

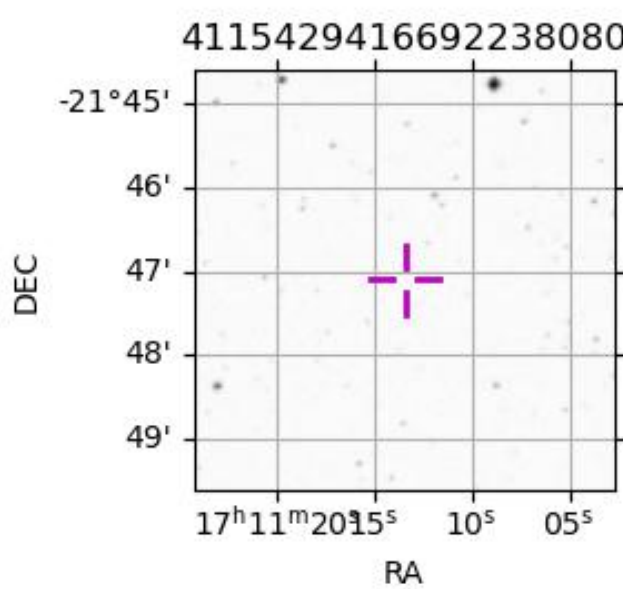
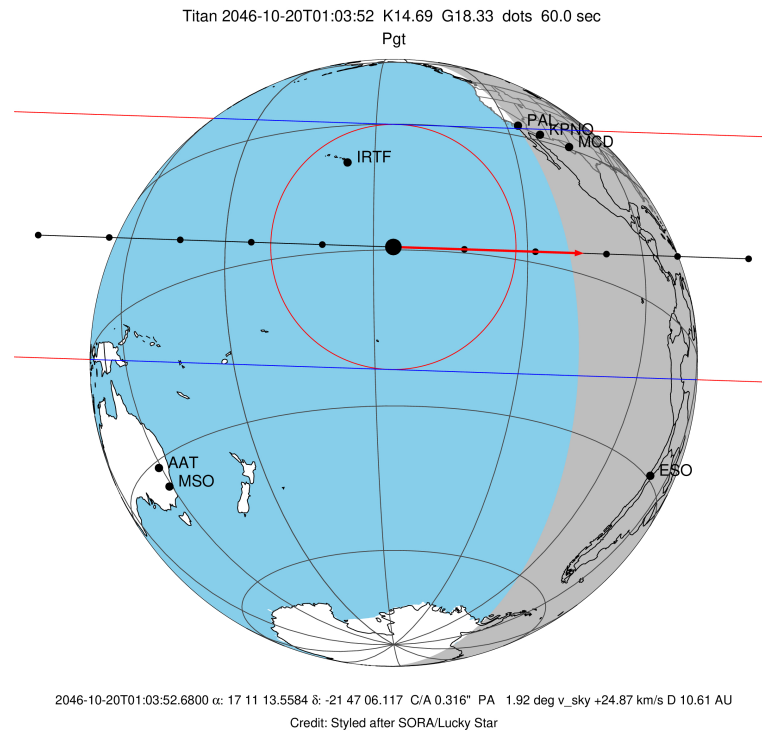
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-10-20T01:03:52.680  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4115429416692238080  
 2Mass ID (if available) : 17111356-2147060

ICRS Star Coord at Epoch: 17h 11m 13.55837s -21:47:06.11732s  
 RUWE (>1.4 is poor) : 2.20  
 K magnitude : 14.686  
 G magnitude : 18.334  
 RP magnitude : 17.150  
 BP magnitude : 19.131  
 DUPflag : 0  
 Distance (au) : 10.611  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 24.87  
 Sun-Target sep (deg) : 52.54  
 Sun-Moon sep (deg) : 174.18  
 B (ring opening deg) : 26.88  
 PA of pole (deg) : 4.56  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.315  
 C/A sky separation (km) : 2427.7  
 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 | + +    | OCT 20 01:05 - OCT 20 01:07 | 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            : 2046-10-20T01:06:17.640
Event type           : Pgt
: Titan occs: geocentric, topocentric
: 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       : 4115429416692238080
2Mass ID (if available) : 17111356-2147060
ICRS Star Coord at Epoch: 17h 11m 13.55837s -21:47:06.11732s
RUWE (>1.4 is poor) : 2.20
K magnitude          : 14.686
G magnitude          : 18.334
RP magnitude         : 17.150
BP magnitude         : 19.131
DUPflag             : 0
Distance (au)        : 10.611
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 24.87
Sun-Target sep (deg) : 52.54
Sun-Moon sep (deg)   : 174.31
B (ring opening deg) : 26.88
PA of pole (deg)     : 4.56
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.283
C/A sky separation (km): 2181.2
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   | 2046-10-20T01:05:21.944 | 23.62 | -10.47  | 2575.1 | 51.10   | 51.12        |
| Titan  | E   | 2046-10-20T01:07:13.324 | 23.35 | -10.87  | 2575.1 | 46.96   | 46.97        |

