

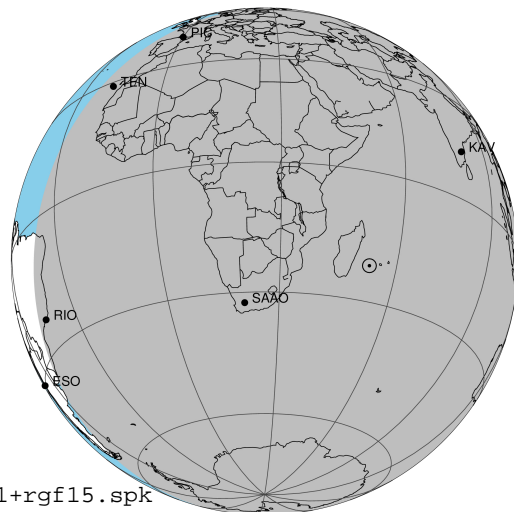
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-07-12T20:35:13.540  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116554702570720000  
 2Mass ID (if available) : 17394907-2304166

Jupiter 2043-07-12T20:35:13 K7.87 G13.65 Pgt

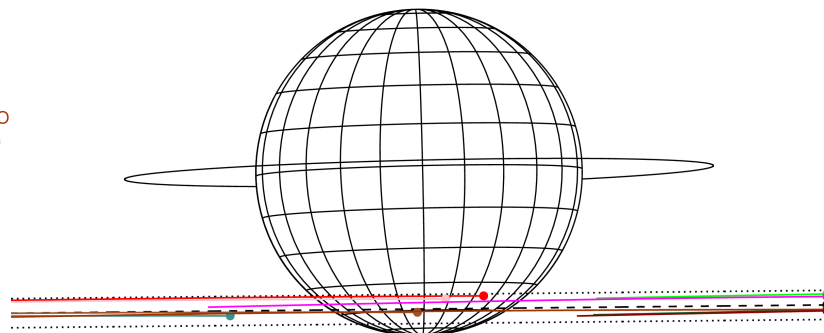
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23°04'16.56508s

RUWE (>1.4 is poor) : 0.89  
 K magnitude : 7.869  
 G magnitude : 13.652  
 RP magnitude : 12.219  
 BP magnitude : 16.374  
 DUPflag : 0  
 Distance (au) : 4.316  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -13.83  
 Sun-Target sep (deg) : 155.55  
 Sun-Moon sep (deg) : 79.15  
 B (ring opening deg) : -2.40  
 PA of pole (deg) : 1.34  
 Pole direction: RA (deg): 268.05670  
 Dec (deg): 64.49732  
 C/A sky separation (") : 19.109  
 C/A sky separation (km) : 59820.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2043-07-12T20:35:13 K7.87 G13.65  
 Pgt



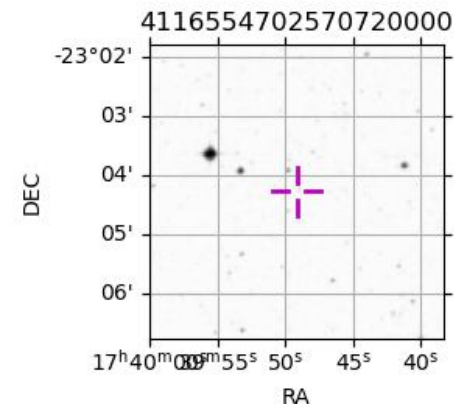
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 RIO  
 ESO  
 AAT  
 SAAO  
 MSO



2043-07-12T20:35:13.5400 α: 17 39 49.0854 δ: -23 04 16.565 C/A \*\*\*\*\* PA 0.58 deg v\_sky -13.83 km/s D 04.32 AU  
 Credit: Styled after SORA/Lucky Star

