

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-24T15:33:11.020
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425435017848554880
 2Mass ID (if available) : 06102174+2341368

Uranus 2034-01-24T15:33:11 K13.99 G16.19 PgtRgt

ICRS Star Coord at Epoch: 06h 10m 21.74374s +23:41:36.79779s

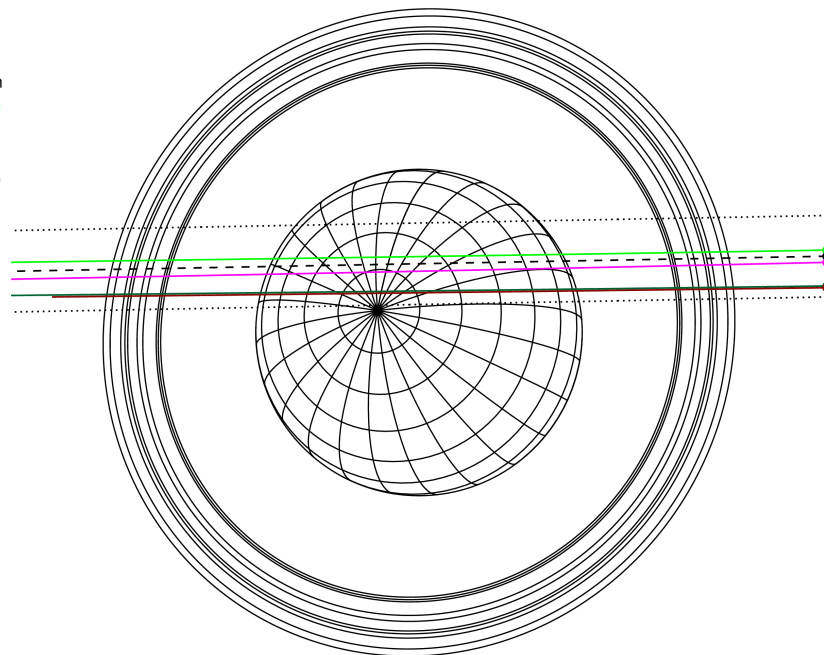
RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.986
 G magnitude : 16.186
 RP magnitude : 15.469
 BP magnitude : 16.732
 DUPflag : 0
 Distance (au) : 18.105
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.92
 Sun-Target sep (deg) : 148.13
 Sun-Moon sep (deg) : 93.60
 B (ring opening deg) : 73.28
 PA of pole (deg) : 62.14

Uranus 2034-01-24T15:33:11 K13.99 G16.19
 PgtRgt



2034-01-24T15:33:11.0200 ra: 06 10 21.7437 s: +23 41 36.798 C/A 0.827 PA 181.06 deg v_sky -18.92 km/s D 18.11 AU
 Credit: Styled after SORA/Lucky Star

