

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-08T21:38:03.010
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 3425258275651531520
 2Mass ID (if available) : 06131464+2340246

ICRS Star Coord at Epoch: 06h 13m 14.65878s +23:40:24.53534s

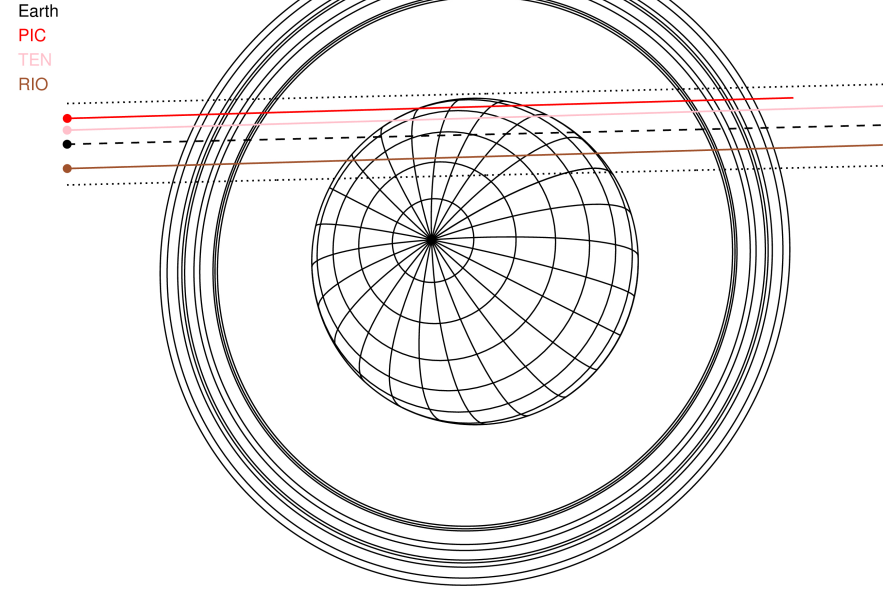
RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.925
 G magnitude : 16.772
 RP magnitude : 15.888
 BP magnitude : 17.567
 DUPflag : 0
 Distance (au) : 19.628
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.39
 Sun-Target sep (deg) : 45.14
 Sun-Moon sep (deg) : 164.48
 B (ring opening deg) : 72.70
 PA of pole (deg) : 63.48

| # | 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 |



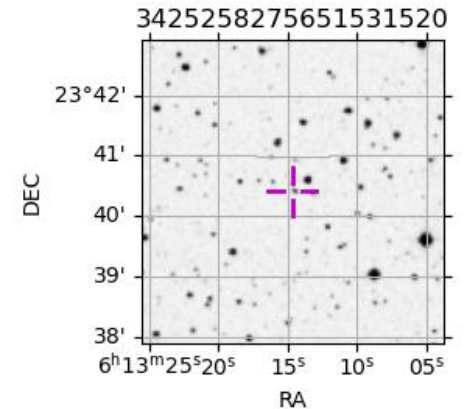
2034-05-08T21:38:03.0100 ex: 06 13 14.6588 s: +23 40 24.535 C/A 1.401" PA 181.35 deg v_sky +27.39 km/s D 19.63 AU
 Credit: Styled after SORA/Lucky Star

