

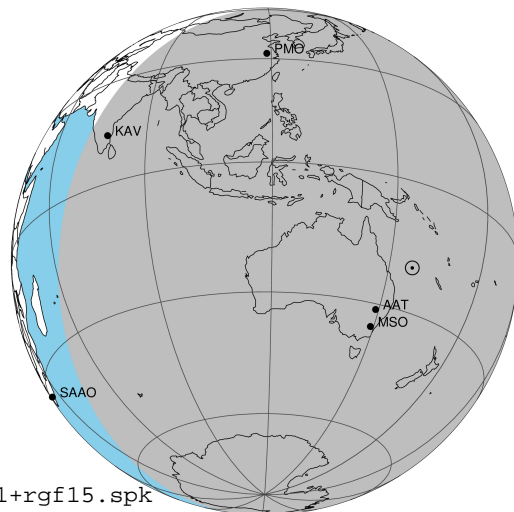
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-23T13:40:14.870  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116687537270758912  
 2Mass ID (if available) : 17352430-2303297

Jupiter 2043-07-23T13:40:14 K9.42 G13.89 Pgt

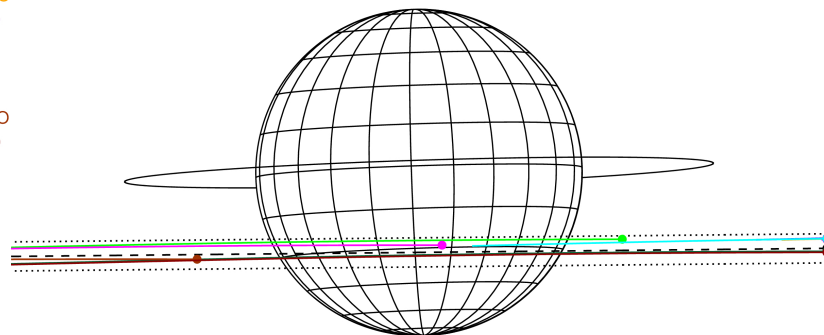
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23°03'29.99486s

RUWE (>1.4 is poor) : 6.38  
 K magnitude : 9.418  
 G magnitude : 13.893  
 RP magnitude : 12.688  
 BP magnitude : 15.352  
 DUPflag : 0  
 Distance (au) : 4.396  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -10.96  
 Sun-Target sep (deg) : 144.32  
 Sun-Moon sep (deg) : 52.82  
 B (ring opening deg) : -2.38  
 PA of pole (deg) : 1.81  
 Pole direction: RA (deg): 268.05670  
 Dec (deg): 64.49731  
 C/A sky separation (") : 10.979  
 C/A sky separation (km) : 35004.6  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-23T13:40:14 K9.42 G13.89  
 Pgt



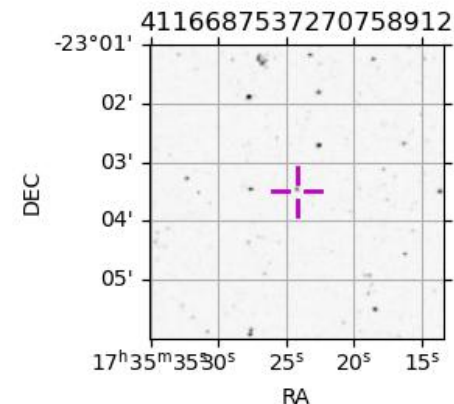
Earth  
 PAL  
 PMO  
 KPNO  
 MCD  
 IRTF  
 KAV  
 AAT  
 SAAO  
 MSO



2043-07-23T13:40:14.8700 α: 17 35 24.2787 δ: -23 03 29.995 C/A \*\*\*\*\* PA 0.57 deg v\_sky -10.96 km/s D 04.40 AU  
 Credit: Styled after SORA/Lucky Star

