

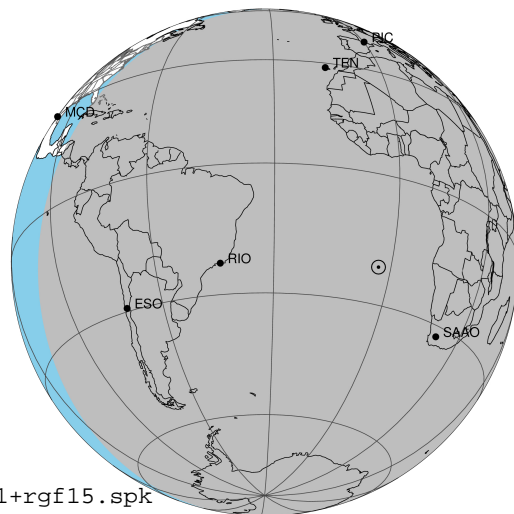
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-15T00:19:27.610
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116535495455570048
 2Mass ID (if available) : 17385064-2304029

Jupiter 2043-07-15T00:19:27 K8.32 G14.65 Pgt

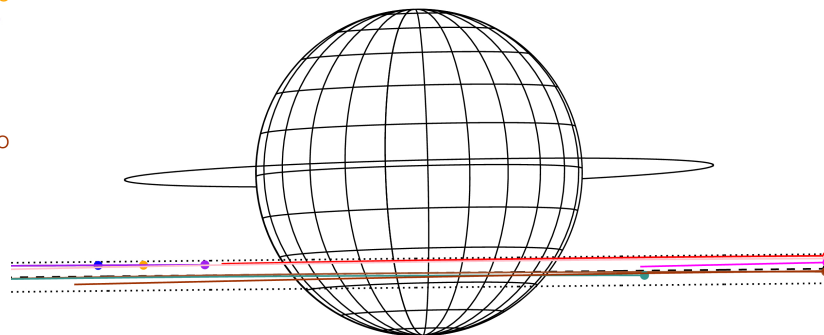
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s

RUWE (>1.4 is poor) : 0.86
 K magnitude : 8.323
 G magnitude : 14.651
 RP magnitude : 13.129
 BP magnitude : 18.043
 DUPflag : 0
 Distance (au) : 4.330
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -13.32
 Sun-Target sep (deg) : 153.27
 Sun-Moon sep (deg) : 53.03
 B (ring opening deg) : -2.40
 PA of pole (deg) : 1.44
 Pole direction: RA (deg): 268.05670
 Dec (deg): 64.49732
 C/A sky separation (") : 14.022
 C/A sky separation (km) : 44034.8
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-15T00:19:27 K8.32 G14.65
 Pgt



Earth
 PIC
 PAL
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO

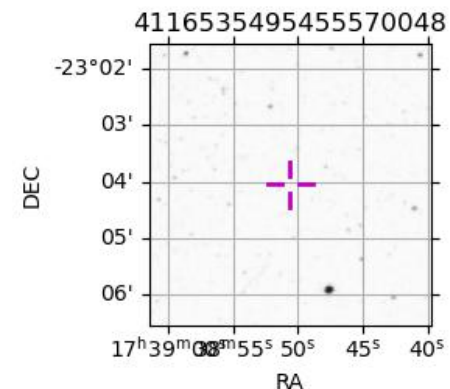


2043-07-15T00:19:27.6100 α: 17 38 50.6385 δ: -23 04 03.172 C/A ***** PA 0.61 deg v_sky -13.32 km/s D 04.33 AU
 Credit: Styled after SORA/Lucky Star

