

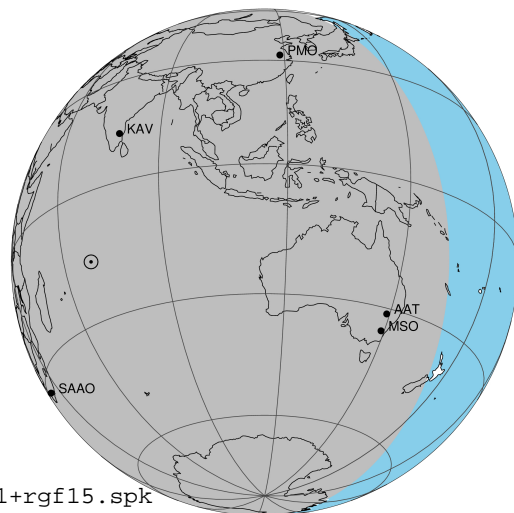
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-05-05T19:19:51.060
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4068711446923639552
 2Mass ID (if available) : 17505323-2254057

Jupiter 2031-05-05T19:19:51 K8.38 G14.51 Pgt

ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s

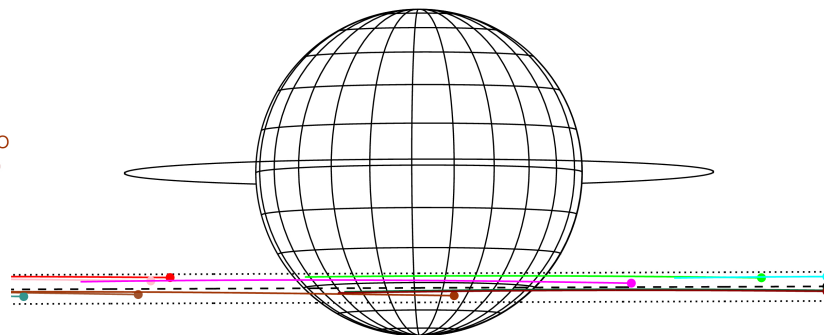
RUWE (>1.4 is poor) : 0.93
 K magnitude : 8.385
 G magnitude : 14.509
 RP magnitude : 13.032
 BP magnitude : 17.568
 DUPflag : 0
 Distance (au) : 4.514
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : -8.43
 Sun-Target sep (deg) : 136.77
 Sun-Moon sep (deg) : 61.26
 B (ring opening deg) : -2.60
 PA of pole (deg) : 0.14
 Pole direction: RA (deg): 268.05695
 Dec (deg): 64.49651
 C/A sky separation (") : 15.441
 C/A sky separation (km) : 50552.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-05-05T19:19:51 K8.38 G14.51
 Pgt



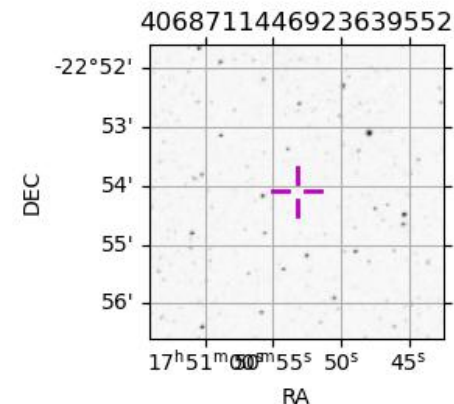
2031-05-05T19:19:51.0600 α: 17 50 53.2243 δ: -22 54 05.993 C/A ***** PA 0.21 deg v_sky - 8.43 km/s D 04.51 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 IRTF
 KAV
 RIO
 ESO
 AAT
 SAAO
 MSO



