

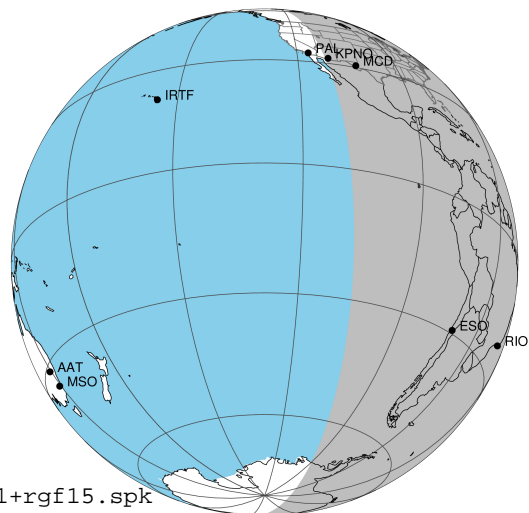
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-07T01:02:40.590
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4111468563494423424
 2Mass ID (if available) : 17274844-2304005

Jupiter 2031-10-07T01:02:40 K9.01 G14.90 Pgt

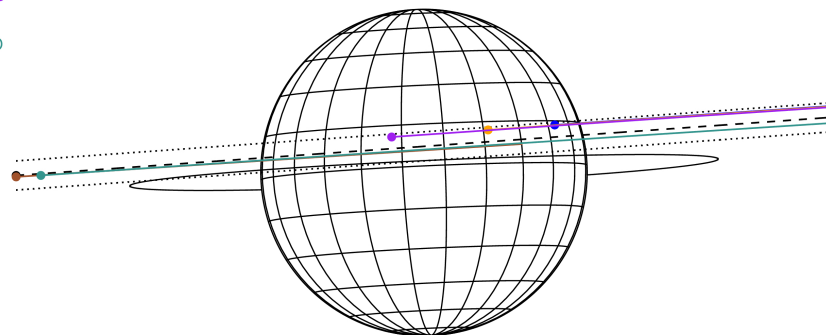
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23°04'00.71489s

RUWE (>1.4 is poor) : 1.15
 K magnitude : 9.009
 G magnitude : 14.905
 RP magnitude : 13.457
 BP magnitude : 17.720
 DUPflag : 0
 Distance (au) : 5.507
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 23.54
 Sun-Target sep (deg) : 69.47
 Sun-Moon sep (deg) : 174.02
 B (ring opening deg) : -2.31
 PA of pole (deg) : 2.63
 Pole direction: RA (deg): 268.05682
 Dec (deg): 64.49652
 C/A sky separation (") : 2.859
 C/A sky separation (km) : 11420.2
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-10-07T01:02:40 K9.01 G14.90
 Pgt



Earth
 PAL
 KPNO
 MCD
 RIO
 ESO

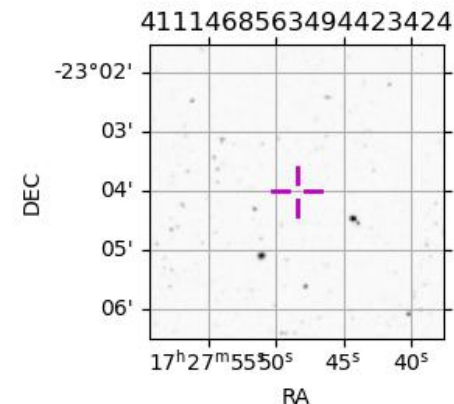


2031-10-07T01:02:40.5900 cc: 17 27 48.4315 s: -23 04 00.715 C/A 2.859° PA 184.08 deg v_sky +23.54 km/s D 05.51 AU

