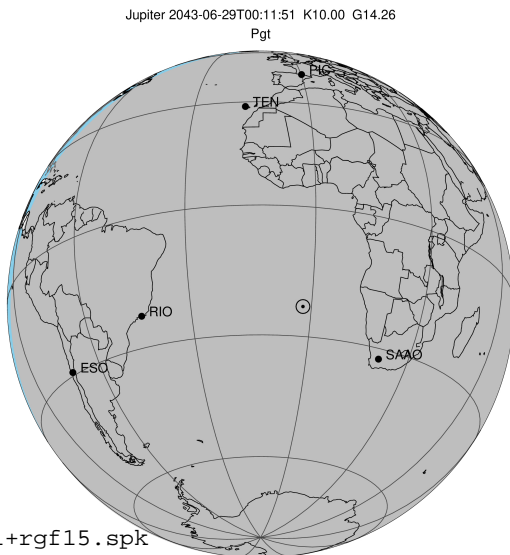


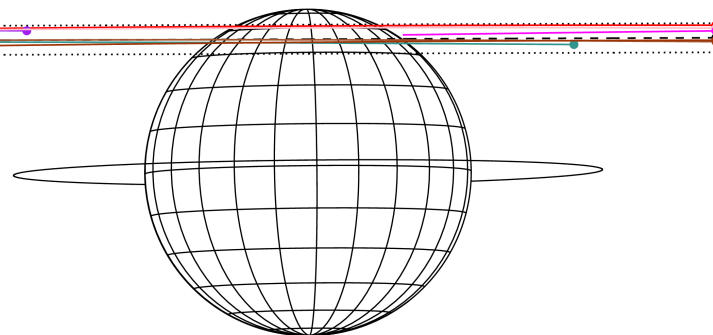
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-06-29T00:11:51.170
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068835897878219904
 2Mass ID (if available) : 17465035-2304199

Jupiter 2043-06-29T00:11:51 K10.00 G14.26 Pgt

ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
 RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.997
 G magnitude : 14.256
 RP magnitude : 13.130
 BP magnitude : 15.584
 DUPflag : 0
 Distance (au) : 4.258
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -16.03
 Sun-Target sep (deg) : 170.37
 Sun-Moon sep (deg) : 85.52
 B (ring opening deg) : -2.42
 PA of pole (deg) : 0.58
 Pole direction: RA (deg): 268.05669
 Dec (deg): 64.49732
 C/A sky separation (") : 18.908
 C/A sky separation (km) : 58399.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



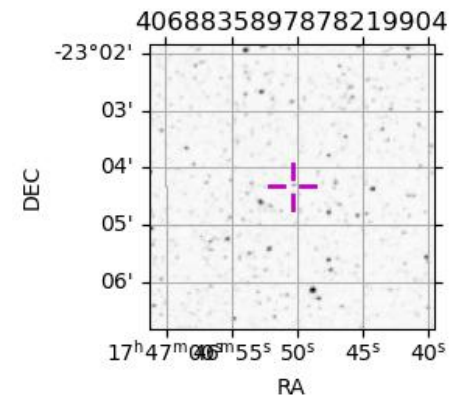
Earth
 PIC
 KPNO
 MCD
 TEN
 KAV
 RIO
 ESO
 SAAO



2043-06-29T00:11:51.1700 a: 17 46 50.3553 s: -23 04 20.104 C/A ***** PA 180.20 deg v_sky -16.03 km/s D 04.26 AU
 Credit: Styled after SORA/Lucky Star

