

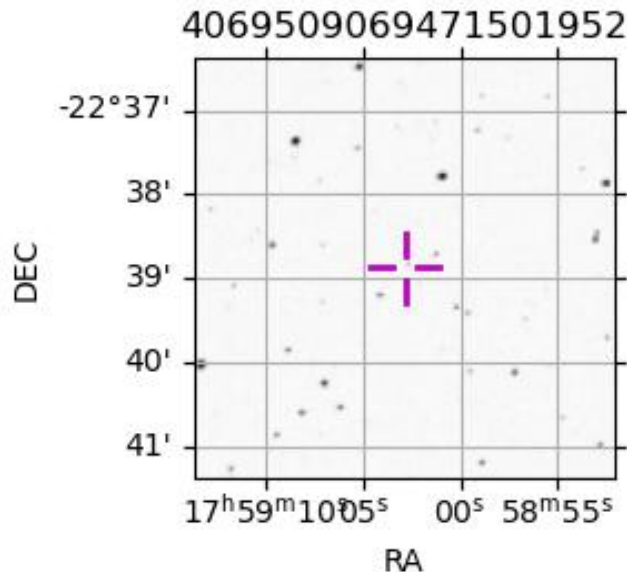
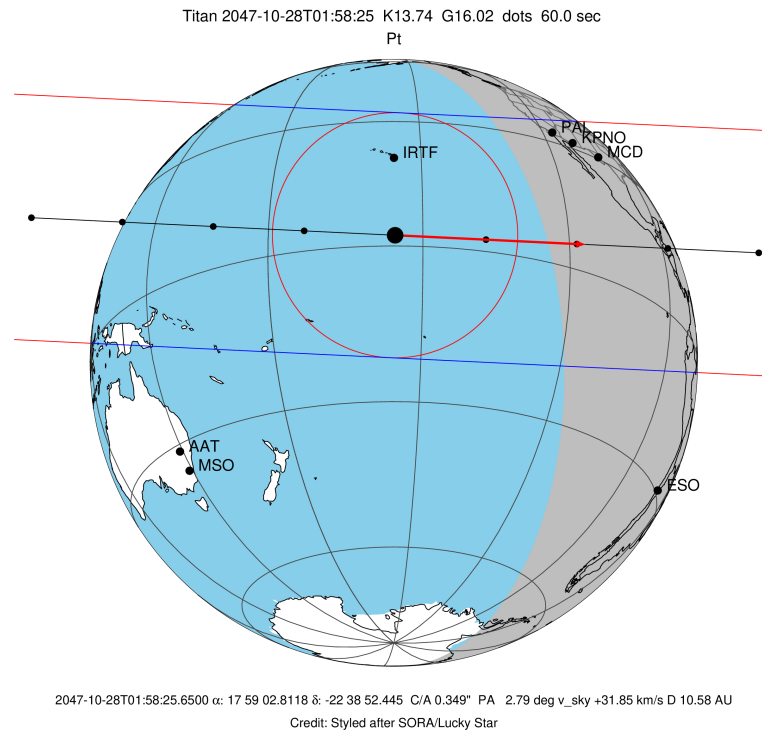
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-10-28T01:58:25.650  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4069509069471501952  
 2Mass ID (if available) : 17590281-2238522

ICRS Star Coord at Epoch: 17h 59m 02.81177s -22:38:52.44492s  
 RUWE (>1.4 is poor) : 0.93  
 K magnitude : 13.741  
 G magnitude : 16.023  
 RP magnitude : 15.221  
 BP magnitude : 16.711  
 DUPflag : 0  
 Distance (au) : 10.576  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 31.85  
 Sun-Target sep (deg) : 55.88  
 Sun-Moon sep (deg) : 61.36  
 B (ring opening deg) : 26.75  
 PA of pole (deg) : 5.66  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.350  
 C/A sky separation (km) : 2682.8  
 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	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	OCT 28 01:59 - OCT 28 02:00	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	OCT 28 01:59 - OCT 28 02:01	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 28 01:59 - OCT 28 02:01	Pie
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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



