

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-09T16:27:06.060
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425257790319803904
 2Mass ID (if available) : 06125092+2340513

Uranus 2034-01-09T16:27:06 K14.65 G16.81 PgtRgt

ICRS Star Coord at Epoch: 06h 12m 50.93765s +23:40:51.28246s

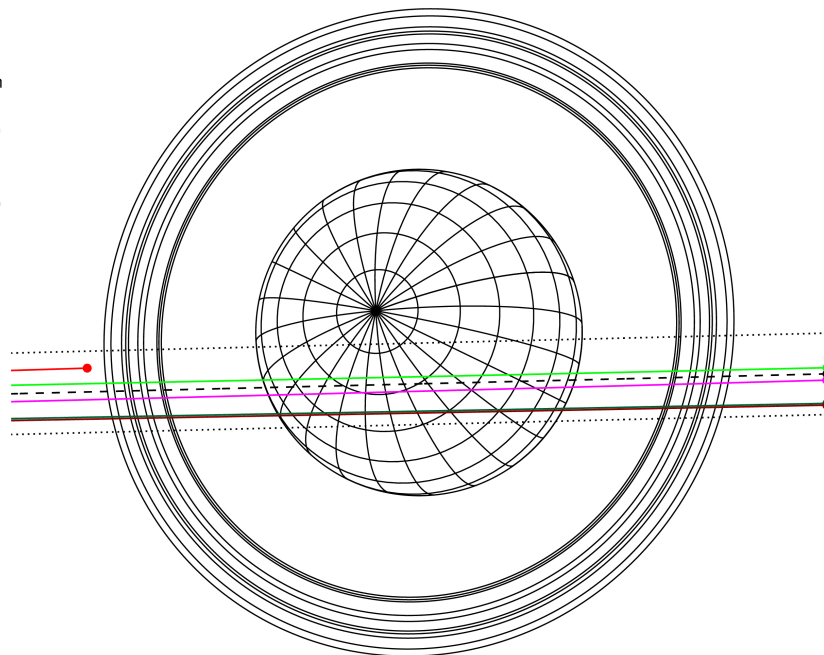
RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.652
 G magnitude : 16.808
 RP magnitude : 16.075
 BP magnitude : 17.368
 DUPflag : 0
 Distance (au) : 18.004
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.24
 Sun-Target sep (deg) : 163.94
 Sun-Moon sep (deg) : 74.69
 B (ring opening deg) : 72.78
 PA of pole (deg) : 63.29

Uranus 2034-01-09T16:27:06 K14.65 G16.81
 PgtRgt



2034-01-09T16:27:06.0600 α: 06 12 50.9376 δ: +23 40 51.282 C/A 0.608° PA 1.40 deg v_sky -22.24 km/s D 18.00 AU
 Credit: Styled after SORA/Lucky Star

