

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-26T22:48:26.490
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 51405024754623616
 2Mass ID (if available) : 04003903+2029094

ICRS Star Coord at Epoch: 04h 00m 39.02279s +20:29:08.85663s

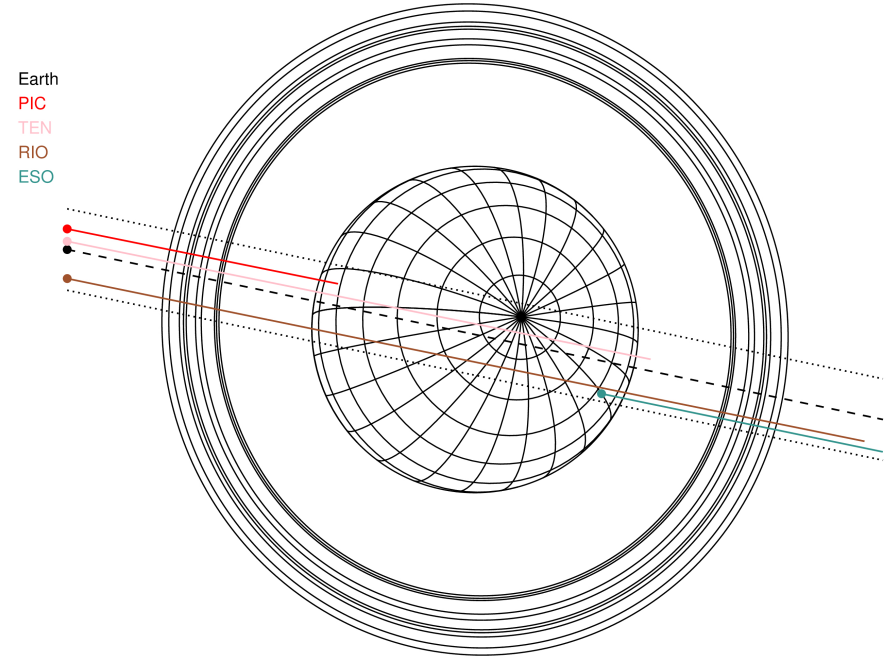
RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.200
 G magnitude : 16.837
 RP magnitude : 15.711
 BP magnitude : 18.152
 DUPflag : 0
 Distance (au) : 19.941
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.74
 Sun-Target sep (deg) : 56.55
 Sun-Moon sep (deg) : 174.76
 B (ring opening deg) : 72.85
 PA of pole (deg) : -74.76

#	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



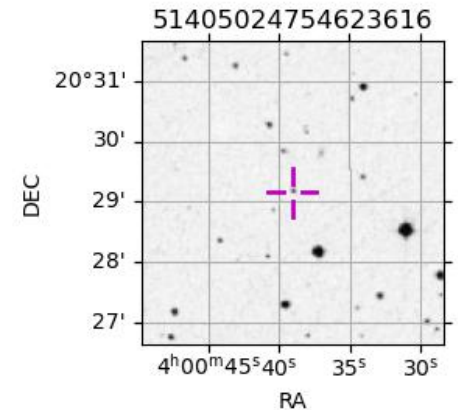
2027-03-26T22:48:26.4900 ex: 04 00 39.02278 s: +20 29 08.857 C/A 0.050° PA 348.28 deg v_sky +22.74 km/s D 19.94 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2027-03-26T22:48:26 K13.20 G16.84 PgtRgt

