

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-02T05:58:42.120
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425248620565002112
 2Mass ID (if available) : 06141230+2340240

ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s

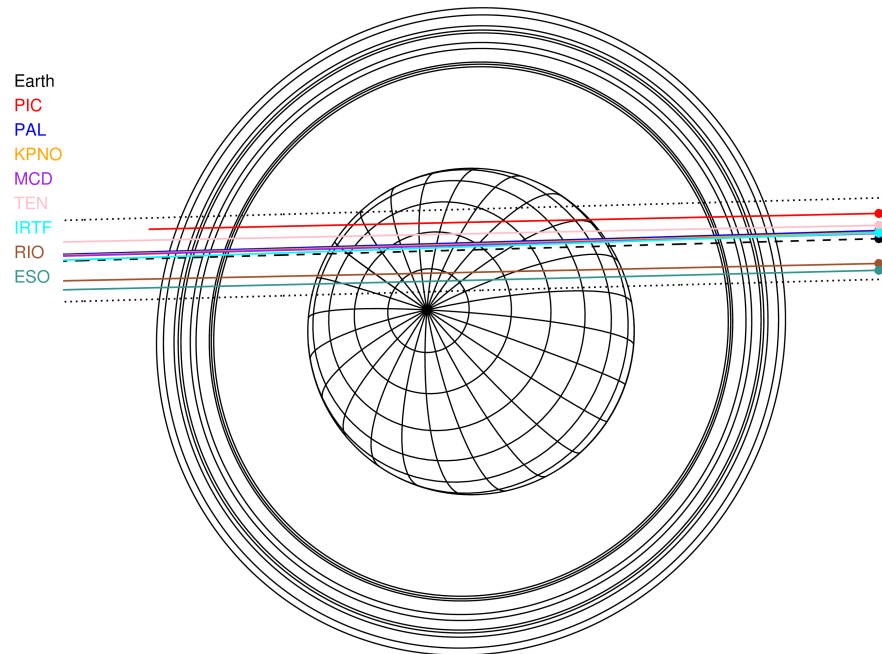
RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.395
 G magnitude : 16.873
 RP magnitude : 16.079
 BP magnitude : 17.549
 DUPflag : 0
 Distance (au) : 17.978
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.09
 Sun-Target sep (deg) : 171.82
 Sun-Moon sep (deg) : 26.17
 B (ring opening deg) : 72.51
 PA of pole (deg) : 63.89

#	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



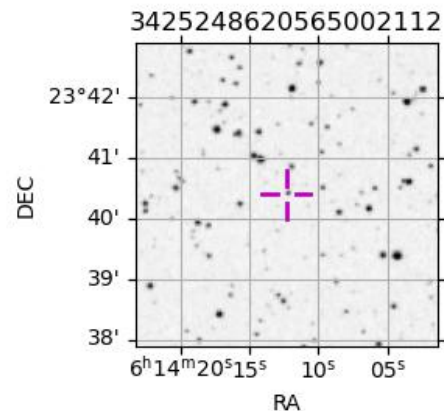
2034-01-02T05:58:42.1200 ra: 06 14 12.3028 s: +23 40 23.847 C/A 0.988° PA 181.58 deg v_sky -23.09 km/s D 17.98 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2034-01-02T05:58:42 K14.39 G16.87 PgtRgt



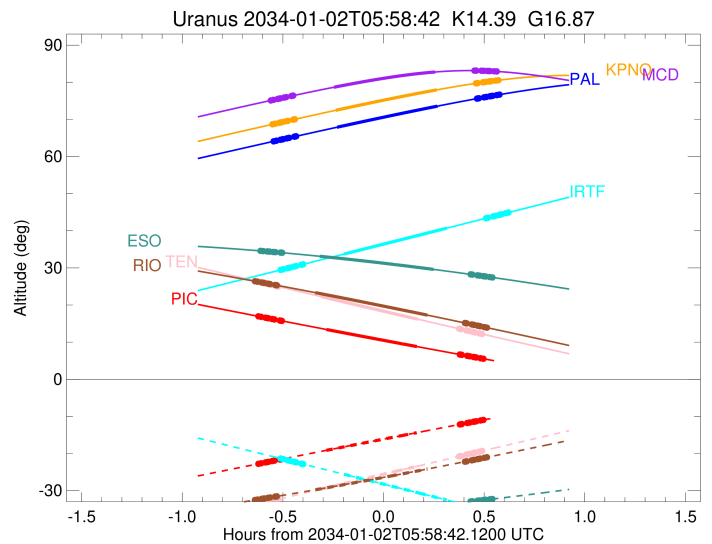
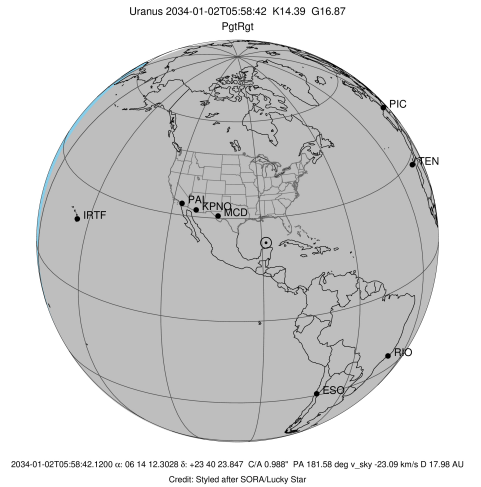
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1	+++++	+ +	+++++	JAN 02 05:21 - JAN 02 06:28	PieRie
PAL	Palomar Mt (200")	33.4	243.1	+++++	+ +	+++++	JAN 02 05:26 - JAN 02 06:33	PieRie
PNO	Purple Mtn Obs. Nanki	32.1	118.8					PnnRnn
KPNO	Kitt Peak Natl Obs	32.0	248.4	+++++	+ +	+++++	JAN 02 05:25 - JAN 02 06:32	PieRie
MCD	McDonald Obs. 2.7m	30.7	256.0	+++++	+ +	+++++	JAN 02 05:25 - JAN 02 06:32	PieRie
TEN	Teide Obs./Tenerife	28.3	343.5	+++++	+ +	+++++	JAN 02 05:20 - JAN 02 06:28	PieRie
IRTF	Mauna Kea/IRTF	19.8	204.5	+++++	+ +	+++++	JAN 02 05:28 - JAN 02 06:35	PieRie
KAV	Kavalur Observatory	12.6	78.8					PnnRnn
RIO	Rio de Janeiro	-22.9	316.8	+++++	+ +	+++++	JAN 02 05:20 - JAN 02 06:29	PieRie
ESO	European Southern Obs	-29.3	289.3	+++++	+ +	+++++	JAN 02 05:22 - JAN 02 06:31	PieRie
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



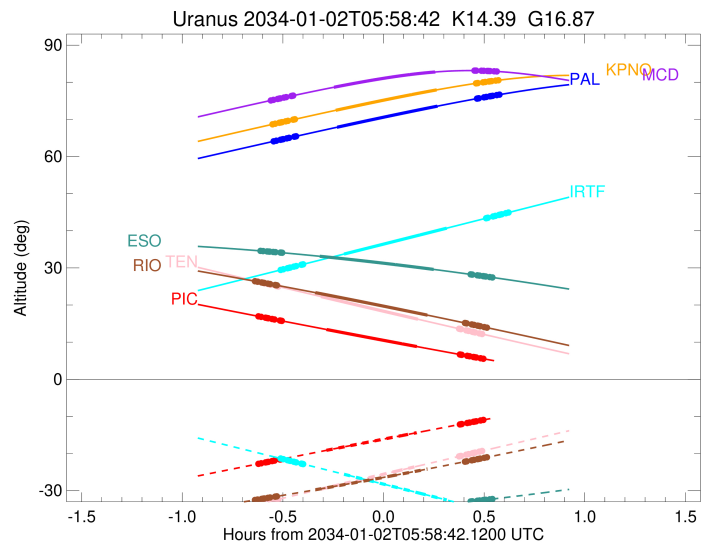
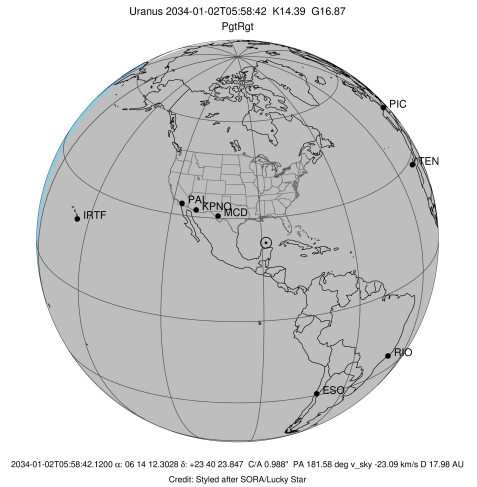
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-02T05:55:22.320
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       : 3425248620565002112
2Mass ID (if available) : 06141230+2340240
ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 14.395
G magnitude          : 16.873
RP magnitude         : 16.079
BP magnitude         : 17.549
DUPflag              : 0
Distance (au)        : 17.978
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.09
Sun-Target sep (deg) : 171.82
Sun-Moon sep (deg)   : 26.98
B (ring opening deg) : 72.51
PA of pole (deg)     : 63.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.312
