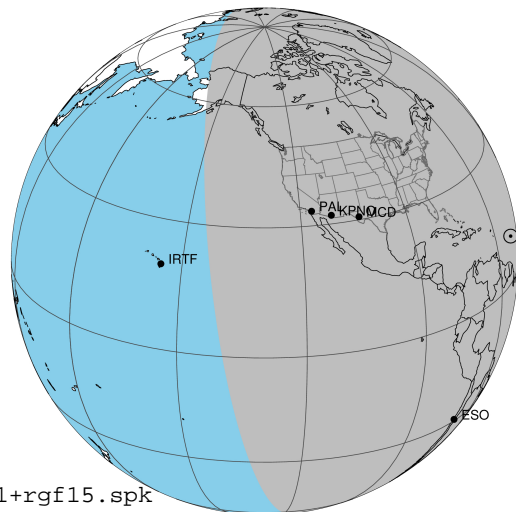


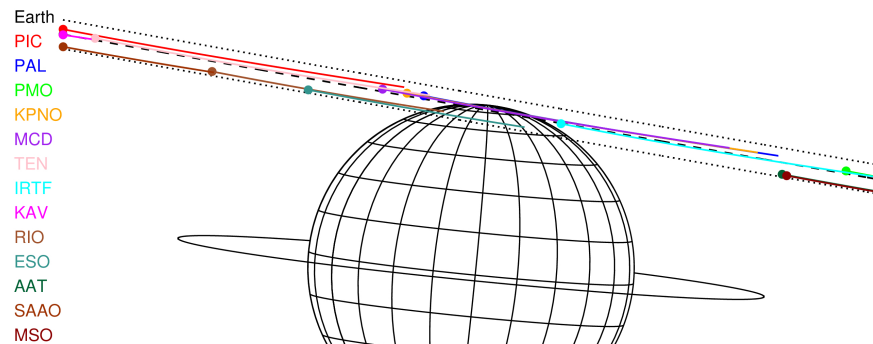
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2037-02-22T03:30:21.190
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 3412474494472909568
 2Mass ID (if available) : 04590204+2222296

Jupiter 2037-02-22T03:30:21 K8.59 G11.60 Pgt

ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
 RUWE (>1.4 is poor) : 0.98
 K magnitude : 8.585
 G magnitude : 11.596
 RP magnitude : 10.723
 BP magnitude : 12.388
 DUPflag : 0
 Distance (au) : 4.809
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 6.23
 Sun-Target sep (deg) : 102.60
 Sun-Moon sep (deg) : 26.39
 B (ring opening deg) : 2.52
 PA of pole (deg) : -5.69
 Pole direction: RA (deg): 268.05630
 Dec (deg): 64.49687
 C/A sky separation (") : 19.799
 C/A sky separation (km) : 69050.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

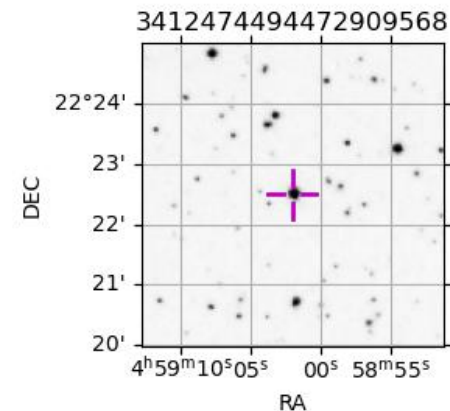


2037-02-22T03:30:21.1900 a: 04 59 02.0364 s: +22 22 29.478 C/A ***** PA 169.92 deg v_sky + 6.23 km/s D 04.81 AU
 Credit: Styled after SORA/Lucky Star