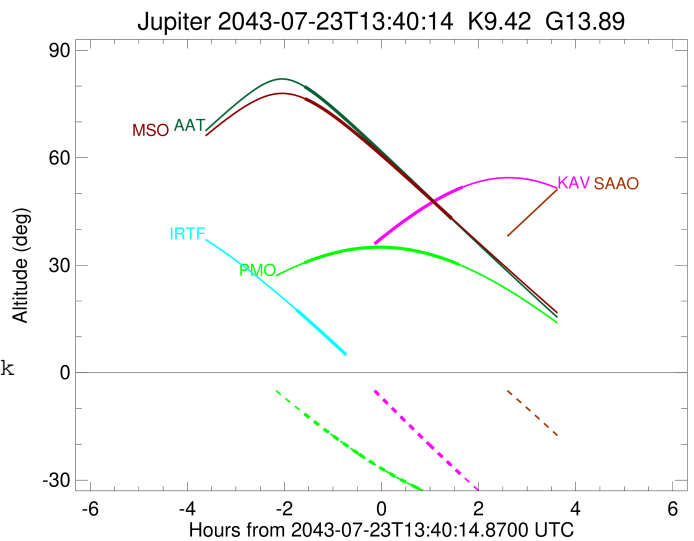
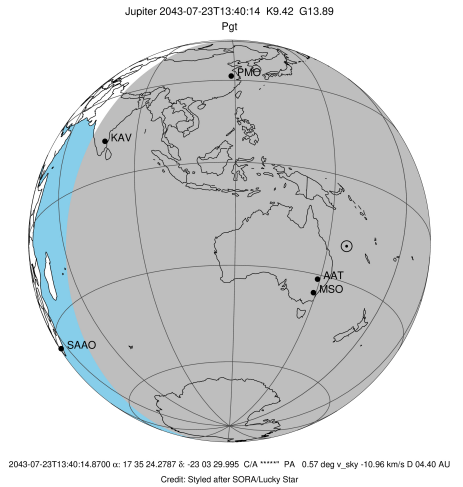
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+ +	JUL 23 12:04 - JUL 23 15:15	Pie
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
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	+	JUL 23 11:55 - JUL 23 11:55	Pin
KAV	Kavalur Observatory	12.6	78.8	+	JUL 23 15:20 - JUL 23 15:20	Pne
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	+ +	JUL 23 12:05 - JUL 23 15:07	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUL 23 12:05 - JUL 23 15:06	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-23T13:40:12.580
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : 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      : 4116687537270758912
2Mass ID (if available) : 17352430-2303297
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23:03:29.99486s
RUWE (>1.4 is poor) : 6.38
K magnitude          : 9.418
G magnitude          : 13.893
RP magnitude         : 12.688
BP magnitude         : 15.352
DUPflag             : 0
Distance (au)        : 4.396
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.32
Sun-Moon sep (deg)  : 53.31
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.81
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 9.342
C/A sky separation (km) : 29785.8
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
    
```

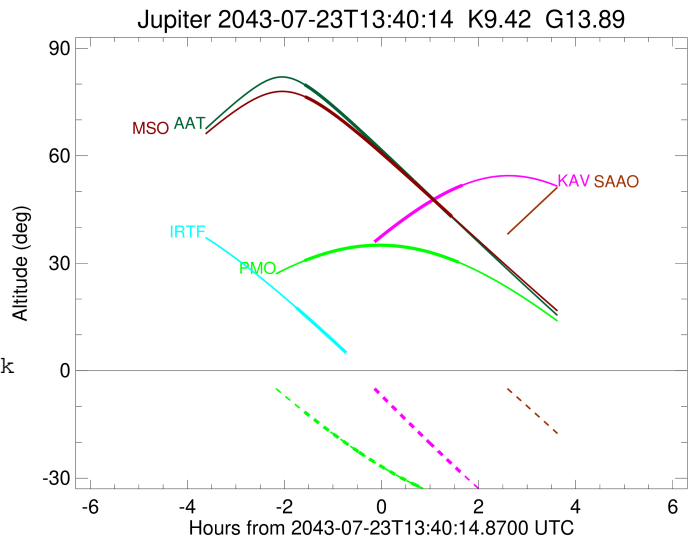
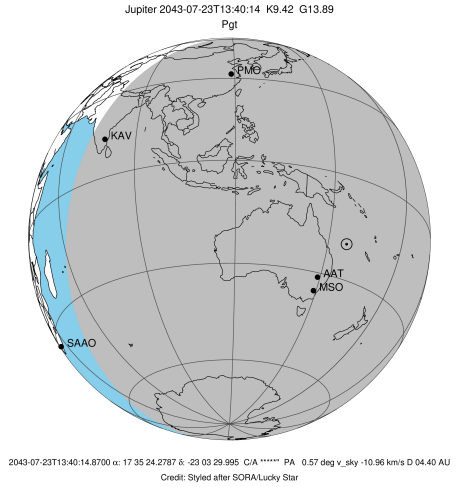


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-23T12:04:54.723	30.67	-11.47	71490.5	-26.00	-29.11
Jupiter	E	2043-07-23T15:15:40.524	30.23	-36.43	71490.8	-23.52	-26.42

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-23T13:30:24.800
Event type            : Pgt
: Jupiter 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        : 4116687537270758912
2Mass ID (if available) : 17352430-2303297
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23:03:29.99486s
RUWE (>1.4 is poor) : 6.38
K magnitude           : 9.418
G magnitude           : 13.893
RP magnitude          : 12.688
BP magnitude          : 15.352
DUPflag              : 0
Distance (au)         : 4.396
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.32
Sun-Moon sep (deg)   : 52.25
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.81
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 10.270
C/A sky separation (km) : 32744.7
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
    
```

