

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-03-10T22:56:34.040
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 663791666660265856
 2Mass ID (if available) : 08250217+1955159

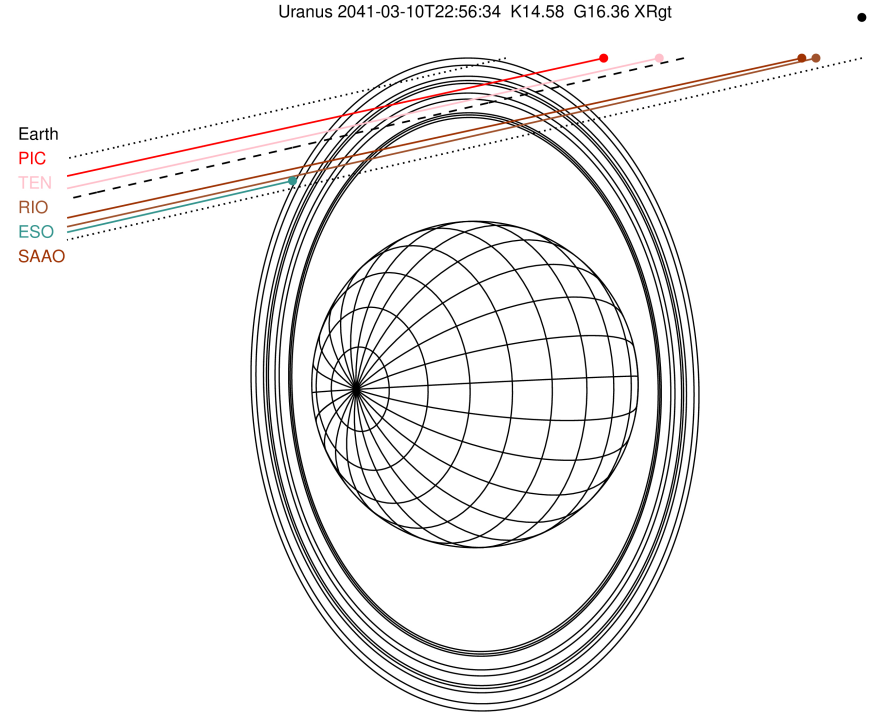
ICRS Star Coord at Epoch: 08h 25m 02.17391s +19:55:15.72873s

RUWE (>1.4 is poor) : 1.12
 K magnitude : 14.582
 G magnitude : 16.358
 RP magnitude : 15.779
 BP magnitude : 16.756
 DUPflag : 0
 Distance (au) : 17.830
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.98
 Sun-Target sep (deg) : 133.61
 Sun-Moon sep (deg) : 29.22
 B (ring opening deg) : 43.24
 PA of pole (deg) : 92.37

#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

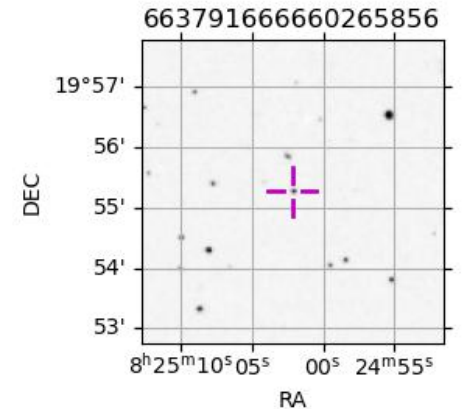


2041-03-10T22:56:34.0400 ex: 08 25 02.1739 s: +19 55 15.729 C/A 3.293° PA 192.88 deg v_sky -13.98 km/s D 17.83 AU
 Credit: Styled after SORA/Lucky Star

