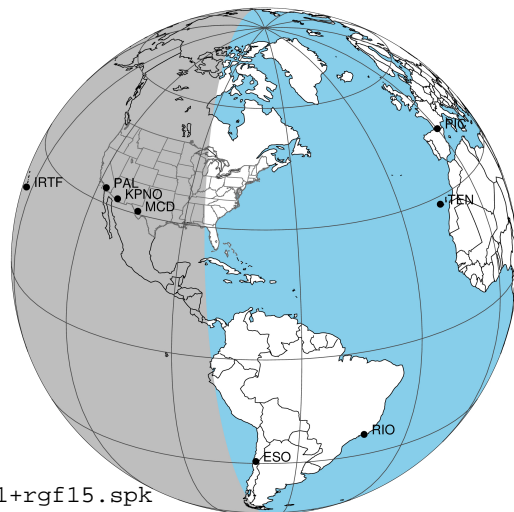


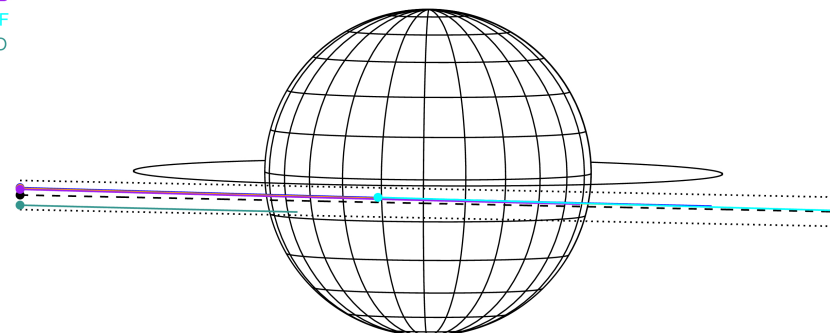
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2048-09-06T11:21:07.660  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 3427354150972176000  
 2Mass ID (if available) : 05492532+2253484

Jupiter 2048-09-06T11:21:07 K9.92 G10.27 Pgt

ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s  
 RUWE (>1.4 is poor) : 1.21  
 K magnitude : 9.917  
 G magnitude : 10.269  
 RP magnitude : 10.151  
 BP magnitude : 10.322  
 DUPflag : 0  
 Distance (au) : 5.215  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 19.61  
 Sun-Target sep (deg) : 76.31  
 Sun-Moon sep (deg) : 54.76  
 B (ring opening deg) : 2.60  
 PA of pole (deg) : -0.30  
 Pole direction: RA (deg): 268.05733  
 Dec (deg): 64.49722  
 C/A sky separation (") : 3.579  
 C/A sky separation (km) : 13536.9  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



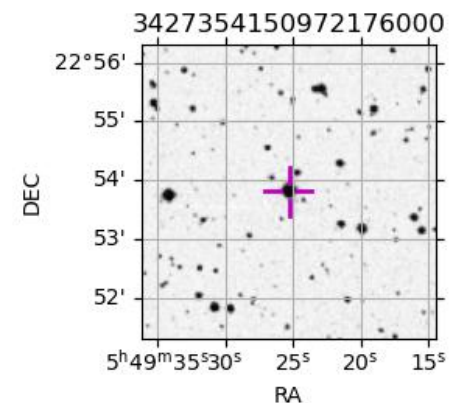
Earth  
 PAL  
 KPNO  
 MCD  
 IRTF  
 ESO



2048-09-06T11:21:07.6600 cc: 05 49 25.3247 s: +22 53 48.4449 C/A 3.569" PA 358.83 deg v\_sky +19.61 km/s D 05.22 AU  
 Credit: Styled after SORA/Lucky Star