Uranus 2034-05-08T21:38:03 K13.93 G16.77 PgtRgt

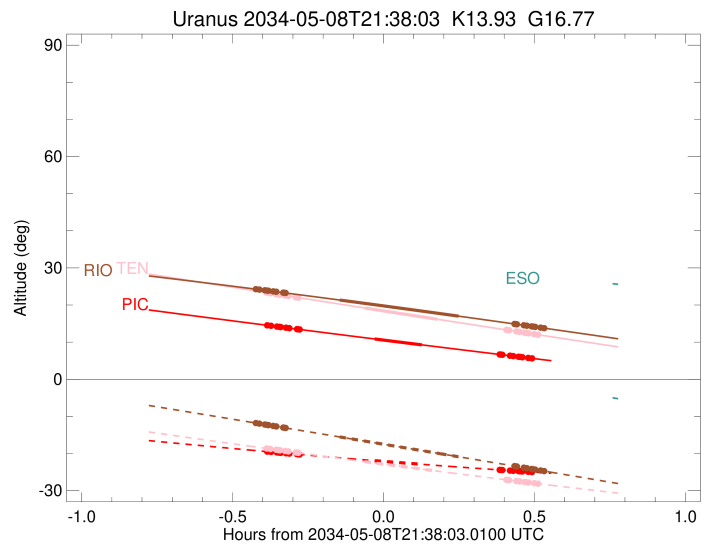
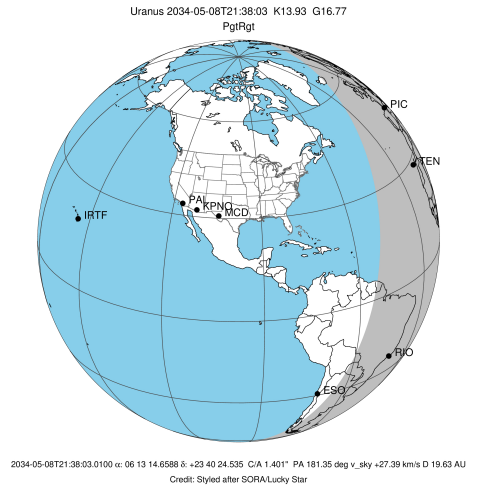


Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

| Obs | Location | lat | Elon | Rings I | Planet | Rings E | Observed Events Interval | OEcode |
|------|-----------------------|-------|-------|---------|--------|---------|-----------------------------|--------|
| PIC | Pic du Midi | 42.9 | 0.1 | +++++ | + + | +++++ | MAY 08 21:14 - MAY 08 22:07 | PieRie |
| 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 | +++++ | + + | +++++ | MAY 08 21:14 - MAY 08 22:08 | PieRie |
| 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 08 21:12 - MAY 08 22:10 | PieRie |
| ESO | European Southern Obs | -29.3 | 289.3 | | | | | PnnRnn |
| 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 |

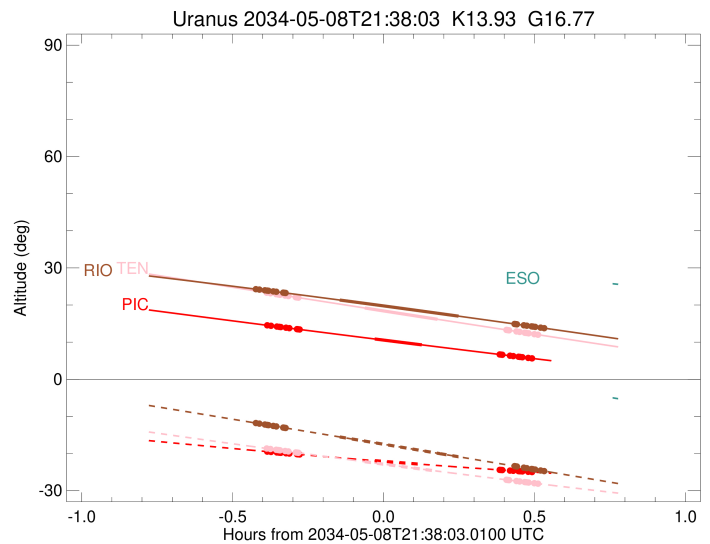
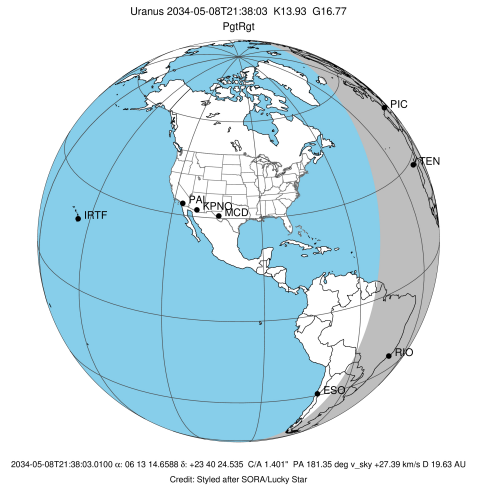


target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-08T21:40:43.510
 Event type : PgtRgt
 : Uranus occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Observer code : PIC
 Location : Pic du Midi
 Latitude (deg) : 42.93656
 E. Longitude (deg) : 0.14231
 Altitude (km) : 2.890
 Gaia source ID : 3425258275651531520
 2Mass ID (if available) : 06131464+2340246
 ICRS Star Coord at Epoch: 06h 13m 14.65878s +23:40:24.53534s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.925
 G magnitude : 16.772
 RP magnitude : 15.888
 BP magnitude : 17.567
 DUPflag : 0
 Distance (au) : 19.628
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.39
 Sun-Target sep (deg) : 45.14
 Sun-Moon sep (deg) : 164.12
 B (ring opening deg) : 72.70
 PA of pole (deg) : 63.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.701
 C/A sky separation (km) : 24212.1
 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



