

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-04T22:15:03.980
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425421793646697344
 2Mass ID (if available) : 06122773+2340359

ICRS Star Coord at Epoch: 06h 12m 27.73678s +23:40:35.96305s

RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.622
 G magnitude : 14.940
 RP magnitude : 13.989
 BP magnitude : 15.867
 DUPflag : 0
 Distance (au) : 19.579
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.99
 Sun-Target sep (deg) : 48.81
 Sun-Moon sep (deg) : 146.32
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.13

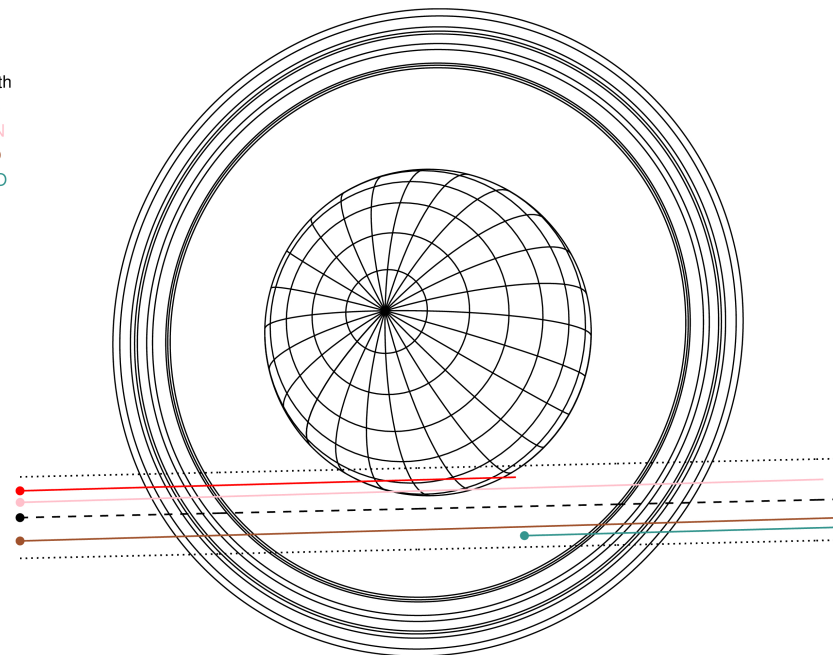
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2034-05-04T22:15:03.9800 α: 06 12 27.7368 δ: +23 40 35.963 C/A 1.934" PA 1.28 deg v_sky +25.99 km/s D 19.58 AU
 Credit: Styled after SORA/Lucky Star

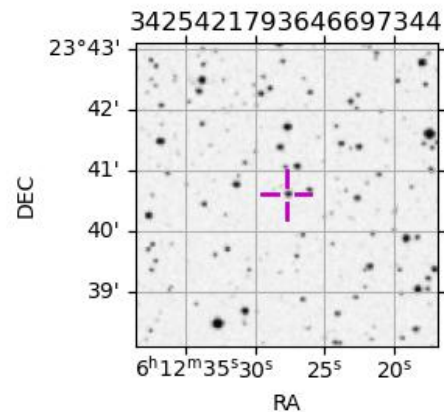
Uranus 2034-05-04T22:15:03 K11.62 G14.94 PtRgt

