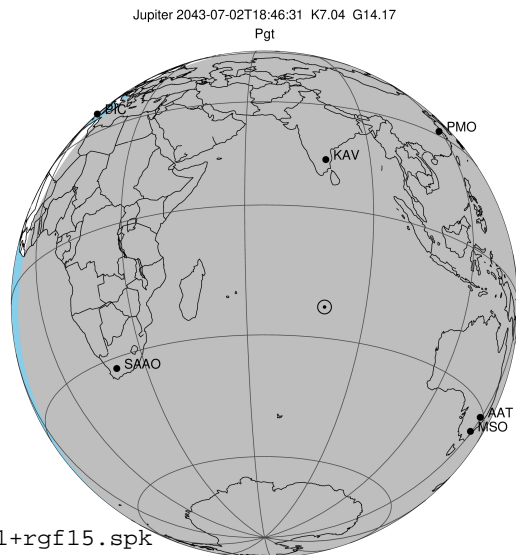


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-02T18:46:31.980
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068824864004374784
 2Mass ID (if available) : 17444933-2304275

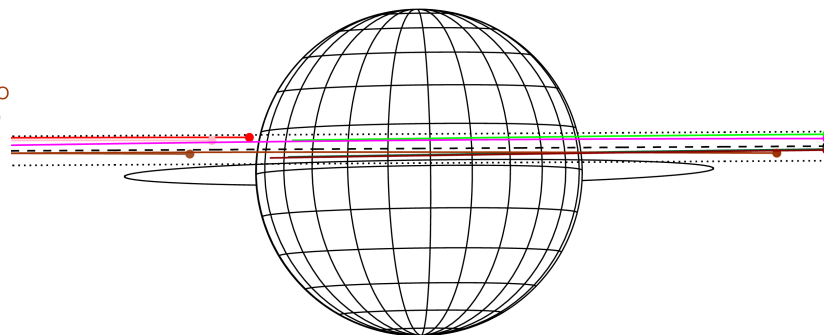
Jupiter 2043-07-02T18:46:31 K7.04 G14.17 Pgt

ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
 RUWE (>1.4 is poor) : 1.02
 K magnitude : 7.043
 G magnitude : 14.170
 RP magnitude : 12.443
 BP magnitude : 18.129
 DUPflag : 0
 Distance (au) : 4.269
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -15.62
 Sun-Target sep (deg) : 166.31
 Sun-Moon sep (deg) : 138.80
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.80
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 3.394
 C/A sky separation (km) : 10507.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 naif0012.tls
 nep097.bsp
 nep101.bsp
 sat4401.bsp



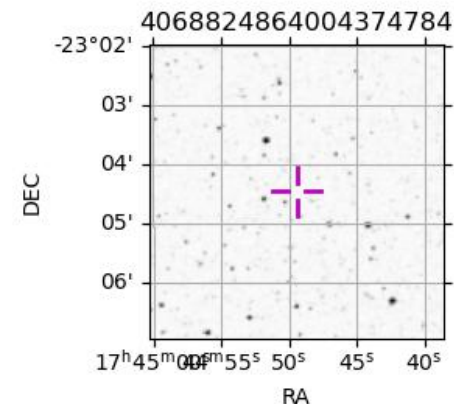
2043-07-02T18:46:31.9800 at: 17 44 49.34725 s: -23 04 27.82828 C/A 3.3833" PA 180.33 deg v_sky -15.62 km/s D 04.27 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 AAT
 SAAO
 MSO