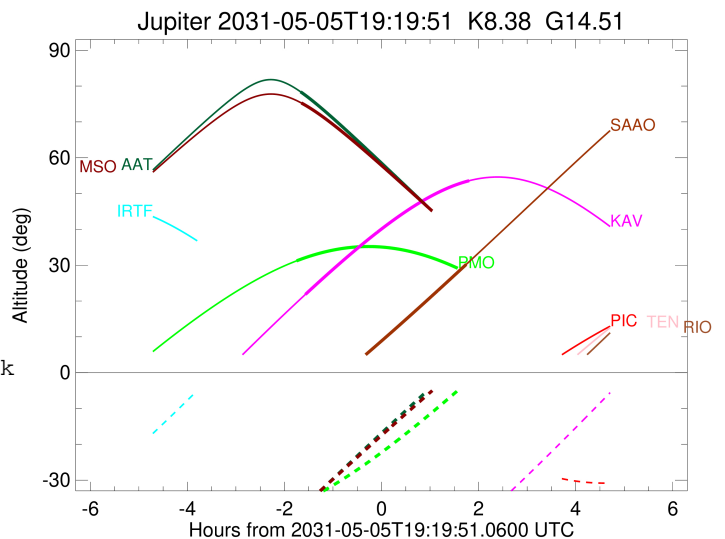
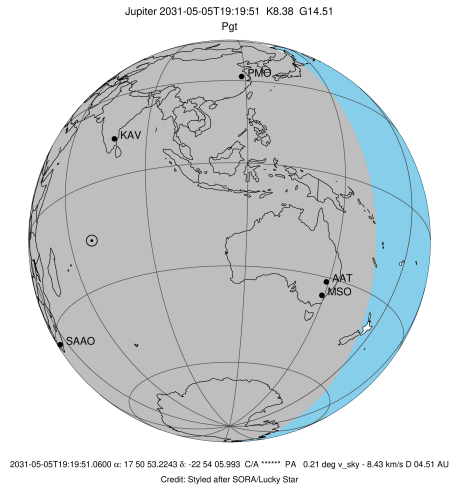
Observable events with sun below -5 deg and altitude above 5 deg

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	+	MAY 05 17:34 - MAY 05 17:34	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	+ +	MAY 05 17:45 - MAY 05 21:08	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	+	MAY 05 17:39 - MAY 05 17:39	Pin
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+	MAY 05 21:04 - MAY 05 21:04	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0	+	MAY 05 17:40 - MAY 05 17:40	Pin



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-05T19:19:01.970
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       : 4068711446923639552
2Mass ID (if available) : 17505323-2254057
ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.385
G magnitude           : 14.509
RP magnitude          : 13.032
BP magnitude          : 17.568
DUPflag              : 0
Distance (au)        : 4.514
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : -8.43
Sun-Target sep (deg) : 136.77
Sun-Moon sep (deg)   : 61.80
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 13.852
C/A sky separation (km): 45349.4
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
    
```

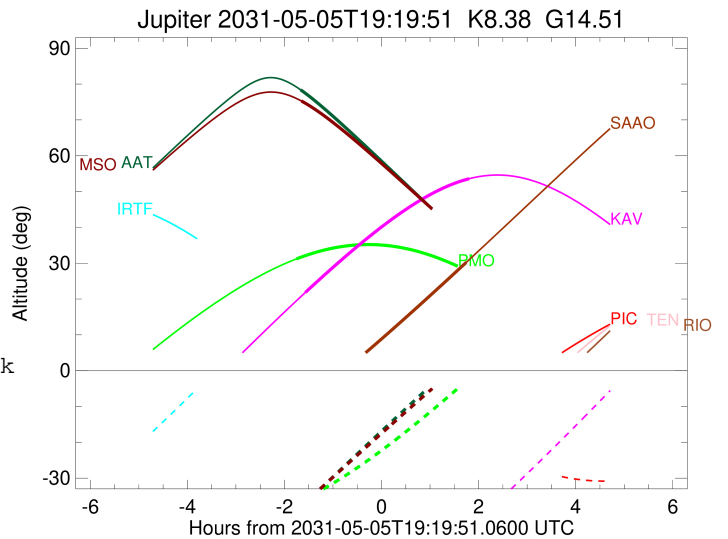
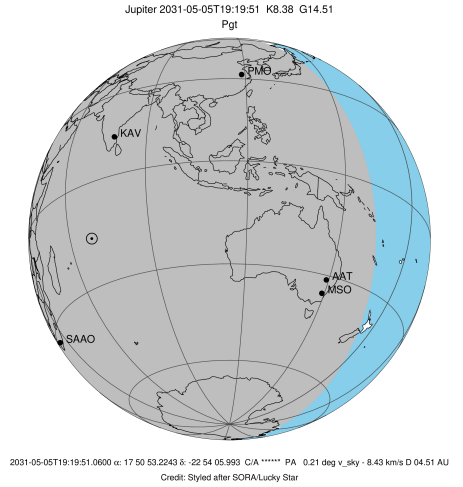


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-05T17:34:46.477	31.20	-36.83	71488.3	-39.42	-43.12
Jupiter	E	2031-05-05T21:03:08.658	28.16	-3.20x	71488.2	-39.68	-43.38

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-05T19:27:46.400
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        : 4068711446923639552
2Mass ID (if available) : 17505323-2254057
ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.385
G magnitude           : 14.509
RP magnitude          : 13.032
BP magnitude          : 17.568
DUPflag               : 0
Distance (au)         : 4.514
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.43
Sun-Target sep (deg) : 136.77
Sun-Moon sep (deg)   : 61.56
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 14.440
C/A sky separation (km) : 47274.6
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
    
```

