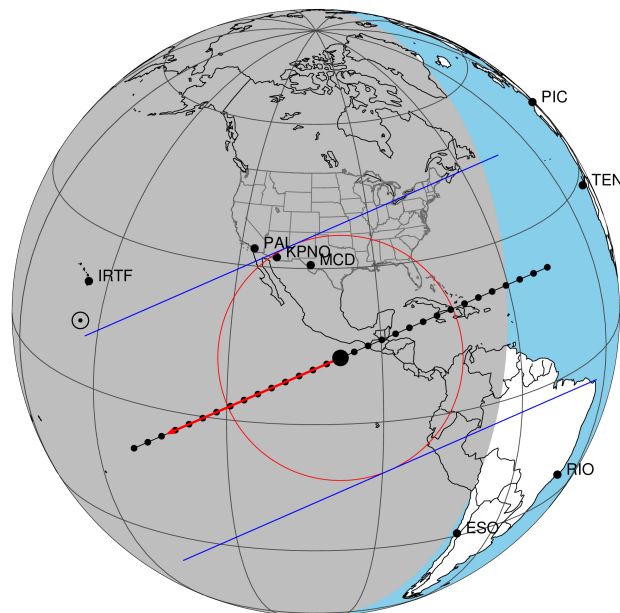


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2031-10-25T10:05:23.660  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 3402441382149737216  
 2Mass ID (if available) : 05261990+2136106

ICRS Star Coord at Epoch: 05h 26m 19.91572s +21:36:10.65896s  
 RUWE (>1.4 is poor) : 1.02  
 K magnitude : 14.327  
 G magnitude : 17.651  
 RP magnitude : 16.608  
 BP magnitude : 18.407  
 DUPflag : 0  
 Distance (au) : 8.376  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -5.27  
 Sun-Target sep (deg) : 129.16  
 Sun-Moon sep (deg) : 113.16  
 B (ring opening deg) : -26.40  
 PA of pole (deg) : -4.91  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.173  
 C/A sky separation (km) : 1048.2  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

Titan 2031-10-25T10:05:23 K14.33 G17.65 dots 60.0 sec  
 Pgt

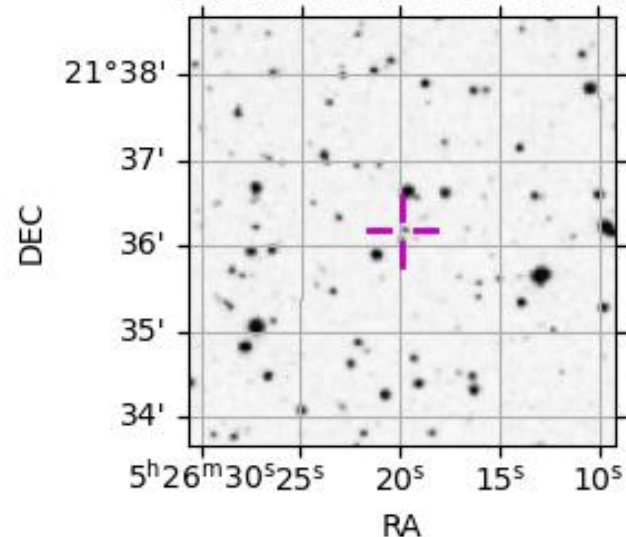


2031-10-25T10:05:23.6600 cc: 05 26 19.91572 s: +21 36 10.6589 C/A 0.177" PA 156.34 deg v\_sky - 5.26 km/s D 08.38 AU  
 Credit: Styled after SORA/Lucky Star

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	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	+ +	OCT 25 10:03 - OCT 25 10:09	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 25 09:59 - OCT 25 10:09	Pie
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			Pnn
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			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