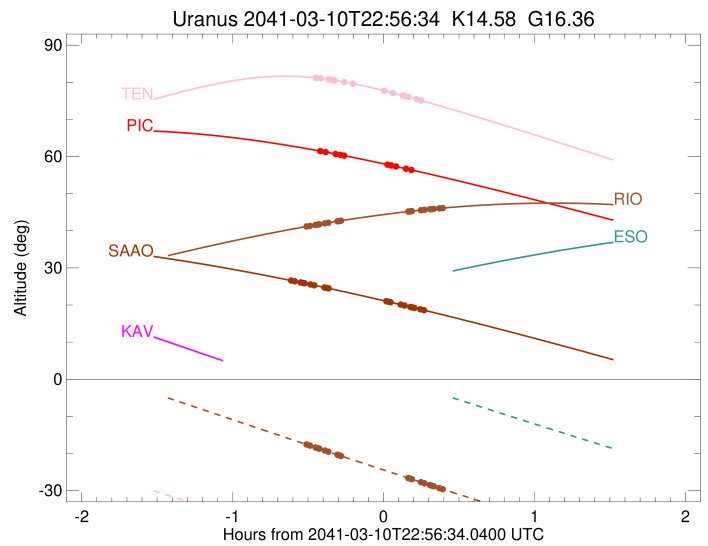
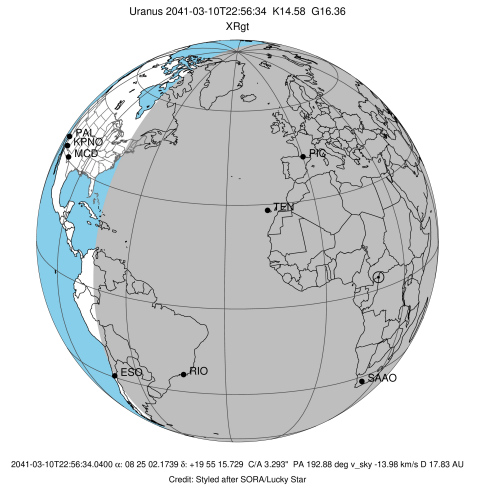


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	MAR 10 22:32 - MAR 10 23:07	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
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	+++++++		+++++++	MAR 10 22:30 - MAR 10 23:11	PnnRie
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++++		+++++++	MAR 10 22:26 - MAR 10 23:20	PnnRie
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	+++++++		+++++++	MAR 10 22:20 - MAR 10 23:12	PnnRie
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn



target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-03-10T22:54:27.260
 Event type : XRgt
 : No Uranus occs
 : 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 : 663791666660265856
 2Mass ID (if available) : 08250217+1955159
 ICRS Star Coord at Epoch: 08h 25m 02.17391s +19:55:15.72873s
 RUWE (>1.4 is poor) : 1.12
 K magnitude : 14.582
 G magnitude : 16.358
 RP magnitude : 15.779
 BP magnitude : 16.756
 DUPflag : 0
 Distance (au) : 17.830
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.98
 Sun-Target sep (deg) : 133.61
 Sun-Moon sep (deg) : 29.73
 B (ring opening deg) : 43.24
 PA of pole (deg) : 92.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.524
 C/A sky separation (km) : 45574.1
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

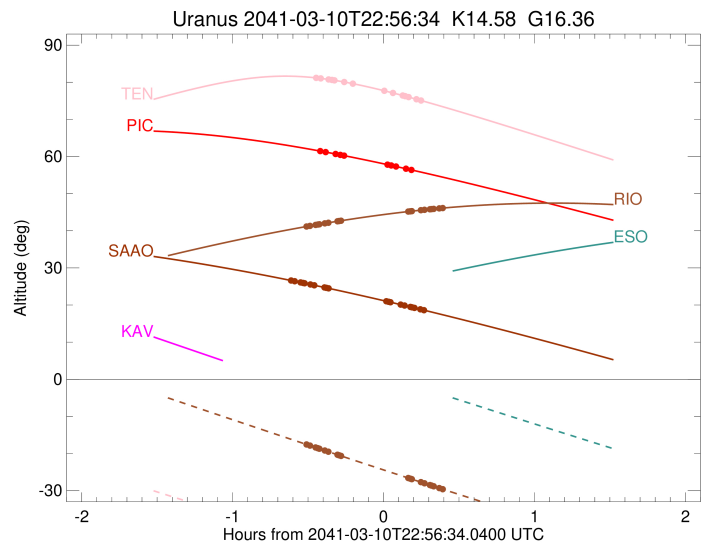
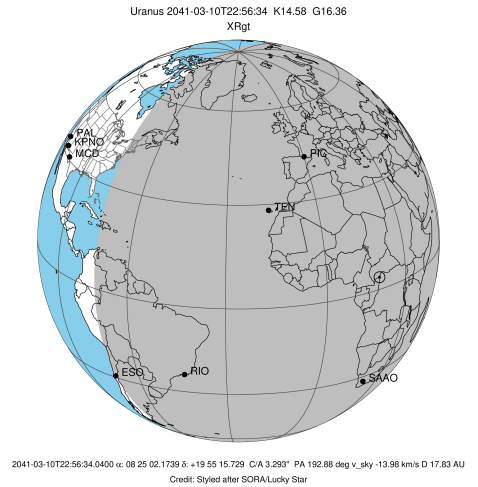