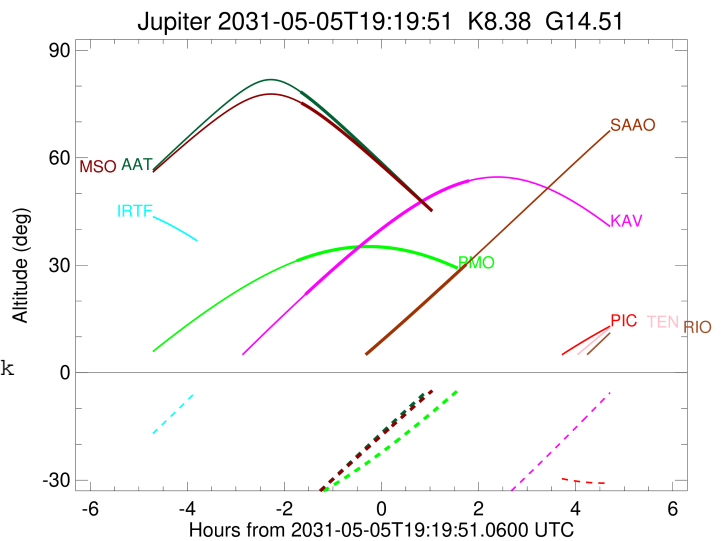
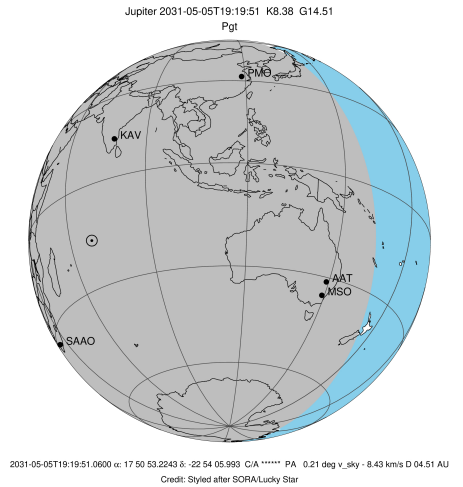


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-05T17:45:43.371	21.83	-58.05	71487.8	-42.12	-45.84
Jupiter	E	2031-05-05T21:08:13.605	53.58	-43.62	71488.0	-41.00	-44.72

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-05T19:13:03.890
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        : 4068711446923639552
2Mass ID (if available) : 17505323-2254057
ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.385
G magnitude           : 14.509
RP magnitude          : 13.032
BP magnitude          : 17.568
DUPflag              : 0
Distance (au)         : 4.514
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.43
Sun-Target sep (deg) : 136.77
Sun-Moon sep (deg)   : 62.22
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 15.821
C/A sky separation (km): 51797.0
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
    
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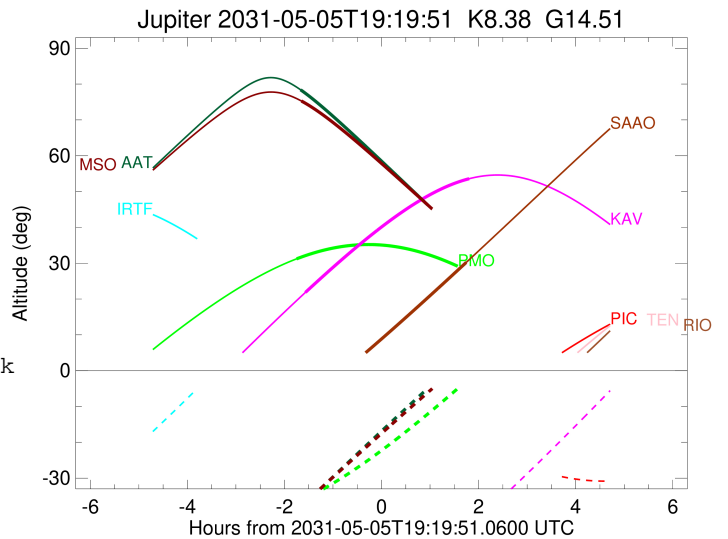
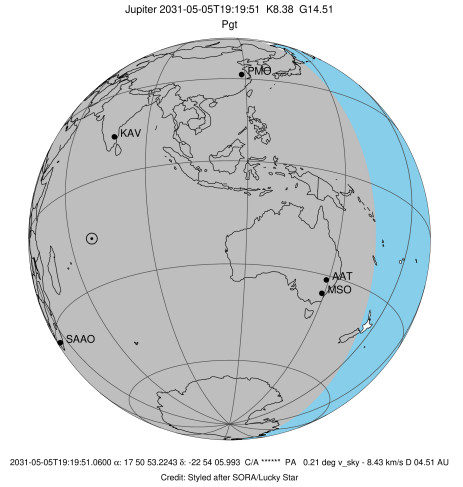


