

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-05-24T22:33:59.180
 Event type : XRgt
 : No Uranus occs
 : Ring occs: geocentric, topocentric
 Gaia source ID : 614965958745950848
 2Mass ID (if available) : 09575834+1312190

ICRS Star Coord at Epoch: 09h 57m 58.34206s +13:12:18.26817s

RUWE (>1.4 is poor) : 0.88
 K magnitude : 13.269
 G magnitude : 15.329
 RP magnitude : 14.669
 BP magnitude : 15.835
 DUPflag : 0
 Distance (au) : 18.413
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.97
 Sun-Target sep (deg) : 83.74
 Sun-Moon sep (deg) : 155.43
 B (ring opening deg) : 20.32
 PA of pole (deg) : 101.53

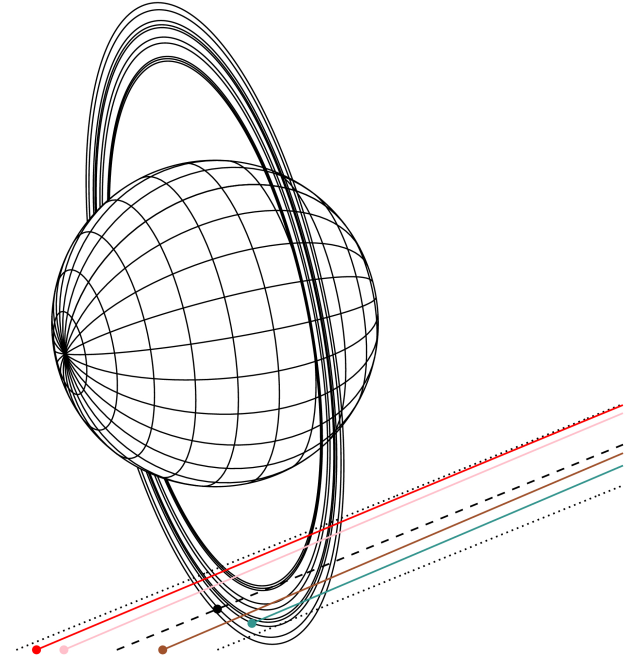
#	a(km)	ring
1	41837.2	6
2	42235.0	5
3	42571.2	4
4	44718.5	alpha
5	45661.1	beta
6	47176.1	eta
7	47626.3	gamma
8	48300.3	delta
9	50026.7	lambda
10	51149.4	epsilon



2046-05-24T22:33:59.1800 α: 09 57 58.3421 ♂: +13 12 18.268 C/A 3.096° PA 22.07 deg v_sky + 9.97 km/s D 18.41 AU
 Credit: Styled after SORA/Lucky Star