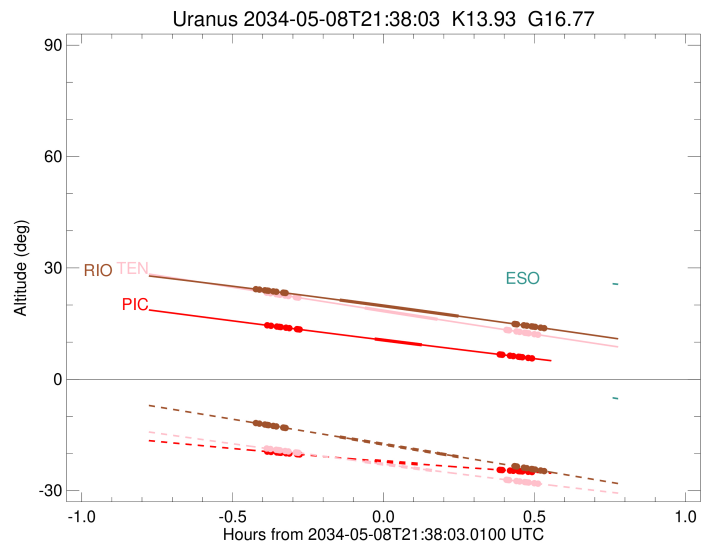
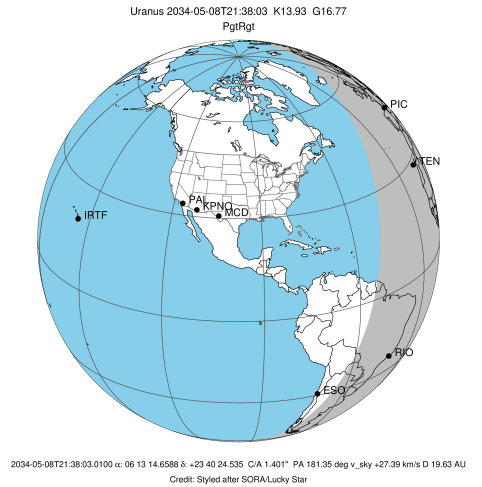
| Ring | I/E | UTC | b? | alt | alt-sun | radius | r-dot | lat-geo | lat-geodetic |
|---------|-----|-------------------------|----|-------|---------|----------|--------|---------|--------------|
| epsilon | I | 2034-05-08T21:14:56.409 | | 14.53 | -19.49 | 51167.28 | -25.05 | | |
| lambda | I | 2034-05-08T21:15:42.290 | | 14.40 | -19.58 | 50026.71 | -24.77 | | |
| delta | I | 2034-05-08T21:16:52.372 | | 14.20 | -19.72 | 48300.35 | -24.49 | | |
| gamma | I | 2034-05-08T21:17:19.762 | | 14.12 | -19.77 | 47631.22 | -24.37 | | |
| eta | I | 2034-05-08T21:17:38.470 | | 14.06 | -19.81 | 47176.12 | -24.28 | | |
| beta | I | 2034-05-08T21:18:42.041 | | 13.88 | -19.93 | 45641.06 | -23.98 | | |
| alpha | I | 2034-05-08T21:19:20.732 | | 13.77 | -20.01 | 44721.67 | -23.79 | | |
| 4 | I | 2034-05-08T21:20:50.800 | | 13.51 | -20.19 | 42600.74 | -23.24 | | |
| 5 | I | 2034-05-08T21:21:09.404 | | 13.45 | -20.22 | 42155.46 | -23.13 | | |
| 6 | I | 2034-05-08T21:21:21.340 | | 13.42 | -20.25 | 41878.72 | -23.05 | | |
| Uranus | I | 2034-05-08T21:36:17.423 | | 10.86 | -21.92 | 25288.64 | | 12.12 | 12.68 |
| Uranus | E | 2034-05-08T21:45:40.127 | | 9.27 | -22.91 | 25543.81 | | 2.83 | 2.97 |
| 6 | E | 2034-05-08T22:01:08.017 | | 6.69 | -24.41 | 41832.82 | 23.11 | | |
| 5 | E | 2034-05-08T22:01:26.898 | | 6.63 | -24.44 | 42270.65 | 23.19 | | |
| 4 | E | 2034-05-08T22:01:37.739 | | 6.60 | -24.46 | 42528.86 | 23.31 | | |
| alpha | E | 2034-05-08T22:03:11.961 | | 6.35 | -24.60 | 44748.13 | 23.86 | | |
| beta | E | 2034-05-08T22:03:50.517 | | 6.24 | -24.66 | 45670.05 | 24.05 | | |
| eta | E | 2034-05-08T22:04:52.705 | | 6.07 | -24.75 | 47176.12 | 24.36 | | |
| gamma | E | 2034-05-08T22:05:10.988 | | 6.02 | -24.78 | 47622.24 | 24.44 | | |
| delta | E | 2034-05-08T22:05:38.662 | | 5.94 | -24.82 | 48300.35 | 24.56 | | |
| lambda | E | 2034-05-08T22:06:48.523 | | 5.75 | -24.93 | 50026.71 | 24.85 | | |
| epsilon | E | 2034-05-08T22:07:46.588 | | 5.59 | -25.01 | 51476.22 | 25.13 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-08T21:41:18.810
 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 : 3425258275651531520
 2Mass ID (if available) : 06131464+2340246
 ICRS Star Coord at Epoch: 06h 13m 14.65878s +23:40:24.53534s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.925
