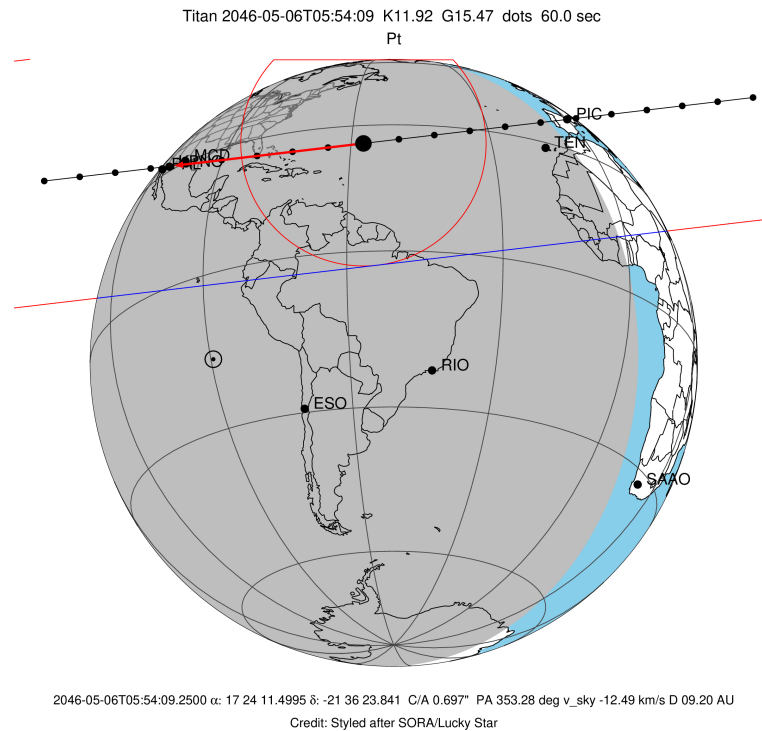


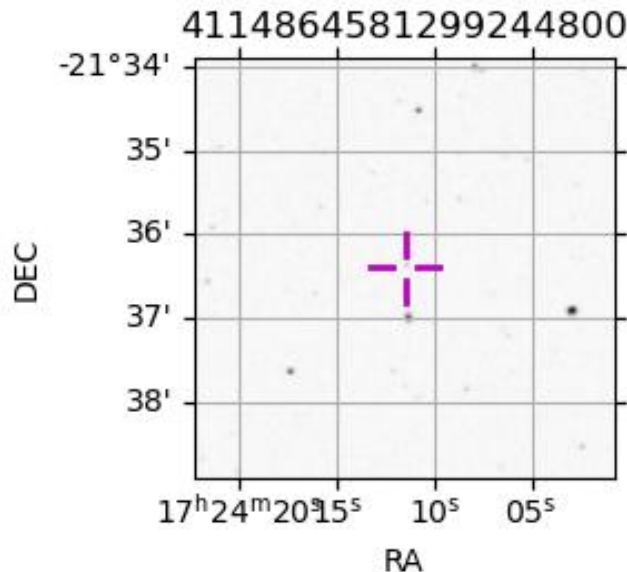
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-05-06T05:54:09.250  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4114864581299244800  
 2Mass ID (if available) : 17241149-2136236

ICRS Star Coord at Epoch: 17h 24m 11.49947s -21:36:23.84104s  
 RUWE (>1.4 is poor) : 0.95  
 K magnitude : 11.921  
 G magnitude : 15.472  
 RP magnitude : 14.419  
 BP magnitude : 16.593  
 DUPflag : 0  
 Distance (au) : 9.205  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -12.49  
 Sun-Target sep (deg) : 143.54  
 Sun-Moon sep (deg) : 144.44  
 B (ring opening deg) : 26.45  
 PA of pole (deg) : 4.87  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.694  
 C/A sky separation (km) : 4635.9  
 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	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAY 06 05:56 - MAY 06 06:03	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 06 05:56 - MAY 06 06:03	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 06 05:55 - MAY 06 06:02	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	MAY 06 05:46 - MAY 06 05:52	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



