

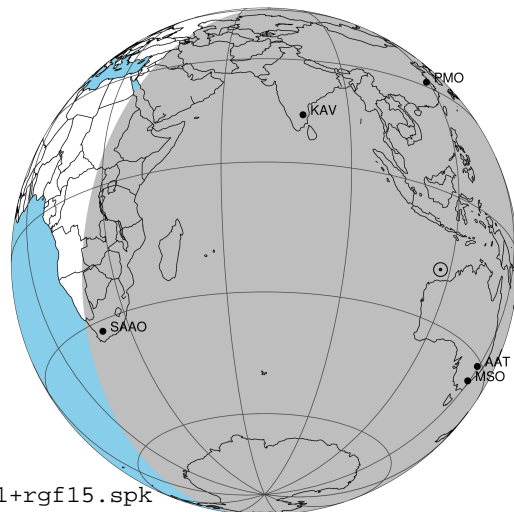
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2043-07-31T16:19:03.130
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4117427027516531584
 2Mass ID (if available) : 17325202-2303055

Jupiter 2043-07-31T16:19:03 K8.32 G14.10 Pgt

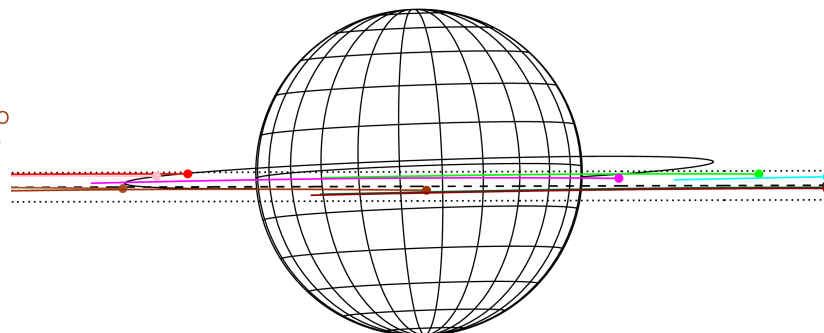
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23°03'05.80874s

RUWE (>1.4 is poor) : 1.03
 K magnitude : 8.324
 G magnitude : 14.096
 RP magnitude : 12.689
 BP magnitude : 16.633
 DUPflag : 0
 Distance (au) : 4.474
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -8.25
 Sun-Target sep (deg) : 135.99
 Sun-Moon sep (deg) : 164.25
 B (ring opening deg) : -2.37
 PA of pole (deg) : 2.08
 Pole direction: RA (deg): 268.05671
 Dec (deg): 64.49731
 C/A sky separation (") : 1.875
 C/A sky separation (km) : 6084.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2043-07-31T16:19:03 K8.32 G14.10
 Pgt



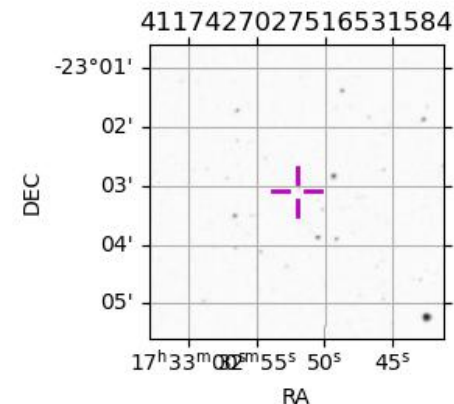
Earth
 PIC
 PMO
 TEN
 IRTF
 KAV
 RIO
 AAT
 SAAO
 MSO



2043-07-31T16:19:03.1300 α: 17 32 52.0174 δ: -23 03 05.809 C/A 1.885° PA 0.15 deg v_sky - 8.25 km/s D 04.47 AU
 Credit: Styled after SORA/Lucky Star

