

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2032-12-11T06:31:13.330
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 3376843651945501056
 2Mass ID (if available) : 06183079+2222257

ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.124
 G magnitude : 14.878
 RP magnitude : 14.278
 BP magnitude : 15.295
 DUPflag : 0
 Distance (au) : 8.060
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -19.49
 Sun-Target sep (deg) : 165.00
 Sun-Moon sep (deg) : 85.77
 B (ring opening deg) : -26.02
 PA of pole (deg) : -6.00
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.476
 C/A sky separation (km) : 2782.4
 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	+ +	DEC 11 06:24 - DEC 11 06:29	Pie
PAL	Palomar Mt (200")	33.4	243.1	+ +	DEC 11 06:31 - DEC 11 06:35	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	DEC 11 06:31 - DEC 11 06:35	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	DEC 11 06:31 - DEC 11 06:34	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	DEC 11 06:24 - DEC 11 06:28	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	DEC 11 06:33 - DEC 11 06:37	Pie
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

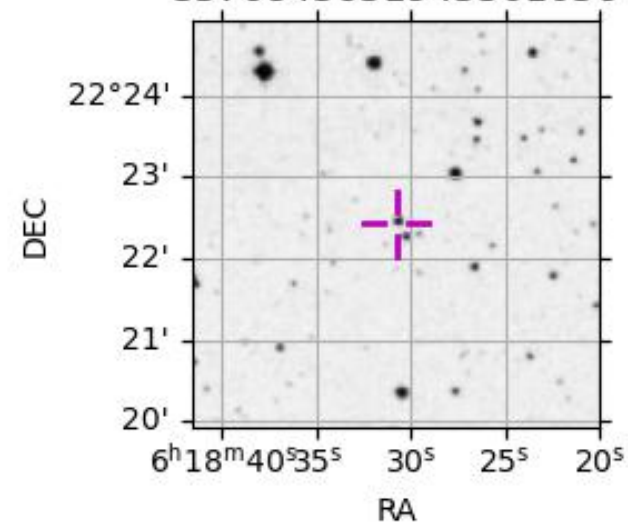
Titan 2032-12-11T06:31:13 K13.12 G14.88 dots 60.0 sec
 Pt



2032-12-11T06:31:13.3300 α: 06 18 30.7890 δ: +22 22 25.798 C/A 0.475" PA 355.25 deg v_sky -19.49 km/s D 08.06 AU

Credit: Styled after SORA/Lucky Star

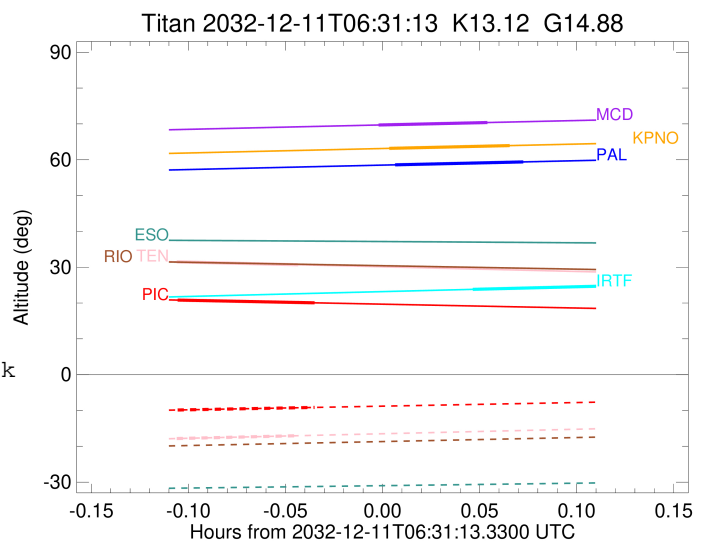
3376843651945501056



target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2032-12-11T06:27:00.760
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3376843651945501056
 2Mass ID (if available) : 06183079+2222257
 ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 13.124
 G magnitude : 14.878
 RP magnitude : 14.278
 BP magnitude : 15.295
 DUPflag : 0
 Distance (au) : 8.060
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -19.49
 Sun-Target sep (deg) : 165.00
 Sun-Moon sep (deg) : 86.14
 B (ring opening deg) : -26.02
 PA of pole (deg) : -6.00
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.102
 C/A sky separation (km) : 598.3
 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