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-05T17:39:57.278	78.38	-38.18	71487.2	-45.95	-49.64
Jupiter	E	2031-05-05T20:46:54.102	39.84	1.12x	71487.0	-47.14	-50.81

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-05-05T19:32:25.970
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       : 4068711446923639552
2Mass ID (if available) : 17505323-2254057
ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s
RUWE (>1.4 is poor) : 0.93
K magnitude           : 8.385
G magnitude           : 14.509
RP magnitude          : 13.032
BP magnitude          : 17.568
DUPflag              : 0
Distance (au)         : 4.514
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : -8.43
Sun-Target sep (deg) : 136.77
Sun-Moon sep (deg)   : 60.98
B (ring opening deg) : -2.60
PA of pole (deg)     : 0.14
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation ("): 16.409
C/A sky separation (km): 53721.1
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
    
```

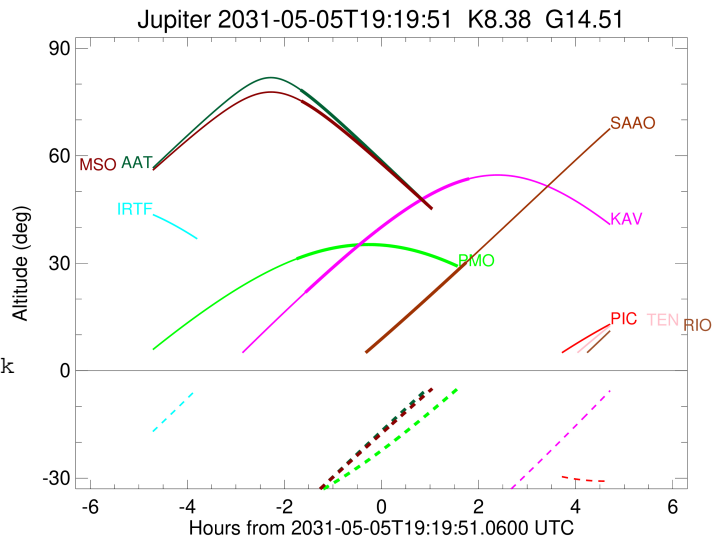
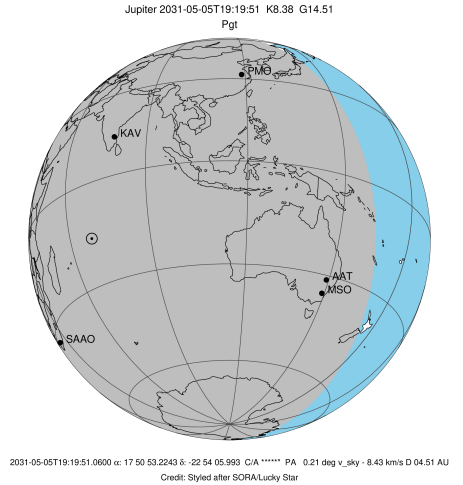


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-05-05T17:58:08.551	-6.61x	-26.31	71486.6	-49.60	-53.20
Jupiter	E	2031-05-05T21:04:37.431	30.22	-64.41	71486.9	-47.72	-51.37

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-05-05T19:13:21.540
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        : 4068711446923639552
2Mass ID (if available) : 17505323-2254057
ICRS Star Coord at Epoch: 17h 50m 53.22427s -22:54:05.99302s
RUWE (>1.4 is poor)  : 0.93
K magnitude           : 8.385
G magnitude           : 14.509
RP magnitude          : 13.032
BP magnitude          : 17.568
DUPflag              : 0
Distance (au)         : 4.514
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s)  : -8.43
Sun-Target sep (deg)  : 136.77
Sun-Moon sep (deg)    : 62.20
B (ring opening deg)  : -2.60
PA of pole (deg)      : 0.14
Pole direction: RA (deg): 268.05695
Dec (deg): 64.49651
C/A sky separation (") : 15.951
C/A sky separation (km) : 52223.0
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	2031-05-05T17:40:54.948	75.26	-37.69	71487.1	-46.46	-50.14
Jupiter	E	2031-05-05T20:46:28.663	40.21	-0.38x	71486.9	-47.61	-51.26