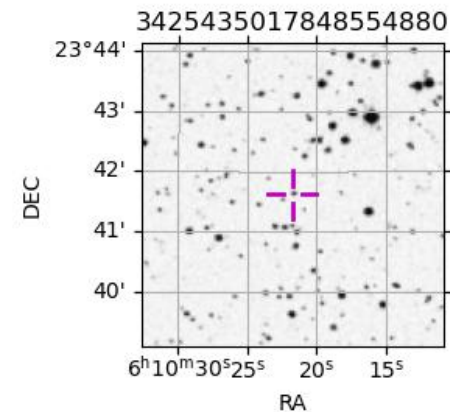
Earth
 PMO
 KAV
 AAT
 MSO



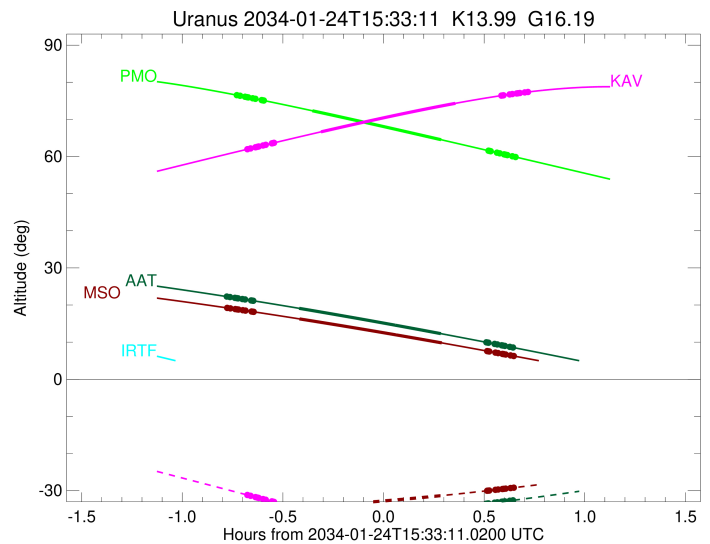
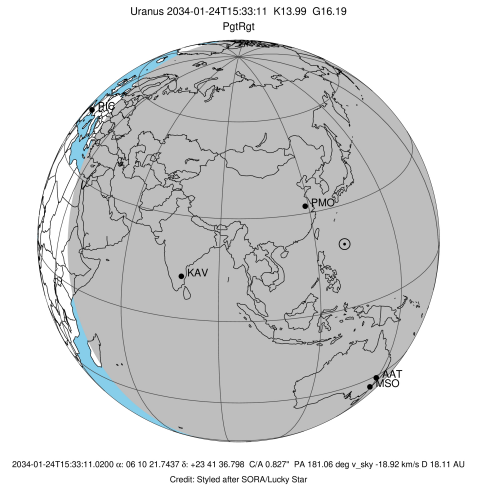
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+++++	+ +	+++++	JAN 24 14:49 - JAN 24 16:12	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
IRTTF	Mauna Kea/IRTTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	JAN 24 14:52 - JAN 24 16:16	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	+++++	+ +	+++++	JAN 24 14:46 - JAN 24 16:11	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	JAN 24 14:46 - JAN 24 16:11	PieRie

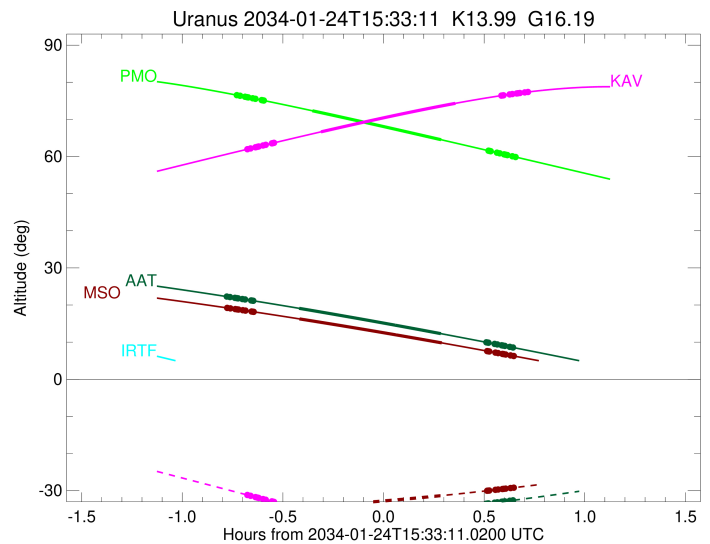
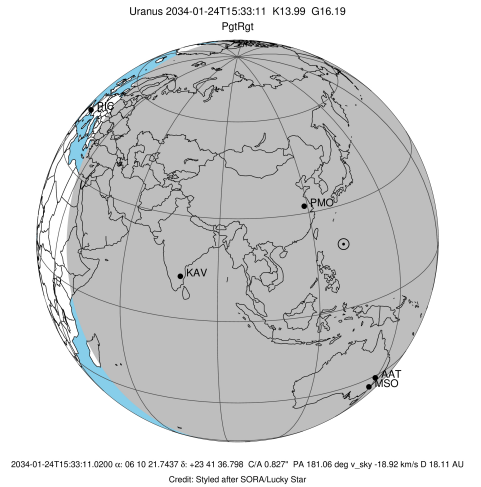


