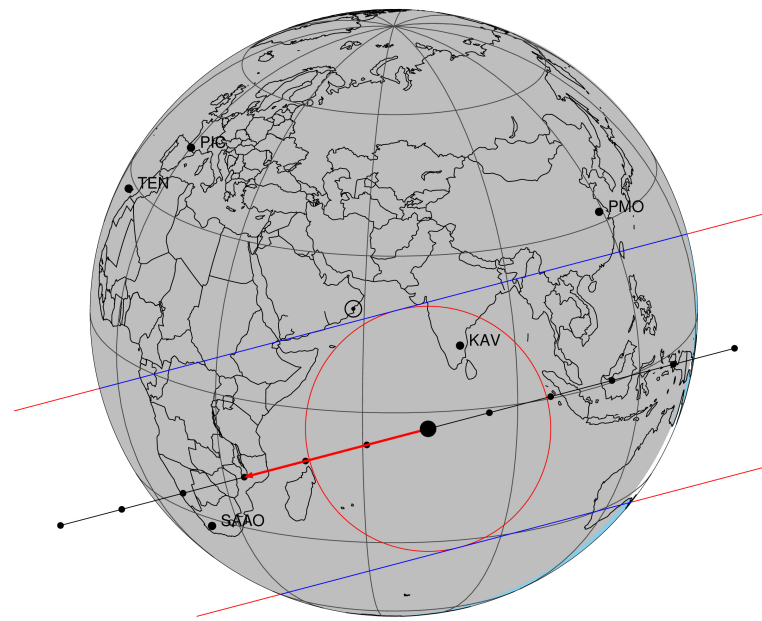


target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2030-11-20T19:54:31.100
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 48580826058239104
 2Mass ID (if available) : 04155728+1910108

Titan 2030-11-20T19:54:31 K11.42 G14.18 dots 60.0 sec
 Pgt

ICRS Star Coord at Epoch: 04h 15m 57.28372s +19:10:10.91518s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.419
 G magnitude : 14.184
 RP magnitude : 13.326
 BP magnitude : 14.952
 DUPflag : 0
 Distance (au) : 8.086
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -22.17
 Sun-Target sep (deg) : 172.31
 Sun-Moon sep (deg) : 112.13
 B (ring opening deg) : -25.12
 PA of pole (deg) : -3.01
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.433
 C/A sky separation (km) : 2539.4
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

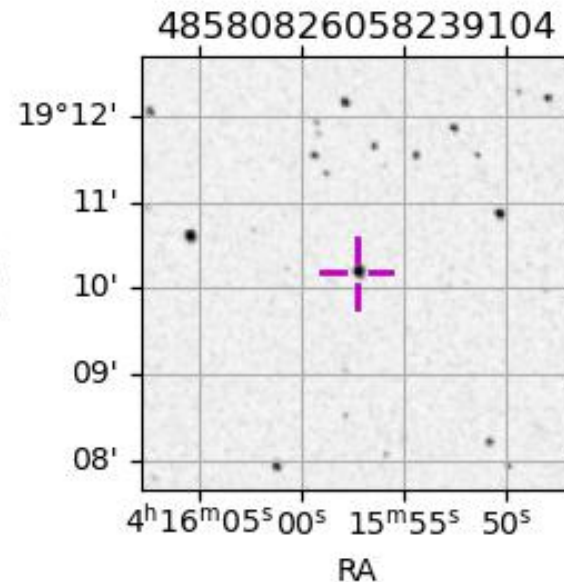


2030-11-20T19:54:31.1000 α: 04 15 57.2837 δ: +19 10 10.915 C/A 0.433" PA 165.25 deg v_sky -22.17 km/s D 08.09 AU
 Credit: Styled after SORA/Lucky Star