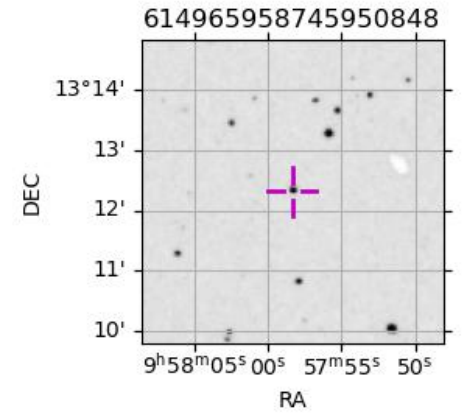
Earth
 PIC
 TEN
 RIO
 ESO

Uranus 2046-05-24T22:33:59 K13.27 G15.33 XRgt

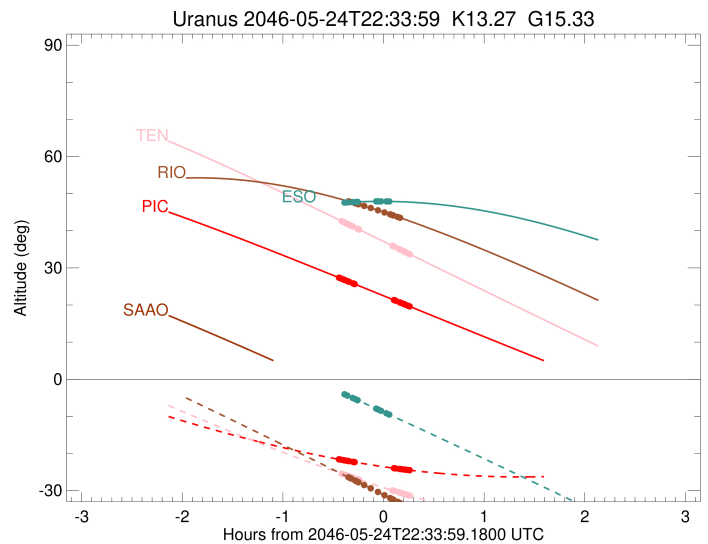
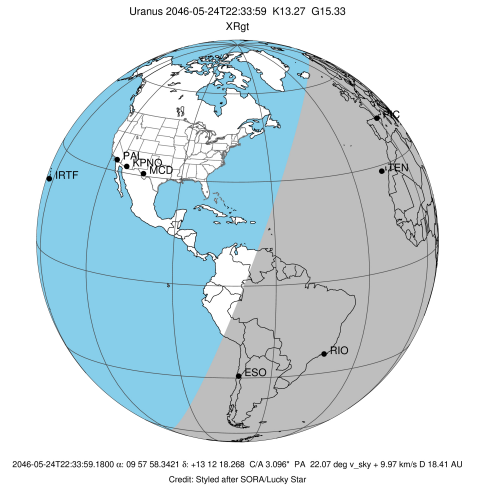


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEncode
PIC	Pic du Midi	42.9	0.1	+++++		+++++	MAY 24 22:07 - MAY 24 22:49	PnnRie
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PNO	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 24 22:08 - MAY 24 22:50	PnnRie
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 24 22:12 - MAY 24 22:44	PnnRie
ESO	European Southern Obs	-29.3	289.3	+++		+++++	MAY 24 22:15 - MAY 24 22:37	PnnRie
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 : 2046-05-24T22:39:04.860
 Event type : XRgt
 : No Uranus occs
 : 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 : 614965958745950848
 2Mass ID (if available) : 09575834+1312190
 ICRS Star Coord at Epoch: 09h 57m 58.34206s +13:12:18.26817s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 13.269
 G magnitude : 15.329
 RP magnitude : 14.669
 BP magnitude : 15.835
 DUPflag : 0
 Distance (au) : 18.413
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.97
 Sun-Target sep (deg) : 83.74
 Sun-Moon sep (deg) : 155.95
 B (ring opening deg) : 20.32
 PA of pole (deg) : 101.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.718
 C/A sky separation (km) : 36295.5
 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_itr93_040916.bsp
 earth_720101_070426.bpc
 earth_200101_990628_predict.bpc
 pg3f0000r.bsp
 pg490000r.bsp
 naif0012.tls
 earth_flat_IAU.spk

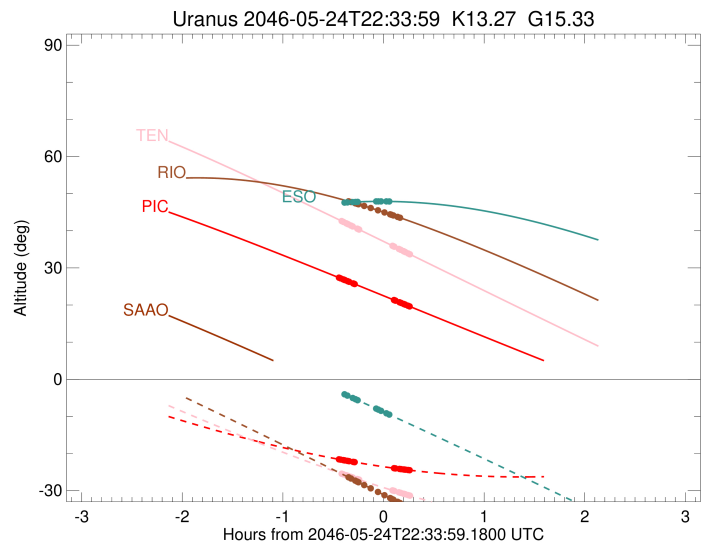
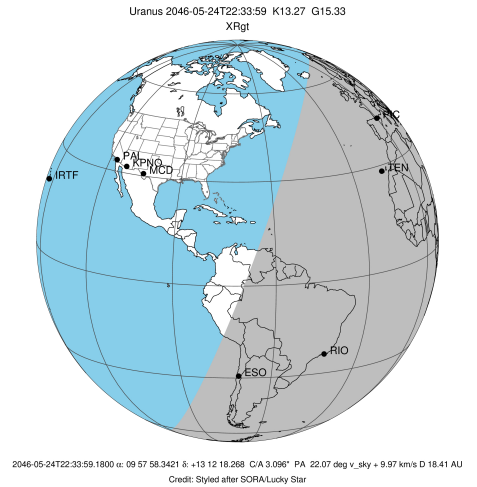


