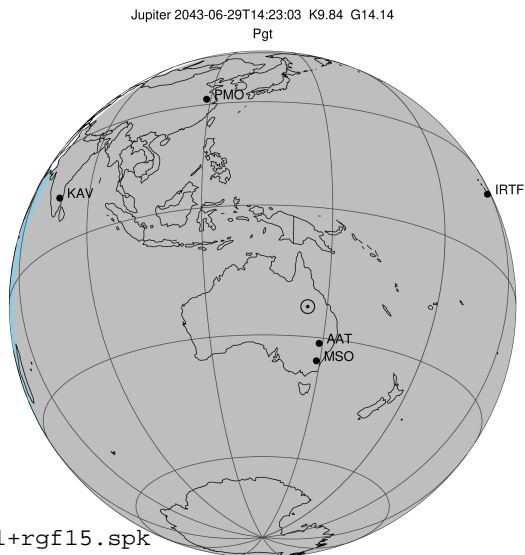


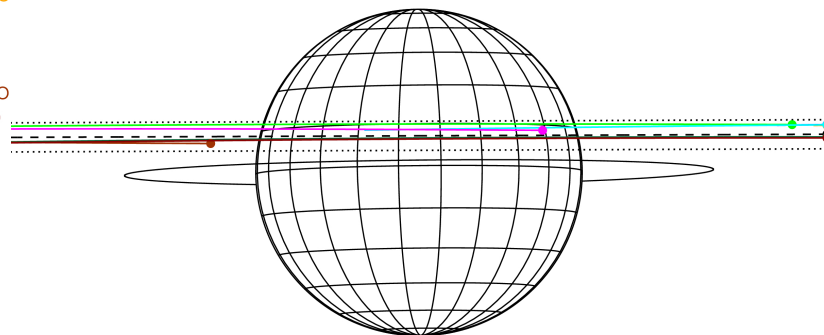
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2043-06-29T14:23:03.740  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4068836447634369152  
 2Mass ID (if available) : 17463118-2304327

Jupiter 2043-06-29T14:23:03 K9.84 G14.14 Pgt

ICRS Star Coord at Epoch: 17h 46m 31.18360s -23°04'32.83781s  
 RUWE (>1.4 is poor) : 0.89  
 K magnitude : 9.839  
 G magnitude : 14.137  
 RP magnitude : 12.902  
 BP magnitude : 15.374  
 DUPflag : 0  
 Distance (au) : 4.260  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -15.97  
 Sun-Target sep (deg) : 169.73  
 Sun-Moon sep (deg) : 93.61  
 B (ring opening deg) : -2.42  
 PA of pole (deg) : 0.61  
 Pole direction: RA (deg): 268.05669  
 Dec (deg): 64.49732  
 C/A sky separation (") : 5.204  
 C/A sky separation (km) : 16078.3  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk



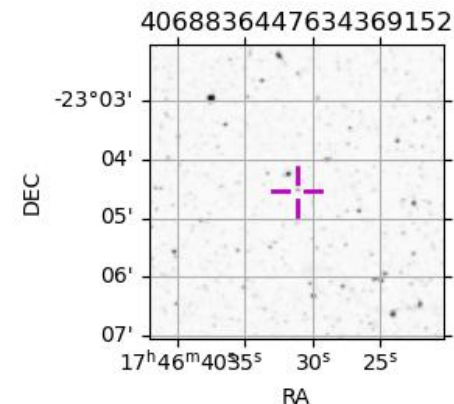
Earth  
 PAL  
 PMO  
 KPNO  
 IRTF  
 KAV  
 AAT  
 SAAO  
 MSO



2043-06-29T14:23:03.7400 at: 17 46 31.1836 s: -23 04 32.838 C/A 5.193° PA 180.22 deg v\_sky -15.97 km/s D 04.26 AU  
 Credit: Styled after SORA/Lucky Star

