

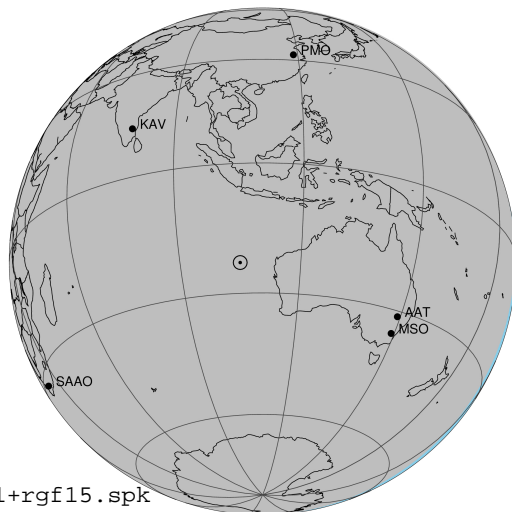
target : Jupiter  
 target radius (km) : 71492.00  
 C/A epoch : 2031-06-10T16:59:10.260  
 Event type : Pgt  
 : Jupiter occs: geocentric, topocentric  
 : Not a ringed target  
 Gaia source ID : 4116706125893088512  
 2Mass ID (if available) : 17350464-2250358

Jupiter 2031-06-10T16:59:10 K9.53 G14.65 Pgt

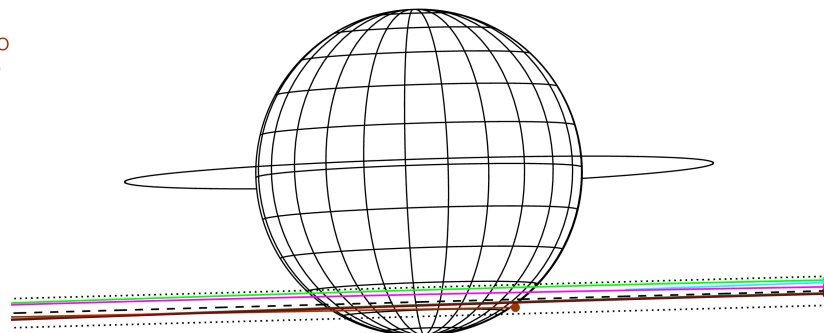
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s

RUWE (>1.4 is poor) : 0.88  
 K magnitude : 9.531  
 G magnitude : 14.649  
 RP magnitude : 13.348  
 BP magnitude : 16.582  
 DUPflag : 0  
 Distance (au) : 4.270  
 f0 (km) : 0.00  
 g0 (km) : 0.00  
 skyplane vel. (km/s) : -16.34  
 Sun-Target sep (deg) : 174.92  
 Sun-Moon sep (deg) : 67.15  
 B (ring opening deg) : -2.60  
 PA of pole (deg) : 1.85  
 Pole direction: RA (deg): 268.05692  
 Dec (deg): 64.49651  
 C/A sky separation (") : 18.310  
 C/A sky separation (km) : 56704.8  
 NAIF SPICE kernels : RAJobs\_U111+rgf15.spk

Jupiter 2031-06-10T16:59:10 K9.53 G14.65  
 Pgt



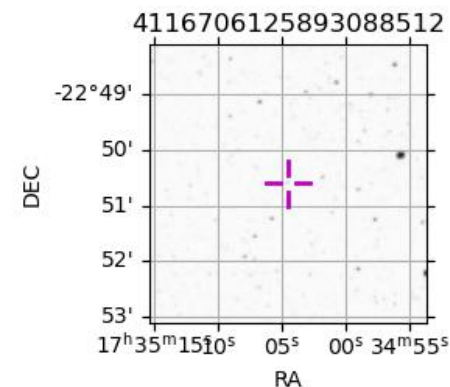
Earth  
 PMO  
 IRTF  
 KAV  
 AAT  
 SAAO  
 MSO



2031-06-10T16:59:10.2600 α: 17 35 04.6338 δ: -22 50 35.895 C/A \*\*\*\*\* PA 1.57 deg v\_sky -16.34 km/s D 04.27 AU  
 Credit: Styled after SORA/Lucky Star