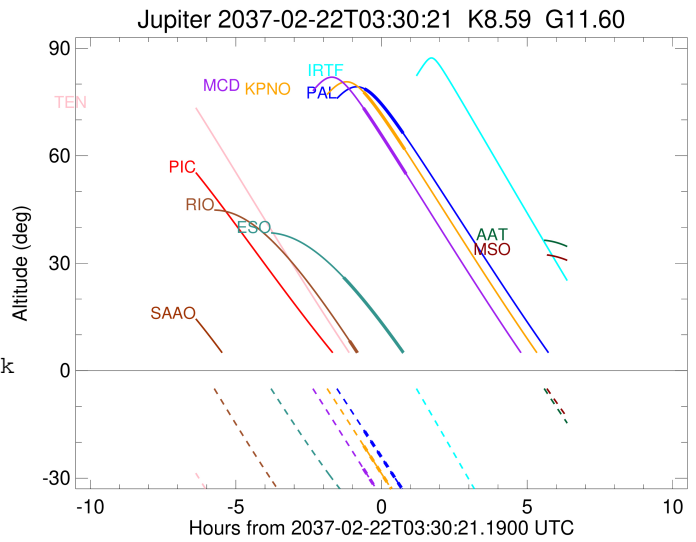
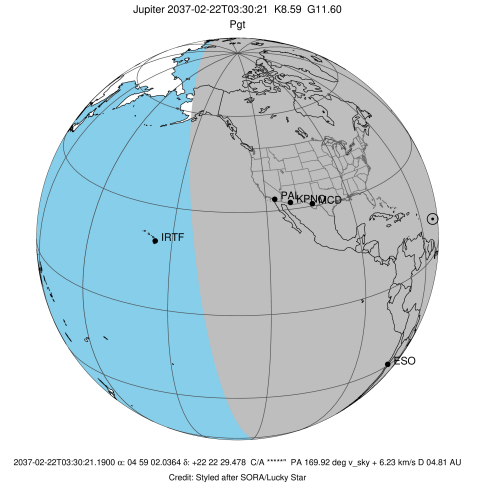
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	FEB 22 02:55 - FEB 22 04:15	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	FEB 22 02:53 - FEB 22 04:18	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	FEB 22 02:52 - FEB 22 04:21	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	+	FEB 22 02:24 - FEB 22 02:24	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	FEB 22 02:12 - FEB 22 02:12	Pin
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



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-02-22T03:35:16.030
Event type            : Pgt
: Jupiter 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        : 3412474494472909568
2Mass ID (if available) : 04590204+2222296
ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.585
G magnitude           : 11.596
RP magnitude          : 10.723
BP magnitude          : 12.388
DUPflag              : 0
Distance (au)         : 4.809
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 6.23
Sun-Target sep (deg) : 102.60
Sun-Moon sep (deg)   : 26.99
B (ring opening deg) : 2.52
PA of pole (deg)     : -5.69
Pole direction: RA (deg): 268.05630
Dec (deg): 64.49687
C/A sky separation ("): 20.089
C/A sky separation (km): 70060.9
NAIF SPICE kernels   : RAJobs_U111+rgf15.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
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

