

target : Neptune  
 target radius (km) : 24764.00  
 C/A epoch : 2037-12-07T17:57:42.210  
 Event type : PgtRgt  
 : Neptune occs: geocentric, topocentric  
 : Ring occs: geocentric, topocentric  
 Gaia source ID : 2571896549366324096  
 2Mass ID (if available) : 01390633+0825035

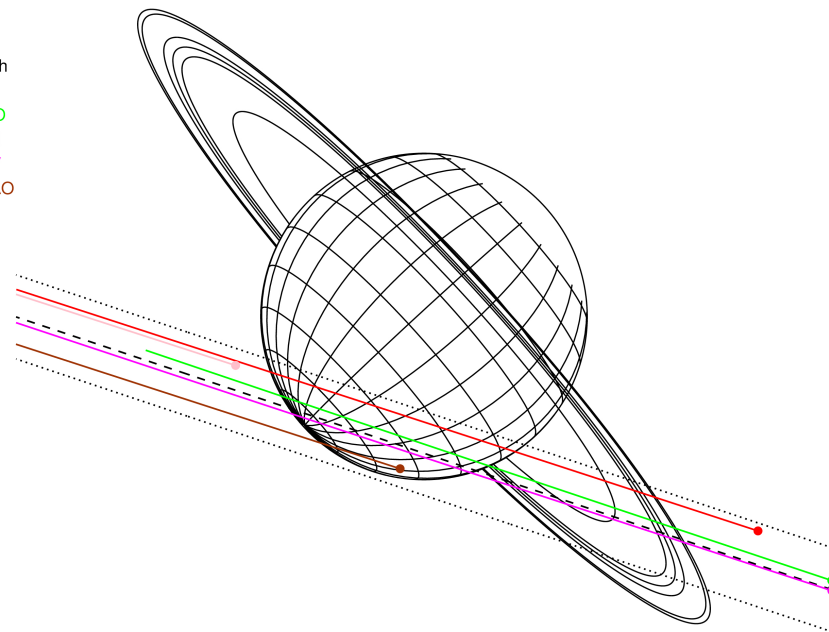
Neptune 2037-12-07T17:57:42 K13.62 G15.35 PgtRgt

ICRS Star Coord at Epoch: 01h 39m 06.33806s +08:25:03.29125s  
 RUWE (>1.4 is poor) : 1.07  
 K magnitude : 13.625  
 G magnitude : 15.354  
 RP magnitude : 14.778  
 BP magnitude : 15.757  
 DUPflag : 0  
 Distance (au) : 29.172  
 f0 (km) : 0.000  
 g0 (km) : 0.000  
 skyplane vel. (km/s) : -14.03  
 Sun-Target sep (deg) : 130.56  
 Sun-Moon sep (deg) : 120.72  
 B (ring opening deg) : -9.22  
 PA of pole (deg) : -47.62



2037-12-07T17:57:42.2100 α: 01 39 06.3381 δ: +08 25 03.291 C/A 0.930° PA 341.52 deg v\_sky -14.03 km/s D 29.17 AU  
 Credit: Styled after SORA/Lucky Star

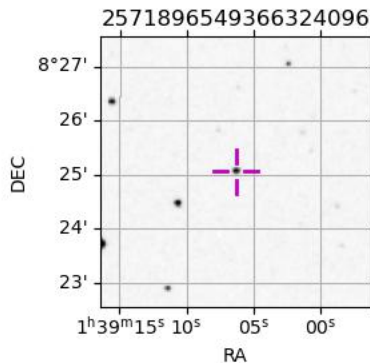
Earth  
 PIC  
 PMO  
 TEN  
 KAV  
 SAAO



- 1 42000.0 Galle
- 2 53200.0 LeVerrier
- 3 55200.0 Lassell
- 4 57200.0 Arago
- 5 61953.0 Galatea
- 6 62933.0 Adams

