

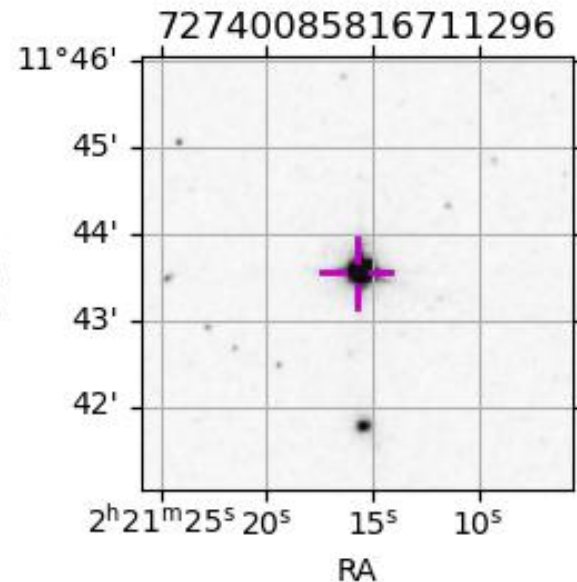
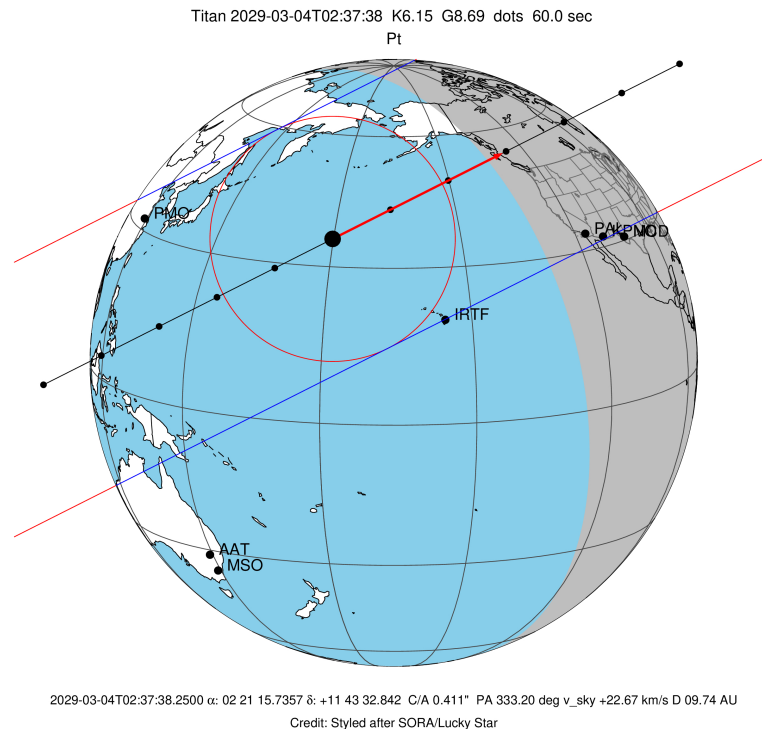
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2029-03-04T02:37:38.250
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 72740085816711296
 2Mass ID (if available) : 02211573+1143331

ICRS Star Coord at Epoch: 02h 21m 15.73573s +11:43:32.84218s
 RUWE (>1.4 is poor) : 0.94
 K magnitude : 6.151
 G magnitude : 8.695
 RP magnitude : 7.930
 BP magnitude : 9.330
 DUPflag : 0
 Distance (au) : 9.736
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 22.67
 Sun-Target sep (deg) : 53.55
 Sun-Moon sep (deg) : 170.97
 B (ring opening deg) : -18.28
 PA of pole (deg) : 0.50
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.411
 C/A sky separation (km) : 2902.1
 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	+ +	MAR 04 02:40 - MAR 04 02:42	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 04 02:41 - MAR 04 02:41	Pie
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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



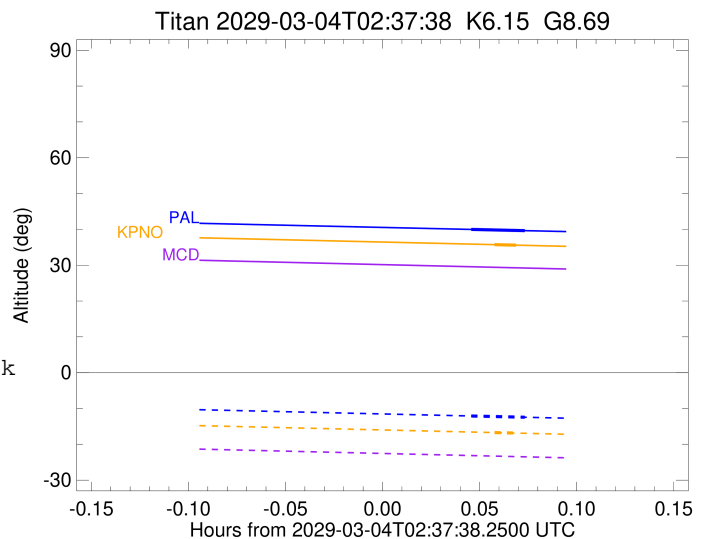
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2029-03-04T02:41:12.410
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       : 72740085816711296
2Mass ID (if available) : 02211573+1143331
ICRS Star Coord at Epoch: 02h 21m 15.73573s +11:43:32.84218s
RUWE (>1.4 is poor) : 0.94
K magnitude           : 6.151
G magnitude           : 8.695
RP magnitude         : 7.930
BP magnitude         : 9.330
DUPflag              : 0
Distance (au)        : 9.736
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 22.67
Sun-Target sep (deg) : 53.55
Sun-Moon sep (deg)   : 171.35
B (ring opening deg) : -18.28
PA of pole (deg)     : 0.50
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.328
C/A sky separation (km): 2316.0
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	2029-03-04T02:40:22.180	39.98	-12.09	2575.2	-34.51	-34.53
Titan	E	2029-03-04T02:42:02.633	39.64	-12.44	2575.1	-71.66	-71.67



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2029-03-04T02:41:25.930
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      : 72740085816711296
2Mass ID (if available) : 02211573+1143331
ICRS Star Coord at Epoch: 02h 21m 15.73573s +11:43:32.84218s
RUWE (>1.4 is poor) : 0.94
K magnitude         : 6.151
G magnitude         : 8.695
RP magnitude        : 7.930
BP magnitude        : 9.330
DUPflag            : 0
Distance (au)       : 9.736
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : 22.67
Sun-Target sep (deg) : 53.55
Sun-Moon sep (deg)  : 171.39
B (ring opening deg) : -18.28
PA of pole (deg)    : 0.50
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.359
C/A sky separation (km) : 2532.3
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	2029-03-04T02:41:05.075	35.73	-16.72	2575.2	-48.56	-48.57
Titan	E	2029-03-04T02:41:46.787	35.59	-16.87	2575.2	-65.28	-65.30