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-24T15:31:20.240
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3425435017848554880
 2Mass ID (if available) : 06102174+2341368
 ICRS Star Coord at Epoch: 06h 10m 21.74374s +23:41:36.79779s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.986
 G magnitude : 16.186
 RP magnitude : 15.469
 BP magnitude : 16.732
 DUPflag : 0
 Distance (au) : 18.105
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.92
 Sun-Target sep (deg) : 148.13
 Sun-Moon sep (deg) : 94.49
 B (ring opening deg) : 73.28
 PA of pole (deg) : 62.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.905
 C/A sky separation (km) : 11886.9
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



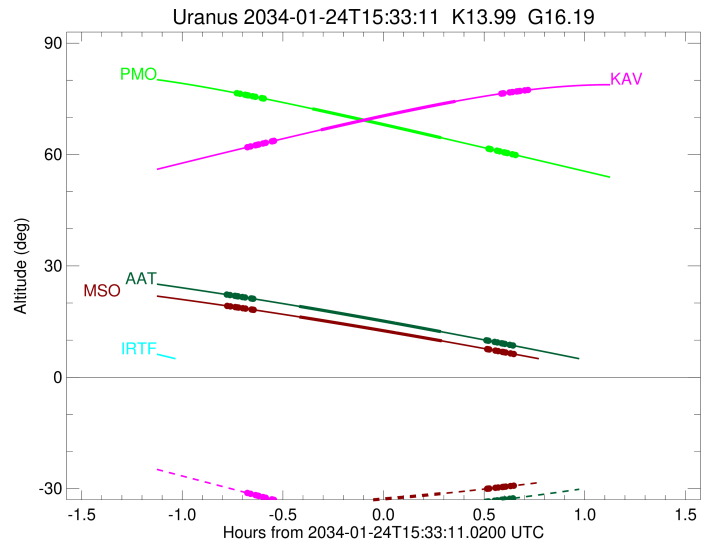
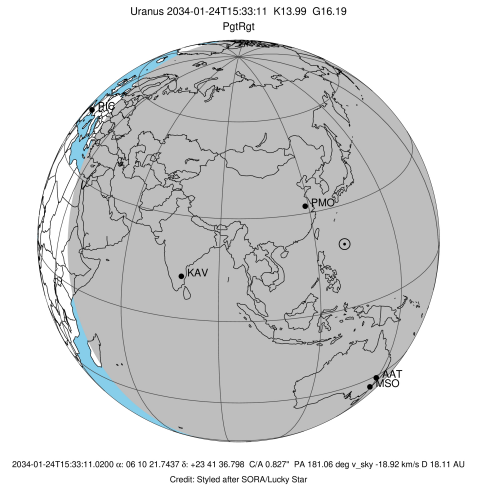
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-24T14:49:28.304		76.53	-66.58	51140.01	-19.37		
lambda	I	2034-01-24T14:50:25.702		76.37	-66.76	50026.71	-19.38		
delta	I	2034-01-24T14:51:54.870		76.10	-67.03	48300.35	-19.34		
gamma	I	2034-01-24T14:52:29.498		76.00	-67.14	47631.02	-19.32		
eta	I	2034-01-24T14:52:53.052		75.93	-67.21	47176.12	-19.31		
beta	I	2034-01-24T14:54:11.871		75.69	-67.46	45656.92	-19.26		
alpha	I	2034-01-24T14:55:02.221		75.54	-67.61	44684.62	-19.23		
4	I	2034-01-24T14:56:52.721		75.20	-67.95	42569.22	-19.15		
5	I	2034-01-24T14:57:06.983		75.16	-67.99	42298.91	-19.15		
6	I	2034-01-24T14:57:33.249		75.08	-68.07	41795.10	-19.12		
Uranus	I	2034-01-24T15:11:57.120		72.33	-70.60	25392.98		-9.10	-9.53
Uranus	E	2034-01-24T15:50:22.541		64.53	-75.87	25022.04		16.72	17.46
6	E	2034-01-24T16:04:30.535		61.57	-76.89	41869.31	19.06		
5	E	2034-01-24T16:04:48.141		61.51	-76.90	42207.95	19.09		
4	E	2034-01-24T16:05:05.683		61.44	-76.91	42548.24	19.09		
alpha	E	2034-01-24T16:07:01.117		61.04	-76.99	44747.71	19.17		
beta	E	2034-01-24T16:07:49.272		60.87	-77.02	45674.78	19.20		
eta	E	2034-01-24T16:09:07.411		60.60	-77.06	47176.12	19.24		
gamma	E	2034-01-24T16:09:30.522		60.52	-77.08	47620.96	19.25		
delta	E	2034-01-24T16:10:05.792		60.39	-77.09	48300.35	19.27		
lambda	E	2034-01-24T16:11:35.274		60.08	-77.13	50026.71	19.31		
epsilon	E	2034-01-24T16:12:23.872		59.91	-77.14	50965.82	19.30		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-24T15:34:44.570
 Event type : PgtRgt
 : Uranus 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 : 3425435017848554880
 2Mass ID (if available) : 06102174+2341368
 ICRS Star Coord at Epoch: 06h 10m 21.74374s +23:41:36.79779s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.986
 G magnitude : 16.186
 RP magnitude : 15.469
 BP magnitude : 16.732
 DUPflag : 0
 Distance (au) : 18.105
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.92
 Sun-Target sep (deg) : 148.13
 Sun-Moon sep (deg) : 94.55
 B (ring opening deg) : 73.28
 PA of pole (deg) : 62.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.730
 C/A sky separation (km) : 9591.7
 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_itrf93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



