

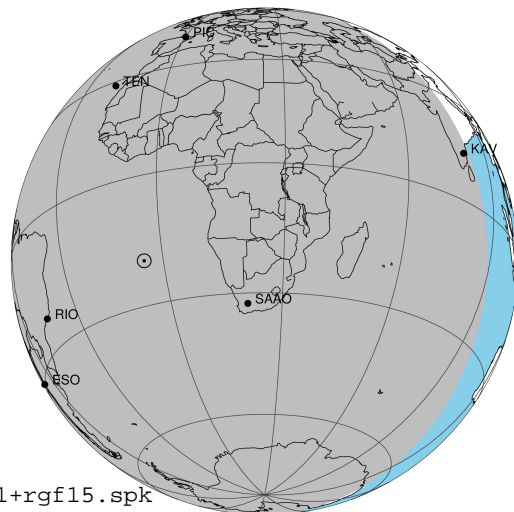
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-20T00:16:42.700
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068854447765103360
 2Mass ID (if available) : 17455542-2253385

Jupiter 2031-05-20T00:16:42 K8.50 G14.20 Pgt

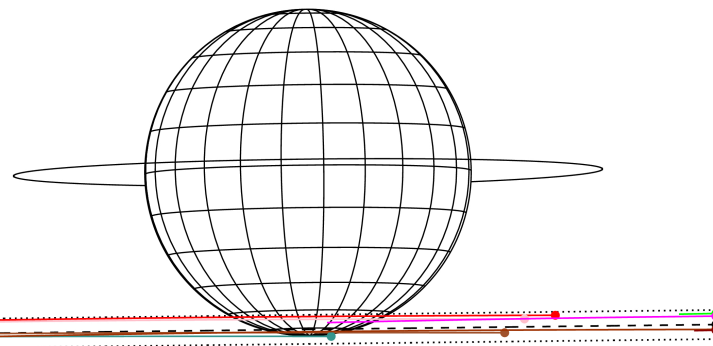
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s

RUWE (>1.4 is poor) : 0.91
 K magnitude : 8.498
 G magnitude : 14.202
 RP magnitude : 12.761
 BP magnitude : 16.944
 DUPflag : 0
 Distance (au) : 4.377
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -12.91
 Sun-Target sep (deg) : 151.63
 Sun-Moon sep (deg) : 137.00
 B (ring opening deg) : -2.60
 PA of pole (deg) : 0.68
 Pole direction: RA (deg): 268.05694
 Dec (deg): 64.49651
 C/A sky separation (") : 21.648
 C/A sky separation (km) : 68725.7
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-20T00:16:42 K8.50 G14.20
 Pgt



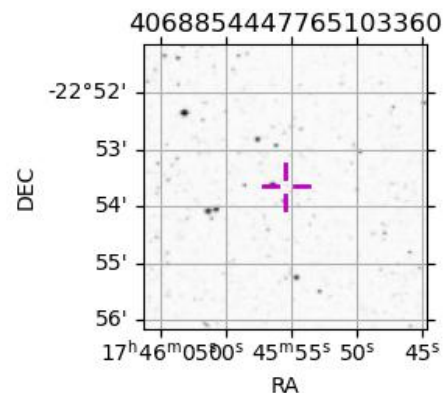
Earth
 PIC
 PMO
 TEN
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



2031-05-20T00:16:42.7000 α: 17 45 55.4233 δ: -22 53 38.715 C/A ***** PA 0.68 deg v_sky -12.91 km/s D 04.38 AU
 Credit: Styled after SORA/Lucky Star

