

# Simultaneous LSST and Euclid observations – advantages for Solar System Objects

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## Abstract

The ESA Euclid mission is a space telescope that will survey  $\sim 15,000$  square degrees of the sky, primarily to study the distant universe (constraining cosmological parameters through the lensing of galaxies). It is also expected to observe  $\sim 150,000$  Solar System Objects (SSOs), primarily in poorly understood high inclination populations, as it will mostly avoid  $\pm 15^\circ$  from the ecliptic plane. With a launch date of 2022 and a 6 year survey, Euclid and LSST will operate at the same time, and have complementary capabilities. We propose a LSST mini-survey to coordinate quasi-simultaneous observations between these two powerful observatories, when possible, with the primary aim of greatly improving the orbits of SSOs discovered by these facilities. As Euclid will operate from a halo orbit around the Sun-Earth L2 Lagrangian point, there will be significant parallax between observations from Earth and Euclid (0.01 AU). This means that simultaneous observations will give an independent distance measurement to SSOs, giving additional constraints on orbits compared to single Euclid visits.

## 1 White Paper Information

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1. **Science Category:** Taking an Inventory of the Solar System
2. **Survey Type Category:** Other: suggested scheduling to enable quasi-simultaneous observations with another survey telescope
3. **Observing Strategy Category:** an integrated program with science that hinges on the combination of pointing and detailed observing strategy.

## 2 Scientific Motivation

Euclid is the European Space Agency (ESA)’s mission to “map the geometry of the dark Universe”, improving our understanding of dark matter and dark energy, by studying the distortion of distant galaxies due to weak gravitational lensing. Euclid is designed to provide diffraction-limited imaging in both the visible and near-IR, with a 1.2m diameter telescope. It is a survey mission, designed to image a wide area of the sky (15,000 deg<sup>2</sup>), but, apart from some Deep Survey fields covering 40 deg<sup>2</sup> and some calibration fields, will visit each field only once. However, each  $\sim$ hour-long visit is composed of 4 blocks, each comprising a 565s image in the broad visible band and shorter exposures in Y (121s), J (116s), and H (81s) plus slitless spectroscopy in near-IR. Solar System Objects (SSOs) will generally appear as trailed objects (depending on their relative speed, with nearby objects most trailed) and will be recognizable by their motion between the four consecutive imaging blocks. Although Euclid will avoid ecliptic latitudes within 15° of the ecliptic plane (Fig. 1) to avoid zodiacal dust emission, its sensitivity to faint objects (detection limit of  $m_{AB} = 24.5$  for  $10\sigma$  on a 1” extended source) and wide field of view ( $0.8 \times 0.7$  deg<sup>2</sup>) means that it will still detect large numbers of SSOs, and the Euclid consortium now includes a SSO working group to drive the exploitation of this data set.

The Euclid survey strategy is fixed well in advance (any change in the schedule will be decided at least 6 weeks prior to the observations), and allows simulation of where Euclid will be pointing at a particular time, and therefore what known SSOs will be in the fields. Carry (2018) ran this simulation, also including estimated populations of fainter unknown objects to test Euclid’s discovery potential, finding that Euclid can expect to observe around 150,000 SSOs (only about 1% of which are currently known objects).

Euclid provides spectroscopic information and near-IR colours that are diagnostic of different mineral features, breaking the degeneracy that exists between several spectral classes of asteroids at visible wavelengths (Fig. 2). Euclid can therefore map compositional variation in faint objects better than a visible only survey, naturally supplementing LSST’s capabilities. Finally, the spatial resolution offered by a space telescope (0.1” pixels in the VIS band) makes it sensitive to any binarity or extended features (i.e., cometary activity) around SSOs. Probing the cometary activity of Centaurs will be a particular strength of Euclid, with the potential to constrain orbit evolution (planetary migration) models.

LSST is complimentary to Euclid in time domain astronomy: LSST is bound to discover many more objects as it covers the ecliptic plane, and because it returns to fields many times, meaning that the orbits of SSOs can be determined. Orbits from the short arc of Euclid data alone will be very uncertain, and completely unconstrained in many cases. LSST observations will also allow sparse photometry (i.e., with a typical separation in time larger than the rotation period) lightcurves to be built up over the length of the surveys, to study rotation and shape of SSOs, their photometric phase curves, and will allow visible colours to be measured (Euclid has only a single broad visible passband).

Euclid is expected to launch in 2022 and perform a 6-year survey, meaning that parallel observations between LSST and Euclid should be possible for much of the time. Considering

the comparable photometric depth of both surveys, there is therefore the possibility to combine their strengths to obtain more detailed information on the SSOs seen by both (100s per field). Some of this can be done *post facto* by using LSST determined orbits to link with observations obtained by Euclid, but in this white paper we argue that optimizing a relatively small amount of the LSST survey to obtain *simultaneous* observations between LSST and Euclid, when possible, has significant advantages.

LSST and Euclid have comparable imaging depths and sensitivities. For orbit determination, it presents the unique opportunity to constrain distances to the observed objects via parallaxes, as Euclid will be observing from the Sun-Earth L2 Lagrangian point 1.5 million km from Earth. Two sets of astrometric positions simultaneously observed by Euclid and LSST could allow for preliminary orbits of solar system objects that may otherwise be lost (e.g. Eggl 2011). While many Euclid SSOs will be eventually observed by LSST anyway, and their orbits determined independently, only parallel observations will allow rapid determination of orbits for recovery of rare objects, allowing follow up elsewhere, and direct comparison between visible and near-IR observations at the same geometry. For photometry, simultaneous observations would remove systematic lightcurve effects due to the rotation of irregular (unknown) shapes that otherwise drastically limit the precision of SSO colors. For nearby objects, the difference in viewing geometry may also allow some constraints to be placed on phase angle effects on photometry. Secondly, the addition of LSST visible and Euclid near-IR photometry will improve compositional characterisation.

LSST is the only realistic facility to perform these observations, reaching a similar depth to Euclid observations and having a wide field of view. Whether or not Euclid will provide its own alert stream for SSO discoveries is still under discussion, but in the case that it does, significant 8m telescope time would be required to confirm orbits for interesting objects. Finally, we also expect that other (non SSO) communities may find some advantage in simultaneous LSST+Euclid observations, especially given the near-IR spectroscopic coverage of Euclid, e.g., transient events.

