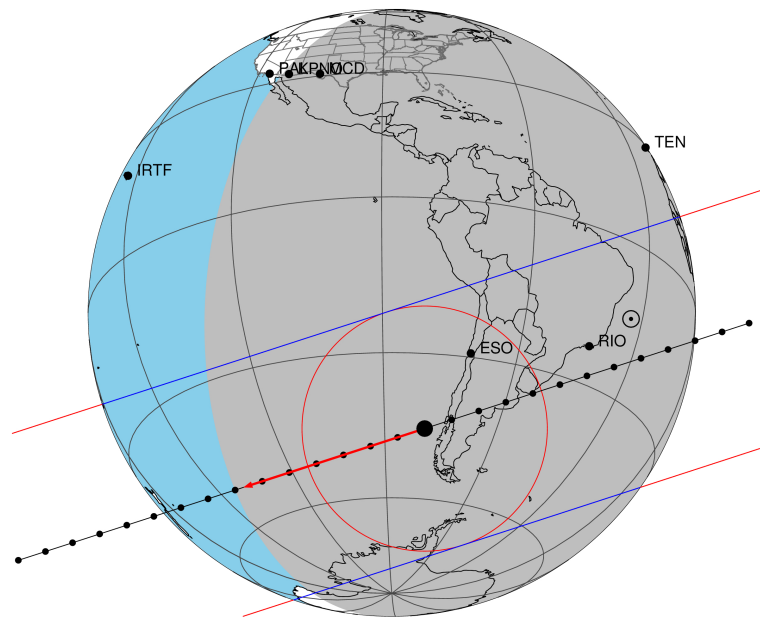


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-08-13T02:19:11.770  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068930868163340032  
 2Mass ID (if available) : 17495614-2227224

ICRS Star Coord at Epoch: 17h 49m 56.14781s -22:27:22.74112s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 12.484  
 G magnitude : 17.821  
 RP magnitude : 16.550  
 BP magnitude : 19.194  
 DUPflag : 0  
 Distance (au) : 9.390  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -9.95  
 Sun-Target sep (deg) : 128.02  
 Sun-Moon sep (deg) : 134.73  
 B (ring opening deg) : 26.76  
 PA of pole (deg) : 5.47  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.376  
 C/A sky separation (km) : 2559.5  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk  
 URKALLv1.spk  
 naif0012.tls  
 nep097.bsp  
 nep101.bsp  
 sat4401.bsp

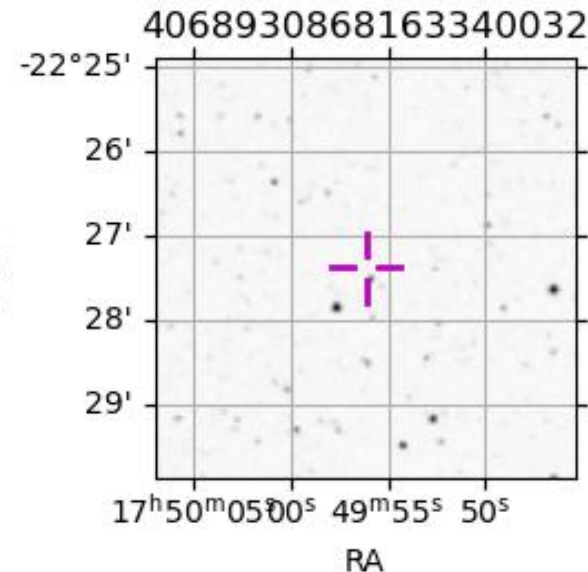
Titan 2047-08-13T02:19:11 K12.48 G17.82 dots 60.0 sec  
 Pgt



2047-08-13T02:19:11.7700 α: 17 49 56.1478 δ: -22 27 22.741 C/A 0.371" PA 162.00 deg v\_sky - 9.96 km/s D 09.39 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	OCode
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	+ +	AUG 13 02:09 - AUG 13 02:17	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	AUG 13 02:13 - AUG 13 02:20	Pie
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



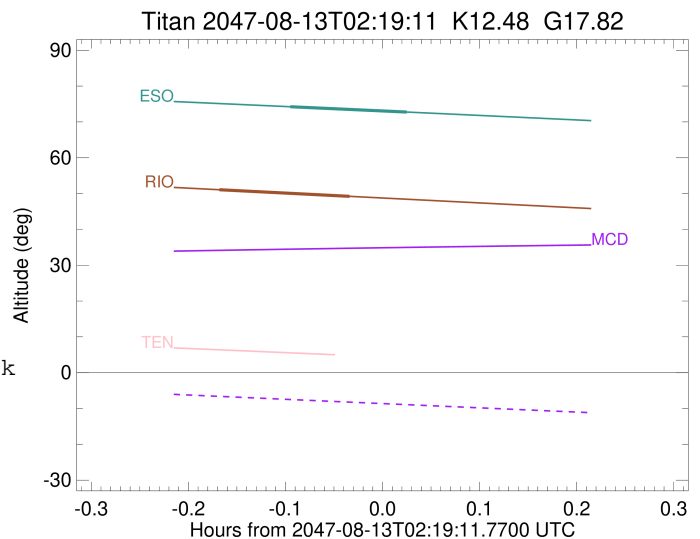
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-08-13T02:13:08.540
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       : 4068930868163340032
2Mass ID (if available) : 17495614-2227224
ICRS Star Coord at Epoch: 17h 49m 56.14781s -22:27:22.74112s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.484
G magnitude           : 17.821
RP magnitude         : 16.550
BP magnitude         : 19.194
DUPflag              : 0
Distance (au)        : 9.390
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.95
Sun-Target sep (deg) : 128.02
Sun-Moon sep (deg)   : 135.62
B (ring opening deg) : 26.76
PA of pole (deg)     : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.100
C/A sky separation (km) : 680.8
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	2047-08-13T02:09:05.331	51.06	-75.96	2575.2	-6.26	-6.26
Titan	E	2047-08-13T02:17:11.750	49.21	-77.48	2575.1	33.06	33.07



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-08-13T02:17:06.080
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       : 4068930868163340032
2Mass ID (if available) : 17495614-2227224
ICRS Star Coord at Epoch: 17h 49m 56.14781s -22:27:22.74112s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.484
G magnitude           : 17.821
RP magnitude         : 16.550
BP magnitude         : 19.194
DUPflag              : 0
Distance (au)        : 9.390
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.95
Sun-Target sep (deg) : 128.02
Sun-Moon sep (deg)   : 135.50
B (ring opening deg) : 26.76
PA of pole (deg)     : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.186
C/A sky separation (km) : 1268.3
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

```

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	2047-08-13T02:13:28.665	74.23	-51.64	2575.2	6.20	6.20
Titan	E	2047-08-13T02:20:43.445	72.74	-53.18	2575.1	44.76	44.77

