

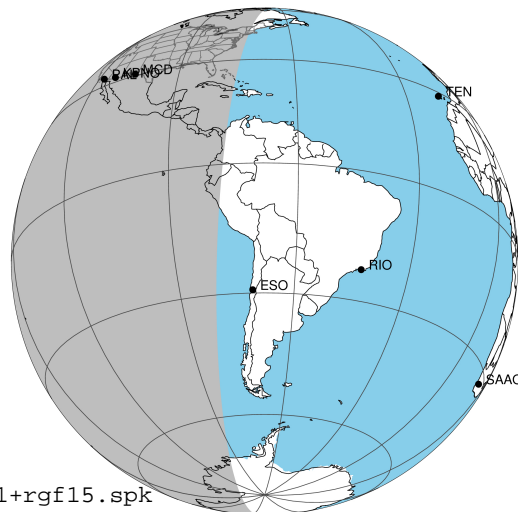
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-03-06T11:19:45.810
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116882803655471104
 2Mass ID (if available) : 17431722-2250373

Jupiter 2031-03-06T11:19:45 K9.36 G14.83 Pgt

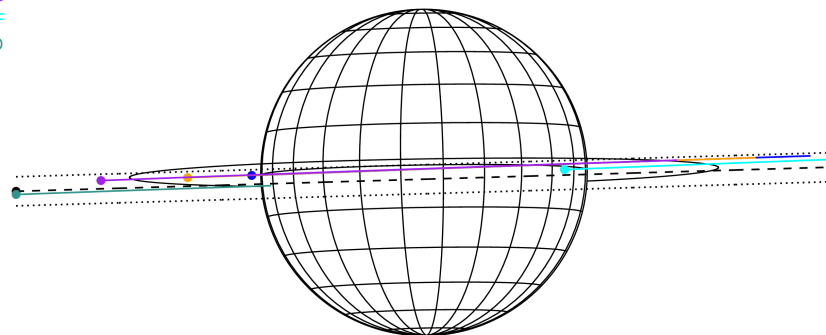
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s

RUWE (>1.4 is poor) : 0.96
 K magnitude : 9.355
 G magnitude : 14.826
 RP magnitude : 13.455
 BP magnitude : 17.131
 DUPflag : 0
 Distance (au) : 5.411
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 18.76
 Sun-Target sep (deg) : 79.10
 Sun-Moon sep (deg) : 132.66
 B (ring opening deg) : -2.64
 PA of pole (deg) : 0.96
 Pole direction: RA (deg): 268.05701
 Dec (deg): 64.49651
 C/A sky separation (") : 0.750
 C/A sky separation (km) : 2943.9
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-03-06T11:19:45 K9.36 G14.83
 Pgt



Earth
 PAL
 KPNO
 MCD
 IRTF
 ESO

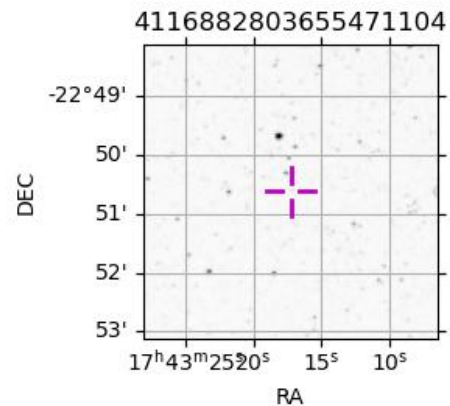


2031-03-06T11:19:45.8100 az: 17.43 17.2172 & -22.50 37.454 C/A 0.760" PA 1.69 deg v_sky +18.76 km/s D 05.41 AU