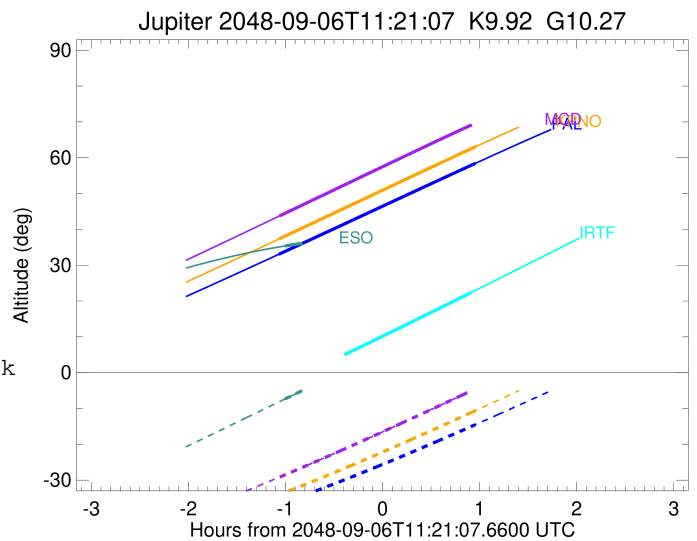
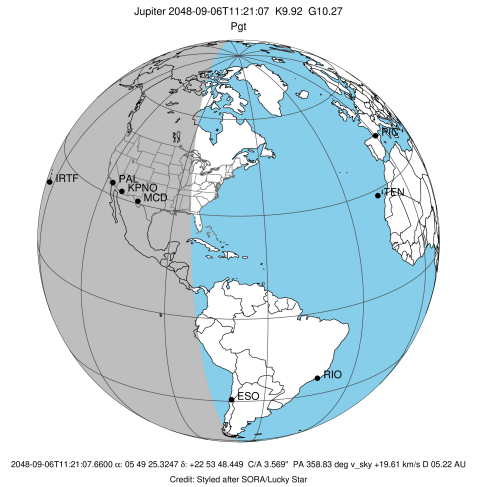
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	SEP 06 10:17 - SEP 06 12:18	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	SEP 06 10:17 - SEP 06 12:18	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+	SEP 06 10:17 - SEP 06 10:17	Pin
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	SEP 06 12:16 - SEP 06 12:16	Pne
KAV	Kavalur Observatory	12.6	78.8			Pnn
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	SEP 06 10:20 - SEP 06 10:20	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            : 2048-09-06T11:17:39.280
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       : 3427354150972176000
2Mass ID (if available) : 05492532+2253484
ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s
RUWE (>1.4 is poor) : 1.21
K magnitude           : 9.917
G magnitude           : 10.269
RP magnitude         : 10.151
BP magnitude         : 10.322
DUPflag              : 0
Distance (au)        : 5.215
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 19.61
Sun-Target sep (deg) : 76.31
Sun-Moon sep (deg)   : 55.66
B (ring opening deg) : 2.60
PA of pole (deg)     : -0.30
Pole direction: RA (deg): 268.05733
Dec (deg): 64.49722
C/A sky separation ("): 3.071
C/A sky separation (km): 11616.8
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
    
```

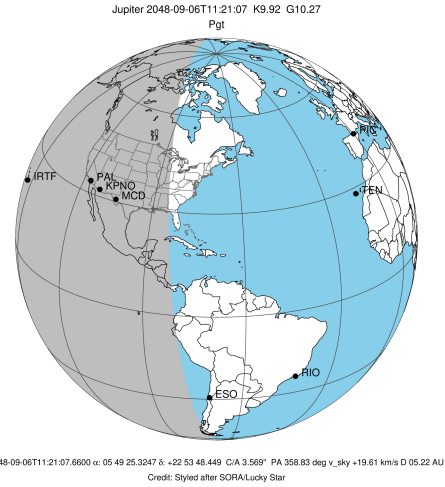


x: target alt < 5.0 deg or sun > -5.0 deg

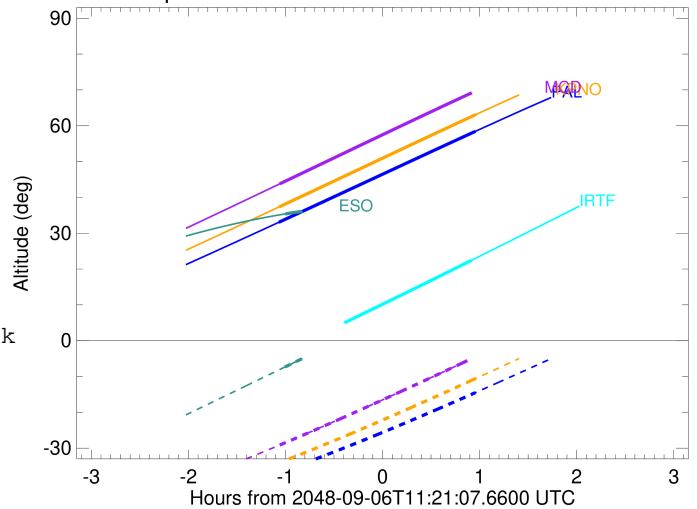
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-09-06T10:17:04.252	33.05	-36.78	71491.8	-8.09	-9.23
Jupiter	E	2048-09-06T12:18:33.023	58.43	-14.50	71491.7	-10.52	-11.99

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-09-06T11:17:53.590
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      : 3427354150972176000
2Mass ID (if available) : 05492532+2253484
ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s
RUWE (>1.4 is poor) : 1.21
K magnitude          : 9.917
G magnitude          : 10.269
RP magnitude         : 10.151
BP magnitude         : 10.322
DUPflag             : 0
Distance (au)       : 5.215
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 19.61
Sun-Target sep (deg) : 76.31
Sun-Moon sep (deg)  : 55.67
B (ring opening deg) : 2.60
PA of pole (deg)    : -0.30
Pole direction: RA (deg): 268.05733
Dec (deg): 64.49722
C/A sky separation (" ) : 3.147
C/A sky separation (km) : 11904.4
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
    
```



