

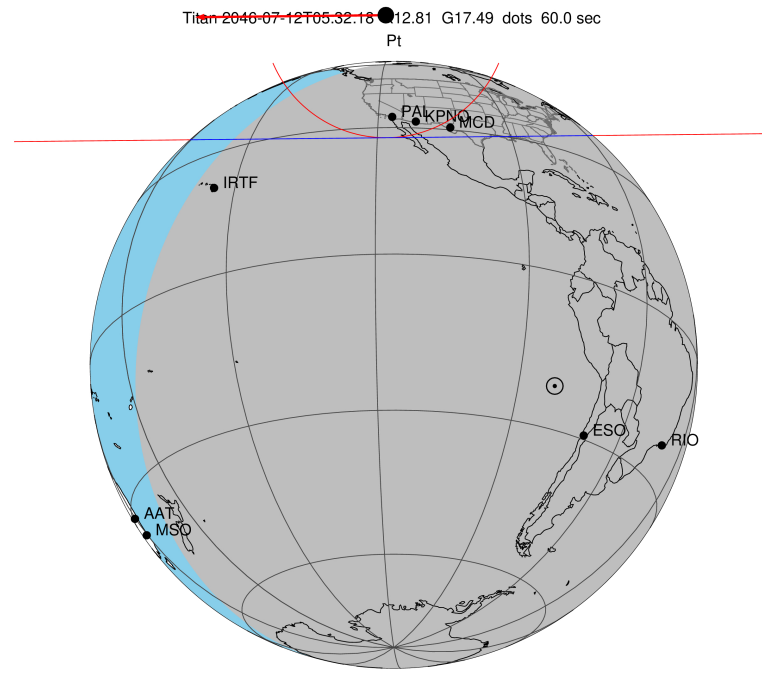
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-07-12T05:32:18.680
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4127605790716169344
 2Mass ID (if available) : 17044751-2120587

ICRS Star Coord at Epoch: 17h 04m 47.48209s -21:20:58.33209s
 RUWE (>1.4 is poor) : 0.00
 K magnitude : 12.814
 G magnitude : 17.490
 RP magnitude : 0.000
 BP magnitude : 0.000
 DUPflag : 0
 Distance (au) : 9.156
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -20.45
 Sun-Target sep (deg) : 147.70
 Sun-Moon sep (deg) : 39.91
 B (ring opening deg) : 26.56
 PA of pole (deg) : 4.39
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 1.105
 C/A sky separation (km) : 7338.8
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

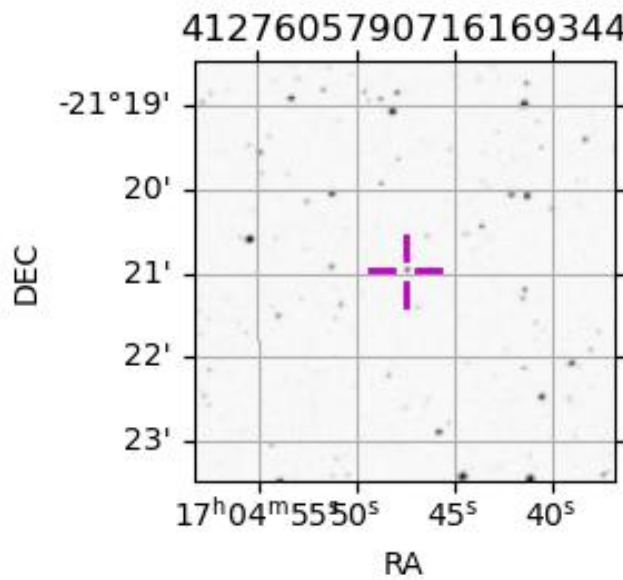
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	JUL 12 05:31 - JUL 12 05:33	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JUL 12 05:30 - JUL 12 05:32	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JUL 12 05:30 - JUL 12 05:32	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
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



2046-07-12T05:32:18.6800 cc: 17 04 47.4821 d: -21 20 58.332 C/A 1.107" PA 359.39 deg v_sky -20.45 km/s D 09.16 AU
 Credit: Styled after SORA/Lucky Star



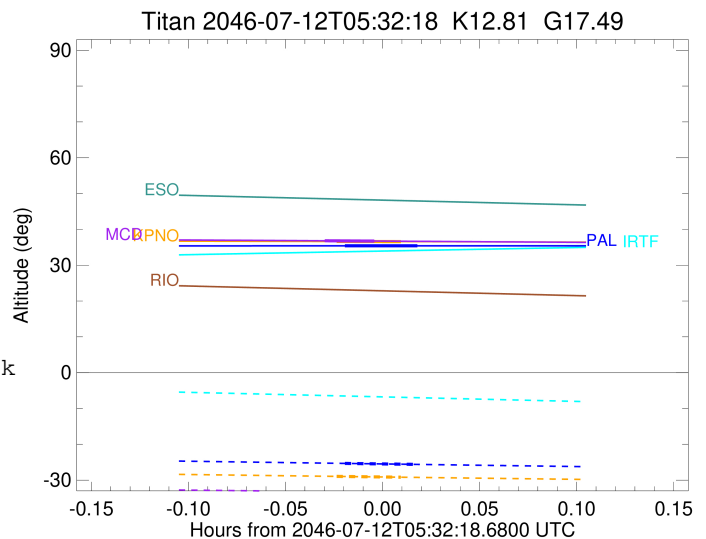
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-07-12T05:32:16.460
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 4127605790716169344
2Mass ID (if available) : 17044751-2120587
ICRS Star Coord at Epoch: 17h 04m 47.48209s -21:20:58.33209s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 12.814
G magnitude          : 17.490
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag             : 0
Distance (au)        : 9.156
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.45
Sun-Target sep (deg) : 147.70
Sun-Moon sep (deg)  : 40.33
B (ring opening deg) : 26.56
PA of pole (deg)    : 4.39
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.323
C/A sky separation (km): 2144.3
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