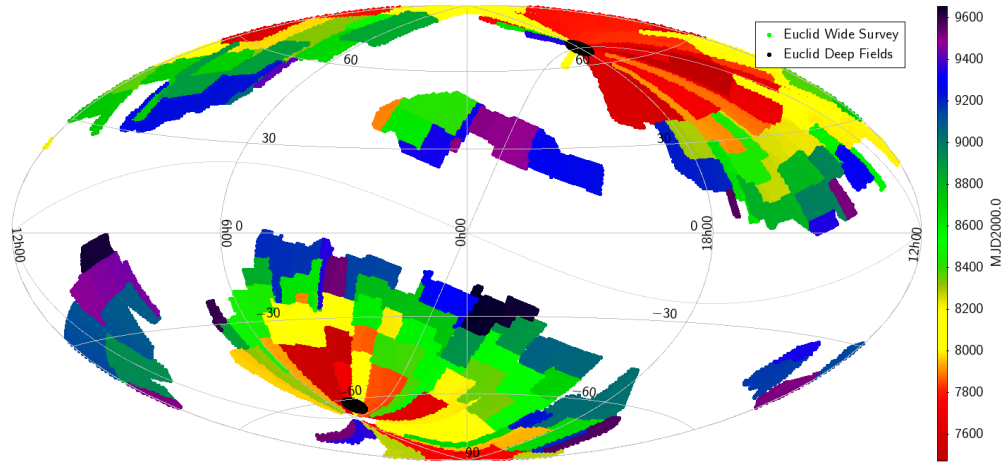


Figure 1: Expected coverage of the Euclid Survey color-coded by observing epoch, in equatorial coordinates. The grey line represents the ecliptic plane. The two circular black regions are the location of the Euclid Deep Fields North and South.

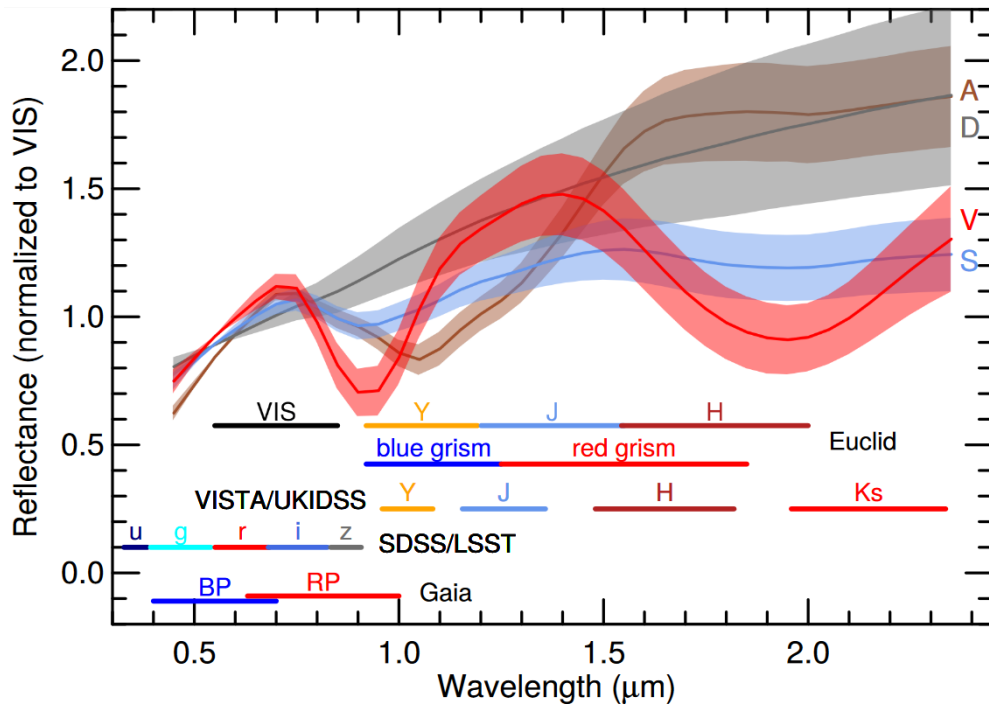


Figure 2: Spectral degeneration of asteroid spectral classes over visible only (including LSST filters). Euclid near-infrared will disentangle these classes.

## 3 Technical Description

### 3.1 High-level description

We propose small modifications to the LSST exposure scheduling during a fraction of the survey so that, when possible, Euclid fields are observed simultaneously by the spacecraft and LSST. This will be a minimal fraction of total LSST pointings, and we propose that beyond this the survey continues as planned, with repeats of the Euclid fields once more within the night and then again as another pair within a few days to one month (depending on what the final repeat cadence is set as for the main survey). We do not require any special repeat pattern beyond that required for LSST MOPS to recognise SSOs. The observations of the Euclid fields should be to standard LSST depth, and we have only weak constraints on the filter choice (should avoid the less sensitive filters to achieve a good single visit depth).

Around 8% of Euclid fields will be observable (see below) from LSST during the night time, or 3,489 pointings over 6 years (Fig. 3). As the planned single visit depth of LSST in the standard Wide-Fast-Deep survey is comparable with Euclid (for observations in  $g$ ,  $r$ , or  $i$ ), **we do not suggest extra observations are required to perform parallel observations, but these would place some constraints on observation timing (and therefore cadence)**, but given the expected  $\sim 1000$  LSST pointings per night, the impact of this scheduling should be minimal (at most a handful pointings during a given night, see Fig.4).

The nominal Euclid survey fields, and the timing of these observations, is already known. Although this is likely to be modified based on the eventual launch date of the spacecraft (some delays are always probable in launching space telescopes), once fixed the timing of individual observations will be known years in advance. In the case of any change in the planning of Euclid survey, the decision will be known at least 6 weeks before the observations. This allows this information to be fed into LSST scheduling early; the proposed timing modifications are not going to be late-time ToO changes.

Based on the current baseline Euclid survey, we have analysed the Euclid pointing profile for visibility from LSST, and find that  $\sim 8\%$  of Euclid fields are observable during the night from Cerro Pachon. 3,489 of the  $\sim 42,000$  Euclid pointings are observable at night (Sun below  $-18^\circ$  from the horizon) at elevation  $> 30^\circ$ , and about half of these are observable with both Sun and Moon distances  $> 90^\circ$ , for more sensitive dark skies. Additionally, around 280 fields are observable (with the same airmass  $< 2$  limit) during each of the three twilights (civil, nautical, astronomical). Data taken in astronomical twilight and slightly closer to the Moon will still be useful, even if the fainter objects seen by Euclid are not detected.

