

target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-07-31T10:25:40.420  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4070413937475550720  
 2Mass ID (if available) : 17515580-2226540

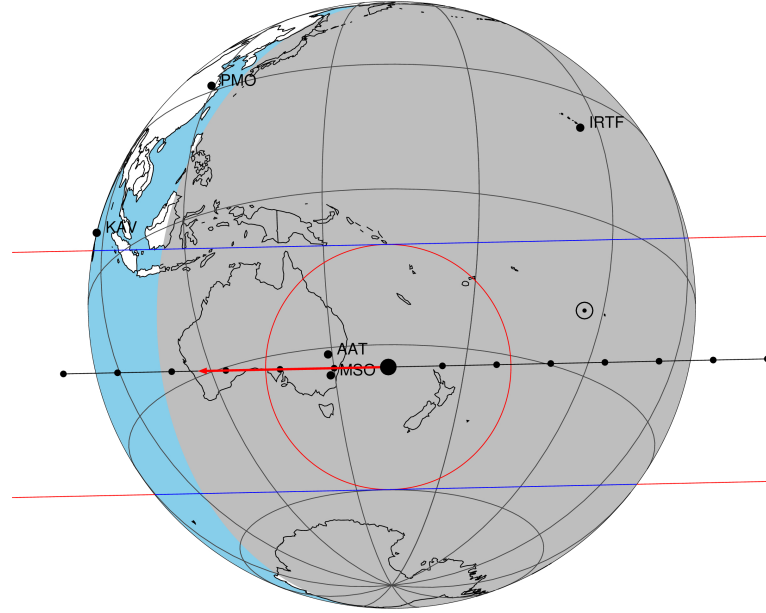
ICRS Star Coord at Epoch: 17h 51m 55.78983s -22:26:54.44495s  
 RUWE (>1.4 is poor) : 0.99  
 K magnitude : 13.011  
 G magnitude : 17.216  
 RP magnitude : 16.048  
 BP magnitude : 18.622  
 DUPflag : 0  
 Distance (au) : 9.234  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -18.95  
 Sun-Target sep (deg) : 140.61  
 Sun-Moon sep (deg) : 30.89  
 B (ring opening deg) : 26.71  
 PA of pole (deg) : 5.51  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.195  
 C/A sky separation (km) : 1308.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

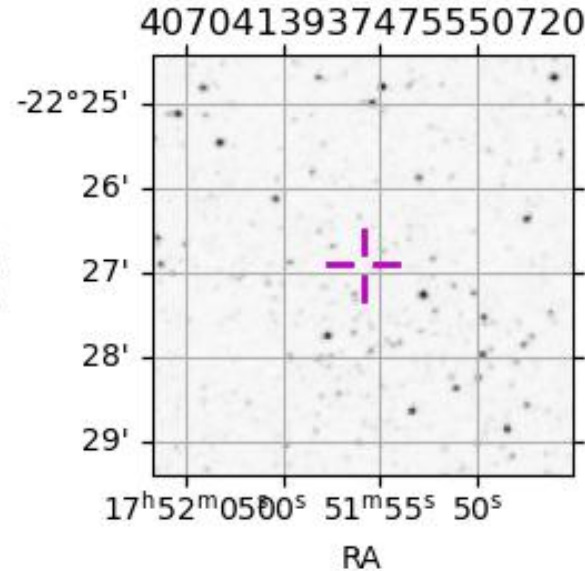
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+ +	JUL 31 10:24 - JUL 31 10:29	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 31 10:24 - JUL 31 10:29	Pie

