

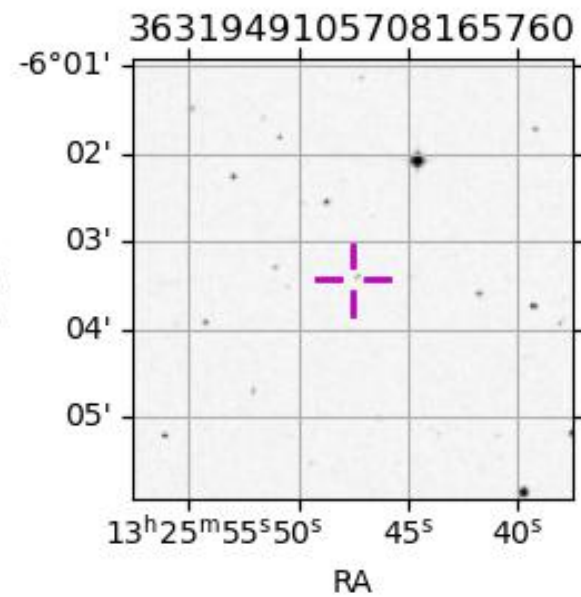
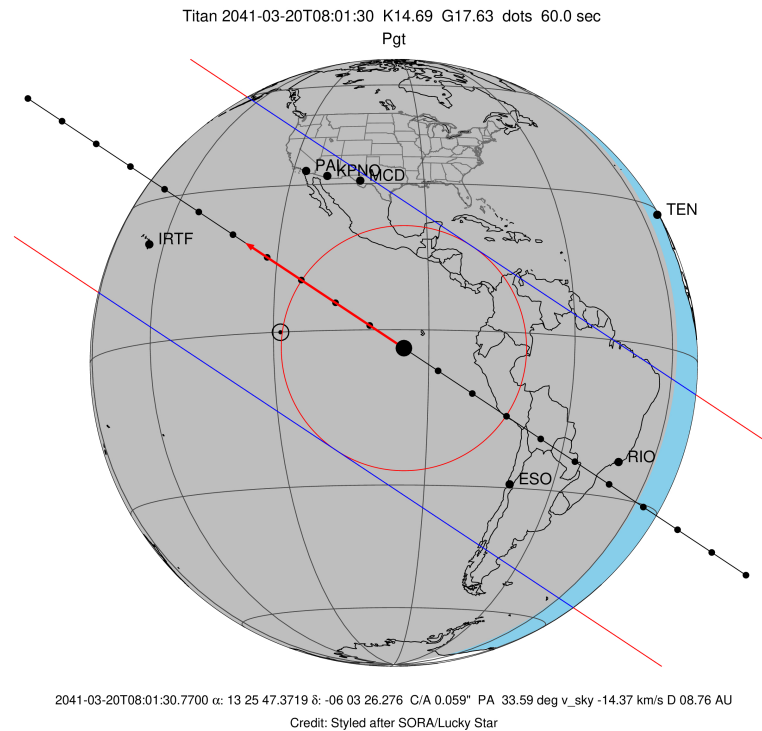
target : Titan
 target radius (km) : 2575.15
 C/A epoch : 2041-03-20T08:01:30.770
 Event type : Pgt
 : Titan occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3631949105708165760
 2Mass ID (if available) : 13254742-0603261

ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
 RUWE (>1.4 is poor) : 1.03
 K magnitude : 14.688
 G magnitude : 17.634
 RP magnitude : 16.732
 BP magnitude : 18.474
 DUPflag : 0
 Distance (au) : 8.757
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -14.37
 Sun-Target sep (deg) : 157.27
 Sun-Moon sep (deg) : 5.72
 B (ring opening deg) : 12.30
 PA of pole (deg) : -2.08
 Pole direction: RA (deg): 39.48270
 Dec (deg): 83.42790
 C/A sky separation (") : 0.059
 C/A sky separation (km) : 374.5
 NAIF SPICE kernels : RAJobs_U111+rgf16.spk

