

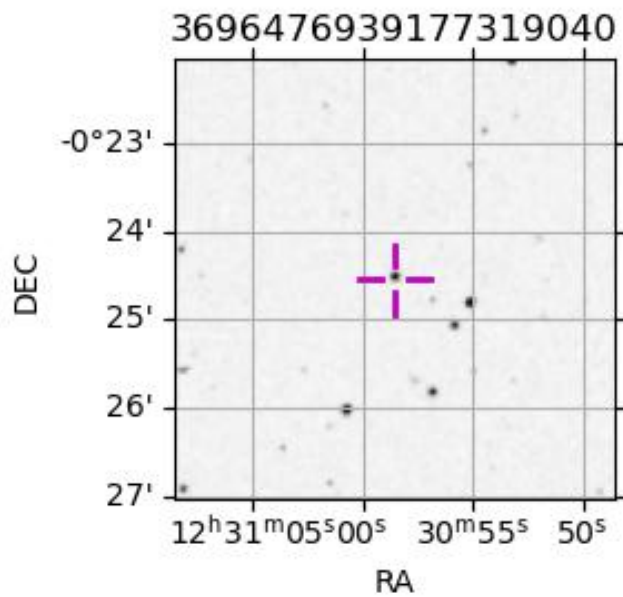
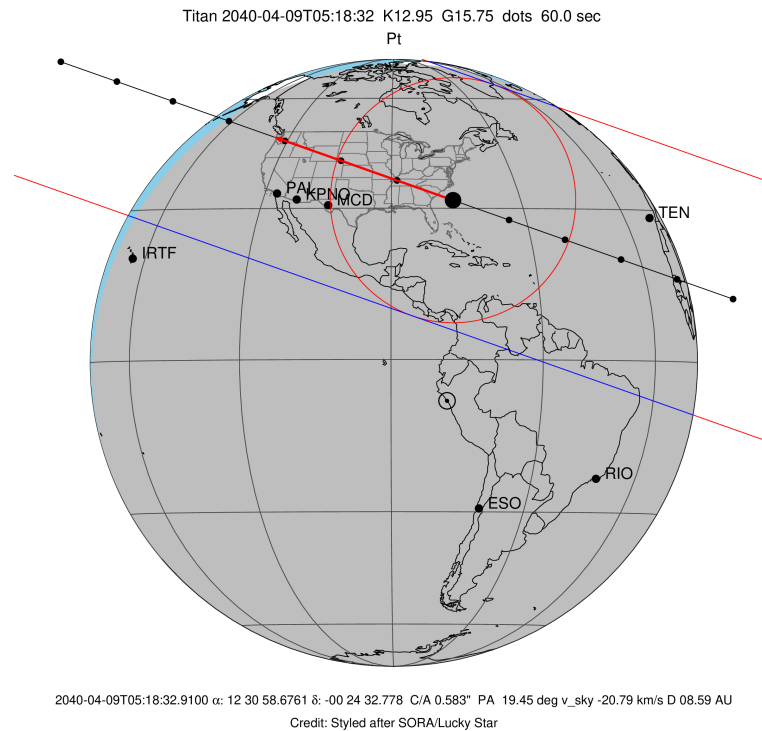
target : Titan  
 target radius (km) : 2575.15  
 C/A epoch : 2040-04-09T05:18:32.910  
 Event type : Pt  
 : Titan occs: topocentric, not geocentric  
 : Not a ringed target  
 Gaia source ID : 3696476939177319040  
 2Mass ID (if available) : 12305864-0024328

ICRS Star Coord at Epoch: 12h 30m 58.67608s -00:24:32.77805s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 12.954  
 G magnitude : 15.751  
 RP magnitude : 14.854  
 BP magnitude : 16.583  
 DUPflag : 0  
 Distance (au) : 8.592  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -20.79  
 Sun-Target sep (deg) : 167.57  
 Sun-Moon sep (deg) : 162.49  
 B (ring opening deg) : 5.99  
 PA of pole (deg) : -3.47  
 Pole direction: RA (deg): 39.48270  
 Dec (deg): 83.42790  
 C/A sky separation (") : 0.584  
 C/A sky separation (km) : 3638.9  
 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	+ +	APR 09 05:19 - APR 09 05:23	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	APR 09 05:19 - APR 09 05:22	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	APR 09 05:18 - APR 09 05:22	Pie
TEN	Teide Obs./Tenerife	28.3	343.5	+ +	APR 09 05:13 - APR 09 05:17	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			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