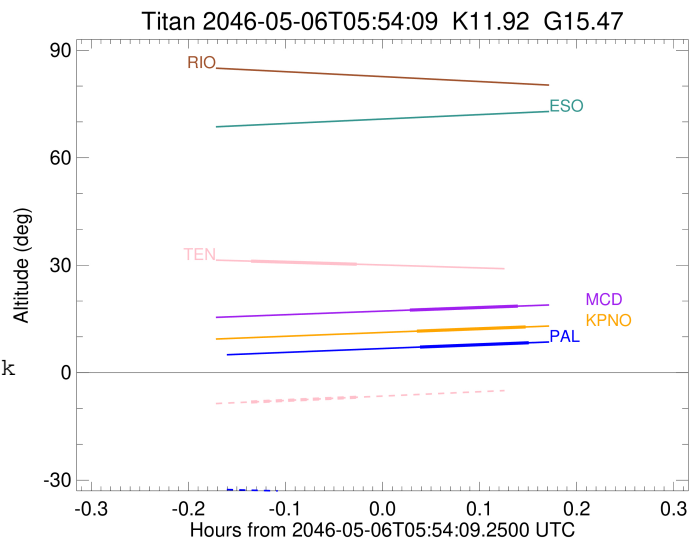
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-06T05:59:51.340
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        : 4114864581299244800
2Mass ID (if available) : 17241149-2136236
ICRS Star Coord at Epoch: 17h 24m 11.49947s -21:36:23.84104s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 11.921
G magnitude           : 15.472
RP magnitude          : 14.419
BP magnitude          : 16.593
DUPflag              : 0
Distance (au)         : 9.205
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg)  : 143.54
Sun-Moon sep (deg)    : 144.00
B (ring opening deg) : 26.45
PA of pole (deg)      : 4.87
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.002
C/A sky separation (km) : 13.3
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	2046-05-06T05:56:28.196	7.15	-33.99	2575.1	-10.54	-10.54
Titan	E	2046-05-06T06:03:14.301	8.35	-34.71	2575.1	11.05	11.06



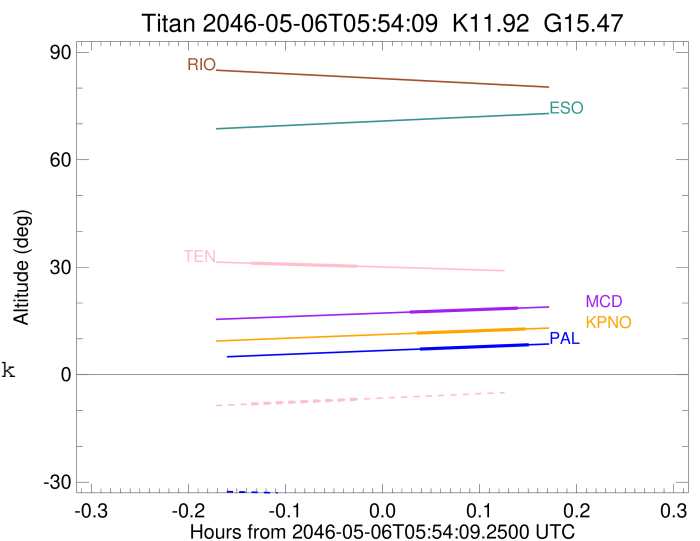
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-06T05:59:38.280
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       : 4114864581299244800
2Mass ID (if available) : 17241149-2136236
ICRS Star Coord at Epoch: 17h 24m 11.49947s -21:36:23.84104s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 11.921
G magnitude           : 15.472
RP magnitude          : 14.419
BP magnitude          : 16.593
DUPflag              : 0
Distance (au)        : 9.205
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 143.54
Sun-Moon sep (deg)   : 144.06
B (ring opening deg) : 26.45
PA of pole (deg)     : 4.87
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.007
C/A sky separation (km) : 49.3
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	2046-05-06T05:56:15.704	11.59	-37.34	2575.1	-9.84	-9.85
Titan	E	2046-05-06T06:03:00.693	12.76	-37.95	2575.1	11.67	11.68