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

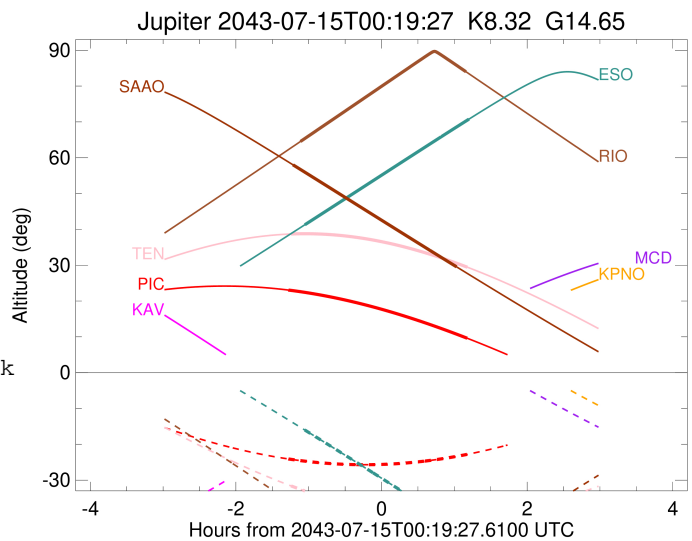
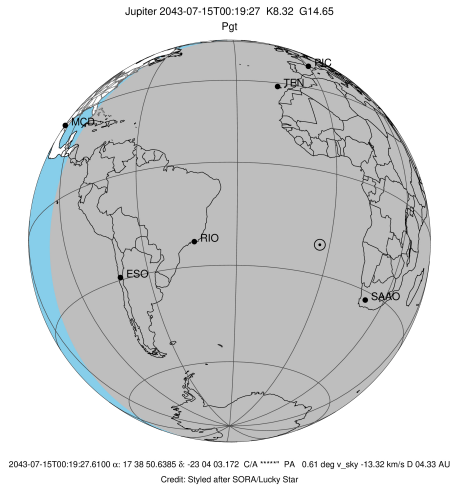
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUL 14 23:02 - JUL 15 01:30	Pie
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
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	+ +	JUL 14 23:04 - JUL 15 01:30	Pie
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	+ +	JUL 14 23:12 - JUL 15 01:29	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUL 14 23:16 - JUL 15 01:31	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 14 23:06 - JUL 15 01:21	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-15T00:16:11.590
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PIC
Location            : Pic du Midi
Latitude (deg)      : 42.93656
E. Longitude (deg)  : 0.14231
Altitude (km)       : 2.890
Gaia source ID      : 4116535495455570048
2Mass ID (if available) : 17385064-2304029
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 8.323
G magnitude          : 14.651
RP magnitude         : 13.129
BP magnitude         : 18.043
DUPflag             : 0
Distance (au)       : 4.330
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.32
Sun-Target sep (deg) : 153.27
Sun-Moon sep (deg)  : 53.47
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.44
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation ("): 12.253
C/A sky separation (km): 38479.9
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
    
```

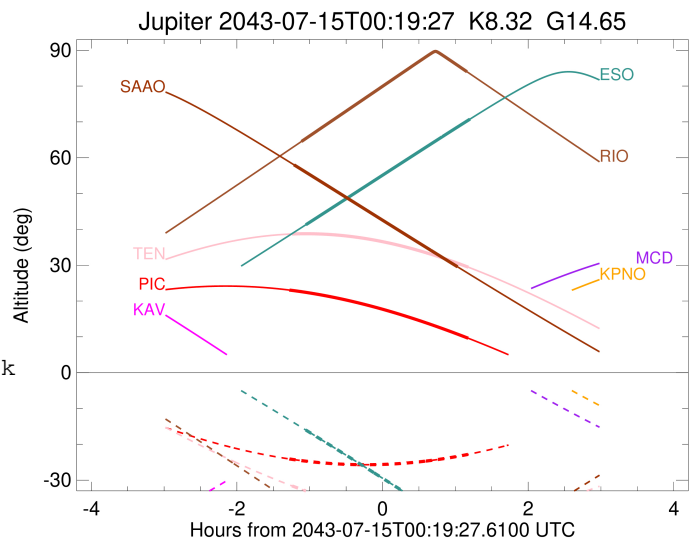
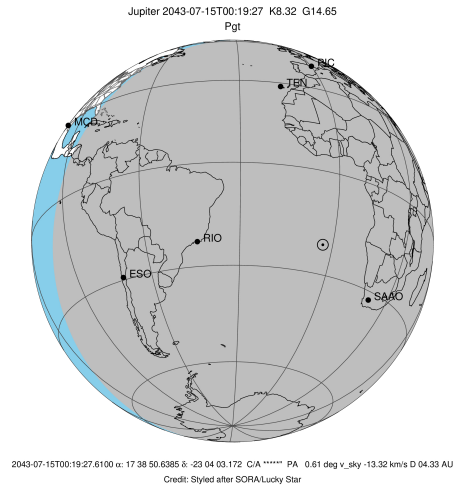


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-14T23:02:39.813	23.06	-24.08	71489.6	-33.16	-36.69
Jupiter	E	2043-07-15T01:30:06.034	9.61	-22.80	71489.8	-32.06	-35.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-15T00:17:29.980
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : TEN
Location              : Teide Obs./Tenerife
Latitude (deg)        : 28.30050
E. Longitude (deg)    : 343.48909
Altitude (km)         : 2.395
Gaia source ID        : 4116535495455570048
2Mass ID (if available) : 17385064-2304029
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s
RUWE (>1.4 is poor)  : 0.86
K magnitude           : 8.323
G magnitude           : 14.651
RP magnitude          : 13.129
BP magnitude          : 18.043
DUPflag              : 0
Distance (au)         : 4.330
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.32
Sun-Target sep (deg)  : 153.27
Sun-Moon sep (deg)   : 53.60
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.44
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 12.461
C/A sky separation (km) : 39133.8
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
    
```

