

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF SATURN (0 hr U.T.) - 2020
 (Compiled by: Jeffrey D. Beish, A.L.P.O.)

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Rings Vis			Diameter('')		
							Angle	Eq	Po	Maj	Min	Mag	CMI	CMII	CMIII
yyyy-mmm-dd	o	hh:mm	o	o	o	o						o	o	o	
2020-Jan-01	11.4E	19:32	-21.7	118.6	23.5	23.2	1.1	15.1	13.2	34.1	13.6	0.5	217.8	322.1	86.4
2020-Jan-02	10.5E	19:33	-21.7	118.6	23.5	23.2	1.0	15.1	13.2	34.1	13.6	0.5	342.0	54.0	177.0
2020-Jan-03	9.6E	19:33	-21.6	118.7	23.4	23.2	0.9	15.0	13.2	34.1	13.6	0.5	106.2	145.9	267.7
2020-Jan-04	8.7E	19:34	-21.6	118.7	23.4	23.2	0.8	15.0	13.2	34.1	13.5	0.5	230.3	237.7	358.3
2020-Jan-05	7.8E	19:34	-21.6	118.7	23.4	23.1	0.8	15.0	13.2	34.1	13.5	0.5	354.5	329.6	89.0
2020-Jan-06	6.9E	19:35	-21.6	118.8	23.3	23.1	0.7	15.0	13.2	34.1	13.5	0.5	118.7	61.5	179.7
2020-Jan-07	6.0E	19:35	-21.6	118.8	23.3	23.1	0.6	15.0	13.2	34.1	13.5	0.5	242.8	153.3	270.3
2020-Jan-08	5.1E	19:36	-21.6	118.8	23.3	23.1	0.5	15.0	13.2	34.1	13.5	0.5	7.0	245.2	1.0
2020-Jan-09	4.2E	19:36	-21.5	118.8	23.2	23.1	0.4	15.0	13.2	34.1	13.4	0.5	131.2	337.1	91.7
2020-Jan-10	3.3E	19:37	-21.5	118.9	23.2	23.1	0.3	15.0	13.2	34.1	13.4	0.5	255.3	68.9	182.3
2020-Jan-11	2.4E	19:37	-21.5	118.9	23.2	23.1	0.2	15.0	13.2	34.1	13.4	0.5	19.5	160.8	273.0
2020-Jan-12	1.5E	19:38	-21.5	118.9	23.1	23.1	0.1	15.0	13.2	34.1	13.4	0.5	143.7	252.7	3.7
2020-Jan-13	0.6E	19:38	-21.5	119.0	23.1	23.1	0.1	15.0	13.2	34.1	13.4	0.5	267.8	344.5	94.3
2020-Jan-14	0.3W	19:39	-21.5	119.0	23.1	23.1	0.0	15.0	13.2	34.1	13.4	0.5	32.0	76.4	185.0
2020-Jan-15	1.2W	19:39	-21.4	119.0	23.0	23.1	0.1	15.0	13.2	34.1	13.3	0.5	156.2	168.3	275.7
2020-Jan-16	2.1W	19:40	-21.4	119.1	23.0	23.1	0.2	15.0	13.2	34.1	13.3	0.5	280.4	260.2	6.3
2020-Jan-17	3.0W	19:40	-21.4	119.1	23.0	23.1	0.3	15.0	13.2	34.1	13.3	0.5	44.6	352.1	97.0
2020-Jan-18	3.9W	19:41	-21.4	119.1	22.9	23.1	0.4	15.0	13.2	34.1	13.3	0.5	168.7	83.9	187.7
2020-Jan-19	4.8W	19:41	-21.4	119.1	22.9	23.0	0.5	15.0	13.2	34.1	13.3	0.5	292.9	175.8	278.4
2020-Jan-20	5.7W	19:42	-21.3	119.2	22.9	23.0	0.6	15.0	13.2	34.1	13.3	0.5	57.1	267.7	9.0
2020-Jan-21	6.6W	19:42	-21.3	119.2	22.8	23.0	0.6	15.0	13.2	34.1	13.2	0.5	181.3	359.6	99.7
2020-Jan-22	7.5W	19:43	-21.3	119.2	22.8	23.0	0.7	15.0	13.2	34.1	13.2	0.5	305.5	91.5	190.4
2020-Jan-23	8.4W	19:43	-21.3	119.3	22.8	23.0	0.8	15.0	13.2	34.1	13.2	0.6	69.7	183.4	281.1
2020-Jan-24	9.3W	19:44	-21.3	119.3	22.7	23.0	0.9	15.0	13.2	34.1	13.2	0.6	193.9	275.3	11.8
2020-Jan-25	10.2W	19:44	-21.2	119.3	22.7	23.0	1.0	15.1	13.2	34.1	13.2	0.6	318.1	7.2	102.4
2020-Jan-26	11.1W	19:45	-21.2	119.4	22.7	23.0	1.1	15.1	13.2	34.1	13.2	0.6	82.2	99.0	193.1
2020-Jan-27	12.0W	19:45	-21.2	119.4	22.7	23.0	1.2	15.1	13.3	34.2	13.2	0.6	206.4	190.9	283.8
2020-Jan-28	12.9W	19:46	-21.2	119.4	22.6	23.0	1.3	15.1	13.3	34.2	13.1	0.6	330.6	282.8	14.5
2020-Jan-29	13.8W	19:46	-21.2	119.4	22.6	23.0	1.3	15.1	13.3	34.2	13.1	0.6	94.8	14.7	105.2
2020-Jan-30	14.7W	19:47	-21.1	119.5	22.6	23.0	1.4	15.1	13.3	34.2	13.1	0.6	219.0	106.6	195.9
2020-Jan-31	15.6W	19:47	-21.1	119.5	22.5	23.0	1.5	15.1	13.3	34.2	13.1	0.6	343.2	198.5	286.6

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yyyy-mmm-dd	o	hh:mm	o	o	o	o						o	o	o	
2020-Feb-01	16.5W	19:47	-21.1	119.5	22.5	22.9	1.6	15.1	13.3	34.2	13.1	0.6	107.4	290.4	17.3
2020-Feb-02	17.4W	19:48	-21.1	119.6	22.5	22.9	1.7	15.1	13.3	34.2	13.1	0.6	231.6	22.3	108.0
2020-Feb-03	18.3W	19:48	-21.1	119.6	22.4	22.9	1.8	15.1	13.3	34.2	13.1	0.6	355.9	114.2	198.7
2020-Feb-04	19.2W	19:49	-21.0	119.6	22.4	22.9	1.9	15.1	13.3	34.3	13.0	0.6	120.1	206.1	289.4
2020-Feb-05	20.1W	19:49	-21.0	119.7	22.4	22.9	1.9	15.1	13.3	34.3	13.0	0.6	244.3	298.1	20.1
2020-Feb-06	21.0W	19:50	-21.0	119.7	22.3	22.9	2.0	15.1	13.3	34.3	13.0	0.6	8.5	30.0	110.8
2020-Feb-07	21.9W	19:50	-21.0	119.7	22.3	22.9	2.1	15.1	13.3	34.3	13.0	0.6	132.7	121.9	201.5
2020-Feb-08	22.8W	19:51	-21.0	119.7	22.3	22.9	2.2	15.1	13.3	34.3	13.0	0.6	256.9	213.8	292.2
2020-Feb-09	23.7W	19:51	-20.9	119.8	22.2	22.9	2.3	15.2	13.3	34.4	13.0	0.6	21.1	305.7	22.9
2020-Feb-10	24.6W	19:52	-20.9	119.8	22.2	22.9	2.3	15.2	13.3	34.4	13.0	0.6	145.3	37.6	113.6