C/A sky separation (km) : 17108.4
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.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	2034-01-02T05:21:36.358		16.92	-22.74	50899.57	-22.50		
lambda	I	2034-01-02T05:22:15.107		16.81	-22.63	50026.71	-22.50		
delta	I	2034-01-02T05:23:32.029		16.58	-22.40	48300.35	-22.39		
gamma	I	2034-01-02T05:24:02.102		16.49	-22.31	47627.87	-22.34		
eta	I	2034-01-02T05:24:22.341		16.43	-22.25	47176.12	-22.30		
beta	I	2034-01-02T05:25:29.869		16.23	-22.04	45674.14	-22.19		
alpha	I	2034-01-02T05:26:13.774		16.11	-21.91	44699.95	-22.11		
4	I	2034-01-02T05:27:52.726		15.82	-21.61	42529.15	-21.89		
5	I	2034-01-02T05:28:02.682		15.79	-21.58	42304.29	-21.86		
6	I	2034-01-02T05:28:24.870		15.72	-21.52	41817.33	-21.82		
Uranus	I	2034-01-02T05:41:42.528		13.41	-19.14	25491.91		-6.04	-6.33
Uranus	E	2034-01-02T06:08:37.642		8.82	-14.39	25064.33		16.82	17.57
6	E	2034-01-02T06:21:29.974		6.67	-12.16	41878.62	21.75		
5	E	2034-01-02T06:21:42.745		6.64	-12.12	42158.79	21.78		
4	E	2034-01-02T06:22:01.579		6.58	-12.07	42586.88	21.81		
alpha	E	2034-01-02T06:23:40.582		6.31	-11.78	44751.77	22.02		
beta	E	2034-01-02T06:24:21.911		6.20	-11.66	45662.62	22.10		
eta	E	2034-01-02T06:25:30.197		6.01	-11.47	47176.12	22.21		
gamma	E	2034-01-02T06:25:50.241		5.96	-11.41	47621.66	22.24		
delta	E	2034-01-02T06:26:20.720		5.87	-11.32	48300.35	22.29		
lambda	E	2034-01-02T06:27:37.975		5.66	-11.10	50026.71	22.40		
epsilon	E	2034-01-02T06:28:27.242		5.53	-10.96	51131.89	22.40		

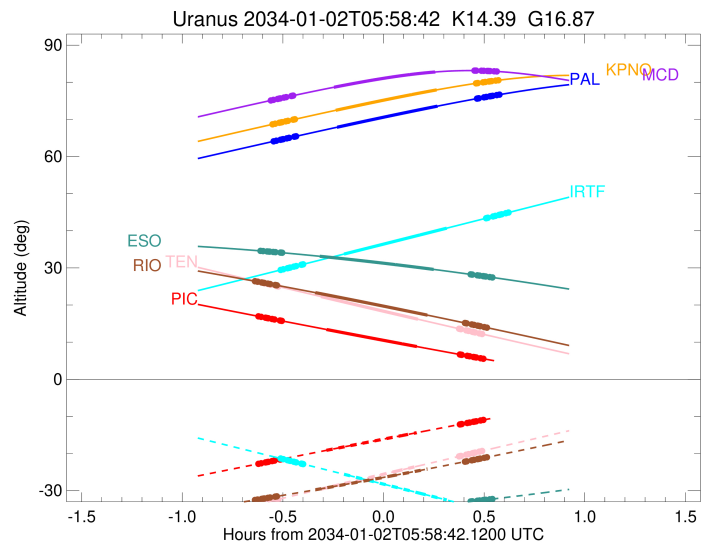
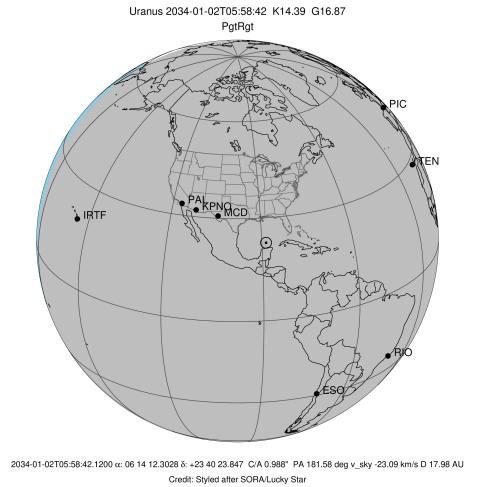
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-02T05:59:59.790
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PAL
 Location : Palomar Mt (200")
 Latitude (deg) : 33.35622
 E. Longitude (deg) : 243.13601
 Altitude (km) : 1.706
 Gaia source ID : 3425248620565002112
 2Mass ID (if available) : 06141230+2340240
 ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.395
 G magnitude : 16.873
 RP magnitude : 16.079
 BP magnitude : 17.549
 DUPflag : 0
 Distance (au) : 17.978
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.09
 Sun-Target sep (deg) : 171.82
 Sun-Moon sep (deg) : 26.37
 B (ring opening deg) : 72.51
 PA of pole (deg) : 63.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.066
 C/A sky separation (km) : 13896.2
 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	2034-01-02T05:26:07.247		64.13	-56.54	50918.86	-23.34		
lambda	I	2034-01-02T05:26:45.429		64.26	-56.67	50026.71	-23.35		
delta	I	2034-01-02T05:27:59.482		64.51	-56.93	48300.35	-23.28		