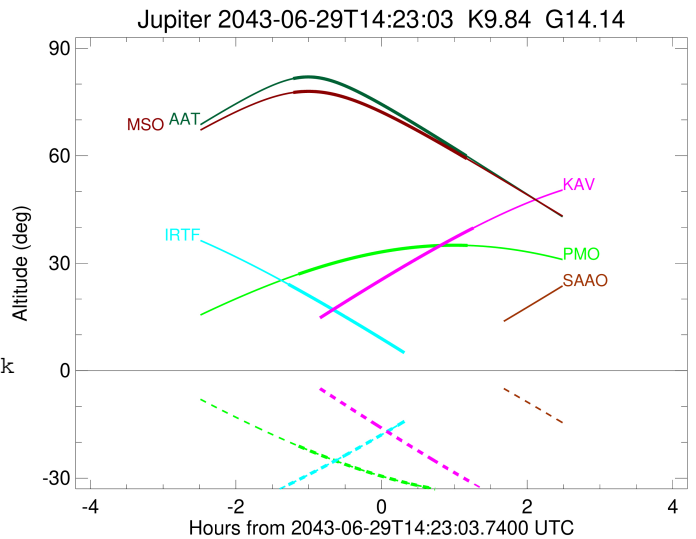
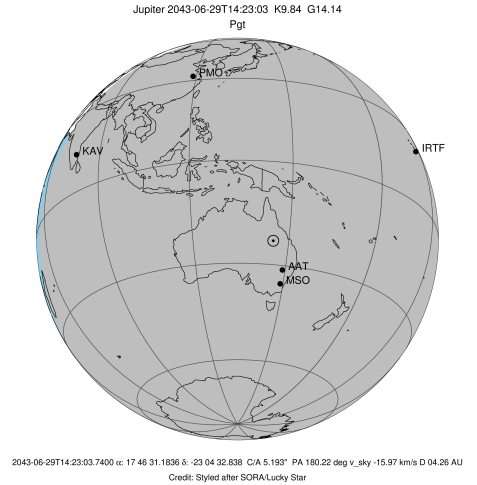
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OEcode
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	+ +	JUN 29 13:14 - JUN 29 15:34	Pie
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	+	JUN 29 13:06 - JUN 29 13:06	Pin
KAV	Kavalur Observatory	12.6	78.8	+	JUN 29 15:38 - JUN 29 15:38	Pne
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	+ +	JUN 29 13:10 - JUN 29 15:32	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUN 29 13:10 - JUN 29 15:33	Pie



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T14:24:26.670
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      : 4068836447634369152
2Mass ID (if available) : 17463118-2304327
ICRS Star Coord at Epoch: 17h 46m 31.18360s -23:04:32.83781s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 9.839
G magnitude          : 14.137
RP magnitude         : 12.902
BP magnitude         : 15.374
DUPflag             : 0
Distance (au)       : 4.260
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.97
Sun-Target sep (deg) : 169.73
Sun-Moon sep (deg)  : 94.12
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.61
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 6.871
C/A sky separation (km): 21228.4
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
    
```

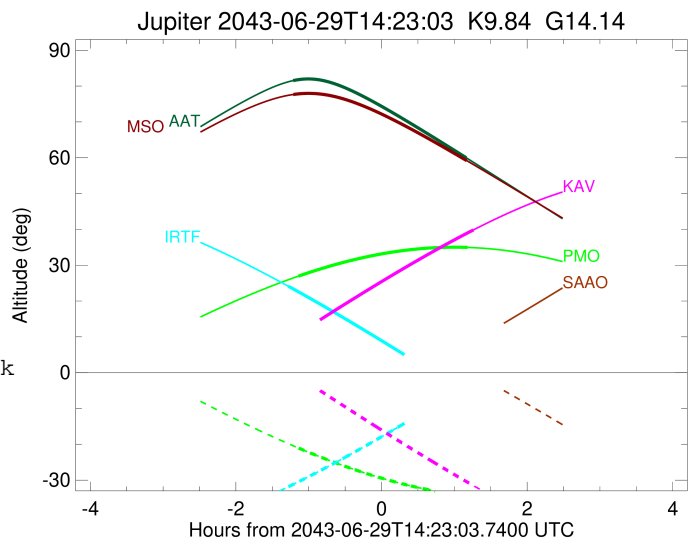
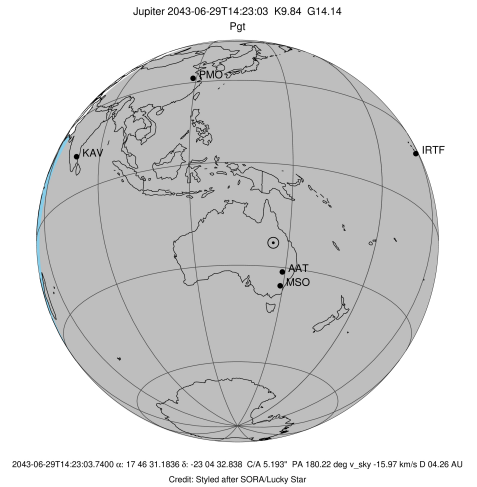


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-29T13:14:45.366	26.96	-21.05	71491.3	16.65	18.86
Jupiter	E	2043-06-29T15:34:01.408	34.95	-34.30	71491.3	17.71	20.04

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2043-06-29T14:17:23.890
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)        : 19.82622
E. Longitude (deg)    : 204.52800
Altitude (km)         : 4.168
Gaia source ID        : 4068836447634369152
2Mass ID (if available) : 17463118-2304327
ICRS Star Coord at Epoch: 17h 46m 31.18360s -23:04:32.83781s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.839
G magnitude           : 14.137
RP magnitude          : 12.902
BP magnitude          : 15.374
DUPflag              : 0
Distance (au)         : 4.260
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -15.97
Sun-Target sep (deg)  : 169.73
Sun-Moon sep (deg)   : 93.81
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.61
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.115
C/A sky separation (km) : 18891.3
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
    
```

