

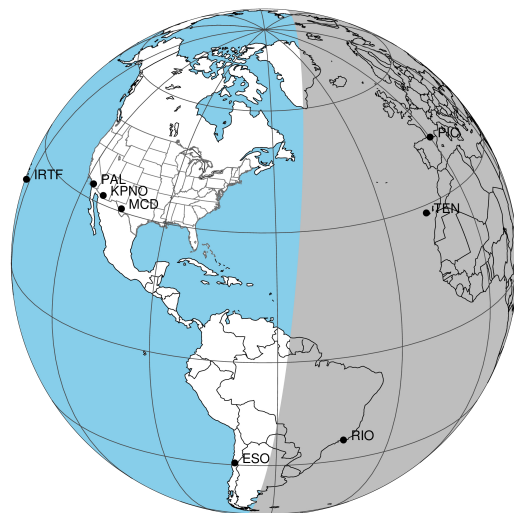
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-07T21:53:30.070
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3379626928191006592
 2Mass ID (if available) : 06463219+2323230

Uranus 2036-04-07T21:53:30 K14.70 G16.35 PgtRgt

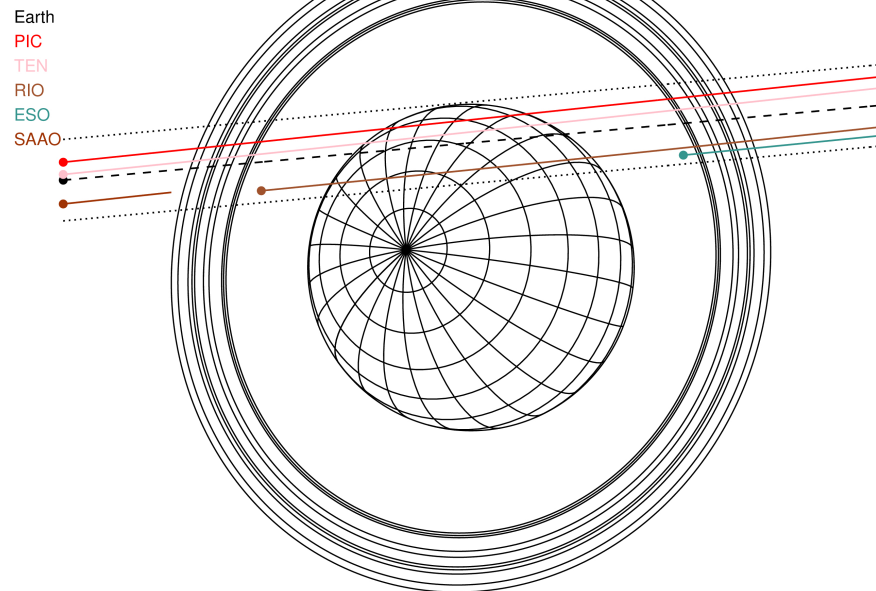
ICRS Star Coord at Epoch: 06h 46m 32.18575s +23:23:23.05986s

RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.698
 G magnitude : 16.351
 RP magnitude : 15.787
 BP magnitude : 16.737
 DUPflag : 0
 Distance (au) : 18.914
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.31
 Sun-Target sep (deg) : 82.51
 Sun-Moon sep (deg) : 59.17
 B (ring opening deg) : 65.66
 PA of pole (deg) : 74.68

Uranus 2036-04-07T21:53:30 K14.70 G16.35
 PgtRgt



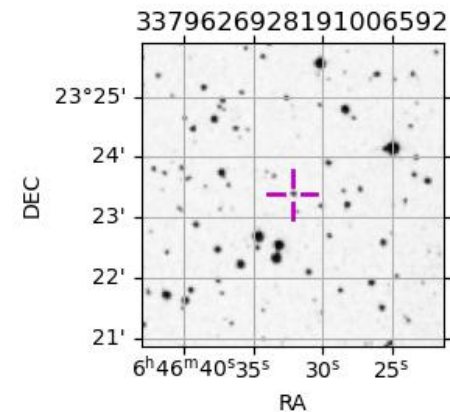
2036-04-07T21:53:30.0700 ex: 06 46 32.1858 s: +23 23 23.060 C/A 1.427° PA 185.23 deg v_sky +10.32 km/s D 18.91 AU
 Credit: Styled after SORA/Lucky Star



