

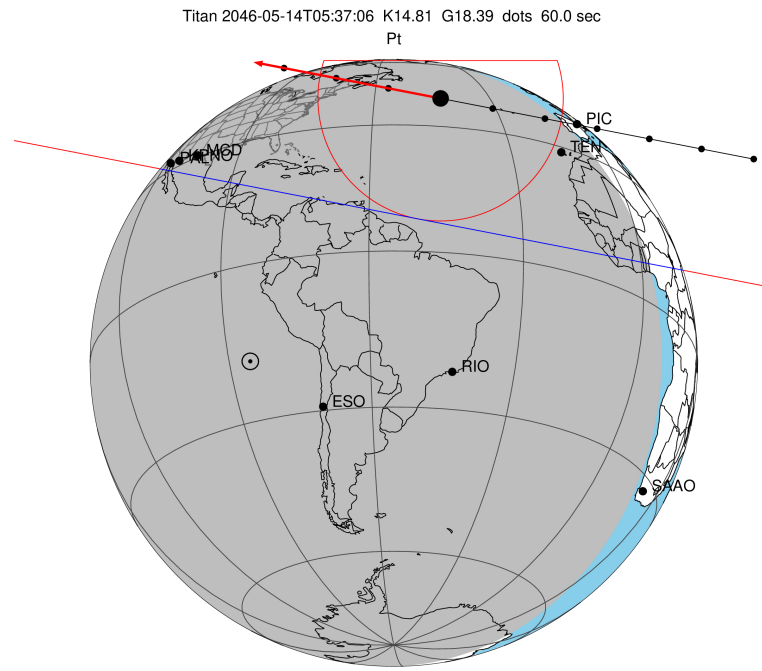
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-14T05:37:06.180
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4115063180572670336
 2Mass ID (if available) : 17215096-2134575

ICRS Star Coord at Epoch: 17h 21m 50.95019s -21:34:58.20374s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.811
 G magnitude : 18.395
 RP magnitude : 16.995
 BP magnitude : 18.871
 DUPflag : 0
 Distance (au) : 9.128
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -18.60
 Sun-Target sep (deg) : 151.80
 Sun-Moon sep (deg) : 107.71
 B (ring opening deg) : 26.47
 PA of pole (deg) : 4.81
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.854
 C/A sky separation (km) : 5653.0
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

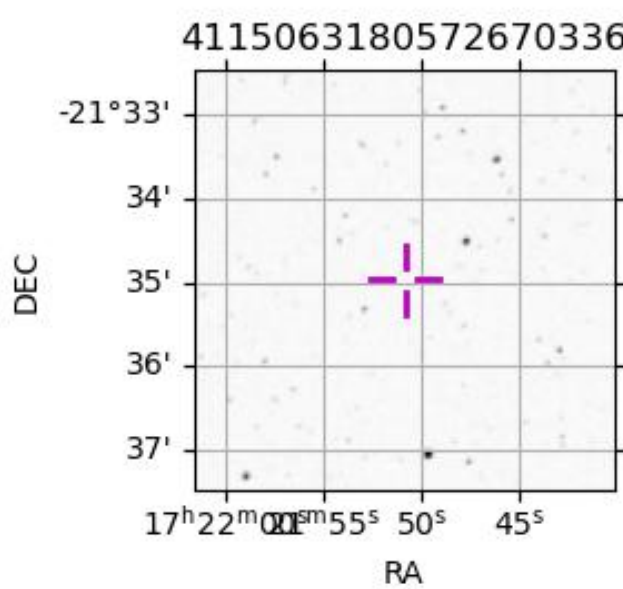
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	MAY 14 05:41 - MAY 14 05:42	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 14 05:40 - MAY 14 05:42	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 14 05:40 - MAY 14 05:42	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	MAY 14 05:32 - MAY 14 05:36	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



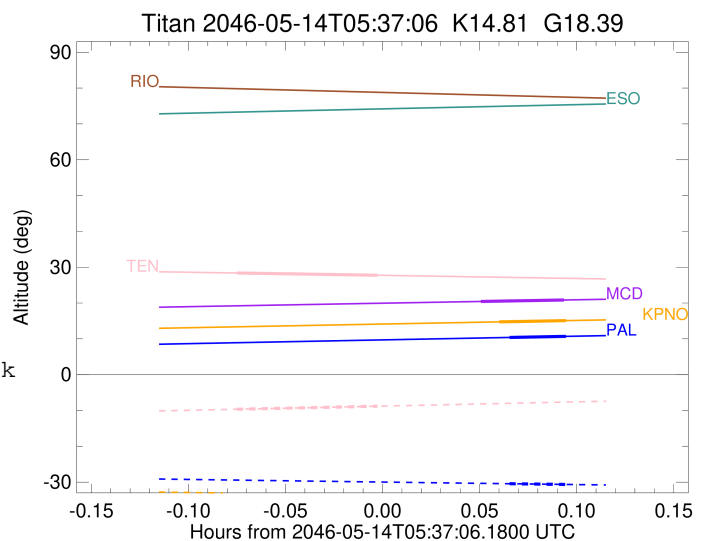
2046-05-14T05:37:06.1800 α: 17 21 50.9502 δ: -21 34 58.204 C/A 0.852" PA 10.98 deg v_sky -18.60 km/s D 09.13 AU
 Credit: Styled after SORA/Lucky Star



target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-14T05:41:54.330
 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 : 4115063180572670336
 2Mass ID (if available) : 17215096-2134575
 ICRS Star Coord at Epoch: 17h 21m 50.95019s -21:34:58.20374s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.811
 G magnitude : 18.395
 RP magnitude : 16.995
 BP magnitude : 18.871
 DUPflag : 0
 Distance (au) : 9.128
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -18.60
 Sun-Target sep (deg) : 151.80
 Sun-Moon sep (deg) : 108.10
 B (ring opening deg) : 26.47
 PA of pole (deg) : 4.81
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.359
 C/A sky separation (km) : 2373.6
 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

