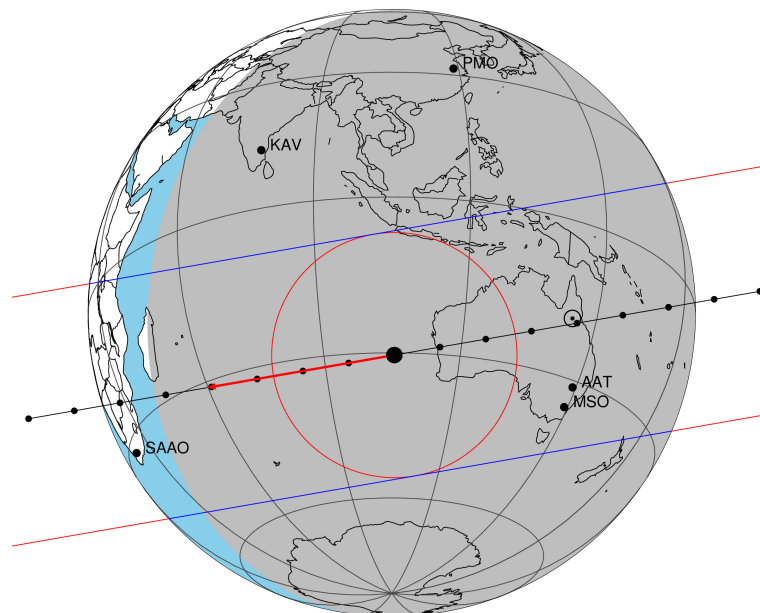


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-07-28T14:30:55.270
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4070232891731283712
 2Mass ID (if available) : 17524313-2225515

Titan 2047-07-28T14:30:55 K12.21 G17.19 dots 60.0 sec
 Pgt

ICRS Star Coord at Epoch: 17h 52m 43.13112s -22:25:51.52143s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 12.206
 G magnitude : 17.187
 RP magnitude : 15.873
 BP magnitude : 18.745
 DUPflag : 0
 Distance (au) : 9.210
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.23
 Sun-Target sep (deg) : 143.49
 Sun-Moon sep (deg) : 71.11
 B (ring opening deg) : 26.67
 PA of pole (deg) : 5.52
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.135
 C/A sky separation (km) : 902.3
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk



2047-07-28T14:30:55.2700 cc: 17 52 43.1311 & -22 25 51.521 C/A 0.132" PA 170.08 deg v_sky -16.23 km/s D 09.21 AU

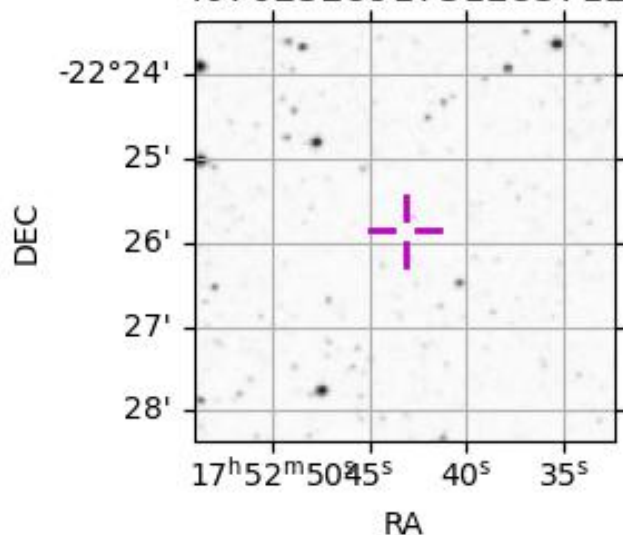
Credit: Styled after SORA/Lucky Star

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 | | | 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 28 14:25 - JUL 28 14:29 | Pie |
| SAAO | So. Afr. Astro. Obs. (Sutherland) | -32.4 | 20.8 | | | Pnn |
| MSO | Mt. Stromlo Observatory | -35.3 | 149.0 | + + | JUL 28 14:25 - JUL 28 14:29 | Pie |

4070232891731283712



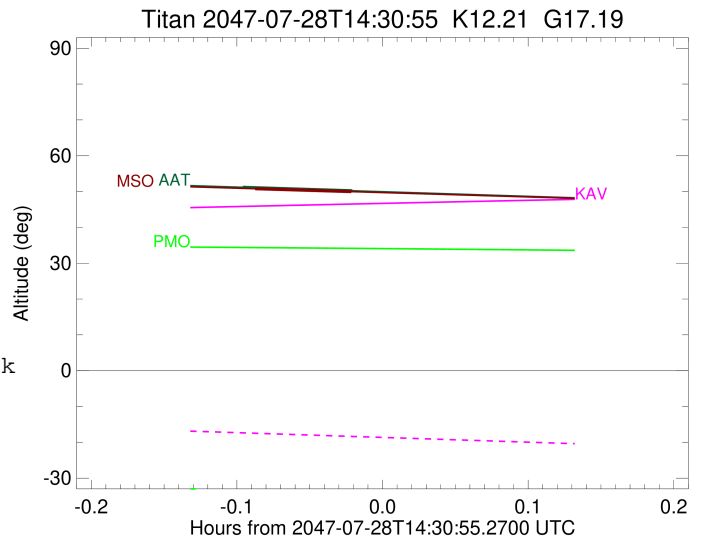
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-28T14:27:24.540
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        : 4070232891731283712
2Mass ID (if available) : 17524313-2225515
ICRS Star Coord at Epoch: 17h 52m 43.13112s -22:25:51.52143s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.206
G magnitude           : 17.187
RP magnitude          : 15.873
BP magnitude          : 18.745
DUPflag              : 0
Distance (au)         : 9.210
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.23
Sun-Target sep (deg)  : 143.49
Sun-Moon sep (deg)    : 72.01
B (ring opening deg) : 26.67
PA of pole (deg)      : 5.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.189
C/A sky separation (km) : 1260.6
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 | 2047-07-28T14:25:08.443 | 51.18 | -77.33 | 2575.1 | -38.53 | -38.55 |
| Titan | E | 2047-07-28T14:29:40.638 | 50.21 | -77.02 | 2575.1 | -12.86 | -12.87 |



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-28T14:27:39.110
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        : 4070232891731283712
2Mass ID (if available) : 17524313-2225515
ICRS Star Coord at Epoch: 17h 52m 43.13112s -22:25:51.52143s
RUWE (>1.4 is poor)  : 1.07
K magnitude           : 12.206
G magnitude           : 17.187
RP magnitude          : 15.873
BP magnitude          : 18.745
DUPflag              : 0
Distance (au)         : 9.210
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.23
Sun-Target sep (deg)  : 143.49
Sun-Moon sep (deg)    : 71.99
B (ring opening deg) : 26.67
PA of pole (deg)      : 5.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.245
C/A sky separation (km) : 1639.0
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 | 2047-07-28T14:25:38.646 | 50.79 | -73.41 | 2575.1 | -46.63 | -46.65 |
| Titan | E | 2047-07-28T14:29:39.575 | 49.98 | -73.21 | 2575.2 | -21.86 | -21.87 |