Earth
 PIC
 TEN
 RIO
 ESO

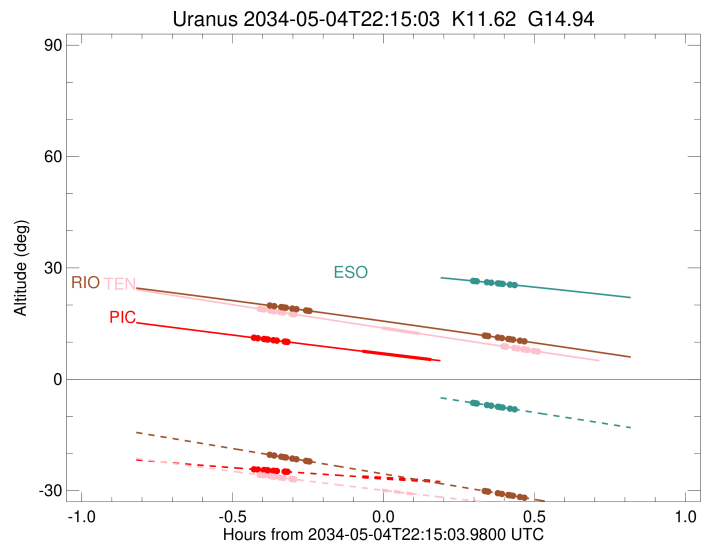
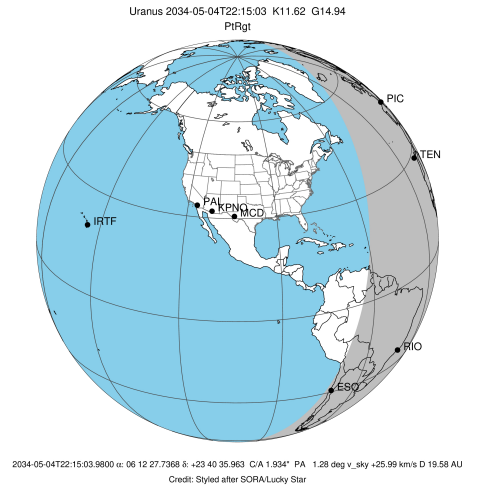


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +		MAY 04 21:49 - MAY 04 22:24	PieRin
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	+++++	+ +	+++++	MAY 04 21:50 - MAY 04 22:45	PieRie
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	+++++		+++++	MAY 04 21:52 - MAY 04 22:43	PnnRie
ESO	European Southern Obs	-29.3	289.3			+++++	MAY 04 22:32 - MAY 04 22:41	PnnRne
AAT	Siding Spring (AAT)	-31.3	149.1					PnnRnn
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0					PnnRnn

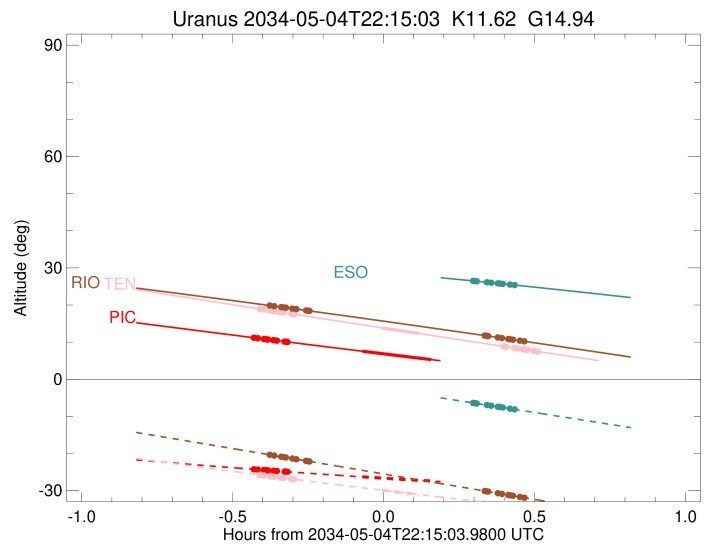
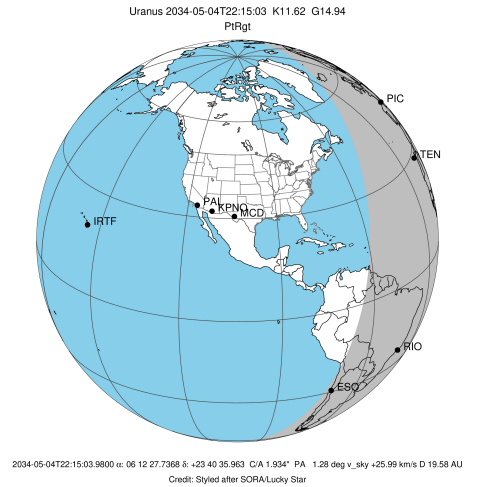