#	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

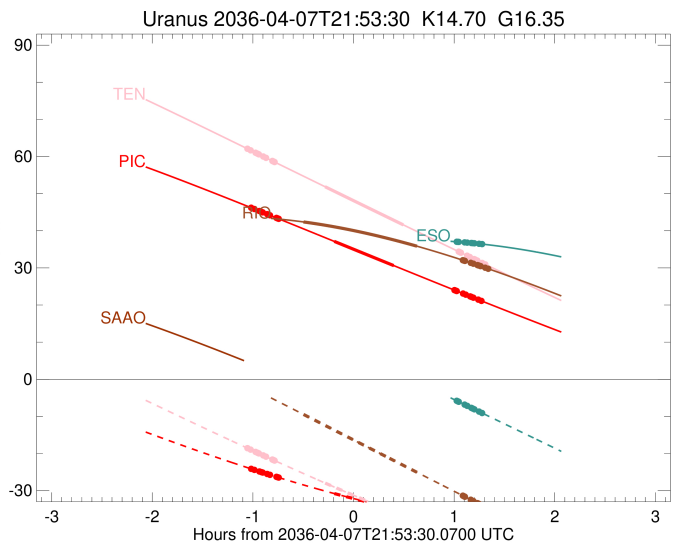
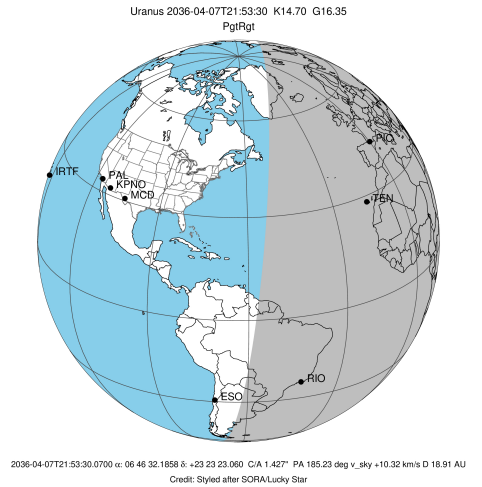
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	APR 07 20:53 - APR 07 23:09	PieRie
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	+++++	+ +	+++++	APR 07 20:50 - APR 07 23:12	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		+ +	+++++	APR 07 21:23 - APR 07 23:13	PieRne
ESO	European Southern Obs	-29.3	289.3			+++++	APR 07 22:54 - APR 07 23:10	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



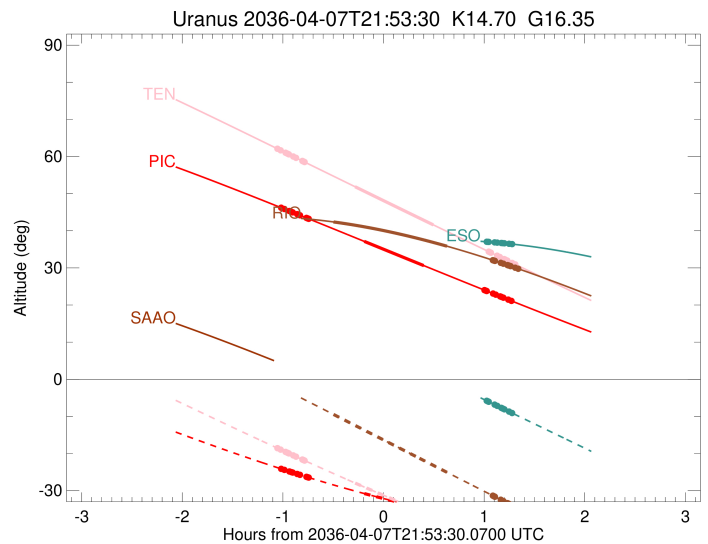
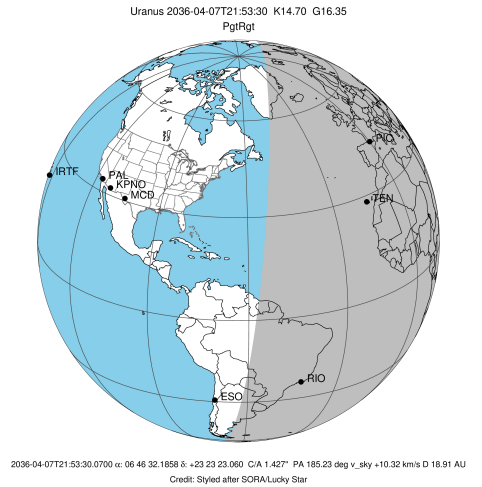
```

target                : Uranus
target radius (km)    : 25559.00
C/A epoch              : 2036-04-07T21:59:18.970
Event type             : PgtRgt
: Uranus 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        : 3379626928191006592
2Mass ID (if available) : 06463219+2323230
ICRS Star Coord at Epoch: 06h 46m 32.18575s +23:23:23.05986s
RUWE (>1.4 is poor)  : 1.07
K magnitude           : 14.698
G magnitude           : 16.351
RP magnitude          : 15.787
BP magnitude          : 16.737
DUPflag              : 0
Distance (au)         : 18.914
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s)  : 10.31
Sun-Target sep (deg)  : 82.51
Sun-Moon sep (deg)    : 59.35
B (ring opening deg)  : 65.66
PA of pole (deg)      : 74.68
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.677
C/A sky separation (km) : 23007.1
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_itr93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
  