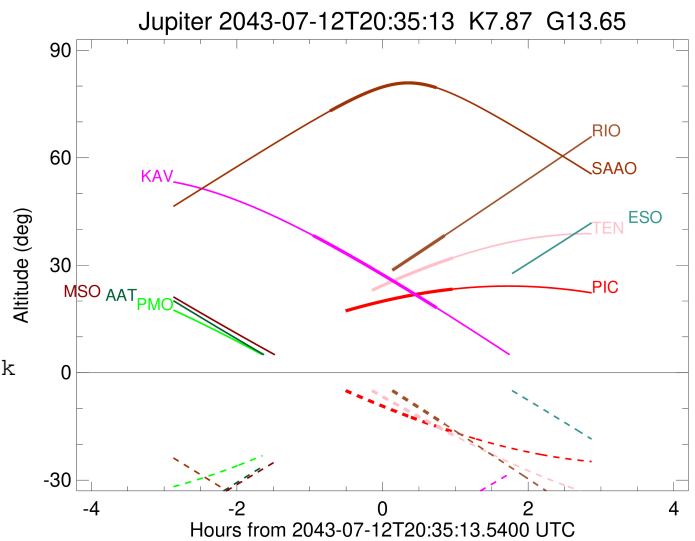
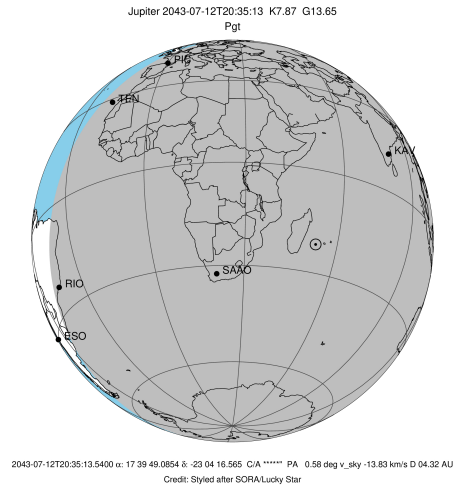
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+	JUL 12 21:32 - JUL 12 21:32	Pne
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	+	JUL 12 21:33 - JUL 12 21:33	Pne
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUL 12 19:38 - JUL 12 21:19	Pie
RIO	Rio de Janeiro	-22.9	316.8	+ +	JUL 12 21:26 - JUL 12 21:26	Pne
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	+ +	JUL 12 19:51 - JUL 12 21:19	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-12T20:37:56.860
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        : 4116554702570720000
2Mass ID (if available) : 17394907-2304166
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23:04:16.56508s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 7.869
G magnitude           : 13.652
RP magnitude          : 12.219
BP magnitude          : 16.374
DUPflag              : 0
Distance (au)         : 4.316
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.83
Sun-Target sep (deg)  : 155.55
Sun-Moon sep (deg)   : 79.40
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.34
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 17.312
C/A sky separation (km) : 54195.8
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
    
```

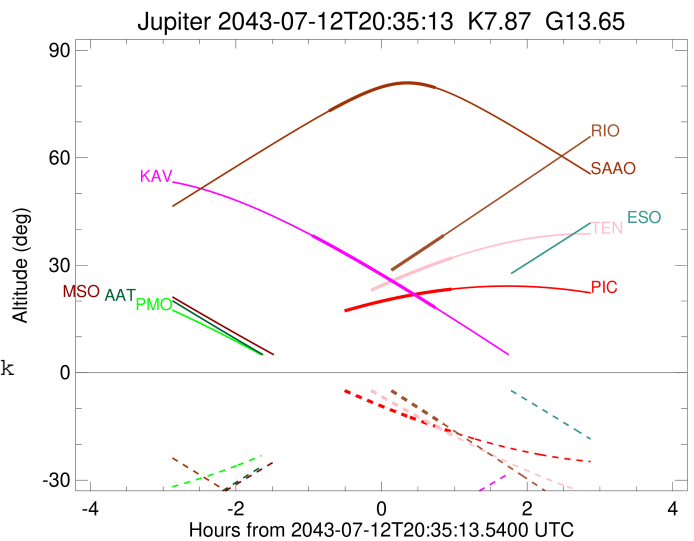
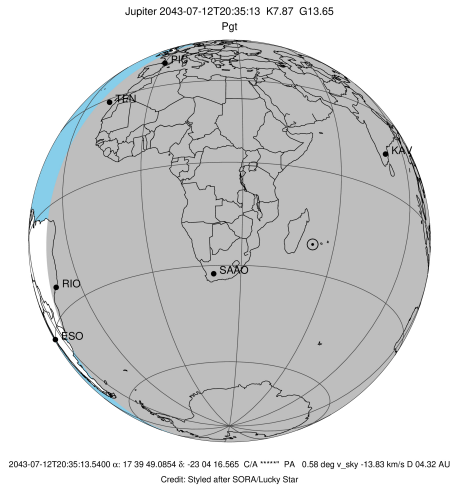


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-12T19:42:59.543	14.95	-1.68x	71487.3	-50.29	-53.87
Jupiter	E	2043-07-12T21:32:47.578	23.31	-16.47	71487.6	-48.31	-51.94

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-12T20:40:14.730
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      : 4116554702570720000
2Mass ID (if available) : 17394907-2304166
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23:04:16.56508s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 7.869
G magnitude          : 13.652
RP magnitude         : 12.219
BP magnitude         : 16.374
DUPflag             : 0
Distance (au)       : 4.316
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.83
Sun-Target sep (deg) : 155.55
Sun-Moon sep (deg)  : 79.42
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.34
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 17.704
C/A sky separation (km) : 55423.2
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
    
```

