

target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-05-17T08:27:45.040  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4090699854003033984  
 2Mass ID (if available) : 18125652-2217591

ICRS Star Coord at Epoch: 18h 12m 56.51724s -22:17:59.41356s  
 RUWE (>1.4 is poor) : 1.15  
 K magnitude : 13.382  
 G magnitude : 18.265  
 RP magnitude : 16.890  
 BP magnitude : 20.119  
 DUPflag : 0  
 Distance (au) : 9.223  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -14.25  
 Sun-Target sep (deg) : 142.72  
 Sun-Moon sep (deg) : 60.22  
 B (ring opening deg) : 26.08  
 PA of pole (deg) : 5.90  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.924  
 C/A sky separation (km) : 6178.7  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

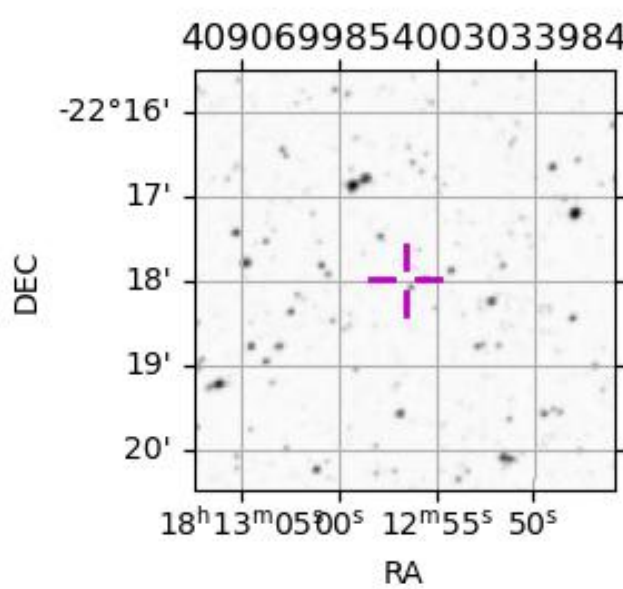
URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

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			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAY 17 08:29 - MAY 17 08:33	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAY 17 08:28 - MAY 17 08:33	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAY 17 08:27 - MAY 17 08:32	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



2047-05-17T08:27:45.0400 a: 18 12 56.51724 s: -22 17 59.414 C/A 0.921" PA 8.13 deg v\_sky -14.25 km/s D 09.22 AU  
 Credit: Styled after SORA/Lucky Star



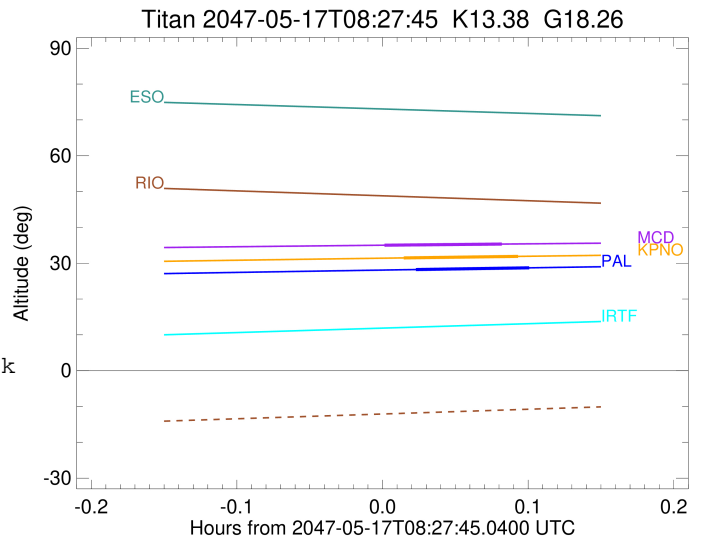
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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-05-17T08:31:27.740
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 4090699854003033984
2Mass ID (if available) : 18125652-2217591
ICRS Star Coord at Epoch: 18h 12m 56.51724s -22:17:59.41356s
RUWE (>1.4 is poor) : 1.15
K magnitude          : 13.382
G magnitude          : 18.265
RP magnitude         : 16.890
BP magnitude         : 20.119
DUPflag             : 0
Distance (au)        : 9.223
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.25
Sun-Target sep (deg) : 142.72
Sun-Moon sep (deg)   : 60.75
B (ring opening deg) : 26.08
PA of pole (deg)     : 5.90
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.232
C/A sky separation (km) : 1552.5
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