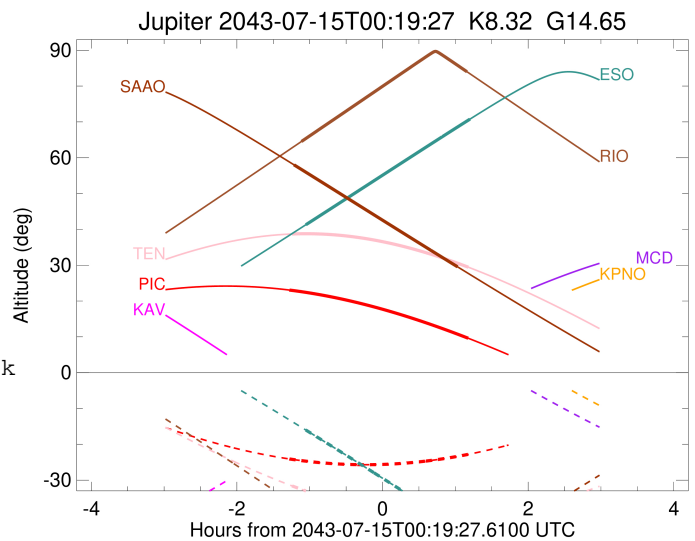
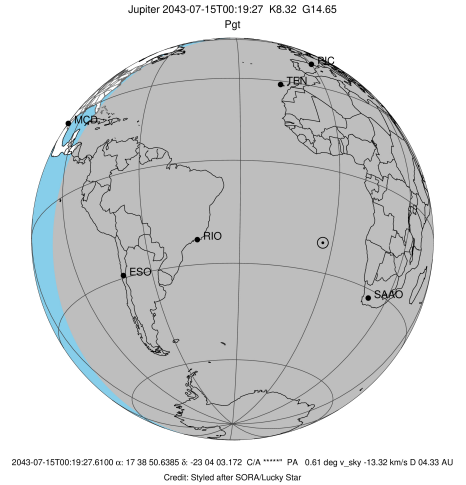


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-14T23:04:59.463	38.71	-31.62	71489.5	-33.93	-37.49
Jupiter	E	2043-07-15T01:30:15.049	29.43	-40.12	71489.7	-32.59	-36.09

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-15T00:20:56.630
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      : 4116535495455570048
2Mass ID (if available) : 17385064-2304029
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s
RUWE (>1.4 is poor) : 0.86
K magnitude          : 8.323
G magnitude          : 14.651
RP magnitude         : 13.129
BP magnitude         : 18.043
DUPflag             : 0
Distance (au)       : 4.330
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.32
Sun-Target sep (deg) : 153.27
Sun-Moon sep (deg)  : 53.65
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.44
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 14.024
C/A sky separation (km) : 44043.4
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
    
```

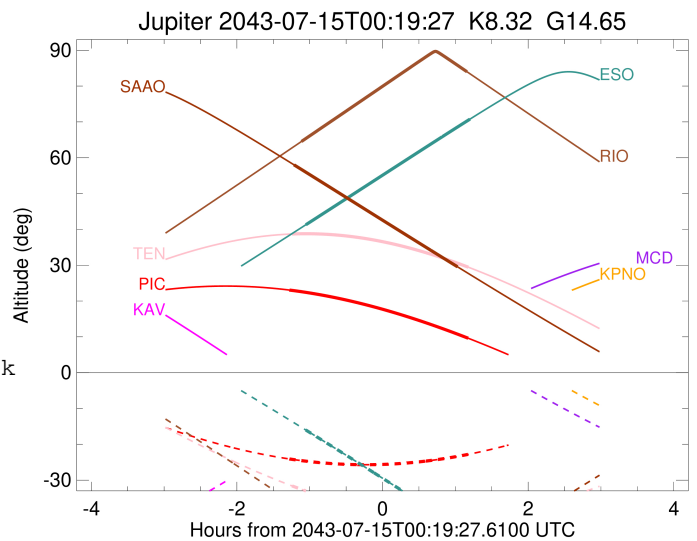
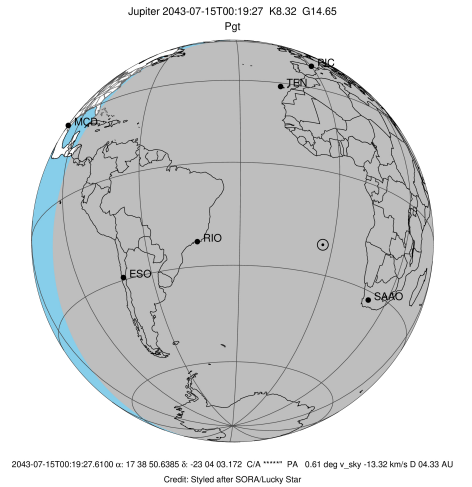


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-14T23:12:41.475	64.53	-37.96	71488.9	-39.07	-42.76
Jupiter	E	2043-07-15T01:29:07.771	83.98	-69.22	71489.1	-37.12	-40.78

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-15T00:24:04.960
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        : 4116535495455570048
2Mass ID (if available) : 17385064-2304029
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s
RUWE (>1.4 is poor) : 0.86
K magnitude           : 8.323
G magnitude           : 14.651
RP magnitude          : 13.129
BP magnitude          : 18.043
DUPflag              : 0
Distance (au)         : 4.330
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.32
Sun-Target sep (deg)  : 153.27
Sun-Moon sep (deg)   : 53.32
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.44
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 14.383
C/A sky separation (km) : 45170.0
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
    
```