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-03-10T22:32:10.685		61.37	-45.35	50753.80	-8.81		
lambda	I	2041-03-10T22:33:36.469		61.19	-45.50	50026.71	-8.17		
delta	I	2041-03-10T22:37:33.588		60.68	-45.92	48300.35	-6.36		
gamma	I	2041-03-10T22:39:28.827		60.43	-46.11	47621.58	-5.41		
eta	I	2041-03-10T22:40:57.202		60.23	-46.26	47176.12	-4.66		

No planet occultations

eta	E	2041-03-10T22:58:06.577		57.82	-47.83	47176.12	4.66		
gamma	E	2041-03-10T22:59:35.415		57.61	-47.95	47623.48	5.41		
delta	E	2041-03-10T23:01:30.472		57.32	-48.11	48300.35	6.35		
lambda	E	2041-03-10T23:05:28.037		56.73	-48.41	50026.71	8.15		
epsilon	E	2041-03-10T23:07:18.127		56.45	-48.55	50966.96	8.79		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-03-10T22:55:20.080
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 663791666660265856
 2Mass ID (if available) : 08250217+1955159
 ICRS Star Coord at Epoch: 08h 25m 02.17391s +19:55:15.72873s
 RUWE (>1.4 is poor) : 1.12
 K magnitude : 14.582
 G magnitude : 16.358
 RP magnitude : 15.779
 BP magnitude : 16.756
 DUPflag : 0
 Distance (au) : 17.830
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.98
 Sun-Target sep (deg) : 133.61
 Sun-Moon sep (deg) : 29.73
 B (ring opening deg) : 43.24
 PA of pole (deg) : 92.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.377
 C/A sky separation (km) : 43672.0
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

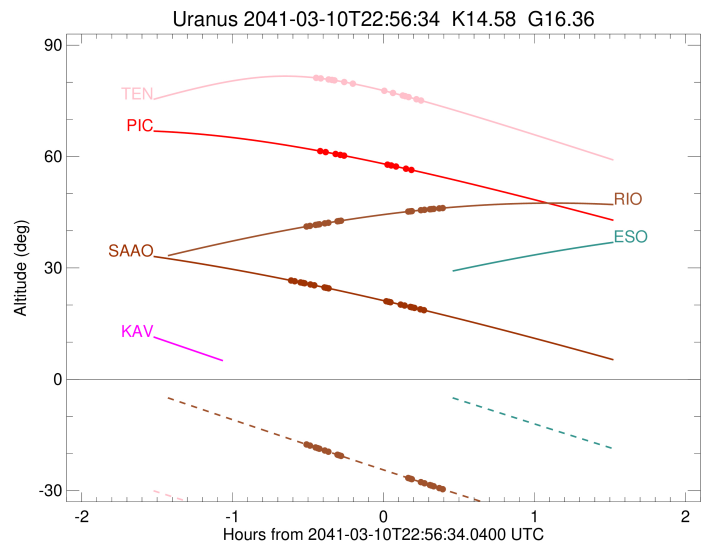
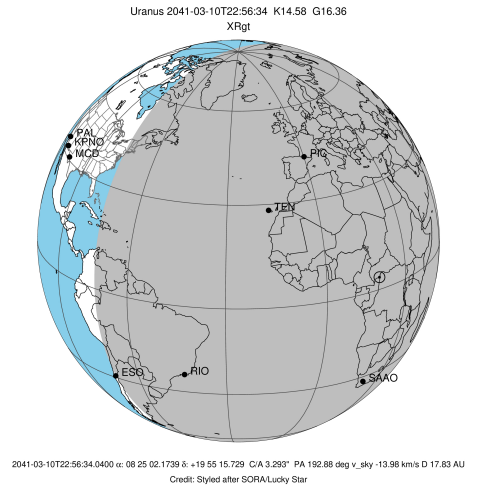


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-03-10T22:30:28.083		81.14	-43.68	50747.78	-10.37		
lambda	I	2041-03-10T22:31:39.388		81.05	-43.92	50026.71	-9.88		
delta	I	2041-03-10T22:34:46.569		80.76	-44.55	48300.35	-8.55		
gamma	I	2041-03-10T22:36:09.035		80.62	-44.82	47621.31	-7.92		
eta	I	2041-03-10T22:37:06.932		80.52	-45.01	47176.12	-7.46		
beta	I	2041-03-10T22:40:59.181		80.07	-45.78	45667.52	-5.49		
alpha	I	2041-03-10T22:44:20.395		79.64	-46.44	44743.38	-3.67		