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

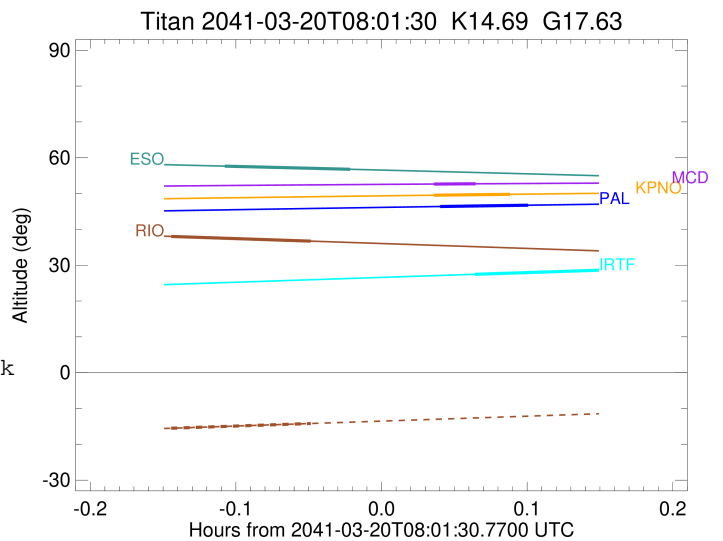
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	MAR 20 08:03 - MAR 20 08:07	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 20 08:03 - MAR 20 08:06	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 20 08:03 - MAR 20 08:05	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+ +	MAR 20 08:05 - MAR 20 08:10	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+ +	MAR 20 07:52 - MAR 20 07:58	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	MAR 20 07:55 - MAR 20 08:00	Pie
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            : 2041-03-20T08:05:44.770
Event type           : Pgt
: Titan occs: geocentric, topocentric
: 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       : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 14.688
G magnitude          : 17.634
RP magnitude         : 16.732
BP magnitude         : 18.474
DUPflag             : 0
Distance (au)        : 8.757
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg) : 157.27
Sun-Moon sep (deg)   : 6.35
B (ring opening deg) : 12.30
PA of pole (deg)     : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.316
C/A sky separation (km): 2008.7
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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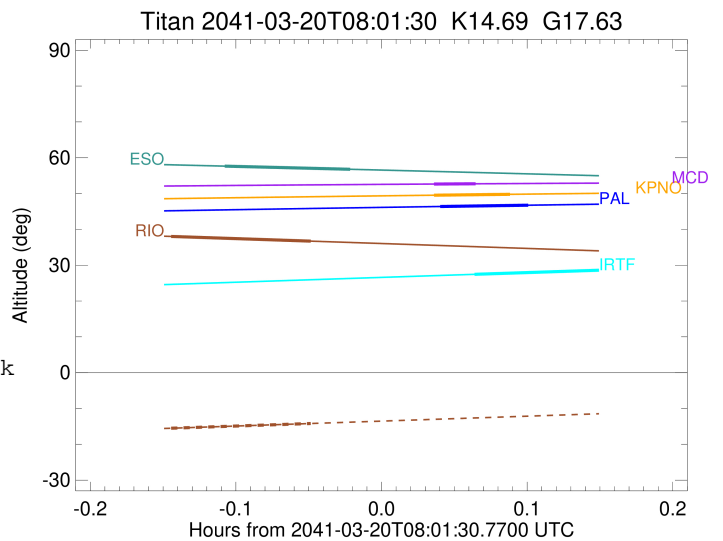


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2041-03-20T08:03:54.872	46.38	-56.72	2575.1	77.10	77.11
Titan	E	2041-03-20T08:07:34.666	46.74	-56.65	2575.2	16.03	16.04

