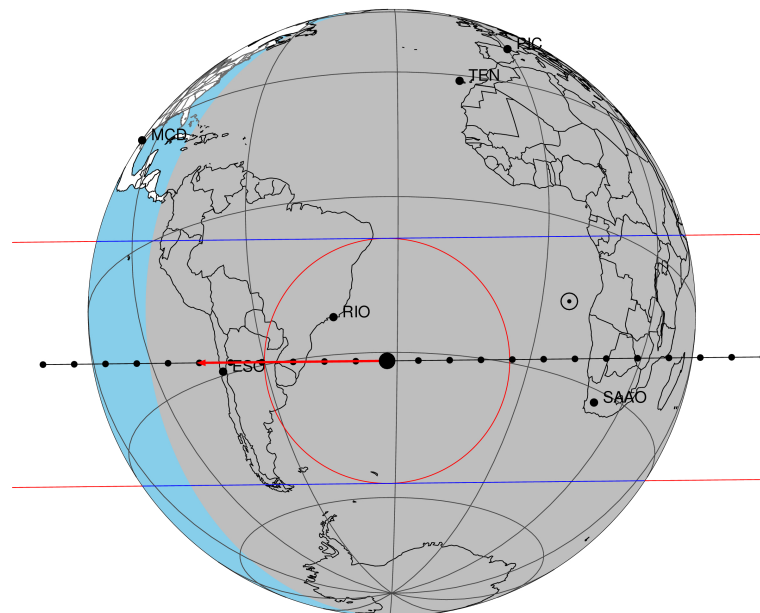


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2048-08-07T23:40:36.560  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4079186734668902400  
 2Mass ID (if available) : 18414287-2234418

ICRS Star Coord at Epoch: 18h 41m 42.87901s -22:34:41.88077s  
 RUWE (>1.4 is poor) : 1.20  
 K magnitude : 14.972  
 G magnitude : 18.681  
 RP magnitude : 17.431  
 BP magnitude : 18.897  
 DUPflag : 0  
 Distance (au) : 9.199  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -10.96  
 Sun-Target sep (deg) : 144.16  
 Sun-Moon sep (deg) : 164.15  
 B (ring opening deg) : 25.64  
 PA of pole (deg) : 6.37  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.150  
 C/A sky separation (km) : 1001.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

Titan 2048-08-07T23:40:36 K14.97 G18.68 dots 60.0 sec  
 Pgt

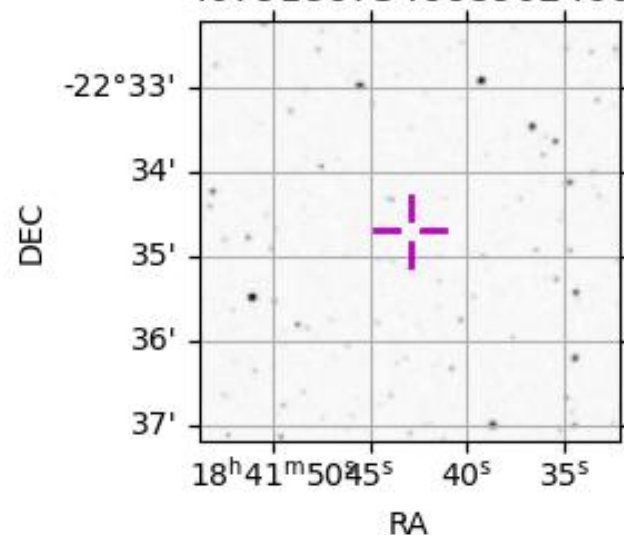


2048-08-07T23:40:36.56000 cc: 18 41 42.8790 s -22 34 41.881 C/A 0.151" PA 179.40 deg v\_sky -10.96 km/s D 09.20 AU  
 Credit: Styled after SORA/Lucky Star

Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEncode
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 07 23:38 - AUG 07 23:45	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	AUG 07 23:42 - AUG 07 23:49	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	AUG 07 23:30 - AUG 07 23:37	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