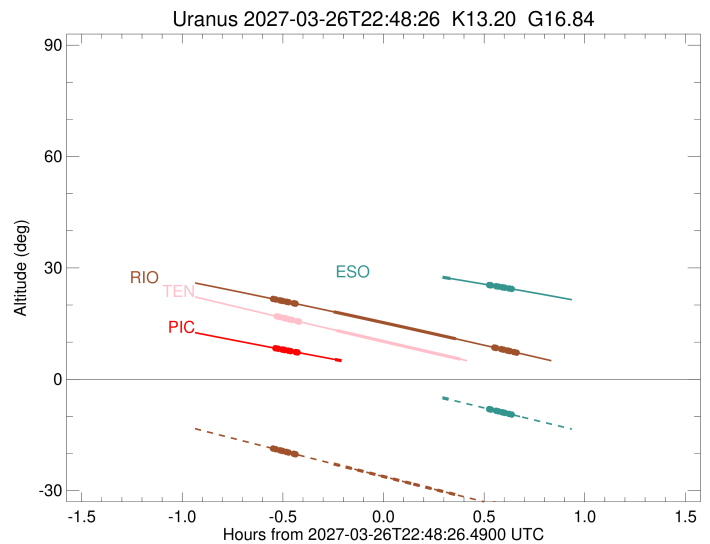
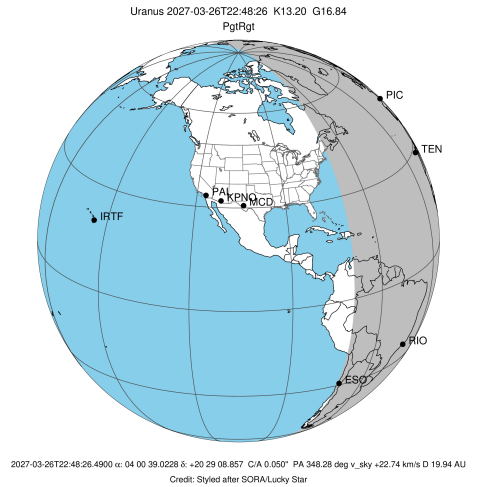


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1	+++++++	+		MAR 26 22:16 - MAR 26 22:34	PinRin
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	+++++++	+ +		MAR 26 22:16 - MAR 26 23:11	PieRin
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	+++++++	+ +	+++++++	MAR 26 22:15 - MAR 26 23:27	PieRie
ESO	European Southern Obs	-29.3	289.3			+++++++	MAR 26 23:08 - MAR 26 23:26	PneRne
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

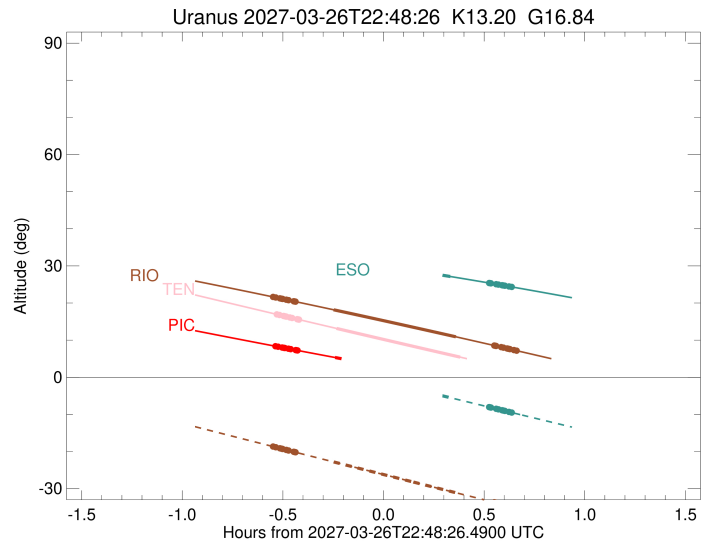
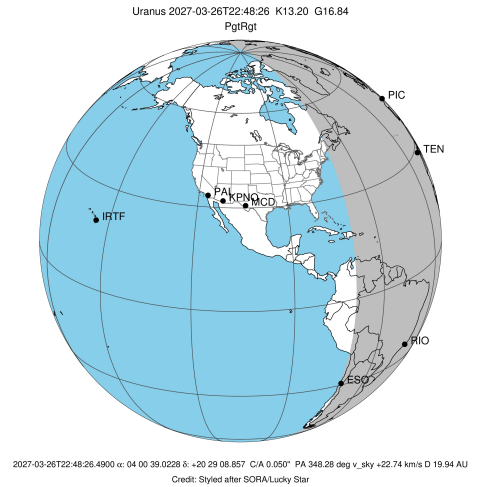