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

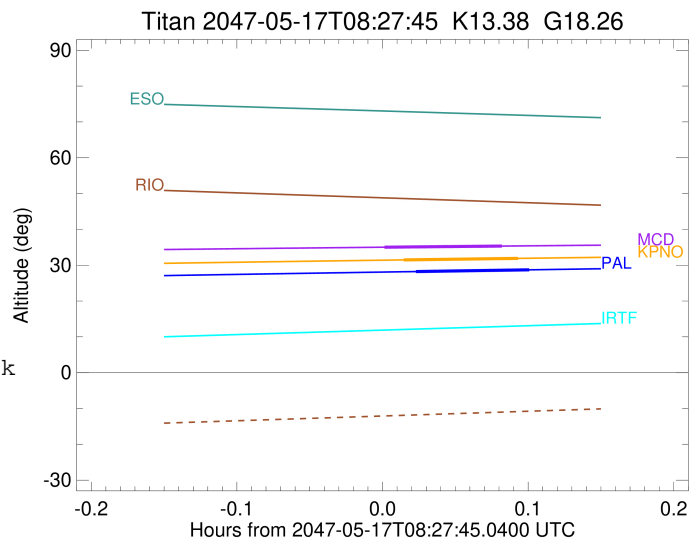
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-05-17T08:29:06.815	28.22	-36.37	2575.1	-31.27	-31.28
Titan	E	2047-05-17T08:33:48.681	28.71	-36.14	2575.1	-34.30	-34.32



target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-05-17T08:30:59.690  
 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 : 4090699854003033984  
 2Mass ID (if available) : 18125652-2217591  
 ICRS Star Coord at Epoch: 18h 12m 56.51724s -22:17:59.41356s  
 RUWE (>1.4 is poor) : 1.15  
 K magnitude : 13.382  
 G magnitude : 18.265  
 RP magnitude : 16.890  
 BP magnitude : 20.119  
 DUPflag : 0  
 Distance (au) : 9.223  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -14.25  
 Sun-Target sep (deg) : 142.72  
 Sun-Moon sep (deg) : 60.76  
 B (ring opening deg) : 26.08  
 PA of pole (deg) : 5.90  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.226  
 C/A sky separation (km) : 1510.8  
 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	2047-05-17T08:28:36.871	31.47	-36.48	2575.1	-30.25	-30.26
Titan	E	2047-05-17T08:33:22.531	31.90	-36.14	2575.1	-33.35	-33.36



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-05-17T08:30:15.030
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       : 4090699854003033984
2Mass ID (if available) : 18125652-2217591
ICRS Star Coord at Epoch: 18h 12m 56.51724s -22:17:59.41356s
RUWE (>1.4 is poor) : 1.15
K magnitude          : 13.382
G magnitude          : 18.265
RP magnitude         : 16.890
BP magnitude         : 20.119
DUPflag             : 0
Distance (au)        : 9.223
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.25
Sun-Target sep (deg) : 142.72
Sun-Moon sep (deg)   : 60.76
B (ring opening deg) : 26.08
PA of pole (deg)     : 5.90
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.213
C/A sky separation (km) : 1422.8
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	2047-05-17T08:27:48.284	35.02	-35.13	2575.1	-28.14	-28.15
Titan	E	2047-05-17T08:32:41.802	35.33	-34.63	2575.1	-31.36	-31.38