 G magnitude : 16.772
 RP magnitude : 15.888
 BP magnitude : 17.567
 DUPflag : 0
 Distance (au) : 19.628
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.39
 Sun-Target sep (deg) : 45.14
 Sun-Moon sep (deg) : 163.95
 B (ring opening deg) : 72.70
 PA of pole (deg) : 63.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.576
 C/A sky separation (km) : 22438.3
 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_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 | 2034-05-08T21:14:50.846 | | 23.33 | -18.65 | 51150.93 | -25.45 | | |
| lambda | I | 2034-05-08T21:15:35.315 | | 23.17 | -18.78 | 50026.71 | -25.21 | | |
| delta | I | 2034-05-08T21:16:44.112 | | 22.93 | -19.00 | 48300.35 | -24.97 | | |
| gamma | I | 2034-05-08T21:17:10.956 | | 22.83 | -19.08 | 47631.30 | -24.87 | | |
| eta | I | 2034-05-08T21:17:29.281 | | 22.77 | -19.14 | 47176.12 | -24.80 | | |
| beta | I | 2034-05-08T21:18:31.451 | | 22.55 | -19.33 | 45641.07 | -24.55 | | |
| alpha | I | 2034-05-08T21:19:09.285 | | 22.41 | -19.44 | 44720.05 | -24.39 | | |
| 4 | I | 2034-05-08T21:20:36.814 | | 22.10 | -19.71 | 42602.47 | -23.94 | | |
| 5 | I | 2034-05-08T21:20:54.938 | | 22.04 | -19.77 | 42155.04 | -23.84 | | |
| 6 | I | 2034-05-08T21:21:06.516 | | 22.00 | -19.80 | 41878.17 | -23.78 | | |
| Uranus | I | 2034-05-08T21:34:19.467 | | 19.20 | -22.20 | 25194.93 | | 14.14 | 14.78 |
| Uranus | E | 2034-05-08T21:48:46.454 | | 16.16 | -24.75 | 25558.98 | | -0.12 | -0.12 |
| 6 | E | 2034-05-08T22:02:28.503 | | 13.30 | -27.08 | 41830.68 | 23.86 | | |
| 5 | E | 2034-05-08T22:02:47.038 | | 13.24 | -27.13 | 42274.20 | 23.92 | | |
| 4 | E | 2034-05-08T22:02:57.342 | | 13.20 | -27.16 | 42528.12 | 24.02 | | |
| alpha | E | 2034-05-08T22:04:28.984 | | 12.88 | -27.42 | 44747.34 | 24.48 | | |
| beta | E | 2034-05-08T22:05:06.668 | | 12.75 | -27.52 | 45670.84 | 24.63 | | |
| eta | E | 2034-05-08T22:06:07.416 | | 12.54 | -27.69 | 47176.12 | 24.89 | | |
| gamma | E | 2034-05-08T22:06:25.307 | | 12.48 | -27.74 | 47622.10 | 24.96 | | |
| delta | E | 2034-05-08T22:06:52.420 | | 12.39 | -27.81 | 48300.35 | 25.07 | | |
| lambda | E | 2034-05-08T22:08:00.956 | | 12.15 | -28.00 | 50026.71 | 25.31 | | |
| epsilon | E | 2034-05-08T22:08:57.651 | | 11.96 | -28.16 | 51466.80 | 25.55 | | |