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-26T22:52:18.830
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 51405024754623616
 2Mass ID (if available) : 04003903+2029094
 ICRS Star Coord at Epoch: 04h 00m 39.02279s +20:29:08.85663s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.200
 G magnitude : 16.837
 RP magnitude : 15.711
 BP magnitude : 18.152
 DUPflag : 0
 Distance (au) : 19.941
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.74
 Sun-Target sep (deg) : 56.55
 Sun-Moon sep (deg) : 174.34
 B (ring opening deg) : 72.85
 PA of pole (deg) : -74.76
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.191
 C/A sky separation (km) : 2760.1
 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



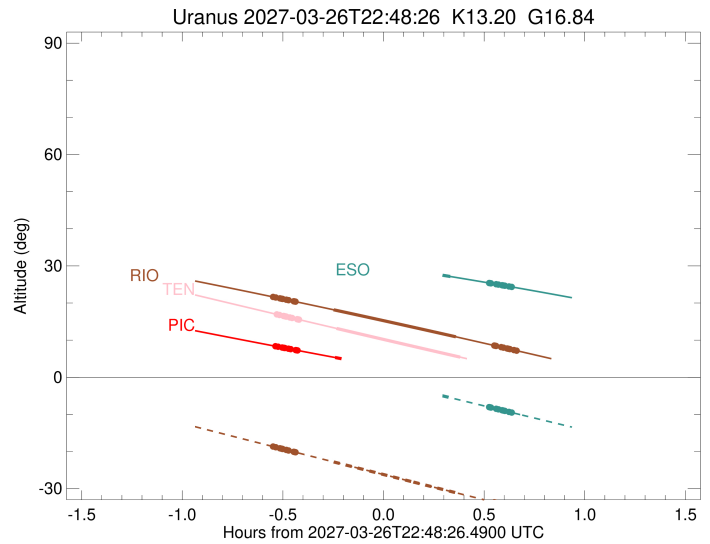
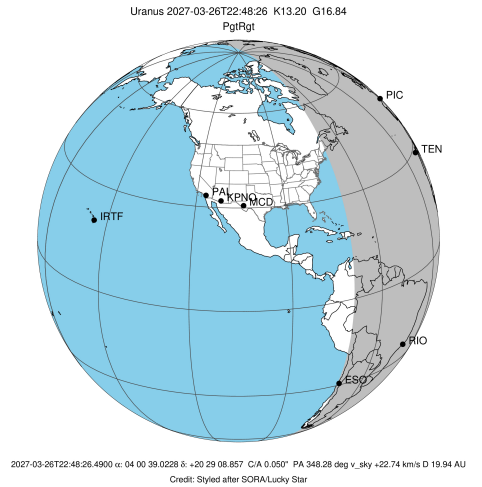
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-03-26T22:16:04.599		8.39	-38.61	51368.00	-23.56		
lambda	I	2027-03-26T22:17:01.542		8.22	-38.71	50026.71	-23.55		
delta	I	2027-03-26T22:18:14.835		8.01	-38.84	48300.35	-23.55		
gamma	I	2027-03-26T22:18:43.568		7.93	-38.89	47623.58	-23.55		
eta	I	2027-03-26T22:19:02.566		7.88	-38.93	47176.12	-23.55		
beta	I	2027-03-26T22:20:06.841		7.69	-39.04	45661.99	-23.55		
alpha	I	2027-03-26T22:20:45.790		7.58	-39.10	44746.09	-23.55		
4	I	2027-03-26T22:22:18.372		7.32	-39.26	42560.69	-23.54		
5	I	2027-03-26T22:22:30.349		7.28	-39.28	42286.72	-23.55		
6	I	2027-03-26T22:22:47.944		7.23	-39.31	41875.65	-23.55		
Uranus	I	2027-03-26T22:34:00.927		5.32	-40.41	25179.36		-14.33	-14.97
Uranus	E	2027-03-26T23:10:31.171		-0.70x	-43.20	25087.45		16.05	16.77
6	E	2027-03-26T23:21:34.089		-2.46x	-43.79	41801.54	23.66		
5	E	2027-03-26T23:21:49.931		-2.50x	-43.80	42175.68	23.65		
4	E	2027-03-26T23:22:07.246		-2.55x	-43.82	42575.95	23.65		
alpha	E	2027-03-26T23:23:36.534		-2.78x	-43.89	44693.57	23.66		
beta	E	2027-03-26T23:24:17.572		-2.89x	-43.92	45662.70	23.67		
eta	E	2027-03-26T23:25:21.494		-3.05x	-43.96	47176.12	23.67		
gamma	E	2027-03-26T23:25:40.600		-3.10x	-43.98	47628.40	23.67		
delta	E	2027-03-26T23:26:08.983		-3.18x	-44.00	48300.35	23.68		
lambda	E	2027-03-26T23:27:21.894		-3.37x	-44.05	50026.71	23.68		
epsilon	E	2027-03-26T23:28:01.470		-3.47x	-44.08	50963.95	23.69		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-26T22:52:53.510
 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 : 51405024754623616
 2Mass ID (if available) : 04003903+2029094
 ICRS Star Coord at Epoch: 04h 00m 39.02279s +20:29:08.85663s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.200
 G magnitude : 16.837
 RP magnitude : 15.711
 BP magnitude : 18.152
 DUPflag : 0
 Distance (au) : 19.941
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.74
 Sun-Target sep (deg) : 56.55
 Sun-Moon sep (deg) : 174.63
 B (ring opening deg) : 72.85
 PA of pole (deg) : -74.76
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.060
 C/A sky separation (km) : 866.1
 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