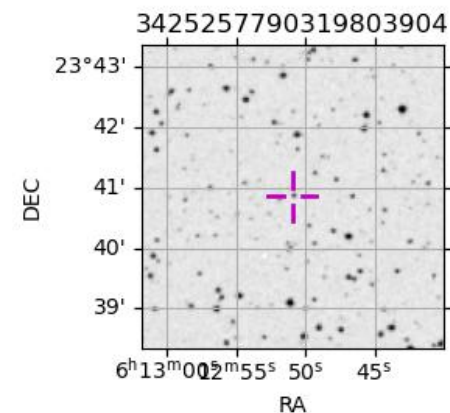
Earth
 PIC
 PMO
 KAV
 AAT
 MSO



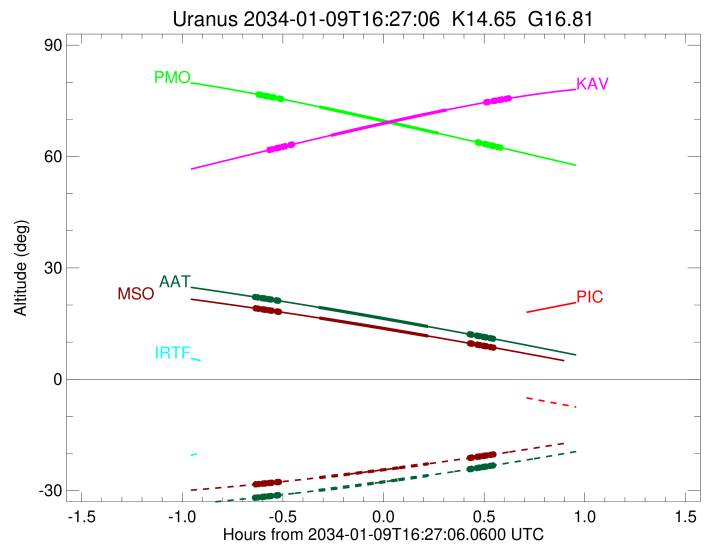
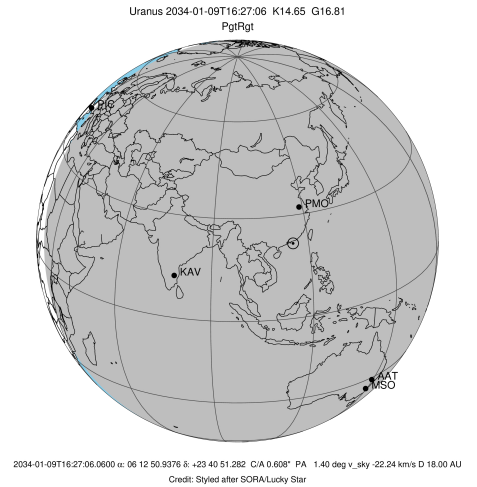
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon

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	OEncode
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 09 15:49 - JAN 09 17:02	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
IRTF	Mauna Kea/IRTF	19.8	204.5					PnnRnn
KAV	Kavalur Observatory	12.6	78.8	+++++	+ +	+++++	JAN 09 15:53 - JAN 09 17:04	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 09 15:48 - JAN 09 16:59	PieRie
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0	+++++	+ +	+++++	JAN 09 15:48 - JAN 09 16:59	PieRie



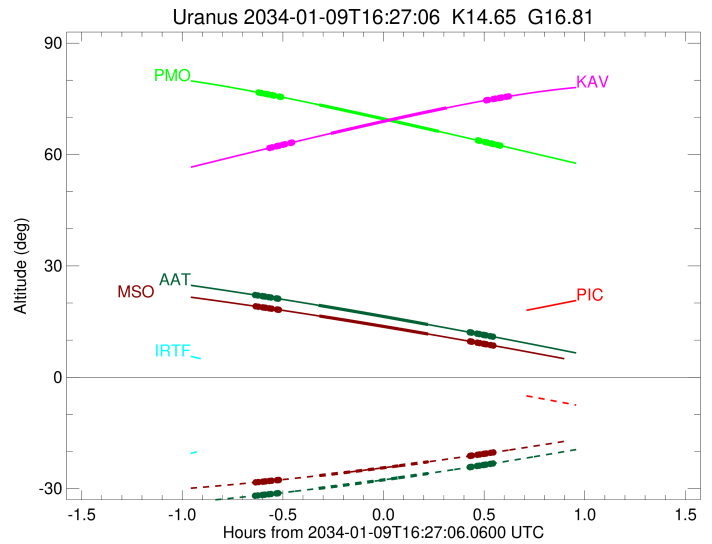
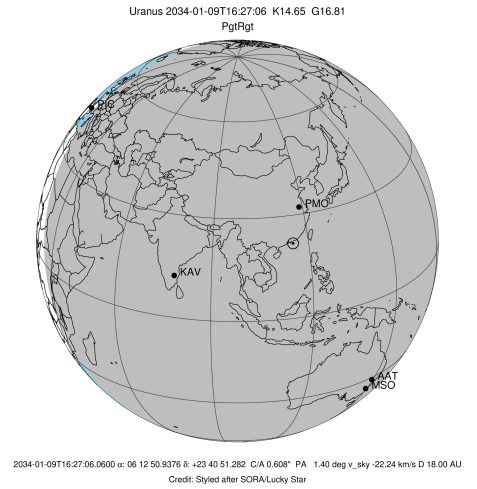
target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-09T16:25:41.920
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PMO
 Location : Purple Mtn Obs. Nanking
 Latitude (deg) : 32.06667
 E. Longitude (deg) : 118.82089
 Altitude (km) : 0.364
 Gaia source ID : 3425257790319803904
 2Mass ID (if available) : 06125092+2340513
 ICRS Star Coord at Epoch: 06h 12m 50.93765s +23:40:51.28246s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.652
 G magnitude : 16.808
 RP magnitude : 16.075
 BP magnitude : 17.368
 DUPflag : 0
 Distance (au) : 18.004
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.24
 Sun-Target sep (deg) : 163.94
 Sun-Moon sep (deg) : 75.45
 B (ring opening deg) : 72.78
 PA of pole (deg) : 63.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.531
 C/A sky separation (km) : 6930.1
 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_itrf93_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