Many of the observable fields correspond to the Southern spot (Euclid Deep Field South) which will be visited many times (another Deep Field, corresponding to the Chandra deep field in Fornax constellation, will be observed by Euclid but was not included in present computation as the survey simulation have yet to be produced), but others are spread across the sky from the wide survey (Fig. 5). As SSO detections will obviously increase toward

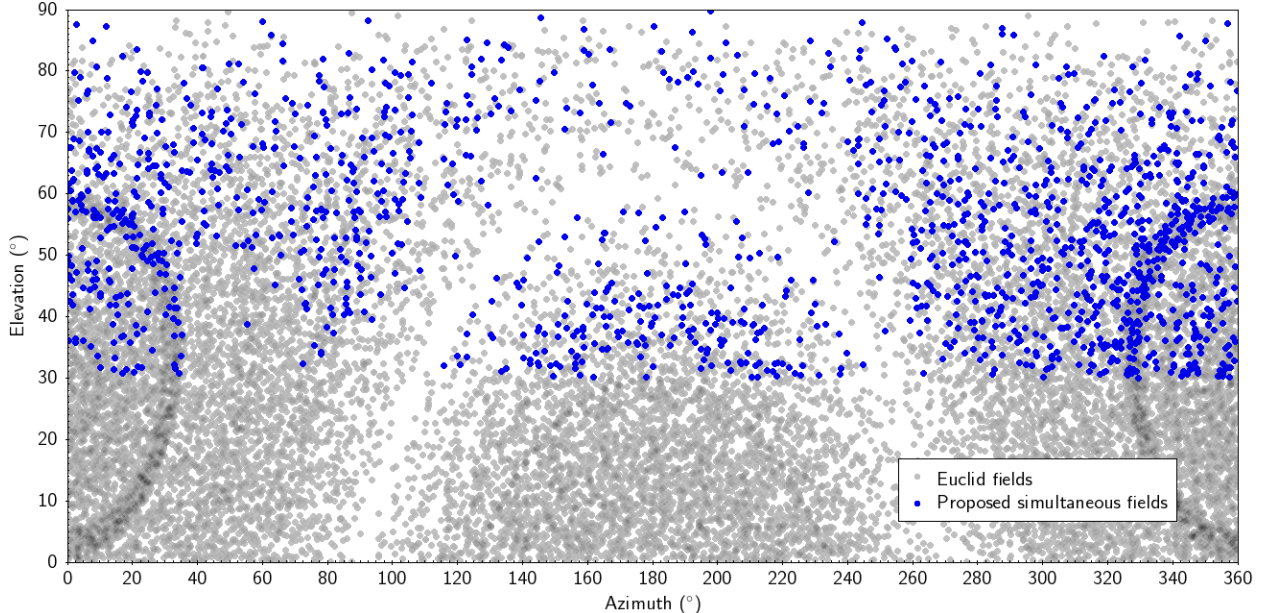


Figure 3: Distribution of Euclid fields in LSST local frame (azimuth-elevation), with the proposed simultaneous field highlighted (blue dots).

the ecliptic, there is a clear bias against inclined population in current census (at least of asteroids, see Mahlke et al. 2018). Hence, any objects discovered by Euclid/LSST in these southern fields will be of high importance. Based on these considerations, we find that there are 1,536 pointings (4% of the Euclid total) that correspond to the SSO “goldmine”:

- above elevation of  $30^\circ$  from LSST
- during the night (sun below  $-18^\circ$  elevation)
- $90^\circ$  apart from both the moon and the sun

We believe that at least this set, corresponding to an almost negligible number of pointings for LSST over 6 years, should be high priority for simultaneous observation.

### 3.2 Footprint – pointings, regions and/or constraints

We require specific pointings at specific times. The timing constraint is however mild on LSST operation, with an hour-long window to acquire the observation each time. The operating mode of Euclid encompasses 16 images of the same field obtained within approximately one hour, which allows some leverage to LSST schedule to achieve simultaneity: the observation can be acquired at any time within the hour-long time slot.

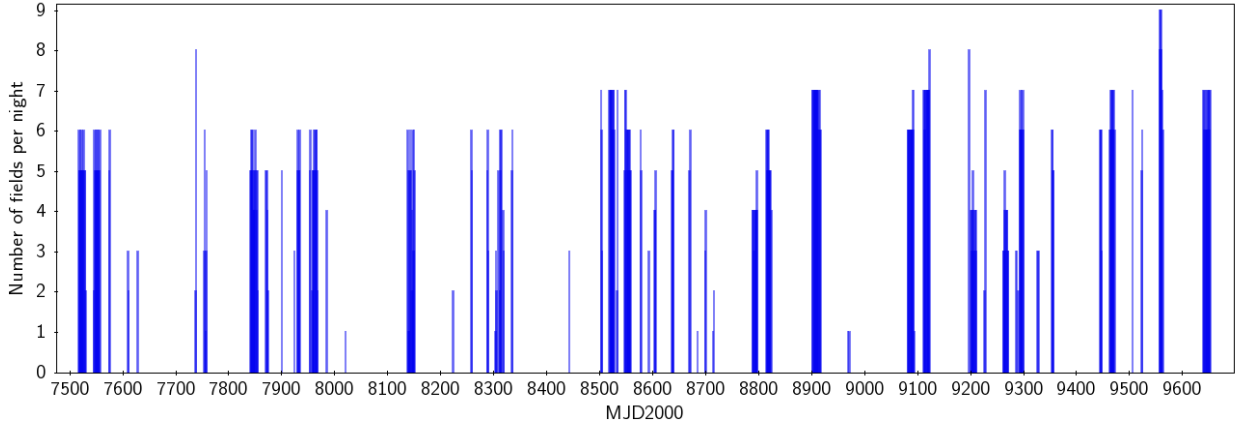


Figure 4: Distribution in time of the proposed fields, corresponding typically to a handful during a night.

The final list of coordinates will be fixed once the final Euclid scheduling is set, but based on the baseline survey, we provide the list as an appendix at the end of the document (Table 2).

The vast majority of these pointings fall within the main LSST wide-fast-deep survey region. Some (particularly at  $\text{dec} > 0$ , or those visible in twilights) correspond to areas proposed in other mini-surveys. Parallel observations with Euclid appear to be compatible with the requested observations by these surveys, with only adjustment in absolute timing of the relevant visit being necessary to achieve both sets of goals.

### 3.3 Image quality

No constraints.

### 3.4 Individual image depth and/or sky brightness

The depth of Euclid to point sources in the broad VIS band is  $m_{AB} = 24.5$  for  $10\sigma$  on a  $1''$  extended source, which is a good match to the expected single visit LSST depth in any of the more sensitive bands (g, r or i). We therefore do not need to modify exposure times from the LSST survey, our constraints are only on timing of the observations, and filter choice.

### 3.5 Co-added image depth and/or total number of visits

Co-added image depth is not relevant, we are looking at SSOs in individual visits. We require one visit parallel to the Euclid observations, one more the same night, and another pair of visits within a month (i.e., usual survey cadence) for the LSST MOPS to identify moving objects and find orbits. The only change to the usual LSST survey requested here is a scheduling constraint on one of these visits.