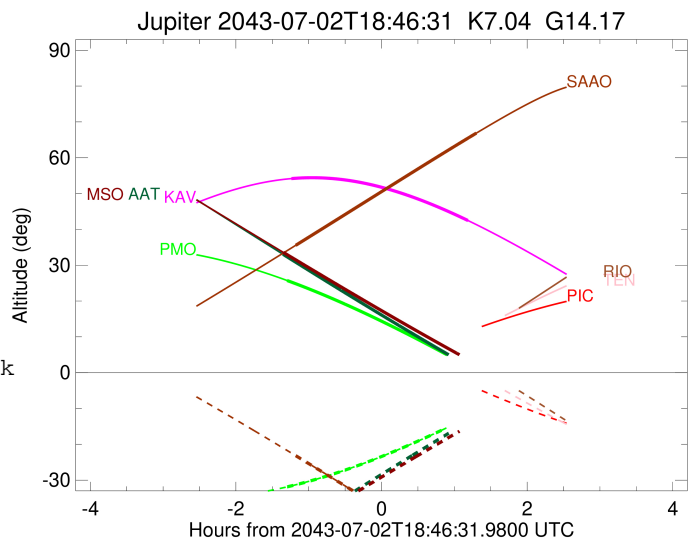
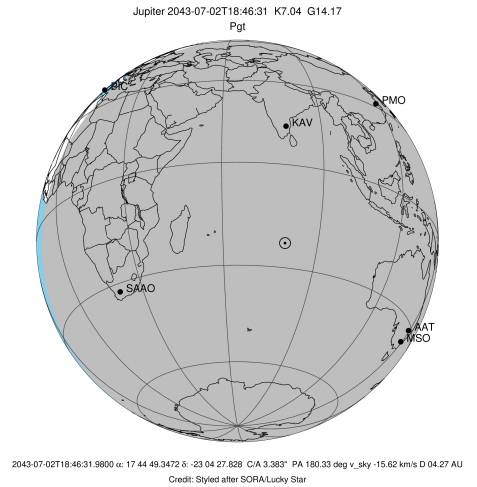
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 02 17:28 - JUL 02 17:28	Pin
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			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 02 17:32 - JUL 02 19:57	Pie
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 02 17:25 - JUL 02 17:25	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUL 02 17:35 - JUL 02 20:04	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 02 17:25 - JUL 02 17:25	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-02T18:42:02.450
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       : 4068824864004374784
2Mass ID (if available) : 17444933-2304275
ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.043
G magnitude           : 14.170
RP magnitude         : 12.443
BP magnitude         : 18.129
DUPflag              : 0
Distance (au)        : 4.269
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.31
Sun-Moon sep (deg)   : 139.52
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 4.807
C/A sky separation (km): 14882.2
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
    
```

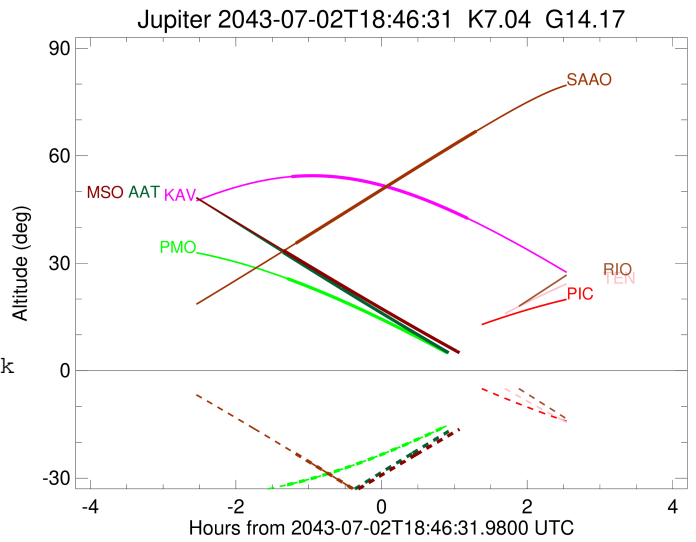
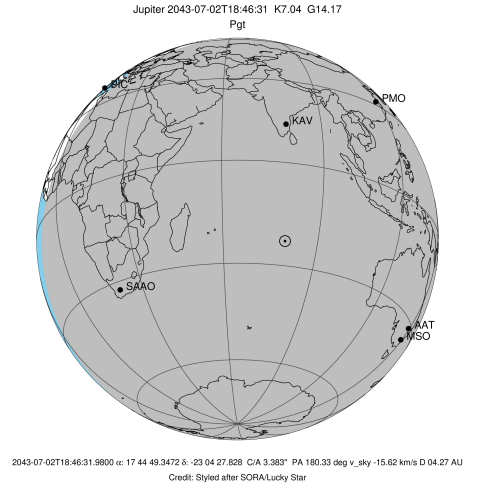


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T17:28:45.571	25.72	-31.87	71491.7	11.92	13.57
Jupiter	E	2043-07-02T19:55:48.693	2.19x	-12.84	71491.7	11.97	13.63

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T18:44:58.650
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        : 4068824864004374784
2Mass ID (if available) : 17444933-2304275
ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.043
G magnitude           : 14.170
RP magnitude          : 12.443
BP magnitude          : 18.129
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg)  : 166.31
Sun-Moon sep (deg)   : 139.52
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 4.570
C/A sky separation (km) : 14149.3
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
    
```