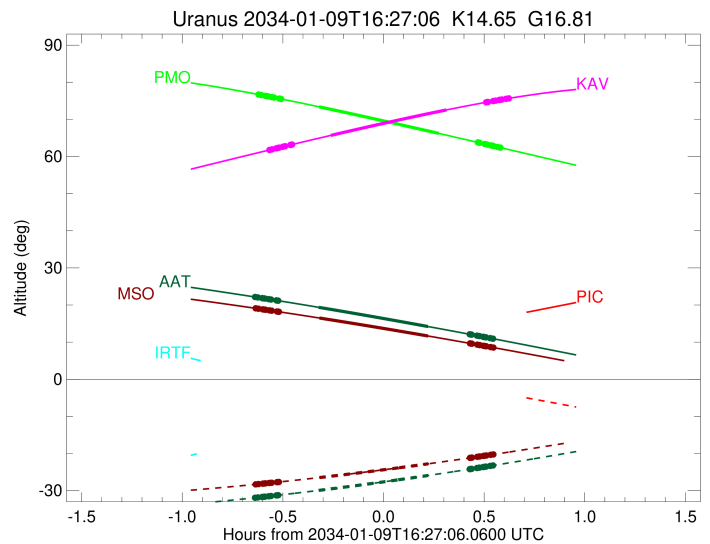
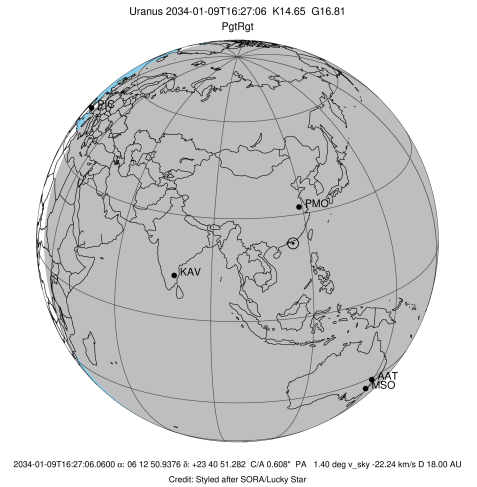
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-09T15:49:52.846		76.71	-78.99	51146.63	-23.25		
lambda	I	2034-01-09T15:50:41.072		76.57	-79.06	50026.71	-23.22		
delta	I	2034-01-09T15:51:55.459		76.35	-79.18	48300.35	-23.20		
gamma	I	2034-01-09T15:52:24.322		76.26	-79.22	47630.87	-23.19		
eta	I	2034-01-09T15:52:43.933		76.21	-79.25	47176.12	-23.19		
beta	I	2034-01-09T15:53:49.387		76.01	-79.34	45659.14	-23.17		
alpha	I	2034-01-09T15:54:31.378		75.89	-79.40	44685.03	-23.15		
4	I	2034-01-09T15:56:03.626		75.61	-79.52	42558.99	-23.13		
5	I	2034-01-09T15:56:13.885		75.58	-79.53	42308.80	-23.11		
6	I	2034-01-09T15:56:35.972		75.51	-79.56	41795.13	-23.11		
Uranus	I	2034-01-09T16:07:57.272		73.38	-80.09	25046.93		-16.84	-17.59
Uranus	E	2034-01-09T16:43:37.771		66.22	-77.86	25276.97		12.33	12.89
6	E	2034-01-09T16:55:15.455		63.81	-76.20	41875.18	23.06		
5	E	2034-01-09T16:55:27.466		63.76	-76.17	42155.04	23.07		
4	E	2034-01-09T16:55:46.280		63.70	-76.12	42596.82	23.09		
alpha	E	2034-01-09T16:57:19.791		63.37	-75.87	44748.77	23.11		
beta	E	2034-01-09T16:57:58.977		63.24	-75.77	45657.02	23.12		
eta	E	2034-01-09T16:59:04.668		63.01	-75.59	47176.12	23.14		
gamma	E	2034-01-09T16:59:23.962		62.94	-75.54	47622.62	23.14		
delta	E	2034-01-09T16:59:53.242		62.84	-75.46	48300.35	23.15		
lambda	E	2034-01-09T17:01:07.789		62.58	-75.26	50026.71	23.17		
epsilon	E	2034-01-09T17:02:00.800		62.39	-75.11	51255.07	23.20		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-09T16:28:32.520
 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 : 3425257790319803904
 2Mass ID (if available) : 06125092+2340513
 ICRS Star Coord at Epoch: 06h 12m 50.93765s +23:40:51.28246s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.652
 G magnitude : 16.808
 RP magnitude : 16.075
 BP magnitude : 17.368
 DUPflag : 0
 Distance (au) : 18.004
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.24
 Sun-Target sep (deg) : 163.94
 Sun-Moon sep (deg) : 75.59
 B (ring opening deg) : 72.78
 PA of pole (deg) : 63.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.704
 C/A sky separation (km) : 9199.0
 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_itrff93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk



