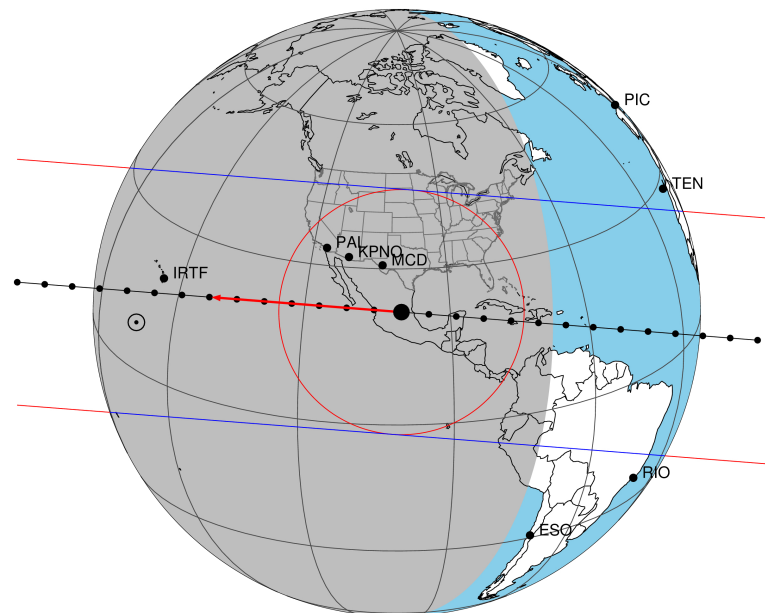


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2031-10-17T10:30:10.730
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3402399016592479360
 2Mass ID (if available) : 05273906+2140003

ICRS Star Coord at Epoch: 05h 27m 39.07024s +21:40:00.33296s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 14.647
 G magnitude : 16.905
 RP magnitude : 16.181
 BP magnitude : 17.514
 DUPflag : 0
 Distance (au) : 8.473
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -9.62
 Sun-Target sep (deg) : 120.92
 Sun-Moon sep (deg) : 134.44
 B (ring opening deg) : -26.44
 PA of pole (deg) : -4.95
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.000
 C/A sky separation (km) : 2.5
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk
 URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

Titan 2031-10-17T10:30:10 K14.65 G16.91 dots 60.0 sec
 Pgt

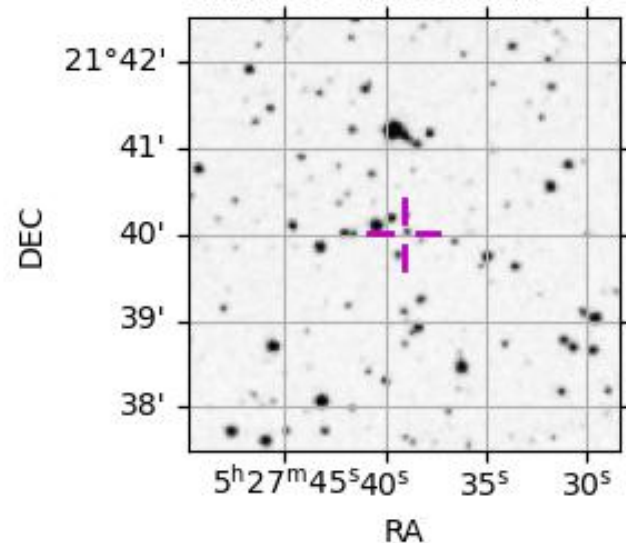


2031-10-17T10:30:10.7300 α: 05 27 39.0702 δ: +21 40 00.333 C/A 0.004° PA 5.17 deg v_sky - 9.62 km/s D 08.47 AU
 Credit: Styled after SORA/Lucky Star

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

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	OCT 17 10:29 - OCT 17 10:36	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	OCT 17 10:28 - OCT 17 10:35	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 17 10:26 - OCT 17 10:34	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	OCT 17 10:34 - OCT 17 10:42	Pie
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