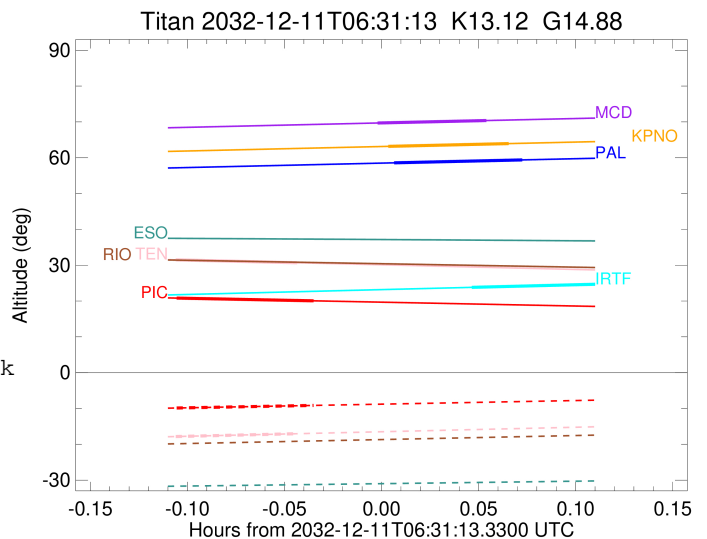
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2032-12-11T06:24:52.721	20.82	-9.86	2575.1	12.84	12.84
Titan	E	2032-12-11T06:29:08.849	20.05	-9.14	2575.1	11.27	11.27



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-11T06:33:35.610
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      : 3376843651945501056
2Mass ID (if available) : 06183079+2222257
ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 13.124
G magnitude          : 14.878
RP magnitude         : 14.278
BP magnitude         : 15.295
DUPflag             : 0
Distance (au)       : 8.060
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -19.49
Sun-Target sep (deg) : 165.00
Sun-Moon sep (deg)  : 86.58
B (ring opening deg) : -26.02
PA of pole (deg)    : -6.00
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.176
C/A sky separation (km) : 1030.7
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	2032-12-11T06:31:36.492	58.57	-71.72	2575.1	-19.71	-19.72
Titan	E	2032-12-11T06:35:34.733	59.38	-72.44	2575.1	-22.45	-22.46

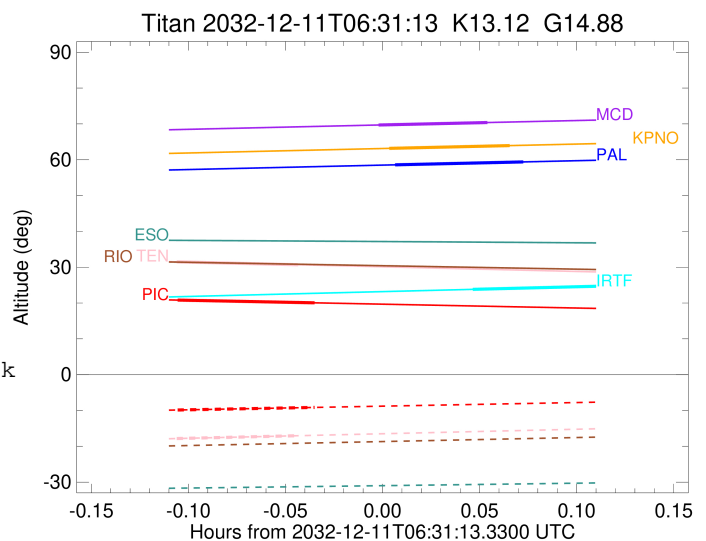
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-12-11T06:33:17.270
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        : 3376843651945501056
2Mass ID (if available) : 06183079+2222257
ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 13.124
G magnitude           : 14.878
RP magnitude          : 14.278
BP magnitude          : 15.295
DUPflag              : 0
Distance (au)         : 8.060
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -19.49
Sun-Target sep (deg) : 165.00
Sun-Moon sep (deg)   : 86.62
B (ring opening deg) : -26.02
PA of pole (deg)     : -6.00
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.223
C/A sky separation (km) : 1301.3
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	2032-12-11T06:31:25.238	63.16	-76.18	2575.1	-25.68	-25.69
Titan	E	2032-12-11T06:35:09.303	63.94	-76.81	2575.1	-28.33	-28.34



