

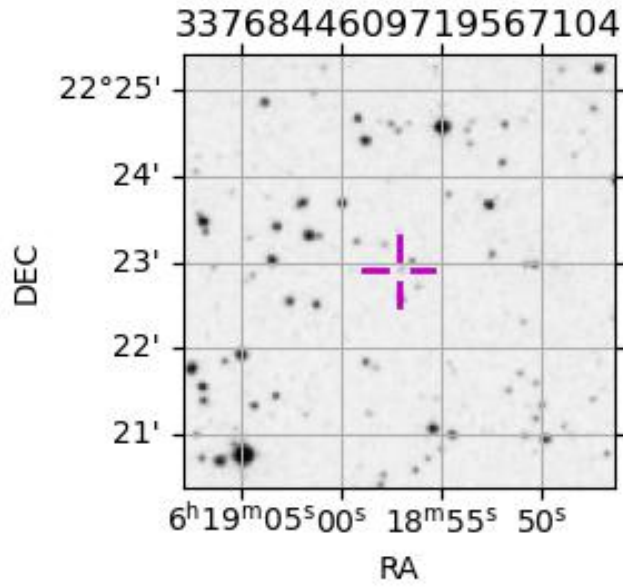
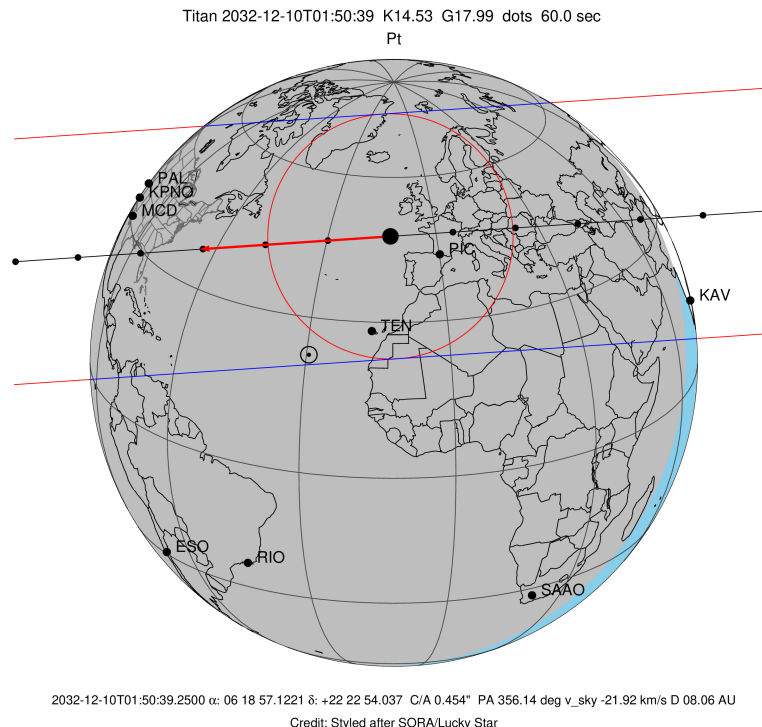
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2032-12-10T01:50:39.250  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 3376844609719567104  
 2Mass ID (if available) : 06185711+2222540

ICRS Star Coord at Epoch: 06h 18m 57.12211s +22:22:54.03731s  
 RUWE (>1.4 is poor) : 0.98  
 K magnitude : 14.533  
 G magnitude : 17.993  
 RP magnitude : 16.963  
 BP magnitude : 18.990  
 DUPflag : 0  
 Distance (au) : 8.062  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -21.91  
 Sun-Target sep (deg) : 163.69  
 Sun-Moon sep (deg) : 102.67  
 B (ring opening deg) : -26.01  
 PA of pole (deg) : -6.01  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.455  
 C/A sky separation (km) : 2659.7  
 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 10 01:47 - DEC 10 01:51	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	DEC 10 01:52 - DEC 10 01:56	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	DEC 10 01:49 - DEC 10 01:52	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