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-05-24T22:07:21.171		27.38	-21.56	51244.14	-19.50		
lambda	I	2046-05-24T22:08:24.941		27.18	-21.65	50026.71	-18.83		
delta	I	2046-05-24T22:09:58.669		26.90	-21.78	48300.35	-17.99		
gamma	I	2046-05-24T22:10:36.474		26.78	-21.83	47626.85	-17.63		
eta	I	2046-05-24T22:11:02.222		26.71	-21.87	47176.12	-17.38		
beta	I	2046-05-24T22:12:30.490		26.44	-21.99	45678.84	-16.44		
alpha	I	2046-05-24T22:13:30.767		26.25	-22.07	44724.55	-15.78		
4	I	2046-05-24T22:15:57.093		25.81	-22.26	42538.17	-13.84		
5	I	2046-05-24T22:16:13.072		25.76	-22.28	42299.30	-13.61		
6	I	2046-05-24T22:16:48.935		25.65	-22.33	41797.39	-13.09		

No planet occultations

6	E	2046-05-24T22:40:07.844		21.37	-23.95	41827.04	13.15		
5	E	2046-05-24T22:40:37.629		21.28	-23.98	42228.16	13.68		
4	E	2046-05-24T22:41:05.791		21.19	-24.01	42527.74	13.90		
alpha	E	2046-05-24T22:43:34.002		20.73	-24.15	44751.80	15.86		
beta	E	2046-05-24T22:44:29.496		20.56	-24.21	45675.64	16.52		
eta	E	2046-05-24T22:45:58.039		20.29	-24.29	47176.12	17.49		
gamma	E	2046-05-24T22:46:23.888		20.21	-24.32	47631.56	17.75		
delta	E	2046-05-24T22:47:01.180		20.10	-24.35	48300.35	18.12		
lambda	E	2046-05-24T22:48:34.254		19.81	-24.44	50026.71	18.97		
epsilon	E	2046-05-24T22:49:52.999		19.57	-24.51	51546.26	19.65		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-05-24T22:40:49.700
 Event type : XRgt
 : No Uranus occs
 : 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 : 614965958745950848
 2Mass ID (if available) : 09575834+1312190
 ICRS Star Coord at Epoch: 09h 57m 58.34206s +13:12:18.26817s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 13.269
 G magnitude : 15.329
 RP magnitude : 14.669
 BP magnitude : 15.835
 DUPflag : 0
 Distance (au) : 18.413
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.97
 Sun-Target sep (deg) : 83.74
 Sun-Moon sep (deg) : 156.13
 B (ring opening deg) : 20.32
 PA of pole (deg) : 101.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 2.828
 C/A sky separation (km) : 37762.1
 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

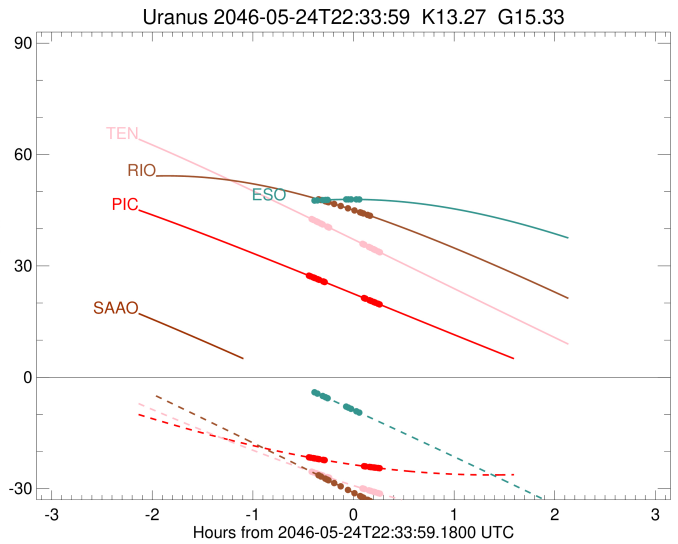
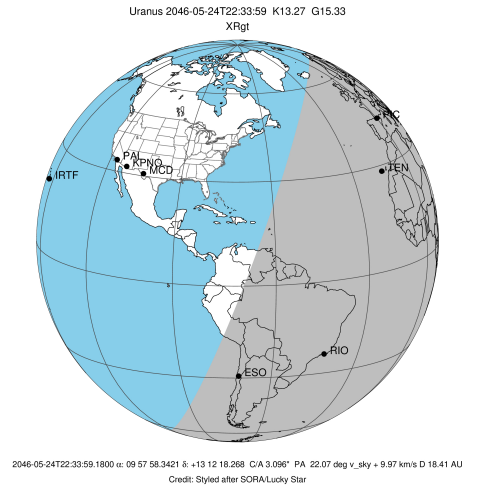


