

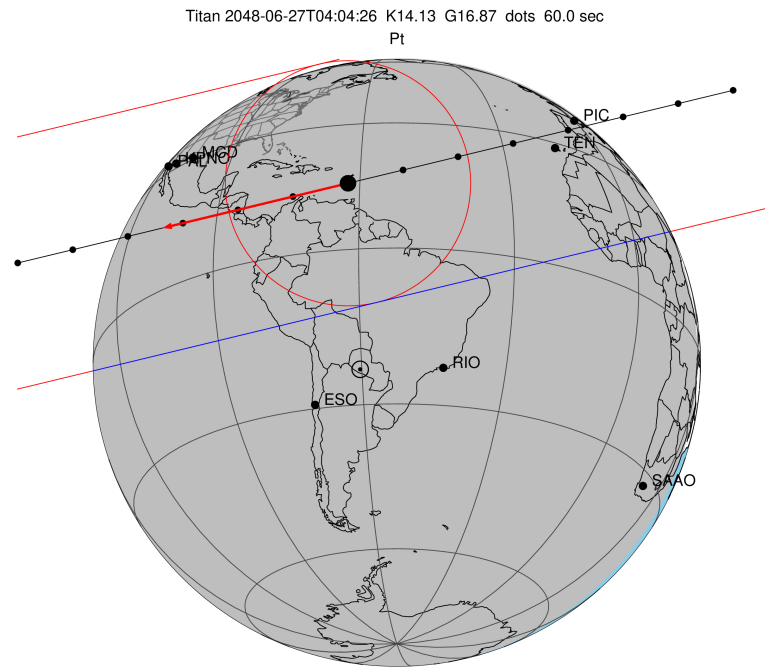
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2048-06-27T04:04:26.200
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4078729097264552448
 2Mass ID (if available) : 18541768-2217457

ICRS Star Coord at Epoch: 18h 54m 17.69959s -22:17:46.16407s
 RUWE (>1.4 is poor) : 0.92
 K magnitude : 14.129
 G magnitude : 16.872
 RP magnitude : 16.040
 BP magnitude : 17.625
 DUPflag : 0
 Distance (au) : 9.028
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -19.81
 Sun-Target sep (deg) : 172.97
 Sun-Moon sep (deg) : 8.34
 B (ring opening deg) : 25.03
 PA of pole (deg) : 6.52
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.594
 C/A sky separation (km) : 3891.0
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

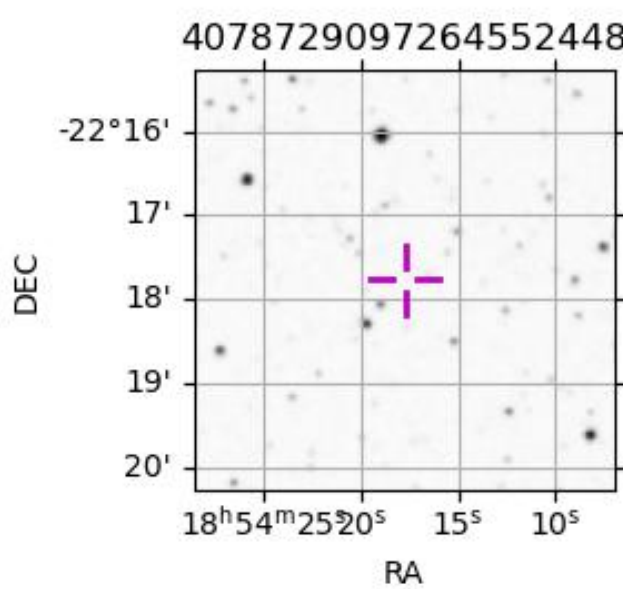
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	JUN 27 04:05 - JUN 27 04:09	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUN 27 04:05 - JUN 27 04:09	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUN 27 04:05 - JUN 27 04:08	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUN 27 03:58 - JUN 27 04:02	Pie
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



2048-06-27T04:04:26.2000 cc: 18 54 17.6996 s: -22 17 46.164 C/A 0.597" PA 346.42 deg v_sky -19.81 km/s D 09.03 AU
 Credit: Styled after SORA/Lucky Star



