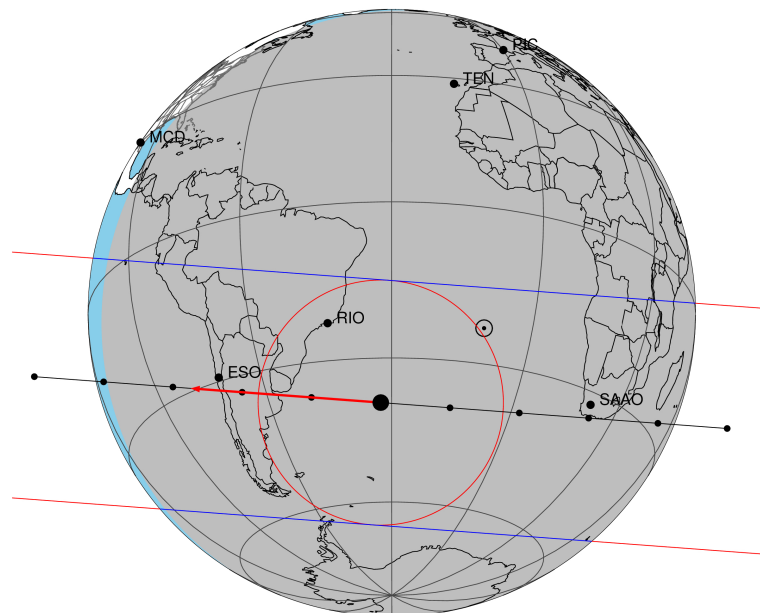


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2046-06-28T00:45:49.220  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4115670553339670784  
 2Mass ID (if available) : 17082892-2123564

ICRS Star Coord at Epoch: 17h 08m 28.92925s -21:23:56.53222s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 14.719  
 G magnitude : 17.488  
 RP magnitude : 16.665  
 BP magnitude : 18.255  
 DUPflag : 0  
 Distance (au) : 9.056  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -24.31  
 Sun-Target sep (deg) : 162.07  
 Sun-Moon sep (deg) : 125.03  
 B (ring opening deg) : 26.54  
 PA of pole (deg) : 4.48  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.289  
 C/A sky separation (km) : 1899.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

Titan 2046-06-28T00:45:49 K14.72 G17.49 dots 60.0 sec  
 Pgt



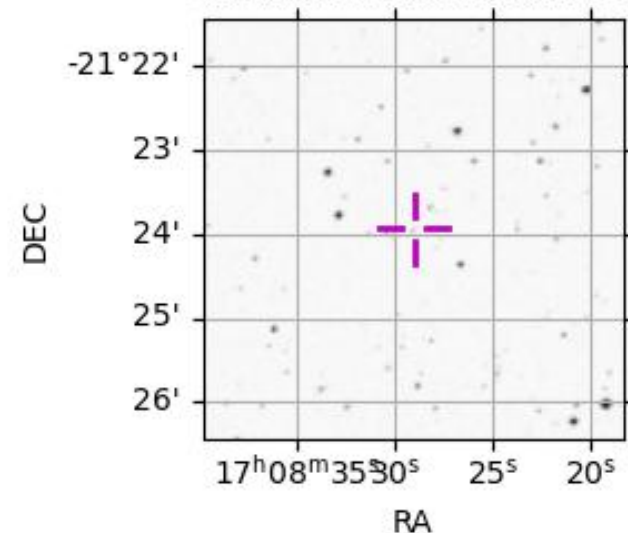
2046-06-28T00:45:49.2200 cc: 17 08 28.9293 s: -21 23 56.532 C/A 0.289" PA 184.30 deg v\_sky -24.31 km/s D 09.06 AU

Credit: Styled after SORA/Lucky Star

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			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			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	+ +	JUN 28 00:45 - JUN 28 00:48	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 28 00:46 - JUN 28 00:49	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 28 00:41 - JUN 28 00:44	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

4115670553339670784



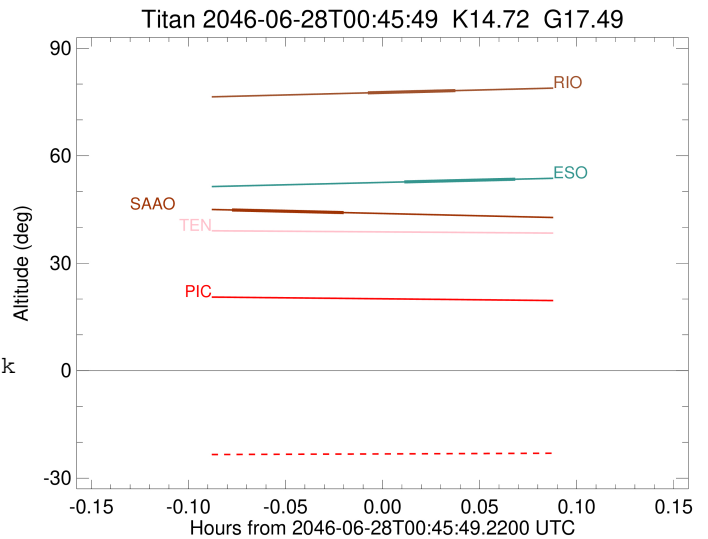
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-06-28T00:46:42.890
Event type          : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code       : RIO
Location            : Rio de Janeiro
Latitude (deg)      : -22.89506
E. Longitude (deg)  : 316.77708
Altitude (km)       : 0.033
Gaia source ID      : 4115670553339670784
2Mass ID (if available) : 17082892-2123564
ICRS Star Coord at Epoch: 17h 08m 28.92925s -21:23:56.53222s
RUWE (>1.4 is poor) : 1.06
K magnitude         : 14.719
G magnitude         : 17.488
RP magnitude        : 16.665
BP magnitude        : 18.255
DUPflag            : 0
Distance (au)       : 9.056
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -24.31
Sun-Target sep (deg) : 162.07
Sun-Moon sep (deg)  : 125.64
B (ring opening deg) : 26.54
PA of pole (deg)    : 4.48
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.245
C/A sky separation (km) : 1606.9
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	2046-06-28T00:45:21.512	77.54	-59.98	2575.1	33.64	33.65
Titan	E	2046-06-28T00:48:04.273	78.17	-60.60	2575.1	34.23	34.24



