

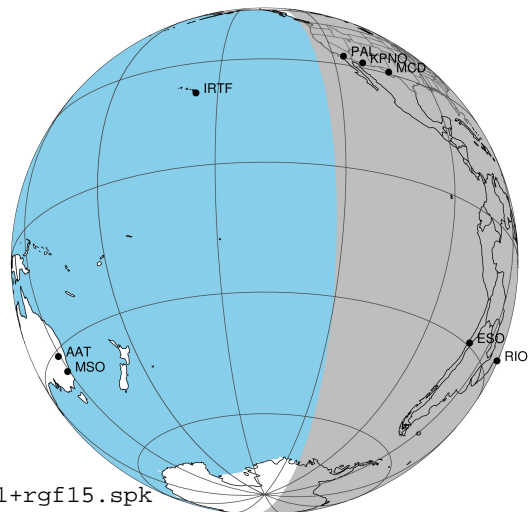
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-10-02T01:59:15.090
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4111575254858968704
 2Mass ID (if available) : 17245288-2300589

Jupiter 2031-10-02T01:59:15 K8.46 G14.61 Pgt

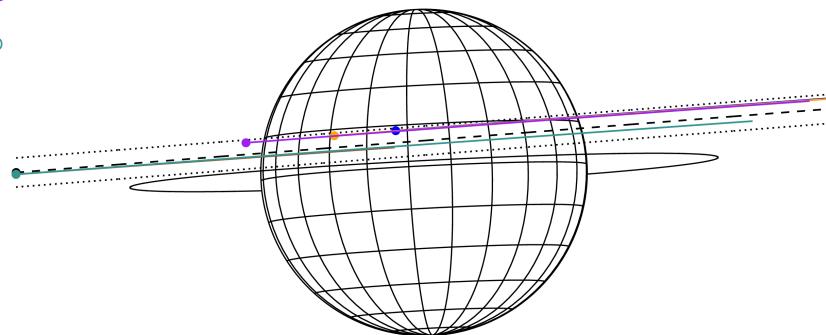
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s

RUWE (>1.4 is poor) : 1.05
 K magnitude : 8.463
 G magnitude : 14.609
 RP magnitude : 13.120
 BP magnitude : 17.823
 DUPflag : 0
 Distance (au) : 5.435
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 21.45
 Sun-Target sep (deg) : 73.67
 Sun-Moon sep (deg) : 122.82
 B (ring opening deg) : -2.33
 PA of pole (deg) : 2.94
 Pole direction: RA (deg): 268.05683
 Dec (deg): 64.49652
 C/A sky separation (") : 3.534
 C/A sky separation (km) : 13932.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-10-02T01:59:15 K8.46 G14.61
 Pgt



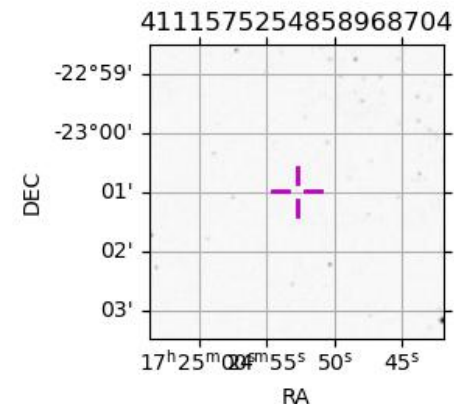
Earth
 PAL
 KPNO
 MCD
 RIO
 ESO



2031-10-02T01:59:15.0900 cc: 17 24 52.8789 s: -23 00 58.9862 C/A 3.5257 PA 184.47 deg v_sky +21.45 km/s D 05.44 AU
 Credit: Styled after SORA/Lucky Star

