

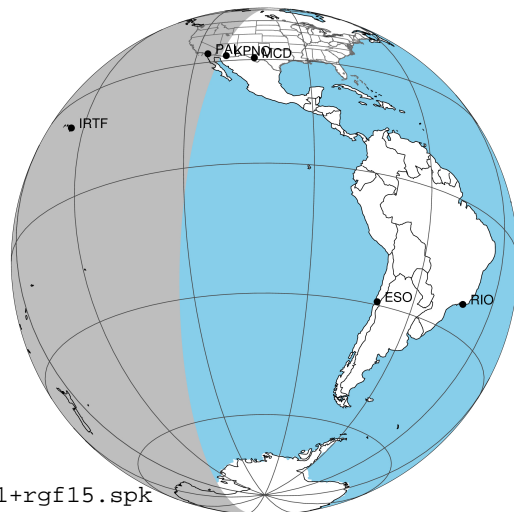
target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-02-24T14:07:58.280
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4116742615903871744
 2Mass ID (if available) : 17375242-2248131

Jupiter 2031-02-24T14:07:58 K9.78 G14.93 Pgt

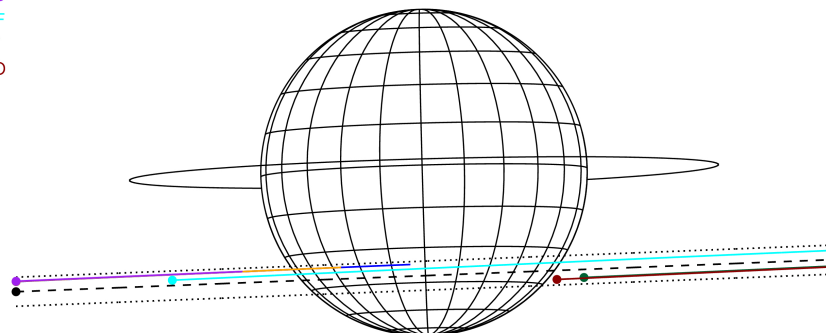
ICRS Star Coord at Epoch: 17h 37m 52.42261s -22:48:13.37476s

RUWE (>1.4 is poor) : 0.91
 K magnitude : 9.778
 G magnitude : 14.926
 RP magnitude : 13.663
 BP magnitude : 16.757
 DUPflag : 0
 Distance (au) : 5.566
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 23.11
 Sun-Target sep (deg) : 70.43
 Sun-Moon sep (deg) : 107.98
 B (ring opening deg) : -2.66
 PA of pole (deg) : 1.55
 Pole direction: RA (deg): 268.05701
 Dec (deg): 64.49651
 C/A sky separation (") : 11.190
 C/A sky separation (km) : 45171.3
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk

Jupiter 2031-02-24T14:07:58 K9.78 G14.93
 Pgt



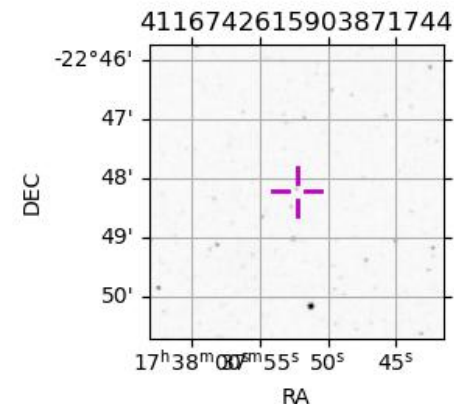
Earth
 PAL
 KPNO
 MCD
 IRTF
 AAT
 MSO



2031-02-24T14:07:58.2800 α: 17 37 52.4226 δ: -22 48 13.375 C/A ***** PA 2.25 deg v_sky +23.11 km/s D 05.57 AU
 Credit: Styled after SORA/Lucky Star

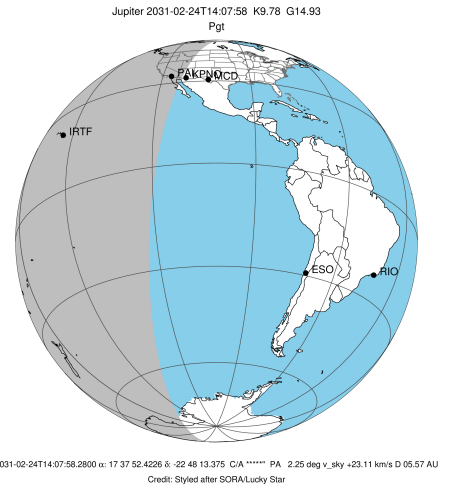
Observable events with sun below -5 deg and altitude above 5 deg