Credit: Styled after SORA/Lucky Star

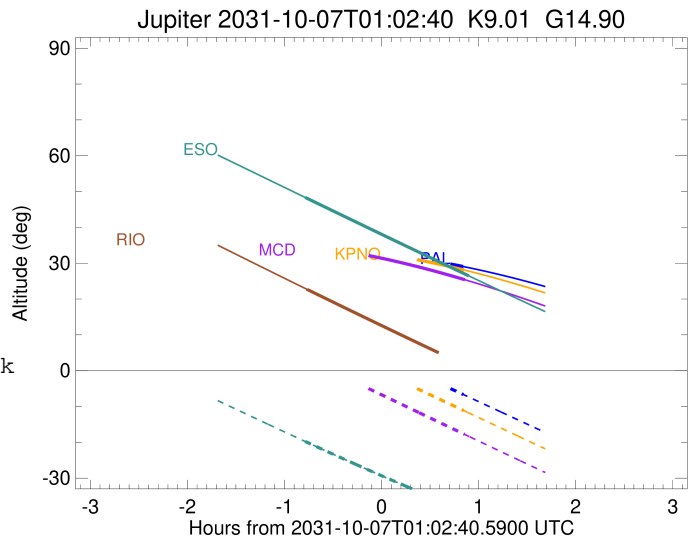
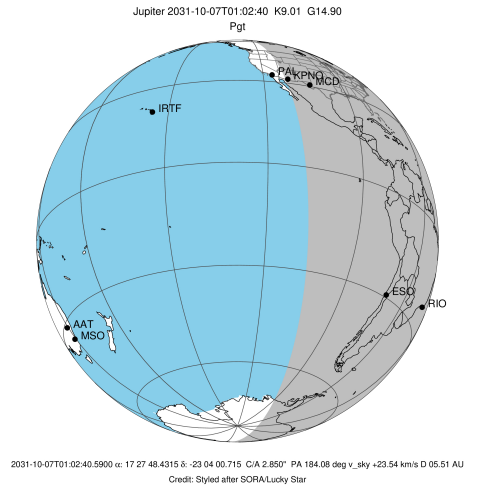
Observable events with sun below -5 deg and altitude above 5 deg

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	+	OCT 07 01:53 - OCT 07 01:53	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 07 01:53 - OCT 07 01:53	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+	OCT 07 01:54 - OCT 07 01:54	Pne
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			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	OCT 07 00:16 - OCT 07 00:16	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+	OCT 07 00:15 - OCT 07 01:56	Pie
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



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-07T01:03:12.640
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        : 4111468563494423424
2Mass ID (if available) : 17274844-2304005
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23:04:00.71489s
RUWE (>1.4 is poor) : 1.15
K magnitude           : 9.009
G magnitude           : 14.905
RP magnitude          : 13.457
BP magnitude          : 17.720
DUPflag              : 0
Distance (au)         : 5.507
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.54
Sun-Target sep (deg)  : 69.47
Sun-Moon sep (deg)    : 173.56
B (ring opening deg) : -2.31
PA of pole (deg)     : 2.63
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (" ) : 4.191
C/A sky separation (km) : 16738.1
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
    
```

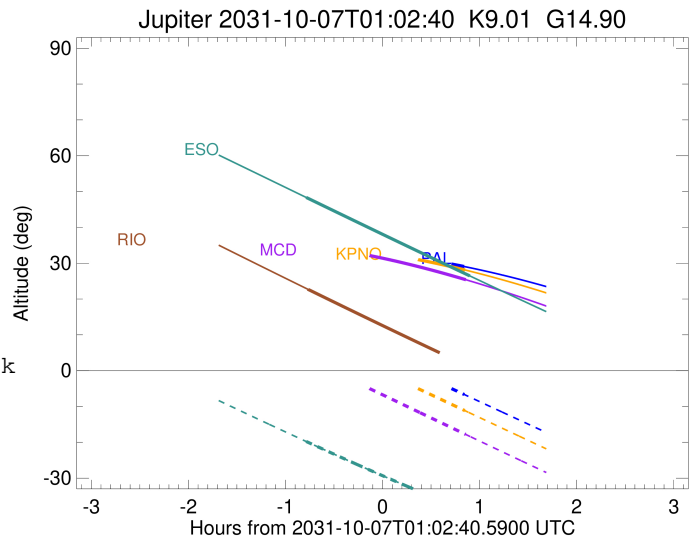
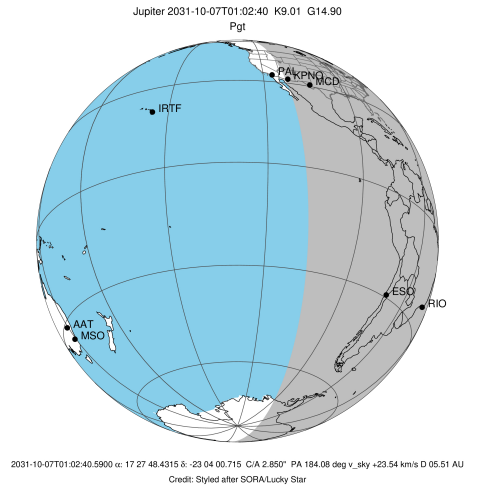


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-07T00:13:09.209	33.73	13.99x	71491.7	12.05	13.71
Jupiter	E	2031-10-07T01:53:11.920	29.06	-6.65	71491.5	14.92	16.94

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-07T01:03:34.980
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        : 4111468563494423424
2Mass ID (if available) : 17274844-2304005
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23:04:00.71489s
RUWE (>1.4 is poor) : 1.15
K magnitude           : 9.009
G magnitude           : 14.905
RP magnitude          : 13.457
BP magnitude          : 17.720
DUPflag              : 0
Distance (au)         : 5.507
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.54
Sun-Target sep (deg) : 69.47
Sun-Moon sep (deg)   : 173.51
B (ring opening deg) : -2.31
PA of pole (deg)     : 2.63
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 4.165
C/A sky separation (km) : 16635.1
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
    
```