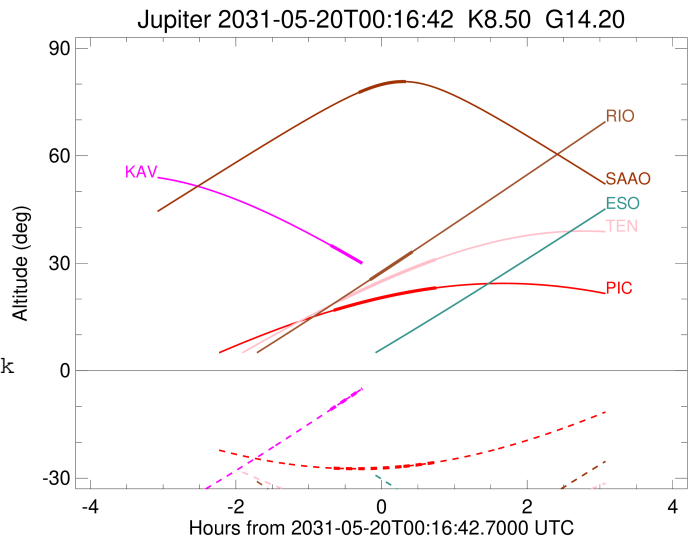
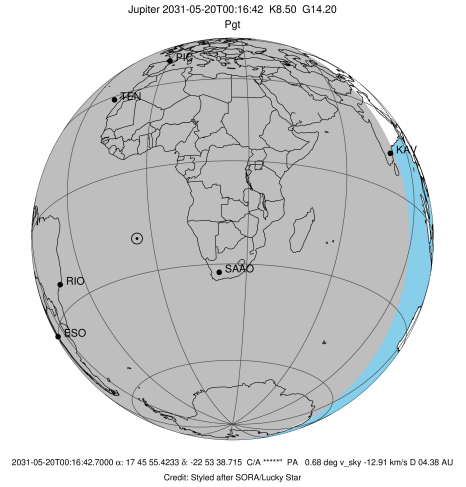
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+ +	MAY 19 23:37 - MAY 20 01:01	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	+ +	MAY 19 23:42 - MAY 20 01:01	Pie
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+	MAY 19 23:34 - MAY 19 23:34	Pin
RIO	Rio de Janeiro	-22.9	316.8	+ +	MAY 20 00:07 - MAY 20 00:42	Pie
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	MAY 19 23:57 - MAY 20 00:36	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-20T00:19:37.590
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        : 4068854447765103360
2Mass ID (if available) : 17455542-2253385
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.498
G magnitude           : 14.202
RP magnitude          : 12.761
BP magnitude          : 16.944
DUPflag              : 0
Distance (au)         : 4.377
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.91
Sun-Target sep (deg) : 151.63
Sun-Moon sep (deg)   : 137.02
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.68
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 19.877
C/A sky separation (km) : 63101.9
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
    
```

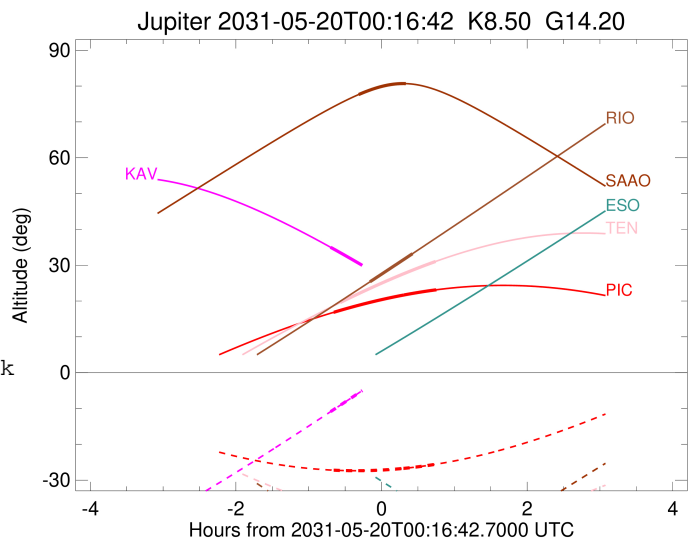
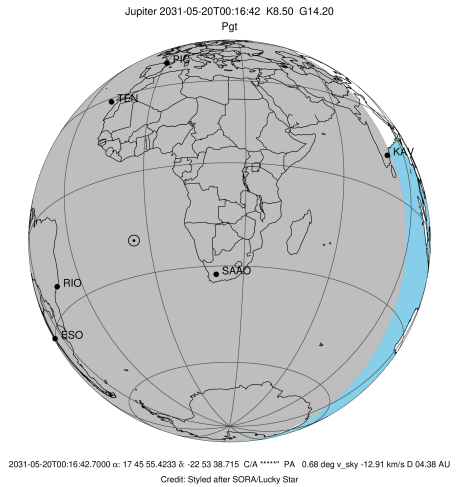


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-19T23:37:17.817	16.84	-27.22	71484.7	-62.15	-65.06
Jupiter	E	2031-05-20T01:01:50.812	23.13	-25.54	71484.8	-61.67	-64.61

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-20T00:22:08.080
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      : 4068854447765103360
2Mass ID (if available) : 17455542-2253385
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 8.498
G magnitude          : 14.202
RP magnitude         : 12.761
BP magnitude         : 16.944
DUPflag             : 0
Distance (au)       : 4.377
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.91
Sun-Target sep (deg) : 151.63
Sun-Moon sep (deg)  : 136.88
B (ring opening deg) : -2.60
PA of pole (deg)    : 0.68
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 20.262
C/A sky separation (km) : 64324.8
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
    
```