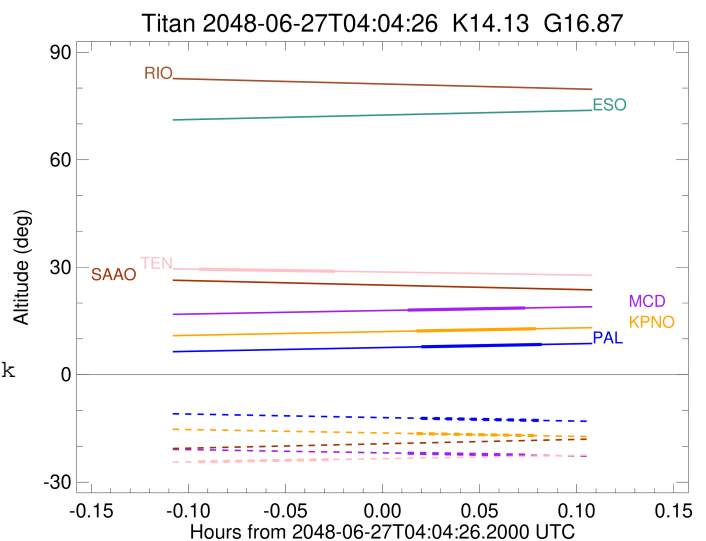
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2048-06-27T04:07:29.440
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        : 4078729097264552448
2Mass ID (if available) : 18541768-2217457
ICRS Star Coord at Epoch: 18h 54m 17.69959s -22:17:46.16407s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 14.129
G magnitude           : 16.872
RP magnitude          : 16.040
BP magnitude          : 17.625
DUPflag              : 0
Distance (au)         : 9.028
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -19.81
Sun-Target sep (deg)  : 172.97
Sun-Moon sep (deg)    : 8.93
B (ring opening deg) : 25.03
PA of pole (deg)     : 6.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.193
C/A sky separation (km) : 1265.5
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	2048-06-27T04:05:37.393	7.77	-12.18	2575.2	8.23	8.23
Titan	E	2048-06-27T04:09:21.459	8.43	-12.79	2575.1	43.77	43.79



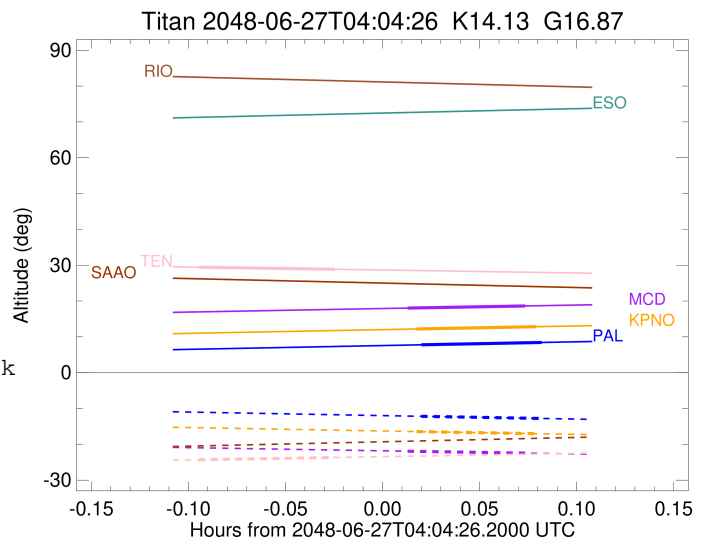
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-06-27T04:07:20.610
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     : 4078729097264552448
2Mass ID (if available) : 18541768-2217457
ICRS Star Coord at Epoch: 18h 54m 17.69959s -22:17:46.16407s
RUWE (>1.4 is poor) : 0.92
K magnitude         : 14.129
G magnitude         : 16.872
RP magnitude        : 16.040
BP magnitude        : 17.625
DUPflag            : 0
Distance (au)      : 9.028
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -19.81
Sun-Target sep (deg) : 172.97
Sun-Moon sep (deg)  : 8.92
B (ring opening deg) : 25.03
PA of pole (deg)   : 6.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.196
C/A sky separation (km) : 1280.8
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	2048-06-27T04:05:29.174	12.19	-16.44	2575.1	8.62	8.62
Titan	E	2048-06-27T04:09:12.012	12.83	-17.03	2575.1	44.06	44.07