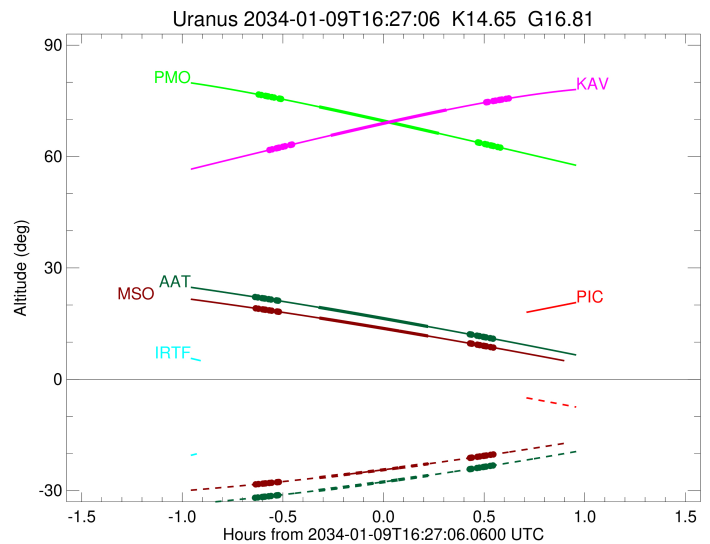
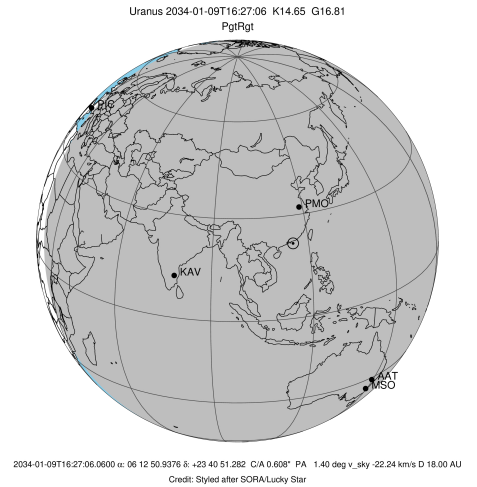
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2034-01-09T15:53:05.848		61.77	-46.44	51163.07	-23.11		
lambda	I	2034-01-09T15:53:55.117		61.95	-46.63	50026.71	-23.06		
delta	I	2034-01-09T15:55:10.043		62.22	-46.92	48300.35	-23.03		
gamma	I	2034-01-09T15:55:39.120		62.32	-47.03	47630.98	-23.01		
eta	I	2034-01-09T15:55:58.889		62.39	-47.11	47176.12	-23.00		
beta	I	2034-01-09T15:57:04.913		62.63	-47.36	45658.22	-22.97		
alpha	I	2034-01-09T15:57:47.243		62.79	-47.53	44684.81	-22.95		
4	I	2034-01-09T15:59:20.238		63.12	-47.88	42561.19	-22.91		
5	I	2034-01-09T15:59:30.737		63.16	-47.92	42307.12	-22.89		
6	I	2034-01-09T15:59:52.983		63.24	-48.01	41794.89	-22.87		
Uranus	I	2034-01-09T16:11:25.169		65.70	-50.66	25031.92		-17.10	-17.86
Uranus	E	2034-01-09T16:45:53.597		72.56	-58.54	25329.67		11.08	11.59
6	E	2034-01-09T16:57:44.354		74.62	-61.21	41873.95	22.91		
5	E	2034-01-09T16:57:56.497		74.65	-61.25	42154.83	22.92		
4	E	2034-01-09T16:58:15.584		74.70	-61.32	42599.00	22.94		
alpha	E	2034-01-09T16:59:49.496		74.95	-61.67	44747.85	22.98		
beta	E	2034-01-09T17:00:28.873		75.06	-61.82	45655.94	23.01		
eta	E	2034-01-09T17:01:34.913		75.23	-62.07	47176.12	23.04		
gamma	E	2034-01-09T17:01:54.297		75.28	-62.14	47622.83	23.05		
delta	E	2034-01-09T17:02:23.683		75.35	-62.25	48300.35	23.06		
lambda	E	2034-01-09T17:03:38.487		75.54	-62.53	50026.71	23.09		
epsilon	E	2034-01-09T17:04:32.497		75.68	-62.73	51274.53	23.15		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-09T16:23:54.150
 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 : 3425257790319803904
 2Mass ID (if available) : 06125092+2340513
 ICRS Star Coord at Epoch: 06h 12m 50.93765s +23:40:51.28246s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.652
 G magnitude : 16.808
 RP magnitude : 16.075
 BP magnitude : 17.368
 DUPflag : 0
 Distance (au) : 18.004
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.24
 Sun-Target sep (deg) : 163.94
 Sun-Moon sep (deg) : 74.77
 B (ring opening deg) : 72.78
 PA of pole (deg) : 63.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.944
 C/A sky separation (km) : 12323.5
 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_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	2034-01-09T15:48:47.333		22.16	-31.92	51191.72	-22.70		
lambda	I	2034-01-09T15:49:38.796		22.04	-31.84	50026.71	-22.62		
delta	I	2034-01-09T15:50:55.210		21.86	-31.71	48300.35	-22.56		
gamma	I	2034-01-09T15:51:24.884		21.79	-31.66	47631.16	-22.54		
eta	I	2034-01-09T15:51:45.079		21.74	-31.63	47176.12	-22.52		
beta	I	2034-01-09T15:52:52.622		21.58	-31.52	45656.67	-22.46		
alpha	I	2034-01-09T15:53:35.886		21.48	-31.44	44684.63	-22.42		
4	I	2034-01-09T15:55:10.988		21.25	-31.28	42564.95	-22.33		
5	I	2034-01-09T15:55:22.027		21.22	-31.26	42303.87	-22.30		
