

target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2036-03-03T05:12:13.260  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 612078916089193344  
 2Mass ID (if available) : 09040551+1752513

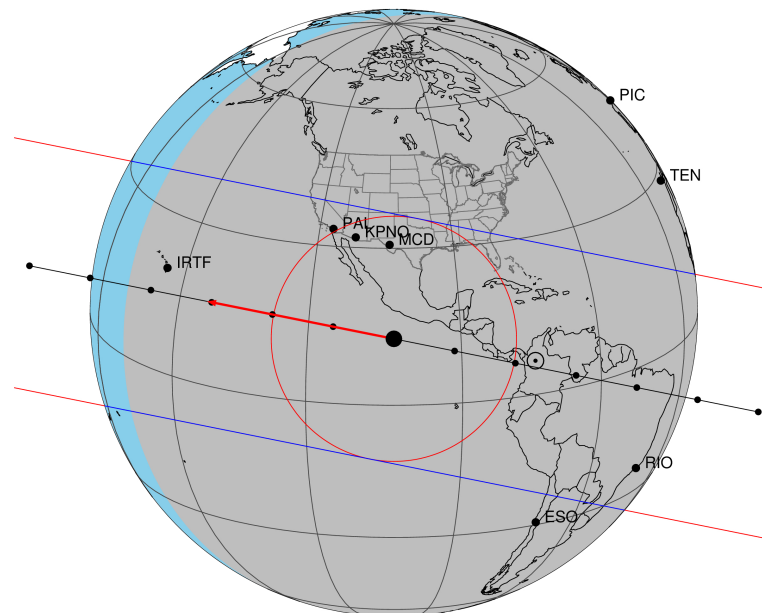
ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.455  
 G magnitude : 17.731  
 RP magnitude : 16.658  
 BP magnitude : 18.814  
 DUPflag : 0  
 Distance (au) : 8.267  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -21.67  
 Sun-Target sep (deg) : 150.51  
 Sun-Moon sep (deg) : 91.93  
 B (ring opening deg) : -17.01  
 PA of pole (deg) : -6.83  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.089  
 C/A sky separation (km) : 530.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk

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

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

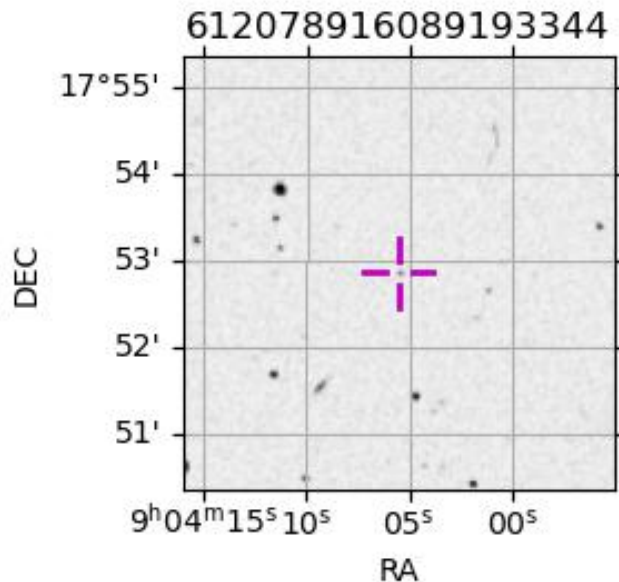
Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAR 03 05:12 - MAR 03 05:14	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 03 05:11 - MAR 03 05:14	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 03 05:11 - MAR 03 05:13	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAR 03 05:13 - MAR 03 05:17	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	MAR 03 05:06 - MAR 03 05:09	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			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

