

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-13T03:18:11.690
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4115059637185857792
 2Mass ID (if available) : 17221062-2135453

Titan 2046-05-13T03:18:11 K14.96 G18.29 dots 60.0 sec
 Pgt

ICRS Star Coord at Epoch: 17h 22m 10.61345s -21:35:45.81815s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.959
 G magnitude : 18.295
 RP magnitude : 17.368
 BP magnitude : 19.348
 DUPflag : 0
 Distance (au) : 9.134
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -20.23
 Sun-Target sep (deg) : 150.67
 Sun-Moon sep (deg) : 123.16
 B (ring opening deg) : 26.48
 PA of pole (deg) : 4.82
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.110
 C/A sky separation (km) : 725.8
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

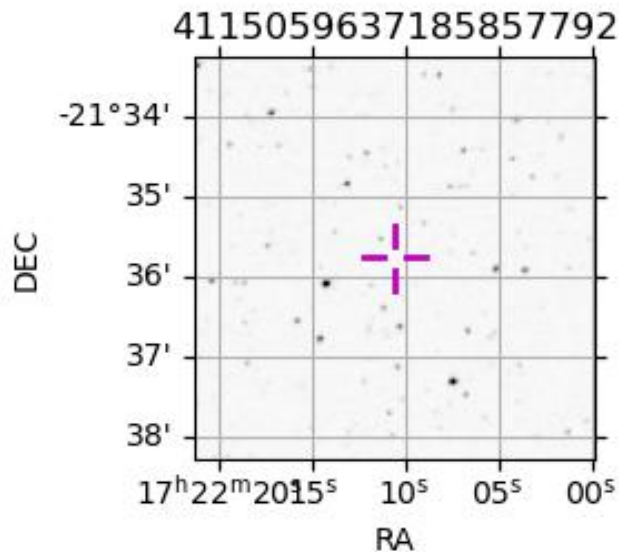


2046-05-13T03:18:11.6900 α: 17 22 10.6135 δ: -21 35 45.818 C/A 0.111" PA 189.01 deg v_sky -20.24 km/s D 09.13 AU
 Credit: Styled after SORA/Lucky Star

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

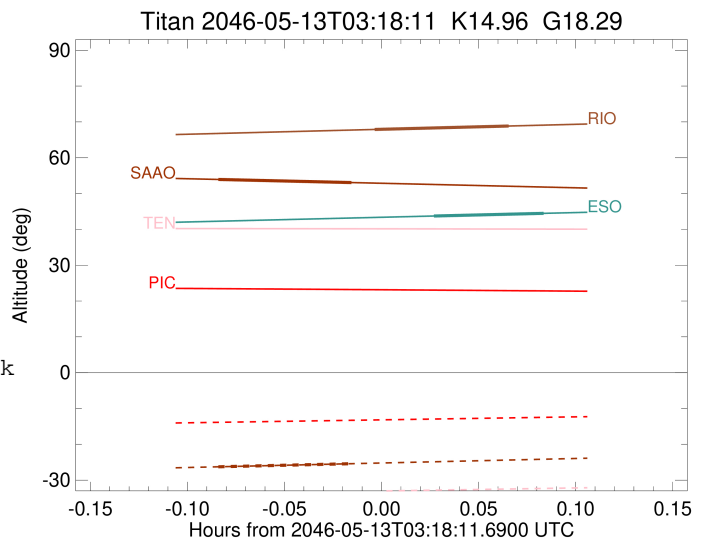
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	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	+ +	MAY 13 03:17 - MAY 13 03:22	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAY 13 03:19 - MAY 13 03:23	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 13 03:13 - MAY 13 03:17	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-05-13T03:20:03.240
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       : 4115059637185857792
2Mass ID (if available) : 17221062-2135453
ICRS Star Coord at Epoch: 17h 22m 10.61345s -21:35:45.81815s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 14.959
G magnitude          : 18.295
RP magnitude         : 17.368
BP magnitude         : 19.348
DUPflag             : 0
Distance (au)        : 9.134
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.23
Sun-Target sep (deg) : 150.67
Sun-Moon sep (deg)  : 124.12
B (ring opening deg) : 26.48
PA of pole (deg)    : 4.82
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.011
C/A sky separation (km) : 71.9
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

