

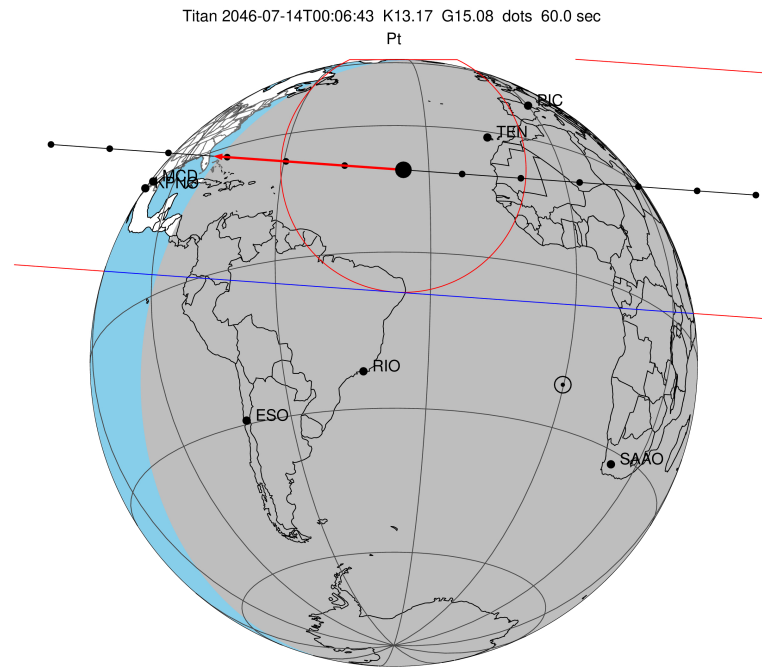
target : Titan
target radius (km) : 2575.15
C/A epoch : 2046-07-14T00:06:43.110
Event type : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Gaia source ID : 4127608058476707840
2Mass ID (if available) : 17041325-2120428

ICRS Star Coord at Epoch: 17h 04m 13.24098s -21:20:43.21878s
RUWE (>1.4 is poor) : 0.92
K magnitude : 13.173
G magnitude : 15.080
RP magnitude : 14.425
BP magnitude : 15.573
DUPflag : 0
Distance (au) : 9.171
f0 (km) : 0.00
g0 (km) : 0.00
skyplane vel. (km/s) : -20.60
Sun-Target sep (deg) : 145.87
Sun-Moon sep (deg) : 16.07
B (ring opening deg) : 26.56
PA of pole (deg) : 4.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.610
C/A sky separation (km) : 4057.5
NAIF SPICE kernels : RAJobs_U111+rgf16.spk

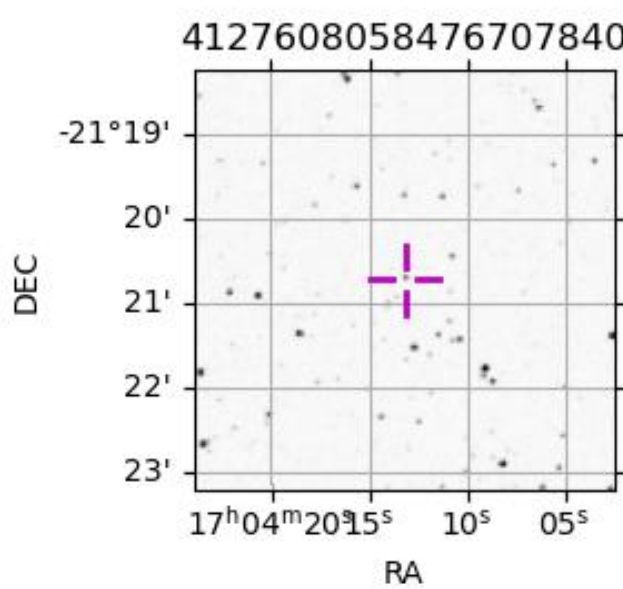
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp

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 | + + | JUL 14 00:03 - JUL 14 00:06 | Pie |
| 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 | + + | JUL 14 00:03 - JUL 14 00:07 | Pie |
| 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 |



2046-07-14T00:06:43.1100 α: 17 04 13.2410 δ: -21 20 43.219 C/A 0.610" PA 4.10 deg v_sky -20.61 km/s D 09.17 AU
Credit: Styled after SORA/Lucky Star