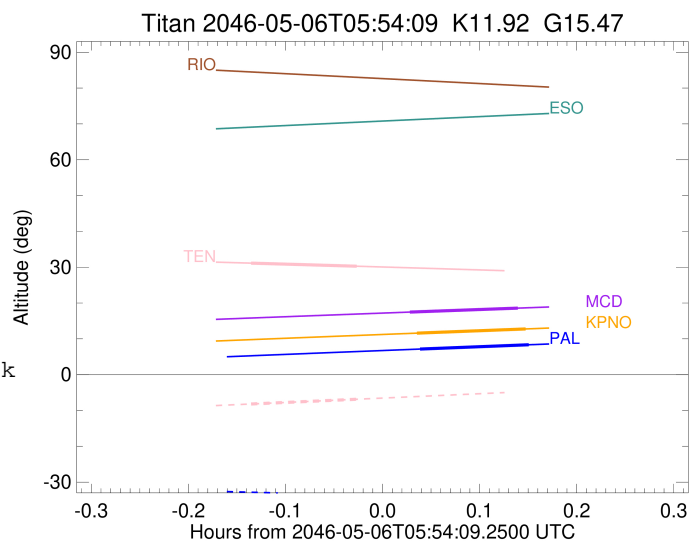
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-06T05:59:09.960
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       : 4114864581299244800
2Mass ID (if available) : 17241149-2136236
ICRS Star Coord at Epoch: 17h 24m 11.49947s -21:36:23.84104s
RUWE (>1.4 is poor) : 0.95
K magnitude           : 11.921
G magnitude           : 15.472
RP magnitude          : 14.419
BP magnitude          : 16.593
DUPflag              : 0
Distance (au)         : 9.205
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.49
Sun-Target sep (deg) : 143.54
Sun-Moon sep (deg)   : 144.15
B (ring opening deg) : 26.45
PA of pole (deg)     : 4.87
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.018
C/A sky separation (km) : 121.7
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

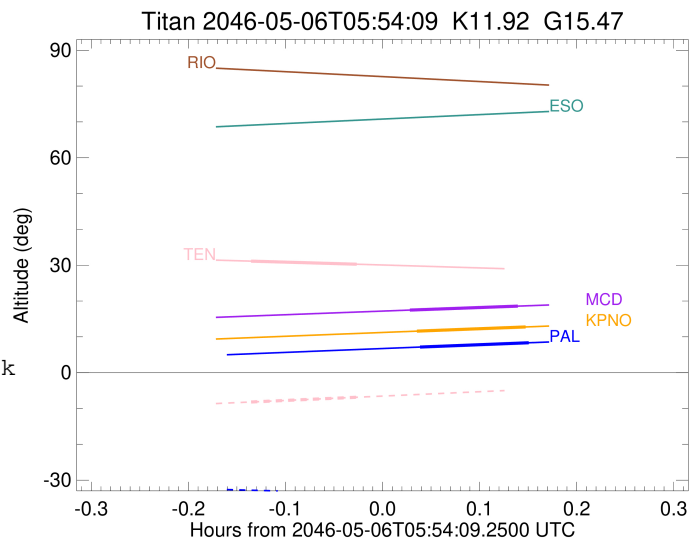
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-05-06T05:55:48.261	17.46	-40.96	2575.1	-8.30	-8.30
Titan	E	2046-05-06T06:02:31.495	18.57	-41.38	2575.1	13.09	13.10



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-06T05:49:18.780
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        : 4114864581299244800
2Mass ID (if available) : 17241149-2136236
ICRS Star Coord at Epoch: 17h 24m 11.49947s -21:36:23.84104s
RUWE (>1.4 is poor)  : 0.95
K magnitude           : 11.921
G magnitude           : 15.472
RP magnitude          : 14.419
BP magnitude          : 16.593
DUPflag              : 0
Distance (au)         : 9.205
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -12.49
Sun-Target sep (deg)  : 143.54
Sun-Moon sep (deg)    : 145.15
B (ring opening deg)  : 26.45
PA of pole (deg)      : 4.87
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.078
C/A sky separation (km) : 520.3
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	2046-05-06T05:46:01.900	31.13	-8.18	2575.1	-20.21	-20.22
Titan	E	2046-05-06T05:52:35.626	30.27	-6.86	2575.2	-0.56	-0.56