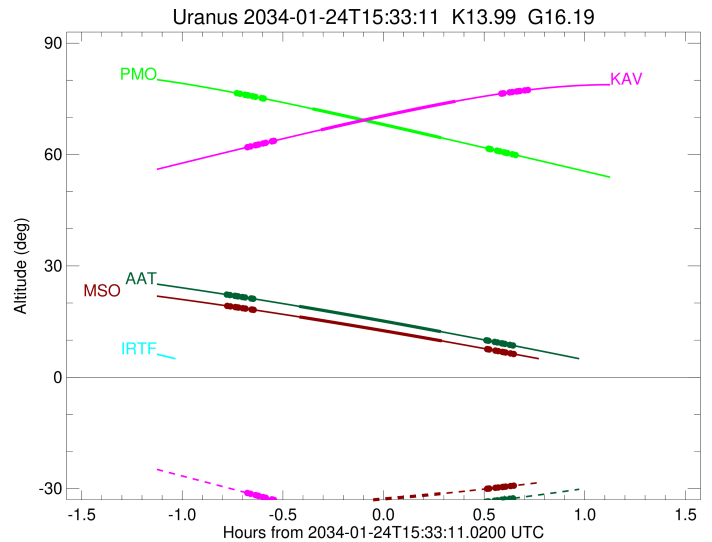
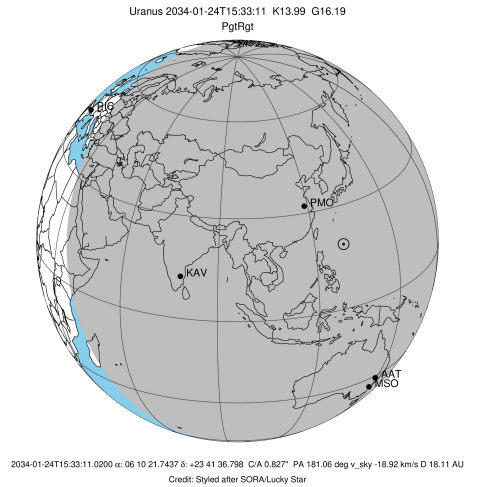
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-24T14:52:36.266		61.97	-31.17	51156.53	-19.59		
lambda	I	2034-01-24T14:53:33.870		62.18	-31.40	50026.71	-19.61		
delta	I	2034-01-24T14:55:01.985		62.50	-31.75	48300.35	-19.58		
gamma	I	2034-01-24T14:55:36.177		62.62	-31.88	47631.12	-19.57		
eta	I	2034-01-24T14:55:59.435		62.71	-31.97	47176.12	-19.56		
beta	I	2034-01-24T14:57:17.249		62.99	-32.28	45656.01	-19.53		
alpha	I	2034-01-24T14:58:06.835		63.17	-32.47	44684.63	-19.51		
4	I	2034-01-24T14:59:55.558		63.56	-32.90	42571.51	-19.46		
5	I	2034-01-24T15:00:09.814		63.61	-32.96	42296.34	-19.46		
6	I	2034-01-24T15:00:35.491		63.70	-33.06	41795.44	-19.44		
Uranus	I	2034-01-24T15:14:32.331		66.65	-36.35	25344.98		-10.36	-10.84
Uranus	E	2034-01-24T15:54:38.689		74.33	-45.82	25028.65		16.61	17.35
6	E	2034-01-24T16:08:20.894		76.41	-49.06	41871.00	19.47		
5	E	2034-01-24T16:08:37.818		76.45	-49.12	42203.32	19.49		
4	E	2034-01-24T16:08:55.418		76.49	-49.19	42550.69	19.48		
alpha	E	2034-01-24T16:10:48.500		76.74	-49.64	44748.68	19.54		
beta	E	2034-01-24T16:11:35.654		76.84	-49.82	45673.91	19.56		
eta	E	2034-01-24T16:12:52.428		76.99	-50.12	47176.12	19.59		
gamma	E	2034-01-24T16:13:15.133		77.04	-50.21	47620.96	19.60		
delta	E	2034-01-24T16:13:49.792		77.11	-50.35	48300.35	19.61		
lambda	E	2034-01-24T16:15:17.770		77.28	-50.69	50026.71	19.64		
epsilon	E	2034-01-24T16:16:06.543		77.37	-50.89	50984.81	19.62		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-24T15:29:15.380
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : AAT
 Location : Siding Spring (AAT)
 Latitude (deg) : -31.27703
 E. Longitude (deg) : 149.06608
 Altitude (km) : 1.164
 Gaia source ID : 3425435017848554880
 2Mass ID (if available) : 06102174+2341368
 ICRS Star Coord at Epoch: 06h 10m 21.74374s +23:41:36.79779s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.986
 G magnitude : 16.186
 RP magnitude : 15.469
 BP magnitude : 16.732