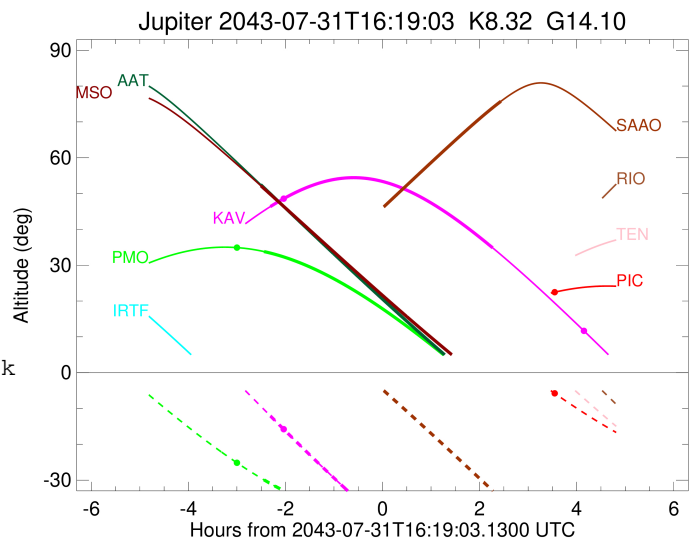
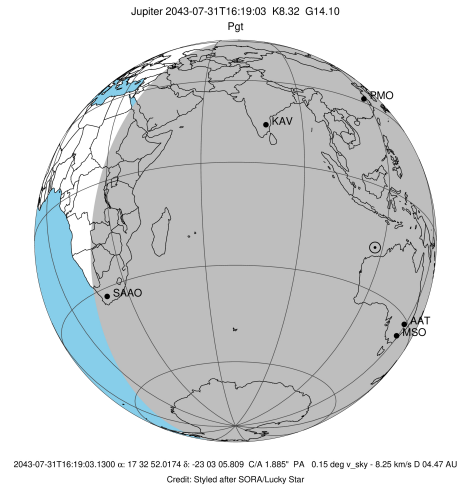
Observable events with sun below -5 deg and altitude above 5 deg

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			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8	+	JUL 31 13:52 - JUL 31 13:52	Pin
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			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 31 14:00 - JUL 31 18:35	Pie
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1	+	JUL 31 13:48 - JUL 31 13:48	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	JUL 31 18:45 - JUL 31 18:45	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	JUL 31 13:48 - JUL 31 13:48	Pin



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-31T16:11:00.670
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PMO
Location            : Purple Mtn Obs. Nanking
Latitude (deg)      : 32.06667
E. Longitude (deg)  : 118.82089
Altitude (km)       : 0.364
Gaia source ID      : 4117427027516531584
2Mass ID (if available) : 17325202-2303055
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23:03:05.80874s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.324
G magnitude          : 14.096
RP magnitude         : 12.689
BP magnitude         : 16.633
DUPflag             : 0
Distance (au)       : 4.474
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.25
Sun-Target sep (deg) : 135.99
Sun-Moon sep (deg)   : 165.10
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.08
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 0.476
C/A sky separation (km): 1546.0
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
    