2020-Feb-11	25.5W	19:52	-20.9	119.8	22.2	22.9	2.4	15.2	13.3	34.4	13.0	0.6	269.6	129.5	204.3
2020-Feb-12	26.4W	19:53	-20.9	119.9	22.1	22.9	2.5	15.2	13.4	34.4	13.0	0.6	33.8	221.5	295.1
2020-Feb-13	27.3W	19:53	-20.9	119.9	22.1	22.9	2.6	15.2	13.4	34.5	13.0	0.6	158.0	313.4	25.8
2020-Feb-14	28.2W	19:54	-20.8	119.9	22.1	22.9	2.7	15.2	13.4	34.5	12.9	0.6	282.2	45.3	116.5
2020-Feb-15	29.1W	19:54	-20.8	120.0	22.0	22.8	2.7	15.2	13.4	34.5	12.9	0.6	46.5	137.2	207.2
2020-Feb-16	30.0W	19:55	-20.8	120.0	22.0	22.8	2.8	15.2	13.4	34.5	12.9	0.6	170.7	229.2	297.9
2020-Feb-17	30.9W	19:55	-20.8	120.0	22.0	22.8	2.9	15.2	13.4	34.6	12.9	0.6	294.9	321.1	28.6
2020-Feb-18	31.8W	19:55	-20.8	120.0	21.9	22.8	3.0	15.3	13.4	34.6	12.9	0.6	59.2	53.0	119.4
2020-Feb-19	32.7W	19:56	-20.8	120.1	21.9	22.8	3.1	15.3	13.4	34.6	12.9	0.6	183.4	145.0	210.1
2020-Feb-20	33.6W	19:56	-20.7	120.1	21.9	22.8	3.1	15.3	13.4	34.6	12.9	0.6	307.6	236.9	300.8
2020-Feb-21	34.6W	19:57	-20.7	120.1	21.8	22.8	3.2	15.3	13.5	34.7	12.9	0.6	71.9	328.8	31.6
2020-Feb-22	35.5W	19:57	-20.7	120.2	21.8	22.8	3.3	15.3	13.5	34.7	12.9	0.6	196.1	60.8	122.3
2020-Feb-23	36.4W	19:58	-20.7	120.2	21.8	22.8	3.4	15.3	13.5	34.7	12.9	0.7	320.3	152.7	213.0
2020-Feb-24	37.3W	19:58	-20.7	120.2	21.7	22.8	3.4	15.3	13.5	34.8	12.9	0.7	84.6	244.6	303.8
2020-Feb-25	38.2W	19:59	-20.6	120.3	21.7	22.8	3.5	15.3	13.5	34.8	12.9	0.7	208.8	336.6	34.5
2020-Feb-26	39.1W	19:59	-20.6	120.3	21.7	22.8	3.6	15.4	13.5	34.8	12.9	0.7	333.1	68.5	125.2
2020-Feb-27	40.0W	19:59	-20.6	120.3	21.7	22.8	3.6	15.4	13.5	34.9	12.9	0.7	97.3	160.5	216.0
2020-Feb-28	40.9W	20:00	-20.6	120.4	21.6	22.7	3.7	15.4	13.5	34.9	12.9	0.7	221.6	252.4	306.7
2020-Feb-29	41.8W	20:00	-20.6	120.4	21.6	22.7	3.8	15.4	13.6	34.9	12.9	0.7	345.8	344.4	37.5

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yyyy-mm-dd	o	hh:mm	o	o	o	o	Angle	Eq	Po	Maj	Min	Mag	o	o	o
2020-Mar-01	42.7W	20:01	-20.5	120.4	21.6	22.7	3.8	15.4	13.6	35.0	12.9	0.7	110.1	76.3	128.2
2020-Mar-02	43.6W	20:01	-20.5	120.4	21.5	22.7	3.9	15.4	13.6	35.0	12.9	0.7	234.3	168.3	219.0
2020-Mar-03	44.5W	20:01	-20.5	120.5	21.5	22.7	4.0	15.5	13.6	35.0	12.8	0.7	358.6	260.2	309.7
2020-Mar-04	45.4W	20:02	-20.5	120.5	21.5	22.7	4.0	15.5	13.6	35.1	12.8	0.7	122.9	352.2	40.5
2020-Mar-05	46.3W	20:02	-20.5	120.5	21.4	22.7	4.1	15.5	13.6	35.1	12.8	0.7	247.1	84.2	131.2
2020-Mar-06	47.2W	20:03	-20.5	120.6	21.4	22.7	4.2	15.5	13.6	35.2	12.8	0.7	11.4	176.1	222.0
2020-Mar-07	48.1W	20:03	-20.4	120.6	21.4	22.7	4.2	15.5	13.7	35.2	12.8	0.7	135.7	268.1	312.7
2020-Mar-08	49.1W	20:03	-20.4	120.6	21.4	22.7	4.3	15.5	13.7	35.3	12.8	0.7	259.9	0.1	43.5
2020-Mar-09	50.0W	20:04	-20.4	120.7	21.3	22.7	4.3	15.6	13.7	35.3	12.8	0.7	24.2	92.0	134.2
2020-Mar-10	50.9W	20:04	-20.4	120.7	21.3	22.7	4.4	15.6	13.7	35.3	12.8	0.7	148.5	184.0	225.0
2020-Mar-11	51.8W	20:05	-20.4	120.7	21.3	22.7	4.5	15.6	13.7	35.4	12.8	0.7	272.7	276.0	315.8
2020-Mar-12	52.7W	20:05	-20.4	120.7	21.3	22.6	4.5	15.6	13.7	35.4	12.8	0.7	37.0	7.9	46.5
2020-Mar-13	53.6W	20:05	-20.3	120.8	21.2	22.6	4.6	15.6	13.8	35.5	12.8	0.7	161.3	99.9	137.3
2020-Mar-14	54.5W	20:06	-20.3	120.8	21.2	22.6	4.6	15.7	13.8	35.5	12.8	0.7	285.6	191.9	228.1
2020-Mar-15	55.4W	20:06	-20.3	120.8	21.2	22.6	4.7	15.7	13.8	35.6	12.8	0.7	49.8	283.9	318.9
2020-Mar-16	56.3W	20:06	-20.3	120.9	21.2	22.6	4.7	15.7	13.8	35.6	12.8	0.7	174.1	15.8	49.6
2020-Mar-17	57.3W	20:07	-20.3	120.9	21.1	22.6	4.8	15.7	13.8	35.7	12.8	0.7	298.4	107.8	140.4
2020-Mar-18	58.2W	20:07	-20.3	120.9	21.1	22.6	4.8	15.7	13.9	35.7	12.9	0.7	62.7	199.8	231.2
2020-Mar-19	59.1W	20:07	-20.2	121.0	21.1	22.6	4.9	15.8	13.9	35.7	12.9	0.7	187.0	291.8	322.0
2020-Mar-20	60.0W	20:08	-20.2	121.0	21.1	22.6	4.9	15.8	13.9	35.8	12.9	0.7	311.3	23.8	52.7
2020-Mar-21	60.9W	20:08	-20.2	121.0	21.0	22.6	5.0	15.8	13.9	35.8	12.9	0.7	75.6	115.8	143.5
2020-Mar-22	61.8W	20:08	-20.2	121.0	21.0	22.6	5.0	15.8	13.9	35.9	12.9	0.7	199.9	207.8	234.3
2020-Mar-23	62.8W	20:09	-20.2	121.1	21.0	22.6	5.1	15.9	13.9	35.9	12.9	0.7	324.2	299.8	325.1
2020-Mar-24	63.7W	20:09	-20.2	121.1	21.0	22.6	5.1	15.9	14.0	36.0	12.9	0.7	88.5	31.8	55.9
2020-Mar-25	64.6W	20:09	-20.2	121.1	20.9	22.5	5.2	15.9	14.0	36.1	12.9	0.7	212.8	123.8	146.7
2020-Mar-26	65.5W	20:09	-20.1	121.2	20.9	22.5	5.2	15.9	14.0	36.1	12.9	0.7	337.1	215.8	237.5
2020-Mar-27	66.4W	20:10	-20.1	121.2	20.9	22.5	5.2	15.9	14.0	36.2	12.9	0.7	101.4	307.8	328.3
2020-Mar-28	67.4W	20:10	-20.1	121.2	20.9	22.5	5.3	16.0	14.1	36.2	12.9	0.7	225.7	39.8	59.1