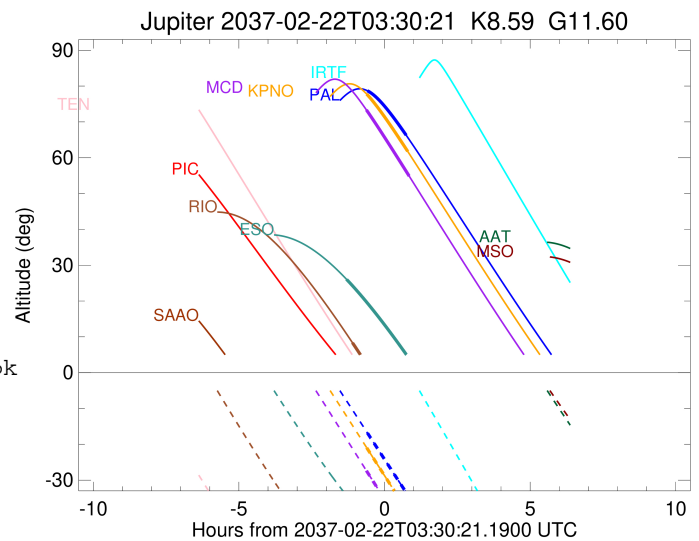
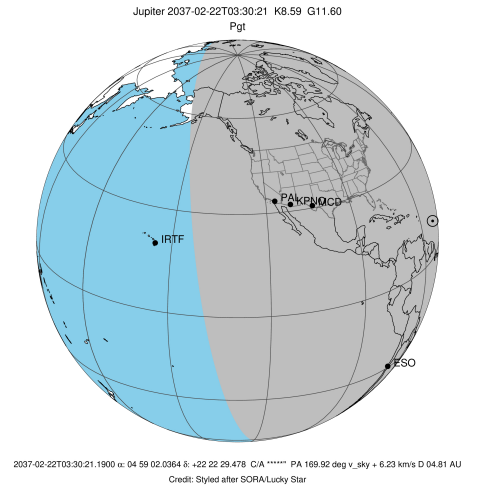


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-02-22T02:55:15.614	78.67	-16.85	71483.4	82.90	83.73
Jupiter	E	2037-02-22T04:15:05.995	66.26	-33.46	71484.0	73.83	75.66

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-02-22T03:36:06.100
Event type            : Pgt
: Jupiter 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        : 3412474494472909568
2Mass ID (if available) : 04590204+2222296
ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.585
G magnitude           : 11.596
RP magnitude          : 10.723
BP magnitude          : 12.388
DUPflag              : 0
Distance (au)         : 4.809
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 6.23
Sun-Target sep (deg) : 102.60
Sun-Moon sep (deg)   : 27.05
B (ring opening deg) : 2.52
PA of pole (deg)     : -5.69
Pole direction: RA (deg): 268.05630
Dec (deg): 64.49687
C/A sky separation (") : 20.037
C/A sky separation (km) : 69879.3
NAIF SPICE kernels   : RAJobs_U111+rgf15.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
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

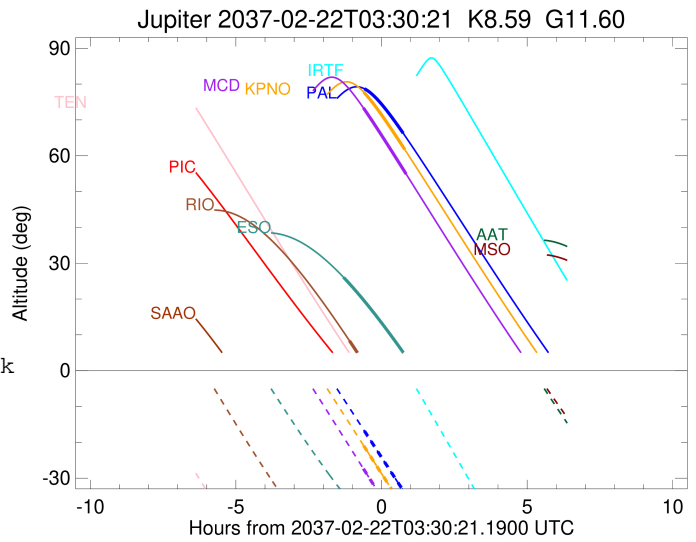
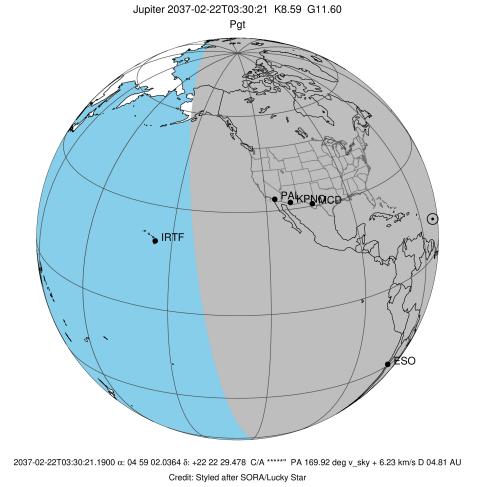