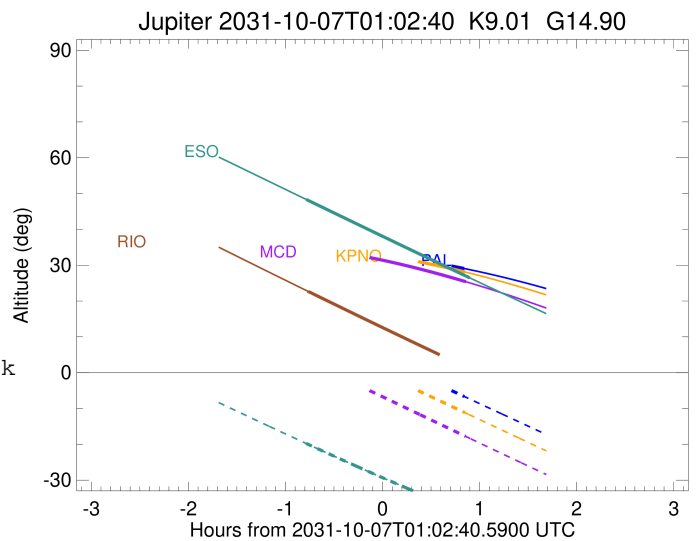
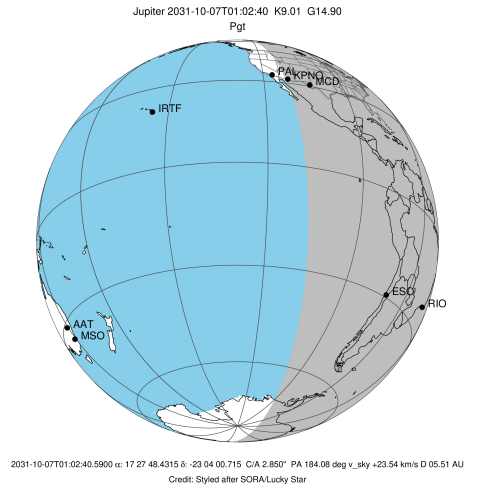


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-07T00:13:30.280	34.93	9.97x	71491.7	12.00	13.66
Jupiter	E	2031-10-07T01:53:34.480	28.12	-11.15	71491.5	14.80	16.80

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-07T01:04:06.280
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        : 4111468563494423424
2Mass ID (if available) : 17274844-2304005
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23:04:00.71489s
RUWE (>1.4 is poor) : 1.15
K magnitude           : 9.009
G magnitude           : 14.905
RP magnitude          : 13.457
BP magnitude          : 17.720
DUPflag              : 0
Distance (au)         : 5.507
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.54
Sun-Target sep (deg) : 69.47
Sun-Moon sep (deg)   : 173.44
B (ring opening deg) : -2.31
PA of pole (deg)     : 2.63
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 4.130
C/A sky separation (km) : 16494.2
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
    