Jupiter 2048-09-06T11:21:07 K9.92 G10.27

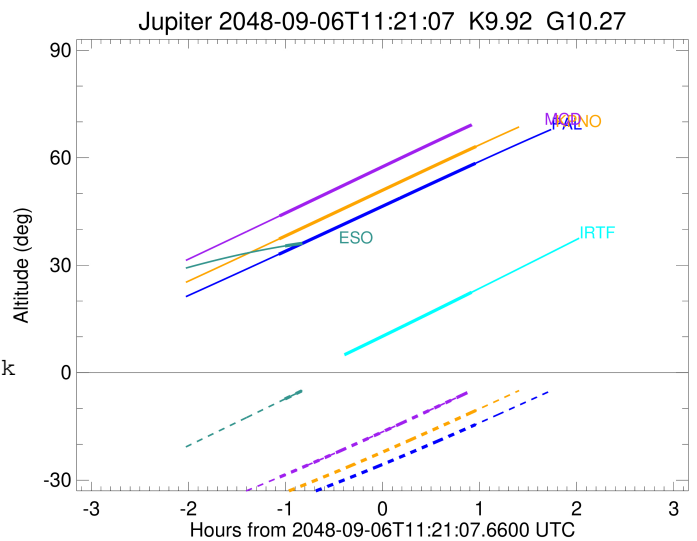
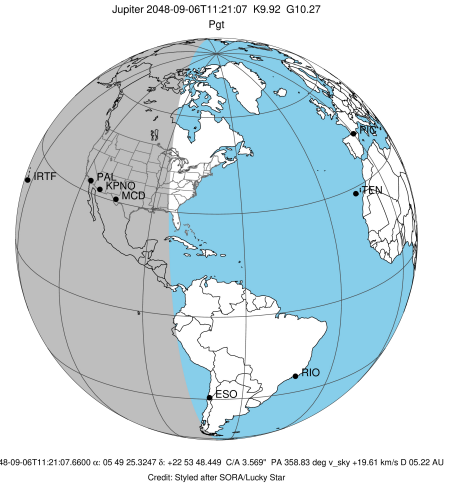


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-09-06T10:17:14.748	37.33	-34.07	71491.8	-8.34	-9.51
Jupiter	E	2048-09-06T12:18:50.187	63.11	-10.54	71491.7	-10.73	-12.22

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-09-06T11:18:19.770
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       : 3427354150972176000
2Mass ID (if available) : 05492532+2253484
ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s
RUWE (>1.4 is poor) : 1.21
K magnitude           : 9.917
G magnitude           : 10.269
RP magnitude          : 10.151
BP magnitude          : 10.322
DUPflag              : 0
Distance (au)        : 5.215
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 19.61
Sun-Target sep (deg) : 76.31
Sun-Moon sep (deg)   : 55.68
B (ring opening deg) : 2.60
PA of pole (deg)     : -0.30
Pole direction: RA (deg): 268.05733
Dec (deg): 64.49722
C/A sky separation (") : 3.233
C/A sky separation (km) : 12230.4
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
    
```

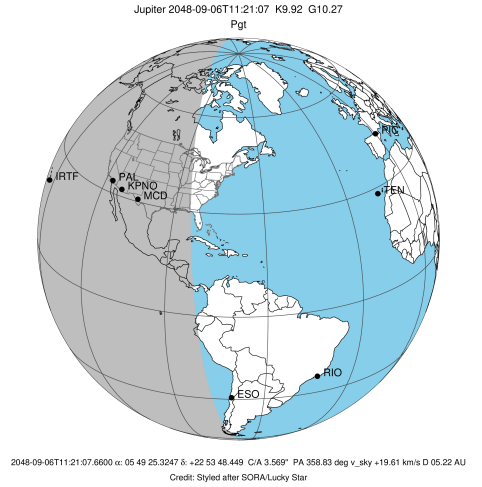


x: target alt < 5.0 deg or sun > -5.0 deg

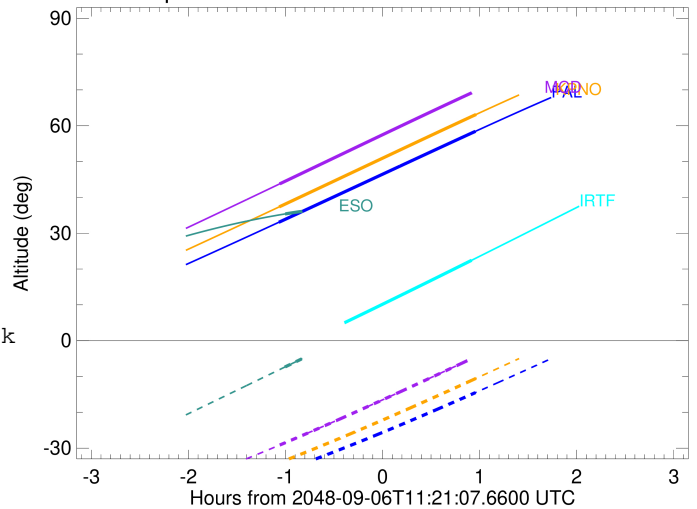
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-09-06T10:17:35.580	43.77	-29.13	71491.8	-8.64	-9.85
Jupiter	E	2048-09-06T12:19:19.932	69.81	-4.35x	71491.7	-10.95	-12.47

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2048-09-06T11:15:57.860
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      : 3427354150972176000
2Mass ID (if available) : 05492532+2253484
ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s
RUWE (>1.4 is poor) : 1.21
K magnitude          : 9.917
G magnitude          : 10.269
RP magnitude         : 10.151
BP magnitude         : 10.322
DUPflag             : 0
Distance (au)       : 5.216
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 19.61
Sun-Target sep (deg) : 76.31
Sun-Moon sep (deg)  : 55.41
B (ring opening deg) : 2.60
PA of pole (deg)    : -0.30
Pole direction: RA (deg): 268.05733
Dec (deg): 64.49722
C/A sky separation (") : 3.049
C/A sky separation (km) : 11532.8
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
    
```