gamma	I	2034-01-02T05:28:28.378		64.61	-57.03	47628.19	-23.24		
eta	I	2034-01-02T05:28:47.835		64.68	-57.10	47176.12	-23.22		
beta	I	2034-01-02T05:29:52.666		64.90	-57.32	45673.07	-23.15		
alpha	I	2034-01-02T05:30:34.755		65.04	-57.46	44698.02	-23.10		
4	I	2034-01-02T05:32:09.160		65.36	-57.79	42530.52	-22.96		
5	I	2034-01-02T05:32:18.530		65.39	-57.82	42307.12	-22.94		
6	I	2034-01-02T05:32:39.905		65.46	-57.89	41814.54	-22.92		
Uranus	I	2034-01-02T05:44:51.786		67.90	-60.40	25430.16		-8.40	-8.79
Uranus	E	2034-01-02T06:14:47.192		73.57	-66.42	25032.06		17.40	18.17
6	E	2034-01-02T06:26:36.758		75.61	-68.72	41877.57	22.94		
5	E	2034-01-02T06:26:48.818		75.64	-68.76	42156.87	22.96		
4	E	2034-01-02T06:27:06.942		75.69	-68.82	42590.59	22.99		
alpha	E	2034-01-02T06:28:40.897		75.95	-69.12	44751.10	23.13		
beta	E	2034-01-02T06:29:20.215		76.05	-69.24	45660.96	23.18		
eta	E	2034-01-02T06:30:25.456		76.23	-69.45	47176.12	23.25		
gamma	E	2034-01-02T06:30:44.616		76.28	-69.51	47621.88	23.28		
delta	E	2034-01-02T06:31:13.745		76.35	-69.60	48300.35	23.31		
lambda	E	2034-01-02T06:32:27.696		76.55	-69.83	50026.71	23.38		
epsilon	E	2034-01-02T06:33:16.193		76.67	-69.99	51161.68	23.37		

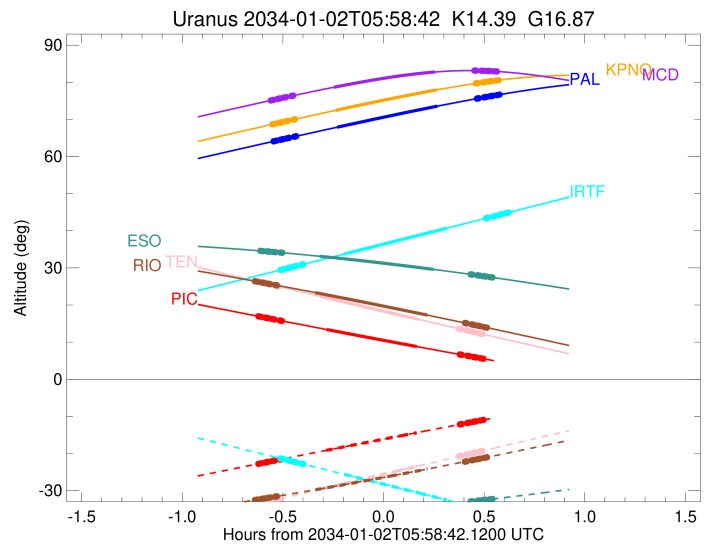
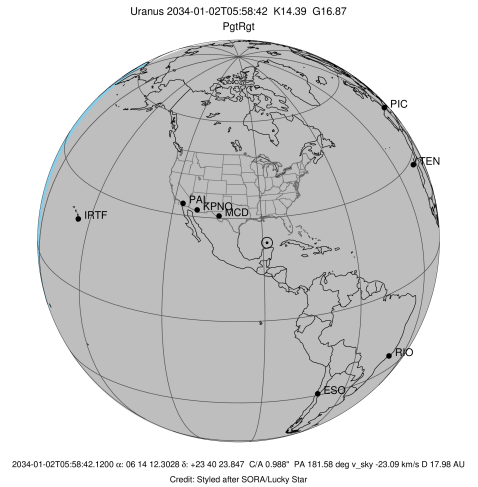
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-02T05:59:40.000
Event type           : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : KPNO
Location             : Kitt Peak Natl Obs
Latitude (deg)       : 31.96333
E. Longitude (deg)   : 248.40000
Altitude (km)        : 2.120
Gaia source ID       : 3425248620565002112
2Mass ID (if available) : 06141230+2340240
ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
RUWE (>1.4 is poor) : 1.00
K magnitude           : 14.395
G magnitude           : 16.873
RP magnitude          : 16.079
BP magnitude          : 17.549
DUPflag              : 0
Distance (au)        : 17.978
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.09
Sun-Target sep (deg) : 171.82
Sun-Moon sep (deg)   : 26.44
B (ring opening deg) : 72.51
PA of pole (deg)     : 63.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.051
C/A sky separation (km) : 13703.9
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.bsp
ural61.bsp
vgr2.ural61.bsp
peph.ural60.bsp
earthstns_itrff93_040916.bsp
earth_720101_070426.bpc
earth_200101_990628_predict.bpc
pg3f0000r.bsp
pg490000r.bsp
naif0012.tls
earth_flat_IAU.spk
    
```



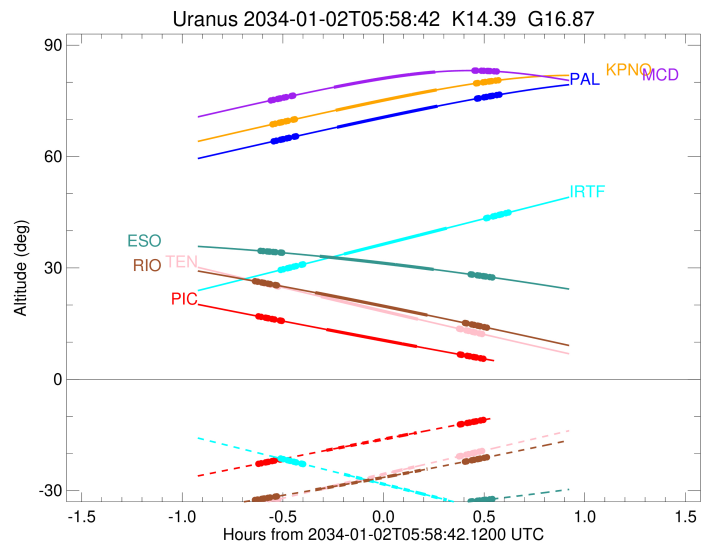
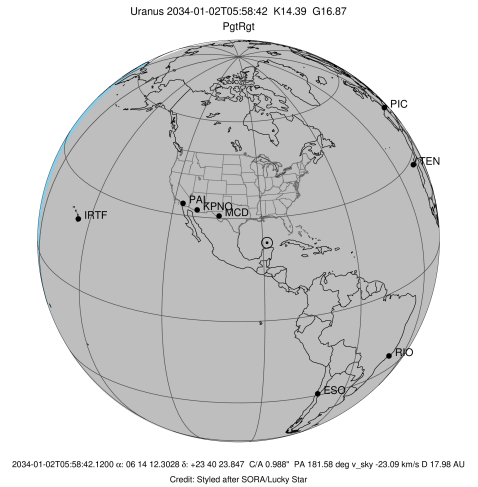
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-02T05:25:47.031		68.72	-61.08	50920.37	-23.39		