3402399016592479360

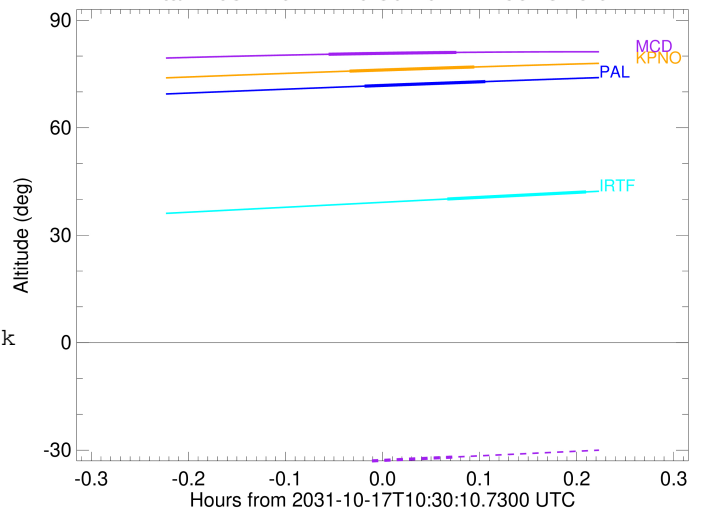


```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2031-10-17T10:32:47.990
Event type            : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code         : PAL
Location              : Palomar Mt (200")
Latitude (deg)        : 33.35622
E. Longitude (deg)    : 243.13601
Altitude (km)         : 1.706
Gaia source ID        : 3402399016592479360
2Mass ID (if available) : 05273906+2140003
ICRS Star Coord at Epoch: 05h 27m 39.07024s +21:40:00.33296s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.647
G magnitude           : 16.905
RP magnitude          : 16.181
BP magnitude          : 17.514
DUPflag              : 0
Distance (au)         : 8.473
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.62
Sun-Target sep (deg) : 120.92
Sun-Moon sep (deg)   : 134.93
B (ring opening deg) : -26.44
PA of pole (deg)     : -4.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.198
C/A sky separation (km): 1218.0
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

```

Titan 2031-10-17T10:30:10 K14.65 G16.91



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	2031-10-17T10:29:01.159	71.60	-42.99	2575.1	33.20	33.22
Titan	E	2031-10-17T10:36:34.689	72.87	-41.50	2575.1	16.75	16.76

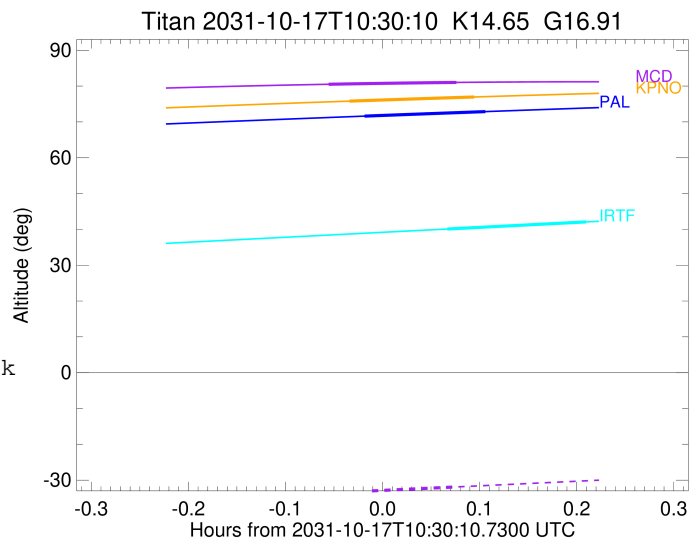
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2031-10-17T10:32:00.190
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       : 3402399016592479360
2Mass ID (if available) : 05273906+2140003
ICRS Star Coord at Epoch: 05h 27m 39.07024s +21:40:00.33296s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.647
G magnitude           : 16.905
RP magnitude          : 16.181
BP magnitude          : 17.514
DUPflag              : 0
Distance (au)        : 8.473
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.62
Sun-Target sep (deg) : 120.92
Sun-Moon sep (deg)   : 134.99
B (ring opening deg) : -26.44
PA of pole (deg)     : -4.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.173
C/A sky separation (km) : 1065.1
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	2031-10-17T10:28:06.069	75.79	-39.37	2575.1	29.91	29.92
Titan	E	2031-10-17T10:35:54.183	76.95	-37.76	2575.1	13.45	13.45