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-04T22:17:58.720
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425421793646697344
 2Mass ID (if available) : 06122773+2340359
 ICRS Star Coord at Epoch: 06h 12m 27.73678s +23:40:35.96305s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.622
 G magnitude : 14.940
 RP magnitude : 13.989
 BP magnitude : 15.867
 DUPflag : 0
 Distance (au) : 19.580
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.99
 Sun-Target sep (deg) : 48.81
 Sun-Moon sep (deg) : 146.97
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.13
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.622
 C/A sky separation (km) : 23034.1
 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



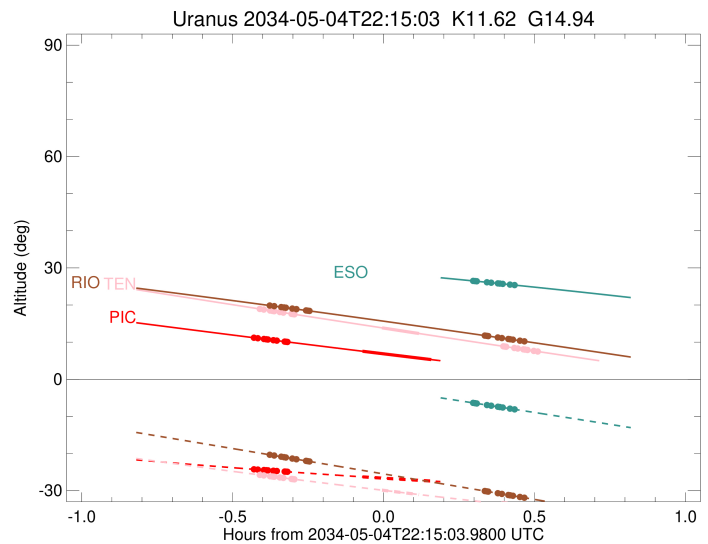
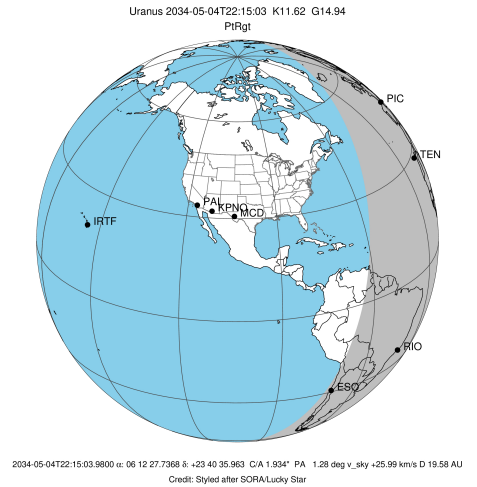
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-05-04T21:49:33.552		11.14	-24.28	50803.24	-23.92		
lambda	I	2034-05-04T21:50:06.018		11.05	-24.33	50026.71	-23.87		
delta	I	2034-05-04T21:51:18.708		10.85	-24.46	48300.35	-23.63		
gamma	I	2034-05-04T21:51:47.141		10.76	-24.50	47629.95	-23.53		
eta	I	2034-05-04T21:52:06.460		10.71	-24.54	47176.12	-23.46		
beta	I	2034-05-04T21:53:11.663		10.53	-24.64	45654.30	-23.20		
alpha	I	2034-05-04T21:53:53.596		10.41	-24.71	44687.10	-23.02		
4	I	2034-05-04T21:55:24.707		10.15	-24.86	42610.82	-22.59		
5	I	2034-05-04T21:55:42.137		10.10	-24.89	42210.61	-22.52		
6	I	2034-05-04T21:55:58.843		10.05	-24.92	41834.85	-22.39		
Uranus	I	2034-05-04T22:10:53.996		7.55	-26.29	25557.72		-0.81	-0.85
Uranus	E	2034-05-04T22:24:32.353		5.30	-27.41	25218.94		-13.51	-14.13
6	E	2034-05-04T22:38:49.961		2.99x	-28.44	41798.86	22.45		
5	E	2034-05-04T22:39:12.832		2.93x	-28.46	42314.89	22.58		
4	E	2034-05-04T22:39:22.026		2.91x	-28.47	42535.14	22.65		
alpha	E	2034-05-04T22:40:57.464		2.66x	-28.57	44721.48	23.09		
beta	E	2034-05-04T22:41:39.027		2.55x	-28.62	45681.00	23.28		
eta	E	2034-05-04T22:42:42.871		2.38x	-28.69	47176.12	23.53		
gamma	E	2034-05-04T22:43:01.750		2.33x	-28.71	47621.08	23.60		
delta	E	2034-05-04T22:43:30.464		2.25x	-28.74	48300.35	23.71		
lambda	E	2034-05-04T22:44:42.900		2.06x	-28.81	50026.71	23.95		
epsilon	E	2034-05-04T22:45:30.643		1.93x	-28.86	51173.88	23.98		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-04T22:18:43.410
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425421793646697344
 2Mass ID (if available) : 06122773+2340359
 ICRS Star Coord at Epoch: 06h 12m 27.73678s +23:40:35.96305s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.622
 G magnitude : 14.940
