

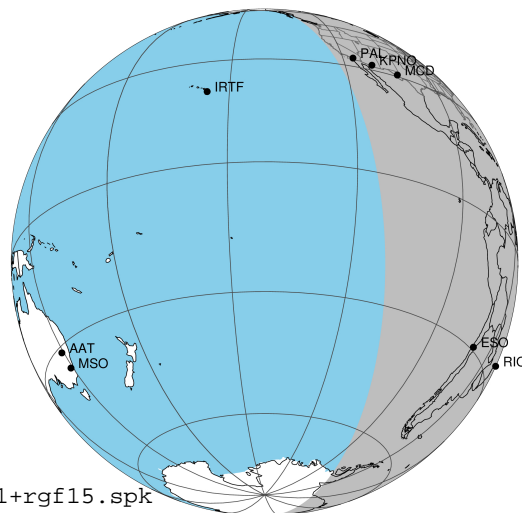
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-10-21T01:24:31.240  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068625616279420288  
 2Mass ID (if available) : 17532552-2322303

Jupiter 2043-10-21T01:24:31 K9.51 G14.72 Pgt

ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s

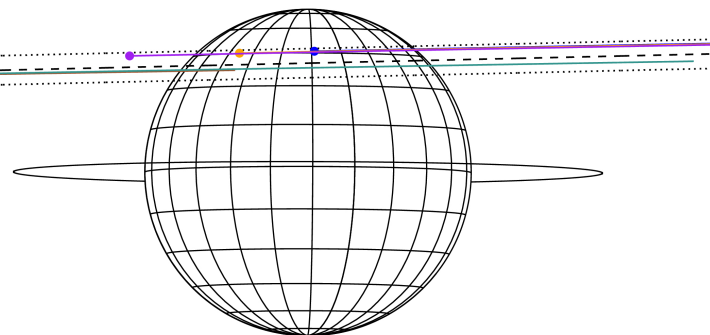
RUWE (>1.4 is poor) : 0.97  
 K magnitude : 9.513  
 G magnitude : 14.719  
 RP magnitude : 13.432  
 BP magnitude : 16.594  
 DUPflag : 0  
 Distance (au) : 5.624  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : 27.37  
 Sun-Target sep (deg) : 61.56  
 Sun-Moon sep (deg) : 153.84  
 B (ring opening deg) : -2.13  
 PA of pole (deg) : -0.13  
 Pole direction: RA (deg): 268.05675  
 Dec (deg): 64.49731  
 C/A sky separation (") : 11.740  
 C/A sky separation (km) : 47883.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-10-21T01:24:31 K9.51 G14.72  
 Pgt



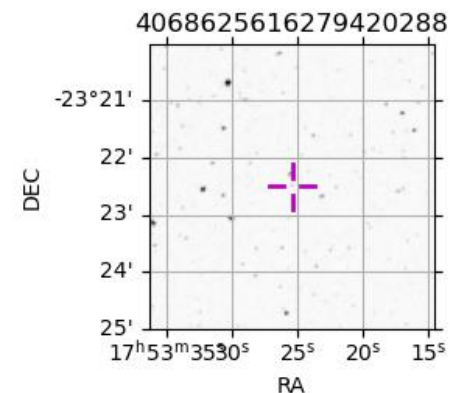
2043-10-21T01:24:31.2400 a: 17 53 25.5217 s: -23 22 30.371 C/A \*\*\*\*\* PA 181.31 deg v\_sky +27.37 km/s D 05.62 AU  
 Credit: Styled after SORA/Lucky Star

Earth  
 PAL  
 KPNO  
 MCD  
 RIO  
 ESO



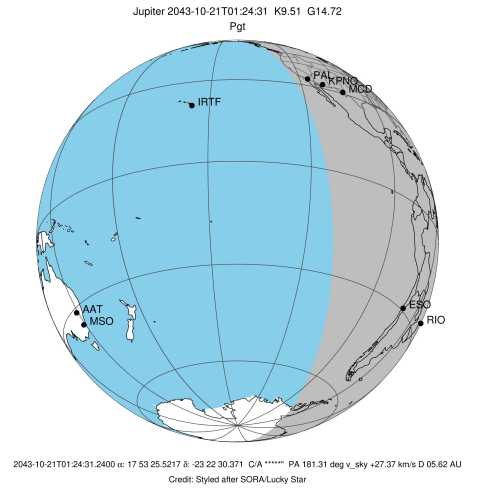
Observable events with sun below -5 deg and altitude above 5 deg

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 21 01:55 - OCT 21 01:55	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 21 01:55 - OCT 21 01:55	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 21 00:56 - OCT 21 01:56	Pie
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 21 00:54 - OCT 21 00:54	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	OCT 21 00:54 - OCT 21 02:01	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