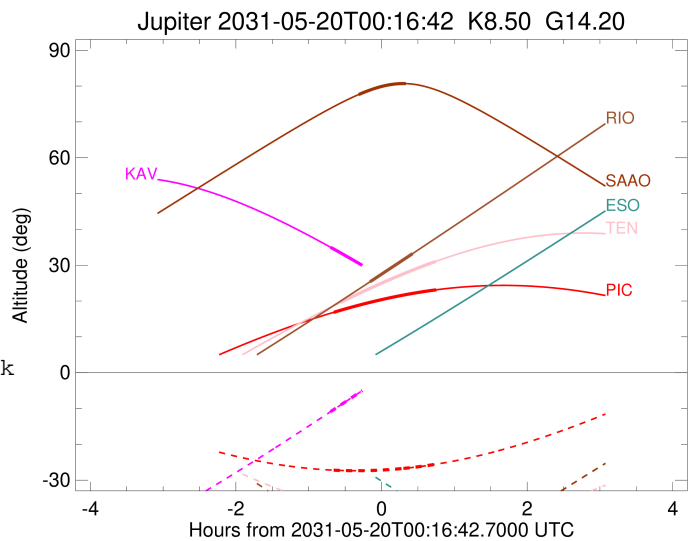
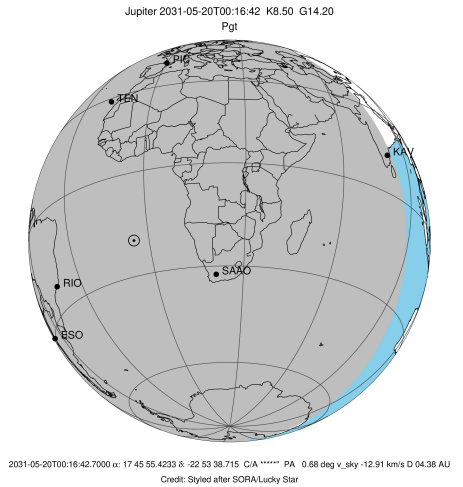


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-19T23:42:48.953	19.60	-38.26	71484.4	-64.51	-67.23
Jupiter	E	2031-05-20T01:01:17.621	31.04	-41.97	71484.5	-63.61	-66.40

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-20T00:09:33.170
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        : 4068854447765103360
2Mass ID (if available) : 17455542-2253385
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.498
G magnitude           : 14.202
RP magnitude          : 12.761
BP magnitude          : 16.944
DUPflag              : 0
Distance (au)         : 4.377
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.91
Sun-Target sep (deg) : 151.63
Sun-Moon sep (deg)   : 137.82
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.68
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 20.763
C/A sky separation (km) : 65915.6
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
    
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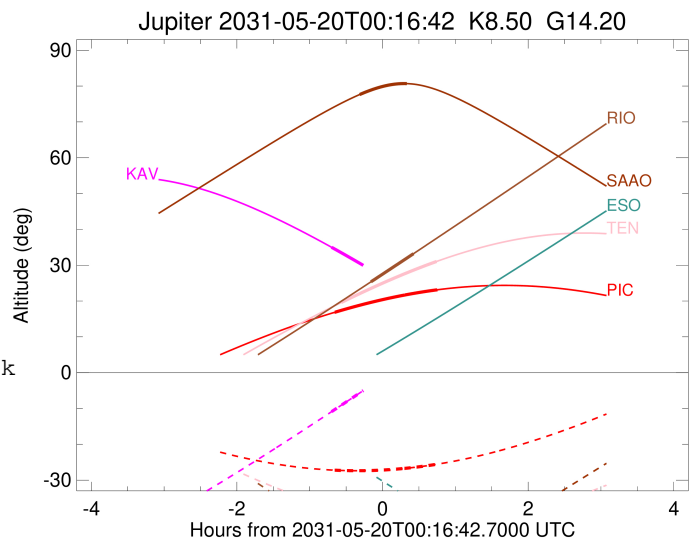
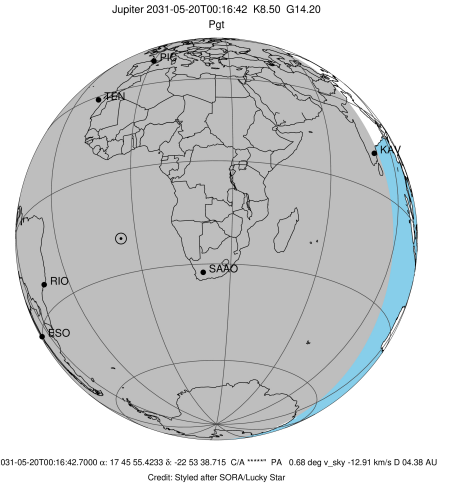


