

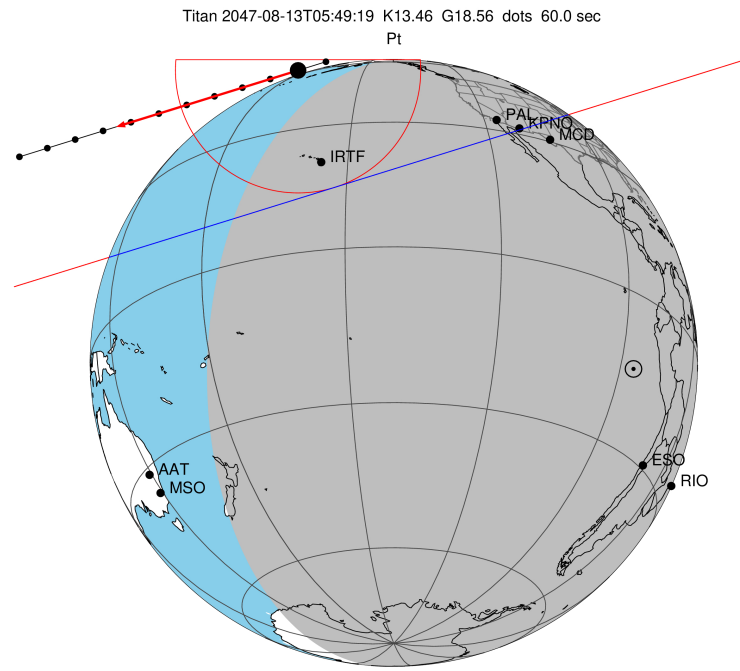
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2047-08-13T05:49:19.230
 Event type : Pt
 : Titan occs: topocentric, not geocentric
 : Not a ringed target
 Gaia source ID : 4068929390694596480
 2Mass ID (if available) : 17495489-2227292

ICRS Star Coord at Epoch: 17h 49m 54.89353s -22:27:29.65127s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 13.460
 G magnitude : 18.565
 RP magnitude : 16.999
 BP magnitude : 19.665
 DUPflag : 0
 Distance (au) : 9.392
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -10.20
 Sun-Target sep (deg) : 127.88
 Sun-Moon sep (deg) : 136.46
 B (ring opening deg) : 26.76
 PA of pole (deg) : 5.47
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.944
 C/A sky separation (km) : 6432.3
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

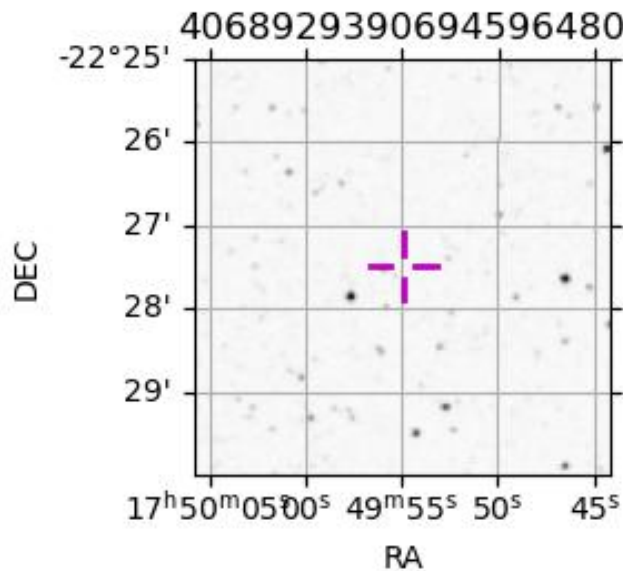
URKALLv1.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp

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	+ +	AUG 13 05:41 - AUG 13 05:45	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	AUG 13 05:41 - AUG 13 05:44	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	+ +	AUG 13 05:46 - AUG 13 05:52	Pie
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