2020-Mar-29	68.3W	20:10	-20.1	121.3	20.9	22.5	5.3	16.0	14.1	36.3	12.9	0.7	350.0	131.8	149.9
2020-Mar-30	69.2W	20:11	-20.1	121.3	20.8	22.5	5.3	16.0	14.1	36.3	12.9	0.7	114.3	223.8	240.7
2020-Mar-31	70.1W	20:11	-20.1	121.3	20.8	22.5	5.4	16.0	14.1	36.4	12.9	0.7	238.6	315.8	331.5

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2020-Apr-01	71.1W	20:11	-20.1	121.3	20.8	22.5	5.4	16.1	14.1	36.4	12.9	0.7	2.9	47.8	62.3
2020-Apr-02	72.0W	20:11	-20.0	121.4	20.8	22.5	5.4	16.1	14.2	36.5	12.9	0.7	127.2	139.8	153.1
2020-Apr-03	72.9W	20:12	-20.0	121.4	20.8	22.5	5.5	16.1	14.2	36.5	12.9	0.7	251.5	231.8	243.9
2020-Apr-04	73.8W	20:12	-20.0	121.4	20.7	22.5	5.5	16.1	14.2	36.6	13.0	0.7	15.9	323.8	334.7
2020-Apr-05	74.8W	20:12	-20.0	121.5	20.7	22.5	5.5	16.2	14.2	36.7	13.0	0.7	140.2	55.8	65.5
2020-Apr-06	75.7W	20:12	-20.0	121.5	20.7	22.5	5.6	16.2	14.2	36.7	13.0	0.7	264.5	147.9	156.3
2020-Apr-07	76.6W	20:13	-20.0	121.5	20.7	22.4	5.6	16.2	14.3	36.8	13.0	0.7	28.8	239.9	247.1
2020-Apr-08	77.5W	20:13	-20.0	121.6	20.7	22.4	5.6	16.2	14.3	36.8	13.0	0.7	153.2	331.9	337.9
2020-Apr-09	78.5W	20:13	-20.0	121.6	20.7	22.4	5.6	16.3	14.3	36.9	13.0	0.6	277.5	63.9	68.8
2020-Apr-10	79.4W	20:13	-20.0	121.6	20.6	22.4	5.6	16.3	14.3	37.0	13.0	0.6	41.8	156.0	159.6
2020-Apr-11	80.3W	20:13	-20.0	121.6	20.6	22.4	5.7	16.3	14.4	37.0	13.0	0.6	166.1	248.0	250.4
2020-Apr-12	81.3W	20:14	-19.9	121.7	20.6	22.4	5.7	16.3	14.4	37.1	13.0	0.6	290.5	340.0	341.2
2020-Apr-13	82.2W	20:14	-19.9	121.7	20.6	22.4	5.7	16.4	14.4	37.1	13.1	0.6	54.8	72.0	72.1
2020-Apr-14	83.1W	20:14	-19.9	121.7	20.6	22.4	5.7	16.4	14.4	37.2	13.1	0.6	179.1	164.1	162.9
2020-Apr-15	84.1W	20:14	-19.9	121.8	20.6	22.4	5.7	16.4	14.5	37.3	13.1	0.6	303.5	256.1	253.7
2020-Apr-16	85.0W	20:14	-19.9	121.8	20.6	22.4	5.7	16.5	14.5	37.3	13.1	0.6	67.8	348.1	344.5
2020-Apr-17	86.0W	20:15	-19.9	121.8	20.5	22.4	5.7	16.5	14.5	37.4	13.1	0.6	192.2	80.2	75.4
2020-Apr-18	86.9W	20:15	-19.9	121.9	20.5	22.4	5.7	16.5	14.5	37.4	13.1	0.6	316.5	172.2	166.2
2020-Apr-19	87.8W	20:15	-19.9	121.9	20.5	22.4	5.7	16.5	14.6	37.5	13.1	0.6	80.9	264.3	257.0
2020-Apr-20	88.8W	20:15	-19.9	121.9	20.5	22.3	5.8	16.6	14.6	37.6	13.2	0.6	205.2	356.3	347.9
2020-Apr-21	89.7W	20:15	-19.9	122.0	20.5	22.3	5.8	16.6	14.6	37.6	13.2	0.6	329.5	88.4	78.7
2020-Apr-22	90.7W	20:15	-19.9	122.0	20.5	22.3	5.8	16.6	14.6	37.7	13.2	0.6	93.9	180.4	169.6
2020-Apr-23	91.6W	20:15	-19.9	122.0	20.5	22.3	5.8	16.7	14.6	37.8	13.2	0.6	218.2	272.4	260.4
2020-Apr-24	92.6W	20:15	-19.9	122.0	20.5	22.3	5.8	16.7	14.7	37.8	13.2	0.6	342.6	4.5	351.2
2020-Apr-25	93.5W	20:16	-19.9	122.1	20.5	22.3	5.8	16.7	14.7	37.9	13.2	0.6	107.0	96.5	82.1
2020-Apr-26	94.5W	20:16	-19.9	122.1	20.5	22.3	5.7	16.7	14.7	37.9	13.3	0.6	231.3	188.6	172.9
2020-Apr-27	95.4W	20:16	-19.9	122.1	20.5	22.3	5.7	16.8	14.7	38.0	13.3	0.6	355.7	280.7	263.8
2020-Apr-28	96.4W	20:16	-19.8	122.2	20.4	22.3	5.7	16.8	14.8	38.1	13.3	0.6	120.0	12.7	354.6
2020-Apr-29	97.3W	20:16	-19.8	122.2	20.4	22.3	5.7	16.8	14.8	38.1	13.3	0.6	244.4	104.8	85.5
2020-Apr-30	98.3W	20:16	-19.8	122.2	20.4	22.3	5.7	16.8	14.8	38.2	13.3	0.6	8.7	196.8	176.3

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Diameter('')			CMI	CMII	CMIII
							Angle	Eq	Po	Maj	Min	Mag			
2020-May-01	99.2W	20:16	-19.8	122.3	20.4	22.3	5.7	16.9	14.8	38.3	13.4	0.6	133.1	288.9	267.2
2020-May-02	100.2W	20:16	-19.8	122.3	20.4	22.3	5.7	16.9	14.9	38.3	13.4	0.6	257.5	20.9	358.0
2020-May-03	101.1W	20:16	-19.8	122.3	20.4	22.2	5.7	16.9	14.9	38.4	13.4	0.6	21.8	113.0	88.9
2020-May-04	102.1W	20:16	-19.8	122.3	20.4	22.2	5.6	17.0	14.9	38.5	13.4	0.6	146.2	205.1	179.8
2020-May-05	103.0W	20:16	-19.8	122.4	20.4	22.2	5.6	17.0	14.9	38.5	13.4	0.6	270.6	297.1	270.6
2020-May-06	104.0W	20:16	-19.8	122.4	20.4	22.2	5.6	17.0	15.0	38.6	13.5	0.6	34.9	29.2	1.5
2020-May-07	105.0W	20:16	-19.8	122.4	20.4	22.2	5.6	17.0	15.0	38.7	13.5	0.6	159.3	121.3	92.3
2020-May-08	105.9W	20:16	-19.8	122.5	20.4	22.2	5.6	17.1	15.0	38.7	13.5	0.5	283.7	213.3	183.2
2020-May-09	106.9W	20:16	-19.8	122.5	20.4	22.2	5.5	17.1	15.0	38.8	13.5	0.5	48.1	305.4	274.1
2020-May-10	107.9W	20:16	-19.8	122.5	20.4	22.2	5.5	17.1	15.1	38.8	13.6	0.5	172.4	37.5	4.9