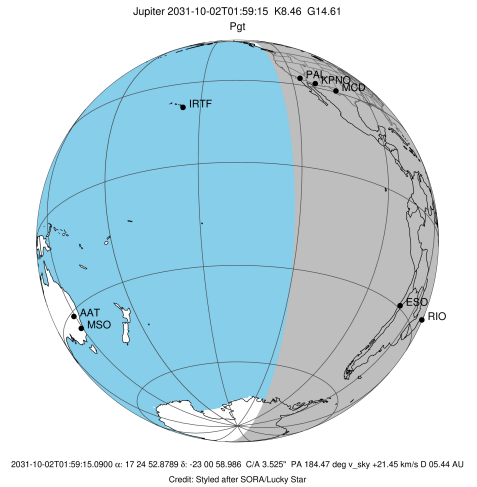
Observable events with sun below -5 deg and altitude above 5 deg

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	+	OCT 02 02:54 - OCT 02 02:54	Pne
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	OCT 02 02:55 - OCT 02 02:55	Pne
MCD	McDonald Obs. 2.7m	30.7	256.0	+ +	OCT 02 01:06 - OCT 02 02:55	Pie
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			Pnn
RIO	Rio de Janeiro	-22.9	316.8	+	OCT 02 01:09 - OCT 02 01:09	Pin
ESO	European Southern Obs. (3.6m)	-29.3	289.3	+ +	OCT 02 01:08 - OCT 02 02:58	Pie
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

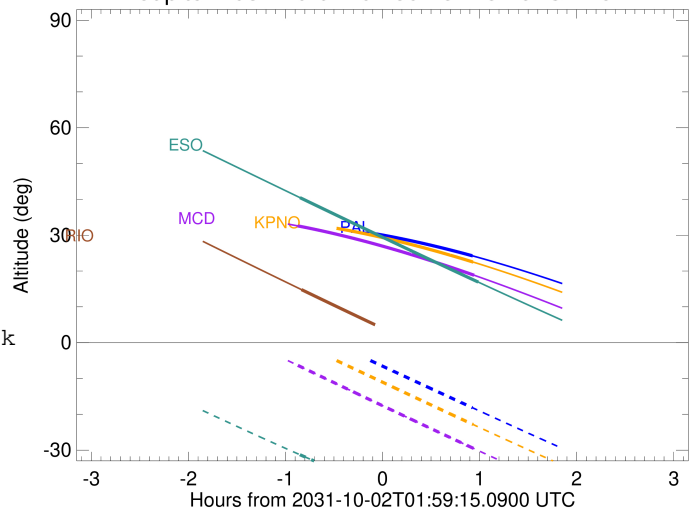


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-02T02:00:32.090
Event type           : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code        : PAL
Location             : Palomar Mt (200")
Latitude (deg)       : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)        : 1.706
Gaia source ID       : 4111575254858968704
2Mass ID (if available) : 17245288-2300589
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s
RUWE (>1.4 is poor) : 1.05
K magnitude          : 8.463
G magnitude          : 14.609
RP magnitude         : 13.120
BP magnitude         : 17.823
DUPflag             : 0
Distance (au)        : 5.435
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 21.45
Sun-Target sep (deg) : 73.67
Sun-Moon sep (deg)  : 123.38
B (ring opening deg) : -2.33
PA of pole (deg)    : 2.94
Pole direction: RA (deg): 268.05683
Dec (deg): 64.49652
C/A sky separation ("): 4.874
C/A sky separation (km): 19211.6
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
    
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Jupiter 2031-10-02T01:59:15 K8.46 G14.61