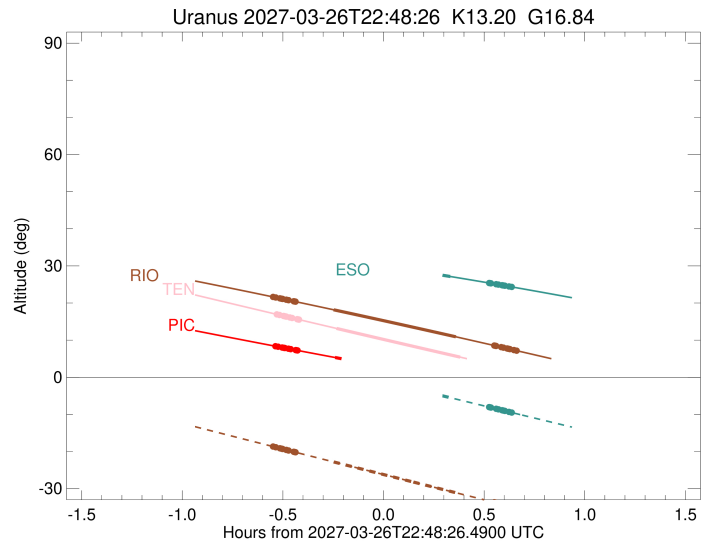
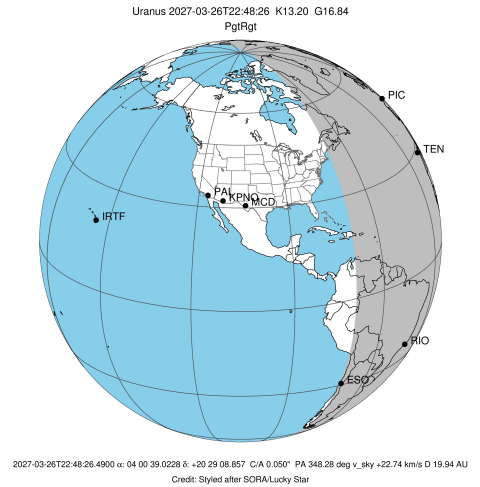
Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
epsilon	I	2027-03-26T22:16:29.750		16.97	-38.06	51354.98	-23.47		
lambda	I	2027-03-26T22:17:26.339		16.77	-38.25	50026.71	-23.47		
delta	I	2027-03-26T22:18:39.884		16.51	-38.48	48300.35	-23.47		
gamma	I	2027-03-26T22:19:08.705		16.41	-38.57	47623.77	-23.48		
eta	I	2027-03-26T22:19:27.774		16.34	-38.64	47176.12	-23.48		
beta	I	2027-03-26T22:20:32.290		16.11	-38.84	45661.15	-23.48		
alpha	I	2027-03-26T22:21:11.372		15.97	-38.97	44745.21	-23.48		
4	I	2027-03-26T22:22:44.107		15.64	-39.26	42562.69	-23.48		
5	I	2027-03-26T22:22:56.106		15.60	-39.30	42289.46	-23.48		
6	I	2027-03-26T22:23:13.869		15.53	-39.36	41874.77	-23.48		
Uranus	I	2027-03-26T22:34:26.126		13.15	-41.47	25144.32		-15.00	-15.68
Uranus	E	2027-03-26T23:11:17.766		5.43	-47.96	25115.24		15.55	16.25
6	E	2027-03-26T23:22:22.490	x	3.14	-49.74	41800.53	23.61		
5	E	2027-03-26T23:22:38.550	x	3.09	-49.78	42178.15	23.61		
4	E	2027-03-26T23:22:55.861	x	3.03	-49.82	42577.94	23.61		
alpha	E	2027-03-26T23:24:25.204	x	2.72	-50.06	44692.62	23.61		
beta	E	2027-03-26T23:25:06.326	x	2.58	-50.16	45661.87	23.62		
eta	E	2027-03-26T23:26:10.426	x	2.36	-50.33	47176.12	23.62		
gamma	E	2027-03-26T23:26:29.583	x	2.30	-50.37	47628.59	23.62		
delta	E	2027-03-26T23:26:58.023	x	2.20	-50.45	48300.35	23.62		
lambda	E	2027-03-26T23:28:11.105	x	1.95	-50.63	50026.71	23.62		
epsilon	E	2027-03-26T23:28:50.220	x	1.82	-50.73	50950.78	23.63		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-26T22:51:44.970
 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 : 51405024754623616
 2Mass ID (if available) : 04003903+2029094
 ICRS Star Coord at Epoch: 04h 00m 39.02279s +20:29:08.85663s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.200