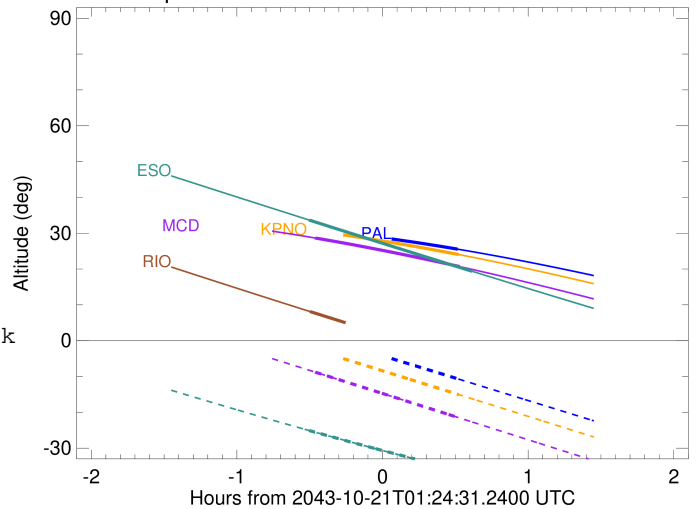


```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-10-21T01:25:54.430
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        : 4068625616279420288
2Mass ID (if available) : 17532552-2322303
ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.513
G magnitude           : 14.719
RP magnitude          : 13.432
BP magnitude          : 16.594
DUPflag              : 0
Distance (au)         : 5.624
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 27.37
Sun-Target sep (deg)  : 61.56
Sun-Moon sep (deg)    : 154.48
B (ring opening deg) : -2.13
PA of pole (deg)      : -0.13
Pole direction: RA (deg): 268.05675
Dec (deg): 64.49731
C/A sky separation (") : 13.006
C/A sky separation (km) : 53044.4
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 2043-10-21T01:24:31 K9.51 G14.72

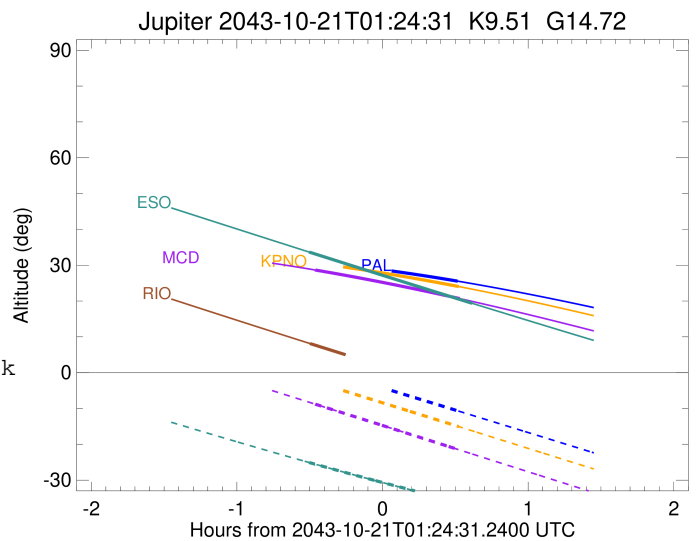
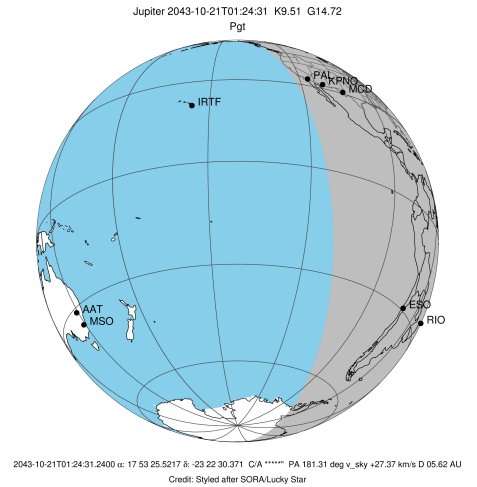


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-10-21T00:56:18.577	31.00	1.56x	71488.8	46.52	50.20
Jupiter	E	2043-10-21T01:55:28.266	25.55	-10.64	71488.5	49.16	52.77

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-10-21T01:26:13.190
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        : 4068625616279420288
2Mass ID (if available) : 17532552-2322303
ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.513
G magnitude           : 14.719
RP magnitude          : 13.432
BP magnitude          : 16.594
DUPflag              : 0
Distance (au)         : 5.624
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 27.37
Sun-Target sep (deg)  : 61.56
Sun-Moon sep (deg)   : 154.54
B (ring opening deg) : -2.13
PA of pole (deg)     : -0.13
Pole direction: RA (deg): 268.05675
Dec (deg): 64.49731
C/A sky separation (") : 12.963
C/A sky separation (km) : 52871.2
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
    
```