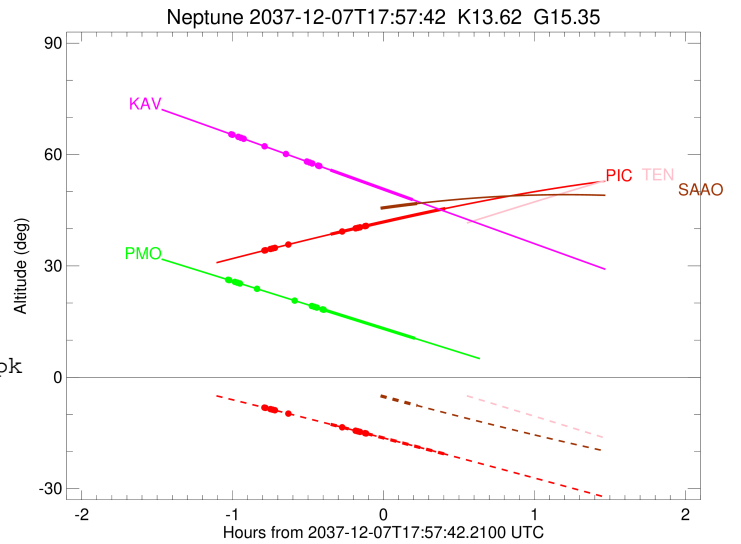
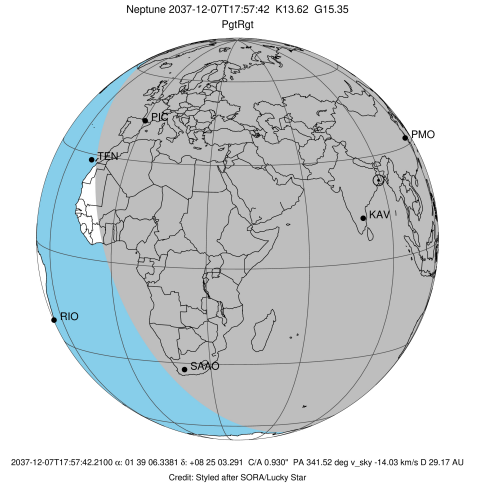
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+ + + + +	+ +		DEC 07 17:10 - DEC 07 18:22	PieRin
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+ + + + +	+ +	+ +	DEC 07 16:56 - DEC 07 18:10	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+ + + + +	+ +	+ + + + +	DEC 07 16:57 - DEC 07 18:09	PieRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8		+		DEC 07 18:11 - DEC 07 18:11	PneRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



