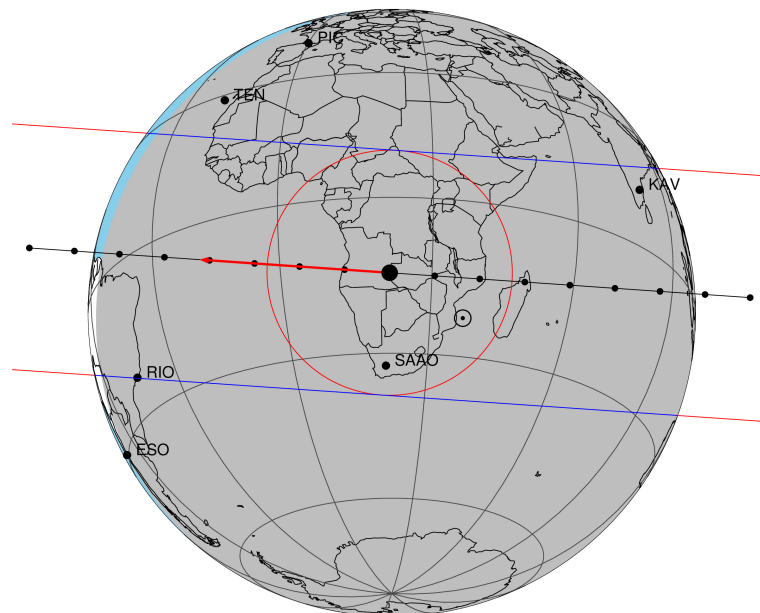


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-07-05T21:37:28.490
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4070280479958431616
 2Mass ID (if available) : 17582856-2221564

ICRS Star Coord at Epoch: 17h 58m 28.57199s -22:21:56.47555s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 10.662
 G magnitude : 15.361
 RP magnitude : 14.124
 BP magnitude : 16.942
 DUPflag : 0
 Distance (au) : 9.059
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.80
 Sun-Target sep (deg) : 166.46
 Sun-Moon sep (deg) : 7.60
 B (ring opening deg) : 26.48
 PA of pole (deg) : 5.63
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.128
 C/A sky separation (km) : 843.6
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Titan 2047-07-05T21:37:28 K10.66 G15.36 dots 60.0 sec
 Pgt

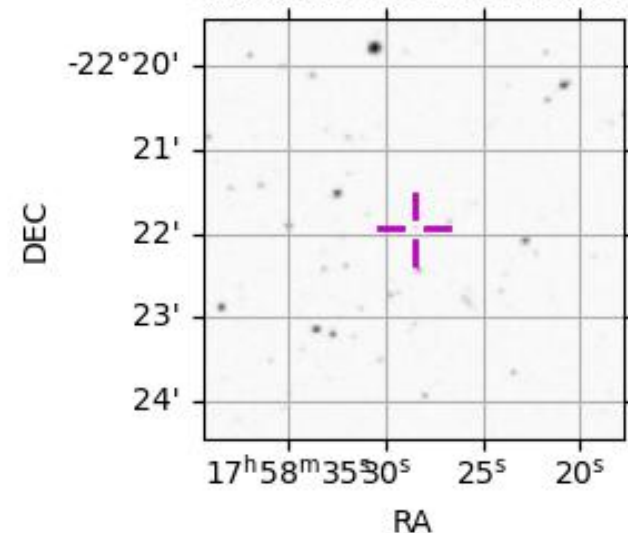


2047-07-05T21:37:28.4900 α: 17 58 28.5720 δ: -22 21 56.476 C/A 0.127" PA 3.97 deg v_sky -15.80 km/s D 09.06 AU
 Credit: Styled after SORA/Lucky Star

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

Obs	Location	lat	Elon	Target	Observed Events Interval	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	+ +	JUL 05 21:30 - JUL 05 21:33	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 05 21:42 - JUL 05 21:43	Pie
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	+ +	JUL 05 21:35 - JUL 05 21:39	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