 G magnitude : 16.837
 RP magnitude : 15.711
 BP magnitude : 18.152
 DUPflag : 0
 Distance (au) : 19.941
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.74
 Sun-Target sep (deg) : 56.55
 Sun-Moon sep (deg) : 175.47
 B (ring opening deg) : 72.85
 PA of pole (deg) : -74.76
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.346
 C/A sky separation (km) : 4997.3
 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	2027-03-26T22:15:24.293		21.66	-18.64	51313.96	-23.15		
lambda	I	2027-03-26T22:16:19.853		21.49	-18.85	50026.71	-23.17		
delta	I	2027-03-26T22:17:34.384		21.25	-19.14	48300.35	-23.16		
gamma	I	2027-03-26T22:18:03.574		21.16	-19.25	47624.36	-23.16		
eta	I	2027-03-26T22:18:22.932		21.10	-19.32	47176.12	-23.15		
beta	I	2027-03-26T22:19:28.459		20.89	-19.57	45658.59	-23.15		
alpha	I	2027-03-26T22:20:08.148		20.77	-19.72	44742.27	-23.14		
4	I	2027-03-26T22:21:41.870		20.47	-20.08	42568.85	-23.13		
5	I	2027-03-26T22:21:54.041		20.43	-20.13	42297.06	-23.13		
6	I	2027-03-26T22:22:12.416		20.37	-20.20	41871.63	-23.13		
Uranus	I	2027-03-26T22:33:33.717		18.18	-22.80	25060.60		-16.53	-17.27
Uranus	E	2027-03-26T23:10:01.987		10.90	-31.10	25224.83		13.40	14.02
6	E	2027-03-26T23:21:25.631		8.56	-33.67	41797.85	23.24		
5	E	2027-03-26T23:21:42.543		8.50	-33.73	42186.75	23.25		
4	E	2027-03-26T23:21:59.963		8.44	-33.80	42584.18	23.25		
alpha	E	2027-03-26T23:23:30.289		8.13	-34.14	44689.92	23.27		
beta	E	2027-03-26T23:24:11.993		7.98	-34.29	45659.23	23.27		
eta	E	2027-03-26T23:25:17.140		7.76	-34.54	47176.12	23.29		
gamma	E	2027-03-26T23:25:36.595		7.69	-34.61	47629.18	23.29		
delta	E	2027-03-26T23:26:05.411		7.59	-34.72	48300.35	23.29		
lambda	E	2027-03-26T23:27:19.504		7.33	-34.99	50026.71	23.31		
epsilon	E	2027-03-26T23:27:57.424		7.20	-35.14	50910.60	23.30		