 RP magnitude : 13.989
 BP magnitude : 15.867
 DUPflag : 0
 Distance (au) : 19.580
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.99
 Sun-Target sep (deg) : 48.81
 Sun-Moon sep (deg) : 147.14
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.13
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.744
 C/A sky separation (km) : 24764.9
 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	2034-05-04T21:50:44.236		18.89	-25.81	50795.01	-23.31		
lambda	I	2034-05-04T21:51:17.199		18.77	-25.90	50026.71	-23.25		
delta	I	2034-05-04T21:52:31.898		18.51	-26.12	48300.35	-22.97		
gamma	I	2034-05-04T21:53:01.170		18.41	-26.20	47629.78	-22.85		
eta	I	2034-05-04T21:53:21.062		18.34	-26.26	47176.12	-22.76		
beta	I	2034-05-04T21:54:28.288		18.10	-26.45	45655.18	-22.47		
alpha	I	2034-05-04T21:55:11.691		17.95	-26.58	44686.53	-22.25		
4	I	2034-05-04T21:56:46.185		17.62	-26.85	42609.64	-21.73		
5	I	2034-05-04T21:57:04.108		17.56	-26.90	42214.58	-21.65		
6	I	2034-05-04T21:57:21.785		17.49	-26.95	41832.63	-21.50		
Uranus	I	2034-05-04T22:14:45.465		13.86	-29.87	25524.48		-4.23	-4.43
Uranus	E	2034-05-04T22:22:07.869		12.32	-31.06	25328.26		-11.06	-11.57
6	E	2034-05-04T22:38:50.816		8.88	-33.64	41798.00	21.57		
5	E	2034-05-04T22:39:14.660		8.80	-33.70	42315.17	21.73		
4	E	2034-05-04T22:39:24.293		8.77	-33.72	42536.51	21.80		
alpha	E	2034-05-04T22:41:03.058		8.43	-33.96	44719.96	22.33		
beta	E	2034-05-04T22:41:46.066		8.28	-34.07	45681.11	22.55		
eta	E	2034-05-04T22:42:51.884		8.06	-34.23	47176.12	22.85		
gamma	E	2034-05-04T22:43:11.322		7.99	-34.28	47621.14	22.94		
delta	E	2034-05-04T22:43:40.854		7.89	-34.35	48300.35	23.06		
lambda	E	2034-05-04T22:44:55.245		7.64	-34.53	50026.71	23.35		
epsilon	E	2034-05-04T22:45:43.546		7.48	-34.65	51158.63	23.42		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-04T22:18:31.620
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : 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 : 3425421793646697344
 2Mass ID (if available) : 06122773+2340359
 ICRS Star Coord at Epoch: 06h 12m 27.73678s +23:40:35.96305s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.622
 G magnitude : 14.940
 RP magnitude : 13.989
 BP magnitude : 15.867
 DUPflag : 0
 Distance (au) : 19.580
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.99
 Sun-Target sep (deg) : 48.81
 Sun-Moon sep (deg) : 147.00
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.13
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.172
 C/A sky separation (km) : 30842.9
 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