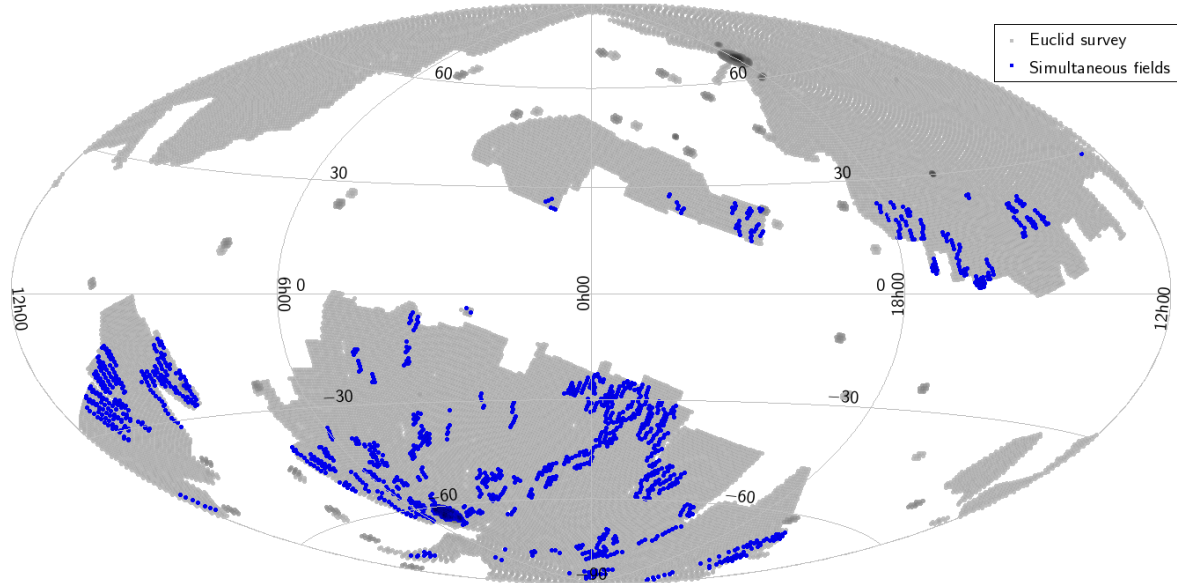


Figure 5: Distribution of fields (blue) eligible for simultaneous observations overprint on Euclid survey (grey) in RA/Dec projection. All fields have  $\delta < 30^\circ$ .

### 3.6 Number of visits within a night

Two visits are required for MOPS, although only one of these needs have fixed timing to match Euclid. In fact we will be able to identify moving objects in a single frame by comparison with the Euclid observations, but operations will be greatly simplified if the LSST detections are automatically recognised by MOPS.

### 3.7 Distribution of visits over time

Fixed timing of observations.

### 3.8 Filter choice

Any of g, r, or i are acceptable as either of those filters will provide additional spectrophotometric information supplementing the Euclid VIS, Y, J, and H filter bands, and have a similar sensitivity to Euclid in a single visit.

### 3.9 Exposure constraints

Usual survey exposure times (assumed to be 30s) are appropriate, shorter exposures should not be used. No maximum (objects will always be significantly less trailed than Euclid observations).



### 3.10 Other constraints

n.a.

### 3.11 Estimated time requirement

The proposed schedule does not change the time required for the LSST survey: we only argue in favor of a prioritization of certain fields at specific times to be obtained synchronously to Euclid observations and benefit from the parallax between the two facilities. Given Euclid operations, in which Euclid will pave the sky by acquiring images of the same field over an hour, the timing constraint for LSST observation will be mild: the LSST observation of the field can be obtained at any time within the hour-long slot.

Properties	Importance
Image quality	3
Sky brightness	2
Individual image depth	1
Co-added image depth	3
Number of exposures in a visit	3
Number of visits (in a night)	2
Total number of visits	3
Time between visits (in a night)	3
Time between visits (between nights)	3
Long-term gaps between visits	3
Other (absolute timing of visit)	1

Table 1: **Constraint Rankings:** Summary of the relative importance of various survey strategy constraints. Please rank the importance of each of these considerations, from 1=very important, 2=somewhat important, 3=not important. If a given constraint depends on other parameters in the table, but these other parameters are not important in themselves, please only mark the final constraint as important. For example, individual image depth depends on image quality, sky brightness, and number of exposures in a visit; if your science depends on the individual image depth but not directly on the other parameters, individual image depth would be ‘1’ and the other parameters could be marked as ‘3’, giving us the most flexibility when determining the composition of a visit, for example.

### 3.12 Technical trades

*To aid in attempts to combine this proposed survey modification with others, please address the following questions:*

1. *What is the effect of a trade-off between your requested survey footprint (area) and requested co-added depth or number of visits?* **n.a.**
2. *If not requesting a specific timing of visits, what is the effect of a trade-off between the uniformity of observations and the frequency of observations in time? e.g. a ‘rolling cadence’ increases the frequency of visits during a short time period at the cost of fewer visits the rest of the time, making the overall sampling less uniform.* **n.a.**
3. *What is the effect of a trade-off on the exposure time and number of visits (e.g. increasing the individual image depth but decreasing the overall number of visits)?* **The number of visits is set by MOPS requirements to identify SSOs.**
4. *What is the effect of a trade-off between uniformity in number of visits and co-added depth? Is there any benefit to real-time exposure time optimization to obtain nearly constant single-visit limiting depth?* **n.a.**
5. *Are there any other potential trade-offs to consider when attempting to balance this proposal with others which may have similar but slightly different requests?* **n.a.**

## 4 Performance Evaluation

The simple metric that will describe the performance of any given survey strategy against our goals will be a percentage of the possible Euclid observations that are achieved within the necessary time windows (see table 2). A minimum set will be the “goldmine” subset that are observable at larger solar and lunar elongation (see section 3.1).

## 5 Special Data Processing

No specific data processing beyond the MOPS processing to identify SSOs in the LSST data. Combining simultaneous observations from both Euclid and LSST will allow distances to be derived by parallax – these measurements will be made by my team members with both LSST and Euclid data access rights using their own (non-project) software.

## 6 References

Carry, B. (2018). Solar System Science with ESA Euclid. **A&A** 609, A113

Eggl, S. (2011). Refinement of Near Earth Asteroids’ orbital elements via simultaneous measurements by two observers. **Celestial Mechanics and Dynamical Astronomy**,

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Mahlke, M., Bouy, H., Altieri, B., Verdoes Kleijn, G., Carry, B., Bertin, E., de Jong, J. T. A., Kuijken, K., McFarland, J. & Valentijn, E. (2018). Mining the Kilo-Degree Survey for solar system objects. **Astronomy & Astrophysics**, 610, A21.

Table 2: Appendix: Preliminary list of pointings.