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2027-03-26T22:50:05.750
 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 : 51405024754623616
 2Mass ID (if available) : 04003903+2029094
 ICRS Star Coord at Epoch: 04h 00m 39.02279s +20:29:08.85663s
 RUWE (>1.4 is poor) : 0.95
 K magnitude : 13.200
 G magnitude : 16.837
 RP magnitude : 15.711
 BP magnitude : 18.152
 DUPflag : 0
 Distance (au) : 19.941
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 22.74
 Sun-Target sep (deg) : 56.55
 Sun-Moon sep (deg) : 175.57
 B (ring opening deg) : 72.85
 PA of pole (deg) : -74.76
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 0.403
 C/A sky separation (km) : 5824.6
 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	2027-03-26T22:13:39.159		34.26	6.43x	51309.12	-23.00		
lambda	I	2027-03-26T22:14:34.866		34.16	6.23x	50026.71	-23.02		
delta	I	2027-03-26T22:15:49.888		34.02	5.96x	48300.35	-23.01		
gamma	I	2027-03-26T22:16:19.271		33.96	5.85x	47624.43	-23.00		
eta	I	2027-03-26T22:16:38.763		33.93	5.78x	47176.12	-23.00		
beta	I	2027-03-26T22:17:44.754		33.80	5.54x	45658.29	-22.98		
alpha	I	2027-03-26T22:18:24.729		33.73	5.40x	44741.89	-22.98		
4	I	2027-03-26T22:19:59.083		33.55	5.05x	42569.60	-22.96		
5	I	2027-03-26T22:20:11.346		33.52	5.01x	42297.89	-22.96		
6	I	2027-03-26T22:20:29.897		33.49	4.94x	41871.21	-22.95		
Uranus	I	2027-03-26T22:31:57.170		32.12	2.45x	25052.99		-16.66	-17.41
Uranus	E	2027-03-26T23:08:22.024		27.14	-5.51	25244.00		13.00	13.59
6	E	2027-03-26T23:19:54.045		25.40	-8.03	41797.48	23.03		
5	E	2027-03-26T23:20:11.210		25.35	-8.09	42188.25	23.04		
4	E	2027-03-26T23:20:28.759		25.31	-8.16	42585.18	23.04		
alpha	E	2027-03-26T23:21:59.846		25.07	-8.49	44689.53	23.06		
beta	E	2027-03-26T23:22:41.917		24.96	-8.64	45658.80	23.07		
eta	E	2027-03-26T23:23:47.660		24.79	-8.88	47176.12	23.08		
gamma	E	2027-03-26T23:24:07.290		24.74	-8.95	47629.27	23.09		
delta	E	2027-03-26T23:24:36.353		24.67	-9.06	48300.35	23.09		
lambda	E	2027-03-26T23:25:51.087		24.47	-9.33	50026.71	23.11		
epsilon	E	2027-03-26T23:26:29.055		24.37	-9.47	50904.17	23.10		