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	+	FEB 24 13:23 - FEB 24 13:23	Pin
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+	FEB 24 13:23 - FEB 24 13:23	Pin
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	+ +	FEB 24 13:22 - FEB 24 14:46	Pie
KAV	Kavalur Observatory	12.6	78.8			Pnn
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			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8			Pnn
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn

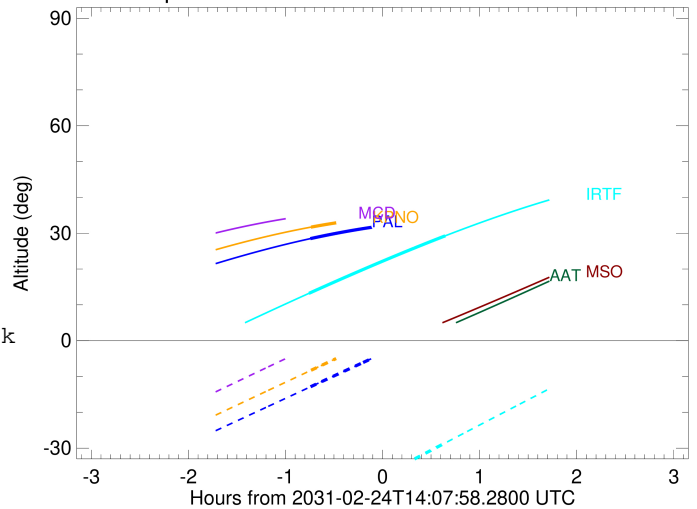


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target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-24T14:06:51.430
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : PAL
Location            : Palomar Mt (200")
Latitude (deg)      : 33.35622
E. Longitude (deg)  : 243.13601
Altitude (km)       : 1.706
Gaia source ID      : 4116742615903871744
2Mass ID (if available) : 17375242-2248131
ICRS Star Coord at Epoch: 17h 37m 52.42261s -22:48:13.37476s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.778
G magnitude          : 14.926
RP magnitude         : 13.663
BP magnitude         : 16.757
DUPflag             : 0
Distance (au)       : 5.566
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 23.11
Sun-Target sep (deg) : 70.43
Sun-Moon sep (deg)  : 108.40
B (ring opening deg) : -2.66
PA of pole (deg)    : 1.55
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (" ) : 9.914
C/A sky separation (km) : 40021.7
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
    
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Jupiter 2031-02-24T14:07:58 K9.78 G14.93

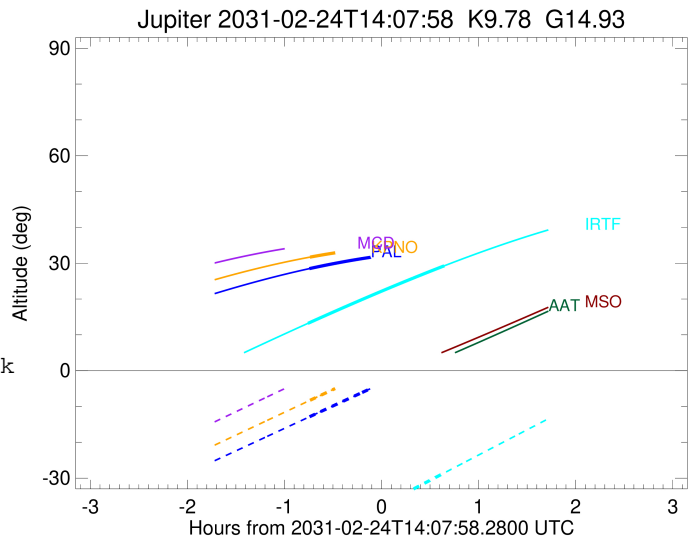
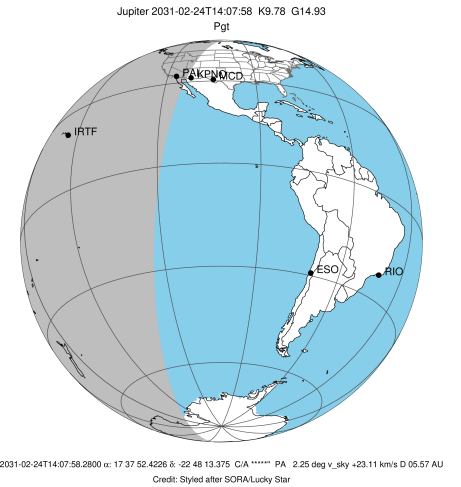