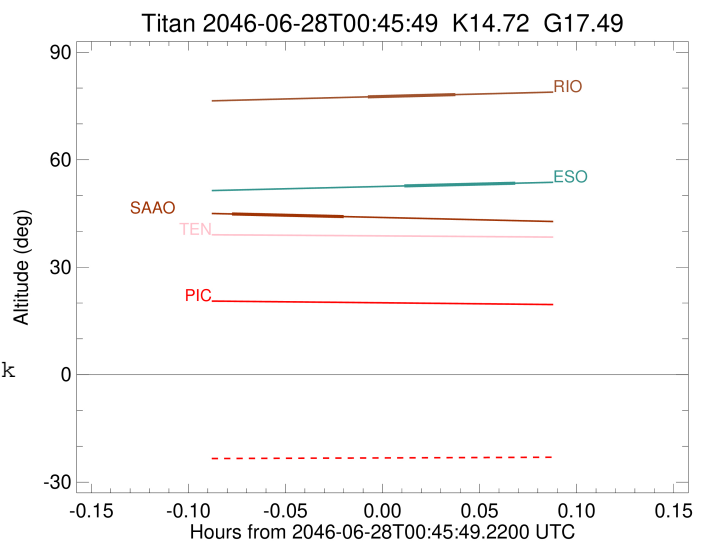
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-28T00:48:12.790
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 4115670553339670784
2Mass ID (if available) : 17082892-2123564
ICRS Star Coord at Epoch: 17h 08m 28.92925s -21:23:56.53222s
RUWE (>1.4 is poor) : 1.06
K magnitude          : 14.719
G magnitude          : 17.488
RP magnitude         : 16.665
BP magnitude         : 18.255
DUPflag             : 0
Distance (au)        : 9.056
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -24.31
Sun-Target sep (deg) : 162.07
Sun-Moon sep (deg)   : 125.31
B (ring opening deg) : 26.54
PA of pole (deg)     : 4.48
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.049
C/A sky separation (km) : 323.0
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

```

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

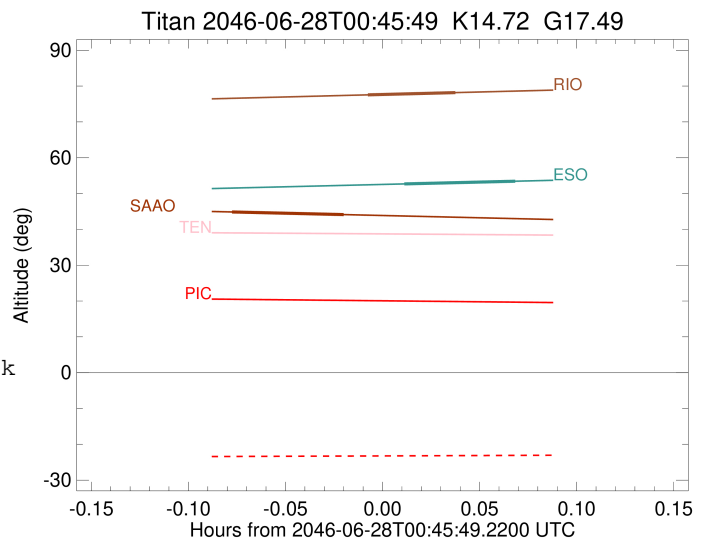
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-06-28T00:46:28.994	52.68	-36.48	2575.1	6.02	6.02
Titan	E	2046-06-28T00:49:56.577	53.44	-37.23	2575.1	6.86	6.86



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2046-06-28T00:42:54.210
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : SAAO
Location             : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 4115670553339670784
2Mass ID (if available) : 17082892-2123564
ICRS Star Coord at Epoch: 17h 08m 28.92925s -21:23:56.53222s
RUWE (>1.4 is poor) : 1.06
K magnitude           : 14.719
G magnitude           : 17.488
RP magnitude          : 16.665
BP magnitude          : 18.255
DUPflag              : 0
Distance (au)        : 9.056
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -24.31
Sun-Target sep (deg) : 162.07
Sun-Moon sep (deg)   : 125.88
B (ring opening deg) : 26.54
PA of pole (deg)     : 4.48
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.045
C/A sky separation (km) : 298.5
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

```



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	2046-06-28T00:41:10.128	44.85	-61.85	2575.1	5.96	5.96
Titan	E	2046-06-28T00:44:38.306	44.12	-61.13	2575.1	5.94	5.94