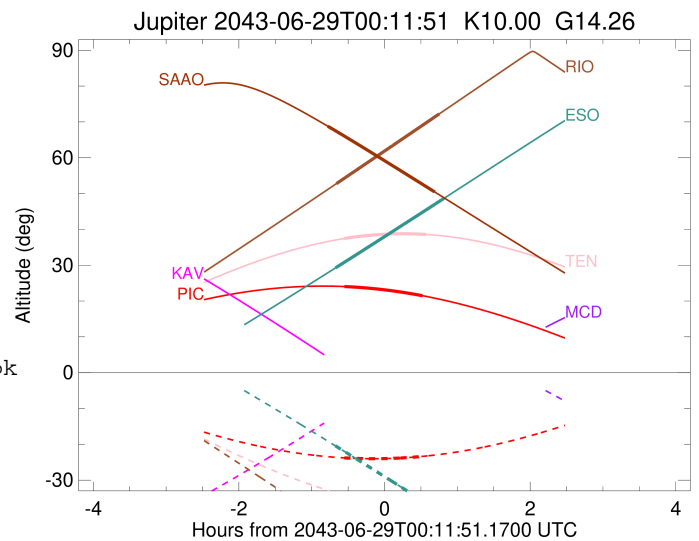
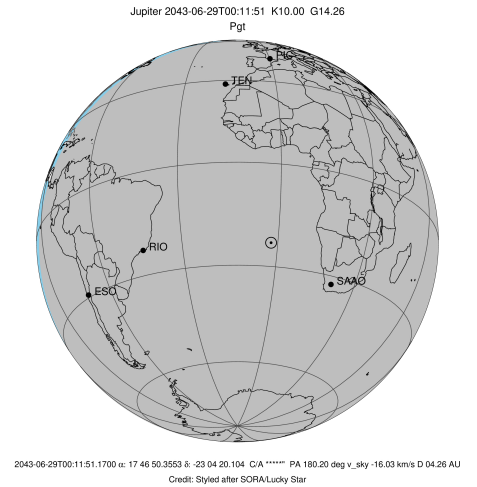
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	JUN 28 23:38 - JUN 29 00:43	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	+ +	JUN 28 23:38 - JUN 29 00:45	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	+ +	JUN 28 23:32 - JUN 29 00:56	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	JUN 28 23:31 - JUN 29 01:00	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 28 23:25 - JUN 29 00:53	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T00:10:54.730
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      : 4068835897878219904
2Mass ID (if available) : 17465035-2304199
ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.997
G magnitude          : 14.256
RP magnitude         : 13.130
BP magnitude         : 15.584
DUPflag             : 0
Distance (au)        : 4.258
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.03
Sun-Target sep (deg) : 170.37
Sun-Moon sep (deg)   : 85.89
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.58
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 20.776
C/A sky separation (km): 64167.2
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
    
```

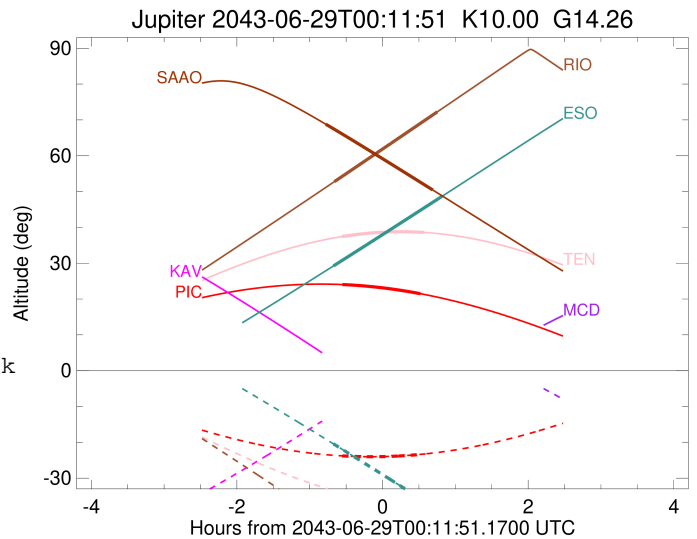
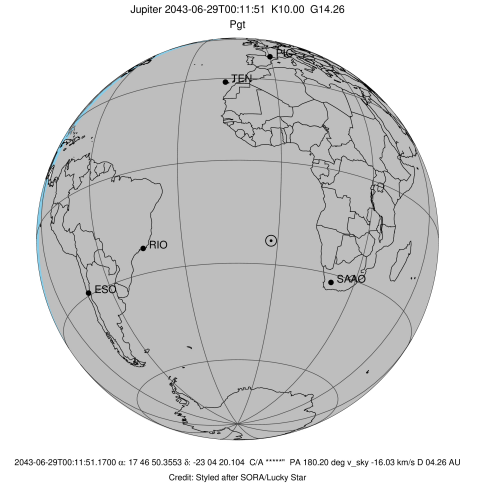


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-28T23:38:47.014	24.03	-23.78	71485.6	63.43	66.24
Jupiter	E	2043-06-29T00:43:03.818	21.48	-23.37	71485.5	63.99	66.75

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-29T00:12:11.680
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        : 4068835897878219904
2Mass ID (if available) : 17465035-2304199
ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.997
G magnitude           : 14.256
RP magnitude          : 13.130
BP magnitude          : 15.584
DUPflag              : 0
Distance (au)         : 4.258
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.03
Sun-Target sep (deg)  : 170.37
Sun-Moon sep (deg)    : 86.13
B (ring opening deg) : -2.42
PA of pole (deg)      : 0.58
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 20.516
C/A sky separation (km) : 63364.8
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
    
```