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-24T13:23:29.948	28.49	-12.87	71488.8	-34.88	-38.47
Jupiter	E	2031-02-24T14:50:16.986	33.81	5.06x	71489.1	-33.20	-36.73

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-24T14:07:10.820
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      : 4116742615903871744
2Mass ID (if available) : 17375242-2248131
ICRS Star Coord at Epoch: 17h 37m 52.42261s -22:48:13.37476s
RUWE (>1.4 is poor) : 0.91
K magnitude          : 9.778
G magnitude          : 14.926
RP magnitude         : 13.663
BP magnitude         : 16.757
DUPflag             : 0
Distance (au)       : 5.566
f0 (km)              : 0.00
g0 (km)              : 0.00
skyplane vel. (km/s) : 23.11
Sun-Target sep (deg) : 70.43
Sun-Moon sep (deg)  : 108.46
B (ring opening deg) : -2.66
PA of pole (deg)    : 1.55
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 9.921
C/A sky separation (km) : 40048.7
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
    
```

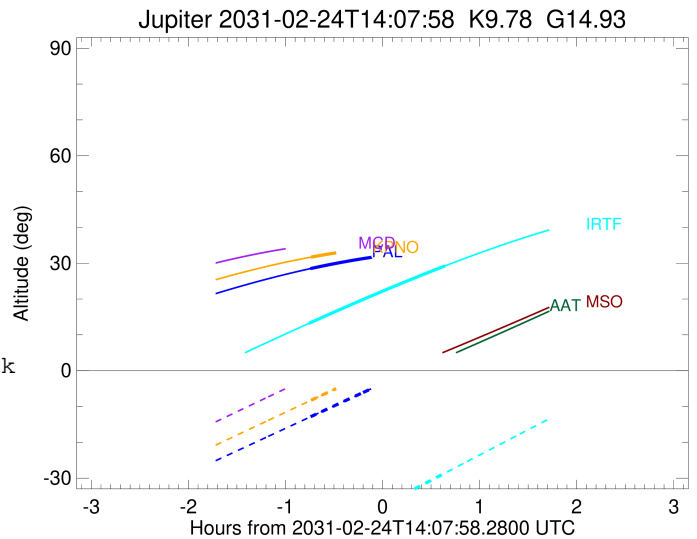
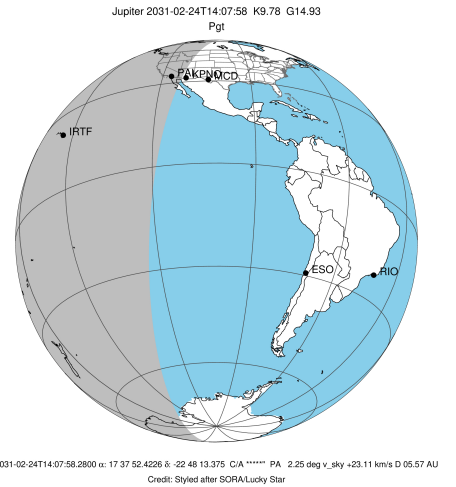


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-02-24T13:23:48.136	31.70	-8.27	71488.8	-34.87	-38.46
Jupiter	E	2031-02-24T14:50:36.850	35.39	9.78x	71489.1	-33.26	-36.79

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-02-24T14:04:32.120
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       : 4116742615903871744
2Mass ID (if available) : 17375242-2248131
ICRS Star Coord at Epoch: 17h 37m 52.42261s -22:48:13.37476s
RUWE (>1.4 is poor) : 0.91
K magnitude           : 9.778
G magnitude           : 14.926
RP magnitude          : 13.663
BP magnitude          : 16.757
DUPflag              : 0
Distance (au)         : 5.566
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 23.11
Sun-Target sep (deg) : 70.43
Sun-Moon sep (deg)   : 108.10
B (ring opening deg) : -2.66
PA of pole (deg)     : 1.55
Pole direction: RA (deg): 268.05701
Dec (deg): 64.49651
C/A sky separation (") : 10.412
C/A sky separation (km) : 42033.0
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	2031-02-24T13:22:28.697	13.20	-48.33	71488.5	-37.06	-40.72
Jupiter	E	2031-02-24T14:46:44.383	29.26	-28.55	71488.8	-34.92	-38.51