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-02-22T02:53:38.917	77.76	-20.94	71483.5	82.10	83.03
Jupiter	E	2037-02-22T04:18:18.832	61.73	-38.76	71484.0	73.28	75.17

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2037-02-22T03:37:15.550
Event type           : Pgt
: Jupiter 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       : 3412474494472909568
2Mass ID (if available) : 04590204+2222296
ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.585
G magnitude           : 11.596
RP magnitude         : 10.723
BP magnitude         : 12.388
DUPflag              : 0
Distance (au)        : 4.809
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.23
Sun-Target sep (deg) : 102.60
Sun-Moon sep (deg)   : 27.12
B (ring opening deg) : 2.52
PA of pole (deg)     : -5.69
Pole direction: RA (deg): 268.05630
Dec (deg): 64.49687
C/A sky separation (") : 19.994
C/A sky separation (km) : 69731.4
NAIF SPICE kernels   : RAJobs_U111+rgf15.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
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

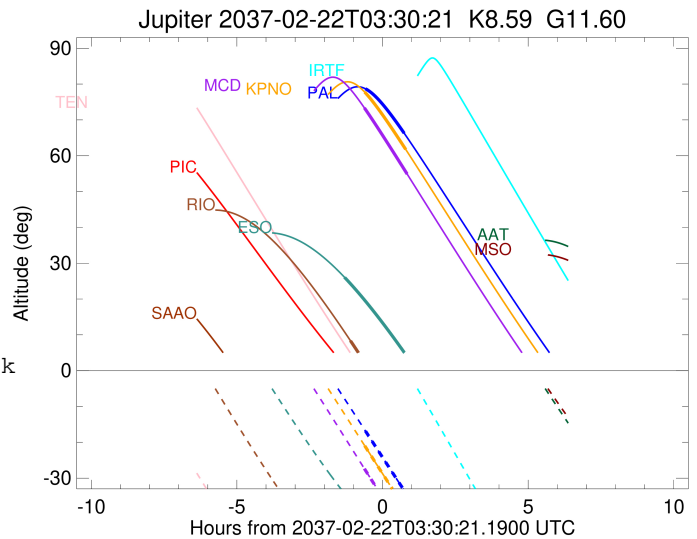
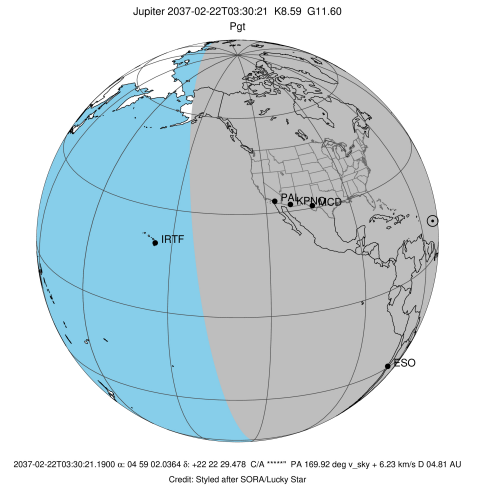


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-02-22T02:52:58.936	73.36	-27.34	71483.5	81.38	82.39
Jupiter	E	2037-02-22T04:21:12.617	54.86	-45.94	71484.1	72.96	74.89