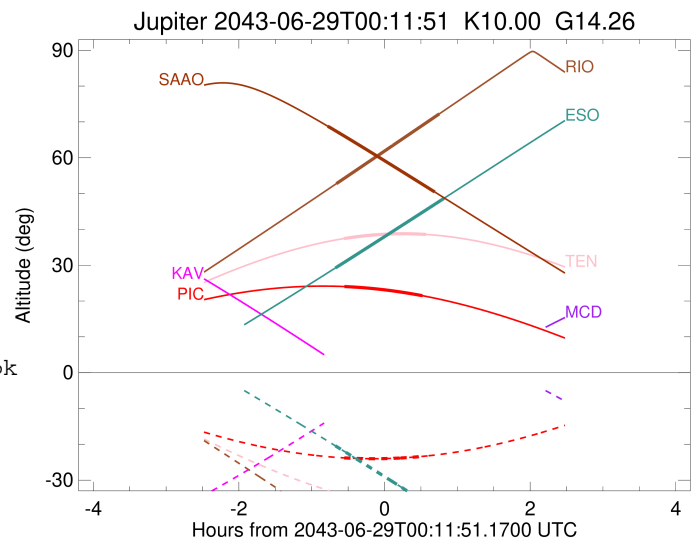
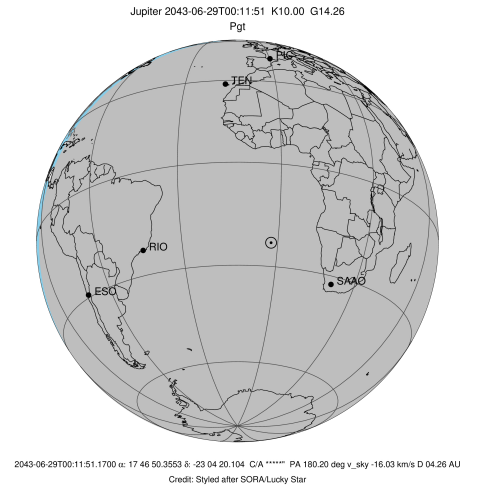


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-28T23:38:35.035	37.43	-34.17	71485.8	61.87	64.80
Jupiter	E	2043-06-29T00:45:48.076	38.58	-38.32	71485.7	62.70	65.56

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T00:14:35.790
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      : 4068835897878219904
2Mass ID (if available) : 17465035-2304199
ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.997
G magnitude          : 14.256
RP magnitude         : 13.130
BP magnitude         : 15.584
DUPflag             : 0
Distance (au)       : 4.258
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.03
Sun-Target sep (deg) : 170.37
Sun-Moon sep (deg)  : 86.40
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.58
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 18.822
C/A sky separation (km): 58132.3
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
    
```

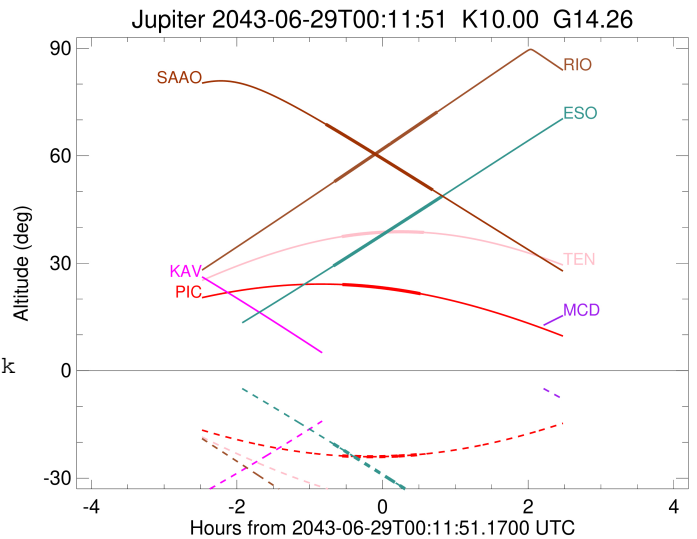
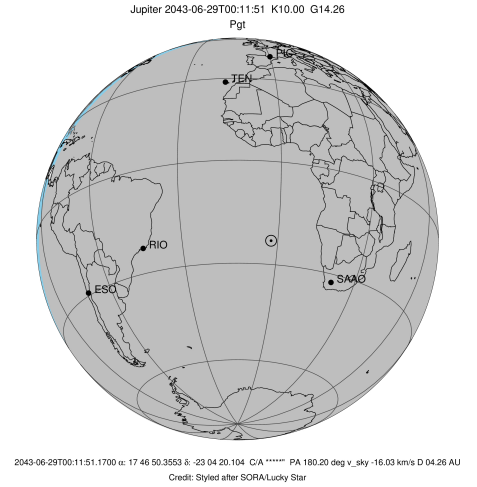


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-28T23:32:12.410	52.76	-43.30	71486.8	53.62	57.06
Jupiter	E	2043-06-29T00:56:53.593	72.21	-62.58	71486.6	54.96	58.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-29T00:16:13.870
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      : 4068835897878219904
2Mass ID (if available) : 17465035-2304199
ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.997
G magnitude          : 14.256
RP magnitude         : 13.130
BP magnitude         : 15.584
DUPflag             : 0
Distance (au)       : 4.258
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : -16.03
Sun-Target sep (deg) : 170.37
Sun-Moon sep (deg)  : 86.16
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.58
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 18.372
C/A sky separation (km) : 56742.9
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
    
```