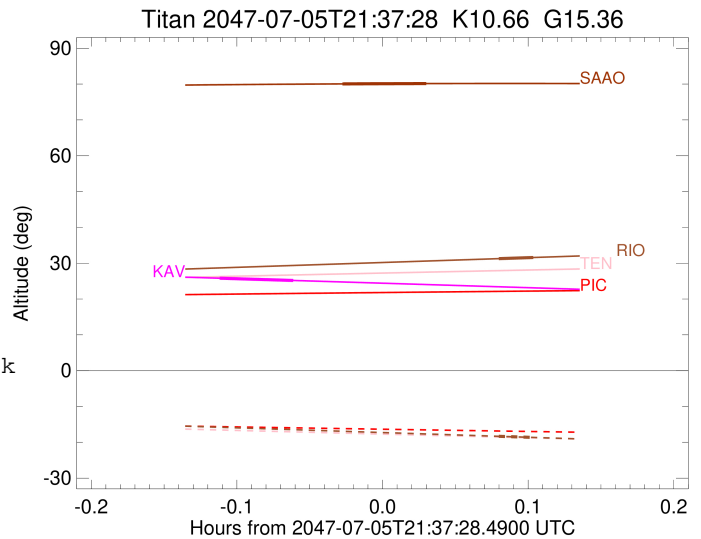
4070280479958431616



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-05T21:32:16.490
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : KAV
Location             : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 4070280479958431616
2Mass ID (if available) : 17582856-2221564
ICRS Star Coord at Epoch: 17h 58m 28.57199s -22:21:56.47555s
RUWE (>1.4 is poor) : 1.17
K magnitude           : 10.662
G magnitude           : 15.361
RP magnitude         : 14.124
BP magnitude         : 16.942
DUPflag              : 0
Distance (au)        : 9.059
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.80
Sun-Target sep (deg) : 166.46
Sun-Moon sep (deg)   : 8.56
B (ring opening deg) : 26.48
PA of pole (deg)     : 5.63
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.320
C/A sky separation (km) : 2099.9
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

```

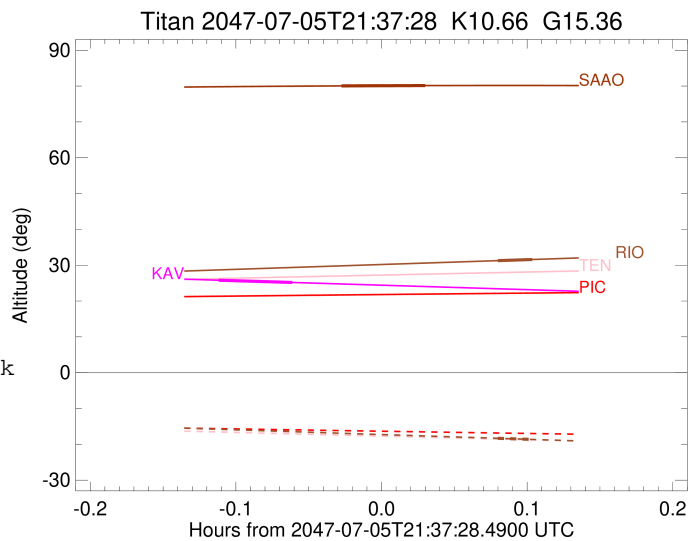


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-05T21:30:43.777	25.81	-37.07	2575.1	45.94	45.95
Titan	E	2047-07-05T21:33:49.226	25.17	-36.50	2575.1	47.81	47.82

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-07-05T21:42:58.520
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       : 4070280479958431616
2Mass ID (if available) : 17582856-2221564
ICRS Star Coord at Epoch: 17h 58m 28.57199s -22:21:56.47555s
RUWE (>1.4 is poor) : 1.17
K magnitude          : 10.662
G magnitude          : 15.361
RP magnitude         : 14.124
BP magnitude         : 16.942
DUPflag             : 0
Distance (au)        : 9.059
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.80
Sun-Target sep (deg) : 166.46
Sun-Moon sep (deg)   : 6.82
B (ring opening deg) : 26.48
PA of pole (deg)     : 5.63
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.377
C/A sky separation (km) : 2476.7
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
    
```



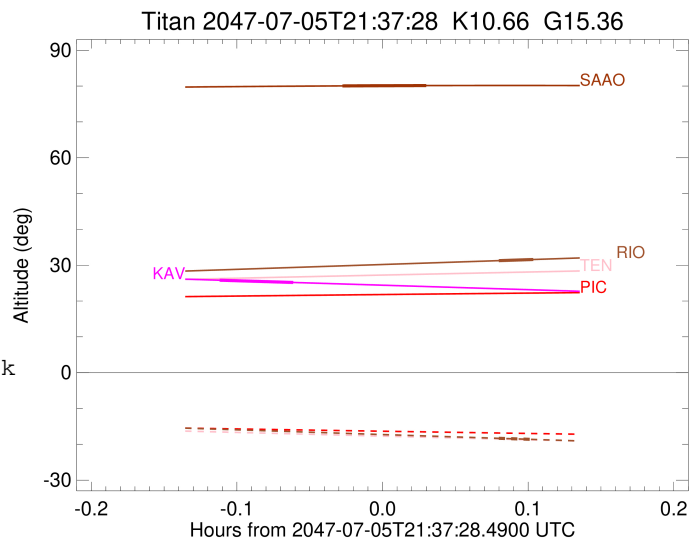
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2047-07-05T21:42:14.383	31.26	-18.32	2575.1	-60.45	-60.46
Titan	E	2047-07-05T21:43:42.657	31.59	-18.64	2575.1	-58.27	-58.28

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-05T21:37:32.070
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        : 4070280479958431616
2Mass ID (if available) : 17582856-2221564
ICRS Star Coord at Epoch: 17h 58m 28.57199s -22:21:56.47555s
RUWE (>1.4 is poor)  : 1.17
K magnitude           : 10.662
G magnitude           : 15.361
RP magnitude          : 14.124
BP magnitude          : 16.942
DUPflag              : 0
Distance (au)         : 9.059
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.80
Sun-Target sep (deg)  : 166.46
Sun-Moon sep (deg)    : 7.65
B (ring opening deg) : 26.48
PA of pole (deg)      : 5.63
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.295
C/A sky separation (km) : 1939.1
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	2047-07-05T21:35:47.438	80.04	-72.66	2575.1	-43.79	-43.81
Titan	E	2047-07-05T21:39:16.708	80.13	-73.30	2575.1	-40.94	-40.96