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8969.428947	33.820	-5.245	201.515	63.458	155.0	160.7
8972.431574	34.918	-4.038	194.802	63.052	156.5	138.4
7517.300938	58.068	-42.014	303.029	33.029	118.1	90.0
7517.352616	57.113	-41.516	299.966	47.447	119.0	90.9
7517.403542	57.004	-40.727	300.549	61.370	119.6	91.0
7517.455220	56.163	-40.192	315.821	75.180	120.4	91.8
7517.506146	56.067	-39.401	22.679	79.972	121.0	91.8
7517.557824	55.248	-38.860	60.143	68.177	121.9	92.5
7518.332245	56.060	-38.582	296.293	43.148	121.8	98.0
7518.383924	56.884	-39.123	296.321	57.023	120.9	98.2
7518.434850	56.987	-39.909	305.441	70.574	120.4	98.9
7518.486528	57.833	-40.446	347.866	79.531	119.5	98.9
7518.537454	57.949	-41.229	44.348	73.409	118.9	99.4
7519.310775	60.644	-41.979	302.436	35.164	117.1	103.0
7519.362454	59.754	-41.449	299.818	49.605	118.0	104.1
7519.414132	58.784	-40.949	302.535	64.277	118.9	105.3
7519.465058	58.661	-40.170	322.174	76.913	119.5	105.8
7519.516736	57.811	-39.633	35.750	78.053	120.3	106.8
7520.290405	56.768	-36.714	296.835	32.051	123.1	112.9
7520.342083	56.774	-37.526	294.157	46.777	122.5	113.5
7520.393762	57.685	-38.042	294.770	60.785	121.7	113.3
7520.445440	58.517	-38.586	306.110	74.125	120.8	113.1
7520.496366	58.635	-39.363	8.904	80.754	120.3	113.4
7520.548044	59.490	-39.902	53.575	71.306	119.4	113.1
7521.324375	55.123	-33.195	288.823	43.052	126.8	122.8
7521.375301	55.898	-32.947	284.853	57.579	126.5	122.9
7521.426979	56.671	-33.509	286.040	72.522	125.7	122.7
7521.478657	56.670	-34.316	342.076	85.707	125.1	122.9
7521.530336	57.460	-34.874	67.047	75.548	124.3	122.5
7522.300995	59.170	-35.957	295.096	34.485	122.7	124.6
7522.352674	58.260	-35.431	290.441	49.986	123.6	126.0
7522.404352	58.249	-34.630	287.853	65.210	124.2	126.9
7522.456030	57.454	-34.070	297.806	81.047	125.1	128.1
7522.507708	57.451	-33.268	66.267	81.700	125.7	128.9
7525.346192	68.053	-51.149	313.594	43.512	108.0	110.6
7525.397118	67.776	-50.405	316.371	55.167	108.7	111.3
7525.448044	67.509	-49.661	328.346	65.627	109.3	112.0
7525.498970	67.252	-48.916	358.143	71.312	110.0	112.6

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**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7525.550648	66.076	-48.460	33.039	66.765	110.9	112.9
7526.319051	64.593	-43.200	303.089	39.672	115.5	115.2
7526.370729	63.539	-42.705	302.235	54.061	116.4	115.4
7526.421655	62.674	-42.969	310.905	67.531	116.6	114.7
7526.472581	62.506	-42.208	343.780	77.452	117.3	115.2
7526.523507	63.363	-41.948	37.878	74.400	117.0	115.2
7527.293819	65.668	-43.694	305.047	33.167	114.7	110.0
7527.344745	65.758	-44.475	304.316	46.292	114.1	109.1
7527.395671	66.645	-44.221	306.526	58.711	113.9	109.3
7527.447350	65.970	-45.222	324.086	70.321	113.5	107.9
7527.498275	66.865	-44.964	3.343	75.247	113.3	108.1
7527.549201	67.091	-45.706	38.936	68.385	112.6	107.1
7528.313843	72.997	-56.279	320.072	35.367	102.6	95.7
7528.365521	74.439	-56.657	321.611	44.786	101.8	95.6
7528.416447	75.009	-57.320	328.207	53.484	101.1	95.0
7528.467373	75.465	-58.023	341.530	59.699	100.4	94.4
7528.518299	75.944	-58.722	0.367	61.517	99.8	93.7
7529.336123	82.591	-61.675	326.689	35.183	95.4	90.4
7529.387049	81.994	-61.038	327.768	44.234	96.0	90.8
7529.438727	80.323	-60.702	334.647	52.996	96.9	90.5
7529.489653	79.762	-60.041	347.568	58.979	97.5	90.8
7529.540579	79.073	-59.418	6.448	60.519	98.2	90.9
7530.359907	71.566	-51.727	315.113	47.377	106.6	90.2
7530.462512	71.247	-51.004	338.491	67.048	107.2	90.0
7546.449294	76.906	-40.438	330.250	77.995	115.3	90.2
7546.500972	76.325	-41.295	36.798	75.591	114.8	91.2
7547.270880	78.267	-41.763	303.042	31.899	113.8	94.8
7547.322558	79.008	-40.901	299.262	45.029	114.2	94.5
7547.373484	79.167	-41.640	301.427	58.658	113.5	95.0
7547.425162	78.600	-42.477	316.323	71.576	113.1	95.9
7547.476840	78.023	-43.323	6.456	76.820	112.6	96.7
7547.528519	77.435	-44.178	44.416	68.184	112.1	97.5
7548.296169	79.520	-51.484	313.887	39.222	105.3	100.4
7548.347847	78.891	-52.363	317.379	50.857	104.8	101.1
7548.398773	79.936	-52.178	325.578	60.398	104.6	100.7
7548.450451	79.307	-53.056	348.195	66.484	104.0	101.2
7548.501377	80.363	-52.870	14.399	66.323	103.9	100.8
7549.271285	83.537	-58.408	322.881	32.723	98.3	99.9
7549.322211	84.694	-58.237	323.018	41.746	98.1	99.6