2020-May-11	108.8W	20:16	-19.8	122.6	20.4	22.2	5.5	17.2	15.1	38.9	13.6	0.5	296.8	129.6	95.8
2020-May-12	109.8W	20:16	-19.8	122.6	20.4	22.2	5.4	17.2	15.1	39.0	13.6	0.5	61.2	221.6	186.7
2020-May-13	110.8W	20:16	-19.8	122.6	20.4	22.2	5.4	17.2	15.1	39.0	13.6	0.5	185.6	313.7	277.5
2020-May-14	111.7W	20:16	-19.8	122.6	20.4	22.2	5.4	17.2	15.2	39.1	13.6	0.5	309.9	45.8	8.4
2020-May-15	112.7W	20:16	-19.8	122.7	20.4	22.1	5.3	17.3	15.2	39.2	13.7	0.5	74.3	137.9	99.3
2020-May-16	113.7W	20:16	-19.8	122.7	20.4	22.1	5.3	17.3	15.2	39.2	13.7	0.5	198.7	229.9	190.1
2020-May-17	114.6W	20:16	-19.9	122.7	20.4	22.1	5.3	17.3	15.2	39.3	13.7	0.5	323.1	322.0	281.0
2020-May-18	115.6W	20:16	-19.9	122.8	20.4	22.1	5.2	17.4	15.3	39.3	13.7	0.5	87.5	54.1	11.9
2020-May-19	116.6W	20:16	-19.9	122.8	20.4	22.1	5.2	17.4	15.3	39.4	13.8	0.5	211.9	146.2	102.8
2020-May-20	117.6W	20:16	-19.9	122.8	20.5	22.1	5.1	17.4	15.3	39.5	13.8	0.5	336.2	238.3	193.6
2020-May-21	118.5W	20:16	-19.9	122.9	20.5	22.1	5.1	17.4	15.3	39.5	13.8	0.5	100.6	330.3	284.5
2020-May-22	119.5W	20:16	-19.9	122.9	20.5	22.1	5.0	17.5	15.4	39.6	13.8	0.5	225.0	62.4	15.4
2020-May-23	120.5W	20:16	-19.9	122.9	20.5	22.1	5.0	17.5	15.4	39.7	13.9	0.5	349.4	154.5	106.3
2020-May-24	121.5W	20:16	-19.9	123.0	20.5	22.1	4.9	17.5	15.4	39.7	13.9	0.5	113.8	246.6	197.2
2020-May-25	122.5W	20:16	-19.9	123.0	20.5	22.1	4.9	17.5	15.4	39.8	13.9	0.5	238.2	338.7	288.0
2020-May-26	123.4W	20:16	-19.9	123.0	20.5	22.1	4.8	17.6	15.5	39.8	14.0	0.5	2.6	70.8	18.9
2020-May-27	124.4W	20:16	-19.9	123.0	20.5	22.1	4.8	17.6	15.5	39.9	14.0	0.4	127.0	162.9	109.8
2020-May-28	125.4W	20:16	-19.9	123.1	20.5	22.0	4.7	17.6	15.5	40.0	14.0	0.4	251.4	255.0	200.7
2020-May-29	126.4W	20:15	-19.9	123.1	20.5	22.0	4.7	17.6	15.5	40.0	14.0	0.4	15.8	347.0	291.6
2020-May-30	127.4W	20:15	-19.9	123.1	20.5	22.0	4.6	17.7	15.5	40.1	14.1	0.4	140.1	79.1	22.5
2020-May-31	128.4W	20:15	-19.9	123.2	20.6	22.0	4.6	17.7	15.6	40.1	14.1	0.4	264.5	171.2	113.3

Date	Elong o	RA hh:mm	Dec o	Ls o	B o	B' o	Phase Globe			Diameter('')			CMI	CMII	CMIII
							Angle	Eq	Po	Maj	Min	Mag			
2020-Jun-01	129.4W	20:15	-19.9	123.2	20.6	22.0	4.5	17.7	15.6	40.2	14.1	0.4	28.9	263.3	204.2
2020-Jun-02	130.4W	20:15	-20.0	123.2	20.6	22.0	4.4	17.7	15.6	40.2	14.1	0.4	153.3	355.4	295.1
2020-Jun-03	131.4W	20:15	-20.0	123.3	20.6	22.0	4.4	17.8	15.6	40.3	14.2	0.4	277.7	87.5	26.0
2020-Jun-04	132.3W	20:15	-20.0	123.3	20.6	22.0	4.3	17.8	15.7	40.3	14.2	0.4	42.1	179.6	116.9
2020-Jun-05	133.3W	20:14	-20.0	123.3	20.6	22.0	4.2	17.8	15.7	40.4	14.2	0.4	166.5	271.7	207.8
2020-Jun-06	134.3W	20:14	-20.0	123.3	20.6	22.0	4.2	17.8	15.7	40.4	14.3	0.4	290.9	3.8	298.7
2020-Jun-07	135.3W	20:14	-20.0	123.4	20.7	22.0	4.1	17.9	15.7	40.5	14.3	0.4	55.3	95.9	29.6
2020-Jun-08	136.3W	20:14	-20.0	123.4	20.7	22.0	4.0	17.9	15.7	40.6	14.3	0.4	179.7	188.0	120.4
2020-Jun-09	137.3W	20:14	-20.0	123.4	20.7	21.9	3.9	17.9	15.8	40.6	14.3	0.4	304.1	280.1	211.3
2020-Jun-10	138.3W	20:14	-20.0	123.5	20.7	21.9	3.9	17.9	15.8	40.6	14.4	0.4	68.5	12.2	302.2
2020-Jun-11	139.3W	20:13	-20.1	123.5	20.7	21.9	3.8	17.9	15.8	40.7	14.4	0.4	192.9	104.3	33.1
2020-Jun-12	140.3W	20:13	-20.1	123.5	20.7	21.9	3.7	18.0	15.8	40.7	14.4	0.3	317.3	196.4	124.0
2020-Jun-13	141.3W	20:13	-20.1	123.6	20.8	21.9	3.6	18.0	15.8	40.8	14.5	0.3	81.7	288.5	214.9
2020-Jun-14	142.3W	20:13	-20.1	123.6	20.8	21.9	3.6	18.0	15.8	40.8	14.5	0.3	206.1	20.6	305.8
2020-Jun-15	143.4W	20:13	-20.1	123.6	20.8	21.9	3.5	18.0	15.9	40.9	14.5	0.3	330.5	112.7	36.7
2020-Jun-16	144.4W	20:12	-20.1	123.6	20.8	21.9	3.4	18.1	15.9	40.9	14.5	0.3	94.9	204.8	127.6
2020-Jun-17	145.4W	20:12	-20.1	123.7	20.8	21.9	3.3	18.1	15.9	41.0	14.6	0.3	219.3	296.9	218.5
2020-Jun-18	146.4W	20:12	-20.1	123.7	20.8	21.9	3.2	18.1	15.9	41.0	14.6	0.3	343.7	29.0	309.4
2020-Jun-19	147.4W	20:12	-20.2	123.7	20.9	21.9	3.1	18.1	15.9	41.1	14.6	0.3	108.1	121.1	40.3
2020-Jun-20	148.4W	20:12	-20.2	123.8	20.9	21.9	3.0	18.1	15.9	41.1	14.7	0.3	232.5	213.2	131.1
2020-Jun-21	149.4W	20:11	-20.2	123.8	20.9	21.8	3.0	18.1	16.0	41.1	14.7	0.3	356.9	305.3	222.0
2020-Jun-22	150.4W	20:11	-20.2	123.8	20.9	21.8	2.9	18.2	16.0	41.2	14.7	0.3	121.3	37.4	312.9
2020-Jun-23	151.4W	20:11	-20.2	123.9	20.9	21.8	2.8	18.2	16.0	41.2	14.7	0.3	245.7	129.4	43.8
2020-Jun-24	152.4W	20:11	-20.2	123.9	21.0	21.8	2.7	18.2	16.0	41.2	14.8	0.3	10.1	221.5	134.7
2020-Jun-25	153.5W	20:10	-20.2	123.9	21.0	21.8	2.6	18.2	16.0	41.3	14.8	0.3	134.5	313.6	225.6
2020-Jun-26	154.5W	20:10	-20.3	123.9	21.0	21.8	2.5	18.2	16.0	41.3	14.8	0.3	258.9	45.7	316.5

2020-Jun-27	155.5W	20:10	-20.3	124.0	21.0	21.8	2.4	18.2	16.0	41.3	14.8	0.2	23.3	137.8	47.4
2020-Jun-28	156.5W	20:10	-20.3	124.0	21.1	21.8	2.3	18.2	16.1	41.4	14.9	0.2	147.7	229.9	138.3
2020-Jun-29	157.5W	20:09	-20.3	124.0	21.1	21.8	2.2	18.3	16.1	41.4	14.9	0.2	272.1	322.0	229.2
2020-Jun-30	158.6W	20:09	-20.3	124.1	21.1	21.8	2.1	18.3	16.1	41.4	14.9	0.2	36.5	54.1	320.1