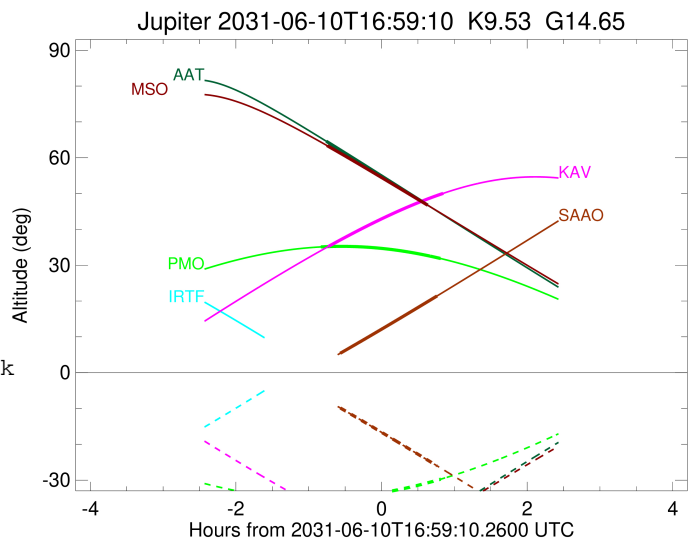
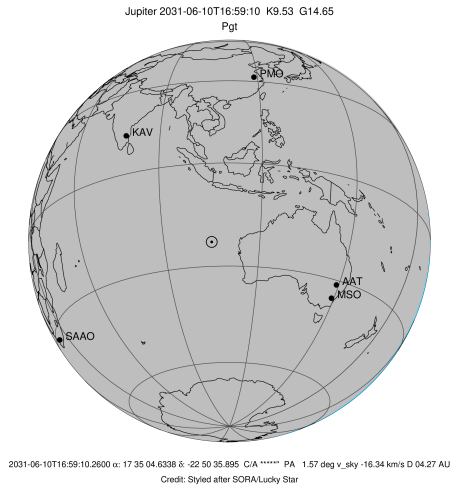
Observable events with sun below -5 deg and altitude above 5 deg