Jupiter 2048-09-06T11:21:07 K9.92 G10.27

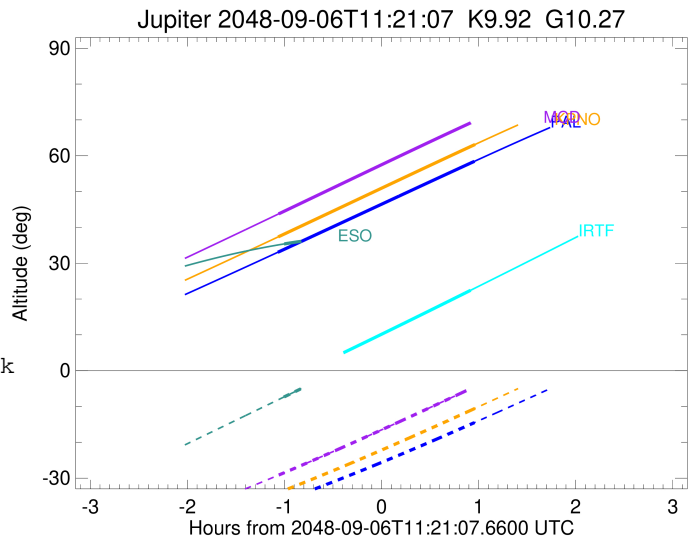
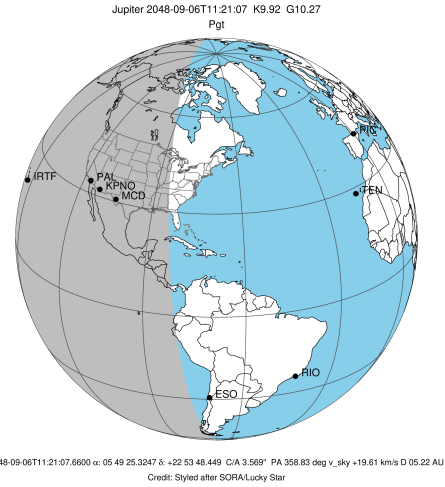


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2048-09-06T10:16:10.139	-3.91x	-64.18	71491.8	-7.91	-9.03
Jupiter	E	2048-09-06T12:16:10.419	22.43	-51.51	71491.7	-10.64	-12.12

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2048-09-06T11:20:51.450
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        : 3427354150972176000
2Mass ID (if available) : 05492532+2253484
ICRS Star Coord at Epoch: 05h 49m 25.32470s +22:53:48.44890s
RUWE (>1.4 is poor) : 1.21
K magnitude           : 9.917
G magnitude           : 10.269
RP magnitude          : 10.151
BP magnitude          : 10.322
DUPflag              : 0
Distance (au)         : 5.215
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 19.61
Sun-Target sep (deg) : 76.31
Sun-Moon sep (deg)   : 55.23
B (ring opening deg) : 2.60
PA of pole (deg)     : -0.30
Pole direction: RA (deg): 268.05733
Dec (deg): 64.49722
C/A sky separation (") : 4.905
C/A sky separation (km) : 18555.2
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	2048-09-06T10:20:57.792	35.37	-7.32	71491.5	-14.06	-15.97
Jupiter	E	2048-09-06T12:20:49.848	36.58	18.39x	71491.3	-15.87	-18.00