 DUPflag : 0
 Distance (au) : 18.105
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.92
 Sun-Target sep (deg) : 148.13
 Sun-Moon sep (deg) : 93.81
 B (ring opening deg) : 73.28
 PA of pole (deg) : 62.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.495
 C/A sky separation (km) : 6505.2
 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_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	2034-01-24T14:46:26.778		22.28	-39.27	51185.30	-19.69		
lambda	I	2034-01-24T14:47:25.570		22.14	-39.24	50026.71	-19.70		
delta	I	2034-01-24T14:48:53.227		21.93	-39.18	48300.35	-19.69		
gamma	I	2034-01-24T14:49:27.218		21.85	-39.16	47631.27	-19.68		
eta	I	2034-01-24T14:49:50.348		21.80	-39.15	47176.12	-19.68		
beta	I	2034-01-24T14:51:07.747		21.61	-39.10	45654.50	-19.66		
alpha	I	2034-01-24T14:51:56.898		21.49	-39.06	44684.83	-19.65		
4	I	2034-01-24T14:53:44.637		21.23	-38.99	42575.30	-19.62		
5	I	2034-01-24T14:53:59.150		21.20	-38.98	42291.78	-19.63		
6	I	2034-01-24T14:54:24.318		21.14	-38.96	41796.25	-19.61		
Uranus	I	2034-01-24T15:08:01.953		19.11	-38.27	25271.72	-19.69	-12.05	-12.61
Uranus	E	2034-01-24T15:50:19.047		12.29	-34.93	25050.23	-19.69	16.25	16.97
6	E	2034-01-24T16:03:52.386		9.95	-33.51	41872.67	19.50		
5	E	2034-01-24T16:04:08.954		9.90	-33.48	42198.46	19.51		
4	E	2034-01-24T16:04:26.974		9.85	-33.45	42553.41	19.51		
alpha	E	2034-01-24T16:06:19.901		9.52	-33.24	44749.59	19.53		
beta	E	2034-01-24T16:07:06.986		9.38	-33.15	45672.94	19.54		
eta	E	2034-01-24T16:08:23.925		9.16	-33.01	47176.12	19.55		
gamma	E	2034-01-24T16:08:46.678		9.09	-32.96	47620.97	19.55		
delta	E	2034-01-24T16:09:21.419		8.99	-32.90	48300.35	19.56		
lambda	E	2034-01-24T16:10:49.665		8.73	-32.73	50026.71	19.57		
epsilon	E	2034-01-24T16:11:39.646		8.58	-32.63	51004.89	19.55		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-24T15:29:25.600
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : MSO
 Location : Mt. Stromlo Observatory
 Latitude (deg) : -35.32000
 E. Longitude (deg) : 149.00833
