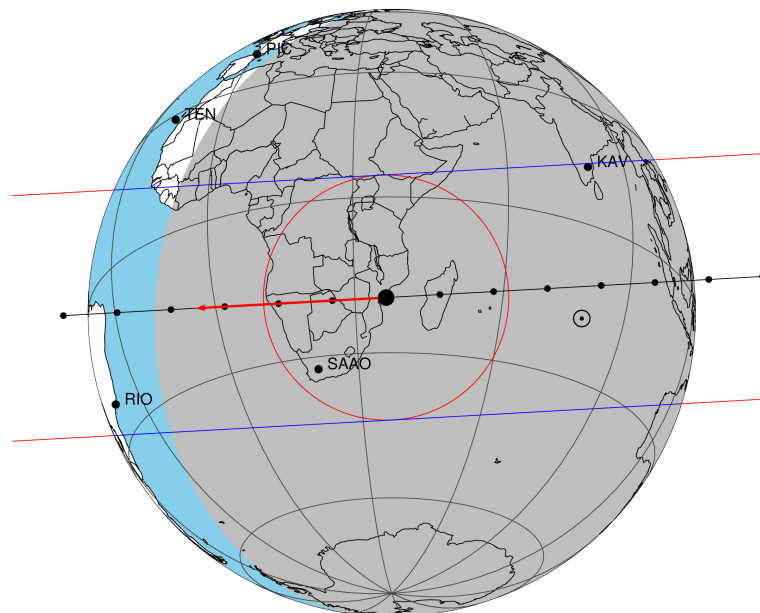


target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-07-30T18:51:55.620  
 Event type : Pgt  
 : Titan occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4070419572478832256  
 2Mass ID (if available) : 17520727-2226483

Titan 2047-07-30T18:51:55 K12.21 G17.86 dots 60.0 sec  
 Pgt

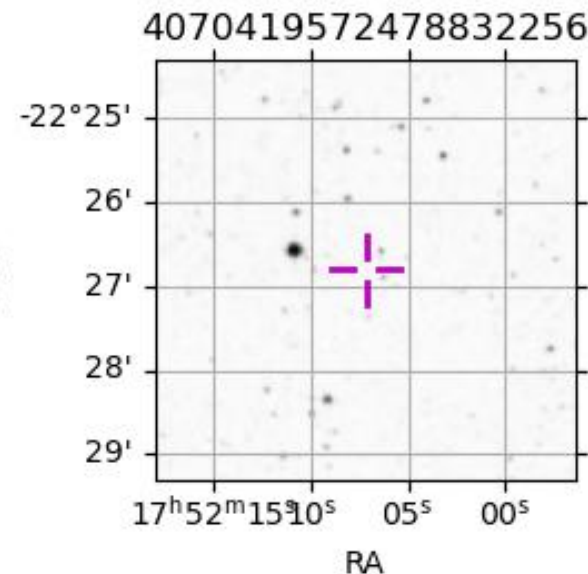
ICRS Star Coord at Epoch: 17h 52m 07.20905s -22:26:48.57601s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 12.207  
 G magnitude : 17.856  
 RP magnitude : 0.000  
 BP magnitude : 0.000  
 DUPflag : 0  
 Distance (au) : 9.228  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -18.84  
 Sun-Target sep (deg) : 141.27  
 Sun-Moon sep (deg) : 40.11  
 B (ring opening deg) : 26.70  
 PA of pole (deg) : 5.51  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.048  
 C/A sky separation (km) : 319.0  
 NAIF SPICE kernels : RAJobs\_U111+rgf16.spk



2047-07-30T18:51:55.6200 cc: 17 52 07.2091 d: -22 26 48.576 C/A 0.049" PA 356.86 deg v\_sky -18.85 km/s D 09.23 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