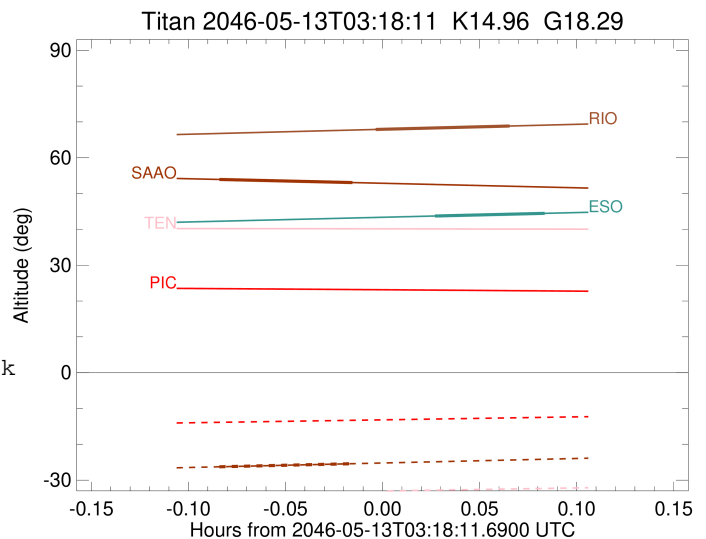
```

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2046-05-13T03:17:58.384	67.88	-81.99	2575.1	4.91	4.91
Titan	E	2046-05-13T03:22:08.107	68.84	-81.15	2575.1	-2.05	-2.05

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2046-05-13T03:21:30.340
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       : 4115059637185857792
2Mass ID (if available) : 17221062-2135453
ICRS Star Coord at Epoch: 17h 22m 10.61345s -21:35:45.81815s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 14.959
G magnitude          : 18.295
RP magnitude         : 17.368
BP magnitude         : 19.348
DUPflag             : 0
Distance (au)        : 9.134
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.23
Sun-Target sep (deg) : 150.67
Sun-Moon sep (deg)   : 124.09
B (ring opening deg) : 26.48
PA of pole (deg)     : 4.82
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.224
C/A sky separation (km): 1486.5
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

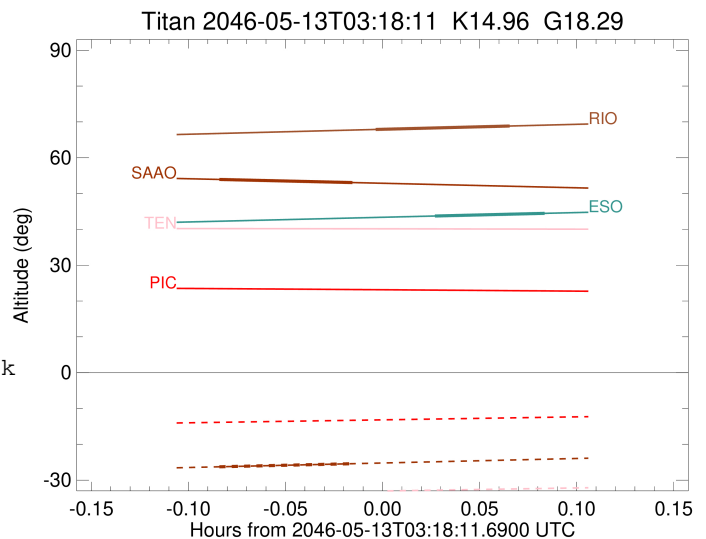
```



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	2046-05-13T03:19:47.626	43.72	-68.96	2575.1	-27.85	-27.86
Titan	E	2046-05-13T03:23:13.039	44.47	-69.63	2575.1	-34.33	-34.34

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2046-05-13T03:15:12.090
 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 : 4115059637185857792
 2Mass ID (if available) : 17221062-2135453
 ICRS Star Coord at Epoch: 17h 22m 10.61345s -21:35:45.81815s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.959
 G magnitude : 18.295
 RP magnitude : 17.368
 BP magnitude : 19.348
 DUPflag : 0
 Distance (au) : 9.134
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -20.23
 Sun-Target sep (deg) : 150.67
 Sun-Moon sep (deg) : 123.51
 B (ring opening deg) : 26.48
 PA of pole (deg) : 4.82
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.054
 C/A sky separation (km) : 355.3
 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	2046-05-13T03:13:08.016	53.93	-26.28	2575.2	-3.21	-3.21
Titan	E	2046-05-13T03:17:16.183	53.06	-25.41	2575.1	-10.97	-10.98