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**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7549.373889	84.304	-59.033	328.836	50.812	97.6	99.7
7549.424815	83.137	-59.231	340.797	58.027	97.7	100.4
7549.475741	83.696	-59.882	357.893	60.326	97.0	100.0
7549.526667	84.869	-59.686	14.750	58.838	96.9	99.5
7550.292060	86.060	-59.531	324.060	35.846	96.7	99.6
7550.342986	85.486	-58.871	325.131	45.508	97.4	100.3
7550.393912	85.862	-58.100	330.683	54.225	97.9	100.5
7550.444838	85.311	-57.427	344.488	61.161	98.6	101.2
7550.495764	84.773	-56.751	6.165	63.254	99.4	101.8
7551.261910	84.742	-53.794	317.754	30.629	101.9	104.2
7551.312836	84.252	-53.100	316.090	41.778	102.6	105.1
7551.367928	83.092	-51.732	318.425	54.548	104.2	106.7
7551.419606	81.599	-51.167	332.209	65.056	105.2	107.9
7551.470532	80.558	-51.317	1.997	68.907	105.4	108.3
7551.521458	80.143	-50.620	30.505	64.759	106.1	109.0
7552.290613	79.012	-46.986	307.950	40.659	109.7	112.7
7552.341539	79.984	-46.845	308.860	52.513	109.5	112.6
7552.393218	78.649	-46.279	317.582	65.509	110.5	113.6
7552.444144	79.610	-46.137	344.273	73.331	110.3	113.5
7552.495069	79.245	-45.429	28.976	72.015	111.0	114.2
7553.261215	80.799	-40.685	301.837	31.557	114.7	118.0
7553.312141	80.968	-41.423	299.986	45.211	114.0	117.3
7553.363819	80.419	-42.242	302.886	59.406	113.5	116.6
7553.415498	79.859	-43.068	319.489	71.888	113.0	115.9
7553.466424	80.217	-43.781	6.072	76.369	112.2	115.0
7553.517350	80.583	-44.493	42.324	68.760	111.5	114.2
7554.283495	81.932	-46.601	307.692	38.229	109.3	110.7
7554.334421	81.536	-45.892	306.965	51.194	110.1	111.3
7554.385347	81.150	-45.181	312.653	63.985	110.8	111.9
7554.437025	81.522	-44.384	335.908	74.189	111.4	112.6
7554.487951	81.146	-43.671	27.408	74.477	112.2	113.1
7555.254850	81.864	-39.065	300.348	30.098	116.0	115.4
7555.305775	82.224	-39.787	297.845	43.872	115.3	114.6
7555.356701	83.112	-39.710	297.443	57.300	115.0	114.7
7555.408380	83.621	-38.918	302.893	71.150	115.5	115.3
7555.463472	82.591	-40.508	2.176	79.724	114.5	113.3
7555.514398	83.489	-40.433	50.232	72.184	114.3	113.2
7556.282049	83.467	-45.696	306.556	38.074	109.8	105.7
7556.332975	84.433	-45.617	306.350	50.223	109.6	105.9

Continued on next page

Table 2 – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7556.384653	83.883	-46.410	314.424	62.811	109.1	104.8
7556.435579	82.907	-46.499	339.477	72.339	109.3	104.1
7556.486505	83.323	-47.210	19.899	71.642	108.6	103.3
7557.260579	86.476	-57.316	321.519	33.190	98.8	93.6
7557.311505	87.038	-57.997	322.903	42.659	98.1	93.2
7557.362431	86.681	-58.747	329.015	51.568	97.5	92.4
7557.413356	87.264	-59.417	340.692	57.765	96.8	91.9
7557.465035	86.647	-60.187	358.994	60.046	96.3	91.0
7557.515961	87.246	-60.837	15.149	57.443	95.6	90.5
7738.184873	101.392	-76.836	14.278	35.749	100.4	97.2
7738.236551	100.756	-77.687	14.283	31.432	100.9	97.7
7739.207153	196.851	-84.327	357.073	35.353	114.5	93.8
7739.258831	201.067	-83.609	358.557	36.517	115.3	93.0
7739.309757	204.719	-84.175	0.533	36.048	115.1	93.3
7739.360683	209.073	-83.554	2.506	36.338	115.9	92.7
7739.411609	212.640	-82.902	4.791	36.100	116.7	92.1
7739.462535	215.597	-82.229	7.122	35.196	117.4	91.4
7739.513461	218.075	-81.538	9.167	33.574	118.2	90.8
7739.565139	222.694	-81.127	10.223	31.618	118.8	90.6
7754.497546	23.431	-87.781	357.435	30.143	111.2	93.8
7754.548472	3.941	-87.616	357.735	31.622	111.8	94.0
7754.599398	348.528	-87.224	358.858	32.841	112.4	94.2
7755.321389	316.254	-85.967	355.330	30.347	114.6	99.2
7755.373067	329.860	-86.060	355.459	30.693	113.7	98.6
7755.424745	342.519	-86.078	355.550	31.096	112.8	98.2
7755.475671	352.113	-86.570	356.283	31.502	112.3	98.3
7755.526597	4.464	-86.936	356.838	31.667	111.7	98.4
7755.577523	19.297	-87.127	357.138	31.737	111.1	98.5
7757.596157	57.183	-85.325	354.587	30.367	108.5	105.1
7758.473993	14.998	-85.109	354.336	30.289	110.7	109.8
7758.525671	5.754	-85.578	355.460	32.366	111.6	110.8
7758.577350	354.793	-85.911	357.506	33.740	112.5	111.8
7759.401192	349.427	-84.826	354.009	30.309	112.9	114.9
7759.452118	356.940	-85.250	354.590	31.209	112.3	114.5
7759.507211	333.231	-84.452	356.296	34.827	114.5	116.8
7759.558889	324.325	-84.313	359.303	35.897	115.4	117.7
7759.610567	316.066	-84.052	2.648	35.760	116.2	118.7
7841.345312	32.662	-54.468	317.847	35.377	117.9	90.3
7841.396238	31.843	-53.889	318.118	46.593	118.6	90.4

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7841.447917	30.191	-53.759	325.531	57.656	119.6	91.3
7841.498843	31.056	-53.300	341.034	64.996	119.3	90.9
7841.549769	31.917	-52.844	6.602	67.185	119.1	90.6
7842.366840	41.752	-57.867	322.021	35.361	112.1	95.4
7842.417766	40.742	-57.352	322.951	45.703	112.8	95.6
7842.468692	39.758	-56.829	329.421	55.376	113.5	95.9
7842.519618	38.801	-56.298	344.871	62.486	114.2	96.2
7842.570544	37.867	-55.762	8.710	64.032	114.9	96.6
7843.337442	36.954	-52.181	315.547	32.050	117.0	100.3
7843.389120	36.991	-51.185	313.643	43.507	117.4	100.0
7843.440046	36.184	-50.631	316.953	55.396	118.1	100.4
7843.490972	37.031	-50.202	328.609	64.976	117.8	100.0
7843.546065	37.807	-51.739	358.272	68.489	116.7	100.6
7843.597743	37.797	-52.729	24.820	64.073	116.3	101.4
7844.366898	43.856	-58.872	323.255	35.329	110.9	105.7
7844.417824	44.701	-58.352	323.942	44.437	110.7	105.1
7844.469502	44.954	-59.360	331.346	52.633	110.2	105.5
7844.520428	45.792	-58.833	342.596	59.079	110.0	105.0
7844.572106	45.550	-57.839	1.860	62.379	110.5	105.0
7845.339757	39.508	-51.838	315.117	32.148	116.1	111.4
7845.390683	40.361	-51.400	313.889	42.971	115.8	111.0
7845.442361	40.377	-52.368	319.180	53.946	115.4	111.2
7845.493287	39.520	-52.816	332.990	63.183	115.7	111.9
7845.544213	40.407	-53.346	356.478	66.833	115.0	111.7
7845.595139	41.267	-52.892	21.791	64.772	114.7	111.3
7846.367708	46.635	-58.314	322.582	35.044	110.0	112.4
7846.418634	47.484	-57.803	323.105	44.300	109.8	112.0
7846.470312	47.749	-58.780	330.304	52.742	109.3	111.8
7846.521238	46.913	-59.304	344.037	58.949	109.5	112.2
7846.572164	48.063	-59.765	1.123	60.466	108.8	111.7
7847.392998	58.395	-63.021	328.324	34.327	103.2	108.4
7847.443924	59.114	-62.445	329.021	42.396	103.0	108.1
7847.495602	59.828	-63.367	335.367	49.305	102.5	107.6
7847.546528	60.525	-62.787	344.430	55.084	102.3	107.3
7848.419039	73.908	-65.713	331.612	32.184	96.3	101.7
7848.469965	74.343	-65.129	331.737	39.646	96.2	101.5
7848.521644	75.555	-65.882	336.511	45.995	95.7	100.8
7848.572569	77.201	-66.030	343.651	50.883	95.0	100.0
7849.388889	68.621	-63.683	329.479	30.024	98.7	104.1