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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	2046-07-12T05:31:08.058	35.41	-25.33	2575.1	-51.72	-51.74
Titan	E	2046-07-12T05:33:24.860	35.41	-25.61	2575.1	-44.35	-44.37



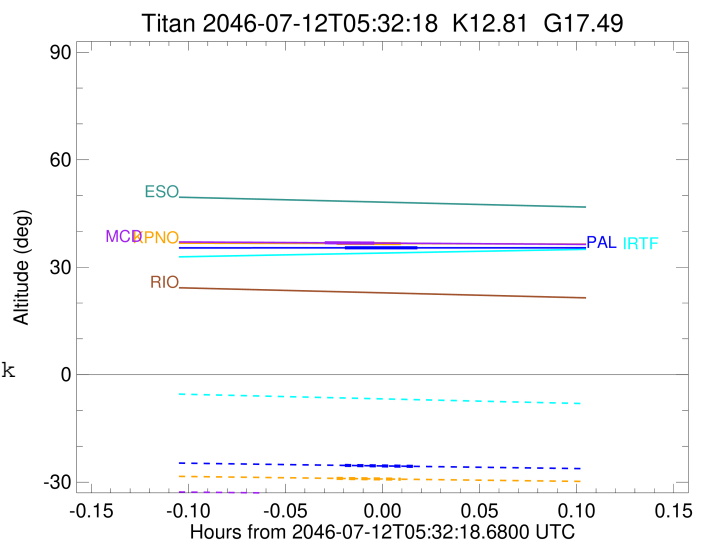
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-07-12T05:31:52.640
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 4127605790716169344
2Mass ID (if available) : 17044751-2120587
ICRS Star Coord at Epoch: 17h 04m 47.48209s -21:20:58.33209s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 12.814
G magnitude          : 17.490
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag             : 0
Distance (au)        : 9.156
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.45
Sun-Target sep (deg) : 147.70
Sun-Moon sep (deg)   : 40.40
B (ring opening deg) : 26.56
PA of pole (deg)     : 4.39
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.339
C/A sky separation (km) : 2249.0
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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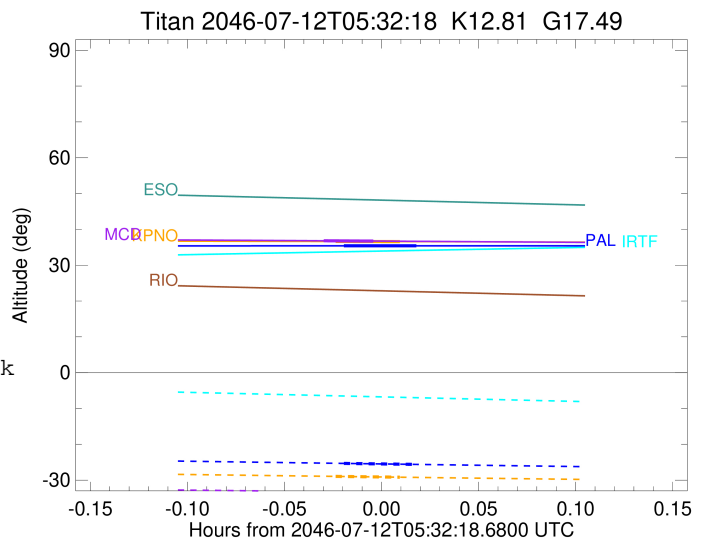
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-07-12T05:30:52.486	36.62	-28.95	2575.1	-54.67	-54.69
Titan	E	2046-07-12T05:32:52.801	36.58	-29.18	2575.1	-47.79	-47.81



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-07-12T05:31:17.900
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      : 4127605790716169344
2Mass ID (if available) : 17044751-2120587
ICRS Star Coord at Epoch: 17h 04m 47.48209s -21:20:58.33209s
RUWE (>1.4 is poor) : 0.00
K magnitude          : 12.814
G magnitude          : 17.490
RP magnitude         : 0.000
BP magnitude         : 0.000
DUPflag             : 0
Distance (au)       : 9.156
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -20.45
Sun-Target sep (deg) : 147.70
Sun-Moon sep (deg)  : 40.48
B (ring opening deg) : 26.56
PA of pole (deg)    : 4.39
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.359
C/A sky separation (km) : 2385.2
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	2046-07-12T05:30:31.357	36.81	-33.18	2575.0	-58.68	-58.69
Titan	E	2046-07-12T05:32:04.451	36.73	-33.32	2575.1	-52.82	-52.84