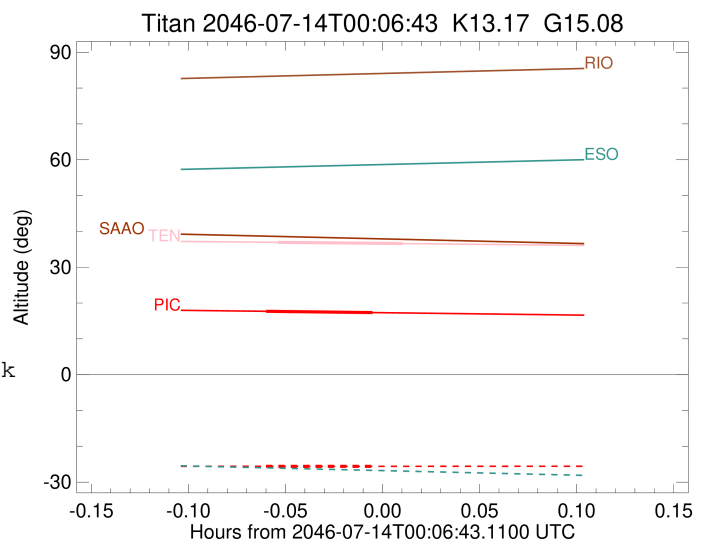
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-07-14T00:04:45.620
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)        : 42.93656
E. Longitude (deg)    : 0.14231
Altitude (km)         : 2.890
Gaia source ID       : 4127608058476707840
2Mass ID (if available) : 17041325-2120428
ICRS Star Coord at Epoch: 17h 04m 13.24098s -21:20:43.21878s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 13.173
G magnitude           : 15.080
RP magnitude          : 14.425
BP magnitude          : 15.573
DUPflag              : 0
Distance (au)         : 9.171
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -20.60
Sun-Target sep (deg)  : 145.87
Sun-Moon sep (deg)    : 16.78
B (ring opening deg) : 26.56
PA of pole (deg)      : 4.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.228
C/A sky separation (km) : 1513.4
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

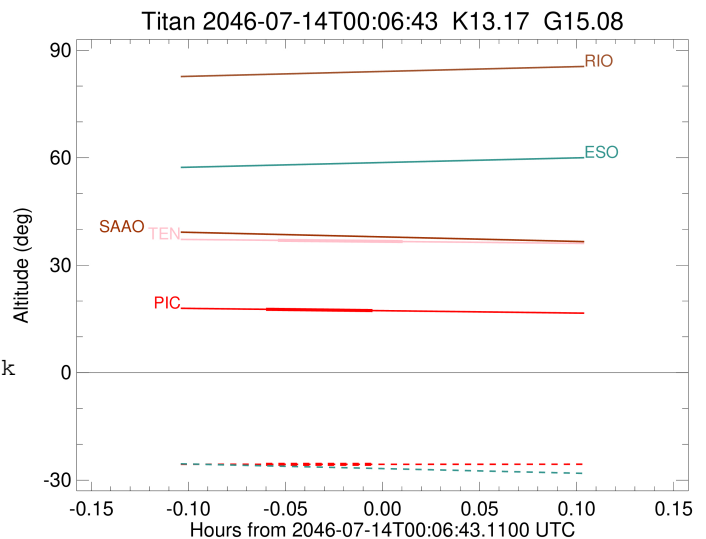
| Target | I/E | UTC | alt | alt-sun | radius | lat-geo | lat-geodetic |
|--------|-----|-------------------------|-------|---------|--------|---------|--------------|
| Titan | I | 2046-07-14T00:03:05.875 | 17.69 | -25.58 | 2575.1 | 31.61 | 31.63 |
| Titan | E | 2046-07-14T00:06:25.377 | 17.33 | -25.58 | 2575.1 | 31.81 | 31.82 |



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-07-14T00:05:24.640
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 4127608058476707840
2Mass ID (if available) : 17041325-2120428
ICRS Star Coord at Epoch: 17h 04m 13.24098s -21:20:43.21878s
RUWE (>1.4 is poor)  : 0.92
K magnitude           : 13.173
G magnitude           : 15.080
RP magnitude          : 14.425
BP magnitude          : 15.573
DUPflag              : 0
Distance (au)         : 9.171
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.60
Sun-Target sep (deg) : 145.87
Sun-Moon sep (deg)   : 16.72
B (ring opening deg) : 26.56
PA of pole (deg)     : 4.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.118
C/A sky separation (km) : 786.8
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 | 2046-07-14T00:03:27.861 | 36.94 | -37.53 | 2575.1 | 15.68 | 15.69 |
| Titan | E | 2046-07-14T00:07:21.435 | 36.59 | -37.82 | 2575.1 | 16.03 | 16.04 |