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Rings Vis			Diameter('')		
							Angle	Eq	Po	Maj	Min	Mag	CMI	CMII	CMIII
yyyy-mm-dd	o	hh:mm	o	o	o	o							o	o	o
2020-Jul-01	159.6W	20:09	-20.3	124.1	21.1	21.8	2.0	18.3	16.1	41.5	14.9	0.2	160.9	146.2	50.9
2020-Jul-02	160.6W	20:08	-20.3	124.1	21.2	21.8	1.9	18.3	16.1	41.5	15.0	0.2	285.3	238.3	141.8
2020-Jul-03	161.6W	20:08	-20.4	124.2	21.2	21.7	1.8	18.3	16.1	41.5	15.0	0.2	49.7	330.4	232.7
2020-Jul-04	162.6W	20:08	-20.4	124.2	21.2	21.7	1.7	18.3	16.1	41.5	15.0	0.2	174.1	62.5	323.6
2020-Jul-05	163.7W	20:08	-20.4	124.2	21.2	21.7	1.6	18.3	16.1	41.6	15.0	0.2	298.5	154.6	54.5
2020-Jul-06	164.7W	20:07	-20.4	124.3	21.2	21.7	1.5	18.3	16.1	41.6	15.1	0.2	62.9	246.7	145.4
2020-Jul-07	165.7W	20:07	-20.4	124.3	21.3	21.7	1.4	18.3	16.1	41.6	15.1	0.2	187.2	338.8	236.3
2020-Jul-08	166.7W	20:07	-20.4	124.3	21.3	21.7	1.3	18.4	16.1	41.6	15.1	0.2	311.6	70.9	327.1
2020-Jul-09	167.7W	20:06	-20.5	124.3	21.3	21.7	1.2	18.4	16.2	41.6	15.1	0.2	76.0	163.0	58.0
2020-Jul-10	168.8W	20:06	-20.5	124.4	21.3	21.7	1.1	18.4	16.2	41.7	15.2	0.2	200.4	255.0	148.9
2020-Jul-11	169.8W	20:06	-20.5	124.4	21.4	21.7	1.0	18.4	16.2	41.7	15.2	0.2	324.8	347.1	239.8
2020-Jul-12	170.8W	20:05	-20.5	124.4	21.4	21.7	0.9	18.4	16.2	41.7	15.2	0.2	89.2	79.2	330.7
2020-Jul-13	171.8W	20:05	-20.5	124.5	21.4	21.7	0.8	18.4	16.2	41.7	15.2	0.1	213.6	171.3	61.5
2020-Jul-14	172.9W	20:05	-20.5	124.5	21.4	21.7	0.7	18.4	16.2	41.7	15.2	0.1	338.0	263.4	152.4
2020-Jul-15	173.9W	20:05	-20.6	124.5	21.5	21.6	0.6	18.4	16.2	41.7	15.3	0.1	102.3	355.5	243.3
2020-Jul-16	174.9W	20:04	-20.6	124.6	21.5	21.6	0.5	18.4	16.2	41.7	15.3	0.1	226.7	87.5	334.2
2020-Jul-17	176.0W	20:04	-20.6	124.6	21.5	21.6	0.4	18.4	16.2	41.7	15.3	0.1	351.1	179.6	65.1
2020-Jul-18	177.0W	20:04	-20.6	124.6	21.5	21.6	0.3	18.4	16.2	41.7	15.3	0.1	115.5	271.7	155.9
2020-Jul-19	178.0W	20:03	-20.6	124.6	21.6	21.6	0.2	18.4	16.2	41.7	15.3	0.1	239.9	3.8	246.8
2020-Jul-20	179.0W	20:03	-20.6	124.7	21.6	21.6	0.1	18.4	16.2	41.7	15.4	0.1	4.2	95.9	337.7
2020-Jul-21	179.8E	20:03	-20.7	124.7	21.6	21.6	0.0	18.4	16.2	41.7	15.4	0.1	128.6	187.9	68.5
2020-Jul-22	178.9E	20:02	-20.7	124.7	21.6	21.6	0.1	18.4	16.2	41.7	15.4	0.1	253.0	280.0	159.4
2020-Jul-23	177.9E	20:02	-20.7	124.8	21.7	21.6	0.2	18.4	16.2	41.7	15.4	0.1	17.4	12.1	250.3
2020-Jul-24	176.8E	20:02	-20.7	124.8	21.7	21.6	0.3	18.4	16.2	41.7	15.4	0.1	141.7	104.2	341.1
2020-Jul-25	175.8E	20:02	-20.7	124.8	21.7	21.6	0.4	18.4	16.2	41.7	15.4	0.1	266.1	196.2	72.0
2020-Jul-26	174.8E	20:01	-20.7	124.9	21.7	21.6	0.5	18.4	16.2	41.7	15.5	0.1	30.5	288.3	162.9
2020-Jul-27	173.7E	20:01	-20.8	124.9	21.8	21.5	0.6	18.4	16.2	41.7	15.5	0.1	154.8	20.4	253.7
2020-Jul-28	172.7E	20:01	-20.8	124.9	21.8	21.5	0.7	18.4	16.2	41.7	15.5	0.1	279.2	112.4	344.6
2020-Jul-29	171.7E	20:00	-20.8	124.9	21.8	21.5	0.8	18.4	16.2	41.7	15.5	0.1	43.6	204.5	75.4
2020-Jul-30	170.7E	20:00	-20.8	125.0	21.8	21.5	0.9	18.4	16.2	41.7	15.5	0.1	167.9	296.6	166.3
2020-Jul-31	169.6E	20:00	-20.8	125.0	21.9	21.5	1.0	18.4	16.2	41.7	15.5	0.1	292.3	28.6	257.2

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Rings Vis			Diameter('')		
							Angle	Eq	Po	Maj	Min	Mag	CMI	CMII	CMIII
yyyy-mm-dd	o	hh:mm	o	o	o	o							o	o	o
2020-Aug-01	168.6E	19:59	-20.8	125.0	21.9	21.5	1.1	18.4	16.2	41.7	15.5	0.2	56.6	120.7	348.0
2020-Aug-02	167.6E	19:59	-20.9	125.1	21.9	21.5	1.2	18.4	16.2	41.6	15.5	0.2	181.0	212.7	78.9
2020-Aug-03	166.6E	19:59	-20.9	125.1	21.9	21.5	1.4	18.4	16.1	41.6	15.5	0.2	305.4	304.8	169.7
2020-Aug-04	165.5E	19:58	-20.9	125.1	22.0	21.5	1.5	18.3	16.1	41.6	15.6	0.2	69.7	36.8	260.6
2020-Aug-05	164.5E	19:58	-20.9	125.2	22.0	21.5	1.6	18.3	16.1	41.6	15.6	0.2	194.1	128.9	351.4
2020-Aug-06	163.5E	19:58	-20.9	125.2	22.0	21.5	1.7	18.3	16.1	41.6	15.6	0.2	318.4	220.9	82.2
2020-Aug-07	162.4E	19:58	-20.9	125.2	22.0	21.4	1.8	18.3	16.1	41.5	15.6	0.2	82.8	313.0	173.1
2020-Aug-08	161.4E	19:57	-20.9	125.3	22.1	21.4	1.9	18.3	16.1	41.5	15.6	0.2	207.1	45.0	263.9