lambda	I	2034-01-02T05:26:25.200		68.85	-61.21	50026.71	-23.40		
delta	I	2034-01-02T05:27:39.097		69.10	-61.47	48300.35	-23.33		
gamma	I	2034-01-02T05:28:07.931		69.19	-61.57	47628.22	-23.30		
eta	I	2034-01-02T05:28:27.346		69.26	-61.64	47176.12	-23.28		
beta	I	2034-01-02T05:29:32.035		69.48	-61.86	45672.98	-23.20		
alpha	I	2034-01-02T05:30:14.029		69.62	-62.01	44697.88	-23.15		
4	I	2034-01-02T05:31:48.195		69.94	-62.33	42530.62	-23.02		
5	I	2034-01-02T05:31:57.534		69.97	-62.37	42307.31	-23.00		
6	I	2034-01-02T05:32:18.869		70.04	-62.44	41814.34	-22.98		
Uranus	I	2034-01-02T05:44:27.557		72.46	-64.96	25425.79		-8.54	-8.94
Uranus	E	2034-01-02T06:14:32.216		77.95	-71.01	25031.18		17.41	18.18
6	E	2034-01-02T06:26:19.144		79.72	-73.27	41877.51	22.99		
5	E	2034-01-02T06:26:31.176		79.75	-73.31	42156.80	23.02		
4	E	2034-01-02T06:26:49.272		79.79	-73.36	42590.76	23.04		
alpha	E	2034-01-02T06:28:23.022		80.00	-73.65	44751.06	23.17		
beta	E	2034-01-02T06:29:02.260		80.08	-73.77	45660.89	23.23		
eta	E	2034-01-02T06:30:07.382		80.22	-73.97	47176.12	23.30		
gamma	E	2034-01-02T06:30:26.508		80.26	-74.03	47621.89	23.32		
delta	E	2034-01-02T06:30:55.585		80.31	-74.12	48300.35	23.35		
lambda	E	2034-01-02T06:32:09.410		80.46	-74.35	50026.71	23.42		
epsilon	E	2034-01-02T06:32:57.886		80.55	-74.49	51163.06	23.41		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-02T05:59:09.560
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MCD
 Location : McDonald Obs. 2.7m
 Latitude (deg) : 30.67158
 E. Longitude (deg) : 255.97844
 Altitude (km) : 2.075
 Gaia source ID : 3425248620565002112
 2Mass ID (if available) : 06141230+2340240
 ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.395
 G magnitude : 16.873
 RP magnitude : 16.079
 BP magnitude : 17.549
 DUPflag : 0
 Distance (au) : 17.978
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.09
 Sun-Target sep (deg) : 171.82
 Sun-Moon sep (deg) : 26.54
 B (ring opening deg) : 72.51
 PA of pole (deg) : 63.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.038
 C/A sky separation (km) : 13534.1
 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	2034-01-02T05:25:16.433		75.14	-67.58	50921.82	-23.43		
lambda	I	2034-01-02T05:25:54.590		75.27	-67.71	50026.71	-23.44		
delta	I	2034-01-02T05:27:08.342		75.51	-67.97	48300.35	-23.37		
gamma	I	2034-01-02T05:27:37.115		75.60	-68.07	47628.24	-23.34		
eta	I	2034-01-02T05:27:56.492		75.67	-68.14	47176.12	-23.32		
beta	I	2034-01-02T05:29:01.048		75.88	-68.36	45672.91	-23.25		
alpha	I	2034-01-02T05:29:42.954		76.01	-68.51	44697.75	-23.20		