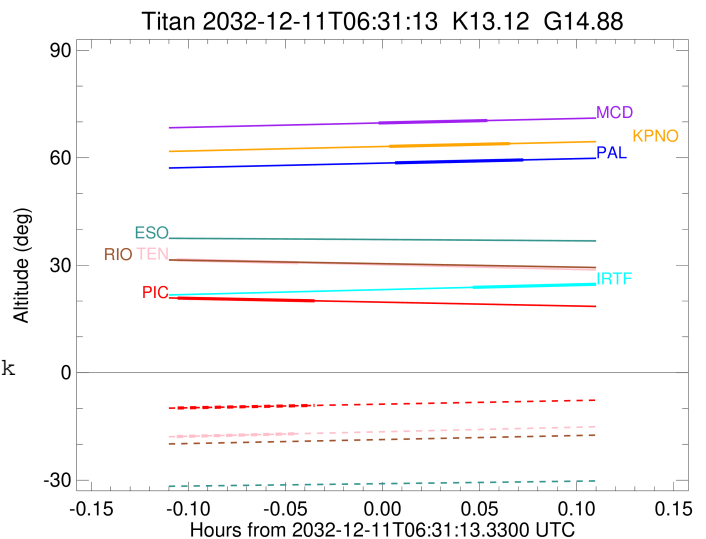
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-12-11T06:32:46.740
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        : 3376843651945501056
2Mass ID (if available) : 06183079+2222257
ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 13.124
G magnitude           : 14.878
RP magnitude          : 14.278
BP magnitude          : 15.295
DUPflag              : 0
Distance (au)         : 8.060
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -19.49
Sun-Target sep (deg)  : 165.00
Sun-Moon sep (deg)   : 86.67
B (ring opening deg) : -26.02
PA of pole (deg)     : -6.00
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.273
C/A sky separation (km) : 1598.7
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	2032-12-11T06:31:05.113	69.68	-81.49	2575.1	-32.65	-32.66
Titan	E	2032-12-11T06:34:28.378	70.37	-81.82	2575.1	-35.16	-35.18



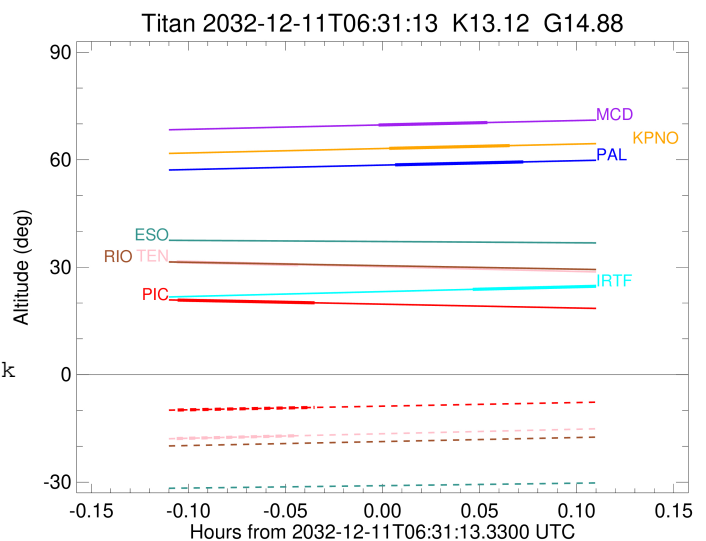
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-12-11T06:26:44.280
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        : 3376843651945501056
2Mass ID (if available) : 06183079+2222257
ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 13.124
G magnitude           : 14.878
RP magnitude          : 14.278
BP magnitude          : 15.295
DUPflag              : 0
Distance (au)         : 8.060
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -19.49
Sun-Target sep (deg) : 165.00
Sun-Moon sep (deg)   : 86.31
B (ring opening deg) : -26.02
PA of pole (deg)     : -6.00
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.222
C/A sky separation (km) : 1298.8
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	2032-12-11T06:24:51.319	31.49	-17.83	2575.1	-26.19	-26.20
Titan	E	2032-12-11T06:28:37.270	30.67	-17.04	2575.1	-27.71	-27.72



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-11T06:35:58.310
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 3376843651945501056
2Mass ID (if available) : 06183079+2222257
ICRS Star Coord at Epoch: 06h 18m 30.78902s +22:22:25.79850s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 13.124
G magnitude           : 14.878
RP magnitude          : 14.278
BP magnitude          : 15.295
DUPflag              : 0
Distance (au)         : 8.060
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -19.49
Sun-Target sep (deg) : 165.00
Sun-Moon sep (deg)   : 86.09
B (ring opening deg) : -26.02
PA of pole (deg)     : -6.00
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.186
C/A sky separation (km): 1086.9
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	2032-12-11T06:33:59.312	23.81	-38.68	2575.1	-20.76	-20.77
Titan	E	2032-12-11T06:37:57.311	24.70	-39.59	2575.1	-23.81	-23.82

