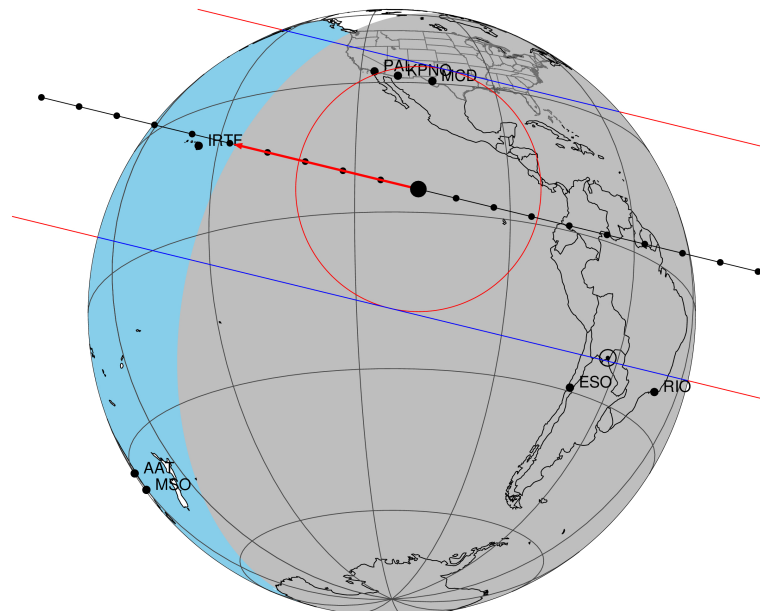


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2045-07-14T04:18:06.440
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 6245792882668739840
 2Mass ID (if available) : 16133138-1917545

ICRS Star Coord at Epoch: 16h 13m 31.34087s -19:17:54.94122s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.689
 G magnitude : 16.913
 RP magnitude : 16.224
 BP magnitude : 17.441
 DUPflag : 0
 Distance (au) : 9.276
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.58
 Sun-Target sep (deg) : 133.41
 Sun-Moon sep (deg) : 136.82
 B (ring opening deg) : 25.28
 PA of pole (deg) : 2.94
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.396
 C/A sky separation (km) : 2663.5
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

Titan 2045-07-14T04:18:06 K14.69 G16.91 dots 60.0 sec
 Pt



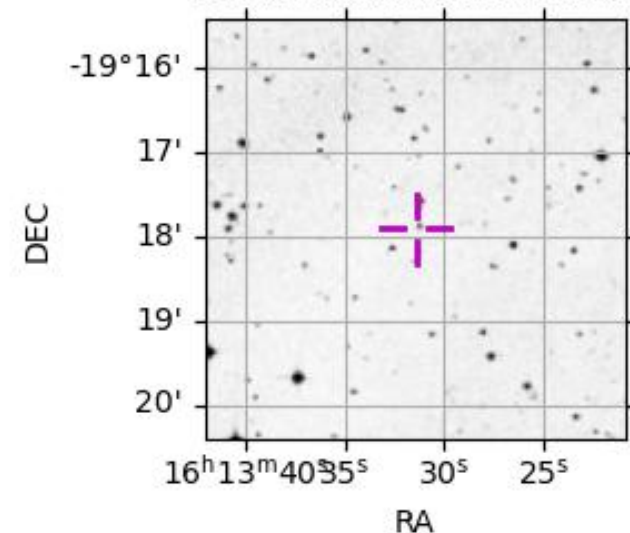
2045-07-14T04:18:06.4400 α: 16 13 31.3409 δ: -19 17 54.941 C/A 0.395" PA 13.67 deg v_sky -13.58 km/s D 09.28 AU
 Credit: Styled after SORA/Lucky Star

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	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUL 14 04:18 - JUL 14 04:21	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 14 04:17 - JUL 14 04:20	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 14 04:16 - JUL 14 04:19	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

