. 23 SPA	iP' 04 08 41 i 09 03 e 09 40 e(PP) 12 39	Dec. 25 SPA	eP 05 47 34 i 47 44	Dec. 27 BYR	e(P') 12 08 24	Dec. 29 SPA	eP 07 17 07 e 17 23
Dec. 23 SPA	eP 04 27 33	Dec. 25 BYR	eP 07 20 04	Dec. 27 SPA	eP' 12 14 30 e 14 49	Dec. 29 BYR	eP 14 46 34
Dec. 23 SPA	e(P) 04 29 23	Dec. 25 SPA	iP 07 20 01 i 20 17	Dec. 27 BYR	iP 12 48 02	Dec. 29 BYR	eP 17 25 13
Dec. 23 BYR	e(P) 04 40 51	Dec. 25 SPA	eP 08 39 33 i 39 43	Dec. 27 SPA	iP 12 48 36 e 49 16 iPP 50 35 ePPP 51 34 e 52 14 eS 56 15 e 56 34 e 57 27	Dec. 29 SPA	eP 17 25 49 iPcP 26 16
Dec. 23 SPA	eP 04 41 28 i 41 41 iPcP 42 19	Dec. 25 BYR	iP 10 28 39				
Dec. 23 BYR	e(P) 06 35 44	Dec. 25 SPA	iP 10 29 19 e 31 21 iPP 31 59 ePPP 32 50				
Dec. 23 SPA	eP 06 36 11						

Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)	Date and Station	Phase (GCT)
Dec. 29 SPA	eP h m s 17 54 00	Dec. 31 SPA	eP h m s 05 56 28 56 34		h m s		h m s
Dec. 29 SPA	eP 18 19 25	Dec. 31 BYR	eP 10 42 19				
Dec. 29 SPA	eP 20 32 59	Dec. 31 SPA	eP 10 42 11 42 56				
Dec. 29 BYR	iP 20 48 40	Dec. 31 BYR	iP 16 58 49				
SPA	iP 20 48 55 ePP 53 20	Dec. 31 SPA	eP 17 00 02				
Dec. 29 SPA	iP 21 04 13	Dec. 31 BYR	iP 19 21 14				
Dec. 29 BYR	eP 21 40 02	Dec. 31 SPA	eP 19 21 52				
SPA	iP 21 39 37 i 39 52 e 40 14	Dec. 31 SPA	eP 19 27 38				
Dec. 30 BYR	eP 00 06 53 e(PP) 08 22	Dec. 31 SPA	eP 20 45 20				
SPA	eP 00 07 20 iPcP 08 33	Dec. 31 SPA	eP 21 12 12				
Dec. 30 SPA	eP 00 15 39						
Dec. 30 SPA	eP 02 46 37						
Dec. 30 SPA	iP 03 26 01						
Dec. 30 SPA	i(P) 04 01 44						
Dec. 30 BYR	eP 07 45 05						
SPA	eP 07 45 43						
Dec. 30 SPA	i(P) 09 53 27						
Dec. 30 SPA	eP 11 05 26 e 08 35						
Dec. 30 BYR	iP 14 08 39						
SPA	eP 14 08 04 i(pP) 08 31 e 09 24						
Dec. 30 SPA	eP 15 41 49						
Dec. 30 SPA	eP 23 39 52 ePcP 40 45						