

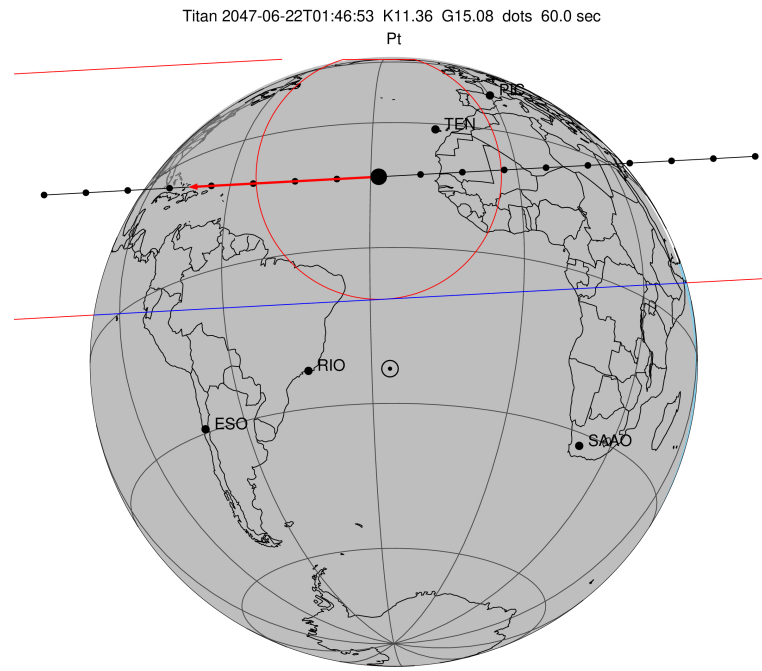
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-06-22T01:46:53.000  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 4069861398543236736  
 2Mass ID (if available) : 18025965-2220173

ICRS Star Coord at Epoch: 18h 02m 59.65966s -22:20:17.29165s  
 RUWE (>1.4 is poor) : 0.97  
 K magnitude : 11.361  
 G magnitude : 15.079  
 RP magnitude : 14.002  
 BP magnitude : 16.273  
 DUPflag : 0  
 Distance (au) : 9.037  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -14.67  
 Sun-Target sep (deg) : 178.69  
 Sun-Moon sep (deg) : 163.25  
 B (ring opening deg) : 26.35  
 PA of pole (deg) : 5.72  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.597  
 C/A sky separation (km) : 3915.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

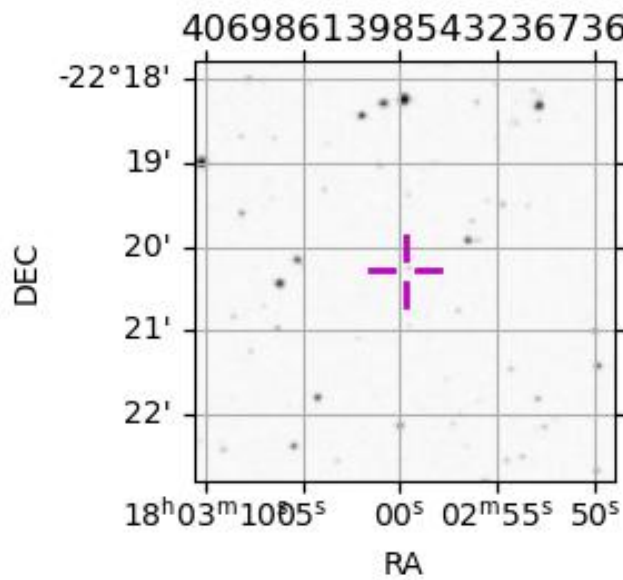
URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

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	+ +	JUN 22 01:42 - JUN 22 01:46	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			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	JUN 22 01:42 - JUN 22 01:48	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



2047-06-22T01:46:53.0000 cc: 18 02 59.6597 & -22 20 17.292 C/A 0.598" PA 356.88 deg v\_sky -14.66 km/s D 09.04 AU  
 Credit: Styled after SORA/Lucky Star



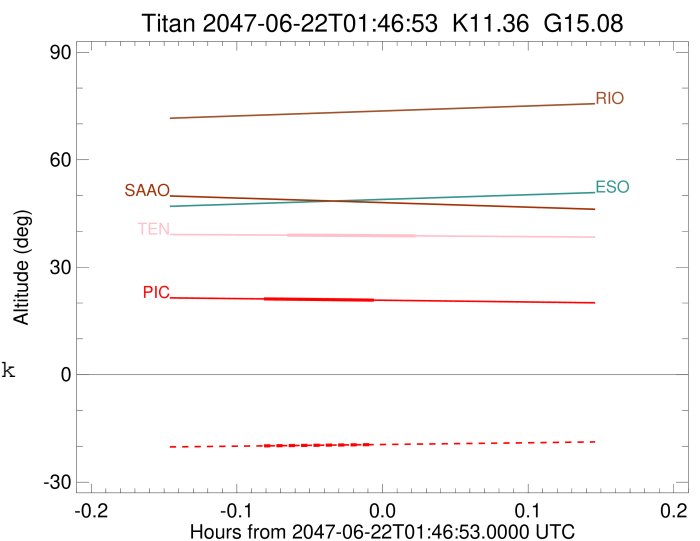
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target                : Titan
target radius (km)    : 2575.15
C/A epoch             : 2047-06-22T01:44:16.410
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PIC
Location              : Pic du Midi
Latitude (deg)        : 42.93656
E. Longitude (deg)    : 0.14231
Altitude (km)         : 2.890
Gaia source ID        : 4069861398543236736
2Mass ID (if available) : 18025965-2220173
ICRS Star Coord at Epoch: 18h 02m 59.65966s -22:20:17.29165s
RUWE (>1.4 is poor)  : 0.97
K magnitude           : 11.361
G magnitude           : 15.079
RP magnitude          : 14.002
BP magnitude          : 16.273
DUPflag              : 0
Distance (au)         : 9.037
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.67
Sun-Target sep (deg)  : 178.69
Sun-Moon sep (deg)    : 163.78
B (ring opening deg)  : 26.35
PA of pole (deg)      : 5.72
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.239
C/A sky separation (km) : 1569.5
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	2047-06-22T01:42:00.001	21.15	-19.87	2575.1	25.75	25.77
Titan	E	2047-06-22T01:46:32.824	20.80	-19.52	2575.1	40.22	40.23



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-06-22T01:45:35.840
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       : 4069861398543236736
2Mass ID (if available) : 18025965-2220173
ICRS Star Coord at Epoch: 18h 02m 59.65966s -22:20:17.29165s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 11.361
G magnitude           : 15.079
RP magnitude         : 14.002
BP magnitude         : 16.273
DUPflag              : 0
Distance (au)        : 9.037
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.67
Sun-Target sep (deg) : 178.69
Sun-Moon sep (deg)   : 163.67
B (ring opening deg) : 26.35
PA of pole (deg)     : 5.72
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.140
C/A sky separation (km) : 918.6
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	2047-06-22T01:42:56.140	38.95	-37.75	2575.2	10.96	10.97
Titan	E	2047-06-22T01:48:15.551	38.74	-37.53	2575.1	26.23	26.24