2020-Aug-09	160.4E	19:57	-21.0	125.3	22.1	21.4	1.9	18.3	16.1	41.5	15.6	0.2	331.4	137.1	354.8
2020-Aug-10	159.4E	19:57	-21.0	125.3	22.1	21.4	2.0	18.3	16.1	41.5	15.6	0.2	95.8	229.1	85.6
2020-Aug-11	158.3E	19:56	-21.0	125.3	22.1	21.4	2.1	18.3	16.1	41.4	15.6	0.2	220.1	321.2	176.4
2020-Aug-12	157.3E	19:56	-21.0	125.4	22.1	21.4	2.2	18.3	16.1	41.4	15.6	0.2	344.5	53.2	267.3
2020-Aug-13	156.3E	19:56	-21.0	125.4	22.2	21.4	2.3	18.3	16.1	41.4	15.6	0.2	108.8	145.2	358.1
2020-Aug-14	155.3E	19:56	-21.0	125.4	22.2	21.4	2.4	18.2	16.0	41.4	15.6	0.2	233.1	237.3	88.9
2020-Aug-15	154.2E	19:55	-21.0	125.5	22.2	21.4	2.5	18.2	16.0	41.3	15.6	0.2	357.5	329.3	179.7
2020-Aug-16	153.2E	19:55	-21.1	125.5	22.2	21.4	2.6	18.2	16.0	41.3	15.6	0.2	121.8	61.3	270.6
2020-Aug-17	152.2E	19:55	-21.1	125.5	22.2	21.4	2.7	18.2	16.0	41.3	15.6	0.2	246.1	153.3	1.4
2020-Aug-18	151.2E	19:55	-21.1	125.6	22.3	21.4	2.8	18.2	16.0	41.2	15.6	0.2	10.4	245.4	92.2
2020-Aug-19	150.2E	19:54	-21.1	125.6	22.3	21.3	2.9	18.2	16.0	41.2	15.6	0.2	134.8	337.4	183.0
2020-Aug-20	149.1E	19:54	-21.1	125.6	22.3	21.3	3.0	18.1	16.0	41.1	15.6	0.2	259.1	69.4	273.8
2020-Aug-21	148.1E	19:54	-21.1	125.6	22.3	21.3	3.1	18.1	15.9	41.1	15.6	0.3	23.4	161.4	4.6
2020-Aug-22	147.1E	19:54	-21.1	125.7	22.3	21.3	3.1	18.1	15.9	41.1	15.6	0.3	147.7	253.5	95.5
2020-Aug-23	146.1E	19:53	-21.1	125.7	22.4	21.3	3.2	18.1	15.9	41.0	15.6	0.3	272.0	345.5	186.3
2020-Aug-24	145.1E	19:53	-21.1	125.7	22.4	21.3	3.3	18.1	15.9	41.0	15.6	0.3	36.3	77.5	277.1
2020-Aug-25	144.0E	19:53	-21.2	125.8	22.4	21.3	3.4	18.1	15.9	40.9	15.6	0.3	160.6	169.5	7.9
2020-Aug-26	143.0E	19:53	-21.2	125.8	22.4	21.3	3.5	18.0	15.9	40.9	15.6	0.3	284.9	261.5	98.7
2020-Aug-27	142.0E	19:53	-21.2	125.8	22.4	21.3	3.6	18.0	15.8	40.8	15.6	0.3	49.2	353.5	189.5
2020-Aug-28	141.0E	19:52	-21.2	125.9	22.4	21.3	3.6	18.0	15.8	40.8	15.6	0.3	173.5	85.5	280.3
2020-Aug-29	140.0E	19:52	-21.2	125.9	22.5	21.3	3.7	18.0	15.8	40.8	15.6	0.3	297.8	177.5	11.1
2020-Aug-30	139.0E	19:52	-21.2	125.9	22.5	21.3	3.8	18.0	15.8	40.7	15.6	0.3	62.1	269.5	101.9
2020-Aug-31	138.0E	19:52	-21.2	126.0	22.5	21.2	3.9	17.9	15.8	40.7	15.5	0.3	186.4	1.5	192.6

Date	Elong	RA	Dec	Ls	B	B'	Phase		Globe	Diameter('')			CMI	CMII	CMIII
							Angle	Eq		Po	Maj	Min			
2020-Sep-01	136.9E	19:52	-21.2	126.0	22.5	21.2	3.9	17.9	15.8	40.6	15.5	0.3	310.7	93.5	283.4
2020-Sep-02	135.9E	19:51	-21.2	126.0	22.5	21.2	4.0	17.9	15.7	40.6	15.5	0.3	75.0	185.5	14.2
2020-Sep-03	134.9E	19:51	-21.2	126.0	22.5	21.2	4.1	17.9	15.7	40.5	15.5	0.3	199.3	277.5	105.0
2020-Sep-04	133.9E	19:51	-21.3	126.1	22.5	21.2	4.2	17.8	15.7	40.5	15.5	0.3	323.6	9.4	195.8
2020-Sep-05	132.9E	19:51	-21.3	126.1	22.6	21.2	4.2	17.8	15.7	40.4	15.5	0.3	87.8	101.4	286.5
2020-Sep-06	131.9E	19:51	-21.3	126.1	22.6	21.2	4.3	17.8	15.7	40.4	15.5	0.3	212.1	193.4	17.3
2020-Sep-07	130.9E	19:51	-21.3	126.2	22.6	21.2	4.4	17.8	15.6	40.3	15.5	0.3	336.4	285.4	108.1
2020-Sep-08	129.9E	19:50	-21.3	126.2	22.6	21.2	4.4	17.7	15.6	40.2	15.5	0.4	100.7	17.4	198.9
2020-Sep-09	128.9E	19:50	-21.3	126.2	22.6	21.2	4.5	17.7	15.6	40.2	15.4	0.4	224.9	109.3	289.6
2020-Sep-10	127.9E	19:50	-21.3	126.3	22.6	21.2	4.6	17.7	15.6	40.1	15.4	0.4	349.2	201.3	20.4
2020-Sep-11	126.9E	19:50	-21.3	126.3	22.6	21.1	4.6	17.7	15.6	40.1	15.4	0.4	113.5	293.3	111.2
2020-Sep-12	125.9E	19:50	-21.3	126.3	22.6	21.1	4.7	17.6	15.5	40.0	15.4	0.4	237.7	25.2	201.9
2020-Sep-13	124.9E	19:50	-21.3	126.3	22.6	21.1	4.7	17.6	15.5	40.0	15.4	0.4	2.0	117.2	292.7
2020-Sep-14	123.9E	19:50	-21.3	126.4	22.6	21.1	4.8	17.6	15.5	39.9	15.4	0.4	126.3	209.2	23.4
2020-Sep-15	122.9E	19:50	-21.3	126.4	22.7	21.1	4.8	17.6	15.5	39.8	15.3	0.4	250.5	301.1	114.2
2020-Sep-16	121.9E	19:50	-21.3	126.4	22.7	21.1	4.9	17.5	15.4	39.8	15.3	0.4	14.8	33.1	204.9
2020-Sep-17	120.9E	19:49	-21.3	126.5	22.7	21.1	4.9	17.5	15.4	39.7	15.3	0.4	139.0	125.0	295.7
2020-Sep-18	119.9E	19:49	-21.3	126.5	22.7	21.1	5.0	17.5	15.4	39.7	15.3	0.4	263.3	217.0	26.4
2020-Sep-19	118.9E	19:49	-21.4	126.5	22.7	21.1	5.0	17.5	15.4	39.6	15.3	0.4	27.5	308.9	117.2
2020-Sep-20	117.9E	19:49	-21.4	126.6	22.7	21.1	5.1	17.4	15.3	39.5	15.3	0.4	151.8	40.9	207.9
2020-Sep-21	116.9E	19:49	-21.4	126.6	22.7	21.1	5.1	17.4	15.3	39.5	15.2	0.4	276.0	132.8	298.7
2020-Sep-22	115.9E	19:49	-21.4	126.6	22.7	21.0	5.2	17.4	15.3	39.4	15.2	0.4	40.3	224.8	29.4
2020-Sep-23	114.9E	19:49	-21.4	126.6	22.7	21.0	5.2	17.4	15.3	39.4	15.2	0.4	164.5	316.7	120.1
2020-Sep-24	113.9E	19:49	-21.4	126.7	22.7	21.0	5.3	17.3	15.2	39.3	15.2	0.4	288.7	48.7	210.9