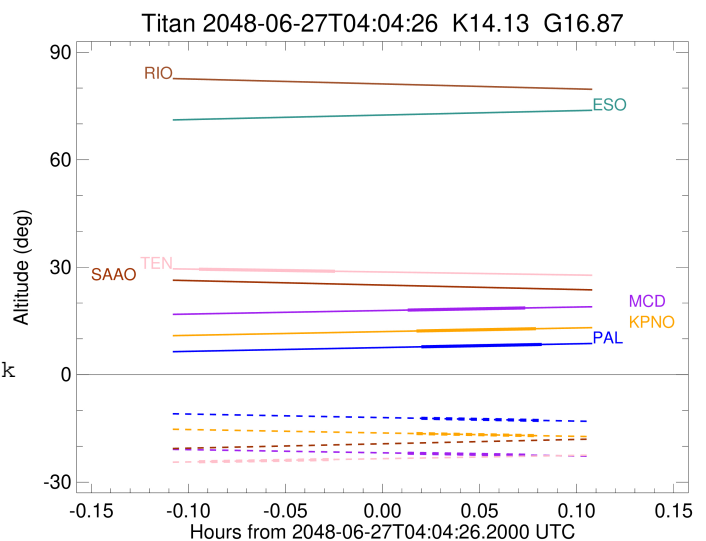
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2048-06-27T04:07:01.760
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 4078729097264552448
2Mass ID (if available) : 18541768-2217457
ICRS Star Coord at Epoch: 18h 54m 17.69959s -22:17:46.16407s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 14.129
G magnitude           : 16.872
RP magnitude          : 16.040
BP magnitude          : 17.625
DUPflag              : 0
Distance (au)        : 9.028
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -19.81
Sun-Target sep (deg) : 172.97
Sun-Moon sep (deg)   : 8.88
B (ring opening deg) : 25.03
PA of pole (deg)     : 6.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.201
C/A sky separation (km) : 1314.6
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

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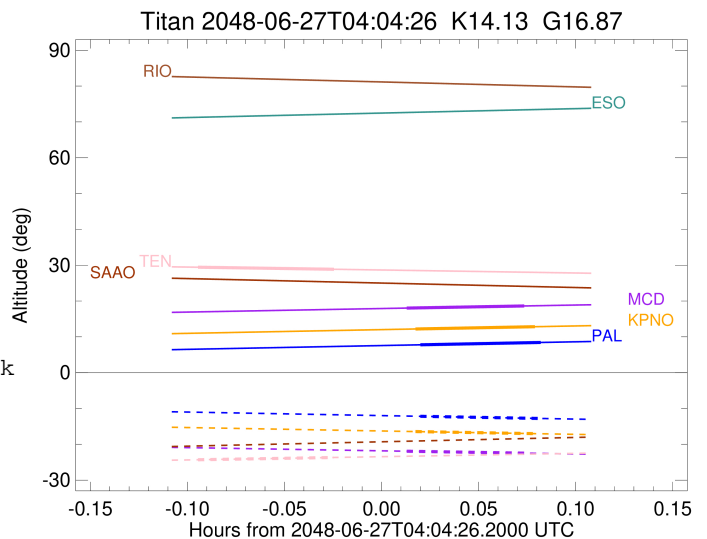
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2048-06-27T04:05:11.534	18.02	-21.93	2575.2	9.45	9.46
Titan	E	2048-06-27T04:08:51.963	18.62	-22.46	2575.1	44.71	44.73



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-06-27T04:00:51.850
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : TEN
Location             : Teide Obs./Tenerife
Latitude (deg)       : 28.30050
E. Longitude (deg)   : 343.48909
Altitude (km)        : 2.395
Gaia source ID       : 4078729097264552448
2Mass ID (if available) : 18541768-2217457
ICRS Star Coord at Epoch: 18h 54m 17.69959s -22:17:46.16407s
RUWE (>1.4 is poor) : 0.92
K magnitude           : 14.129
G magnitude           : 16.872
RP magnitude          : 16.040
BP magnitude          : 17.625
DUPflag              : 0
Distance (au)         : 9.028
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -19.81
Sun-Target sep (deg) : 172.97
Sun-Moon sep (deg)   : 7.72
B (ring opening deg) : 25.03
PA of pole (deg)     : 6.52
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.044
C/A sky separation (km) : 286.2
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

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2048-06-27T03:58:44.592	29.43	-24.31	2575.1	-23.41	-23.43
Titan	E	2048-06-27T04:02:59.097	28.86	-23.67	2575.1	11.98	11.99