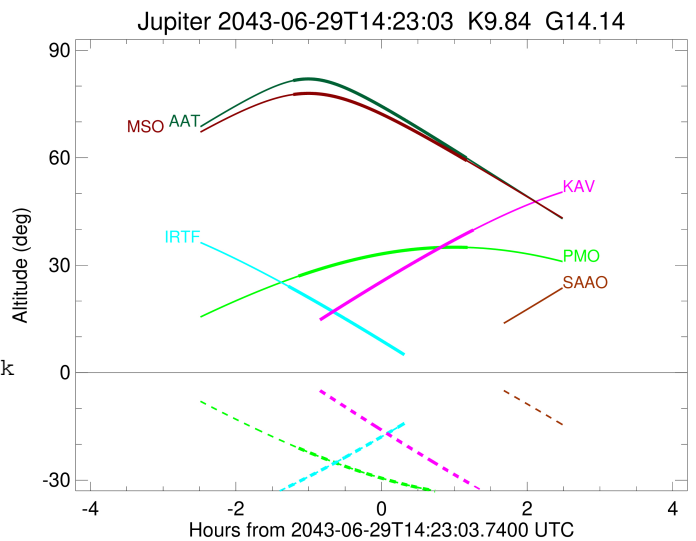
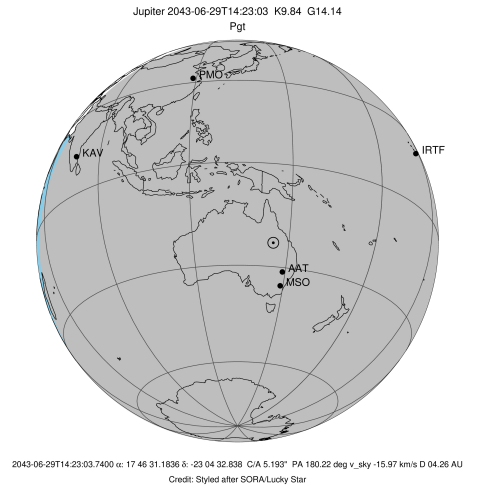


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-29T13:06:24.263	24.10	-31.83	71491.4	15.44	17.52
Jupiter	E	2043-06-29T15:28:57.872	-5.09x	-4.47x	71491.5	15.10	17.14

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T14:28:07.960
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       : 4068836447634369152
2Mass ID (if available) : 17463118-2304327
ICRS Star Coord at Epoch: 17h 46m 31.18360s -23:04:32.83781s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.839
G magnitude           : 14.137
RP magnitude         : 12.902
BP magnitude         : 15.374
DUPflag              : 0
Distance (au)        : 4.260
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.97
Sun-Target sep (deg) : 169.73
Sun-Moon sep (deg)   : 93.97
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.61
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation (") : 6.083
C/A sky separation (km) : 18793.2
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
    