3402441382149737216



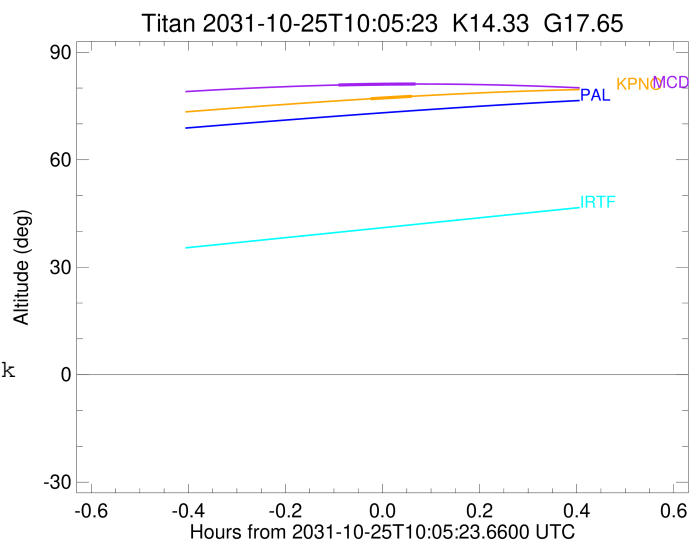
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2031-10-25T10:06:29.690
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 3402441382149737216
2Mass ID (if available) : 05261990+2136106
ICRS Star Coord at Epoch: 05h 26m 19.91572s +21:36:10.65896s
RUWE (>1.4 is poor) : 1.02
K magnitude          : 14.327
G magnitude          : 17.651
RP magnitude         : 16.608
BP magnitude         : 18.407
DUPflag             : 0
Distance (au)        : 8.376
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.27
Sun-Target sep (deg) : 129.16
Sun-Moon sep (deg)  : 114.09
B (ring opening deg) : -26.40
PA of pole (deg)    : -4.91
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.398
C/A sky separation (km) : 2417.3
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

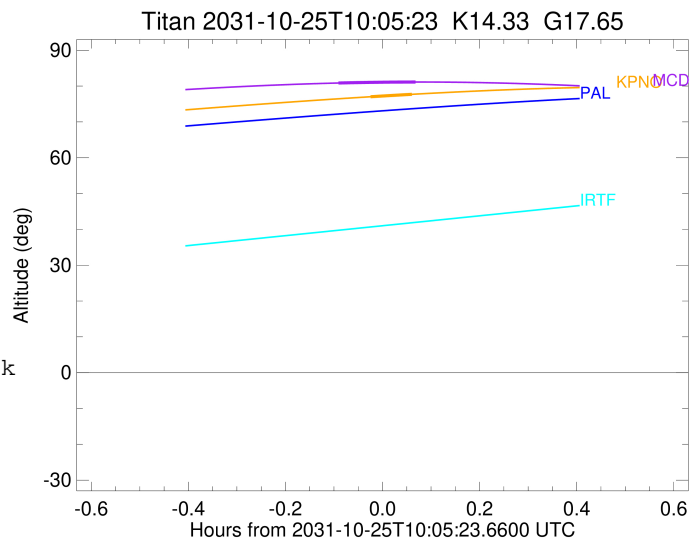
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2031-10-25T10:03:51.630	77.01	-45.63	2575.1	45.58	45.60
Titan	E	2031-10-25T10:09:07.745	77.70	-44.55	2575.0	63.42	63.43



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2031-10-25T10:04:41.880
Event type            : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)   : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 3402441382149737216
2Mass ID (if available) : 05261990+2136106
ICRS Star Coord at Epoch: 05h 26m 19.91572s +21:36:10.65896s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 14.327
G magnitude           : 17.651
RP magnitude          : 16.608
BP magnitude          : 18.407
DUPflag              : 0
Distance (au)        : 8.376
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -5.27
Sun-Target sep (deg) : 129.16
Sun-Moon sep (deg)   : 114.06
B (ring opening deg) : -26.40
PA of pole (deg)     : -4.91
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.329
C/A sky separation (km) : 2001.4
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	2031-10-25T09:59:54.315	80.85	-40.44	2575.1	29.99	30.00
Titan	E	2031-10-25T10:09:29.590	81.12	-38.41	2575.1	56.21	56.22