

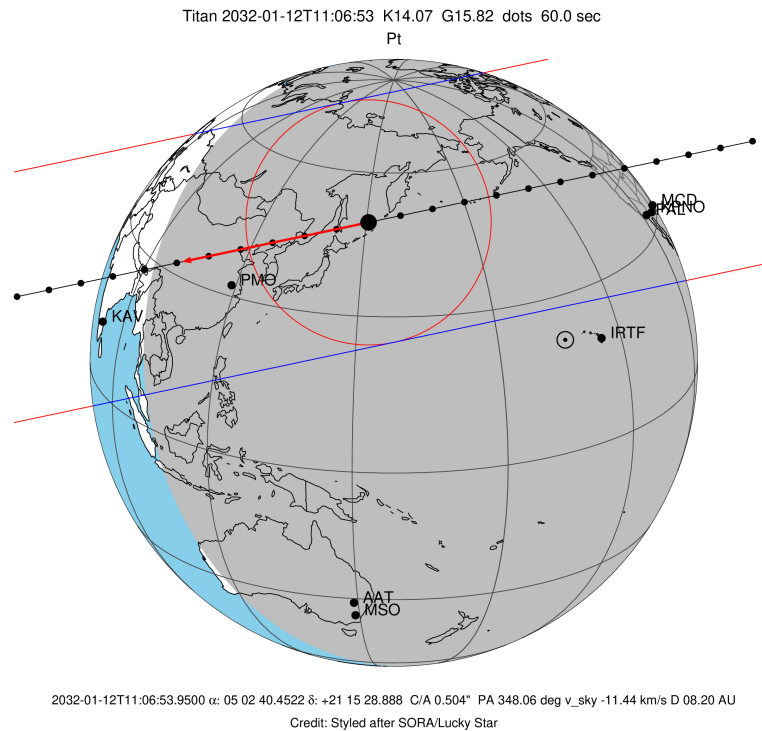
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2032-01-12T11:06:53.950
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 3409158711000682624
 2Mass ID (if available) : 05024045+2115290

ICRS Star Coord at Epoch: 05h 02m 40.45223s +21:15:28.88816s
 RUWE (>1.4 is poor) : 1.01
 K magnitude : 14.067
 G magnitude : 15.823
 RP magnitude : 15.188
 BP magnitude : 16.282
 DUPflag : 0
 Distance (au) : 8.204
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -11.44
 Sun-Target sep (deg) : 145.28
 Sun-Moon sep (deg) : 150.56
 B (ring opening deg) : -26.51
 PA of pole (deg) : -4.33
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.504
 C/A sky separation (km) : 2999.8
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

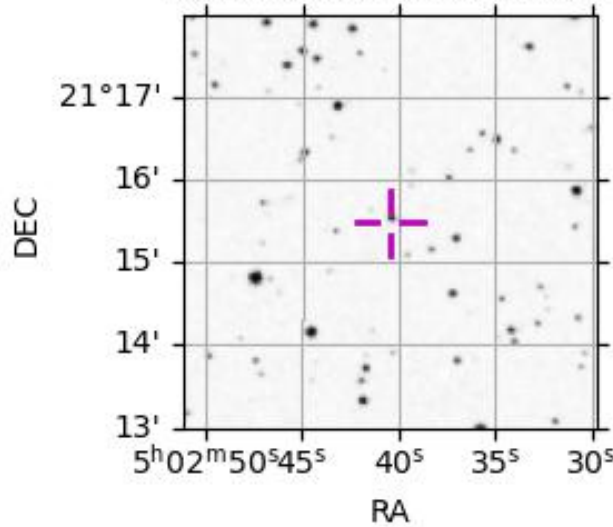
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	JAN 12 10:55 - JAN 12 11:01	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JAN 12 11:07 - JAN 12 11:14	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	JAN 12 10:54 - JAN 12 11:01	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	JAN 12 10:54 - JAN 12 11:01	Pie
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

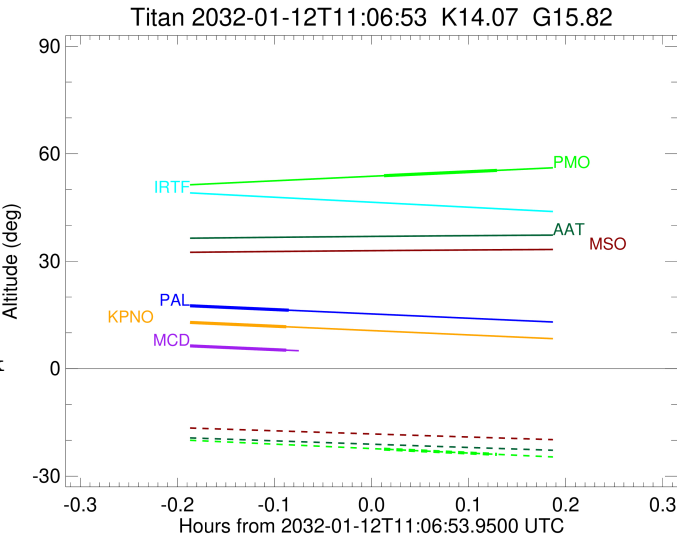


3409158711000682624



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-01-12T10:58:28.250
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        : 3409158711000682624
2Mass ID (if available) : 05024045+2115290
ICRS Star Coord at Epoch: 05h 02m 40.45223s +21:15:28.88816s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 14.067
G magnitude           : 15.823
RP magnitude          : 15.188
BP magnitude          : 16.282
DUPflag              : 0
Distance (au)         : 8.204
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.44
Sun-Target sep (deg)  : 145.28
Sun-Moon sep (deg)    : 149.96
B (ring opening deg) : -26.51
PA of pole (deg)      : -4.33
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.189
C/A sky separation (km) : 1124.9
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