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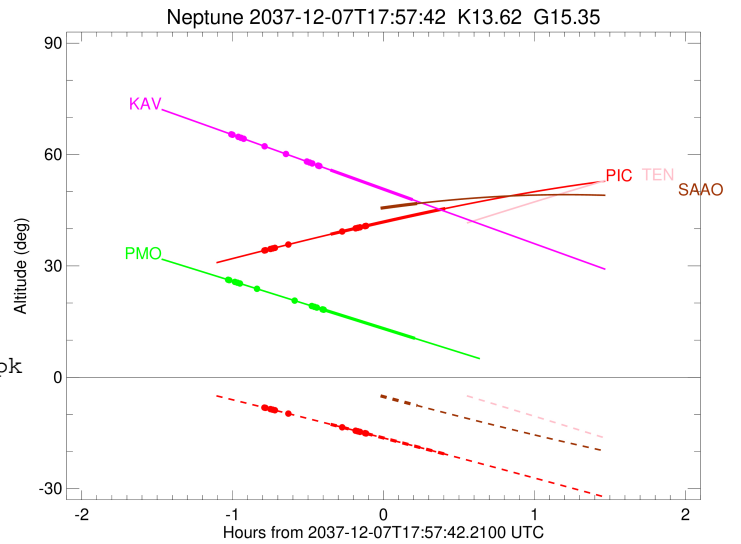
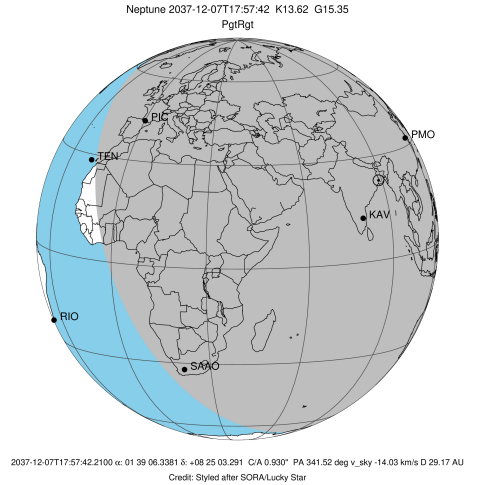
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2037-12-07T17:59:26.260
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PIC
Location              : Pic du Midi
Latitude (deg)       : 42.93656
E. Longitude (deg)   : 0.14231
Altitude (km)        : 2.890
Gaia source ID       : 2571896549366324096
2Mass ID (if available) : 01390633+0825035
ICRS Star Coord at Epoch: 01h 39m 06.33806s +08:25:03.29125s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 13.625
G magnitude           : 15.354
RP magnitude          : 14.778
BP magnitude          : 15.757
DUPflag               : 0
Distance (au)         : 29.172
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.03
Sun-Target sep (deg) : 130.56
Sun-Moon sep (deg)   : 121.39
B (ring opening deg) : -9.22
PA of pole (deg)     : -47.62
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.720
C/A sky separation (km) : 15231.6
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall1.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2037-12-07T17:10:53.176		34.24	-8.27	62933.00	-40.15		
Galatea	I	2037-12-07T17:11:17.642		34.31	-8.33	61953.00	-39.96		
Arago	I	2037-12-07T17:13:18.082		34.65	-8.67	57200.00	-38.92		
Lassell	I	2037-12-07T17:14:09.813		34.80	-8.82	55200.00	-38.39		
LeVerrier	I	2037-12-07T17:15:02.313		34.94	-8.97	53200.00	-37.79		
Galle	I	2037-12-07T17:20:19.347		35.83	-9.86	42000.00	-32.20		
Neptune	I	2037-12-07T17:36:38.069		38.52	-12.67	24763.77		-8.26	-8.55
Neptune	E	2037-12-07T18:22:12.239		45.45	-20.71	24754.79		-65.84	-66.56
Galle	E	2037-12-07T17:41:56.683	b	39.38	-13.59	42000.00	32.40		
LeVerrier	E	2037-12-07T17:47:11.213	b	40.21	-14.50	53200.00	38.16		
Lassell	E	2037-12-07T17:48:03.192	b	40.35	-14.66	55200.00	38.79		
Arago	E	2037-12-07T17:48:54.382	b	40.48	-14.81	57200.00	39.34		
Galatea	E	2037-12-07T17:50:53.475	b	40.79	-15.15	61953.00	40.43		
Adams	E	2037-12-07T17:51:17.656	b	40.85	-15.22	62933.00	40.62		