```

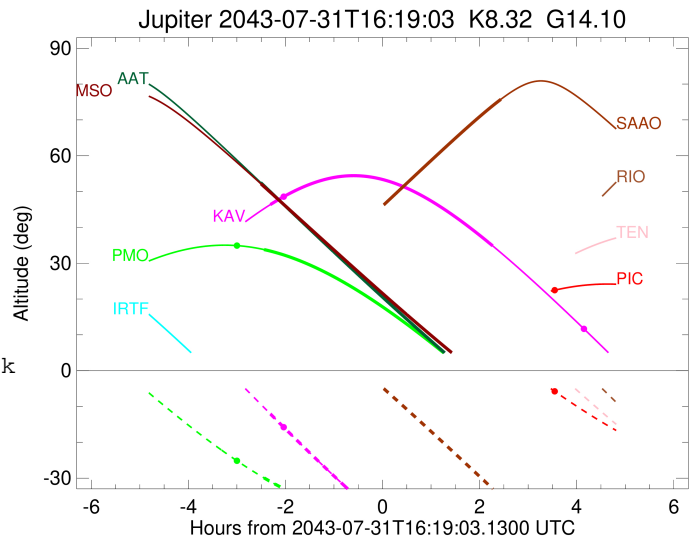
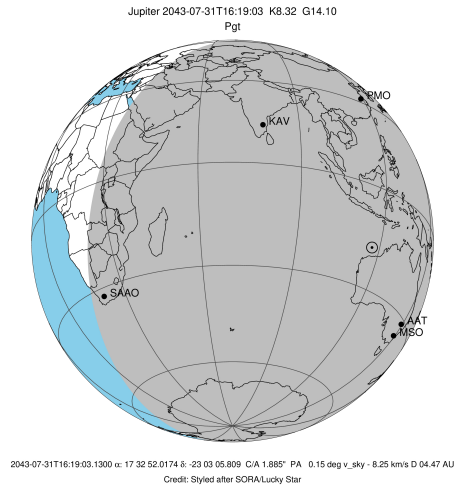


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-31T13:52:35.836	33.80	-29.92	71492.0	-2.67	-3.05
Jupiter	E	2043-07-31T18:32:48.004	-6.00x	-29.53	71492.0	-0.24	-0.27

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-31T16:17:10.340
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       : 4117427027516531584
2Mass ID (if available) : 17325202-2303055
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23:03:05.80874s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.324
G magnitude           : 14.096
RP magnitude          : 12.689
BP magnitude          : 16.633
DUPflag              : 0
Distance (au)        : 4.474
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.25
Sun-Target sep (deg) : 135.99
Sun-Moon sep (deg)   : 164.75
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.08
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation ("): 0.740
C/A sky separation (km): 2402.5
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
    
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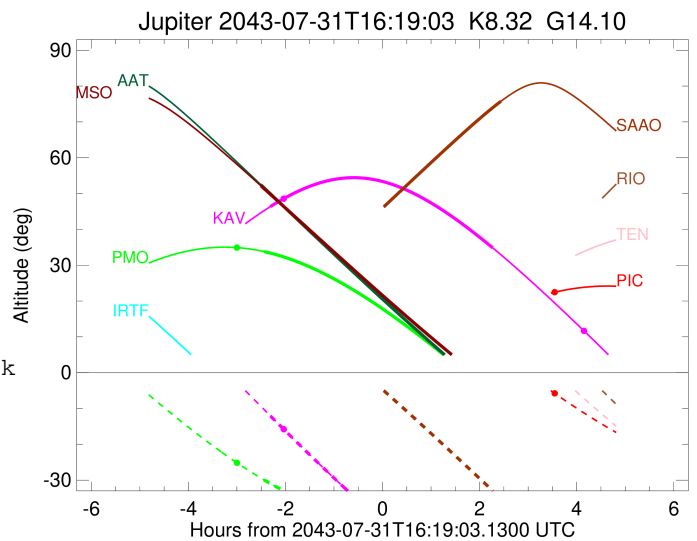
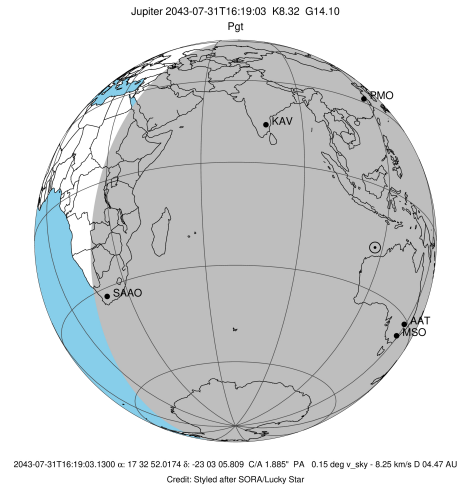


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-31T14:00:26.780	46.36	-12.07	71492.0	-4.02	-4.60
Jupiter	E	2043-07-31T18:35:02.285	34.88	-59.11	71492.0	-0.49	-0.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-31T16:08:01.840
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : AAT
Location              : Siding Spring (AAT)
Latitude (deg)        : -31.27703
E. Longitude (deg)    : 149.06608
Altitude (km)         : 1.164
Gaia source ID        : 4117427027516531584
2Mass ID (if available) : 17325202-2303055
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23:03:05.80874s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.324
G magnitude           : 14.096
RP magnitude          : 12.689
BP magnitude          : 16.633
DUPflag              : 0
Distance (au)         : 4.474
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.25
Sun-Target sep (deg) : 135.99
Sun-Moon sep (deg)   : 164.99
B (ring opening deg) : -2.37
PA of pole (deg)     : 2.08
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 2.657
C/A sky separation (km) : 8622.7
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
    
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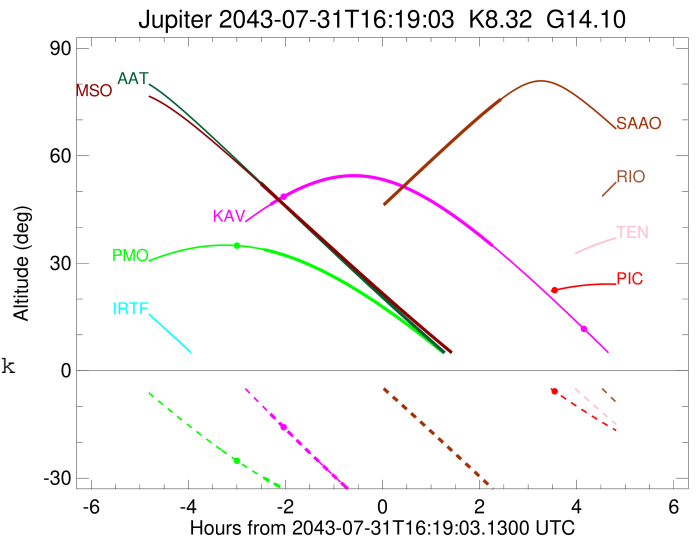
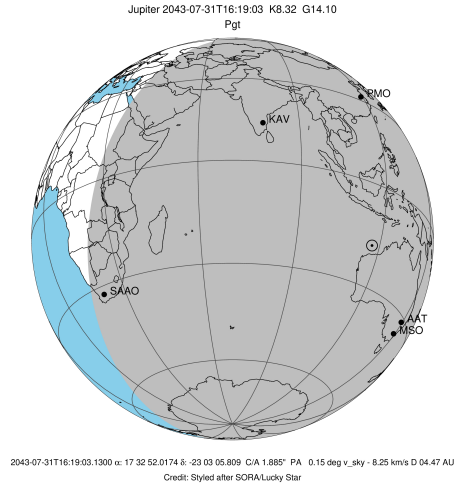


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-31T13:48:26.874	52.50	-76.19	71491.8	-7.96	-9.08
Jupiter	E	2043-07-31T18:32:10.874	-5.71x	-29.87	71491.9	-6.05	-6.91

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-31T16:27:14.500
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        : 4117427027516531584
2Mass ID (if available) : 17325202-2303055
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23:03:05.80874s
RUWE (>1.4 is poor) : 1.03
K magnitude           : 8.324
G magnitude           : 14.096
RP magnitude          : 12.689
BP magnitude          : 16.633
DUPflag              : 0
Distance (au)         : 4.474
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.25
Sun-Target sep (deg)  : 135.99
Sun-Moon sep (deg)    : 163.79
B (ring opening deg) : -2.37
PA of pole (deg)      : 2.08
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (") : 2.392
C/A sky separation (km) : 7761.4
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
    
```