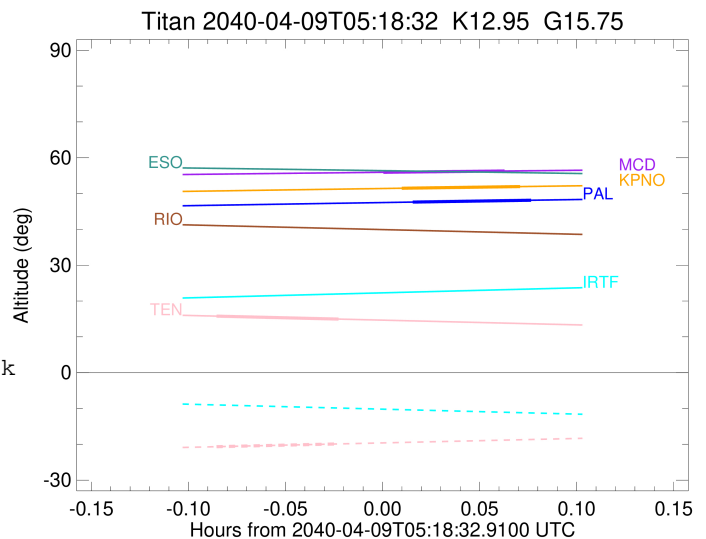
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2040-04-09T05:21:18.590
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 3696476939177319040
2Mass ID (if available) : 12305864-0024328
ICRS Star Coord at Epoch: 12h 30m 58.67608s -00:24:32.77805s
RUWE (>1.4 is poor) : 1.07
K magnitude          : 12.954
G magnitude          : 15.751
RP magnitude         : 14.854
BP magnitude         : 16.583
DUPflag             : 0
Distance (au)        : 8.592
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.79
Sun-Target sep (deg) : 167.57
Sun-Moon sep (deg)  : 162.14
B (ring opening deg) : 5.99
PA of pole (deg)    : -3.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.176
C/A sky separation (km): 1097.6
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	2040-04-09T05:19:28.273	47.61	-35.79	2575.2	-2.60	-2.61
Titan	E	2040-04-09T05:23:08.883	48.13	-36.36	2575.2	-47.49	-47.50



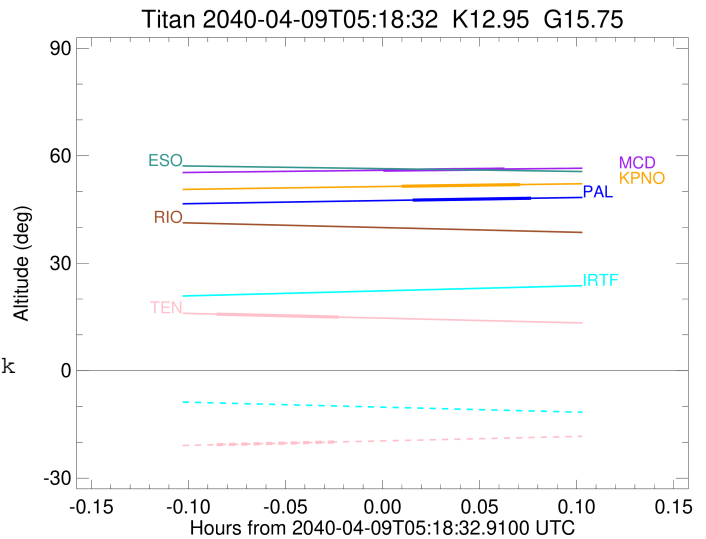
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2040-04-09T05:20:58.010
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       : 3696476939177319040
2Mass ID (if available) : 12305864-0024328
ICRS Star Coord at Epoch: 12h 30m 58.67608s -00:24:32.77805s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.954
G magnitude           : 15.751
RP magnitude         : 14.854
BP magnitude         : 16.583
DUPflag              : 0
Distance (au)        : 8.592
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.79
Sun-Target sep (deg) : 167.57
Sun-Moon sep (deg)   : 162.22
B (ring opening deg) : 5.99
PA of pole (deg)     : -3.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.174
C/A sky separation (km): 1081.2
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	2040-04-09T05:19:07.432	51.47	-39.88	2575.2	-2.22	-2.22
Titan	E	2040-04-09T05:22:48.574	51.94	-40.42	2575.2	-47.07	-47.09