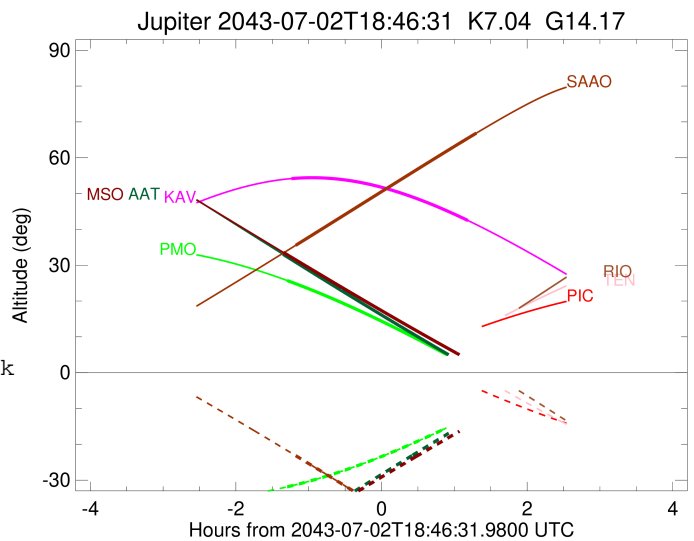
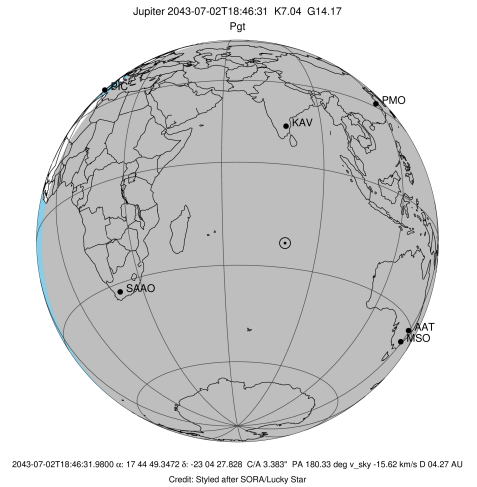


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T17:32:17.542	54.17	-49.87	71491.7	10.99	12.52
Jupiter	E	2043-07-02T19:57:50.620	42.46	-50.69	71491.7	11.62	13.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T18:40:49.830
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        : 4068824864004374784
2Mass ID (if available) : 17444933-2304275
ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.043
G magnitude           : 14.170
RP magnitude          : 12.443
BP magnitude          : 18.129
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.31
Sun-Moon sep (deg)   : 139.60
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 2.501
C/A sky separation (km) : 7741.9
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
    
```

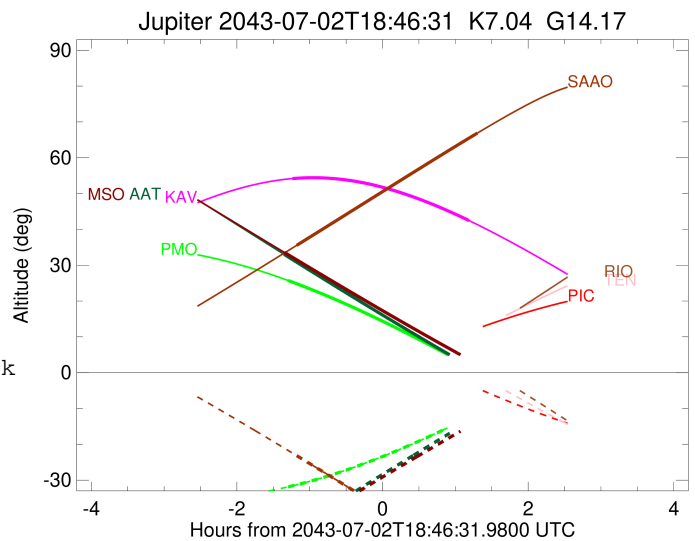
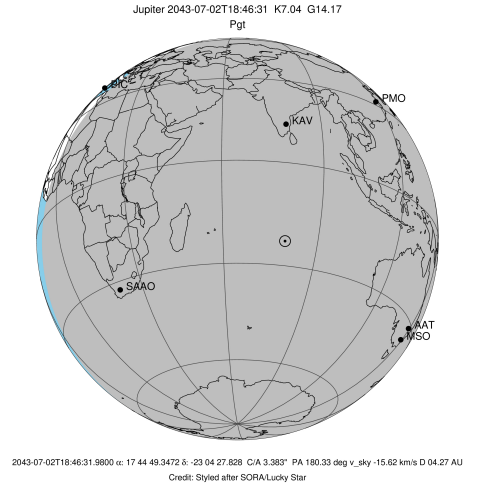


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T17:25:33.242	33.01	-45.60	71491.9	6.29	7.18
Jupiter	E	2043-07-02T19:56:45.462	2.09x	-13.88	71491.9	6.11	6.97

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T18:50:22.370
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       : 4068824864004374784
2Mass ID (if available) : 17444933-2304275
ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
RUWE (>1.4 is poor) : 1.02
K magnitude           : 7.043
G magnitude           : 14.170
RP magnitude         : 12.443
BP magnitude         : 18.129
DUPflag              : 0
Distance (au)        : 4.269
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.62
Sun-Target sep (deg) : 166.31
Sun-Moon sep (deg)   : 138.85
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 2.885
C/A sky separation (km): 8932.6
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
    
```