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

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

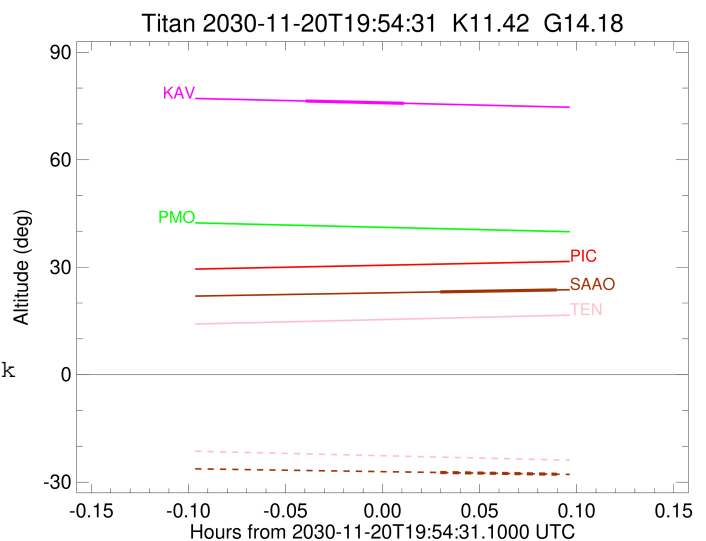
Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	NOV 20 19:52 - NOV 20 19:55	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	+ +	NOV 20 19:56 - NOV 20 19:59	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2030-11-20T19:53:39.600
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       : 48580826058239104
2Mass ID (if available) : 04155728+1910108
ICRS Star Coord at Epoch: 04h 15m 57.28372s +19:10:10.91518s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 11.419
G magnitude           : 14.184
RP magnitude          : 13.326
BP magnitude          : 14.952
DUPflag              : 0
Distance (au)        : 8.086
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -22.17
Sun-Target sep (deg) : 172.31
Sun-Moon sep (deg)   : 113.08
B (ring opening deg) : -25.12
PA of pole (deg)     : -3.01
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.259
C/A sky separation (km) : 1518.4
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

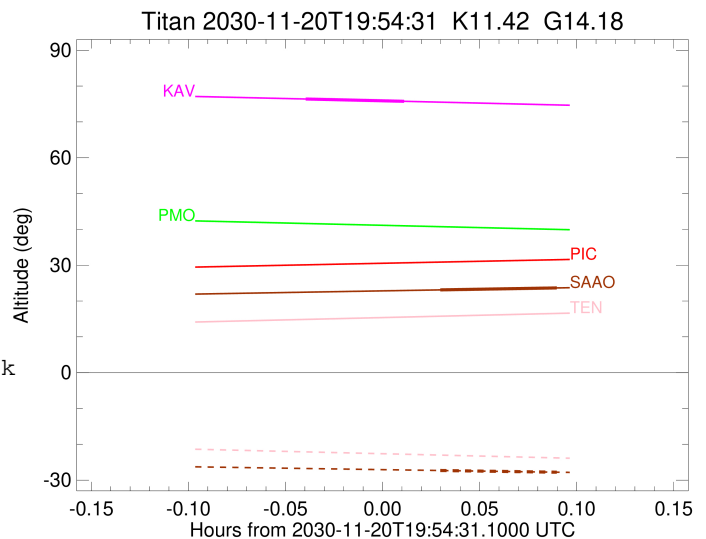
```



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	2030-11-20T19:52:07.623	76.39	-69.06	2575.2	22.15	22.16
Titan	E	2030-11-20T19:55:11.587	75.74	-68.37	2575.1	42.01	42.02

target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2030-11-20T19:58:05.890
 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 : 48580826058239104
 2Mass ID (if available) : 04155728+1910108
 ICRS Star Coord at Epoch: 04h 15m 57.28372s +19:10:10.91518s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 11.419
 G magnitude : 14.184
 RP magnitude : 13.326
 BP magnitude : 14.952
 DUPflag : 0
 Distance (au) : 8.086
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -22.17
 Sun-Target sep (deg) : 172.31
 Sun-Moon sep (deg) : 112.24
 B (ring opening deg) : -25.12
 PA of pole (deg) : -3.01
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.145
 C/A sky separation (km) : 851.1
 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	2030-11-20T19:56:17.478	23.10	-27.31	2575.1	-27.47	-27.48
Titan	E	2030-11-20T19:59:54.307	23.65	-27.78	2575.1	-7.21	-7.21