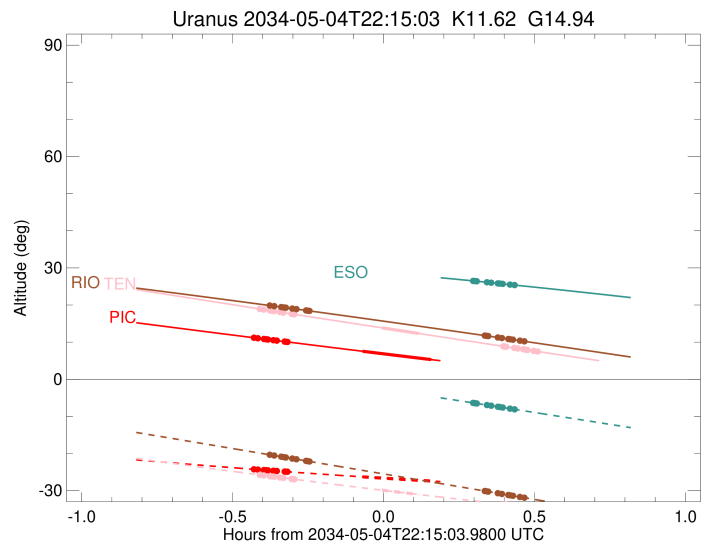
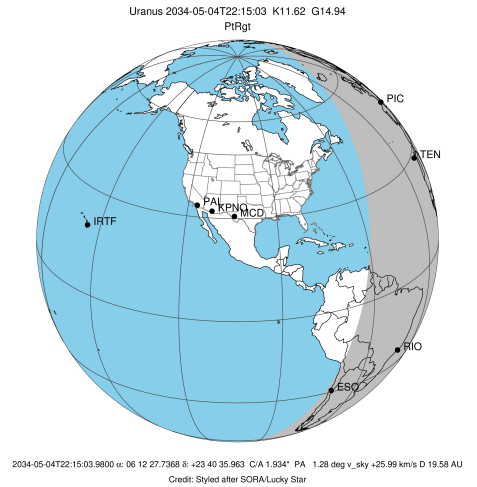
b: ring blocked by planet x: target alt < 5.0 deg or sun > -5.0 deg

Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-05-04T21:52:45.751		19.81	-20.41	50770.25	-21.00		
lambda	I	2034-05-04T21:53:21.241		19.70	-20.55	50026.71	-20.85		
delta	I	2034-05-04T21:54:44.982		19.44	-20.86	48300.35	-20.37		
gamma	I	2034-05-04T21:55:18.103		19.34	-20.99	47629.10	-20.16		
eta	I	2034-05-04T21:55:40.652		19.27	-21.07	47176.12	-20.02		
beta	I	2034-05-04T21:56:57.450		19.04	-21.37	45658.52	-19.49		
alpha	I	2034-05-04T21:57:47.939		18.88	-21.56	44685.05	-19.11		
4	I	2034-05-04T21:59:39.543		18.54	-21.98	42604.32	-18.17		
5	I	2034-05-04T22:00:00.052		18.48	-22.06	42230.00	-18.03		
6	I	2034-05-04T22:00:22.712		18.41	-22.14	41824.37	-17.76		