Credit: Styled after SORA/Lucky Star

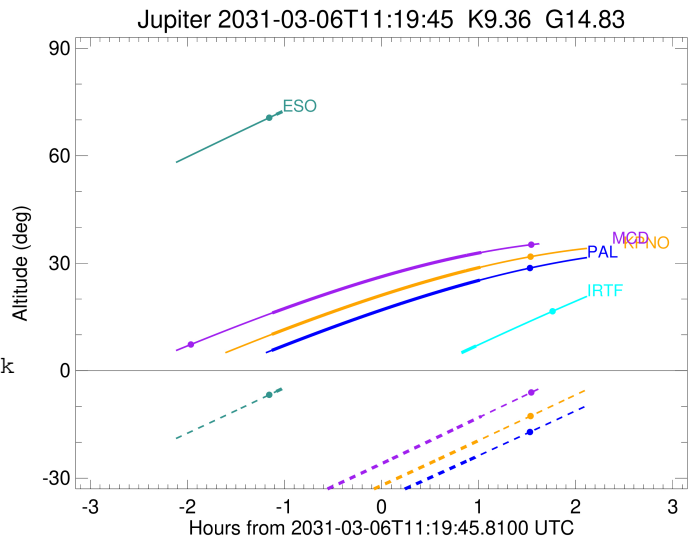
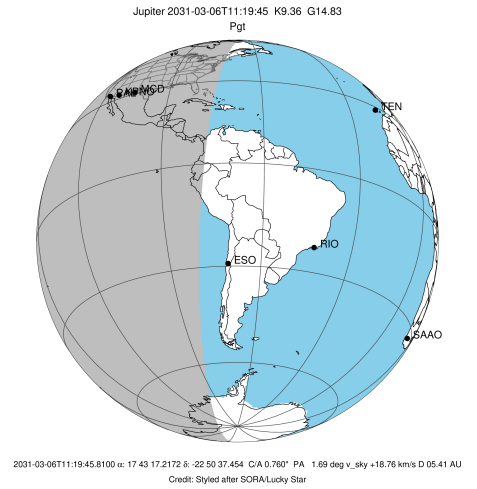
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1	+ +	MAR 06 10:11 - MAR 06 12:20	Pie
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+ +	MAR 06 10:12 - MAR 06 12:20	Pie
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	MAR 06 10:12 - MAR 06 12:21	Pie
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5	+	MAR 06 12:18 - MAR 06 12:18	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	+	MAR 06 10:14 - MAR 06 10:14	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            : 2031-03-06T11:16:00.700
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      : 4116882803655471104
2Mass ID (if available) : 17431722-2250373
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.355
G magnitude          : 14.826
RP magnitude         : 13.455
BP magnitude         : 17.131
DUPflag             : 0
Distance (au)       : 5.411
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 18.76
Sun-Target sep (deg) : 79.10
Sun-Moon sep (deg)  : 133.21
B (ring opening deg) : -2.64
PA of pole (deg)    : 0.96
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (" ) : 0.379
C/A sky separation (km) : 1488.7
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
    
```

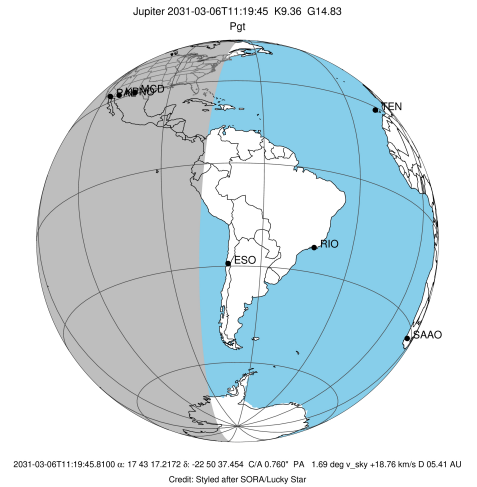


x: target alt < 5.0 deg or sun > -5.0 deg

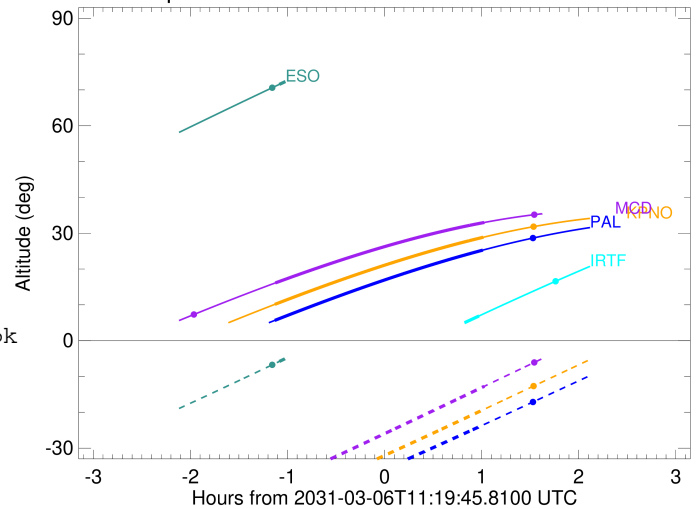
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-06T10:11:52.231	5.64	-48.61	71492.0	0.05	0.06
Jupiter	E	2031-03-06T12:20:31.500	25.27	-23.56	71492.0	2.26	2.58

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-06T11:16:15.350
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       : 4116882803655471104
2Mass ID (if available) : 17431722-2250373
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.355
G magnitude          : 14.826
RP magnitude         : 13.455
BP magnitude         : 17.131
DUPflag             : 0
Distance (au)        : 5.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 18.76
Sun-Target sep (deg) : 79.10
Sun-Moon sep (deg)   : 133.23
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.96
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 0.393
C/A sky separation (km) : 1541.2
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
    
```



