

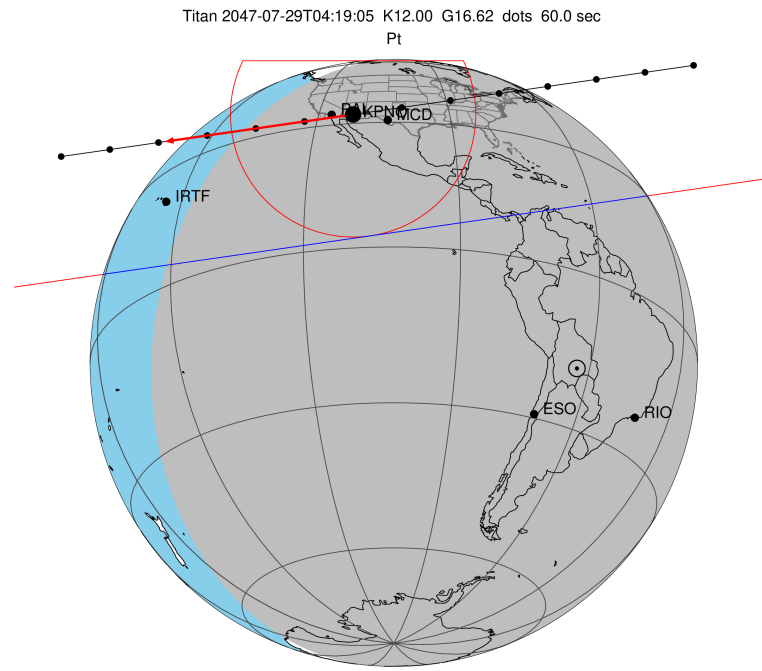
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-07-29T04:19:05.260
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4070419121542324224
 2Mass ID (if available) : 17523430-2226117

ICRS Star Coord at Epoch: 17h 52m 34.27950s -22:26:12.01065s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 11.998
 G magnitude : 16.621
 RP magnitude : 15.369
 BP magnitude : 18.029
 DUPflag : 0
 Distance (au) : 9.214
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -17.20
 Sun-Target sep (deg) : 142.91
 Sun-Moon sep (deg) : 62.95
 B (ring opening deg) : 26.68
 PA of pole (deg) : 5.52
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.789
 C/A sky separation (km) : 5270.3
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

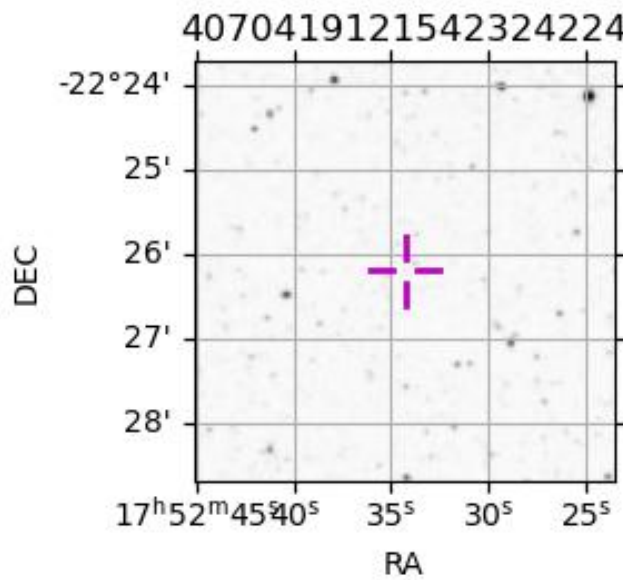
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUL 29 04:17 - JUL 29 04:22	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 29 04:16 - JUL 29 04:21	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 29 04:16 - JUL 29 04:20	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