```



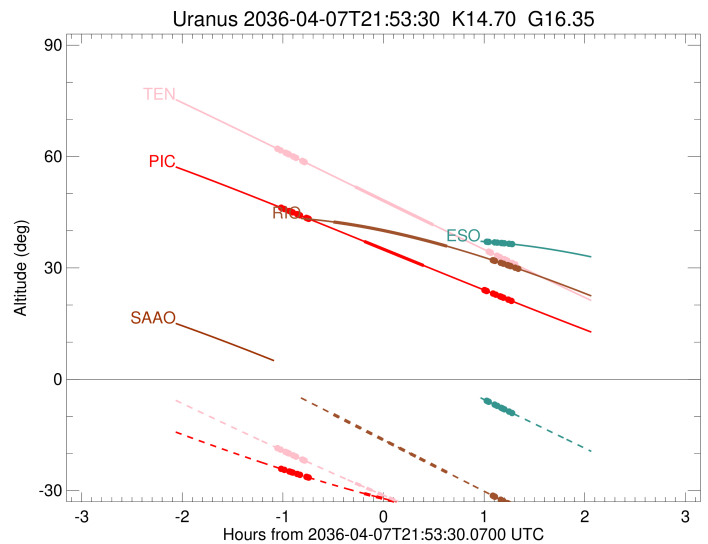
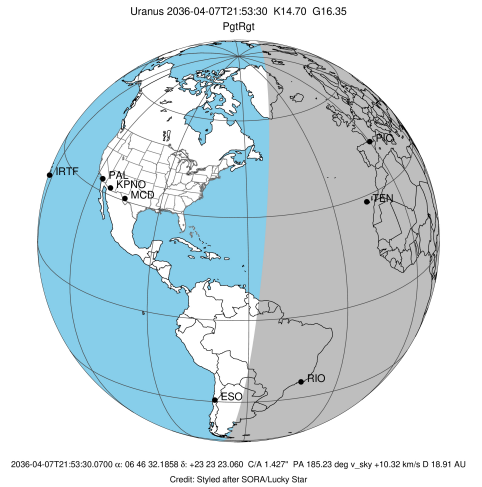
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-07T20:53:05.143		46.10	-24.22	50815.16	-9.70		
lambda	I	2036-04-07T20:54:26.423		45.85	-24.42	50026.71	-9.68		
delta	I	2036-04-07T20:57:25.610		45.31	-24.85	48300.35	-9.59		
gamma	I	2036-04-07T20:58:36.606		45.10	-25.02	47621.15	-9.55		
eta	I	2036-04-07T20:59:23.291		44.96	-25.13	47176.12	-9.52		
beta	I	2036-04-07T21:02:05.210		44.47	-25.52	45642.27	-9.42		
alpha	I	2036-04-07T21:03:40.181		44.18	-25.74	44752.40	-9.35		
4	I	2036-04-07T21:07:33.984		43.47	-26.29	42590.22	-9.17		
5	I	2036-04-07T21:08:13.666		43.35	-26.38	42213.33	-9.15		
6	I	2036-04-07T21:08:59.129		43.21	-26.49	41817.28	-9.10		
Uranus	I	2036-04-07T21:42:02.896		37.14	-30.79	25305.06		17.22	17.98
Uranus	E	2036-04-07T22:17:29.756		30.62	-34.66	25555.94		-1.85	-1.94
6	E	2036-04-07T22:53:36.717		24.03	-37.62	41810.18	9.26		
5	E	2036-04-07T22:54:31.562		23.87	-37.68	42314.52	9.31		
4	E	2036-04-07T22:54:54.303		23.80	-37.70	42525.94	9.34		
alpha	E	2036-04-07T22:58:45.945		23.10	-37.95	44701.67	9.53		
beta	E	2036-04-07T23:00:26.388		22.80	-38.05	45664.20	9.60		
eta	E	2036-04-07T23:03:02.777		22.33	-38.21	47176.12	9.71		
gamma	E	2036-04-07T23:03:49.192		22.19	-38.25	47627.74	9.74		
delta	E	2036-04-07T23:04:58.051		21.98	-38.32	48300.35	9.79		
lambda	E	2036-04-07T23:07:53.437		21.46	-38.48	50026.71	9.90		
epsilon	E	2036-04-07T23:09:46.884		21.12	-38.58	51152.86	9.92		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-07T21:59:31.720
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3379626928191006592
 2Mass ID (if available) : 06463219+2323230
 ICRS Star Coord at Epoch: 06h 46m 32.18575s +23:23:23.05986s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.698
 G magnitude : 16.351
 RP magnitude : 15.787
 BP magnitude : 16.737
 DUPflag : 0
 Distance (au) : 18.914
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.31
 Sun-Target sep (deg) : 82.51
 Sun-Moon sep (deg) : 59.49
 B (ring opening deg) : 65.66
 PA of pole (deg) : 74.68
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.539
 C/A sky separation (km) : 21105.8
 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