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2037-02-22T03:40:14.420
Event type           : Pgt
: Jupiter 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       : 3412474494472909568
2Mass ID (if available) : 04590204+2222296
ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
RUWE (>1.4 is poor) : 0.98
K magnitude          : 8.585
G magnitude          : 11.596
RP magnitude         : 10.723
BP magnitude         : 12.388
DUPflag             : 0
Distance (au)        : 4.809
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.23
Sun-Target sep (deg) : 102.60
Sun-Moon sep (deg)   : 27.00
B (ring opening deg) : 2.52
PA of pole (deg)     : -5.69
Pole direction: RA (deg): 268.05630
Dec (deg): 64.49687
C/A sky separation (") : 18.861
C/A sky separation (km) : 65778.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.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
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

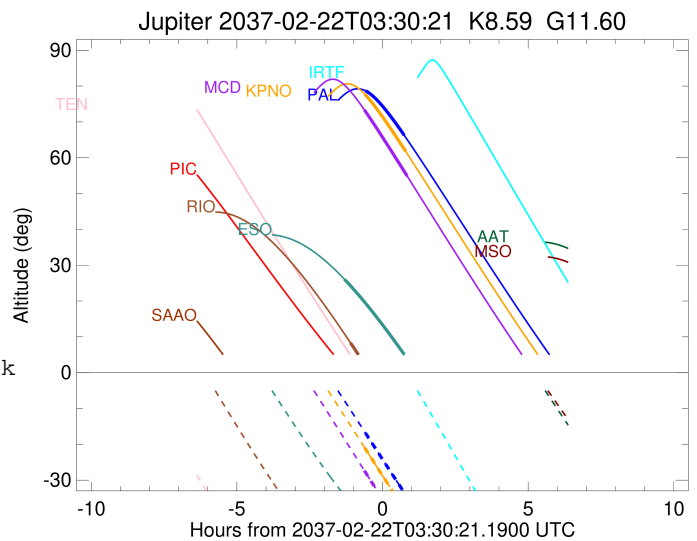
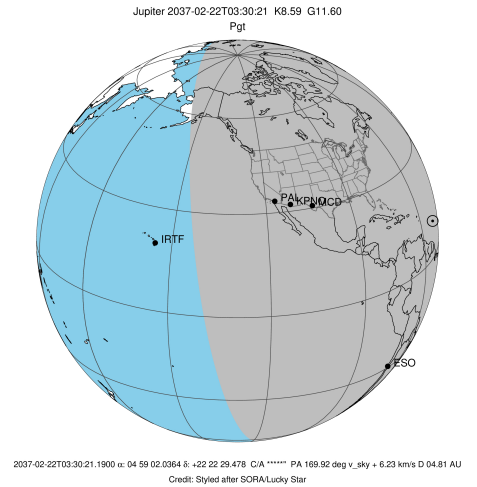


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2037-02-22T02:24:23.076	8.35	-55.57	71484.3	69.84	72.08
Jupiter	E	2037-02-22T04:54:17.659	-23.81x	-47.84	71485.0	64.01	66.76

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2037-02-22T03:38:32.810
Event type            : Pgt
: Jupiter 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       : 3412474494472909568
2Mass ID (if available) : 04590204+2222296
ICRS Star Coord at Epoch: 04h 59m 02.03639s +22:22:29.47754s
RUWE (>1.4 is poor) : 0.98
K magnitude           : 8.585
G magnitude           : 11.596
RP magnitude          : 10.723
BP magnitude          : 12.388
DUPflag              : 0
Distance (au)        : 4.809
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 6.23
Sun-Target sep (deg) : 102.60
Sun-Moon sep (deg)  : 26.95
B (ring opening deg) : 2.52
PA of pole (deg)    : -5.69
Pole direction: RA (deg): 268.05630
Dec (deg): 64.49687
C/A sky separation ("): 18.461
C/A sky separation (km): 64386.0
NAIF SPICE kernels  : RAJobs_U111+rgf15.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
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
Jupiter	I	2037-02-22T02:12:15.089	26.04	-34.31	71484.5	67.81	70.24
Jupiter	E	2037-02-22T05:02:49.541	-4.29x	-50.80	71485.4	60.92	63.92