Jupiter 2031-03-06T11:19:45 K9.36 G14.83

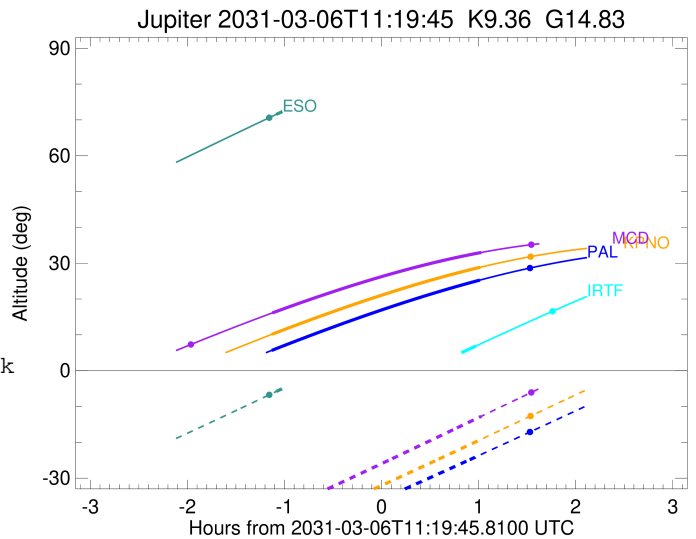
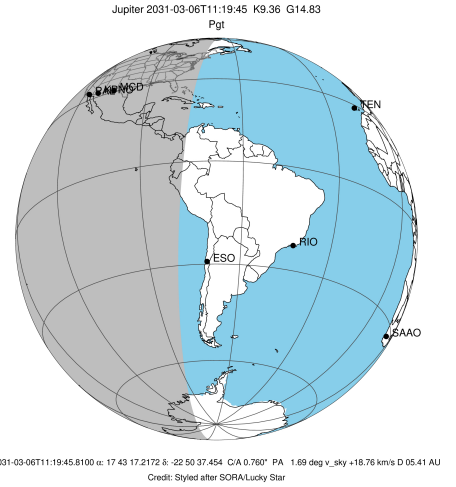


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-06T10:11:59.963	10.13	-45.50	71492.0	0.11	0.12
Jupiter	E	2031-03-06T12:20:52.010	28.87	-19.26	71492.0	2.27	2.60

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-03-06T11:16:42.070
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      : 4116882803655471104
2Mass ID (if available) : 17431722-2250373
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s
RUWE (>1.4 is poor) : 0.96
K magnitude          : 9.355
G magnitude          : 14.826
RP magnitude         : 13.455
BP magnitude         : 17.131
DUPflag             : 0
Distance (au)       : 5.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 18.76
Sun-Target sep (deg) : 79.10
Sun-Moon sep (deg)   : 133.23
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.96
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation ("): 0.420
C/A sky separation (km): 1649.8
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
    
```

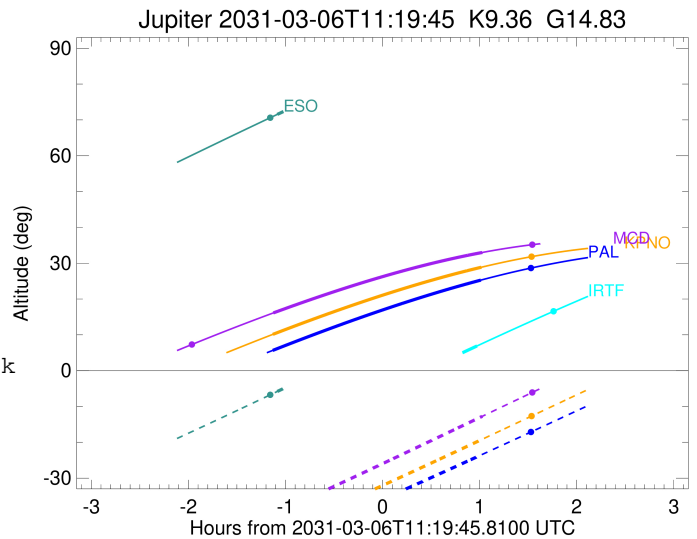
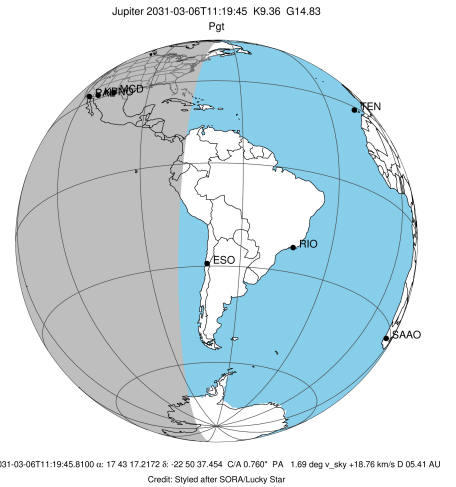


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-06T10:12:17.611	16.12	-40.03	71492.0	0.22	0.26
Jupiter	E	2031-03-06T12:21:25.806	32.99	-12.74	71492.0	2.31	2.65

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-06T11:14:23.520
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       : 4116882803655471104
2Mass ID (if available) : 17431722-2250373
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.355
G magnitude           : 14.826
RP magnitude          : 13.455
BP magnitude          : 17.131
DUPflag              : 0
Distance (au)        : 5.411
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 18.76
Sun-Target sep (deg) : 79.10
Sun-Moon sep (deg)   : 133.17
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.96
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 0.277
C/A sky separation (km) : 1086.5
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
    
```