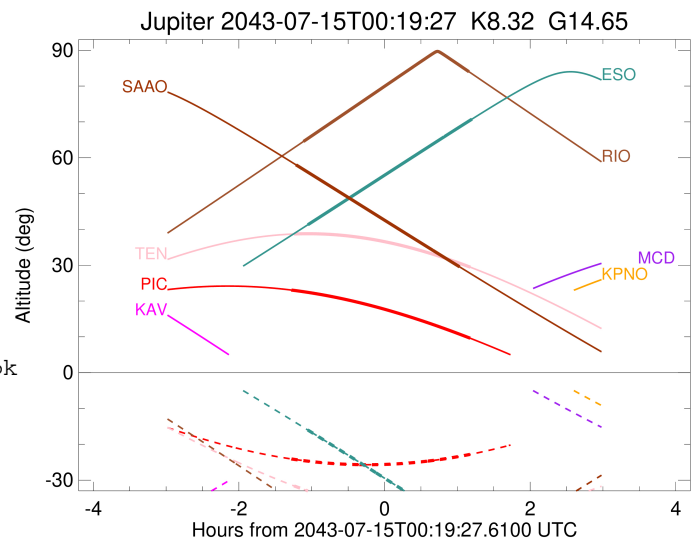
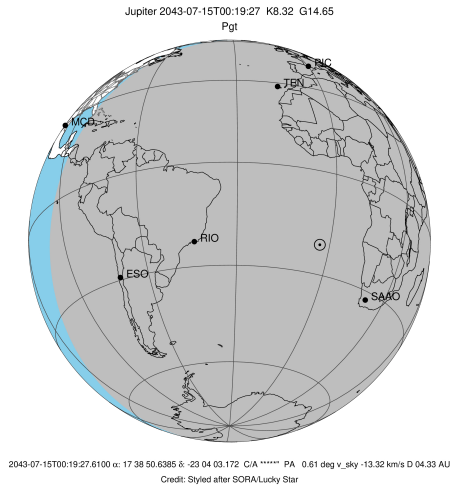


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-14T23:16:17.841	41.29	-16.02	71488.7	-40.47	-44.18
Jupiter	E	2043-07-15T01:31:33.114	70.77	-45.10	71489.0	-37.98	-41.66

```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2043-07-15T00:13:39.170
Event type             : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code          : SAAO
Location               : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)         : -32.37953
E. Longitude (deg)    : 20.81070
Altitude (km)         : 1.768
Gaia source ID        : 4116535495455570048
2Mass ID (if available) : 17385064-2304029
ICRS Star Coord at Epoch: 17h 38m 50.63849s -23:04:03.17158s
RUWE (>1.4 is poor)  : 0.86
K magnitude            : 8.323
G magnitude            : 14.651
RP magnitude          : 13.129
BP magnitude          : 18.043
DUPflag               : 0
Distance (au)         : 4.330
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -13.32
Sun-Target sep (deg)  : 153.27
Sun-Moon sep (deg)    : 53.88
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.44
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 14.591
C/A sky separation (km) : 45823.1
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	2043-07-14T23:06:33.294	58.01	-78.11	71488.7	-40.22	-43.93
Jupiter	E	2043-07-15T01:21:15.744	29.55	-53.30	71488.8	-39.55	-43.25