6	I	2034-01-09T15:55:44.722		21.17	-31.23	41794.75	-22.28		
Uranus	I	2034-01-09T16:07:45.909		19.38	-29.94	25025.36		-17.21	-17.98
Uranus	E	2034-01-09T16:40:22.286		14.21	-25.93	25395.33		9.33	9.76
6	E	2034-01-09T16:52:50.262		12.11	-24.21	41872.34	22.20		
5	E	2034-01-09T16:53:02.875		12.08	-24.18	42154.96	22.22		
4	E	2034-01-09T16:53:22.712		12.02	-24.13	42601.42	22.25		
alpha	E	2034-01-09T16:54:59.257		11.75	-23.91	44746.68	22.34		
beta	E	2034-01-09T16:55:39.759		11.63	-23.81	45654.71	22.37		
eta	E	2034-01-09T16:56:47.686		11.44	-23.65	47176.12	22.43		
gamma	E	2034-01-09T16:57:07.605		11.38	-23.60	47623.08	22.45		
delta	E	2034-01-09T16:57:37.763		11.29	-23.53	48300.35	22.47		
lambda	E	2034-01-09T16:58:54.506		11.07	-23.34	50026.71	22.52		
epsilon	E	2034-01-09T16:59:50.815		10.91	-23.21	51295.86	22.60		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-01-09T16:24:02.350
 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 : 3425257790319803904
 2Mass ID (if available) : 06125092+2340513
 ICRS Star Coord at Epoch: 06h 12m 50.93765s +23:40:51.28246s
 RUWE (>1.4 is poor) : 1.05
 K magnitude : 14.652
 G magnitude : 16.808
 RP magnitude : 16.075
 BP magnitude : 17.368
 DUPflag : 0
 Distance (au) : 18.004
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -22.24
 Sun-Target sep (deg) : 163.94
 Sun-Moon sep (deg) : 74.74
 B (ring opening deg) : 72.78
 PA of pole (deg) : 63.29
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.966
 C/A sky separation (km) : 12609.7
 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	2034-01-09T15:48:57.889		19.11	-28.31	51193.97	-22.65		
lambda	I	2034-01-09T15:49:49.560		19.00	-28.23	50026.71	-22.57		
delta	I	2034-01-09T15:51:06.143		18.83	-28.12	48300.35	-22.51		
gamma	I	2034-01-09T15:51:35.884		18.76	-28.07	47631.17	-22.49		
eta	I	2034-01-09T15:51:56.127		18.72	-28.04	47176.12	-22.47		
beta	I	2034-01-09T15:53:03.839		18.57	-27.94	45656.54	-22.41		
alpha	I	2034-01-09T15:53:47.207		18.47	-27.87	44684.62	-22.36		
4	I	2034-01-09T15:55:22.549		18.25	-27.72	42565.26	-22.27		
5	I	2034-01-09T15:55:33.642		18.23	-27.71	42303.58	-22.24		
6	I	2034-01-09T15:55:56.389		18.18	-27.67	41794.75	-22.22		
Uranus	I	2034-01-09T16:08:00.889		16.50	-26.48	25025.85		-17.20	-17.97
Uranus	E	2034-01-09T16:40:24.097		11.65	-22.78	25401.76		9.14	9.56
6	E	2034-01-09T16:52:55.813		9.66	-21.17	41872.16	22.14		
5	E	2034-01-09T16:53:08.471		9.63	-21.15	42154.99	22.16		
4	E	2034-01-09T16:53:28.376		9.57	-21.10	42601.67	22.19		
alpha	E	2034-01-09T16:55:05.143		9.31	-20.89	44746.54	22.28		
beta	E	2034-01-09T16:55:45.740		9.20	-20.80	45654.57	22.32		
eta	E	2034-01-09T16:56:53.825		9.02	-20.65	47176.12	22.38		
gamma	E	2034-01-09T16:57:13.788		8.97	-20.60	47623.11	22.40		
delta	E	2034-01-09T16:57:44.009		8.88	-20.53	48300.35	22.42		
lambda	E	2034-01-09T16:59:00.907		8.67	-20.36	50026.71	22.48		
epsilon	E	2034-01-09T16:59:57.426		8.52	-20.23	51298.15	22.56		