Titan 2036-03-03T05:12:13 K14.46 G17.73 dots 60.0 sec  
 Pgt



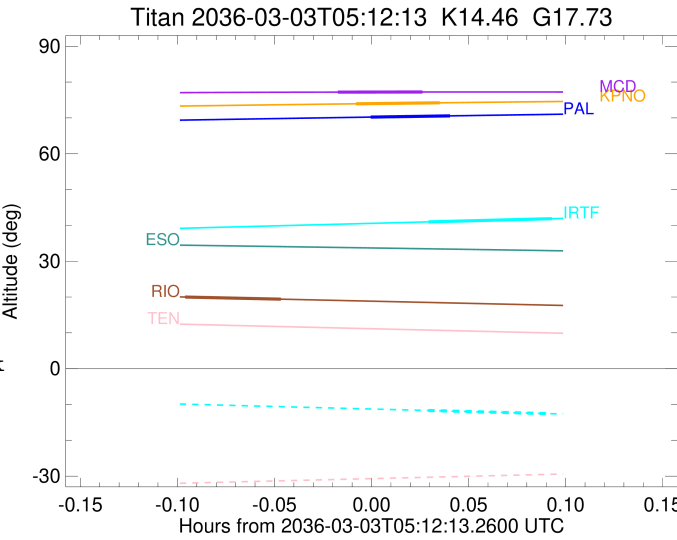
2036-03-03T05:12:13.2600 α: 09 04 05.5059 δ: +17 52 51.774 C/A 0.089" PA 191.40 deg v\_sky -21.68 km/s D 08.27 AU

Credit: Styled after SORA/Lucky Star



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2036-03-03T05:13:25.190
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        : 612078916089193344
2Mass ID (if available) : 09040551+1752513
ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.455
G magnitude           : 17.731
RP magnitude          : 16.658
BP magnitude          : 18.814
DUPflag              : 0
Distance (au)         : 8.267
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -21.67
Sun-Target sep (deg)  : 150.51
Sun-Moon sep (deg)   : 92.84
B (ring opening deg) : -17.01
PA of pole (deg)     : -6.83
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.332
C/A sky separation (km): 1990.6
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
    
```



```

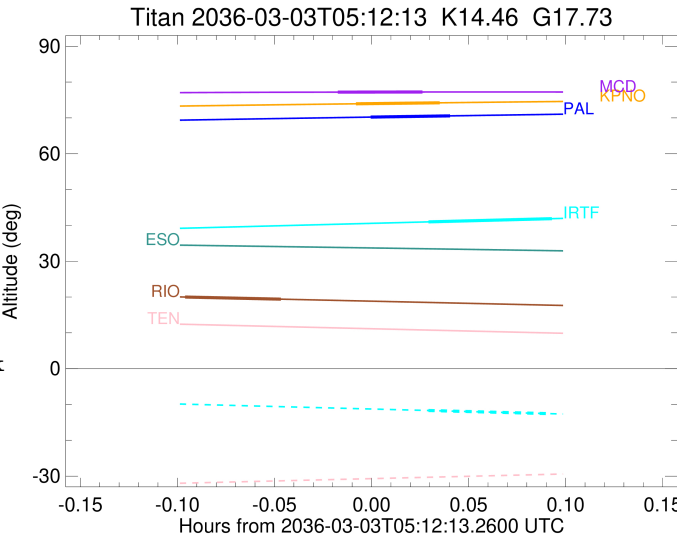
x: target alt < 5.0 deg or sun > -5.0 deg

```

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2036-03-03T05:12:11.121	70.22	-43.08	2575.1	62.97	62.98
Titan	E	2036-03-03T05:14:39.267	70.56	-43.55	2575.2	30.99	31.00

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2036-03-03T05:13:02.710
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      : 612078916089193344
2Mass ID (if available) : 09040551+1752513
ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 14.455
G magnitude          : 17.731
RP magnitude         : 16.658
BP magnitude         : 18.814
DUPflag             : 0
Distance (au)       : 8.267
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -21.67
Sun-Target sep (deg) : 150.51
Sun-Moon sep (deg)  : 92.85
B (ring opening deg) : -17.01
PA of pole (deg)    : -6.83
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.318
C/A sky separation (km) : 1909.3
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
    
```

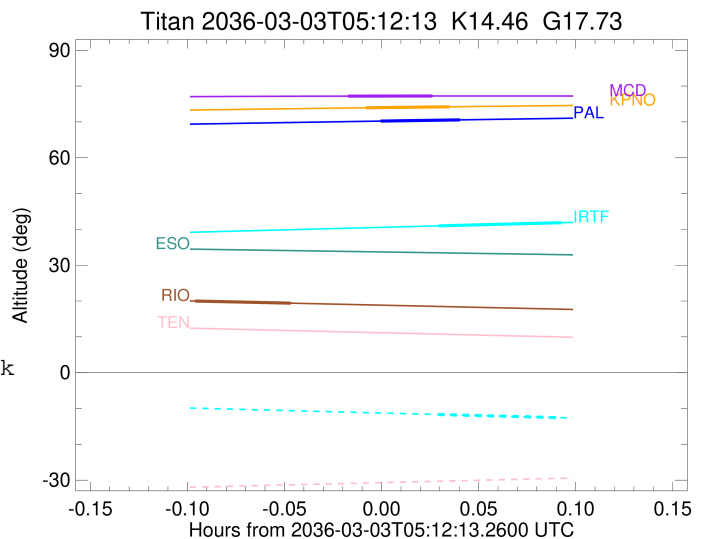


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2036-03-03T05:11:44.403	73.93	-47.59	2575.1	60.78	60.79
Titan	E	2036-03-03T05:14:21.027	74.21	-48.07	2575.2	28.41	28.42