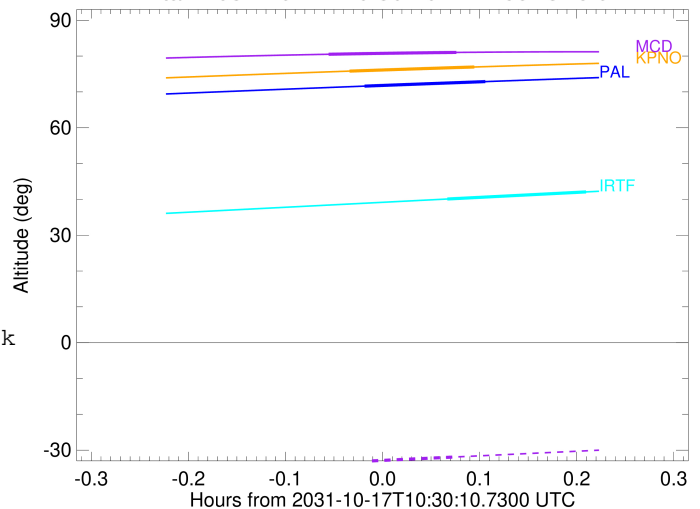


```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2031-10-17T10:30:48.240
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       : 3402399016592479360
2Mass ID (if available) : 05273906+2140003
ICRS Star Coord at Epoch: 05h 27m 39.07024s +21:40:00.33296s
RUWE (>1.4 is poor) : 0.99
K magnitude           : 14.647
G magnitude           : 16.905
RP magnitude          : 16.181
BP magnitude          : 17.514
DUPflag              : 0
Distance (au)         : 8.473
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -9.62
Sun-Target sep (deg) : 120.92
Sun-Moon sep (deg)   : 135.08
B (ring opening deg) : -26.44
PA of pole (deg)     : -4.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.155
C/A sky separation (km) : 950.4
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

```

Titan 2031-10-17T10:30:10 K14.65 G16.91



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

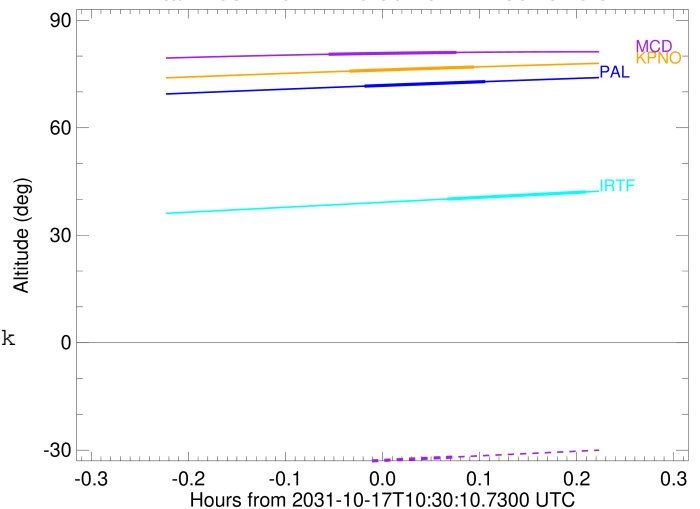
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2031-10-17T10:26:49.446	80.50	-33.58	2575.1	27.43	27.44
Titan	E	2031-10-17T10:34:46.909	81.01	-31.88	2575.2	11.07	11.08

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2031-10-17T10:38:29.630
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 3402399016592479360
2Mass ID (if available) : 05273906+2140003
ICRS Star Coord at Epoch: 05h 27m 39.07024s +21:40:00.33296s
RUWE (>1.4 is poor) : 0.99
K magnitude          : 14.647
G magnitude          : 16.905
RP magnitude         : 16.181
BP magnitude         : 17.514
DUPflag             : 0
Distance (au)        : 8.473
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -9.62
Sun-Target sep (deg) : 120.92
Sun-Moon sep (deg)  : 134.35
B (ring opening deg) : -26.44
PA of pole (deg)    : -4.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.042
C/A sky separation (km) : 255.5
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

```

Titan 2031-10-17T10:30:10 K14.65 G16.91



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	2031-10-17T10:34:10.951	40.10	-77.70	2575.1	14.04	14.05
Titan	E	2031-10-17T10:42:48.002	42.09	-76.48	2575.2	-3.86	-3.86