2020-Sep-25	113.0E	19:49	-21.4	126.7	22.7	21.0	5.3	17.3	15.2	39.2	15.1	0.4	53.0	140.6	301.6
2020-Sep-26	112.0E	19:49	-21.4	126.7	22.7	21.0	5.3	17.3	15.2	39.2	15.1	0.4	177.2	232.5	32.3
2020-Sep-27	111.0E	19:49	-21.4	126.8	22.7	21.0	5.4	17.2	15.2	39.1	15.1	0.5	301.4	324.5	123.0
2020-Sep-28	110.0E	19:49	-21.4	126.8	22.7	21.0	5.4	17.2	15.2	39.0	15.1	0.5	65.6	56.4	213.8
2020-Sep-29	109.0E	19:49	-21.4	126.8	22.7	21.0	5.4	17.2	15.1	39.0	15.1	0.5	189.9	148.3	304.5
2020-Sep-30	108.0E	19:49	-21.4	126.9	22.7	21.0	5.5	17.2	15.1	38.9	15.0	0.5	314.1	240.2	35.2

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Rings Vis			Diameter('')		
							Angle	Eq	Po	Maj	Min	Mag	CMI	CMII	CMIII
yyyy-mm-dd	o	hh:mm	o	o	o	o							o	o	o
2020-Oct-01	107.1E	19:49	-21.4	126.9	22.7	21.0	5.5	17.1	15.1	38.9	15.0	0.5	78.3	332.2	125.9
2020-Oct-02	106.1E	19:49	-21.4	126.9	22.7	21.0	5.5	17.1	15.1	38.8	15.0	0.5	202.5	64.1	216.6
2020-Oct-03	105.1E	19:49	-21.4	127.0	22.7	21.0	5.5	17.1	15.0	38.7	15.0	0.5	326.7	156.0	307.4
2020-Oct-04	104.1E	19:49	-21.4	127.0	22.7	20.9	5.6	17.1	15.0	38.7	14.9	0.5	91.0	247.9	38.1
2020-Oct-05	103.1E	19:49	-21.4	127.0	22.7	20.9	5.6	17.0	15.0	38.6	14.9	0.5	215.2	339.8	128.8
2020-Oct-06	102.2E	19:49	-21.4	127.0	22.7	20.9	5.6	17.0	15.0	38.5	14.9	0.5	339.4	71.7	219.5
2020-Oct-07	101.2E	19:49	-21.4	127.1	22.7	20.9	5.6	17.0	14.9	38.5	14.8	0.5	103.6	163.7	310.2
2020-Oct-08	100.2E	19:49	-21.4	127.1	22.7	20.9	5.6	16.9	14.9	38.4	14.8	0.5	227.8	255.6	40.9
2020-Oct-09	99.3E	19:49	-21.4	127.1	22.7	20.9	5.7	16.9	14.9	38.3	14.8	0.5	352.0	347.5	131.6
2020-Oct-10	98.3E	19:49	-21.4	127.2	22.7	20.9	5.7	16.9	14.9	38.3	14.8	0.5	116.2	79.4	222.3
2020-Oct-11	97.3E	19:49	-21.4	127.2	22.7	20.9	5.7	16.9	14.8	38.2	14.7	0.5	240.4	171.3	313.0
2020-Oct-12	96.3E	19:50	-21.4	127.2	22.7	20.9	5.7	16.8	14.8	38.2	14.7	0.5	4.6	263.2	43.7
2020-Oct-13	95.4E	19:50	-21.4	127.3	22.7	20.9	5.7	16.8	14.8	38.1	14.7	0.5	128.8	355.1	134.4
2020-Oct-14	94.4E	19:50	-21.4	127.3	22.7	20.9	5.7	16.8	14.8	38.0	14.7	0.5	253.0	87.0	225.1
2020-Oct-15	93.4E	19:50	-21.3	127.3	22.7	20.8	5.7	16.7	14.7	38.0	14.6	0.5	17.2	178.9	315.8
2020-Oct-16	92.5E	19:50	-21.3	127.3	22.7	20.8	5.7	16.7	14.7	37.9	14.6	0.5	141.4	270.8	46.4
2020-Oct-17	91.5E	19:50	-21.3	127.4	22.6	20.8	5.7	16.7	14.7	37.8	14.6	0.5	265.6	2.7	137.1
2020-Oct-18	90.6E	19:50	-21.3	127.4	22.6	20.8	5.7	16.7	14.7	37.8	14.5	0.5	29.8	94.5	227.8
2020-Oct-19	89.6E	19:50	-21.3	127.4	22.6	20.8	5.7	16.6	14.6	37.7	14.5	0.5	153.9	186.4	318.5
2020-Oct-20	88.6E	19:50	-21.3	127.5	22.6	20.8	5.7	16.6	14.6	37.6	14.5	0.5	278.1	278.3	49.2
2020-Oct-21	87.7E	19:51	-21.3	127.5	22.6	20.8	5.7	16.6	14.6	37.6	14.4	0.6	42.3	10.2	139.9
2020-Oct-22	86.7E	19:51	-21.3	127.5	22.6	20.8	5.7	16.5	14.6	37.5	14.4	0.6	166.5	102.1	230.5
2020-Oct-23	85.8E	19:51	-21.3	127.6	22.6	20.8	5.7	16.5	14.5	37.5	14.4	0.6	290.7	194.0	321.2
2020-Oct-24	84.8E	19:51	-21.3	127.6	22.6	20.8	5.7	16.5	14.5	37.4	14.4	0.6	54.8	285.9	51.9
2020-Oct-25	83.8E	19:51	-21.3	127.6	22.6	20.8	5.7	16.5	14.5	37.3	14.3	0.6	179.0	17.7	142.6
2020-Oct-26	82.9E	19:51	-21.3	127.7	22.6	20.7	5.7	16.4	14.5	37.3	14.3	0.6	303.2	109.6	233.2
2020-Oct-27	81.9E	19:52	-21.3	127.7	22.5	20.7	5.6	16.4	14.4	37.2	14.3	0.6	67.4	201.5	323.9
2020-Oct-28	81.0E	19:52	-21.3	127.7	22.5	20.7	5.6	16.4	14.4	37.2	14.2	0.6	191.5	293.4	54.6
2020-Oct-29	80.0E	19:52	-21.3	127.7	22.5	20.7	5.6	16.4	14.4	37.1	14.2	0.6	315.7	25.2	145.2
2020-Oct-30	79.1E	19:52	-21.3	127.8	22.5	20.7	5.6	16.3	14.4	37.0	14.2	0.6	79.9	117.1	235.9
2020-Oct-31	78.1E	19:52	-21.2	127.8	22.5	20.7	5.6	16.3	14.3	37.0	14.1	0.6	204.0	209.0	326.6

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Rings Vis			Diameter('')		
							Angle	Eq	Po	Maj	Min	Mag	CMI	CMII	CMIII
yyyy-mm-dd	o	hh:mm	o	o	o	o							o	o	o
2020-Nov-01	77.2E	19:53	-21.2	127.8	22.5	20.7	5.6	16.3	14.3	36.9	14.1	0.6	328.2	300.9	57.2
2020-Nov-02	76.2E	19:53	-21.2	127.9	22.5	20.7	5.5	16.3	14.3	36.9	14.1	0.6	92.4	32.7	147.9
2020-Nov-03	75.3E	19:53	-21.2	127.9	22.4	20.7	5.5	16.2	14.3	36.8	14.0	0.6	216.5	124.6	238.6
2020-Nov-04	74.4E	19:53	-21.2	127.9	22.4	20.7	5.5	16.2	14.3	36.7	14.0	0.6	340.7	216.5	329.2
2020-Nov-05	73.4E	19:54	-21.2	128.0	22.4	20.7	5.5	16.2	14.2	36.7	14.0	0.6	104.9	308.3	59.9
2020-Nov-06	72.5E	19:54	-21.2	128.0	22.4	20.6	5.4	16.2	14.2	36.6	14.0	0.6	229.0	40.2	150.5