4	I	2034-01-02T05:31:16.897		76.32	-68.83	42530.72	-23.08		
5	I	2034-01-02T05:31:26.207		76.35	-68.86	42307.49	-23.05		
6	I	2034-01-02T05:31:47.508		76.41	-68.94	41814.16	-23.03		
Uranus	I	2034-01-02T05:43:53.339		78.66	-71.42	25421.74		-8.68	-9.08
Uranus	E	2034-01-02T06:14:05.972		82.78	-77.25	25030.50		17.42	18.20
6	E	2034-01-02T06:25:50.668		83.15	-79.24	41877.46	23.04		
5	E	2034-01-02T06:26:02.676		83.15	-79.27	42156.74	23.06		
4	E	2034-01-02T06:26:20.749		83.14	-79.32	42590.90	23.08		
alpha	E	2034-01-02T06:27:54.329		83.11	-79.56	44751.03	23.21		
beta	E	2034-01-02T06:28:33.502		83.09	-79.66	45660.82	23.26		
eta	E	2034-01-02T06:29:38.527		83.06	-79.82	47176.12	23.33		
gamma	E	2034-01-02T06:29:57.625		83.04	-79.87	47621.90	23.35		
delta	E	2034-01-02T06:30:26.659		83.02	-79.94	48300.35	23.38		
lambda	E	2034-01-02T06:31:40.382		82.97	-80.11	50026.71	23.45		
epsilon	E	2034-01-02T06:32:28.841		82.92	-80.23	51164.14	23.44		

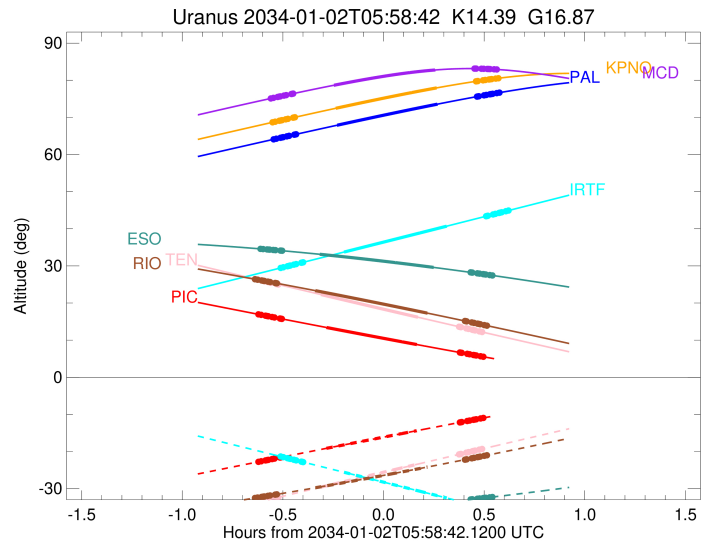
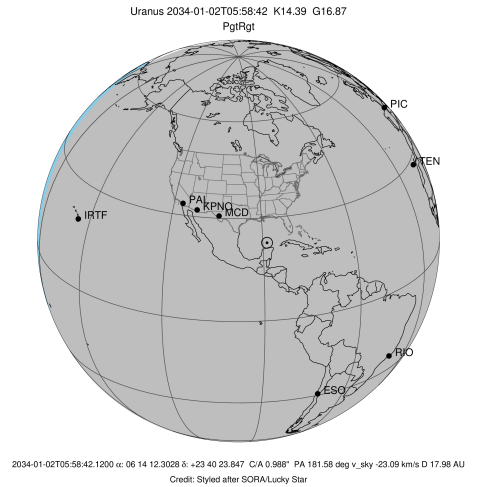
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-02T05:54:40.840
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : TEN
 Location : Teide Obs./Tenerife
 Latitude (deg) : 28.30050
 E. Longitude (deg) : 343.48909
 Altitude (km) : 2.395
 Gaia source ID : 3425248620565002112
 2Mass ID (if available) : 06141230+2340240
 ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.395
 G magnitude : 16.873
 RP magnitude : 16.079
 BP magnitude : 17.549
 DUPflag : 0
 Distance (au) : 17.978
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.09
 Sun-Target sep (deg) : 171.82
 Sun-Moon sep (deg) : 27.13
 B (ring opening deg) : 72.51
 PA of pole (deg) : 63.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.175
 C/A sky separation (km) : 15315.7
 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	2034-01-02T05:20:42.045		26.42	-33.78	50912.08	-22.92		
lambda	I	2034-01-02T05:21:20.638		26.28	-33.64	50026.71	-22.92		
delta	I	2034-01-02T05:22:36.107		26.01	-33.37	48300.35	-22.83		
gamma	I	2034-01-02T05:23:05.580		25.90	-33.26	47628.08	-22.79		
eta	I	2034-01-02T05:23:25.423		25.83	-33.19	47176.12	-22.76		
beta	I	2034-01-02T05:24:31.578		25.60	-32.95	45673.46	-22.67		
alpha	I	2034-01-02T05:25:14.557		25.44	-32.80	44698.71	-22.61		
4	I	2034-01-02T05:26:51.141		25.10	-32.45	42529.99	-22.44		
5	I	2034-01-02T05:27:00.773		25.07	-32.41	42306.13	-22.41		
6	I	2034-01-02T05:27:22.570		24.99	-32.33	41815.55	-22.38		
Uranus	I	2034-01-02T05:40:03.156		22.28	-29.59	25456.07		-7.50	-7.85
Uranus	E	2034-01-02T06:08:57.089		16.18	-23.39	25043.42		17.20	17.96
