

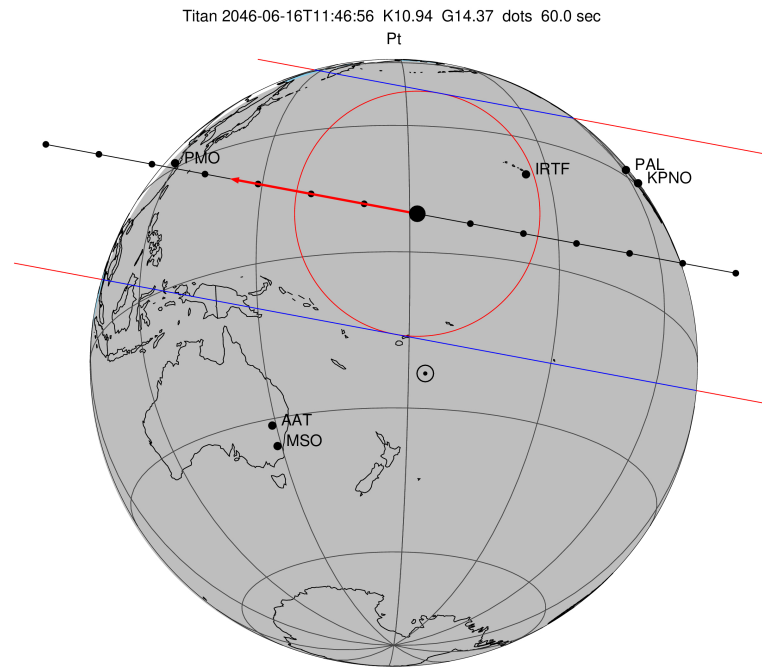
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-06-16T11:46:56.220  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4115632968108286336  
 2Mass ID (if available) : 17114976-2125049

ICRS Star Coord at Epoch: 17h 11m 49.75624s -21:25:05.19835s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 10.939  
 G magnitude : 14.370  
 RP magnitude : 13.417  
 BP magnitude : 15.303  
 DUPflag : 0  
 Distance (au) : 9.026  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -18.89  
 Sun-Target sep (deg) : 173.72  
 Sun-Moon sep (deg) : 20.96  
 B (ring opening deg) : 26.50  
 PA of pole (deg) : 4.56  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.486  
 C/A sky separation (km) : 3179.4  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

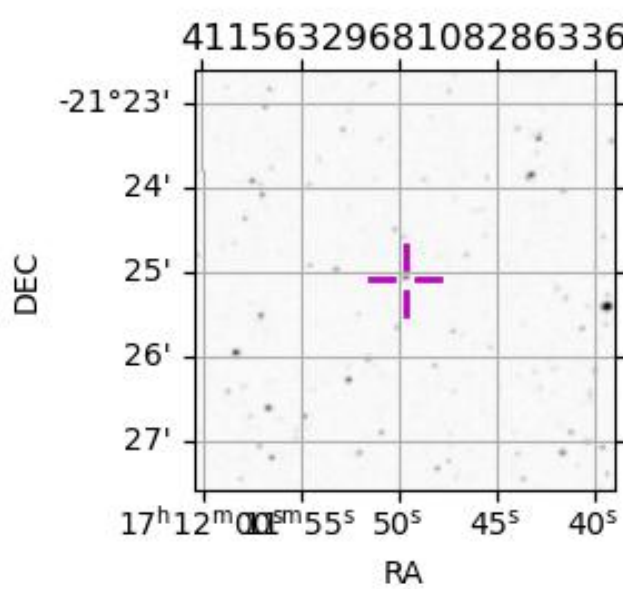
URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

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			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	JUN 16 11:41 - JUN 16 11:45	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JUN 16 11:49 - JUN 16 11:53	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	JUN 16 11:43 - JUN 16 11:47	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