2020-Nov-07	71.5E	19:54	-21.2	128.0	22.4	20.6	5.4	16.1	14.2	36.6	13.9	0.6	353.2	132.1	241.2
2020-Nov-08	70.6E	19:54	-21.2	128.0	22.4	20.6	5.4	16.1	14.2	36.5	13.9	0.6	117.3	223.9	331.9
2020-Nov-09	69.6E	19:55	-21.2	128.1	22.3	20.6	5.3	16.1	14.1	36.5	13.9	0.6	241.5	315.8	62.5
2020-Nov-10	68.7E	19:55	-21.1	128.1	22.3	20.6	5.3	16.1	14.1	36.4	13.8	0.6	5.7	47.6	153.2
2020-Nov-11	67.8E	19:55	-21.1	128.1	22.3	20.6	5.3	16.0	14.1	36.3	13.8	0.6	129.8	139.5	243.8
2020-Nov-12	66.8E	19:56	-21.1	128.2	22.3	20.6	5.2	16.0	14.1	36.3	13.8	0.6	254.0	231.4	334.5
2020-Nov-13	65.9E	19:56	-21.1	128.2	22.3	20.6	5.2	16.0	14.1	36.2	13.7	0.6	18.1	323.2	65.1
2020-Nov-14	65.0E	19:56	-21.1	128.2	22.2	20.6	5.1	16.0	14.0	36.2	13.7	0.6	142.3	55.1	155.8
2020-Nov-15	64.0E	19:56	-21.1	128.3	22.2	20.6	5.1	15.9	14.0	36.1	13.7	0.6	266.4	146.9	246.4
2020-Nov-16	63.1E	19:57	-21.1	128.3	22.2	20.6	5.1	15.9	14.0	36.1	13.6	0.6	30.6	238.8	337.1
2020-Nov-17	62.1E	19:57	-21.1	128.3	22.2	20.5	5.0	15.9	14.0	36.0	13.6	0.6	154.7	330.6	67.7
2020-Nov-18	61.2E	19:57	-21.0	128.4	22.1	20.5	5.0	15.9	14.0	36.0	13.6	0.6	278.9	62.5	158.4
2020-Nov-19	60.3E	19:58	-21.0	128.4	22.1	20.5	4.9	15.8	13.9	35.9	13.5	0.6	43.0	154.3	249.0
2020-Nov-20	59.4E	19:58	-21.0	128.4	22.1	20.5	4.9	15.8	13.9	35.9	13.5	0.6	167.2	246.2	339.7
2020-Nov-21	58.4E	19:58	-21.0	128.4	22.1	20.5	4.8	15.8	13.9	35.8	13.5	0.6	291.3	338.0	70.3
2020-Nov-22	57.5E	19:59	-21.0	128.5	22.0	20.5	4.8	15.8	13.9	35.8	13.4	0.6	55.5	69.9	160.9
2020-Nov-23	56.6E	19:59	-21.0	128.5	22.0	20.5	4.7	15.8	13.9	35.7	13.4	0.6	179.6	161.7	251.6
2020-Nov-24	55.6E	19:59	-20.9	128.5	22.0	20.5	4.7	15.7	13.9	35.7	13.4	0.6	303.8	253.6	342.2
2020-Nov-25	54.7E	20:00	-20.9	128.6	22.0	20.5	4.6	15.7	13.8	35.6	13.3	0.6	67.9	345.4	72.9
2020-Nov-26	53.8E	20:00	-20.9	128.6	21.9	20.5	4.6	15.7	13.8	35.6	13.3	0.6	192.1	77.3	163.5
2020-Nov-27	52.9E	20:00	-20.9	128.6	21.9	20.5	4.5	15.7	13.8	35.6	13.3	0.6	316.2	169.1	254.2
2020-Nov-28	51.9E	20:01	-20.9	128.7	21.9	20.4	4.5	15.7	13.8	35.5	13.2	0.6	80.4	261.0	344.8
2020-Nov-29	51.0E	20:01	-20.9	128.7	21.9	20.4	4.4	15.6	13.8	35.5	13.2	0.6	204.5	352.8	75.5
2020-Nov-30	50.1E	20:02	-20.8	128.7	21.8	20.4	4.3	15.6	13.7	35.4	13.2	0.6	328.7	84.7	166.1

Date	Elong	RA	Dec	Ls	B	B'	Phase Globe			Diameter('')			CMI	CMII	CMIII
							Angle	Eq	Po	Maj	Min	Mag			
2020-Dec-01	49.2E	20:02	-20.8	128.7	21.8	20.4	4.3	15.6	13.7	35.4	13.1	0.6	92.8	176.5	256.7
2020-Dec-02	48.2E	20:02	-20.8	128.8	21.8	20.4	4.2	15.6	13.7	35.3	13.1	0.6	217.0	268.4	347.4
2020-Dec-03	47.3E	20:03	-20.8	128.8	21.8	20.4	4.2	15.6	13.7	35.3	13.1	0.6	341.1	0.2	78.0
2020-Dec-04	46.4E	20:03	-20.8	128.8	21.7	20.4	4.1	15.6	13.7	35.3	13.1	0.6	105.2	92.1	168.7
2020-Dec-05	45.5E	20:03	-20.8	128.9	21.7	20.4	4.0	15.5	13.7	35.2	13.0	0.6	229.4	183.9	259.3
2020-Dec-06	44.6E	20:04	-20.7	128.9	21.7	20.4	4.0	15.5	13.7	35.2	13.0	0.6	353.5	275.8	349.9
2020-Dec-07	43.6E	20:04	-20.7	128.9	21.6	20.4	3.9	15.5	13.6	35.1	13.0	0.6	117.7	7.6	80.6
2020-Dec-08	42.7E	20:05	-20.7	129.0	21.6	20.4	3.8	15.5	13.6	35.1	12.9	0.6	241.8	99.5	171.2
2020-Dec-09	41.8E	20:05	-20.7	129.0	21.6	20.3	3.8	15.5	13.6	35.1	12.9	0.6	6.0	191.3	261.9
2020-Dec-10	40.9E	20:06	-20.7	129.0	21.5	20.3	3.7	15.5	13.6	35.0	12.9	0.6	130.1	283.2	352.5
2020-Dec-11	40.0E	20:06	-20.6	129.1	21.5	20.3	3.6	15.4	13.6	35.0	12.8	0.6	254.3	15.0	83.2
2020-Dec-12	39.1E	20:06	-20.6	129.1	21.5	20.3	3.6	15.4	13.6	35.0	12.8	0.6	18.4	106.9	173.8
2020-Dec-13	38.1E	20:07	-20.6	129.1	21.4	20.3	3.5	15.4	13.6	34.9	12.8	0.6	142.6	198.7	264.4
2020-Dec-14	37.2E	20:07	-20.6	129.1	21.4	20.3	3.4	15.4	13.5	34.9	12.7	0.6	266.7	290.6	355.1
2020-Dec-15	36.3E	20:08	-20.6	129.2	21.4	20.3	3.3	15.4	13.5	34.9	12.7	0.6	30.9	22.4	85.7
2020-Dec-16	35.4E	20:08	-20.5	129.2	21.3	20.3	3.3	15.4	13.5	34.8	12.7	0.6	155.0	114.3	176.4
2020-Dec-17	34.5E	20:09	-20.5	129.2	21.3	20.3	3.2	15.4	13.5	34.8	12.7	0.6	279.1	206.1	267.0
2020-Dec-18	33.6E	20:09	-20.5	129.3	21.3	20.3	3.1	15.3	13.5	34.8	12.6	0.6	43.3	298.0	357.6
2020-Dec-19	32.7E	20:09	-20.5	129.3	21.2	20.2	3.0	15.3	13.5	34.7	12.6	0.6	167.4	29.8	88.3
2020-Dec-20	31.7E	20:10	-20.5	129.3	21.2	20.2	3.0	15.3	13.5	34.7	12.6	0.6	291.6	121.7	178.9
2020-Dec-21	30.8E	20:10	-20.4	129.4	21.2	20.2	2.9	15.3	13.5	34.7	12.5	0.6	55.7	213.5	269.6
2020-Dec-22	29.9E	20:11	-20.4	129.4	21.1	20.2	2.8	15.3	13.5	34.7	12.5	0.6	179.9	305.4	0.2
2020-Dec-23	29.0E	20:11	-20.4	129.4	21.1	20.2	2.7	15.3	13.4	34.6	12.5	0.6	304.0	37.2	90.9

Example: 0h UT CMI = 51.5. At 1413UT CM = $51.5^\circ + 351.79^\circ + 140.72^\circ + 5.86^\circ + 1.76^\circ$
= $551.63^\circ - 360^\circ = 191.63^\circ$