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	+ +	JUN 10 16:09 - JUN 10 17:47	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			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	JUN 10 16:15 - JUN 10 17:50	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	+ +	JUN 10 16:13 - JUN 10 17:37	Pie
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	JUN 10 16:25 - JUN 10 17:44	Pie
MSO	Mt. Stromlo Observatory	-35.3	149.0	+ +	JUN 10 16:14 - JUN 10 17:36	Pie



```

target                : Jupiter
target radius (km)    : 71492.00
C/A epoch              : 2031-06-10T16:58:29.250
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        : 4116706125893088512
2Mass ID (if available) : 17350464-2250358
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s
RUWE (>1.4 is poor)  : 0.88
K magnitude            : 9.531
G magnitude            : 14.649
RP magnitude          : 13.348
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -16.34
Sun-Target sep (deg)  : 174.92
Sun-Moon sep (deg)    : 67.60
B (ring opening deg)  : -2.60
PA of pole (deg)      : 1.85
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49651
C/A sky separation (") : 16.631
C/A sky separation (km) : 51504.5
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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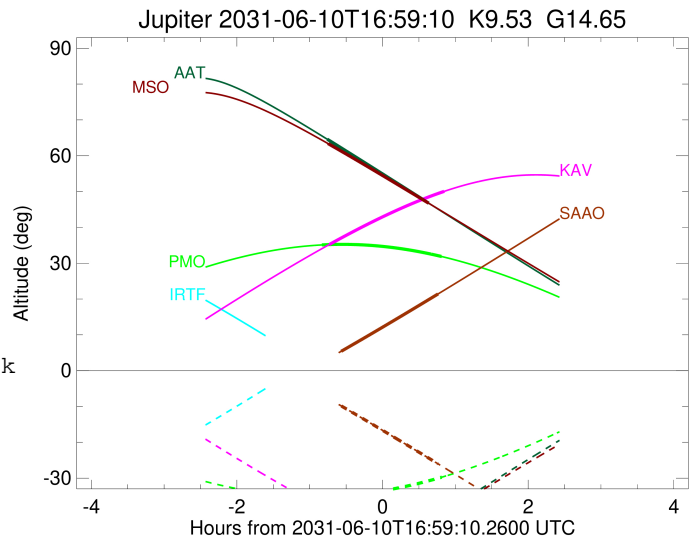
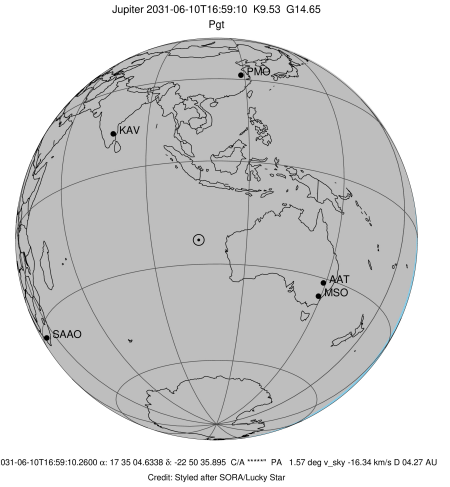


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-06-10T16:09:09.534	35.10	-35.07	71487.2	-46.32	-50.00
Jupiter	E	2031-06-10T17:47:50.695	31.87	-29.74	71487.2	-45.86	-49.55

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-06-10T17:02:50.050
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        : 4116706125893088512
2Mass ID (if available) : 17350464-2250358
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.531
G magnitude           : 14.649
RP magnitude          : 13.348
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.34
Sun-Target sep (deg) : 174.92
Sun-Moon sep (deg)   : 67.95
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.85
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49651
C/A sky separation (") : 17.254
C/A sky separation (km) : 53435.4
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
    
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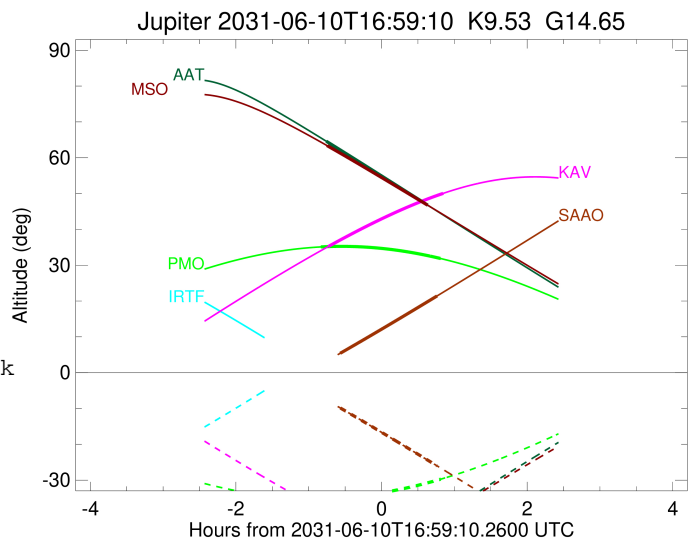
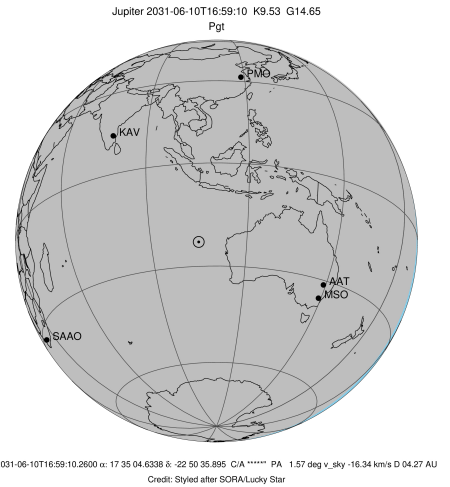


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-06-10T16:15:29.318	35.24	-39.15	71486.7	-48.97	-52.59
Jupiter	E	2031-06-10T17:50:02.060	50.05	-52.08	71486.9	-47.75	-51.40

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-06-10T16:55:26.410
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        : 4116706125893088512
2Mass ID (if available) : 17350464-2250358
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.531
G magnitude           : 14.649
RP magnitude          : 13.348
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)         : 4.270
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -16.34
Sun-Target sep (deg)  : 174.92
Sun-Moon sep (deg)    : 67.70
B (ring opening deg) : -2.60
PA of pole (deg)      : 1.85
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49651
C/A sky separation (") : 18.721
C/A sky separation (km) : 57978.2
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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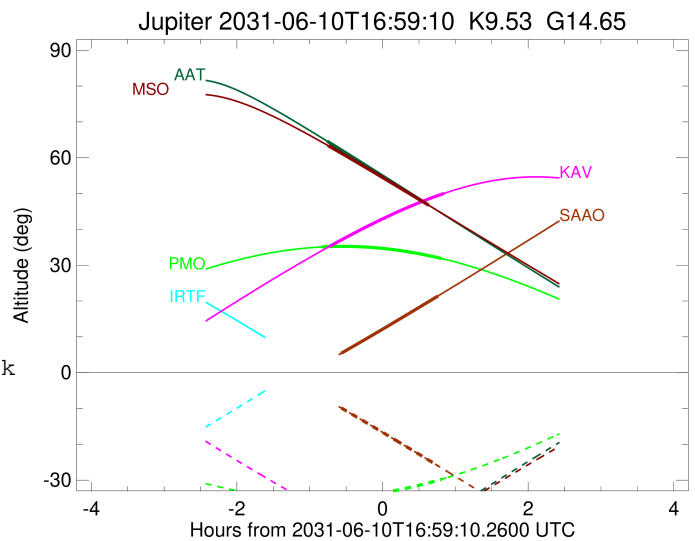
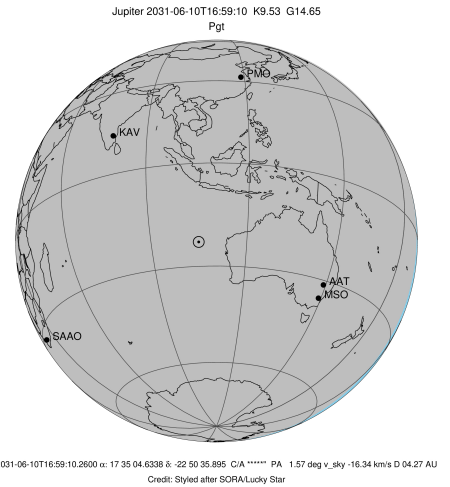


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-06-10T16:13:41.459	64.59	-59.98	71485.9	-54.14	-57.55
Jupiter	E	2031-06-10T17:37:17.914	46.74	-42.12	71485.9	-54.18	-57.59

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-06-10T17:05:09.850
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       : 4116706125893088512
2Mass ID (if available) : 17350464-2250358
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.531
G magnitude           : 14.649
RP magnitude          : 13.348
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)        : 4.270
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.34
Sun-Target sep (deg) : 174.92
Sun-Moon sep (deg)   : 67.66
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.85
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49651
C/A sky separation (") : 19.343
C/A sky separation (km) : 59903.8
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
    
```