No planet occultations

6	E	2034-05-04T22:35:09.117		11.78	-30.09	41795.55	17.81		
5	E	2034-05-04T22:35:37.994		11.68	-30.20	42314.36	18.08		
4	E	2034-05-04T22:35:50.092		11.64	-30.25	42542.74	18.22		
alpha	E	2034-05-04T22:37:45.958		11.26	-30.69	44713.95	19.16		
beta	E	2034-05-04T22:38:36.087		11.10	-30.88	45681.19	19.55		
eta	E	2034-05-04T22:39:51.484		10.85	-31.17	47176.12	20.08		
gamma	E	2034-05-04T22:40:13.579		10.78	-31.26	47621.42	20.23		
delta	E	2034-05-04T22:40:46.971		10.67	-31.38	48300.35	20.44		
lambda	E	2034-05-04T22:42:10.421		10.40	-31.70	50026.71	20.93		
epsilon	E	2034-05-04T22:43:01.363		10.23	-31.90	51099.96	21.08		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-04T22:17:09.450
 Event type : PtRgt
 : Uranus occs: topocentric, not geocentric
 : Ring occs: geocentric, topocentric
 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 : 3425421793646697344
 2Mass ID (if available) : 06122773+2340359
 ICRS Star Coord at Epoch: 06h 12m 27.73678s +23:40:35.96305s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 11.622
 G magnitude : 14.940
 RP magnitude : 13.989
 BP magnitude : 15.867
 DUPflag : 0
 Distance (au) : 19.580
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 25.99
 Sun-Target sep (deg) : 48.81
 Sun-Moon sep (deg) : 146.83
 B (ring opening deg) : 72.86
 PA of pole (deg) : 63.13
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.268
 C/A sky separation (km) : 32200.8
 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	2034-05-04T21:51:55.961		31.41	2.17x	50765.78	-20.33		
lambda	I	2034-05-04T21:52:32.427		31.35	2.05x	50026.71	-20.16		
delta	I	2034-05-04T21:53:59.208		31.20	1.75x	48300.35	-19.62		
gamma	I	2034-05-04T21:54:33.637		31.13	1.63x	47628.94	-19.38		
eta	I	2034-05-04T21:54:57.096		31.09	1.55x	47176.12	-19.22		
beta	I	2034-05-04T21:56:17.222		30.95	1.28x	45659.31	-18.63		
alpha	I	2034-05-04T21:57:10.196		30.85	1.09x	44684.86	-18.19		
4	I	2034-05-04T21:59:08.041		30.64	0.69x	42602.85	-17.12		
5	I	2034-05-04T21:59:29.557		30.60	0.61x	42233.77	-16.96		
6	I	2034-05-04T21:59:54.029		30.55	0.53x	41822.43	-16.65		

No planet occultations

6	E	2034-05-04T22:32:49.902		26.50	-6.35	41795.17	16.68		
5	E	2034-05-04T22:33:20.661		26.44	-6.46	42313.64	16.99		
4	E	2034-05-04T22:33:33.719		26.41	-6.51	42544.56	17.15		
alpha	E	2034-05-04T22:35:35.944		26.13	-6.94	44712.42	18.23		
beta	E	2034-05-04T22:36:28.620		26.01	-7.12	45681.12	18.67		
eta	E	2034-05-04T22:37:47.420		25.83	-7.40	47176.12	19.26		
gamma	E	2034-05-04T22:38:10.450		25.78	-7.48	47621.51	19.42		
delta	E	2034-05-04T22:38:45.191		25.70	-7.61	48300.35	19.66		
lambda	E	2034-05-04T22:40:11.784		25.50	-7.91	50026.71	20.21		
epsilon	E	2034-05-04T22:41:03.780		25.38	-8.09	51085.29	20.38		