No planet occultations

alpha	E	2041-03-10T22:56:57.148		77.70	-48.88	44749.83	3.67		
beta	E	2041-03-10T23:00:16.095		77.14	-49.51	45656.96	5.49		
eta	E	2041-03-10T23:04:10.415		76.45	-50.24	47176.12	7.45		
gamma	E	2041-03-10T23:05:08.731		76.27	-50.42	47624.07	7.91		
delta	E	2041-03-10T23:06:30.955		76.02	-50.68	48300.35	8.54		
lambda	E	2041-03-10T23:09:38.415		75.44	-51.25	50026.71	9.86		
epsilon	E	2041-03-10T23:11:13.790		75.14	-51.54	50996.96	10.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2041-03-10T22:57:13.910
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 663791666660265856
 2Mass ID (if available) : 08250217+1955159
 ICRS Star Coord at Epoch: 08h 25m 02.17391s +19:55:15.72873s
 RUWE (>1.4 is poor) : 1.12
 K magnitude : 14.582
 G magnitude : 16.358
 RP magnitude : 15.779
 BP magnitude : 16.756
 DUPflag : 0
 Distance (au) : 17.830
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -13.98
 Sun-Target sep (deg) : 133.61
 Sun-Moon sep (deg) : 29.52
 B (ring opening deg) : 43.24
 PA of pole (deg) : 92.37
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.941
 C/A sky separation (km) : 38034.5
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk
 URKALLvl.spk
 ura111.bsp
 IAU_URANUS_for_RINGFIT.tpc
 vgr2.ura111.bsp
 ura161.bsp
 vgr2.ura161.bsp
 peph.ura160.bsp
 earthstns_itrfr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



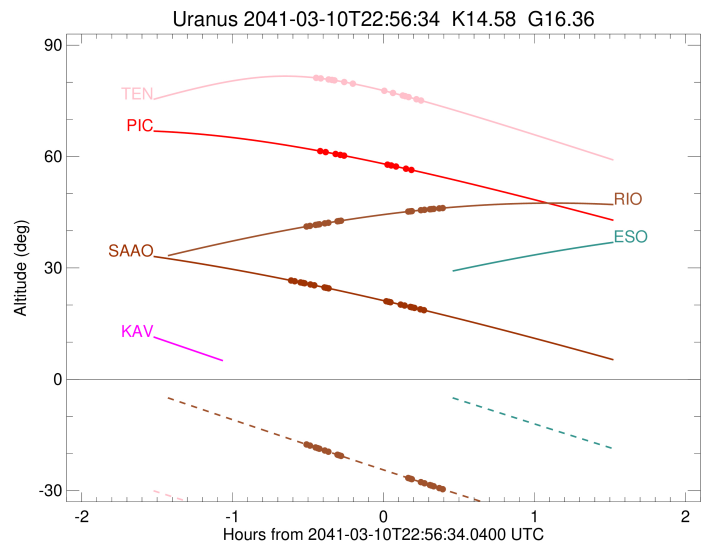
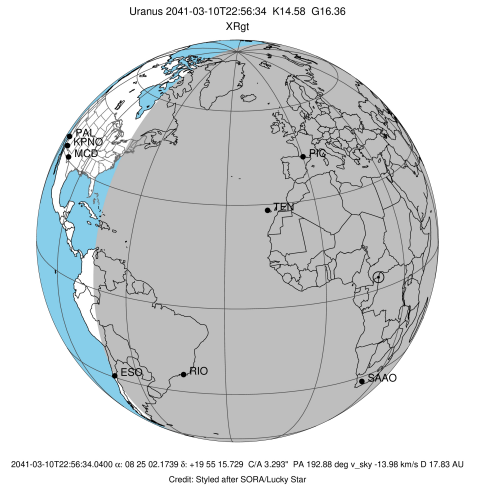
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-03-10T22:26:29.023		41.21	-17.68	50743.90	-13.61		
lambda	I	2041-03-10T22:27:22.200		41.32	-17.88	50026.71	-13.35		
delta	I	2041-03-10T22:29:34.964		41.58	-18.37	48300.35	-12.64		
gamma	I	2041-03-10T22:30:29.381		41.68	-18.58	47621.00	-12.33		
eta	I	2041-03-10T22:31:05.795		41.75	-18.72	47176.12	-12.11		
beta	I	2041-03-10T22:33:14.152		42.00	-19.20	45672.91	-11.28		
alpha	I	2041-03-10T22:34:39.319		42.16	-19.52	44733.67	-10.71		
4	I	2041-03-10T22:38:23.401		42.57	-20.36	42535.82	-9.00		
5	I	2041-03-10T22:38:58.385		42.63	-20.49	42218.94	-8.72		
6	I	2041-03-10T22:39:47.613		42.72	-20.67	41812.23	-8.28		