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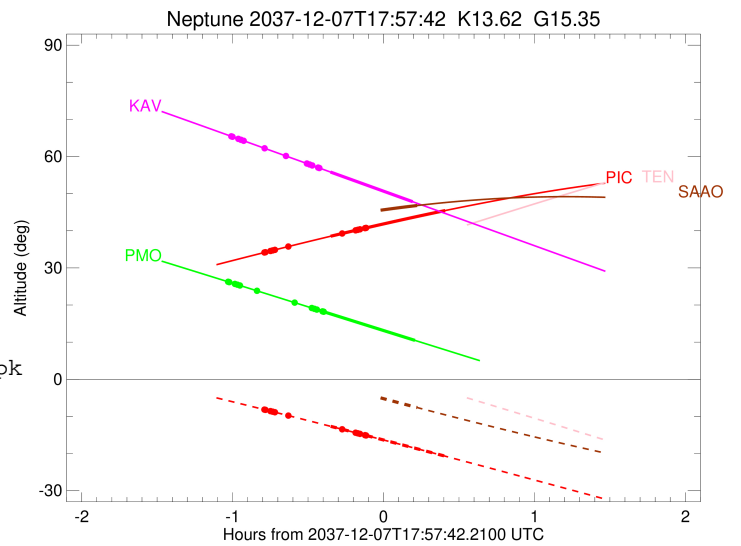
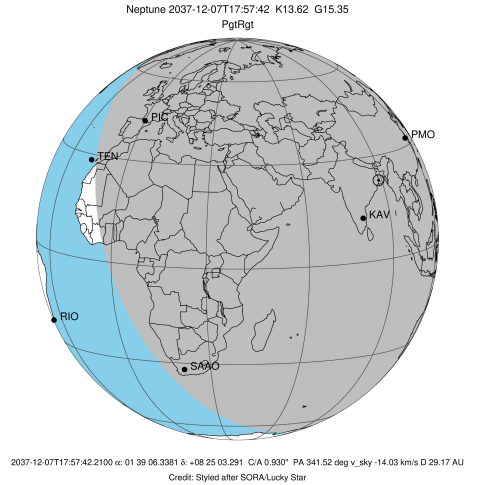
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2037-12-07T17:50:35.950
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 2571896549366324096
2Mass ID (if available) : 01390633+0825035
ICRS Star Coord at Epoch: 01h 39m 06.33806s +08:25:03.29125s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 13.625
G magnitude           : 15.354
RP magnitude         : 14.778
BP magnitude         : 15.757
DUPflag              : 0
Distance (au)        : 29.172
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.03
Sun-Target sep (deg) : 130.56
Sun-Moon sep (deg)   : 120.44
B (ring opening deg) : -9.22
PA of pole (deg)     : -47.62
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.868
C/A sky separation (km) : 18355.4
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2037-12-07T16:56:32.449		26.13	-73.79	62933.00	-36.72		
Galatea	I	2037-12-07T16:56:59.247		26.04	-73.71	61953.00	-36.42		
Arago	I	2037-12-07T16:59:12.757		25.57	-73.30	57200.00	-34.71		
Lassell	I	2037-12-07T17:00:11.102		25.36	-73.12	55200.00	-33.83		
LeVerrier	I	2037-12-07T17:01:11.105		25.15	-72.94	53200.00	-32.82		
Galle	I	2037-12-07T17:07:47.492		23.75	-71.69	42000.00	-22.49		
Neptune	I	2037-12-07T17:31:00.735		18.81	-67.11	24762.89		-18.55	-19.15
Neptune	E	2037-12-07T18:10:13.235		10.47	-59.01	24753.79		-73.99	-74.49
Galle	E	2037-12-07T17:23:25.029		20.43	-68.63	42000.24	22.46		
LeVerrier	E	2037-12-07T17:30:02.117		19.02	-67.31	53200.00	32.75		
Lassell	E	2037-12-07T17:31:02.250	b	18.81	-67.10	55200.00	33.75		
Arago	E	2037-12-07T17:32:00.727	b	18.60	-66.91	57200.00	34.63		
Galatea	E	2037-12-07T17:34:14.556	b	18.13	-66.46	61953.00	36.33		
Adams	E	2037-12-07T17:34:41.421	b	18.03	-66.36	62933.00	36.63		

```

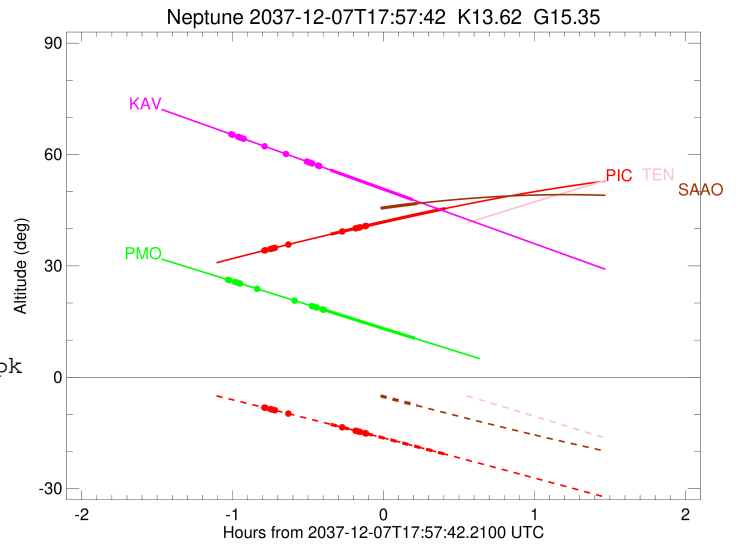
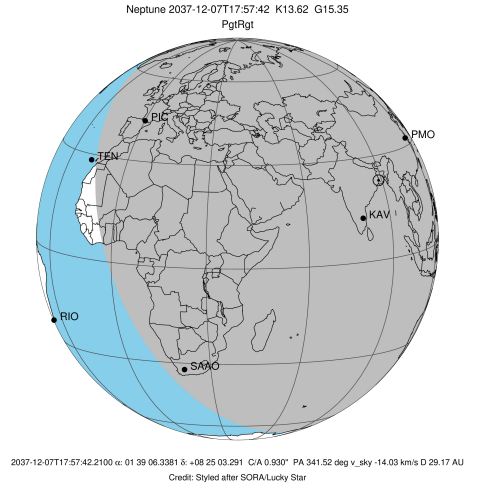
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2037-12-07T17:52:57.720
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : KAV
Location              : Kavalur Observatory
Latitude (deg)       : 12.57556
E. Longitude (deg)   : 78.83167
Altitude (km)        : 0.722
Gaia source ID       : 2571896549366324096
2Mass ID (if available) : 01390633+0825035
ICRS Star Coord at Epoch: 01h 39m 06.33806s +08:25:03.29125s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 13.625
G magnitude           : 15.354
RP magnitude          : 14.778
BP magnitude          : 15.757
DUPflag               : 0
Distance (au)        : 29.172
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.03
Sun-Target sep (deg) : 130.56
Sun-Moon sep (deg)   : 121.05
B (ring opening deg) : -9.22