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-05-24T22:08:56.992		42.63	-25.43	51261.99	-18.38		
lambda	I	2046-05-24T22:10:05.899		42.38	-25.61	50026.71	-17.63		
delta	I	2046-05-24T22:11:46.492		42.02	-25.87	48300.35	-16.68		
gamma	I	2046-05-24T22:12:27.355		41.87	-25.97	47627.13	-16.27		
eta	I	2046-05-24T22:12:55.335		41.76	-26.04	47176.12	-15.97		
beta	I	2046-05-24T22:14:32.027		41.41	-26.29	45679.39	-14.89		
alpha	I	2046-05-24T22:15:38.837		41.17	-26.46	44726.71	-14.11		
4	I	2046-05-24T22:18:26.849		40.55	-26.89	42535.82	-11.77		
5	I	2046-05-24T22:18:45.764		40.48	-26.94	42295.15	-11.47		
6	I	2046-05-24T22:19:28.717		40.33	-27.05	41798.81	-10.82		

No planet occultations

6	E	2046-05-24T22:39:14.154		35.98	-29.92	41823.66	10.86		
5	E	2046-05-24T22:39:50.981		35.84	-30.00	42234.43	11.52		
4	E	2046-05-24T22:40:22.597		35.73	-30.08	42526.91	11.82		
alpha	E	2046-05-24T22:43:12.452		35.10	-30.47	44751.34	14.18		
beta	E	2046-05-24T22:44:14.289		34.88	-30.61	45676.41	14.98		
eta	E	2046-05-24T22:45:51.255		34.52	-30.82	47176.12	16.07		
gamma	E	2046-05-24T22:46:19.325		34.42	-30.89	47631.52	16.37		
delta	E	2046-05-24T22:46:59.652		34.27	-30.98	48300.35	16.79		
lambda	E	2046-05-24T22:48:39.540		33.90	-31.20	50026.71	17.76		
epsilon	E	2046-05-24T22:50:03.530		33.59	-31.39	51549.47	18.52		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-05-24T22:42:09.930
 Event type : XRgt
 : No Uranus occs
 : 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 : 614965958745950848
 2Mass ID (if available) : 09575834+1312190
 ICRS Star Coord at Epoch: 09h 57m 58.34206s +13:12:18.26817s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 13.269
 G magnitude : 15.329
 RP magnitude : 14.669
 BP magnitude : 15.835
 DUPflag : 0
 Distance (au) : 18.413
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.97
 Sun-Target sep (deg) : 83.74
 Sun-Moon sep (deg) : 156.20
 B (ring opening deg) : 20.32
 PA of pole (deg) : 101.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.278
 C/A sky separation (km) : 43773.1
 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