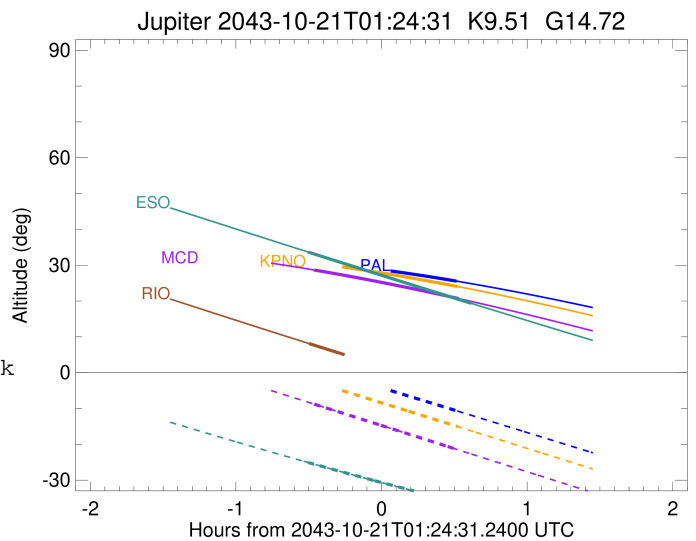
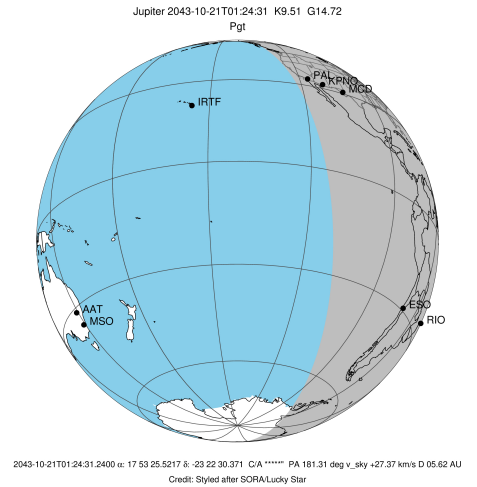


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-10-21T00:56:30.866	30.63	-2.53x	71488.8	46.34	50.03
Jupiter	E	2043-10-21T01:55:53.160	24.04	-15.05	71488.5	48.92	52.54

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-10-21T01:26:38.300
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        : 4068625616279420288
2Mass ID (if available) : 17532552-2322303
ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s
RUWE (>1.4 is poor) : 0.97
K magnitude           : 9.513
G magnitude           : 14.719
RP magnitude          : 13.432
BP magnitude          : 16.594
DUPflag              : 0
Distance (au)         : 5.624
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 27.37
Sun-Target sep (deg) : 61.56
Sun-Moon sep (deg)   : 154.61
B (ring opening deg) : -2.13
PA of pole (deg)     : -0.13
Pole direction: RA (deg): 268.05675
Dec (deg): 64.49731
C/A sky separation (") : 12.904
C/A sky separation (km) : 52632.1
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
    
```

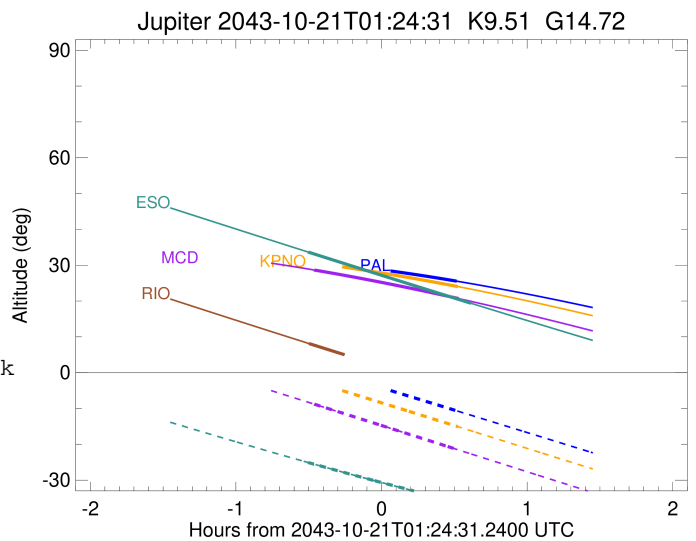
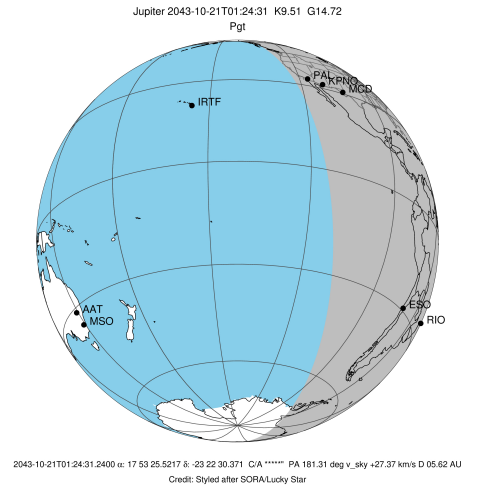


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-10-21T00:56:47.811	28.65	-8.79	71488.8	46.10	49.79
Jupiter	E	2043-10-21T01:56:26.016	20.66	-21.61	71488.5	48.60	52.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-10-21T01:28:15.210
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      : 4068625616279420288
2Mass ID (if available) : 17532552-2322303
ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s
RUWE (>1.4 is poor) : 0.97
K magnitude          : 9.513
G magnitude          : 14.719
RP magnitude         : 13.432
BP magnitude         : 16.594
DUPflag             : 0
Distance (au)       : 5.624
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 27.37
Sun-Target sep (deg) : 61.56
Sun-Moon sep (deg)  : 154.60
B (ring opening deg) : -2.13
PA of pole (deg)    : -0.13
Pole direction: RA (deg): 268.05675
Dec (deg): 64.49731
C/A sky separation (") : 11.120
C/A sky separation (km) : 45353.1
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
    
```