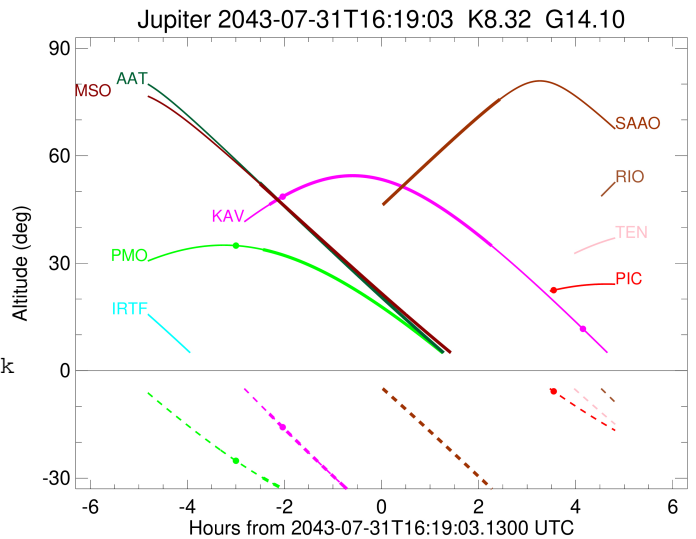
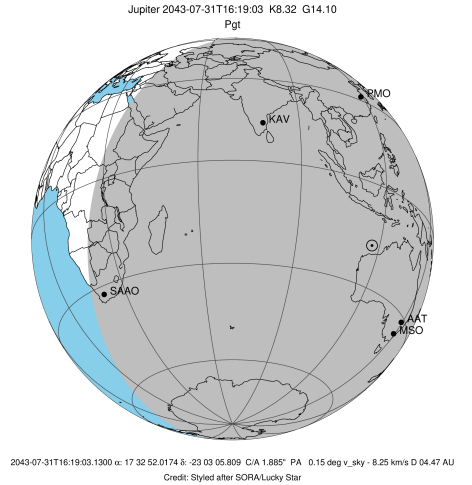


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-31T14:06:47.691	18.29	19.90x	71491.8	-9.09	-10.36
Jupiter	E	2043-07-31T18:45:25.713	75.74	-35.10	71492.0	-3.79	-4.33

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-31T16:08:30.870
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : MSO
Location            : Mt. Stromlo Observatory
Latitude (deg)      : -35.32000
E. Longitude (deg)  : 149.00833
Altitude (km)       : 0.770
Gaia source ID      : 4117427027516531584
2Mass ID (if available) : 17325202-2303055
ICRS Star Coord at Epoch: 17h 32m 52.01744s -23:03:05.80874s
RUWE (>1.4 is poor) : 1.03
K magnitude          : 8.324
G magnitude          : 14.096
RP magnitude         : 12.689
BP magnitude         : 16.633
DUPflag             : 0
Distance (au)       : 4.474
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.25
Sun-Target sep (deg) : 135.99
Sun-Moon sep (deg)  : 164.94
B (ring opening deg) : -2.37
PA of pole (deg)    : 2.08
Pole direction: RA (deg): 268.05671
Dec (deg): 64.49731
C/A sky separation (" ) : 2.771
C/A sky separation (km) : 8991.7
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	2043-07-31T13:48:51.753	52.14	-72.40	71491.8	-8.30	-9.47
Jupiter	E	2043-07-31T18:32:33.461	-3.62x	-30.05	71491.9	-6.30	-7.19