PA of pole (deg)     : -47.62
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.960
C/A sky separation (km) : 20308.5
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2037-12-07T16:57:49.138		65.29	-64.47	62933.00	-35.81		
Galatea	I	2037-12-07T16:58:16.653		65.18	-64.57	61953.00	-35.42		
Arago	I	2037-12-07T17:00:35.001		64.62	-65.07	57200.00	-33.20		
Lassell	I	2037-12-07T17:01:36.303		64.37	-65.29	55200.00	-32.03		
LeVerrier	I	2037-12-07T17:02:40.067		64.11	-65.52	53200.00	-30.67		
Galle	I	2037-12-07T17:10:32.715		62.19	-67.21	42000.00	-14.86		
Neptune	I	2037-12-07T17:36:33.140		55.84	-72.51	24761.98		-25.31	-26.08
Neptune	E	2037-12-07T18:09:22.812		47.81	-77.95	24753.32		-79.29	-79.63
Galle	E	2037-12-07T17:20:19.410		59.81	-69.26	42005.15	14.87		
LeVerrier	E	2037-12-07T17:28:12.509		57.88	-70.86	53200.02	30.64		
Lassell	E	2037-12-07T17:29:16.357		57.62	-71.08	55200.01	31.99		
Arago	E	2037-12-07T17:30:17.744		57.37	-71.28	57200.01	33.15		
Galatea	E	2037-12-07T17:32:36.295		56.81	-71.74	61953.00	35.37		
Adams	E	2037-12-07T17:33:03.853		56.70	-71.83	62933.00	35.75		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2037-12-07T18:00:48.610
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
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        : 2571896549366324096
2Mass ID (if available) : 01390633+0825035
ICRS Star Coord at Epoch: 01h 39m 06.33806s +08:25:03.29125s
RUWE (>1.4 is poor) : 1.07
K magnitude           : 13.625
G magnitude           : 15.354
RP magnitude          : 14.778
BP magnitude          : 15.757
DUPflag               : 0
Distance (au)         : 29.172
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -14.03
Sun-Target sep (deg) : 130.56
Sun-Moon sep (deg)   : 121.55
B (ring opening deg) : -9.22
PA of pole (deg)     : -47.62
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation ("): 1.092
C/A sky separation (km): 23095.1
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2037-12-07T17:02:26.797		39.01	5.16x	62933.00	-32.25		
Galatea	I	2037-12-07T17:02:57.441		39.09	5.06x	61953.00	-31.71		
Arago	I	2037-12-07T17:05:34.977		39.46	4.55x	57200.00	-28.50		
Lassell	I	2037-12-07T17:06:47.319		39.63	4.32x	55200.00	-26.76		
LeVerrier	I	2037-12-07T17:08:05.052		39.81	4.07x	53200.00	-24.66		
Neptune	I	2037-12-07T17:50:28.029		44.95	-3.90x	24759.72		-38.60	-39.56
Neptune	E	2037-12-07T18:11:07.881		46.81	-7.63	24753.49		-77.43	-77.84
LeVerrier	E	2037-12-07T17:28:39.401		42.50	0.15x	53200.19	24.72		
Lassell	E	2037-12-07T17:29:56.963		42.66	-0.09x	55200.10	26.82		
Arago	E	2037-12-07T17:31:09.128		42.80	-0.32x	57200.05	28.58		
Galatea	E	2037-12-07T17:33:46.208		43.12	-0.81x	61953.02	31.81		
Adams	E	2037-12-07T17:34:16.752		43.18	-0.91x	62933.01	32.36		