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Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2032-01-12T10:55:07.345	17.67	-48.86	2575.1	-30.16	-30.18
Titan	E	2032-01-12T11:01:49.349	16.31	-47.47	2575.1	-15.74	-15.75

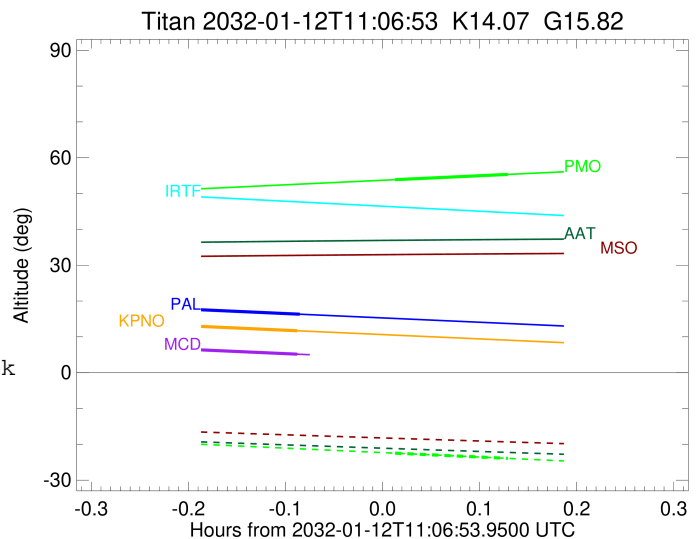
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-01-12T11:11:10.100
Event type            : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code         : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)        : 32.06667
E. Longitude (deg)    : 118.82089
Altitude (km)         : 0.364
Gaia source ID        : 3409158711000682624
2Mass ID (if available) : 05024045+2115290
ICRS Star Coord at Epoch: 05h 02m 40.45223s +21:15:28.88816s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 14.067
G magnitude           : 15.823
RP magnitude          : 15.188
BP magnitude          : 16.282
DUPflag              : 0
Distance (au)         : 8.204
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.44
Sun-Target sep (deg)  : 145.28
Sun-Moon sep (deg)    : 151.44
B (ring opening deg) : -26.51
PA of pole (deg)     : -4.33
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.129
C/A sky separation (km) : 766.1
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	2032-01-12T11:07:40.301	53.87	-22.47	2575.1	-21.50	-21.51
Titan	E	2032-01-12T11:14:39.931	55.34	-23.92	2575.2	-9.32	-9.33



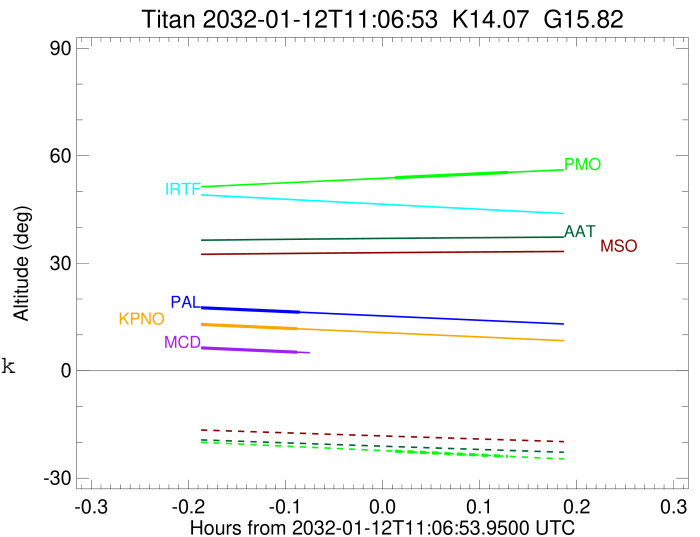
```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2032-01-12T10:58:17.100
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        : 3409158711000682624
2Mass ID (if available) : 05024045+2115290
ICRS Star Coord at Epoch: 05h 02m 40.45223s +21:15:28.88816s
RUWE (>1.4 is poor) : 1.01
K magnitude           : 14.067
G magnitude           : 15.823
RP magnitude          : 15.188
BP magnitude          : 16.282
DUPflag              : 0
Distance (au)         : 8.204
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -11.44
Sun-Target sep (deg)  : 145.28
Sun-Moon sep (deg)    : 149.91
B (ring opening deg) : -26.51
PA of pole (deg)     : -4.33
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.184
C/A sky separation (km) : 1096.5
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	2032-01-12T10:54:54.433	13.06	-44.53	2575.1	-29.61	-29.62
Titan	E	2032-01-12T11:01:39.967	11.69	-43.09	2575.1	-15.07	-15.08



```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2032-01-12T10:58:10.340
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       : 3409158711000682624
2Mass ID (if available) : 05024045+2115290
ICRS Star Coord at Epoch: 05h 02m 40.45223s +21:15:28.88816s
RUWE (>1.4 is poor) : 1.01
K magnitude          : 14.067
G magnitude          : 15.823
RP magnitude         : 15.188
BP magnitude         : 16.282
DUPflag             : 0
Distance (au)        : 8.204
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -11.44
Sun-Target sep (deg) : 145.28
Sun-Moon sep (deg)   : 149.85
B (ring opening deg) : -26.51
PA of pole (deg)     : -4.33
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.162
C/A sky separation (km) : 961.6
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	2032-01-12T10:54:41.634	6.56	-38.04	2575.1	-26.84	-26.85
Titan	E	2032-01-12T11:01:39.253	5.16	-36.55	2575.2	-12.10	-12.11