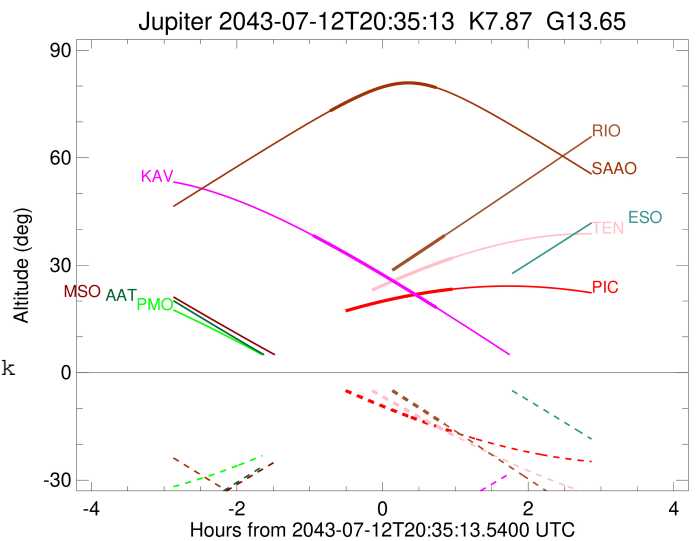
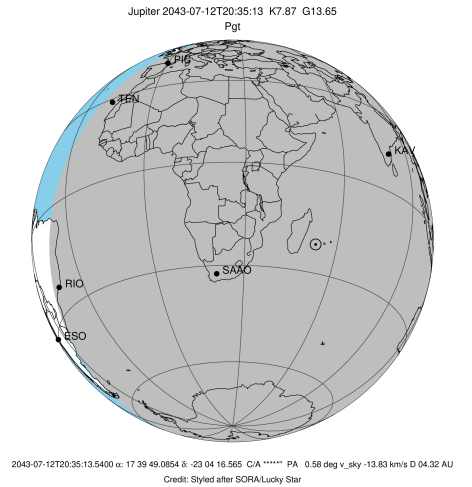


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-12T19:46:57.740	16.46	2.88x	71487.1	-52.01	-55.52
Jupiter	E	2043-07-12T21:33:18.787	32.06	-17.37	71487.4	-49.64	-53.24

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-07-12T20:28:44.550
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      : 4116554702570720000
2Mass ID (if available) : 17394907-2304166
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23:04:16.56508s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 7.869
G magnitude          : 13.652
RP magnitude         : 12.219
BP magnitude         : 16.374
DUPflag             : 0
Distance (au)       : 4.316
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -13.83
Sun-Target sep (deg) : 155.55
Sun-Moon sep (deg)  : 79.69
B (ring opening deg) : -2.40
PA of pole (deg)    : 1.34
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (" ) : 18.205
C/A sky separation (km) : 56992.2
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
    
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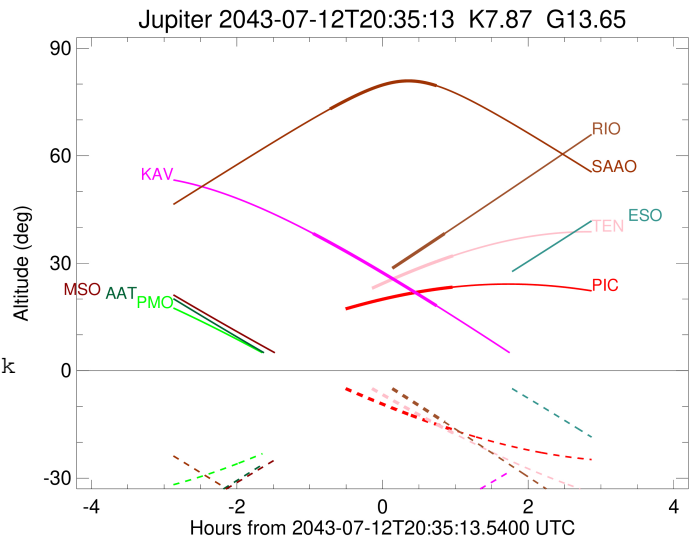
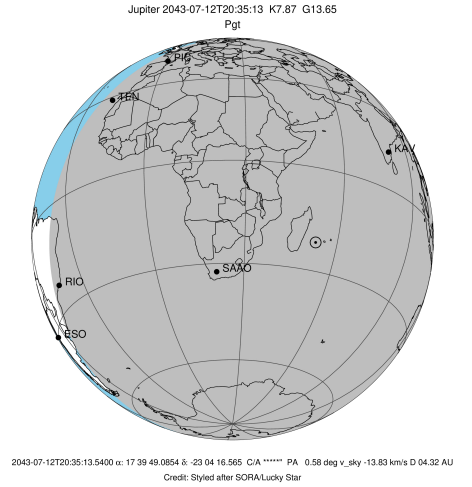