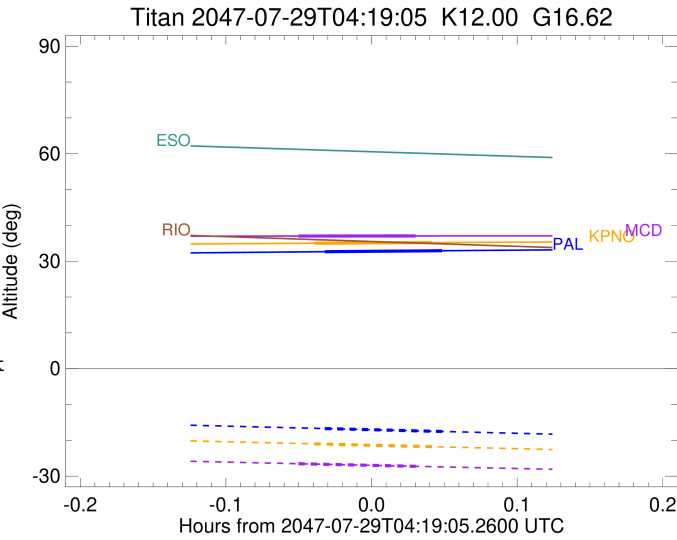


2047-07-29T04:19:05.2600 cc: 17 52 34.2795 d: -22 26 12.0111 C/A 0.791" PA 351.79 deg v_sky -17.20 km/s D 09.21 AU
 Credit: Styled after SORA/Lucky Star



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-29T04:19:35.050
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        : 4070419121542324224
2Mass ID (if available) : 17523430-2226117
ICRS Star Coord at Epoch: 17h 52m 34.27950s -22:26:12.01065s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 11.998
G magnitude           : 16.621
RP magnitude          : 15.369
BP magnitude          : 18.029
DUPflag              : 0
Distance (au)         : 9.214
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -17.20
Sun-Target sep (deg)  : 142.91
Sun-Moon sep (deg)    : 63.38
B (ring opening deg) : 26.68
PA of pole (deg)     : 5.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.010
C/A sky separation (km) : 63.7
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	2047-07-29T04:17:08.592	32.65	-16.72	2575.1	-10.93	-10.94
Titan	E	2047-07-29T04:22:01.480	32.92	-17.53	2575.1	13.43	13.43

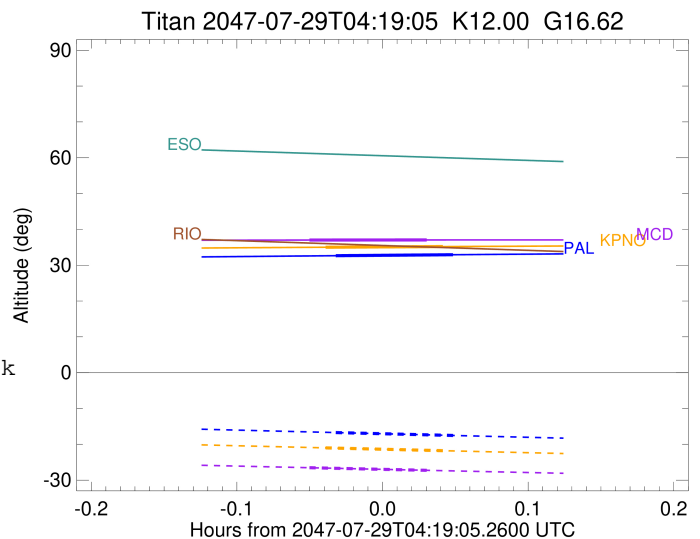
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-29T04:19:09.190
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       : 4070419121542324224
2Mass ID (if available) : 17523430-2226117
ICRS Star Coord at Epoch: 17h 52m 34.27950s -22:26:12.01065s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 11.998
G magnitude          : 16.621
RP magnitude         : 15.369
BP magnitude         : 18.029
DUPflag             : 0
Distance (au)       : 9.214
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -17.20
Sun-Target sep (deg) : 142.91
Sun-Moon sep (deg)  : 63.44
B (ring opening deg) : 26.68
PA of pole (deg)    : 5.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.008
C/A sky separation (km) : 55.9
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	2047-07-29T04:16:42.810	35.01	-20.99	2575.1	-13.24	-13.25
Titan	E	2047-07-29T04:21:35.543	35.19	-21.78	2575.1	11.03	11.04



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-07-29T04:18:29.670
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       : 4070419121542324224
2Mass ID (if available) : 17523430-2226117
ICRS Star Coord at Epoch: 17h 52m 34.27950s -22:26:12.01065s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 11.998
G magnitude           : 16.621
RP magnitude          : 15.369
BP magnitude          : 18.029
DUPflag              : 0
Distance (au)        : 9.214
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -17.20
Sun-Target sep (deg) : 142.91
Sun-Moon sep (deg)   : 63.51
B (ring opening deg) : 26.68
PA of pole (deg)     : 5.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.033
C/A sky separation (km) : 218.4
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	2047-07-29T04:16:03.840	37.01	-26.53	2575.1	-16.40	-16.41
Titan	E	2047-07-29T04:20:55.478	37.05	-27.26	2575.1	7.75	7.75