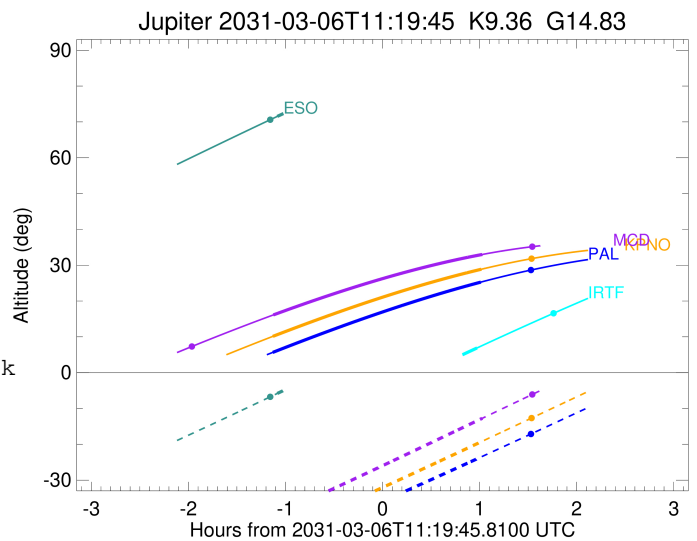
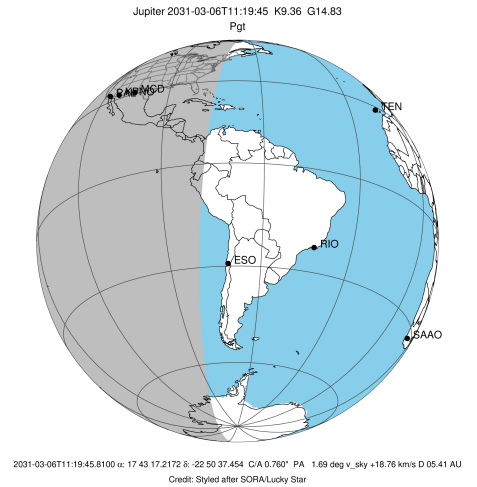


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-03-06T10:11:07.815	-20.84x	-74.97	71492.0	-2.11	-2.41
Jupiter	E	2031-03-06T12:18:08.314	6.89	-60.86	71492.0	0.38	0.43

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-03-06T11:19:30.700
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        : 4116882803655471104
2Mass ID (if available) : 17431722-2250373
ICRS Star Coord at Epoch: 17h 43m 17.21716s -22:50:37.45386s
RUWE (>1.4 is poor) : 0.96
K magnitude           : 9.355
G magnitude           : 14.826
RP magnitude          : 13.455
BP magnitude          : 17.131
DUPflag              : 0
Distance (au)         : 5.411
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 18.76
Sun-Target sep (deg) : 79.10
Sun-Moon sep (deg)   : 133.36
B (ring opening deg) : -2.64
PA of pole (deg)     : 0.96
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 0.930
C/A sky separation (km) : 3648.2
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	2031-03-06T10:14:45.522	71.53	-5.80	71492.0	-3.78	-4.32
Jupiter	E	2031-03-06T12:24:22.298	76.68	22.39x	71492.0	-2.20	-2.52