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	2046-05-14T05:41:01.109	10.39	-30.44	2575.1	-51.87	-51.89
Titan	E	2046-05-14T05:42:47.560	10.69	-30.65	2575.1	-58.81	-58.82



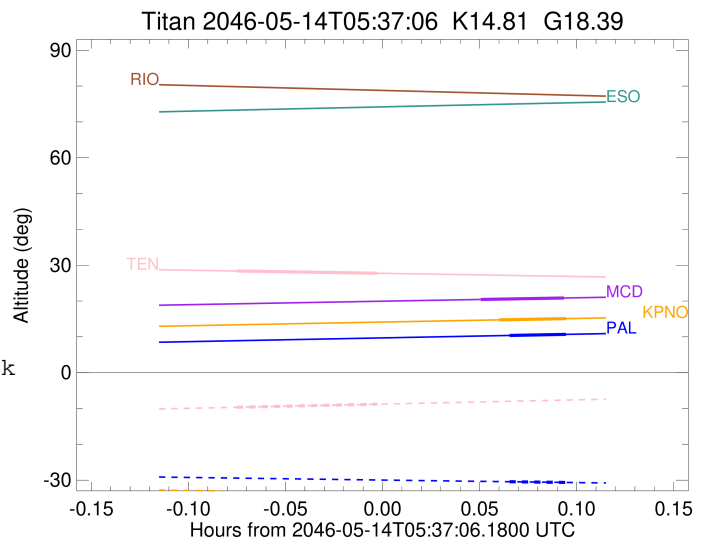
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-14T05:41:44.720
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        : 4115063180572670336
2Mass ID (if available) : 17215096-2134575
ICRS Star Coord at Epoch: 17h 21m 50.95019s -21:34:58.20374s
RUWE (>1.4 is poor)  : 0.97
K magnitude           : 14.811
G magnitude           : 18.395
RP magnitude          : 16.995
BP magnitude          : 18.871
DUPflag              : 0
Distance (au)         : 9.128
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -18.60
Sun-Target sep (deg)  : 151.80
Sun-Moon sep (deg)    : 108.16
B (ring opening deg)  : 26.47
PA of pole (deg)      : 4.81
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.346
C/A sky separation (km) : 2290.5
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	2046-05-14T05:40:42.112	14.74	-33.92	2575.1	-48.75	-48.76
Titan	E	2046-05-14T05:42:47.319	15.09	-34.14	2575.1	-56.39	-56.41



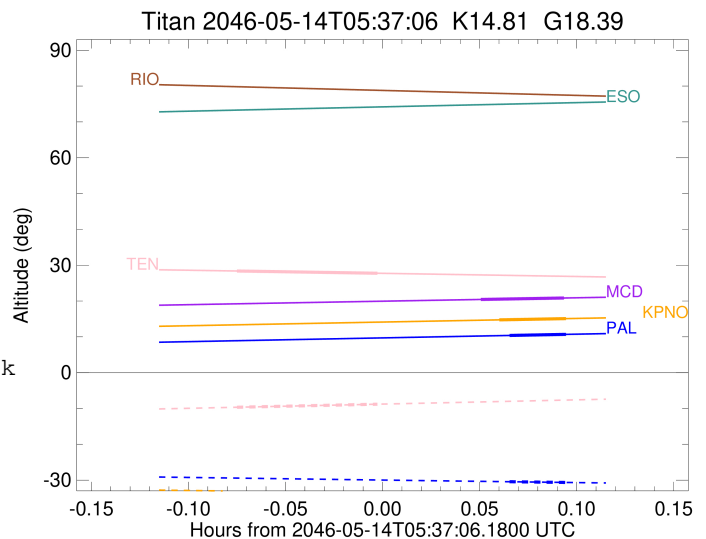
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-05-14T05:41:25.260
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       : 4115063180572670336
2Mass ID (if available) : 17215096-2134575
ICRS Star Coord at Epoch: 17h 21m 50.95019s -21:34:58.20374s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 14.811
G magnitude           : 18.395
RP magnitude          : 16.995
BP magnitude          : 18.871
DUPflag              : 0
Distance (au)        : 9.128
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.60
Sun-Target sep (deg) : 151.80
Sun-Moon sep (deg)   : 108.23
B (ring opening deg) : 26.47
PA of pole (deg)     : 4.81
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.319
C/A sky separation (km) : 2111.8
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	2046-05-14T05:40:07.049	20.43	-37.84	2575.1	-42.82	-42.83
Titan	E	2046-05-14T05:42:43.472	20.84	-38.04	2575.1	-51.38	-51.39



target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-14T05:34:46.600
 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 : 4115063180572670336
 2Mass ID (if available) : 17215096-2134575
 ICRS Star Coord at Epoch: 17h 21m 50.95019s -21:34:58.20374s
 RUWE (>1.4 is poor) : 0.97
 K magnitude : 14.811
 G magnitude : 18.395
 RP magnitude : 16.995
 BP magnitude : 18.871
 DUPflag : 0
 Distance (au) : 9.128
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -18.60
 Sun-Target sep (deg) : 151.80
 Sun-Moon sep (deg) : 107.98
 B (ring opening deg) : 26.47
 PA of pole (deg) : 4.81
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.100
 C/A sky separation (km) : 661.6
 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

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	2046-05-14T05:32:35.191	28.38	-9.66	2575.2	-7.71	-7.72
Titan	E	2046-05-14T05:36:58.036	27.75	-8.80	2575.1	-18.84	-18.85