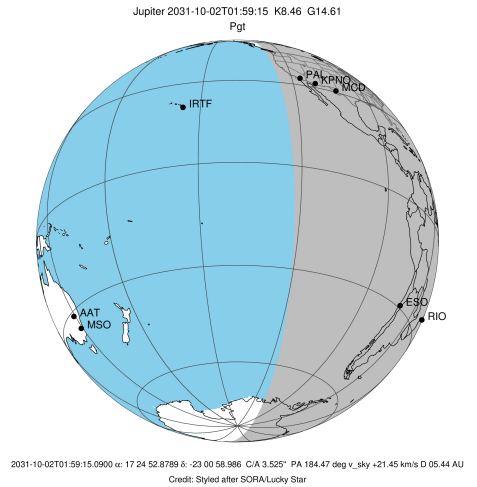


x: target alt < 5.0 deg or sun > -5.0 deg

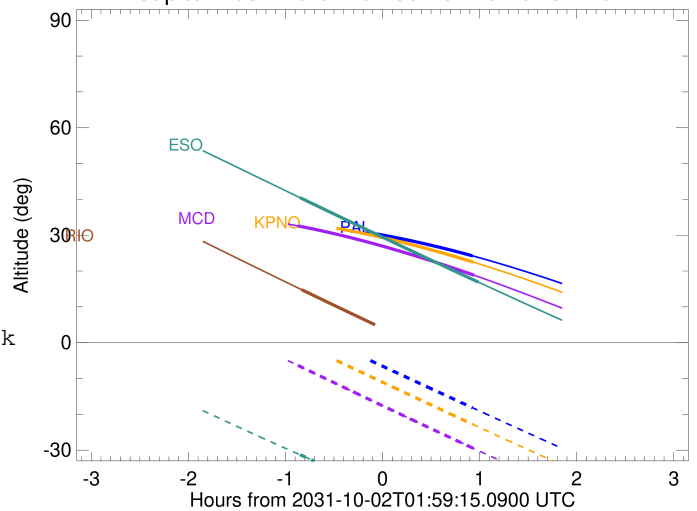
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-02T01:06:02.375	33.19	4.57x	71491.6	14.08	15.99
Jupiter	E	2031-10-02T02:54:53.925	24.23	-18.17	71491.4	16.97	19.23

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-02T02:00:56.160
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : KPNO
Location              : Kitt Peak Natl Obs
Latitude (deg)        : 31.96333
E. Longitude (deg)    : 248.40000
Altitude (km)         : 2.120
Gaia source ID        : 4111575254858968704
2Mass ID (if available) : 17245288-2300589
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s
RUWE (>1.4 is poor)  : 1.05
K magnitude           : 8.463
G magnitude           : 14.609
RP magnitude          : 13.120
BP magnitude          : 17.823
DUPflag              : 0
Distance (au)         : 5.435
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 21.45
Sun-Target sep (deg)  : 73.67
Sun-Moon sep (deg)    : 123.41
B (ring opening deg) : -2.33
PA of pole (deg)      : 2.94
Pole direction: RA (deg): 268.05683
Dec (deg): 64.49652
C/A sky separation (" ) : 4.839
C/A sky separation (km) : 19076.2
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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Jupiter 2031-10-02T01:59:15 K8.46 G14.61

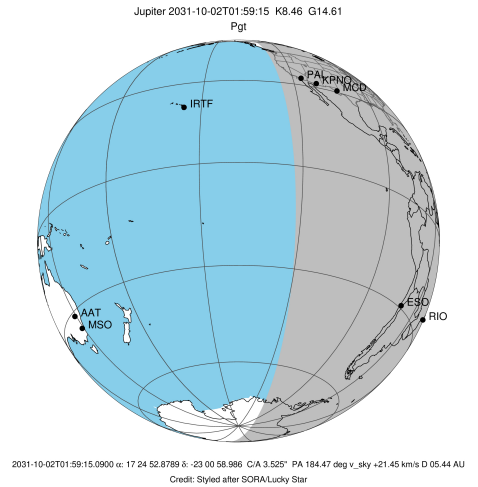


x: target alt < 5.0 deg or sun > -5.0 deg

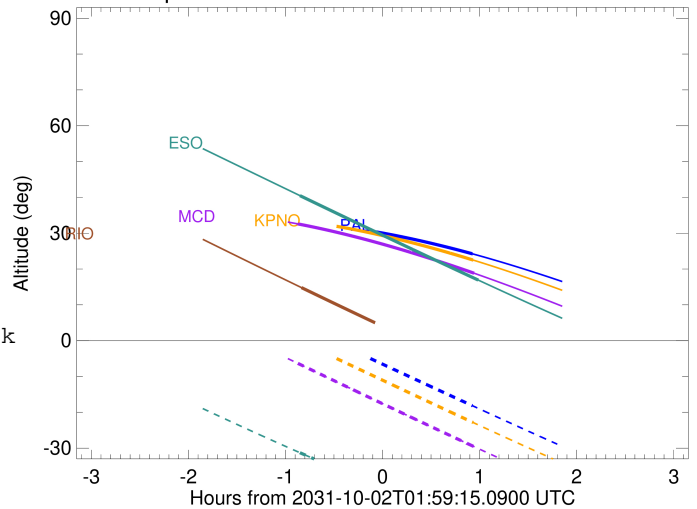
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-02T01:06:25.380	33.58	0.20x	71491.6	14.00	15.91
Jupiter	E	2031-10-02T02:55:17.725	22.50	-22.85	71491.4	16.82	19.06