6	E	2034-01-02T06:21:16.093		13.61	-20.77	41878.12	22.28		
5	E	2034-01-02T06:21:28.527		13.56	-20.72	42157.74	22.31		
4	E	2034-01-02T06:21:47.052		13.50	-20.66	42588.77	22.34		
alpha	E	2034-01-02T06:23:23.756		13.17	-20.31	44751.46	22.50		
beta	E	2034-01-02T06:24:04.186		13.03	-20.17	45661.79	22.57		
eta	E	2034-01-02T06:25:11.144		12.79	-19.94	47176.12	22.65		
gamma	E	2034-01-02T06:25:30.806		12.73	-19.87	47621.77	22.68		
delta	E	2034-01-02T06:26:00.705		12.62	-19.76	48300.35	22.71		
lambda	E	2034-01-02T06:27:16.562		12.36	-19.49	50026.71	22.80		
epsilon	E	2034-01-02T06:28:05.621		12.19	-19.32	51146.55	22.79		

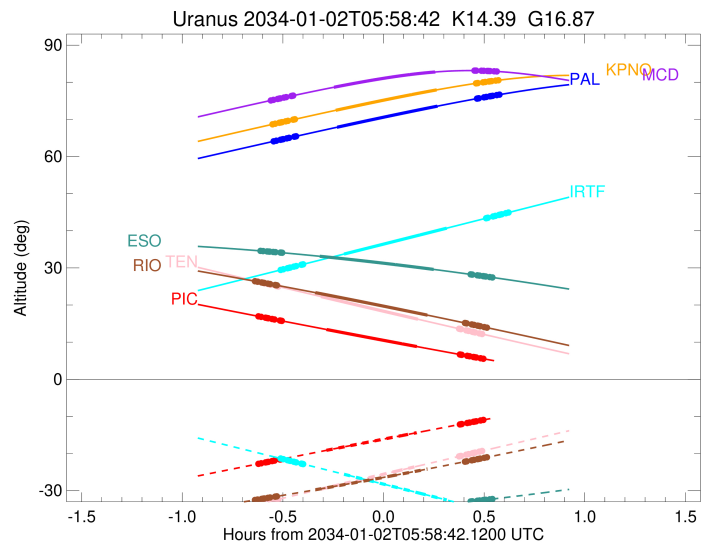
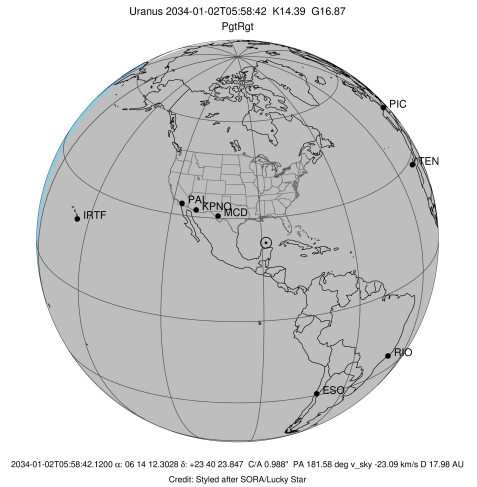
```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-02T06:02:24.490
Event type          : PgtRgt
: Uranus occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : IRTF
Location            : Mauna Kea/IRTF
Latitude (deg)      : 19.82622
E. Longitude (deg)  : 204.52800
Altitude (km)       : 4.168
Gaia source ID      : 3425248620565002112
2Mass ID (if available) : 06141230+2340240
ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 14.395
G magnitude          : 16.873
RP magnitude         : 16.079
BP magnitude         : 17.549
DUPflag             : 0
Distance (au)       : 17.978
f0 (km)             : 0.000
g0 (km)             : 0.000
skyplane vel. (km/s) : -23.09
Sun-Target sep (deg) : 171.82
Sun-Moon sep (deg)  : 25.74
B (ring opening deg) : 72.51
PA of pole (deg)    : 63.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 1.018
C/A sky separation (km) : 13280.1
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.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	2034-01-02T05:28:12.578		29.49	-21.38	50921.74	-23.26		
lambda	I	2034-01-02T05:28:51.016		29.63	-21.53	50026.71	-23.27		
delta	I	2034-01-02T05:30:05.307		29.91	-21.80	48300.35	-23.21		
gamma	I	2034-01-02T05:30:34.287		30.02	-21.91	47628.24	-23.18		
eta	I	2034-01-02T05:30:53.801		30.09	-21.98	47176.12	-23.16		
beta	I	2034-01-02T05:31:58.809		30.34	-22.23	45672.90	-23.10		
alpha	I	2034-01-02T05:32:41.001		30.50	-22.39	44697.74	-23.05		
4	I	2034-01-02T05:34:15.565		30.86	-22.74	42530.74	-22.93		
5	I	2034-01-02T05:34:24.933		30.89	-22.77	42307.52	-22.90		
6	I	2034-01-02T05:34:46.373		30.97	-22.85	41814.12	-22.89		
Uranus	I	2034-01-02T05:46:55.082		33.73	-25.59	25418.91		-8.77	-9.17
Uranus	E	2034-01-02T06:17:33.303		40.70	-32.52	25029.06		17.45	18.22
6	E	2034-01-02T06:29:19.118		43.39	-35.19	41877.29	22.97		
5	E	2034-01-02T06:29:31.160		43.44	-35.24	42156.54	22.99		