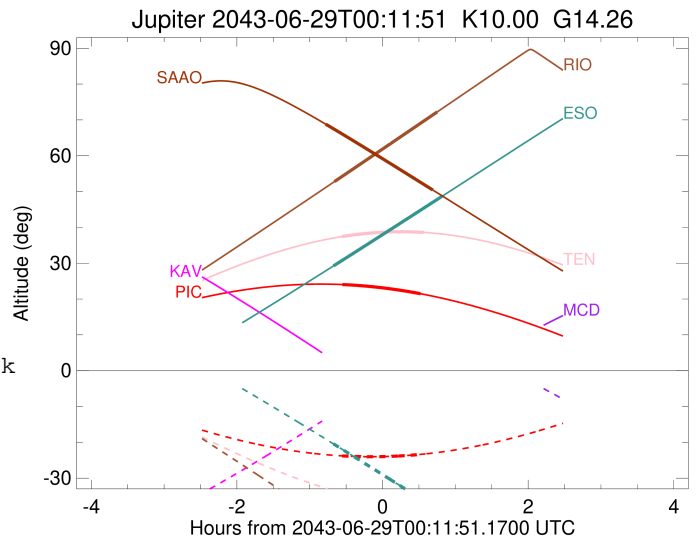
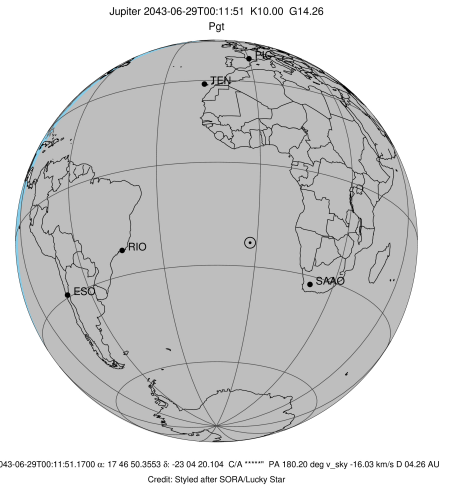


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-28T23:31:30.401	29.25	-20.45	71487.1	51.59	55.12
Jupiter	E	2043-06-29T01:00:47.152	48.63	-39.53	71486.9	53.29	56.74

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T00:09:07.570
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     : 4068835897878219904
2Mass ID (if available) : 17465035-2304199
ICRS Star Coord at Epoch: 17h 46m 50.35530s -23:04:20.10381s
RUWE (>1.4 is poor) : 0.96
K magnitude         : 9.997
G magnitude         : 14.256
RP magnitude        : 13.130
BP magnitude        : 15.584
DUPflag            : 0
Distance (au)      : 4.258
f0 (km)            : 0.00
g0 (km)            : 0.00
skyplane vel. (km/s) : -16.03
Sun-Target sep (deg) : 170.37
Sun-Moon sep (deg)  : 86.32
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.58
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (" ) : 18.472
C/A sky separation (km) : 57050.6
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	2043-06-28T23:25:14.354	68.77	-76.60	71486.9	52.74	56.22
Jupiter	E	2043-06-29T00:53:07.517	50.46	-59.37	71486.9	52.92	56.40