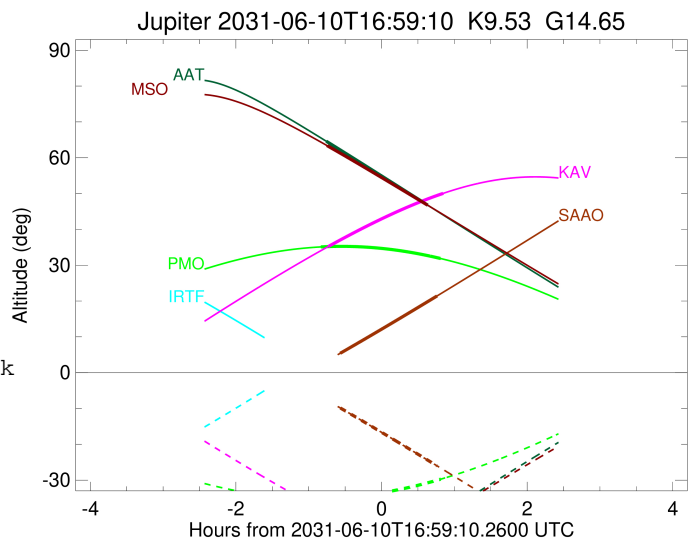
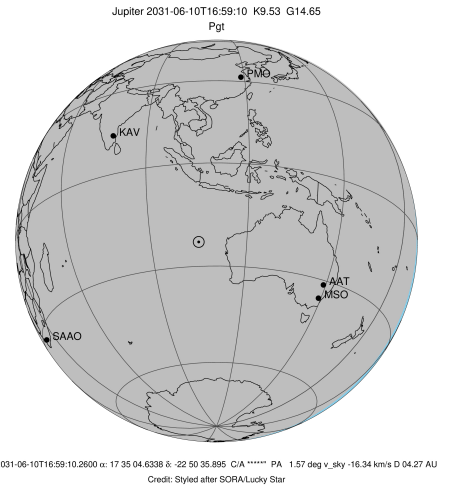


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-06-10T16:25:18.550	5.44	-9.87	71485.4	-57.64	-60.86
Jupiter	E	2031-06-10T17:44:50.705	21.39	-25.99	71485.6	-56.03	-59.35

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-06-10T16:55:35.760
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       : 4116706125893088512
2Mass ID (if available) : 17350464-2250358
ICRS Star Coord at Epoch: 17h 35m 04.63382s -22:50:35.89491s
RUWE (>1.4 is poor) : 0.88
K magnitude           : 9.531
G magnitude           : 14.649
RP magnitude          : 13.348
BP magnitude          : 16.582
DUPflag              : 0
Distance (au)        : 4.270
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -16.34
Sun-Target sep (deg) : 174.92
Sun-Moon sep (deg)   : 67.70
B (ring opening deg) : -2.60
PA of pole (deg)     : 1.85
Pole direction: RA (deg): 268.05692
Dec (deg): 64.49651
C/A sky separation (") : 18.858
C/A sky separation (km) : 58402.3
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	2031-06-10T16:14:24.043	63.36	-59.12	71485.8	-54.73	-58.11
Jupiter	E	2031-06-10T17:36:53.563	46.80	-42.40	71485.8	-54.75	-58.13