

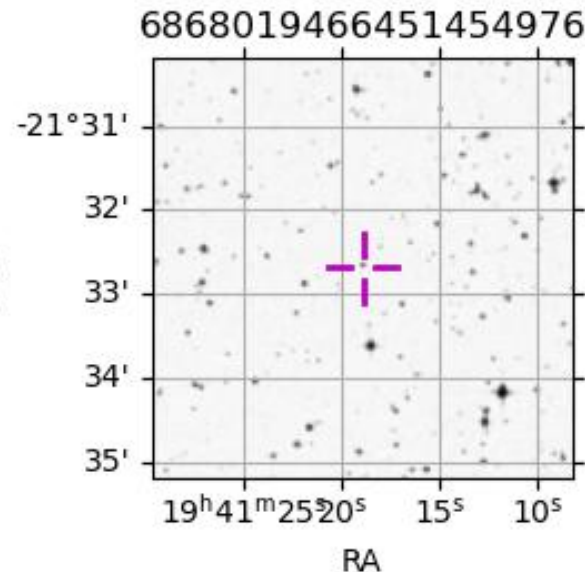
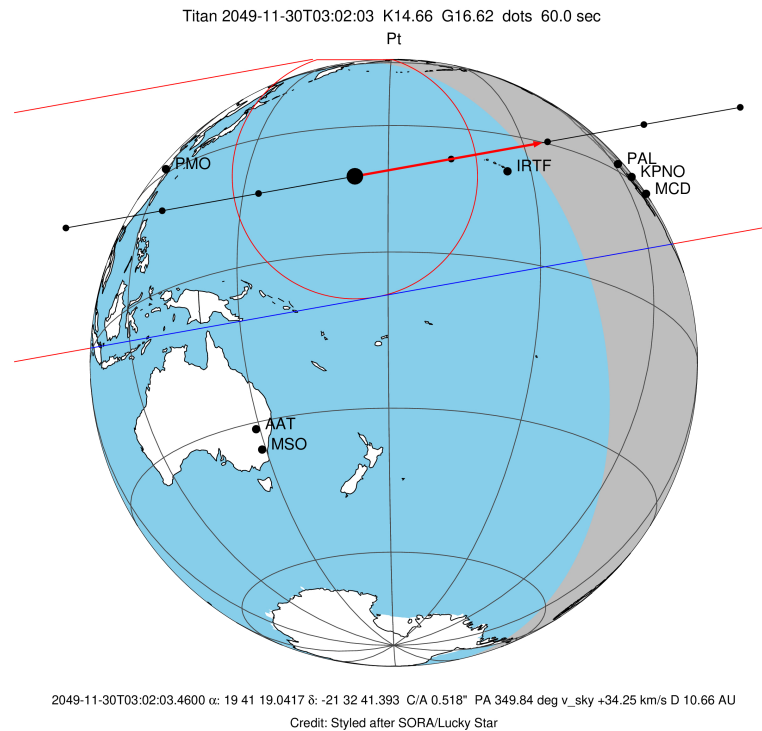
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2049-11-30T03:02:03.460  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 6868019466451454976  
 2Mass ID (if available) : 19411904-2132409

ICRS Star Coord at Epoch: 19h 41m 19.04173s -21:32:41.39305s  
 RUWE (>1.4 is poor) : 1.03  
 K magnitude : 14.663  
 G magnitude : 16.620  
 RP magnitude : 15.952  
 BP magnitude : 17.150  
 DUPflag : 0  
 Distance (au) : 10.656  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 34.24  
 Sun-Target sep (deg) : 45.81  
 Sun-Moon sep (deg) : 20.23  
 B (ring opening deg) : 23.01  
 PA of pole (deg) : 6.92  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.518  
 C/A sky separation (km) : 4001.3  
 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	+ +	NOV 30 03:03 - NOV 30 03:05	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	NOV 30 03:03 - NOV 30 03:05	Pie
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			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



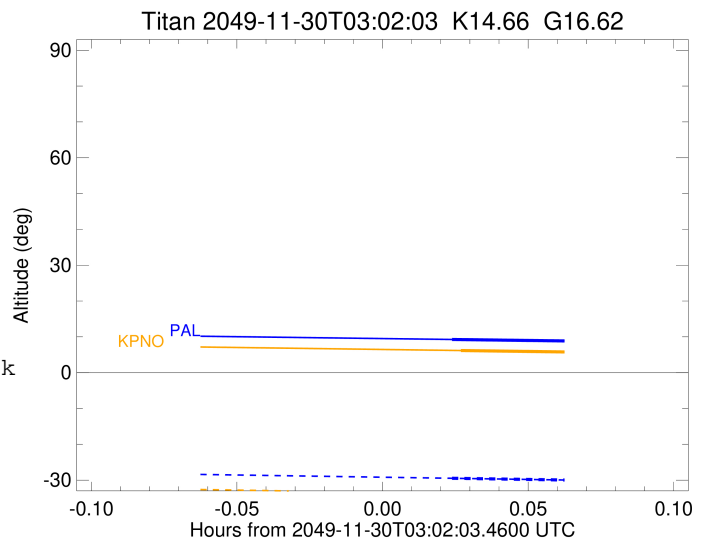
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2049-11-30T03:04:41.360
Event type          : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code       : PAL
Location           : Palomar Mt (200")
Latitude (deg)     : 33.35622
E. Longitude (deg) : 243.13601
Altitude (km)     : 1.706
Gaia source ID     : 6868019466451454976
2Mass ID (if available) : 19411904-2132409
ICRS Star Coord at Epoch: 19h 41m 19.04173s -21:32:41.39305s
RUWE (>1.4 is poor) : 1.03
K magnitude        : 14.663
G magnitude        : 16.620
RP magnitude       : 15.952
BP magnitude       : 17.150
DUPflag           : 0
Distance (au)     : 10.656
f0 (km)           : 0.00
g0 (km)           : 0.00
skyplane vel. (km/s) : 34.24
Sun-Target sep (deg) : 45.81
Sun-Moon sep (deg) : 19.40
B (ring opening deg) : 23.01
PA of pole (deg)   : 6.92
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.102
C/A sky separation (km) : 786.5
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

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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	2049-11-30T03:03:29.438	9.27	-29.48	2575.1	-0.41	-0.41
Titan	E	2049-11-30T03:05:53.266	8.84	-29.98	2575.1	-31.97	-31.99



target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2049-11-30T03:04:48.000  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : 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 : 6868019466451454976  
 2Mass ID (if available) : 19411904-2132409  
 ICRS Star Coord at Epoch: 19h 41m 19.04173s -21:32:41.39305s  
 RUWE (>1.4 is poor) : 1.03  
 K magnitude : 14.663  
 G magnitude : 16.620  
 RP magnitude : 15.952  
 BP magnitude : 17.150  
 DUPflag : 0  
 Distance (au) : 10.656  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 34.24  
 Sun-Target sep (deg) : 45.81  
 Sun-Moon sep (deg) : 19.36  
 B (ring opening deg) : 23.01  
 PA of pole (deg) : 6.92  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.143  
 C/A sky separation (km) : 1106.2  
 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	2049-11-30T03:03:39.856	6.18	-33.75	2575.2	-7.45	-7.46
Titan	E	2049-11-30T03:05:56.133	5.76	-34.23	2575.1	-38.69	-38.71