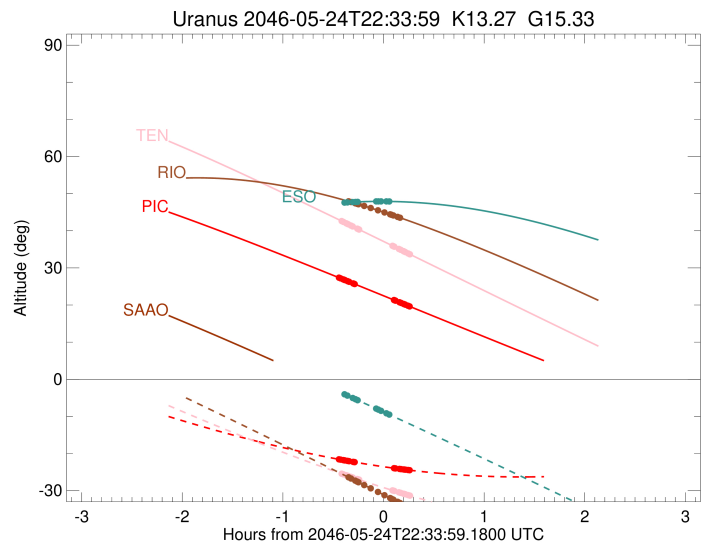
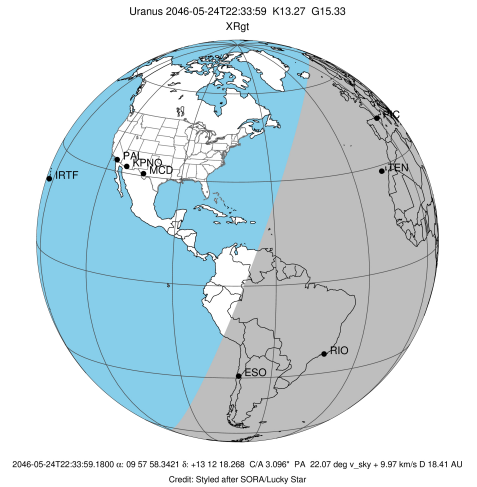


Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2046-05-24T22:12:56.785		47.96	-26.36	51339.20	-13.63		
lambda	I	2046-05-24T22:14:38.497		47.74	-26.74	50026.71	-12.32		
delta	I	2046-05-24T22:17:09.897		47.41	-27.31	48300.35	-10.45		
gamma	I	2046-05-24T22:18:17.049		47.26	-27.56	47628.52	-9.56		
eta	I	2046-05-24T22:19:06.130		47.15	-27.75	47176.12	-8.88		
beta	I	2046-05-24T22:22:27.535		46.69	-28.50	45681.17	-5.90		
alpha	I	2046-05-24T22:26:19.165		46.14	-29.37	44740.35	-2.23		

No planet occultations

alpha	E	2046-05-24T22:30:47.923		45.50	-30.38	44744.29	2.23		
beta	E	2046-05-24T22:34:34.169		44.94	-31.23	45679.97	5.91		
eta	E	2046-05-24T22:37:56.127		44.43	-32.00	47176.12	8.90		
gamma	E	2046-05-24T22:38:45.352		44.31	-32.18	47631.12	9.58		
delta	E	2046-05-24T22:39:52.036		44.14	-32.43	48300.35	10.48		
lambda	E	2046-05-24T22:42:22.924		43.75	-33.00	50026.71	12.37		
epsilon	E	2046-05-24T22:44:20.091		43.44	-33.44	51555.06	13.69		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2046-05-24T22:38:07.680
 Event type : XRgt
 : No Uranus occs
 : 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 : 614965958745950848
 2Mass ID (if available) : 09575834+1312190
 ICRS Star Coord at Epoch: 09h 57m 58.34206s +13:12:18.26817s
 RUWE (>1.4 is poor) : 0.88
 K magnitude : 13.269
 G magnitude : 15.329
 RP magnitude : 14.669
 BP magnitude : 15.835
 DUPflag : 0
 Distance (au) : 18.413
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 9.97
 Sun-Target sep (deg) : 83.74
 Sun-Moon sep (deg) : 155.90
 B (ring opening deg) : 20.32
 PA of pole (deg) : 101.53
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 3.407
 C/A sky separation (km) : 45498.7
 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	2046-05-24T22:10:27.448		47.58	-3.99x	51364.06	-11.88		
lambda	I	2046-05-24T22:12:29.149		47.64	-4.40x	50026.71	-10.24		
delta	I	2046-05-24T22:15:41.328		47.72	-5.05	48300.35	-7.68		
gamma	I	2046-05-24T22:17:17.250		47.76	-5.38	47629.09	-6.31		
eta	I	2046-05-24T22:18:36.415		47.79	-5.65	47176.12	-5.13		

No planet occultations

eta	E	2046-05-24T22:29:33.979		47.91	-7.90	47176.12	5.13		
gamma	E	2046-05-24T22:30:53.376		47.92	-8.17	47630.82	6.31		
delta	E	2046-05-24T22:32:28.963		47.92	-8.50	48300.35	7.69		
lambda	E	2046-05-24T22:35:40.981		47.91	-9.16	50026.71	10.25		
epsilon	E	2046-05-24T22:37:58.531		47.90	-9.63	51552.98	11.90		