 Altitude (km) : 0.770
 Gaia source ID : 3425435017848554880
 2Mass ID (if available) : 06102174+2341368
 ICRS Star Coord at Epoch: 06h 10m 21.74374s +23:41:36.79779s
 RUWE (>1.4 is poor) : 1.06
 K magnitude : 13.986
 G magnitude : 16.186
 RP magnitude : 15.469
 BP magnitude : 16.732
 DUPflag : 0
 Distance (au) : 18.105
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -18.92
 Sun-Target sep (deg) : 148.13
 Sun-Moon sep (deg) : 93.77
 B (ring opening deg) : 73.28
 PA of pole (deg) : 62.14
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.474
 C/A sky separation (km) : 6218.0
 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	2034-01-24T14:46:33.911		19.23	-35.29	51187.50	-19.69		
lambda	I	2034-01-24T14:47:32.812		19.10	-35.26	50026.71	-19.70		
delta	I	2034-01-24T14:49:00.462		18.90	-35.21	48300.35	-19.69		
gamma	I	2034-01-24T14:49:34.448		18.83	-35.20	47631.28	-19.68		
eta	I	2034-01-24T14:49:57.575		18.78	-35.18	47176.12	-19.68		
beta	I	2034-01-24T14:51:14.966		18.60	-35.14	45654.39	-19.67		
alpha	I	2034-01-24T14:52:04.098		18.49	-35.11	44684.86	-19.65		
4	I	2034-01-24T14:53:51.792		18.25	-35.04	42575.60	-19.63		
5	I	2034-01-24T14:54:06.329		18.22	-35.03	42291.40	-19.63		
6	I	2034-01-24T14:54:31.463		18.16	-35.01	41796.32	-19.62		
Uranus	I	2034-01-24T15:08:07.842		16.26	-34.39	25265.64		-12.19	-12.75
Uranus	E	2034-01-24T15:50:34.058		9.80	-31.33	25053.18		16.20	16.92
6	E	2034-01-24T16:04:06.517		7.59	-30.03	41872.84	19.52		
5	E	2034-01-24T16:04:23.040		7.54	-30.00	42197.94	19.53		
4	E	2034-01-24T16:04:41.098		7.49	-29.97	42553.71	19.52		
alpha	E	2034-01-24T16:06:33.951		7.18	-29.78	44749.68	19.54		
beta	E	2034-01-24T16:07:21.003		7.05	-29.70	45672.83	19.55		
eta	E	2034-01-24T16:08:37.916		6.83	-29.57	47176.12	19.56		
gamma	E	2034-01-24T16:09:00.659		6.77	-29.53	47620.97	19.56		
delta	E	2034-01-24T16:09:35.387		6.67	-29.47	48300.35	19.56		
lambda	E	2034-01-24T16:11:03.603		6.43	-29.31	50026.71	19.57		
epsilon	E	2034-01-24T16:11:53.687		6.29	-29.22	51007.18	19.56		