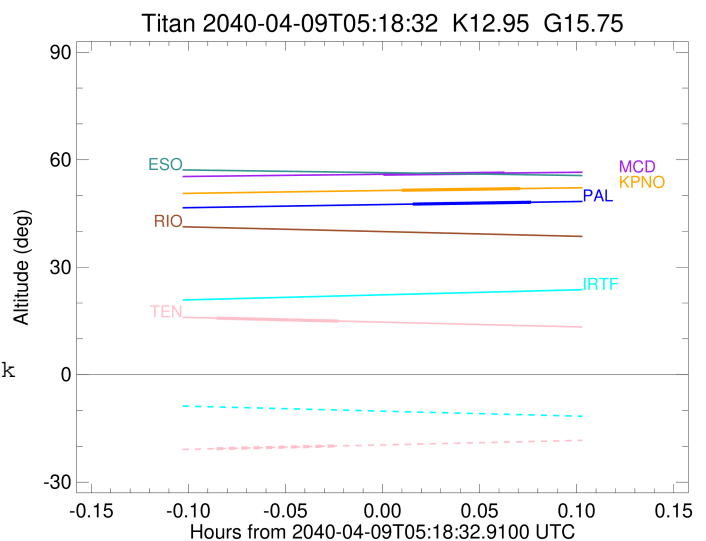
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2040-04-09T05:20:26.520
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : MCD
Location             : McDonald Obs. 2.7m
Latitude (deg)       : 30.67158
E. Longitude (deg)  : 255.97844
Altitude (km)        : 2.075
Gaia source ID       : 3696476939177319040
2Mass ID (if available) : 12305864-0024328
ICRS Star Coord at Epoch: 12h 30m 58.67608s -00:24:32.77805s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.954
G magnitude           : 15.751
RP magnitude         : 14.854
BP magnitude         : 16.583
DUPflag              : 0
Distance (au)        : 8.592
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.79
Sun-Target sep (deg) : 167.57
Sun-Moon sep (deg)  : 162.32
B (ring opening deg) : 5.99
PA of pole (deg)    : -3.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.157
C/A sky separation (km) : 976.8
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	2040-04-09T05:18:33.892	55.93	-44.94	2575.2	0.28	0.28
Titan	E	2040-04-09T05:22:19.131	56.28	-45.40	2575.1	-44.55	-44.57



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2040-04-09T05:15:18.410
Event type            : Pt
: Titan occs: topocentric, not geocentric
: 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       : 3696476939177319040
2Mass ID (if available) : 12305864-0024328
ICRS Star Coord at Epoch: 12h 30m 58.67608s -00:24:32.77805s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 12.954
G magnitude           : 15.751
RP magnitude          : 14.854
BP magnitude          : 16.583
DUPflag              : 0
Distance (au)        : 8.592
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -20.79
Sun-Target sep (deg) : 167.57
Sun-Moon sep (deg)   : 162.99
B (ring opening deg) : 5.99
PA of pole (deg)     : -3.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.160
C/A sky separation (km) : 994.3
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	2040-04-09T05:13:24.774	15.78	-20.66	2575.1	45.22	45.24
Titan	E	2040-04-09T05:17:12.051	14.95	-19.88	2575.2	-0.12	-0.12