6245792882668739840



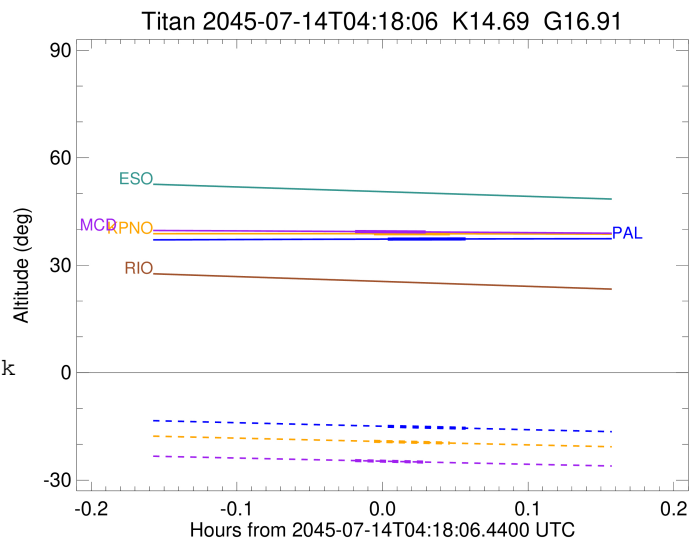
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2045-07-14T04:19:54.860
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        : 6245792882668739840
2Mass ID (if available) : 16133138-1917545
ICRS Star Coord at Epoch: 16h 13m 31.34087s -19:17:54.94122s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.689
G magnitude           : 16.913
RP magnitude          : 16.224
BP magnitude          : 17.441
DUPflag              : 0
Distance (au)         : 9.276
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.58
Sun-Target sep (deg) : 133.41
Sun-Moon sep (deg)   : 137.43
B (ring opening deg) : 25.28
PA of pole (deg)     : 2.94
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.324
C/A sky separation (km) : 2183.0
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	2045-07-14T04:18:16.992	37.28	-14.98	2575.1	57.15	57.16
Titan	E	2045-07-14T04:21:32.751	37.33	-15.51	2575.1	41.91	41.93



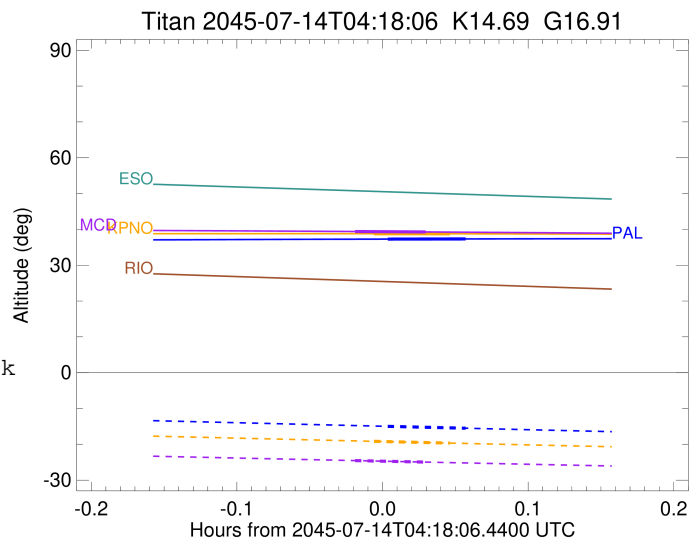
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2045-07-14T04:19:19.120
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       : 6245792882668739840
2Mass ID (if available) : 16133138-1917545
ICRS Star Coord at Epoch: 16h 13m 31.34087s -19:17:54.94122s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.689
G magnitude           : 16.913
RP magnitude          : 16.224
BP magnitude          : 17.441
DUPflag              : 0
Distance (au)        : 9.276
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.58
Sun-Target sep (deg) : 133.41
Sun-Moon sep (deg)   : 137.39
B (ring opening deg) : 25.28
PA of pole (deg)     : 2.94
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.328
C/A sky separation (km) : 2204.4
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

```

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	2045-07-14T04:17:43.823	38.78	-19.16	2575.1	57.73	57.74
Titan	E	2045-07-14T04:20:54.444	38.76	-19.66	2575.1	42.63	42.64



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2045-07-14T04:18:26.940
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       : 6245792882668739840
2Mass ID (if available) : 16133138-1917545
ICRS Star Coord at Epoch: 16h 13m 31.34087s -19:17:54.94122s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.689
G magnitude           : 16.913
RP magnitude          : 16.224
BP magnitude          : 17.441
DUPflag              : 0
Distance (au)         : 9.276
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.58
Sun-Target sep (deg)  : 133.41
Sun-Moon sep (deg)   : 137.31
B (ring opening deg) : 25.28
PA of pole (deg)     : 2.94
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.336
C/A sky separation (km) : 2258.5
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	2045-07-14T04:16:58.408	39.39	-24.54	2575.0	59.16	59.17
Titan	E	2045-07-14T04:19:55.488	39.27	-24.97	2575.1	44.52	44.54