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-02T02:01:28.750
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : MCD
Location              : McDonald Obs. 2.7m
Latitude (deg)        : 30.67158
E. Longitude (deg)    : 255.97844
Altitude (km)         : 2.075
Gaia source ID        : 4111575254858968704
2Mass ID (if available) : 17245288-2300589
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.463
G magnitude           : 14.609
RP magnitude          : 13.120
BP magnitude          : 17.823
DUPflag              : 0
Distance (au)         : 5.435
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 21.45
Sun-Target sep (deg)  : 73.67
Sun-Moon sep (deg)    : 123.44
B (ring opening deg) : -2.33
PA of pole (deg)      : 2.94
Pole direction: RA (deg): 268.05683
Dec (deg): 64.49652
C/A sky separation (" ) : 4.792
C/A sky separation (km) : 18889.1
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
    
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Jupiter 2031-10-02T01:59:15 K8.46 G14.61

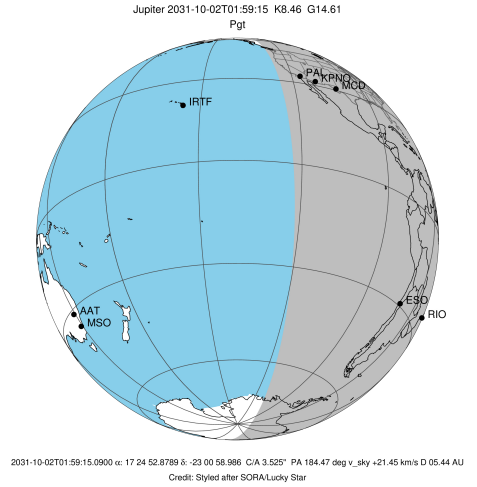


x: target alt < 5.0 deg or sun > -5.0 deg

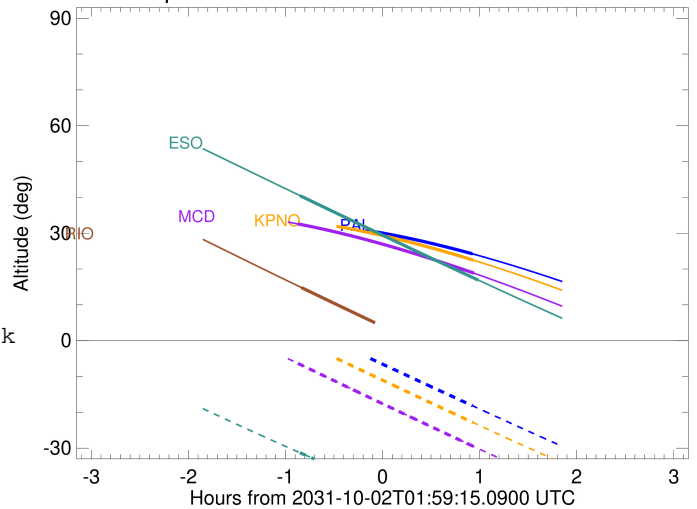
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-02T01:06:58.033	32.58	-6.34	71491.6	13.91	15.80
Jupiter	E	2031-10-02T02:55:48.450	18.83	-29.57	71491.4	16.61	18.83