Titan 2047-07-31T10:25:40 K13.01 G17.22 dots 60.0 sec  
 Pgt



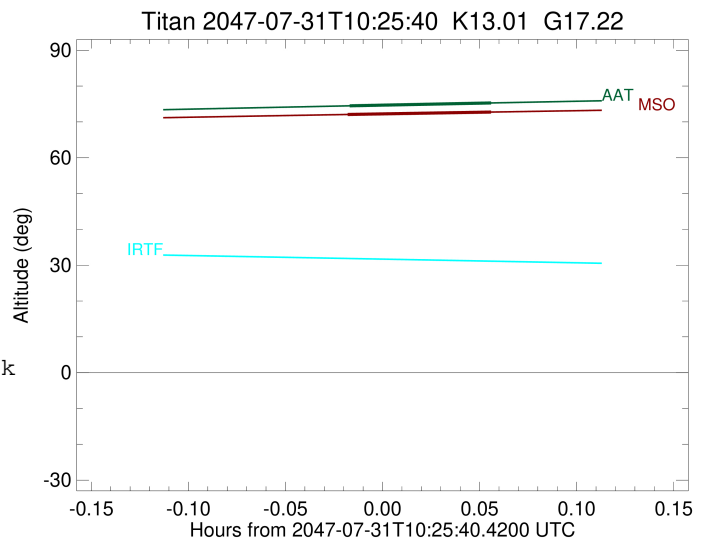
2047-07-31T10:25:40.42000 cc: 17 51 55.78983 s -22 26 54.445 C/A 0.195" PA 178.79 deg v\_sky -18.95 km/s D 09.23 AU  
 Credit: Styled after SORA/Lucky Star



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-07-31T10:26:51.040
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : AAT
Location             : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 4070413937475550720
2Mass ID (if available) : 17515580-2226540
ICRS Star Coord at Epoch: 17h 51m 55.78983s -22:26:54.44495s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 13.011
G magnitude          : 17.216
RP magnitude         : 16.048
BP magnitude         : 18.622
DUPflag             : 0
Distance (au)        : 9.234
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.95
Sun-Target sep (deg) : 140.61
Sun-Moon sep (deg)   : 31.19
B (ring opening deg) : 26.71
PA of pole (deg)     : 5.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.048
C/A sky separation (km) : 324.1
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

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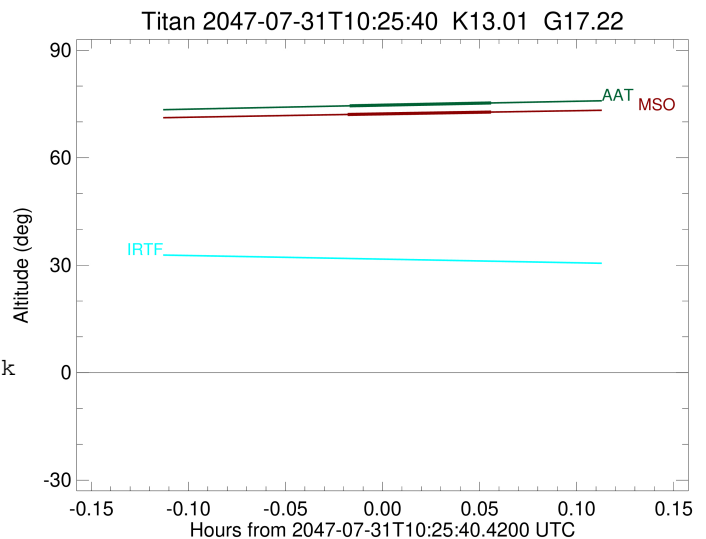
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-31T10:24:38.954	74.48	-37.73	2575.2	0.37	0.37
Titan	E	2047-07-31T10:29:03.129	75.28	-38.68	2575.1	12.51	12.52

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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-07-31T10:26:48.870
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : MSO
Location             : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4070413937475550720
2Mass ID (if available) : 17515580-2226540
ICRS Star Coord at Epoch: 17h 51m 55.78983s -22:26:54.44495s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 13.011
G magnitude          : 17.216
RP magnitude         : 16.048
BP magnitude         : 18.622
DUPflag             : 0
Distance (au)        : 9.234
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.95
Sun-Target sep (deg) : 140.61
Sun-Moon sep (deg)   : 31.18
B (ring opening deg) : 26.71
PA of pole (deg)     : 5.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.017
C/A sky separation (km): 115.3
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk

```



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-31T10:24:35.736	72.06	-37.54	2575.1	-8.37	-8.37
Titan	E	2047-07-31T10:29:01.999	72.74	-38.45	2575.1	3.78	3.78