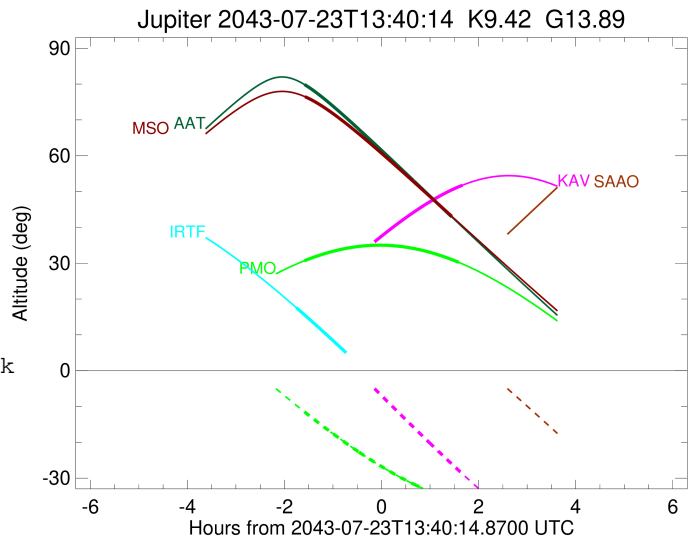
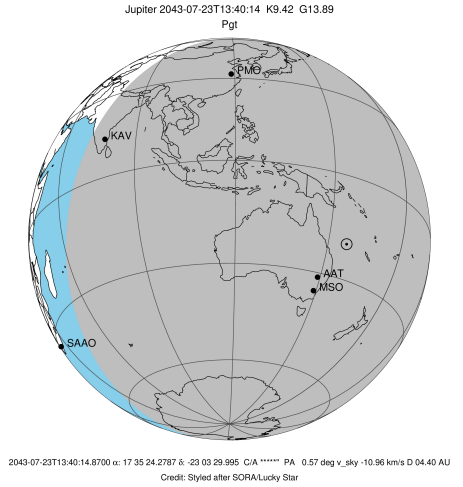


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-23T11:55:05.917	17.56	-44.95	71490.3	-27.64	-30.87
Jupiter	E	2043-07-23T15:07:30.844	-23.73x	-10.98	71490.4	-26.88	-30.05

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-23T13:46:33.410
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 4116687537270758912
2Mass ID (if available) : 17352430-2303297
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23:03:29.99486s
RUWE (>1.4 is poor) : 6.38
K magnitude          : 9.418
G magnitude          : 13.893
RP magnitude         : 12.688
BP magnitude         : 15.352
DUPflag             : 0
Distance (au)       : 4.396
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.32
Sun-Moon sep (deg)  : 53.66
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.81
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (" ) : 9.982
C/A sky separation (km) : 31828.7
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
    
```

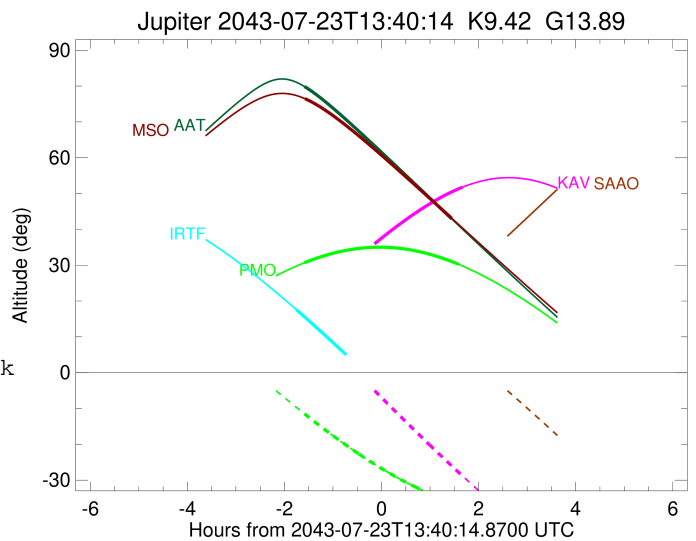
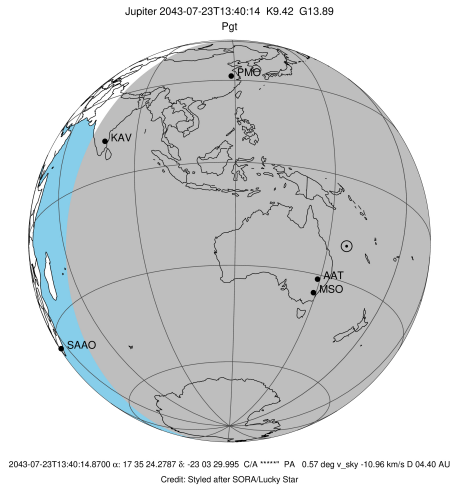


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-23T12:11:53.881	20.06	13.32x	71490.2	-28.35	-31.62
Jupiter	E	2043-07-23T15:20:24.229	51.77	-28.83	71490.6	-24.77	-27.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-23T13:35:45.510
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : AAT
Location            : Siding Spring (AAT)
Latitude (deg)      : -31.27703
E. Longitude (deg)  : 149.06608
Altitude (km)       : 1.164
Gaia source ID      : 4116687537270758912
2Mass ID (if available) : 17352430-2303297
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23:03:29.99486s
RUWE (>1.4 is poor) : 6.38
K magnitude          : 9.418
G magnitude          : 13.893
RP magnitude         : 12.688
BP magnitude         : 15.352
DUPflag             : 0
Distance (au)       : 4.396
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.32
Sun-Moon sep (deg)  : 53.23
B (ring opening deg) : -2.38
PA of pole (deg)    : 1.81
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 11.342
C/A sky separation (km) : 36161.5
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
    
```

