

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2049-06-15T04:04:01.820
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 6865471485693674112
 2Mass ID (if available) : 19500110-2100219

ICRS Star Coord at Epoch: 19h 50m 01.03807s -21:00:22.19515s
 RUWE (>1.4 is poor) : 1.11
 K magnitude : 13.321
 G magnitude : 16.688
 RP magnitude : 15.633
 BP magnitude : 17.835
 DUPflag : 0
 Distance (au) : 9.126
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -18.89
 Sun-Target sep (deg) : 148.29
 Sun-Moon sep (deg) : 40.65
 B (ring opening deg) : 22.23
 PA of pole (deg) : 6.95
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.329
 C/A sky separation (km) : 2174.9
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

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

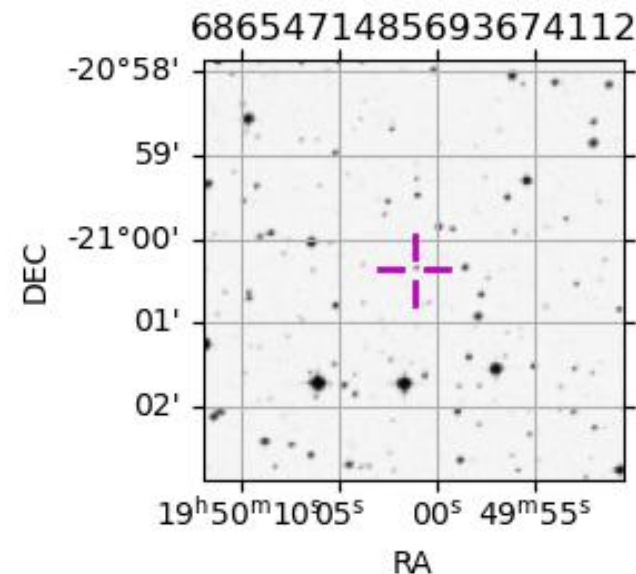
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	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	+ +	JUN 15 04:01 - JUN 15 04:03	Pie
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	+ +	JUN 15 04:04 - JUN 15 04:06	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 2049-06-15T04:04:01 K13.32 G16.69 dots 60.0 sec
 Pgt



2049-06-15T04:04:01.8200 cc: 19 50 01.0381 & -21 00 22.195 C/A 0.330" PA 345.37 deg v_sky -18.89 km/s D 09.13 AU
 Credit: Styled after SORA/Lucky Star



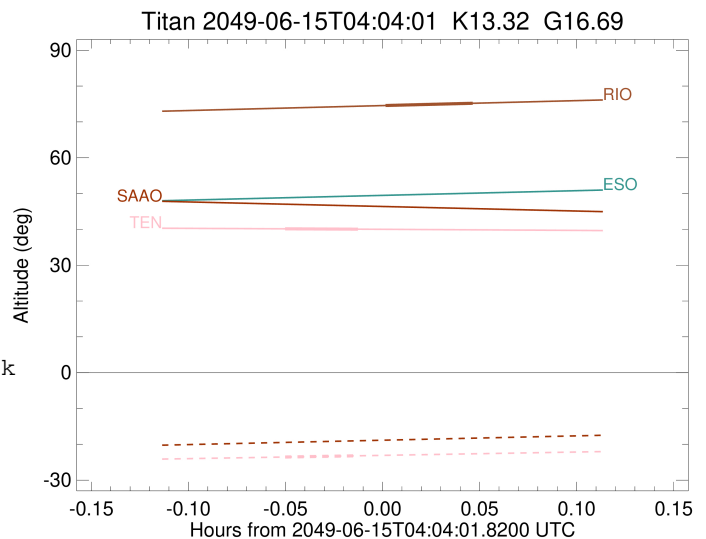
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2049-06-15T04:02:08.920
Event type            : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 6865471485693674112
2Mass ID (if available) : 19500110-2100219
ICRS Star Coord at Epoch: 19h 50m 01.03807s -21:00:22.19515s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 13.321
G magnitude           : 16.688
RP magnitude          : 15.633
BP magnitude          : 17.835
DUPflag              : 0
Distance (au)         : 9.126
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -18.89
Sun-Target sep (deg) : 148.29
Sun-Moon sep (deg)   : 41.30
B (ring opening deg) : 22.23
PA of pole (deg)     : 6.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.333
C/A sky separation (km) : 2203.8
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	2049-06-15T04:00:59.801	40.15	-23.55	2575.2	34.42	34.43
Titan	E	2049-06-15T04:03:18.028	40.05	-23.20	2575.1	65.75	65.76



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2049-06-15T04:05:29.140
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       : 6865471485693674112
2Mass ID (if available) : 19500110-2100219
ICRS Star Coord at Epoch: 19h 50m 01.03807s -21:00:22.19515s
RUWE (>1.4 is poor) : 1.11
K magnitude           : 13.321
G magnitude           : 16.688
RP magnitude          : 15.633
BP magnitude          : 17.835
DUPflag              : 0
Distance (au)        : 9.126
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -18.89
Sun-Target sep (deg) : 148.29
Sun-Moon sep (deg)   : 41.09
B (ring opening deg) : 22.23
PA of pole (deg)     : 6.95
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.308
C/A sky separation (km) : 2036.5
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	2049-06-15T04:04:07.511	74.57	-73.72	2575.0	-62.66	-62.67
Titan	E	2049-06-15T04:06:50.764	75.20	-73.10	2575.1	-28.37	-28.38