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-10-02T02:03:59.710
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      : 4111575254858968704
2Mass ID (if available) : 17245288-2300589
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s
RUWE (>1.4 is poor) : 1.05
K magnitude         : 8.463
G magnitude         : 14.609
RP magnitude        : 13.120
BP magnitude        : 17.823
DUPflag            : 0
Distance (au)       : 5.435
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 21.45
Sun-Target sep (deg) : 73.67
Sun-Moon sep (deg)  : 123.36
B (ring opening deg) : -2.33
PA of pole (deg)    : 2.94
Pole direction: RA (deg): 268.05683
Dec (deg): 64.49652
C/A sky separation (" ) : 3.003
C/A sky separation (km) : 11838.7
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
    
```



Jupiter 2031-10-02T01:59:15 K8.46 G14.61

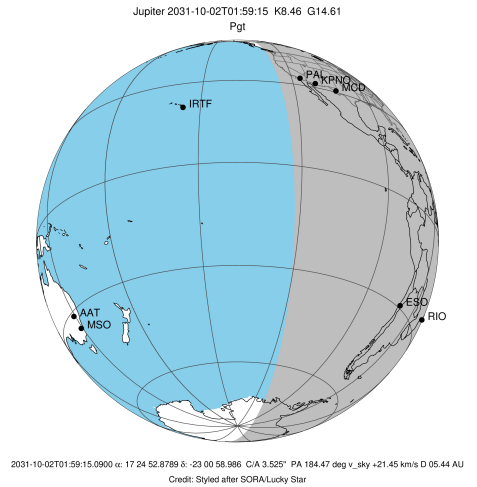


x: target alt < 5.0 deg or sun > -5.0 deg

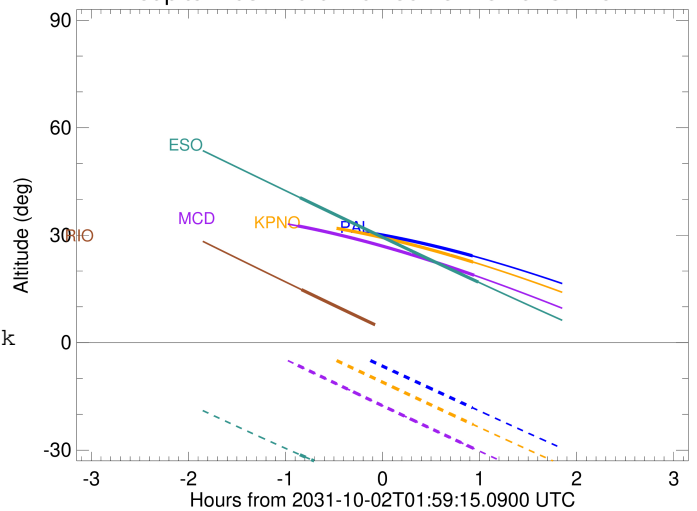
Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-10-02T01:09:09.591	14.81	-55.30	71491.8	8.44	9.63
Jupiter	E	2031-10-02T02:58:31.430	-8.26x	-63.49	71491.8	10.60	12.08

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-10-02T02:03:27.820
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : ESO
Location              : European Southern Obs. (3.6m)
Latitude (deg)        : -29.26097
E. Longitude (deg)    : 289.26831
Altitude (km)         : 2.400
Gaia source ID        : 4111575254858968704
2Mass ID (if available) : 17245288-2300589
ICRS Star Coord at Epoch: 17h 24m 52.87893s -23:00:58.98620s
RUWE (>1.4 is poor) : 1.05
K magnitude           : 8.463
G magnitude           : 14.609
RP magnitude          : 13.120
BP magnitude          : 17.823
DUPflag              : 0
Distance (au)         : 5.435
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 21.45
Sun-Target sep (deg)  : 73.67
Sun-Moon sep (deg)    : 123.65
B (ring opening deg) : -2.33
PA of pole (deg)      : 2.94
Pole direction: RA (deg): 268.05683
Dec (deg): 64.49652
C/A sky separation (") : 3.108
C/A sky separation (km) : 12253.8
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
    
```



Jupiter 2031-10-02T01:59:15 K8.46 G14.61



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	2031-10-02T01:08:11.990	40.49	-31.27	71491.8	8.67	9.89
Jupiter	E	2031-10-02T02:58:26.733	16.91	-50.40	71491.7	11.00	12.53