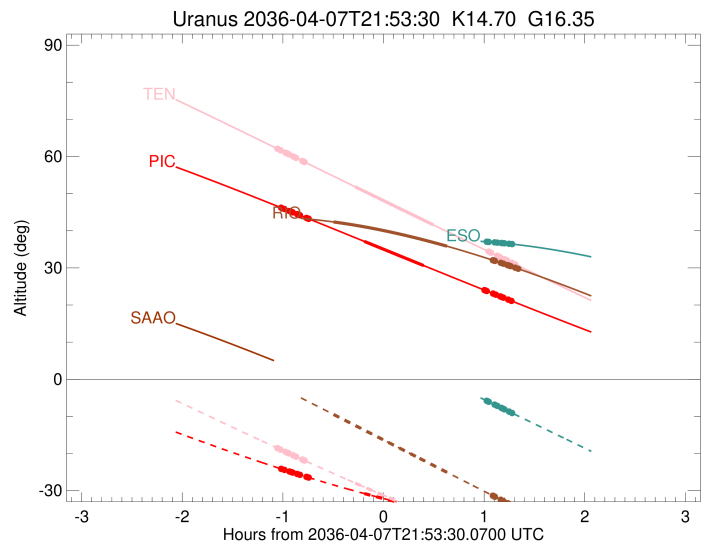
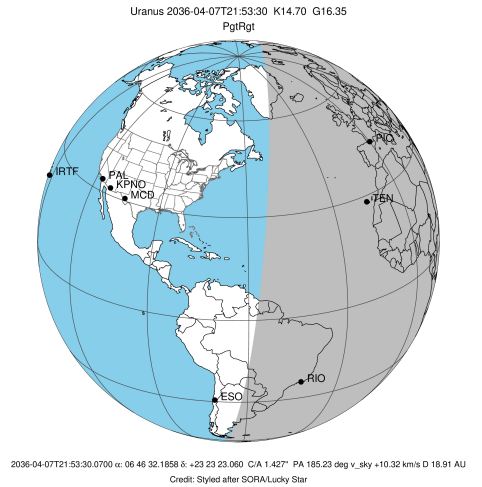
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2036-04-07T20:50:49.888		61.97	-18.68	50825.21	-9.78		
lambda	I	2036-04-07T20:52:11.484		61.67	-18.96	50026.71	-9.77		
delta	I	2036-04-07T20:55:08.868		61.01	-19.57	48300.35	-9.69		
gamma	I	2036-04-07T20:56:19.044		60.76	-19.82	47621.22	-9.66		
eta	I	2036-04-07T20:57:05.168		60.59	-19.97	47176.12	-9.64		
beta	I	2036-04-07T20:59:44.854		60.00	-20.52	45642.63	-9.56		
alpha	I	2036-04-07T21:01:18.388		59.65	-20.84	44752.43	-9.50		
4	I	2036-04-07T21:05:07.852		58.81	-21.63	42592.40	-9.36		
5	I	2036-04-07T21:05:47.429		58.66	-21.77	42209.18	-9.34		
6	I	2036-04-07T21:06:31.288		58.50	-21.92	41819.38	-9.30		
Uranus	I	2036-04-07T21:36:34.471		51.86	-27.96	25233.38		19.63	20.48
Uranus	E	2036-04-07T22:23:17.313		41.58	-36.79	25534.32		-5.26	-5.51
6	E	2036-04-07T22:56:08.496		34.40	-42.39	41811.94	9.48		
5	E	2036-04-07T22:57:01.972		34.20	-42.53	42313.85	9.52		
4	E	2036-04-07T22:57:24.251		34.12	-42.59	42525.96	9.54		
alpha	E	2036-04-07T23:01:11.396		33.30	-43.19	44700.28	9.70		
beta	E	2036-04-07T23:02:50.440		32.94	-43.45	45665.12	9.75		
eta	E	2036-04-07T23:05:24.469		32.39	-43.85	47176.12	9.85		
gamma	E	2036-04-07T23:06:10.298		32.22	-43.97	47627.96	9.87		
delta	E	2036-04-07T23:07:18.281		31.97	-44.14	48300.35	9.91		
lambda	E	2036-04-07T23:10:11.733		31.35	-44.58	50026.71	10.00		
epsilon	E	2036-04-07T23:12:05.717		30.94	-44.86	51169.12	10.01		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-07T21:57:16.770
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3379626928191006592
 2Mass ID (if available) : 06463219+2323230
 ICRS Star Coord at Epoch: 06h 46m 32.18575s +23:23:23.05986s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.698
 G magnitude : 16.351
 RP magnitude : 15.787
 BP magnitude : 16.737
 DUPflag : 0
 Distance (au) : 18.914