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2036-03-03T05:12:29.580
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       : 612078916089193344
2Mass ID (if available) : 09040551+1752513
ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.455
G magnitude           : 17.731
RP magnitude         : 16.658
BP magnitude         : 18.814
DUPflag              : 0
Distance (au)        : 8.267
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -21.67
Sun-Target sep (deg) : 150.51
Sun-Moon sep (deg)  : 92.86
B (ring opening deg) : -17.01
PA of pole (deg)    : -6.83
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.316
C/A sky separation (km) : 1895.5
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
    
```



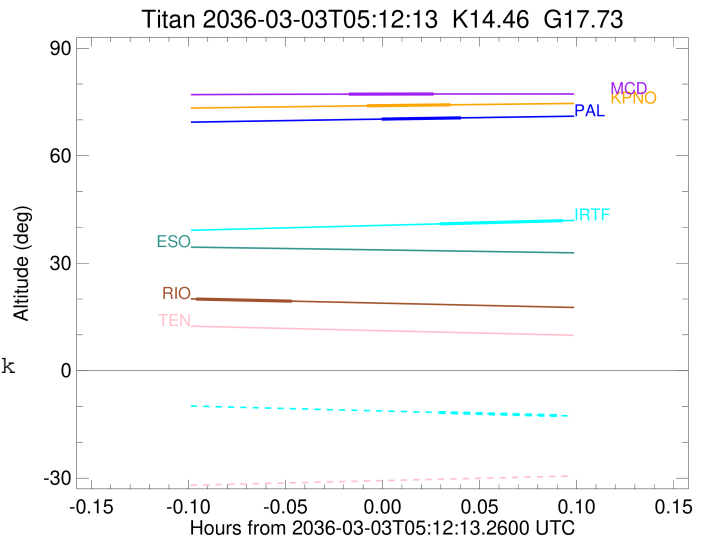
x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2036-03-03T05:11:10.606	77.19	-53.67	2575.1	60.37	60.39
Titan	E	2036-03-03T05:13:48.557	77.22	-54.13	2575.2	28.02	28.03

target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2036-03-03T05:15:54.000  
 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 : 612078916089193344  
 2Mass ID (if available) : 09040551+1752513  
 ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s  
 RUWE (>1.4 is poor) : 1.05  
 K magnitude : 14.455  
 G magnitude : 17.731  
 RP magnitude : 16.658  
 BP magnitude : 18.814  
 DUPflag : 0  
 Distance (au) : 8.267  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -21.67  
 Sun-Target sep (deg) : 150.51  
 Sun-Moon sep (deg) : 92.58  
 B (ring opening deg) : -17.01  
 PA of pole (deg) : -6.83  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.081  
 C/A sky separation (km) : 485.6  
 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	2036-03-03T05:13:58.856	40.97	-11.68	2575.1	27.78	27.79
Titan	E	2036-03-03T05:17:49.125	41.87	-12.58	2575.1	-7.10	-7.10



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2036-03-03T05:07:56.350
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        : 612078916089193344
2Mass ID (if available) : 09040551+1752513
ICRS Star Coord at Epoch: 09h 04m 05.50595s +17:52:51.77376s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 14.455
G magnitude           : 17.731
RP magnitude          : 16.658
BP magnitude          : 18.814
DUPflag              : 0
Distance (au)         : 8.267
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -21.67
Sun-Target sep (deg)  : 150.51
Sun-Moon sep (deg)   : 92.20
B (ring opening deg) : -17.01
PA of pole (deg)     : -6.83
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.280
C/A sky separation (km) : 1677.6
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	2036-03-03T05:06:27.039	19.99	-48.19	2575.2	-21.82	-21.83
Titan	E	2036-03-03T05:09:25.677	19.40	-47.67	2575.1	-54.56	-54.57