4	E	2034-01-02T06:29:49.321		43.50	-35.31	42591.39	23.01		
alpha	E	2034-01-02T06:31:23.172		43.86	-35.66	44750.91	23.14		
beta	E	2034-01-02T06:32:02.464		44.01	-35.81	45660.59	23.19		
eta	E	2034-01-02T06:33:07.711		44.26	-36.06	47176.12	23.26		
gamma	E	2034-01-02T06:33:26.873		44.33	-36.13	47621.93	23.27		
delta	E	2034-01-02T06:33:56.002		44.45	-36.24	48300.35	23.30		
lambda	E	2034-01-02T06:35:09.972		44.73	-36.52	50026.71	23.37		
epsilon	E	2034-01-02T06:35:58.782		44.91	-36.71	51168.54	23.36		

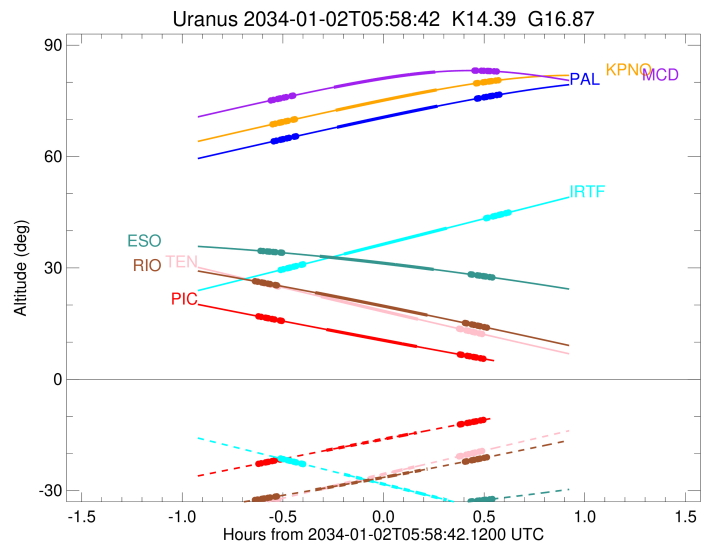
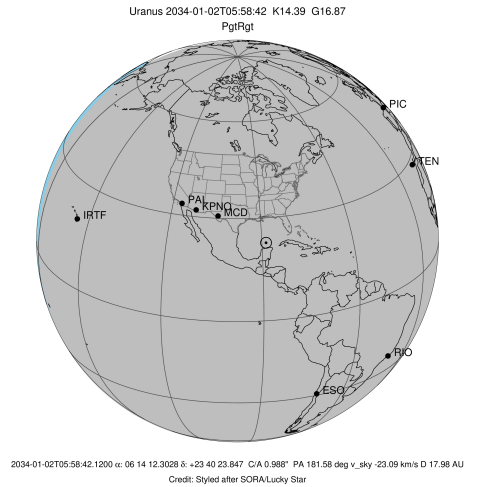
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-02T05:55:10.200
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : RIO
 Location : Rio de Janeiro
 Latitude (deg) : -22.89506
 E. Longitude (deg) : 316.77708
 Altitude (km) : 0.033
 Gaia source ID : 3425248620565002112
 2Mass ID (if available) : 06141230+2340240
 ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
 RUWE (>1.4 is poor) : 1.00
 K magnitude : 14.395
 G magnitude : 16.873
 RP magnitude : 16.079
 BP magnitude : 17.549
 DUPflag : 0
 Distance (au) : 17.978
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -23.09
 Sun-Target sep (deg) : 171.82
 Sun-Moon sep (deg) : 26.91
 B (ring opening deg) : 72.51
 PA of pole (deg) : 63.89
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.711
 C/A sky separation (km) : 9265.6
 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	2034-01-02T05:20:31.636		26.38	-32.50	50954.07	-23.84		
lambda	I	2034-01-02T05:21:10.500		26.28	-32.40	50026.71	-23.85		
delta	I	2034-01-02T05:22:22.923		26.07	-32.22	48300.35	-23.82		
gamma	I	2034-01-02T05:22:51.128		26.00	-32.15	47628.72	-23.81		
eta	I	2034-01-02T05:23:10.144		25.94	-32.11	47176.12	-23.80		
beta	I	2034-01-02T05:24:13.439		25.77	-31.95	45671.15	-23.76		
alpha	I	2034-01-02T05:24:54.472		25.65	-31.84	44695.03	-23.74		
4	I	2034-01-02T05:26:25.963		25.39	-31.61	42533.24	-23.68		
5	I	2034-01-02T05:26:34.914		25.37	-31.59	42310.90	-23.66		
6	I	2034-01-02T05:26:55.959		25.31	-31.54	41810.26	-23.65		
Uranus	I	2034-01-02T05:38:20.979		23.34	-29.77	25323.85		-11.42	-11.95
Uranus	E	2034-01-02T06:11:47.075		17.28	-24.18	25031.42		17.41	18.18
6	E	2034-01-02T06:23:00.736		15.16	-22.19	41875.86	23.56		
5	E	2034-01-02T06:23:12.480		15.12	-22.16	42155.39	23.57		
4	E	2034-01-02T06:23:30.415		15.06	-22.10	42594.85	23.59		
alpha	E	2034-01-02T06:25:01.963		14.77	-21.83	44749.98	23.64		
beta	E	2034-01-02T06:25:40.392		14.65	-21.71	45658.99	23.67		
eta	E	2034-01-02T06:26:44.446		14.44	-21.52	47176.12	23.69		