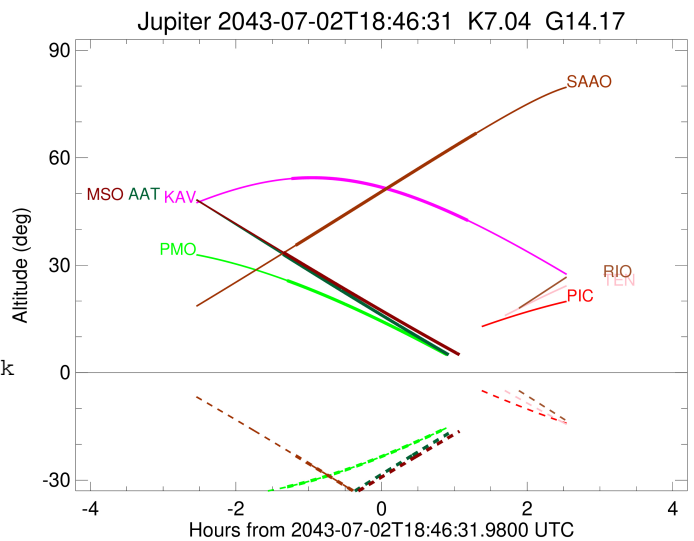
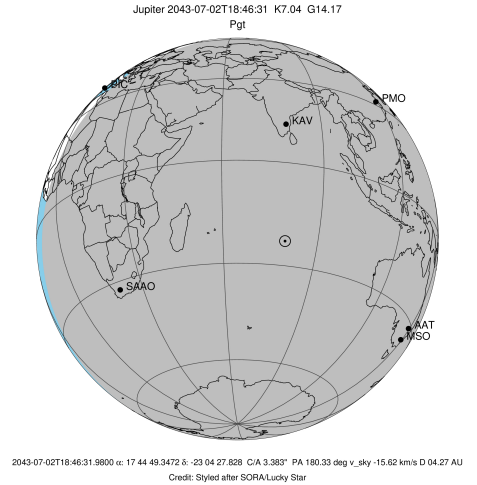


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-02T17:35:50.665	35.55	-23.17	71491.9	6.27	7.16
Jupiter	E	2043-07-02T20:04:31.769	66.83	-54.37	71491.9	7.94	9.06

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-02T18:41:05.030
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        : 4068824864004374784
2Mass ID (if available) : 17444933-2304275
ICRS Star Coord at Epoch: 17h 44m 49.34725s -23:04:27.82831s
RUWE (>1.4 is poor)  : 1.02
K magnitude           : 7.043
G magnitude           : 14.170
RP magnitude          : 12.443
BP magnitude          : 18.129
DUPflag              : 0
Distance (au)         : 4.269
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -15.62
Sun-Target sep (deg)  : 166.31
Sun-Moon sep (deg)    : 139.58
B (ring opening deg)  : -2.42
PA of pole (deg)      : 0.80
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 2.385
C/A sky separation (km) : 7385.3
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	2043-07-02T17:25:44.583	33.55	-45.61	71491.9	5.98	6.83
Jupiter	E	2043-07-02T19:57:02.897	3.84x	-15.13	71491.9	5.84	6.68