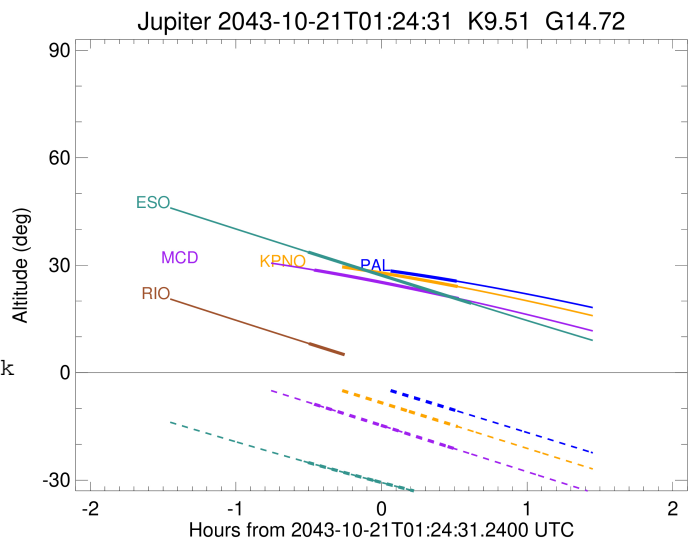
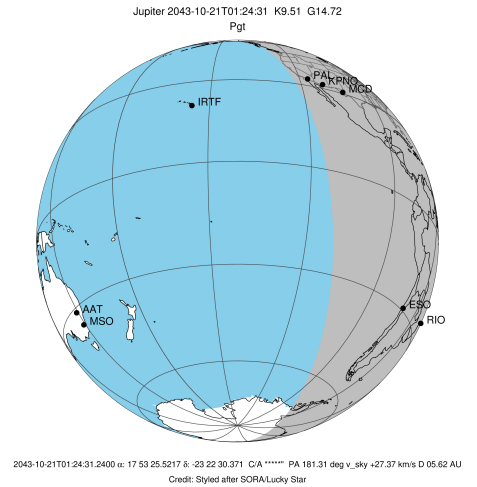


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-10-21T00:54:38.149	8.13	-48.21	71489.6	38.26	41.94
Jupiter	E	2043-10-21T02:01:46.864	-5.91x	-55.51	71489.4	40.44	44.15

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-10-21T01:27:55.120
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      : 4068625616279420288
2Mass ID (if available) : 17532552-2322303
ICRS Star Coord at Epoch: 17h 53m 25.52169s -23:22:30.37134s
RUWE (>1.4 is poor) : 0.97
K magnitude         : 9.513
G magnitude         : 14.719
RP magnitude        : 13.432
BP magnitude        : 16.594
DUPflag            : 0
Distance (au)       : 5.624
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 27.37
Sun-Target sep (deg) : 61.56
Sun-Moon sep (deg)  : 154.72
B (ring opening deg) : -2.13
PA of pole (deg)    : -0.13
Pole direction: RA (deg): 268.05675
Dec (deg): 64.49731
C/A sky separation (") : 11.237
C/A sky separation (km) : 45832.1
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	2043-10-21T00:54:17.967	33.66	-25.08	71489.6	38.71	42.40
Jupiter	E	2043-10-21T02:01:27.242	19.36	-36.92	71489.4	40.96	44.67