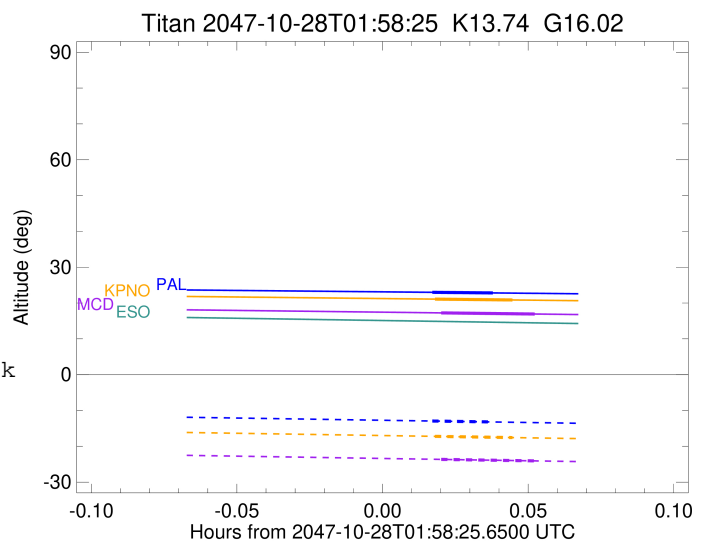
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-10-28T02:00:04.710
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 4069509069471501952
2Mass ID (if available) : 17590281-2238522
ICRS Star Coord at Epoch: 17h 59m 02.81177s -22:38:52.44492s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 13.741
G magnitude          : 16.023
RP magnitude         : 15.221
BP magnitude         : 16.711
DUPflag             : 0
Distance (au)       : 10.576
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 31.85
Sun-Target sep (deg) : 55.88
Sun-Moon sep (deg)  : 61.42
B (ring opening deg) : 26.75
PA of pole (deg)    : 5.66
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.296
C/A sky separation (km) : 2272.1
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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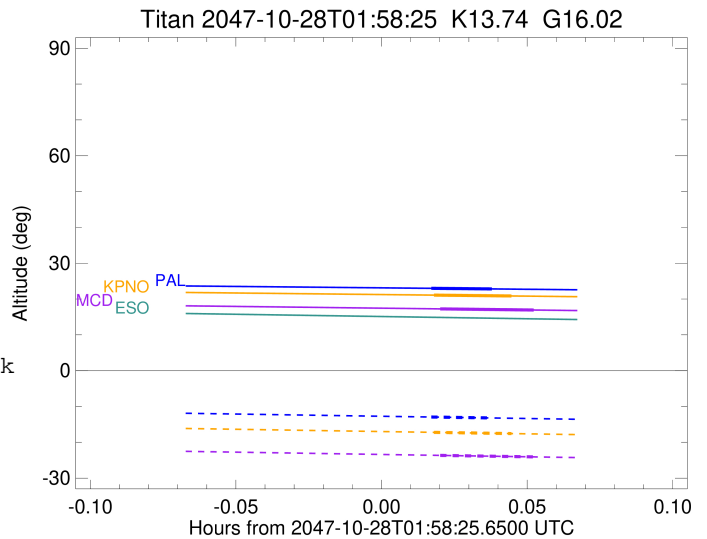
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-10-28T01:59:26.295	22.98	-12.94	2575.1	54.01	54.02
Titan	E	2047-10-28T02:00:43.116	22.81	-13.20	2575.1	49.87	49.89



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-10-28T02:00:18.450
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 4069509069471501952
2Mass ID (if available) : 17590281-2238522
ICRS Star Coord at Epoch: 17h 59m 02.81177s -22:38:52.44492s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 13.741
G magnitude           : 16.023
RP magnitude          : 15.221
BP magnitude          : 16.711
DUPflag              : 0
Distance (au)         : 10.576
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 31.85
Sun-Target sep (deg)  : 55.88
Sun-Moon sep (deg)    : 61.37
B (ring opening deg) : 26.75
PA of pole (deg)      : 5.66
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.269
C/A sky separation (km) : 2067.2
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	2047-10-28T01:59:29.807	21.09	-17.22	2575.1	48.10	48.11
Titan	E	2047-10-28T02:01:07.094	20.85	-17.56	2575.1	43.43	43.44

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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-10-28T02:00:35.820
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 4069509069471501952
2Mass ID (if available) : 17590281-2238522
ICRS Star Coord at Epoch: 17h 59m 02.81177s -22:38:52.44492s
RUWE (>1.4 is poor) : 0.93
K magnitude          : 13.741
G magnitude          : 16.023
RP magnitude         : 15.221
BP magnitude         : 16.711
DUPflag             : 0
Distance (au)        : 10.576
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 31.85
Sun-Target sep (deg) : 55.88
Sun-Moon sep (deg)   : 61.28
B (ring opening deg) : 26.75
PA of pole (deg)     : 5.66
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.233
C/A sky separation (km) : 1788.0
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	2047-10-28T01:59:37.178	17.25	-23.65	2575.1	40.83	40.84
Titan	E	2047-10-28T02:01:34.461	16.93	-24.07	2575.1	35.77	35.78