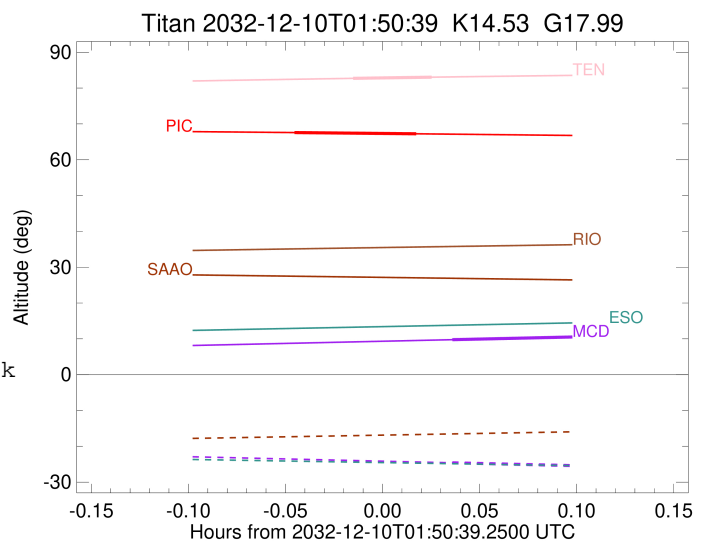
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-12-10T01:49:49.390
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)   : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 3376844609719567104
2Mass ID (if available) : 06185711+2222540
ICRS Star Coord at Epoch: 06h 18m 57.12211s +22:22:54.03731s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 14.533
G magnitude           : 17.993
RP magnitude          : 16.963
BP magnitude          : 18.990
DUPflag              : 0
Distance (au)        : 8.062
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -21.91
Sun-Target sep (deg) : 163.69
Sun-Moon sep (deg)   : 103.52
B (ring opening deg) : -26.01
PA of pole (deg)     : -6.01
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.080
C/A sky separation (km) : 469.0
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	2032-12-10T01:47:55.619	67.57	-58.93	2575.1	-7.51	-7.51
Titan	E	2032-12-10T01:51:43.182	67.23	-58.32	2575.1	-11.32	-11.33



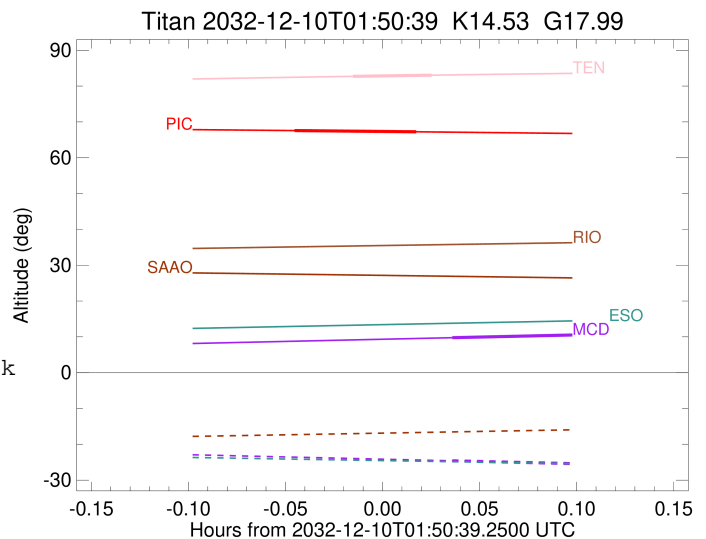
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-12-10T01:54:40.660
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        : 3376844609719567104
2Mass ID (if available) : 06185711+2222540
ICRS Star Coord at Epoch: 06h 18m 57.12211s +22:22:54.03731s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 14.533
G magnitude           : 17.993
RP magnitude          : 16.963
BP magnitude          : 18.990
DUPflag              : 0
Distance (au)         : 8.062
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -21.91
Sun-Target sep (deg)  : 163.69
Sun-Moon sep (deg)    : 103.02
B (ring opening deg) : -26.01
PA of pole (deg)      : -6.01
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.124
C/A sky separation (km) : 722.6
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	2032-12-10T01:52:47.771	9.76	-24.60	2575.1	16.86	16.87
Titan	E	2032-12-10T01:56:33.546	10.52	-25.39	2575.1	12.34	12.35



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-12-10T01:50:57.870
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       : 3376844609719567104
2Mass ID (if available) : 06185711+2222540
ICRS Star Coord at Epoch: 06h 18m 57.12211s +22:22:54.03731s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 14.533
G magnitude           : 17.993
RP magnitude          : 16.963
BP magnitude          : 18.990
DUPflag              : 0
Distance (au)         : 8.062
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -21.91
Sun-Target sep (deg) : 163.69
Sun-Moon sep (deg)   : 103.64
B (ring opening deg) : -26.01
PA of pole (deg)     : -6.01
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.339
C/A sky separation (km) : 1984.2
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

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2032-12-10T01:49:44.349	82.71	-77.40	2575.1	-42.03	-42.04
Titan	E	2032-12-10T01:52:11.406	83.03	-76.89	2575.1	-45.59	-45.60