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.31
 Sun-Target sep (deg) : 82.51
 Sun-Moon sep (deg) : 59.55
 B (ring opening deg) : 65.66
 PA of pole (deg) : 74.68
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.109
 C/A sky separation (km) : 15218.9
 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	2036-04-07T20:43:36.252		43.85	-0.27x	50856.81	-10.19		
lambda	I	2036-04-07T20:44:57.611		43.83	-0.58x	50026.71	-10.19		
delta	I	2036-04-07T20:47:47.264		43.79	-1.23x	48300.35	-10.16		
gamma	I	2036-04-07T20:48:54.156		43.77	-1.49x	47621.48	-10.14		
eta	I	2036-04-07T20:49:38.099		43.75	-1.65x	47176.12	-10.13		
beta	I	2036-04-07T20:52:09.563		43.70	-2.23x	45643.87	-10.09		
alpha	I	2036-04-07T20:53:38.139		43.67	-2.57x	44752.05	-10.06		
4	I	2036-04-07T20:57:13.585		43.57	-3.39x	42598.17	-9.99		
5	I	2036-04-07T20:57:52.435		43.55	-3.54x	42197.98	-9.99		
6	I	2036-04-07T20:58:31.694		43.53	-3.69x	41825.50	-9.97		
Uranus	I	2036-04-07T21:23:42.021		42.38	-9.47	25110.55		23.31	24.29
Uranus	E	2036-04-07T22:31:23.137		35.84	-25.08	25419.43		-12.63	-13.21
6	E	2036-04-07T22:58:37.353		32.08	-31.34	41817.80	10.09		
5	E	2036-04-07T22:59:27.009		31.96	-31.53	42310.46	10.12		
4	E	2036-04-07T22:59:48.220		31.91	-31.62	42526.78	10.12		
alpha	E	2036-04-07T23:03:22.801		31.38	-32.44	44696.22	10.20		
beta	E	2036-04-07T23:04:57.778		31.14	-32.80	45667.95	10.23		
eta	E	2036-04-07T23:07:24.739		30.76	-33.36	47176.12	10.28		
gamma	E	2036-04-07T23:08:08.750		30.65	-33.53	47628.64	10.29		
delta	E	2036-04-07T23:09:13.979		30.48	-33.78	48300.35	10.31		
lambda	E	2036-04-07T23:12:01.113		30.05	-34.42	50026.71	10.35		
epsilon	E	2036-04-07T23:13:56.328		29.75	-34.86	51220.94	10.35		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2036-04-07T21:53:00.200
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : 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 : 3379626928191006592
 2Mass ID (if available) : 06463219+2323230