4079186734668902400



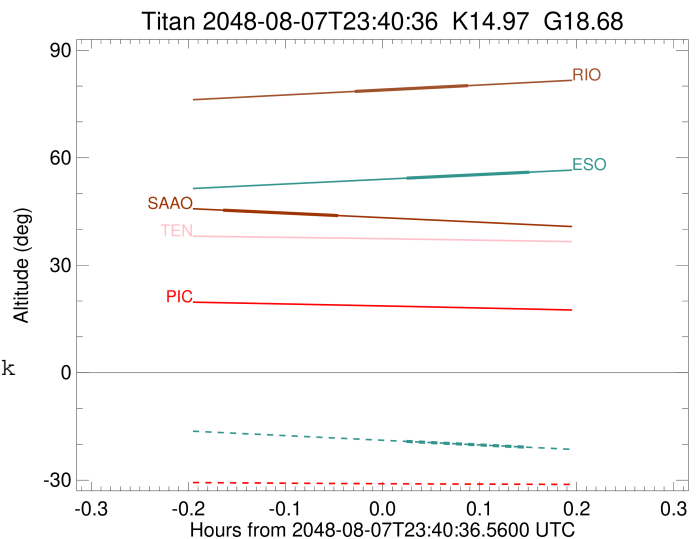
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2048-08-07T23:42:24.240
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       : 4079186734668902400
2Mass ID (if available) : 18414287-2234418
ICRS Star Coord at Epoch: 18h 41m 42.87901s -22:34:41.88077s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 14.972
G magnitude           : 18.681
RP magnitude          : 17.431
BP magnitude          : 18.897
DUPflag              : 0
Distance (au)        : 9.199
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.16
Sun-Moon sep (deg)   : 164.55
B (ring opening deg) : 25.64
PA of pole (deg)     : 6.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.142
C/A sky separation (km) : 949.1
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	2048-08-07T23:38:53.774	78.50	-42.67	2575.1	13.05	13.05
Titan	E	2048-08-07T23:45:54.758	80.12	-44.28	2575.1	25.69	25.70



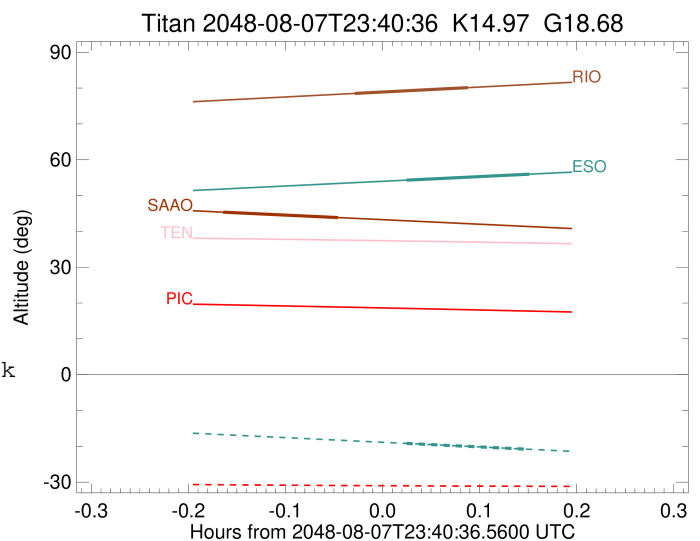
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2048-08-07T23:45:53.070
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       : 4079186734668902400
2Mass ID (if available) : 18414287-2234418
ICRS Star Coord at Epoch: 18h 41m 42.87901s -22:34:41.88077s
RUWE (>1.4 is poor) : 1.20
K magnitude           : 14.972
G magnitude           : 18.681
RP magnitude          : 17.431
BP magnitude          : 18.897
DUPflag              : 0
Distance (au)        : 9.199
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.16
Sun-Moon sep (deg)   : 164.85
B (ring opening deg) : 25.64
PA of pole (deg)     : 6.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.020
C/A sky separation (km) : 130.3
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	2048-08-07T23:42:04.849	54.29	-19.19	2575.1	-9.33	-9.34
Titan	E	2048-08-07T23:49:41.303	55.96	-20.83	2575.1	4.11	4.11



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2048-08-07T23:34:19.050
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        : 4079186734668902400
2Mass ID (if available) : 18414287-2234418
ICRS Star Coord at Epoch: 18h 41m 42.87901s -22:34:41.88077s
RUWE (>1.4 is poor)  : 1.20
K magnitude           : 14.972
G magnitude           : 18.681
RP magnitude          : 17.431
BP magnitude          : 18.897
DUPflag              : 0
Distance (au)         : 9.199
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg)  : 144.16
Sun-Moon sep (deg)    : 163.80
B (ring opening deg)  : 25.64
PA of pole (deg)      : 6.37
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.133
C/A sky separation (km) : 884.2
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	2048-08-07T23:30:43.435	45.36	-70.42	2575.1	-23.66	-23.67
Titan	E	2048-08-07T23:37:54.846	43.84	-69.46	2575.1	-12.35	-12.36