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-12T19:38:00.671	38.29	-53.68	71487.0	-53.06	-56.52
Jupiter	E	2043-07-12T21:19:47.441	18.11	-39.76	71487.0	-52.65	-56.13

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-12T20:42:35.230
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        : 4116554702570720000
2Mass ID (if available) : 17394907-2304166
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23:04:16.56508s
RUWE (>1.4 is poor)  : 0.89
K magnitude           : 7.869
G magnitude           : 13.652
RP magnitude          : 12.219
BP magnitude          : 16.374
DUPflag              : 0
Distance (au)         : 4.316
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -13.83
Sun-Target sep (deg)  : 155.55
Sun-Moon sep (deg)    : 79.41
B (ring opening deg)  : -2.40
PA of pole (deg)      : 1.34
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 19.563
C/A sky separation (km) : 61241.7
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
    
```

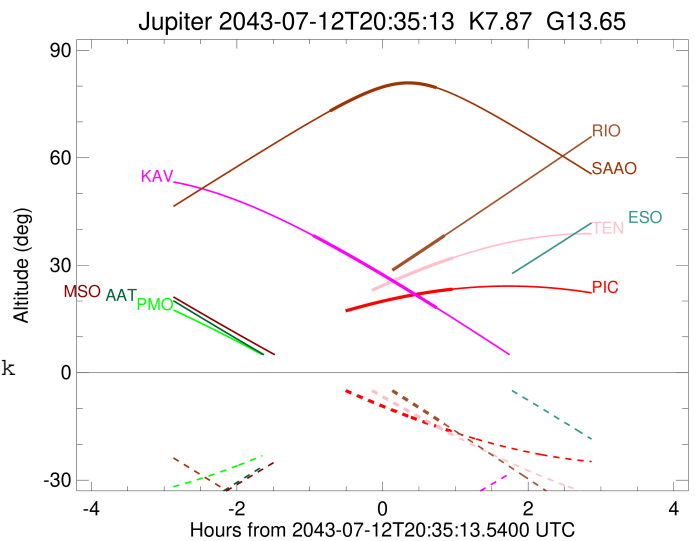
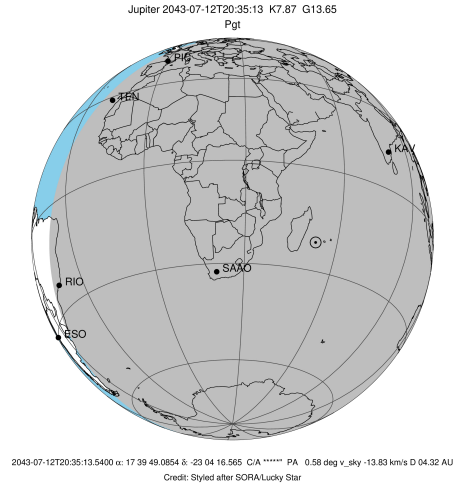


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-07-12T19:58:35.086	18.66	4.43x	71486.0	-60.28	-63.32
Jupiter	E	2043-07-12T21:26:21.754	38.26	-14.34	71486.4	-57.50	-60.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-07-12T20:35:53.290
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        : 4116554702570720000
2Mass ID (if available) : 17394907-2304166
ICRS Star Coord at Epoch: 17h 39m 49.08537s -23:04:16.56508s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 7.869
G magnitude           : 13.652
RP magnitude          : 12.219
BP magnitude          : 16.374
DUPflag              : 0
Distance (au)         : 4.316
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -13.83
Sun-Target sep (deg) : 155.55
Sun-Moon sep (deg)   : 80.03
B (ring opening deg) : -2.40
PA of pole (deg)     : 1.34
Pole direction: RA (deg): 268.05670
Dec (deg): 64.49732
C/A sky separation (") : 19.435
C/A sky separation (km) : 60841.5
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	2043-07-12T19:51:58.274	73.04	-50.94	71486.2	-59.13	-62.25
Jupiter	E	2043-07-12T21:19:48.125	79.52	-68.96	71486.4	-57.49	-60.72