 ICRS Star Coord at Epoch: 06h 46m 32.18575s +23:23:23.05986s
 RUWE (>1.4 is poor) : 1.07
 K magnitude : 14.698
 G magnitude : 16.351
 RP magnitude : 15.787
 BP magnitude : 16.737
 DUPflag : 0
 Distance (au) : 18.914
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 10.31
 Sun-Target sep (deg) : 82.51
 Sun-Moon sep (deg) : 59.72
 B (ring opening deg) : 65.66
 PA of pole (deg) : 74.68
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.047
 C/A sky separation (km) : 14361.6
 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	2036-04-07T20:38:59.953		31.71	22.98x	50859.68	-10.31		
lambda	I	2036-04-07T20:40:20.650		31.85	22.71x	50026.71	-10.31		
delta	I	2036-04-07T20:43:08.319		32.13	22.14x	48300.35	-10.28		
gamma	I	2036-04-07T20:44:14.416		32.25	21.92x	47621.51	-10.26		
eta	I	2036-04-07T20:44:57.836		32.32	21.77x	47176.12	-10.25		
beta	I	2036-04-07T20:47:27.452		32.57	21.27x	45644.00	-10.21		
alpha	I	2036-04-07T20:48:54.949		32.71	20.97x	44751.98	-10.19		
4	I	2036-04-07T20:52:27.620		33.05	20.25x	42598.69	-10.13		
5	I	2036-04-07T20:53:06.128		33.11	20.12x	42196.96	-10.12		
6	I	2036-04-07T20:53:44.706		33.17	19.99x	41826.11	-10.10		
Uranus	I	2036-04-07T21:18:24.364		35.18	14.89x	25102.46		23.54	24.52
Uranus	E	2036-04-07T22:28:10.892		37.55	0.03x	25397.38		-13.62	-14.24
6	E	2036-04-07T22:54:57.479		37.05	-5.78	41818.92	10.12		
5	E	2036-04-07T22:55:46.877		37.02	-5.96	42309.63	10.14		
4	E	2036-04-07T22:56:08.112		37.01	-6.04	42527.05	10.14		
alpha	E	2036-04-07T22:59:42.276		36.87	-6.81	44695.52	10.21		
beta	E	2036-04-07T23:01:17.305		36.81	-7.16	45668.47	10.23		
eta	E	2036-04-07T23:03:44.192		36.71	-7.69	47176.12	10.27		
gamma	E	2036-04-07T23:04:28.228		36.68	-7.85	47628.77	10.28		
delta	E	2036-04-07T23:05:33.480		36.63	-8.09	48300.35	10.30		
lambda	E	2036-04-07T23:08:20.786		36.50	-8.70	50026.71	10.34		
epsilon	E	2036-04-07T23:10:17.148		36.41	-9.12	51230.90	10.34		