target : Uranus
 target radius (km) : 25559.00
 C/A epoch : 2034-05-08T21:40:59.090
 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 : 3425258275651531520
 2Mass ID (if available) : 06131464+2340246
 ICRS Star Coord at Epoch: 06h 13m 14.65878s +23:40:24.53534s
 RUWE (>1.4 is poor) : 0.99
 K magnitude : 13.925
 G magnitude : 16.772
 RP magnitude : 15.888
 BP magnitude : 17.567
 DUPflag : 0
 Distance (au) : 19.628
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : 27.39
 Sun-Target sep (deg) : 45.14
 Sun-Moon sep (deg) : 163.76
 B (ring opening deg) : 72.70
 PA of pole (deg) : 63.48
 Pole direction: RA (deg): 257.31100
 Dec (deg): -15.17500
 C/A sky separation (") : 1.150
 C/A sky separation (km) : 16376.2
 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 | 2034-05-08T21:12:43.332 | | 24.27 | -11.81 | 51098.83 | -26.65 | | |
| lambda | I | 2034-05-08T21:13:23.720 | | 24.15 | -11.96 | 50026.71 | -26.51 | | |
| delta | I | 2034-05-08T21:14:28.981 | | 23.96 | -12.20 | 48300.35 | -26.39 | | |
| gamma | I | 2034-05-08T21:14:54.346 | | 23.89 | -12.29 | 47631.49 | -26.34 | | |
| eta | I | 2034-05-08T21:15:11.643 | | 23.84 | -12.36 | 47176.12 | -26.31 | | |
| beta | I | 2034-05-08T21:16:10.078 | | 23.67 | -12.58 | 45641.37 | -26.18 | | |
| alpha | I | 2034-05-08T21:16:45.697 | | 23.57 | -12.71 | 44714.90 | -26.11 | | |
| 4 | I | 2034-05-08T21:18:06.726 | | 23.33 | -13.01 | 42607.36 | -25.89 | | |
| 5 | I | 2034-05-08T21:18:23.611 | | 23.28 | -13.08 | 42155.15 | -25.83 | | |
| 6 | I | 2034-05-08T21:18:34.381 | | 23.25 | -13.12 | 41875.72 | -25.81 | | |
| Uranus | I | 2034-05-08T21:29:20.530 | | 21.34 | -15.54 | 25050.19 | | 16.86 | 17.61 |
| Uranus | E | 2034-05-08T21:52:58.042 | | 17.01 | -20.87 | 25483.19 | | -6.35 | -6.65 |
| 6 | E | 2034-05-08T22:04:04.781 | | 14.90 | -23.39 | 41823.81 | 25.89 | | |
| 5 | E | 2034-05-08T22:04:22.556 | | 14.84 | -23.46 | 42285.14 | 25.91 | | |
| 4 | E | 2034-05-08T22:04:31.487 | | 14.82 | -23.49 | 42526.43 | 25.97 | | |
| alpha | E | 2034-05-08T22:05:56.636 | | 14.54 | -23.82 | 44744.28 | 26.20 | | |
| beta | E | 2034-05-08T22:06:32.150 | | 14.43 | -23.95 | 45673.35 | 26.27 | | |
| eta | E | 2034-05-08T22:07:29.176 | | 14.25 | -24.17 | 47176.12 | 26.40 | | |
| gamma | E | 2034-05-08T22:07:46.041 | | 14.19 | -24.23 | 47621.67 | 26.44 | | |
| delta | E | 2034-05-08T22:08:11.689 | | 14.11 | -24.33 | 48300.35 | 26.49 | | |
| lambda | E | 2034-05-08T22:09:16.714 | | 13.90 | -24.58 | 50026.71 | 26.61 | | |
| epsilon | E | 2034-05-08T22:10:09.414 | | 13.73 | -24.78 | 51431.39 | 26.75 | | |