```

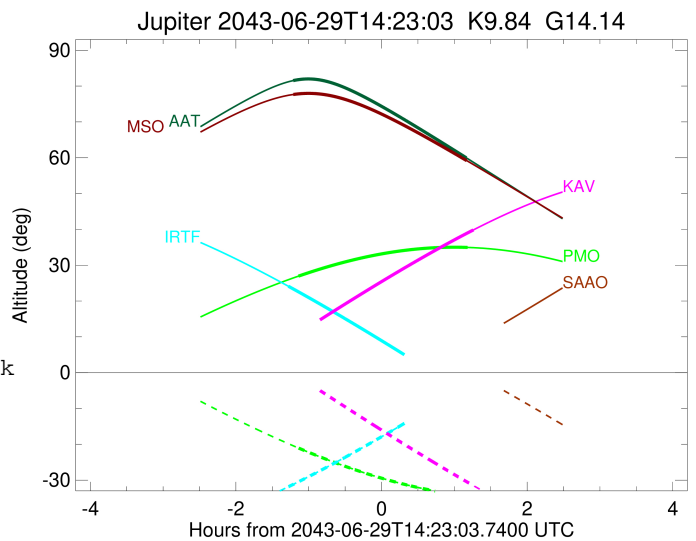
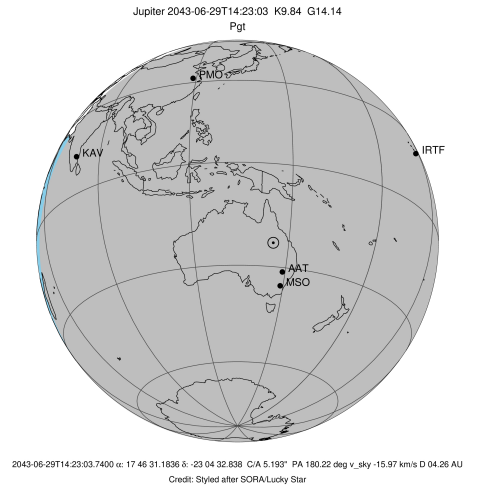


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-29T13:17:04.031	11.41	-1.59x	71491.5	14.27	16.21
Jupiter	E	2043-06-29T15:38:43.892	39.83	-31.51	71491.4	16.06	18.21

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T14:21:38.960
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      : 4068836447634369152
2Mass ID (if available) : 17463118-2304327
ICRS Star Coord at Epoch: 17h 46m 31.18360s -23:04:32.83781s
RUWE (>1.4 is poor) : 0.89
K magnitude          : 9.839
G magnitude          : 14.137
RP magnitude         : 12.902
BP magnitude         : 15.374
DUPflag             : 0
Distance (au)       : 4.260
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.97
Sun-Target sep (deg) : 169.73
Sun-Moon sep (deg)  : 94.56
B (ring opening deg) : -2.42
PA of pole (deg)    : 0.61
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 4.893
C/A sky separation (km): 15117.8
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
    
```

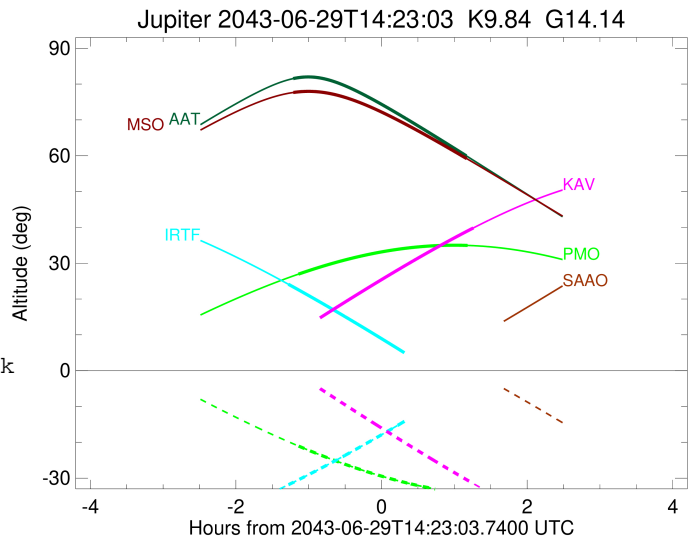
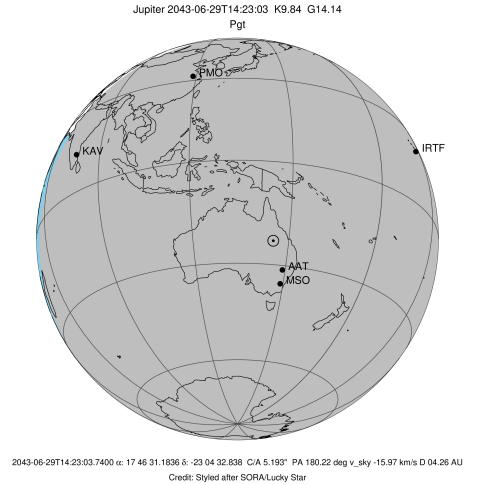


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2043-06-29T13:10:28.479	81.53	-75.14	71491.7	11.86	13.50
Jupiter	E	2043-06-29T15:32:58.707	59.96	-69.40	71491.6	12.37	14.07

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2043-06-29T14:21:42.970
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       : 4068836447634369152
2Mass ID (if available) : 17463118-2304327
ICRS Star Coord at Epoch: 17h 46m 31.18360s -23:04:32.83781s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.839
G magnitude           : 14.137
RP magnitude         : 12.902
BP magnitude         : 15.374
DUPflag              : 0
Distance (au)        : 4.260
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -15.97
Sun-Target sep (deg) : 169.73
Sun-Moon sep (deg)   : 94.54
B (ring opening deg) : -2.42
PA of pole (deg)     : 0.61
Pole direction: RA (deg): 268.05669
Dec (deg): 64.49732
C/A sky separation ("): 4.752
C/A sky separation (km): 14680.2
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	2043-06-29T13:10:22.236	77.64	-72.79	71491.7	11.50	13.09
Jupiter	E	2043-06-29T15:33:12.634	59.20	-67.88	71491.7	12.02	13.68