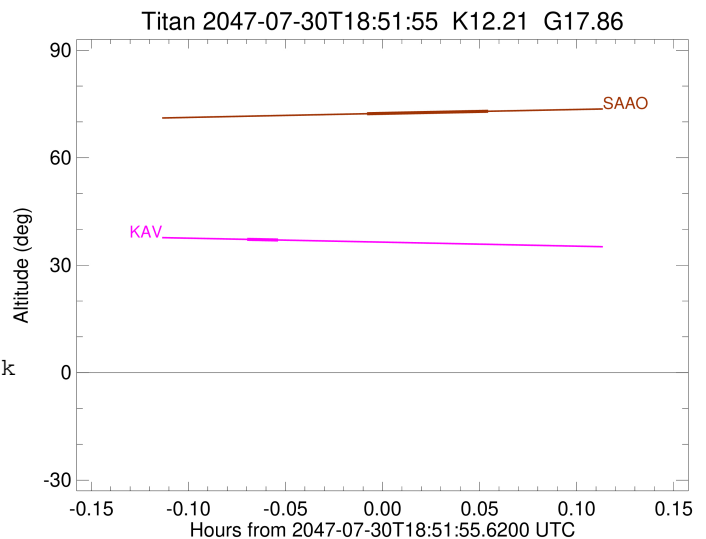
Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 30 18:47 - JUL 30 18:48	Pie
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	+ +	JUL 30 18:51 - JUL 30 18:55	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-07-30T18:48:12.420
Event type            : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code         : KAV
Location              : Kavalur Observatory
Latitude (deg)        : 12.57556
E. Longitude (deg)    : 78.83167
Altitude (km)         : 0.722
Gaia source ID        : 4070419572478832256
2Mass ID (if available) : 17520727-2226483
ICRS Star Coord at Epoch: 17h 52m 07.20905s -22:26:48.57601s
RUWE (>1.4 is poor)  : 1.06
K magnitude           : 12.207
G magnitude           : 17.856
RP magnitude          : 0.000
BP magnitude          : 0.000
DUPflag              : 0
Distance (au)         : 9.228
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -18.84
Sun-Target sep (deg)  : 141.27
Sun-Moon sep (deg)    : 41.02
B (ring opening deg) : 26.70
PA of pole (deg)      : 5.51
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.375
C/A sky separation (km) : 2512.2
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

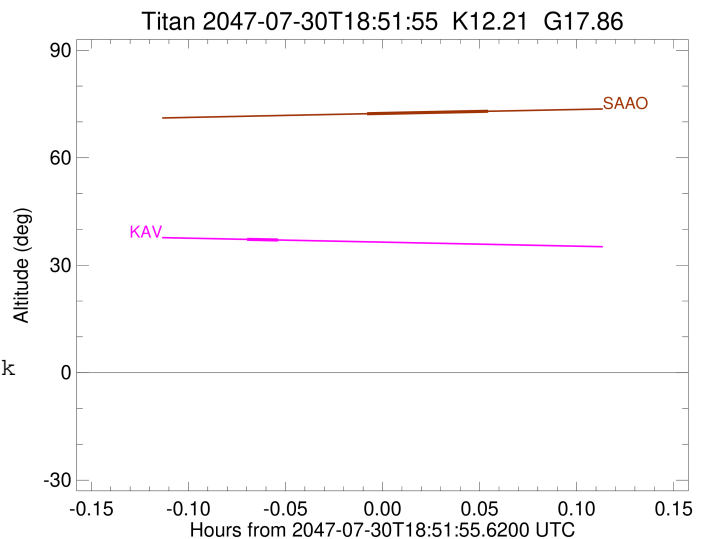
```



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	2047-07-30T18:47:42.945	37.21	-59.12	2575.0	56.50	56.52
Titan	E	2047-07-30T18:48:41.899	37.03	-59.13	2575.0	62.97	62.98

target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2047-07-30T18:53:19.310  
 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 : 4070419572478832256  
 2Mass ID (if available) : 17520727-2226483  
 ICRS Star Coord at Epoch: 17h 52m 07.20905s -22:26:48.57601s  
 RUWE (>1.4 is poor) : 1.06  
 K magnitude : 12.207  
 G magnitude : 17.856  
 RP magnitude : 0.000  
 BP magnitude : 0.000  
 DUPflag : 0  
 Distance (au) : 9.228  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -18.84  
 Sun-Target sep (deg) : 141.27  
 Sun-Moon sep (deg) : 40.52  
 B (ring opening deg) : 26.70  
 PA of pole (deg) : 5.51  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.207  
 C/A sky separation (km) : 1386.6  
 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	2047-07-30T18:51:26.473	72.27	-36.47	2575.1	-36.17	-36.19
Titan	E	2047-07-30T18:55:12.138	72.96	-37.26	2575.1	-21.14	-21.15