gamma	E	2034-01-02T06:27:03.268		14.38	-21.46	47622.18	23.70		
delta	E	2034-01-02T06:27:31.871		14.29	-21.38	48300.35	23.72		
lambda	E	2034-01-02T06:28:44.616		14.06	-21.16	50026.71	23.75		
epsilon	E	2034-01-02T06:29:33.872		13.90	-21.01	51196.78	23.73		


```

target                : Uranus
target radius (km)   : 25559.00
C/A epoch            : 2034-01-02T05:56:47.290
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       : 3425248620565002112
2Mass ID (if available) : 06141230+2340240
ICRS Star Coord at Epoch: 06h 14m 12.30285s +23:40:23.84681s
RUWE (>1.4 is poor) : 1.00
K magnitude          : 14.395
G magnitude          : 16.873
RP magnitude         : 16.079
BP magnitude         : 17.549
DUPflag             : 0
Distance (au)        : 17.978
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -23.09
Sun-Target sep (deg) : 171.82
Sun-Moon sep (deg)   : 26.66
B (ring opening deg) : 72.51
PA of pole (deg)     : 63.89
Pole direction: RA (deg): 257.31100
Dec (deg): -15.17500
C/A sky separation (") : 0.615
C/A sky separation (km) : 8016.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLvl1.spk
urall1.bsp
IAU_URANUS_for_RINGFIT.tpc
vgr2.urall1.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	2034-01-02T05:22:09.814		34.57	-37.31	50962.06	-24.03		
lambda	I	2034-01-02T05:22:48.701		34.52	-37.29	50026.71	-24.05		
delta	I	2034-01-02T05:24:00.529		34.43	-37.24	48300.35	-24.02		
gamma	I	2034-01-02T05:24:28.490		34.40	-37.22	47628.83	-24.01		
eta	I	2034-01-02T05:24:47.346		34.37	-37.21	47176.12	-24.00		
beta	I	2034-01-02T05:25:50.098		34.29	-37.16	45670.71	-23.98		
alpha	I	2034-01-02T05:26:30.763		34.24	-37.13	44694.40	-23.96		
4	I	2034-01-02T05:28:01.319		34.12	-37.07	42533.93	-23.92		
5	I	2034-01-02T05:28:10.160		34.11	-37.06	42311.60	-23.90		
6	I	2034-01-02T05:28:31.056		34.08	-37.04	41809.35	-23.90		
Uranus	I	2034-01-02T05:39:44.422		33.13	-36.47	25297.60		-12.06	-12.61
Uranus	E	2034-01-02T06:13:39.145		29.60	-33.96	25038.60		17.28	18.05
6	E	2034-01-02T06:24:42.361		28.25	-32.92	41875.25	23.85		
5	E	2034-01-02T06:24:53.978		28.23	-32.90	42155.12	23.86		
4	E	2034-01-02T06:25:11.778		28.19	-32.87	42596.11	23.87		
alpha	E	2034-01-02T06:26:42.214		28.00	-32.72	44749.57	23.91		
beta	E	2034-01-02T06:27:20.203		27.92	-32.66	45658.38	23.93		
eta	E	2034-01-02T06:28:23.593		27.79	-32.55	47176.12	23.95		
gamma	E	2034-01-02T06:28:42.220		27.75	-32.52	47622.28	23.96		
delta	E	2034-01-02T06:29:10.519		27.69	-32.47	48300.35	23.97		
lambda	E	2034-01-02T06:30:22.518		27.53	-32.34	50026.71	23.99		
epsilon	E	2034-01-02T06:31:11.741		27.43	-32.26	51207.85	23.97		