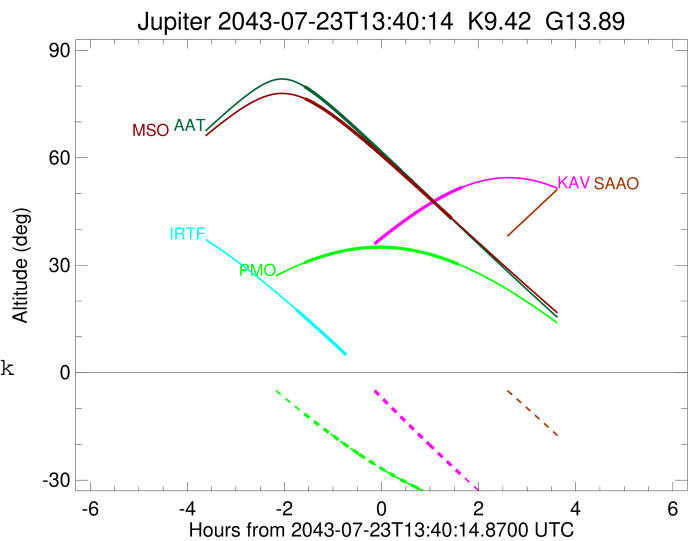
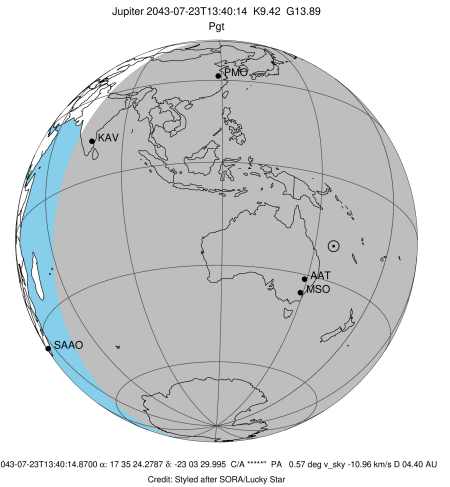


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-23T12:05:17.123	79.83	-59.86	71489.9	-31.36	-34.80
Jupiter	E	2043-07-23T15:07:00.552	42.93	-73.08	71490.1	-29.63	-32.98

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-23T13:35:57.230
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MSO
Location              : Mt. Stromlo Observatory
Latitude (deg)       : -35.32000
E. Longitude (deg)   : 149.00833
Altitude (km)        : 0.770
Gaia source ID       : 4116687537270758912
2Mass ID (if available) : 17352430-2303297
ICRS Star Coord at Epoch: 17h 35m 24.27871s -23:03:29.99486s
RUWE (>1.4 is poor) : 6.38
K magnitude           : 9.418
G magnitude           : 13.893
RP magnitude          : 12.688
BP magnitude          : 15.352
DUPflag              : 0
Distance (au)        : 4.396
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -10.96
Sun-Target sep (deg) : 144.32
Sun-Moon sep (deg)   : 53.23
B (ring opening deg) : -2.38
PA of pole (deg)     : 1.81
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49731
C/A sky separation (") : 11.476
C/A sky separation (km) : 36590.5
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	2043-07-23T12:05:42.772	76.46	-58.69	71489.8	-31.77	-35.23
Jupiter	E	2043-07-23T15:06:56.459	43.12	-70.40	71490.1	-30.00	-33.37