

Topocentric Ephemeris of SUN

Date	for Greenwich Meridian			for location: Longitude W 76 29.4 Latitude N 37 02.4 Time Zone UT -5		
	Ephemeris TDT	Transit JD	Transit Time	Rise (Az)	Trans (Alt)	Set (Az)
			h m s	h m °	h m °	h m °
2013 Jul 6	2456480.003314		12 04 46.3	4 53 (60)	12 11 (s76)	19 29 (299)
2013 Jul 7	2456481.003428		12 04 56.1	4 53 (61)	12 11 (s75)	19 28 (299)
2013 Jul 8	2456482.003537		12 05 05.6	4 54 (61)	12 11 (s75)	19 28 (299)

Times of Twilight
for

Longitude:W 76 29.4 Latitude:N 37 02.4 Time Zone: UT -5

Date	Civil		Nautical		Astronomical	
	Morning	Evening	Morning	Evening	Morning	Evening
	h m	h m	h m	h m	h m	h m
2013 Jul 6	4 22	19 59	3 44	20 37	3 02	21 19
2013 Jul 7	4 23	19 59	3 45	20 37	3 02	21 19
2013 Jul 8	4 23	19 59	3 45	20 36	3 03	21 18

Geocentric Configurations for 2013 Jul 7 AT 0 01 07 TDT

Object	RA		Dec	Dist AU	Position wrt Sun		Elong °	(Moon Phase)		Mag	Dia "	∞Il
	h m s	° ' "			HA	Diff		Mag	Dia "			
NEPTUNE	22 28 53	-10 14.8	29.3222	+ 8 36	W 130	7.9	2	100				
URANUS	0 47 00	+ 4 17.1	19.9746	+ 6 18	W 93	5.8	4	100				
MARS	5 40 30	+23 48.7	2.4463	+ 1 25	W 20	1.5	4	99				
MOON	6 03 42	+19 48.1	.0027	+ 1 02	W 15	(CRESCENT)		2				
JUPITER	6 10 50	+23 12.7	6.1147	+ 0 55	W 13	-1.9	32	100				
SUN	7 05 22	+22 35.1	1.0167									
MERCURY	7 21 33	+17 39.1	.5662	- 0 16	S 6	4.6	12	1				
VENUS	8 56 48	+18 59.1	1.4733	- 1 51	E 26	-3.9	11	89				
SATURN	14 13 34	-10 47.2	9.4491	- 7 08	E 110	.5	18	100				

Celestial Navigation Data for 2013 Jul 7 at 0 59 00 UT (GMT)

Delta T = 76.3 seconds

For Assumed Location: Longitude W 76 29.4
Latitude N 37 02.4

Object	Almanac Data				Altitude Corrections			
	GHA	Dec	Hc	Zn	Refr	SD	PA	Sum
SUN	193 32.0	n22 34.9	- 5 57.5	304.2				
VENUS	165 40.1	n18 58.3	+11 55.6	284.9	-4.5	.1	.1	-4.3
SATURN	86 31.6	s10 47.2	+41 15.1	193.2	-1.1	.1	.0	-1.0
ALIOH	106 15.7	n55 53.4	+62 32.0	322.9	-.5	.0	.0	-.5
ALKAID	92 53.8	n49 15.0	+72 58.3	321.0	-.3	.0	.0	-.3
ALPHARD	157 51.3	s 8 43.2	+ 1 33.3	257.8	-18.9	.0	.0	-18.9
ALPHECCA	66 05.7	n26 40.4	+76 24.1	136.7	-.2	.0	.0	-.2
ALTAIR	2 02.9	n 8 54.5	+17 44.7	92.2	-3.1	.0	.0	-3.1
ANTARES	52 20.9	s26 27.6	+22 33.7	156.6	-2.4	.0	.0	-2.4
ARCTURUS	85 50.6	n19 06.9	+70 17.6	207.1	-.4	.0	.0	-.4
DENEK	349 26.0	n45 19.8	+27 12.4	52.1	-1.9	.0	.0	-1.9
DENEKOLA	122 28.7	n14 29.8	+43 27.1	253.6	-1.0	.0	.0	-1.0
DUBHE	133 47.1	n61 40.8	+47 17.8	323.9	-.9	.0	.0	-.9
ELTANIN	30 40.6	n51 29.5	+54 51.7	50.9	-.7	.0	.0	-.7
GIENAH	115 47.3	s17 37.2	+23 58.7	221.4	-2.2	.0	.0	-2.2
KAUS AUS	23 38.3	s34 22.5	+ 3 18.6	138.8	-12.9	.0	.0	-12.9
KOCHAB	77 14.6	n74 06.3	+52 56.0	359.7	-.8	.0	.0	-.8
MENKENT	88 02.3	s36 26.3	+15 44.7	189.6	-3.4	.0	.0	-3.4
NUNKI	15 52.9	s26 16.6	+ 4 51.2	128.4	-9.8	.0	.0	-9.8
POLLUX	183 23.1	n27 59.5	+ 4 28.0	302.1	-10.5	.0	.0	-10.5
RASALHAG	36 01.1	n12 33.2	+46 21.3	113.4	-.9	.0	.0	-.9
REGULUS	147 38.7	n11 54.0	+22 07.0	268.4	-2.4	.0	.0	-2.4
SABIK	42 07.2	s15 44.3	+28 05.0	142.0	-1.9	.0	.0	-1.9
SCHEDAR	289 35.3	n56 36.5	+ 7 45.2	17.7	-6.7	.0	.0	-6.7
SHAULA	36 16.4	s37 06.7	+ 7 02.6	148.7	-7.3	.0	.0	-7.3
SPICA	98 26.1	s11 14.0	+37 30.4	207.5	-1.3	.0	.0	-1.3
VEGA	20 33.5	n38 48.0	+46 32.7	69.8	-.9	.0	.0	-.9
ZUBENELG	77 00.2	s16 05.9	+36 51.6	180.6	-1.3	.0	.0	-1.3
ARIES	299 55.0							