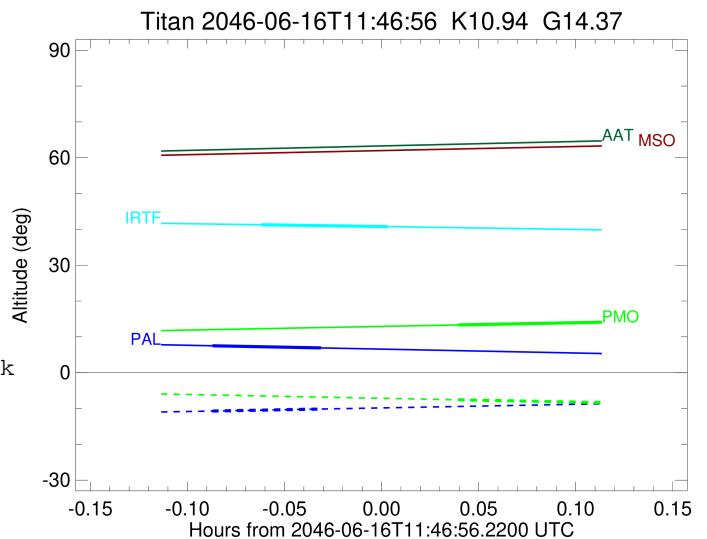


2046-06-16T11:46:56.2200 α: 17 11 49.7562 δ: -21 25 05.198 C/A 0.484" PA 10.59 deg v\_sky -18.89 km/s D 09.03 AU  
 Credit: Styled after SORA/Lucky Star



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-16T11:43:22.900
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        : 4115632968108286336
2Mass ID (if available) : 17114976-2125049
ICRS Star Coord at Epoch: 17h 11m 49.75624s -21:25:05.19835s
RUWE (>1.4 is poor)  : 0.97
K magnitude           : 10.939
G magnitude           : 14.370
RP magnitude          : 13.417
BP magnitude          : 15.303
DUPflag              : 0
Distance (au)         : 9.025
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -18.89
Sun-Target sep (deg)  : 173.72
Sun-Moon sep (deg)    : 21.81
B (ring opening deg)  : 26.50
PA of pole (deg)      : 4.56
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.257
C/A sky separation (km) : 1685.0
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

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-06-16T11:41:40.870	7.51	-10.72	2575.1	41.03	41.05
Titan	E	2046-06-16T11:45:04.968	6.90	-10.15	2575.1	30.50	30.51

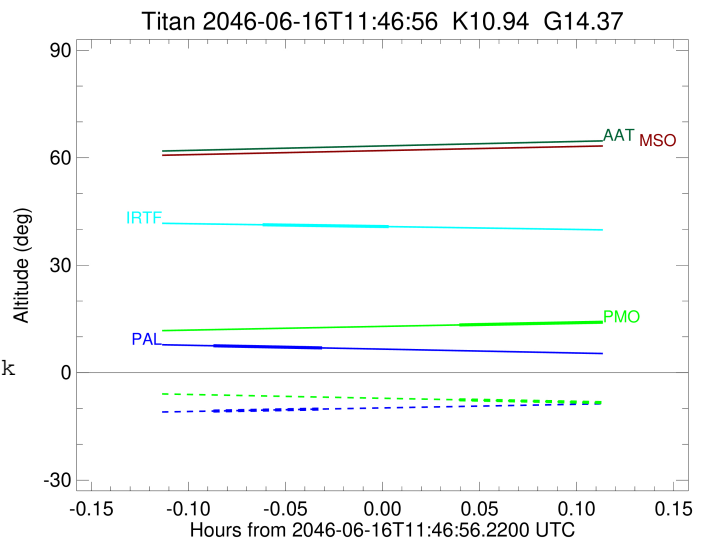
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-06-16T11:51:32.390
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : PMO
Location             : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 4115632968108286336
2Mass ID (if available) : 17114976-2125049
ICRS Star Coord at Epoch: 17h 11m 49.75624s -21:25:05.19835s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 10.939
G magnitude          : 14.370
RP magnitude         : 13.417
BP magnitude         : 15.303
DUPflag             : 0
Distance (au)        : 9.026
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.89
Sun-Target sep (deg) : 173.72
Sun-Moon sep (deg)  : 20.54
B (ring opening deg) : 26.50
PA of pole (deg)    : 4.56
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.023
C/A sky separation (km) : 152.8
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	2046-06-16T11:49:17.643	13.32	-7.57	2575.1	7.99	8.00
Titan	E	2046-06-16T11:53:47.137	14.09	-8.36	2575.1	-1.93	-1.93



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-06-16T11:45:11.190
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       : 4115632968108286336
2Mass ID (if available) : 17114976-2125049
ICRS Star Coord at Epoch: 17h 11m 49.75624s -21:25:05.19835s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 10.939
G magnitude          : 14.370
RP magnitude         : 13.417
BP magnitude         : 15.303
DUPflag             : 0
Distance (au)        : 9.025
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.89
Sun-Target sep (deg) : 173.72
Sun-Moon sep (deg)   : 21.71
B (ring opening deg) : 26.50
PA of pole (deg)     : 4.56
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.184
C/A sky separation (km) : 1205.4
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	2046-06-16T11:43:13.255	41.28	-42.67	2575.1	29.97	29.99
Titan	E	2046-06-16T11:47:09.160	40.76	-42.26	2575.1	19.48	19.49