Continued on next page



**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7849.439815	67.103	-63.420	329.279	38.854	99.4	104.7
7849.490741	65.607	-63.140	333.023	47.334	100.1	105.3
7849.541667	64.135	-62.846	342.235	54.193	100.8	105.9
7849.592593	62.676	-62.546	357.260	57.629	101.6	106.5
7850.357986	46.030	-55.410	318.997	35.480	112.0	116.4
7850.409664	45.891	-54.459	318.868	46.286	112.4	117.1
7850.460590	44.912	-53.969	325.086	56.914	113.2	117.6
7850.511516	43.956	-53.471	341.904	64.993	113.9	118.1
7850.562442	43.040	-52.957	10.048	66.784	114.6	118.6
7851.328588	42.945	-51.058	314.418	31.056	115.7	117.7
7851.380266	42.985	-52.003	314.684	42.641	115.2	116.5
7851.431192	43.902	-52.511	318.785	52.962	114.5	115.7
7851.482118	44.816	-53.022	330.051	61.625	113.8	114.8
7851.533044	45.774	-53.515	351.378	66.346	113.1	114.0
7851.583970	46.754	-54.001	16.117	64.806	112.3	113.2
7852.401794	62.019	-61.668	326.726	36.437	102.3	101.1
7852.452720	63.424	-61.991	329.166	44.218	101.5	100.4
7852.503646	64.874	-62.285	335.249	50.972	100.8	99.7
7852.554572	66.330	-62.580	345.684	55.717	100.1	99.1
7853.369387	52.578	-58.127	322.328	35.862	107.9	100.4
7853.420313	51.425	-57.697	323.656	46.165	108.7	100.4
7853.471238	50.299	-57.257	330.735	55.641	109.4	100.4
7853.522917	50.062	-56.321	345.744	62.634	109.9	101.0
7853.574595	49.858	-55.393	9.308	64.348	110.4	101.6
7854.342998	44.655	-50.215	312.668	34.964	115.7	100.1
7854.394676	44.703	-51.139	314.078	46.712	115.2	98.9
7854.445602	45.626	-51.638	320.178	56.931	114.5	98.3
7854.496528	46.539	-52.145	335.340	64.849	113.8	97.8
7854.547454	47.502	-52.630	0.996	67.606	113.0	97.4
7855.364525	63.633	-60.604	325.787	30.556	102.0	90.4
7855.415451	65.018	-60.926	326.042	38.838	101.3	90.1
7871.325405	50.376	-40.651	300.383	36.752	121.1	91.0
7871.380498	49.563	-39.279	296.364	52.386	122.5	91.1
7871.432176	48.738	-38.757	299.049	67.444	123.3	91.7
7871.487269	48.040	-37.348	331.608	81.819	124.6	91.9
7871.538947	47.310	-36.792	57.665	76.271	125.4	92.7
7872.314525	45.412	-32.525	290.062	36.467	129.5	99.0
7901.321308	65.622	-22.487	273.818	42.468	132.9	94.1
7901.372234	65.668	-23.254	265.556	58.564	132.3	94.7

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7901.423160	65.595	-24.046	250.325	74.484	131.7	95.5
7901.474086	66.337	-23.887	166.746	83.483	131.4	95.4
7901.529178	65.696	-21.696	108.022	68.374	133.5	96.1
7930.286366	88.228	-48.403	309.786	41.931	107.1	93.1
7930.338044	87.697	-49.161	313.589	54.310	106.5	93.8
7930.389722	88.437	-49.879	325.803	64.164	105.7	93.6
7930.441400	87.893	-50.635	354.314	69.471	105.1	94.4
7930.493079	87.337	-51.395	24.838	65.720	104.6	95.1
7931.259977	89.693	-62.075	327.204	35.947	94.2	95.0
7931.311655	88.811	-62.768	330.540	44.620	93.7	95.4
7931.362581	89.413	-63.386	337.715	51.080	93.0	95.0
7931.413507	89.721	-63.992	349.277	55.096	92.4	94.9
7931.468600	90.000	-62.735	4.711	57.308	93.5	95.0
7931.523692	90.308	-61.399	20.626	54.743	94.7	95.2
7932.291343	88.946	-50.608	312.876	43.844	105.1	99.2
7932.343021	89.479	-49.863	315.450	55.312	105.7	99.2
7932.394699	88.720	-49.133	328.233	66.319	106.5	100.2
7932.446377	89.241	-48.384	358.465	71.848	107.1	100.3
7932.498056	89.750	-47.639	32.678	68.054	107.7	100.6
7933.272477	89.571	-36.433	294.624	38.052	118.2	108.4
7933.324155	89.151	-35.685	290.363	53.181	119.1	109.3
7933.379248	89.784	-37.183	295.411	68.535	117.5	108.5
7933.430926	90.218	-37.933	327.616	80.716	116.7	108.1
7933.482604	90.660	-38.685	46.076	77.061	115.9	107.8
7934.267269	88.628	-52.824	315.622	39.790	103.2	102.0
7934.318194	89.168	-53.546	319.012	50.209	102.4	101.3
7934.369873	88.598	-54.290	329.878	59.680	101.9	101.0
7934.421551	89.428	-55.003	349.411	64.602	101.0	100.3
7934.473229	88.845	-55.741	14.244	63.264	100.4	100.0
7934.524155	89.417	-56.455	29.439	56.791	99.7	99.4
7958.463021	98.578	-52.703	28.913	62.553	103.9	90.4
7958.513947	98.460	-53.443	39.548	52.966	103.2	90.8
7959.282350	101.473	-47.061	308.886	51.336	109.5	90.6
7959.334028	100.871	-46.207	315.423	64.101	110.4	91.4
7959.384954	101.832	-46.354	339.301	72.474	110.2	91.1
7959.436632	101.231	-45.498	25.163	72.714	111.1	92.0
7959.487558	102.182	-45.646	46.802	63.416	110.9	91.7
7960.307639	103.531	-42.037	301.929	57.814	114.5	94.6
7960.358565	103.216	-42.752	314.971	70.463	113.8	95.1