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-19T23:34:43.914	35.00	-10.89	71484.2	-66.54	-69.09
Jupiter	E	2031-05-20T00:44:30.419	21.02	4.98x	71484.0	-67.72	-70.16

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-20T00:24:43.470
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        : 4068854447765103360
2Mass ID (if available) : 17455542-2253385
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 8.498
G magnitude           : 14.202
RP magnitude          : 12.761
BP magnitude          : 16.944
DUPflag              : 0
Distance (au)         : 4.377
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -12.91
Sun-Target sep (deg) : 151.63
Sun-Moon sep (deg)   : 136.72
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.68
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 22.093
C/A sky separation (km) : 70136.8
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
    
```

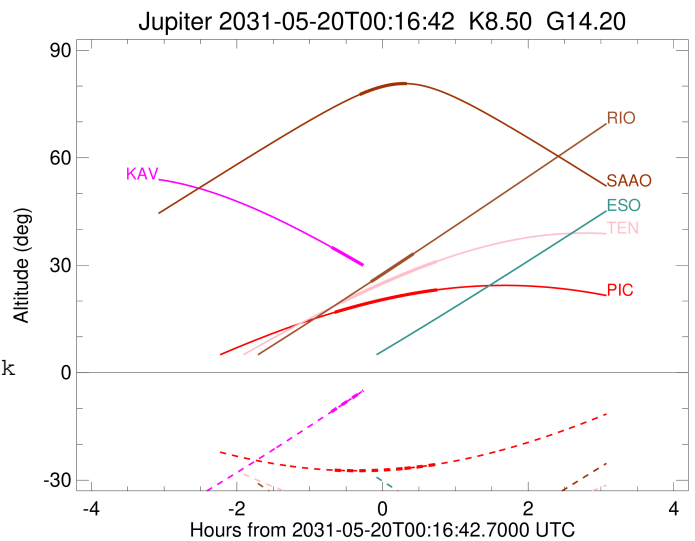
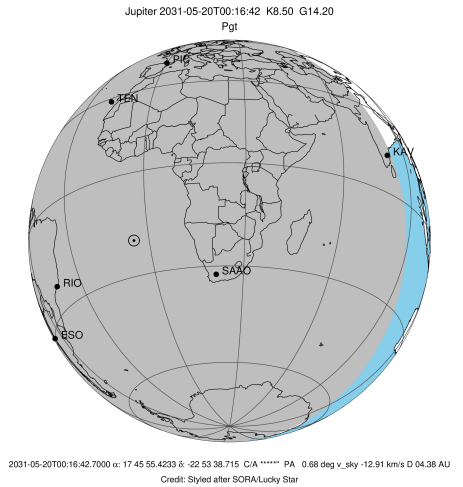


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-20T00:07:07.854	25.34	-52.22	71483.0	-79.23	-80.48
Jupiter	E	2031-05-20T00:42:16.333	33.21	-60.31	71483.1	-77.92	-79.32

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-20T00:17:19.690
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       : 4068854447765103360
2Mass ID (if available) : 17455542-2253385
ICRS Star Coord at Epoch: 17h 45m 55.42333s -22:53:38.71454s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 8.498
G magnitude          : 14.202
RP magnitude         : 12.761
BP magnitude         : 16.944
DUPflag             : 0
Distance (au)        : 4.377
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -12.91
Sun-Target sep (deg) : 151.63
Sun-Moon sep (deg)   : 137.57
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.68
Pole direction: RA (deg): 268.05694
Dec (deg): 64.49651
C/A sky separation (") : 21.976
C/A sky separation (km) : 69765.6
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	2031-05-19T23:57:51.245	77.62	-67.43	71483.2	-77.24	-78.71
Jupiter	E	2031-05-20T00:36:47.626	80.68	-59.80	71483.2	-77.12	-78.61