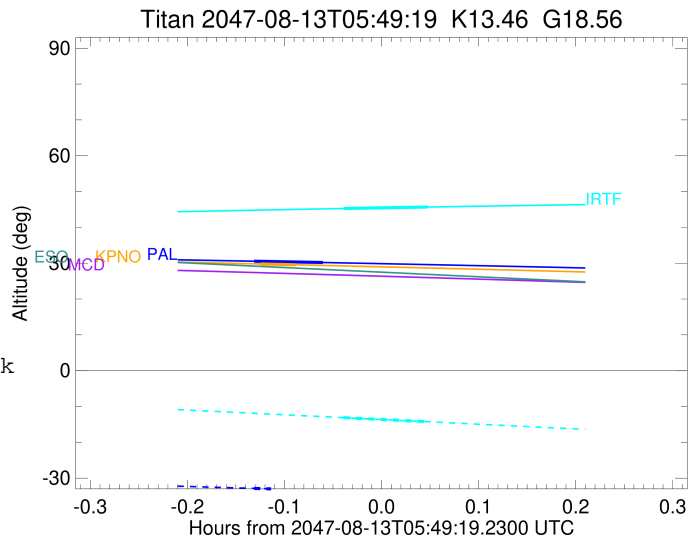


2047-08-13T05:49:19.2300 cc: 17 49 54.8935 s: -22 27 29.651 C/A 0.949" PA 342.74 deg v_sky -10.20 km/s D 09.39 AU
 Credit: Styled after SORA/Lucky Star



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target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2047-08-13T05:43:34.590
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        : 4068929390694596480
2Mass ID (if available) : 17495489-2227292
ICRS Star Coord at Epoch: 17h 49m 54.89353s -22:27:29.65127s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 13.460
G magnitude           : 18.565
RP magnitude          : 16.999
BP magnitude          : 19.665
DUPflag              : 0
Distance (au)         : 9.392
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.20
Sun-Target sep (deg) : 127.88
Sun-Moon sep (deg)   : 137.05
B (ring opening deg) : 26.76
PA of pole (deg)     : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.320
C/A sky separation (km) : 2178.2
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	2047-08-13T05:41:24.096	30.56	-32.86	2575.1	-61.44	-61.45
Titan	E	2047-08-13T05:45:45.077	30.18	-33.42	2575.1	-31.58	-31.59

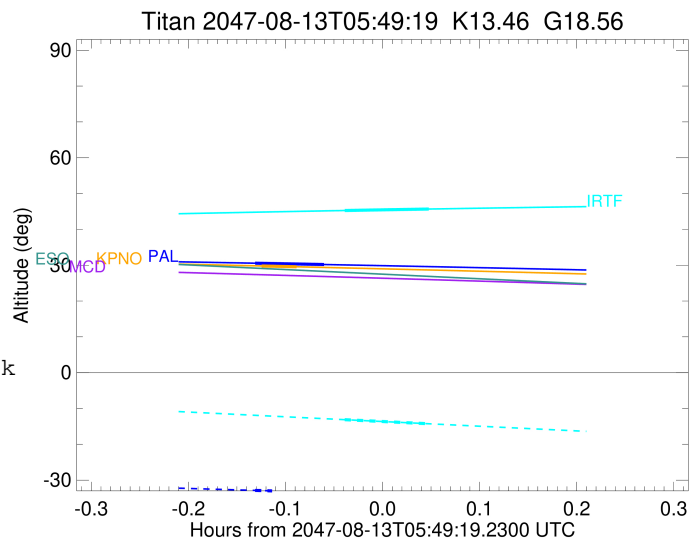
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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-08-13T05:42:55.060
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)  : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 4068929390694596480
2Mass ID (if available) : 17495489-2227292
ICRS Star Coord at Epoch: 17h 49m 54.89353s -22:27:29.65127s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 13.460
G magnitude          : 18.565
RP magnitude         : 16.999
BP magnitude         : 19.665
DUPflag             : 0
Distance (au)        : 9.392
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.20
Sun-Target sep (deg) : 127.88
Sun-Moon sep (deg)  : 137.09
B (ring opening deg) : 26.76
PA of pole (deg)    : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.364
C/A sky separation (km) : 2480.2
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	2047-08-13T05:41:49.197	29.78	-36.65	2575.1	-62.58	-62.59
Titan	E	2047-08-13T05:44:00.939	29.55	-36.90	2575.1	-45.17	-45.19



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target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2047-08-13T05:49:35.160
Event type           : Pt
: Titan occs: topocentric, not geocentric
: Not a ringed target
Observer code        : IRTF
Location             : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 4068929390694596480
2Mass ID (if available) : 17495489-2227292
ICRS Star Coord at Epoch: 17h 49m 54.89353s -22:27:29.65127s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 13.460
G magnitude          : 18.565
RP magnitude         : 16.999
BP magnitude         : 19.665
DUPflag             : 0
Distance (au)        : 9.392
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.20
Sun-Target sep (deg) : 127.88
Sun-Moon sep (deg)   : 136.80
B (ring opening deg) : 26.76
PA of pole (deg)     : 5.47
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.288
C/A sky separation (km): 1961.8
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	2047-08-13T05:46:58.123	45.26	-13.12	2575.0	-58.07	-58.08
Titan	E	2047-08-13T05:52:12.153	45.67	-14.27	2575.2	-24.24	-24.25