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2041-03-20T08:05:15.070
Event type           : Pgt
: Titan occs: geocentric, topocentric
: 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       : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 14.688
G magnitude          : 17.634
RP magnitude         : 16.732
BP magnitude         : 18.474
DUPflag             : 0
Distance (au)        : 8.757
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg) : 157.27
Sun-Moon sep (deg)   : 6.29
B (ring opening deg) : 12.30
PA of pole (deg)     : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (" ) : 0.341
C/A sky separation (km) : 2162.9
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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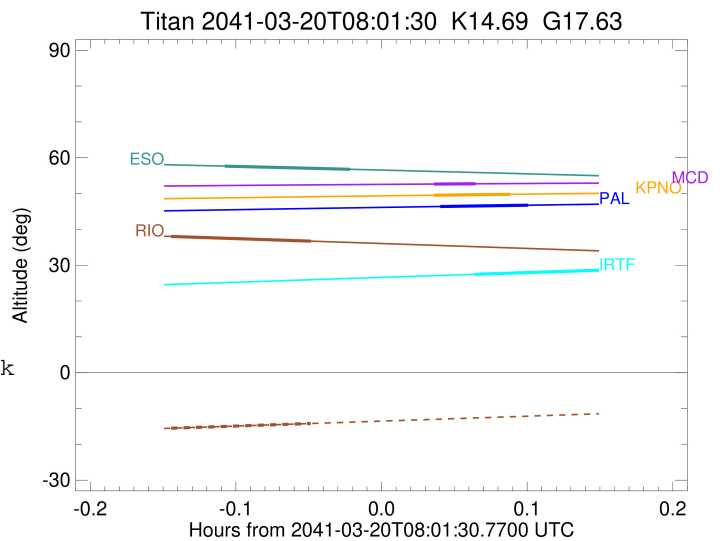


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2041-03-20T08:03:39.852	49.53	-57.40	2575.2	77.55	77.55
Titan	E	2041-03-20T08:06:50.290	49.78	-57.22	2575.2	21.77	21.78

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2041-03-20T08:04:31.470
Event type           : Pgt
: Titan occs: geocentric, topocentric
: 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       : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 14.688
G magnitude           : 17.634
RP magnitude          : 16.732
BP magnitude          : 18.474
DUPflag              : 0
Distance (au)         : 8.757
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg) : 157.27
Sun-Moon sep (deg)   : 6.20
B (ring opening deg) : 12.30
PA of pole (deg)     : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.386
C/A sky separation (km) : 2454.5
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
    
```

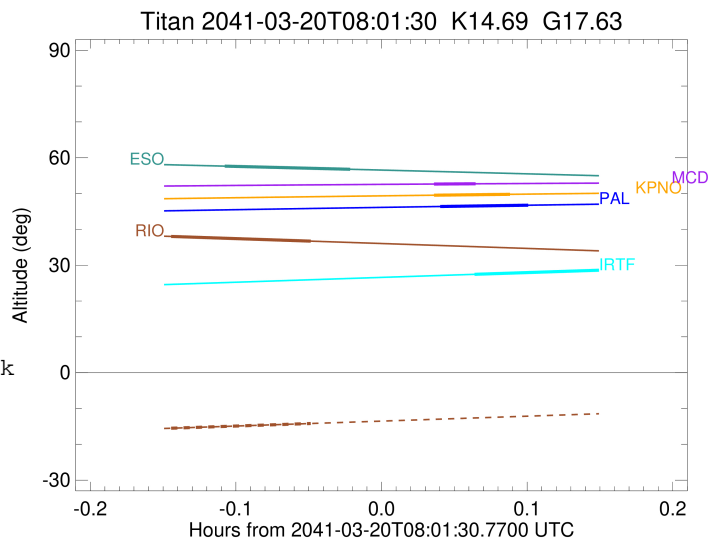


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2041-03-20T08:03:38.455	52.65	-56.28	2575.1	68.97	68.98
Titan	E	2041-03-20T08:05:24.483	52.72	-56.09	2575.2	36.58	36.60

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2041-03-20T08:08:00.530
Event type           : Pgt
: Titan occs: geocentric, topocentric
: 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       : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 14.688
G magnitude           : 17.634
RP magnitude          : 16.732
BP magnitude          : 18.474
DUPflag              : 0
Distance (au)         : 8.757
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg) : 157.27
Sun-Moon sep (deg)   : 6.59
B (ring opening deg) : 12.30
PA of pole (deg)     : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.171
C/A sky separation (km) : 1083.3
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
    
```