```

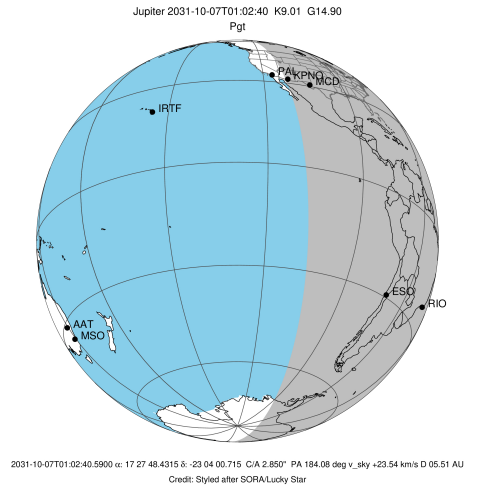


x: target alt < 5.0 deg or sun > -5.0 deg

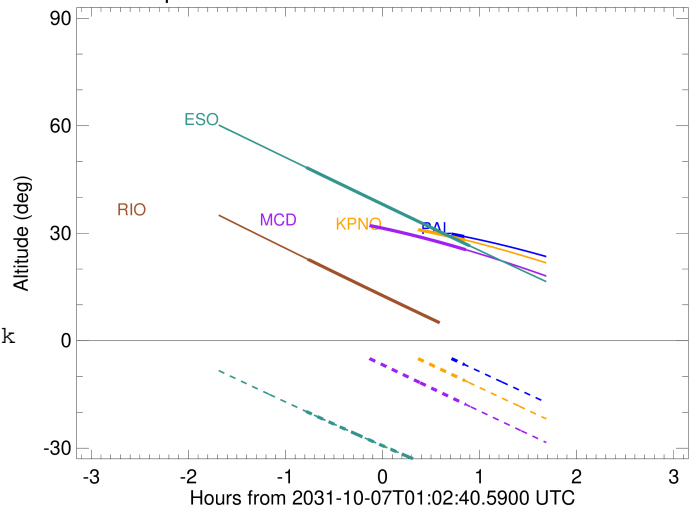
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-07T00:14:01.084	35.08	3.72x	71491.7	11.94	13.58
Jupiter	E	2031-10-07T01:54:04.796	25.40	-17.79	71491.5	14.64	16.62

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-07T01:06:58.330
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      : 4111468563494423424
2Mass ID (if available) : 17274844-2304005
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23:04:00.71489s
RUWE (>1.4 is poor) : 1.15
K magnitude          : 9.009
G magnitude          : 14.905
RP magnitude         : 13.457
BP magnitude         : 17.720
DUPflag             : 0
Distance (au)        : 5.507
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 23.54
Sun-Target sep (deg) : 69.47
Sun-Moon sep (deg)   : 173.42
B (ring opening deg) : -2.31
PA of pole (deg)     : 2.63
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 2.427
C/A sky separation (km) : 9692.0
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 2031-10-07T01:02:40 K9.01 G14.90

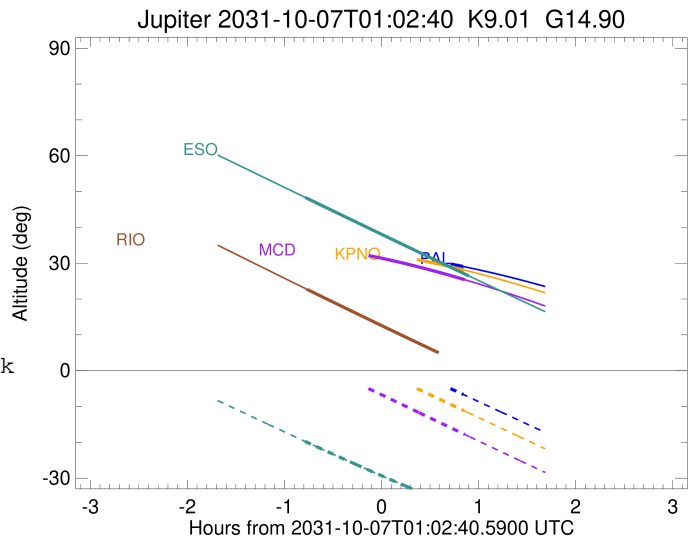
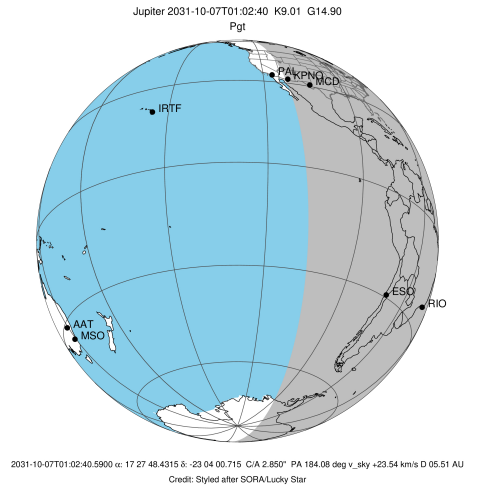


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-07T00:16:37.777	22.70	-44.92	71491.9	6.72	7.68
Jupiter	E	2031-10-07T01:57:04.731	0.97x	-59.90	71491.8	8.83	10.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-07T01:06:09.880
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       : 4111468563494423424
2Mass ID (if available) : 17274844-2304005
ICRS Star Coord at Epoch: 17h 27m 48.43153s -23:04:00.71489s
RUWE (>1.4 is poor) : 1.15
K magnitude          : 9.009
G magnitude           : 14.905
RP magnitude         : 13.457
BP magnitude         : 17.720
DUPflag              : 0
Distance (au)        : 5.507
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 23.54
Sun-Target sep (deg) : 69.47
Sun-Moon sep (deg)   : 173.58
B (ring opening deg) : -2.31
PA of pole (deg)     : 2.63
Pole direction: RA (deg): 268.05682
Dec (deg): 64.49652
C/A sky separation (") : 2.510
C/A sky separation (km) : 10025.0
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	2031-10-07T00:15:28.869	48.36	-19.76	71491.9	6.87	7.84
Jupiter	E	2031-10-07T01:56:38.865	26.45	-39.40	71491.8	9.18	10.47