No planet occultations

6	E	2041-03-10T23:06:26.052		45.18	-26.61	41845.18	8.29		
5	E	2041-03-10T23:07:12.568		45.24	-26.78	42284.20	8.72		
4	E	2041-03-10T23:07:47.508		45.28	-26.91	42570.99	9.00		
alpha	E	2041-03-10T23:11:26.863		45.55	-27.71	44752.42	10.72		
beta	E	2041-03-10T23:12:49.426		45.65	-28.01	45651.19	11.29		
eta	E	2041-03-10T23:14:59.550		45.79	-28.49	47176.12	12.12		
gamma	E	2041-03-10T23:15:36.290		45.83	-28.63	47625.31	12.33		
delta	E	2041-03-10T23:16:30.319		45.89	-28.82	48300.35	12.65		
lambda	E	2041-03-10T23:18:42.985		46.03	-29.31	50026.71	13.36		
epsilon	E	2041-03-10T23:20:00.132		46.11	-29.59	51072.57	13.62		

```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2041-03-10T22:50:22.850
Event type          : XRgt
: No Uranus occs
: 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      : 663791666660265856
2Mass ID (if available) : 08250217+1955159
ICRS Star Coord at Epoch: 08h 25m 02.17391s +19:55:15.72873s
RUWE (>1.4 is poor) : 1.12
K magnitude         : 14.582
G magnitude         : 16.358
RP magnitude        : 15.779
BP magnitude        : 16.756
DUPflag            : 0
Distance (au)       : 17.830
f0 (km)            : 0.000
g0 (km)            : 0.000
skyplane vel. (km/s) : -13.98
Sun-Target sep (deg) : 133.61
Sun-Moon sep (deg)  : 30.03
B (ring opening deg) : 43.24
PA of pole (deg)    : 92.37
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 3.020
C/A sky separation (km) : 39049.0
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall11.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall11.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrfr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2041-03-10T22:20:22.124		26.53	-53.58	50743.58	-13.04		
lambda	I	2041-03-10T22:21:17.721		26.41	-53.61	50026.71	-12.75		
delta	I	2041-03-10T22:23:37.342		26.08	-53.70	48300.35	-11.97		
gamma	I	2041-03-10T22:24:34.937		25.95	-53.74	47621.02	-11.62		
eta	I	2041-03-10T22:25:13.623		25.86	-53.76	47176.12	-11.38		
beta	I	2041-03-10T22:27:31.141		25.53	-53.83	45672.31	-10.46		
alpha	I	2041-03-10T22:29:03.348		25.32	-53.88	44734.86	-9.81		
4	I	2041-03-10T22:33:13.331		24.72	-53.98	42537.35	-7.83		
5	I	2041-03-10T22:33:53.536		24.62	-53.99	42223.30	-7.49		
6	I	2041-03-10T22:34:51.630		24.48	-54.01	41814.32	-6.97		

No planet occultations

6	E	2041-03-10T22:57:42.498		21.01	-54.03	41842.27	6.95		
5	E	2041-03-10T22:58:37.914		20.87	-54.02	42279.97	7.47		
4	E	2041-03-10T22:59:18.258		20.76	-54.00	42568.17	7.81		
alpha	E	2041-03-10T23:03:24.330		20.11	-53.91	44752.33	9.78		
beta	E	2041-03-10T23:04:54.318		19.87	-53.87	45652.01	10.42		
eta	E	2041-03-10T23:07:14.302		19.49	-53.80	47176.12	11.33		
gamma	E	2041-03-10T23:07:53.519		19.39	-53.78	47625.10	11.57		
delta	E	2041-03-10T23:08:51.038		19.23	-53.75	48300.35	11.91		
lambda	E	2041-03-10T23:11:11.379		18.85	-53.66	50026.71	12.68		
epsilon	E	2041-03-10T23:12:31.473		18.63	-53.61	51058.66	12.96		