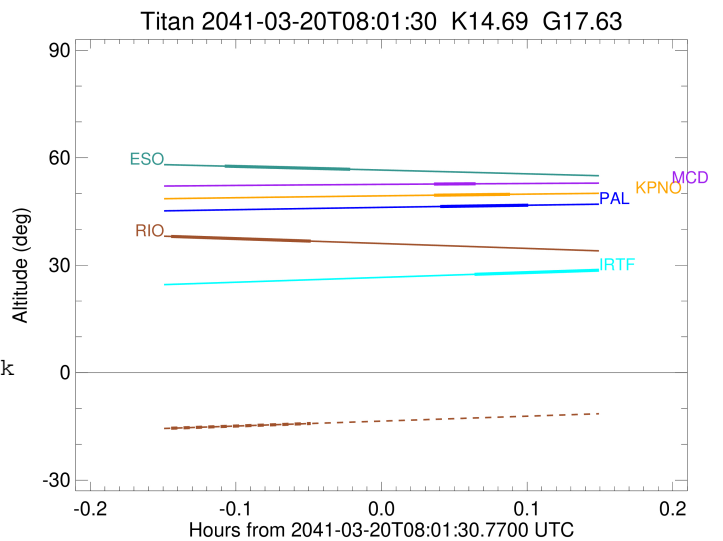


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Titan	I	2041-03-20T08:05:19.815	27.45	-49.62	2575.2	9.92	9.93
Titan	E	2041-03-20T08:10:41.219	28.64	-50.76	2575.1	-57.71	-57.72

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch             : 2041-03-20T07:55:42.810
Event type            : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code         : RIO
Location              : Rio de Janeiro
Latitude (deg)        : -22.89506
E. Longitude (deg)    : 316.77708
Altitude (km)         : 0.033
Gaia source ID        : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor)  : 1.03
K magnitude           : 14.688
G magnitude           : 17.634
RP magnitude          : 16.732
BP magnitude          : 18.474
DUPflag              : 0
Distance (au)         : 8.757
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg)  : 157.27
Sun-Moon sep (deg)    : 5.04
B (ring opening deg) : 12.30
PA of pole (deg)      : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation (") : 0.074
C/A sky separation (km) : 467.9
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
    
```



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	2041-03-20T07:52:49.514	38.03	-15.51	2575.1	44.35	44.36
Titan	E	2041-03-20T07:58:36.160	36.71	-14.19	2575.1	-24.15	-24.16

```

target                : Titan
target radius (km)   : 2575.15
C/A epoch            : 2041-03-20T07:57:38.270
Event type           : Pgt
: Titan occs: geocentric, topocentric
: Not a ringed target
Observer code        : ESO
Location             : European Southern Obs. (3.6m)
Latitude (deg)       : -29.26097
E. Longitude (deg)   : 289.26831
Altitude (km)        : 2.400
Gaia source ID       : 3631949105708165760
2Mass ID (if available) : 13254742-0603261
ICRS Star Coord at Epoch: 13h 25m 47.37193s -06:03:26.27595s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 14.688
G magnitude           : 17.634
RP magnitude          : 16.732
BP magnitude          : 18.474
DUPflag              : 0
Distance (au)         : 8.757
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -14.37
Sun-Target sep (deg) : 157.27
Sun-Moon sep (deg)   : 5.30
B (ring opening deg) : 12.30
PA of pole (deg)     : -2.08
Pole direction: RA (deg): 39.48270
Dec (deg): 83.42790
C/A sky separation ("): 0.187
C/A sky separation (km): 1187.2
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	2041-03-20T07:55:02.699	57.65	-37.23	2575.2	7.31	7.31
Titan	E	2041-03-20T08:00:13.871	56.77	-36.20	2575.1	-59.98	-59.99