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7960.409491	102.894	-43.465	359.712	76.775	113.2	95.5
7960.460417	102.565	-44.178	41.400	69.739	112.5	95.9
7960.511343	102.229	-44.889	52.815	57.357	111.8	96.3
7961.276736	105.029	-43.067	302.294	49.167	113.5	98.0
7961.327662	104.726	-43.782	307.834	62.379	112.8	98.2
7961.378588	104.415	-44.496	330.151	72.985	112.2	98.4
7961.429514	104.098	-45.208	18.024	74.079	111.5	98.6
7961.480440	104.079	-45.976	44.278	64.802	110.7	98.6
7961.532118	102.791	-46.514	51.932	51.615	110.3	99.4
7962.298264	97.384	-55.546	327.075	55.720	101.3	97.3
7962.349190	98.501	-55.726	341.147	62.253	101.2	96.9
7962.400868	96.886	-56.224	6.018	63.799	100.6	97.2
7962.451794	96.374	-56.899	24.926	58.650	99.9	97.0
7962.503472	96.995	-57.744	33.824	50.366	99.1	96.3
7963.268113	95.115	-61.896	332.298	48.957	94.9	92.8
7963.319039	95.720	-61.272	340.915	55.585	95.6	93.3
7963.369965	96.310	-60.638	355.355	59.434	96.2	93.9
7963.420891	96.883	-59.994	12.607	58.993	96.9	94.5
7963.471817	97.440	-59.344	26.557	54.247	97.6	95.1
7963.522743	97.606	-58.612	34.817	46.461	98.3	95.9
7964.290394	103.571	-52.089	318.449	53.617	105.0	101.0
7964.342072	102.929	-51.171	329.777	64.111	105.9	102.2
7964.392998	103.946	-51.387	354.572	68.724	105.7	102.0
7964.443924	103.972	-50.610	24.856	66.676	106.4	102.9
7964.494850	102.970	-50.403	42.031	57.287	106.7	103.4
7965.259491	107.335	-40.417	298.502	45.680	116.6	113.3
7965.310417	107.596	-39.695	297.847	59.540	117.3	114.2
7965.362095	108.207	-40.596	310.744	72.375	116.4	113.4
7965.413021	107.949	-41.319	4.122	78.888	115.7	112.9
7965.463947	107.686	-42.042	47.878	70.270	115.0	112.3
7965.514873	107.117	-42.701	57.111	56.861	114.4	111.8
7966.279514	105.659	-47.067	309.217	52.469	110.2	107.0
7966.331192	106.913	-46.559	315.998	63.830	110.7	107.8
7966.382118	106.892	-45.771	340.181	73.245	111.4	108.6
7966.433044	107.182	-45.053	25.250	73.221	112.2	109.5
7966.483970	107.465	-44.333	49.702	63.749	112.9	110.3
7966.534896	107.741	-43.612	56.684	51.257	113.6	111.1
7967.300289	105.317	-50.125	317.284	57.143	107.2	103.2
7967.351215	104.970	-50.832	334.060	66.088	106.5	102.6

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7967.402141	104.958	-51.619	3.555	68.565	105.7	102.0
7967.453067	104.593	-52.324	28.765	63.137	105.0	101.3
7967.503993	104.216	-53.027	40.006	53.389	104.3	100.6
7968.271644	97.449	-60.894	332.578	51.055	96.2	91.0
7968.322569	96.856	-61.529	344.844	56.658	95.6	90.5
8021.481273	187.074	29.528	178.221	30.207	147.4	127.1
8138.362905	345.829	-79.406	347.714	30.701	116.3	102.7
8138.414583	340.623	-79.438	348.771	34.959	117.2	104.0
8138.465509	337.903	-78.880	350.991	38.526	117.9	104.7
8138.516435	334.993	-78.394	355.226	41.185	118.6	105.4
8138.567361	332.772	-77.791	0.706	42.436	119.3	106.1
8138.619039	328.370	-77.623	7.054	41.226	120.2	107.4
8139.385938	351.017	-79.296	347.606	31.463	115.5	107.7
8139.436863	354.430	-79.720	348.714	34.051	114.9	107.7
8139.487789	358.408	-79.989	350.375	36.204	114.1	107.5
8139.538715	2.334	-80.327	352.740	37.823	113.5	107.5
8139.589641	6.521	-80.618	355.453	38.847	112.8	107.4
8140.609664	77.741	-75.091	342.718	30.334	99.1	100.5
8141.581019	63.392	-78.018	346.110	31.533	103.2	105.9
8142.396586	359.907	-79.361	347.664	31.074	114.3	118.2
8142.447512	356.119	-79.107	348.431	35.148	115.1	119.1
8142.498438	352.832	-78.703	350.994	38.775	115.7	120.0
8142.549363	349.777	-78.264	355.430	41.382	116.4	120.9
8142.601042	344.974	-78.348	1.721	41.810	117.4	122.0
8143.367940	340.536	-72.819	340.163	33.952	120.4	126.8
8143.418866	342.206	-72.343	341.235	38.887	120.1	126.8
8143.470544	342.355	-73.353	346.359	42.829	119.7	126.4
8143.521470	340.618	-73.840	353.323	45.533	120.0	126.7
8143.572396	338.810	-74.321	1.232	45.890	120.3	126.9
8143.623322	341.059	-74.786	6.978	44.423	119.6	126.4
8144.390220	348.026	-76.216	344.282	33.832	117.6	124.2
8144.441146	346.224	-76.760	347.013	38.006	117.9	124.1
8144.492072	344.324	-77.298	351.543	40.937	118.1	124.0
8144.542998	346.945	-77.795	355.892	41.991	117.4	123.3
8144.594676	351.569	-77.687	359.839	42.553	116.5	122.8
8145.563021	61.416	-77.503	345.501	31.429	103.3	108.2
8145.614699	56.596	-77.225	346.613	36.454	103.7	109.2
8146.432523	9.586	-78.649	346.963	32.507	113.0	116.3
8146.483449	6.045	-78.398	348.414	36.683	113.7	116.8

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8146.534375	2.663	-78.105	351.913	40.145	114.4	117.3
8146.585301	359.201	-77.879	357.292	42.165	115.2	117.7
8147.352951	349.343	-72.260	339.382	30.893	118.9	121.1
8147.404630	349.834	-73.237	341.203	36.130	118.6	119.8
8147.455556	351.968	-73.680	344.084	40.172	117.9	119.0
8147.507234	352.942	-74.568	349.326	43.116	117.4	117.9
8147.558912	353.818	-75.545	355.585	44.268	117.0	116.7
8147.610590	354.869	-76.526	1.559	43.657	116.5	115.4
8148.528009	55.267	-76.635	344.493	30.634	103.7	103.7
8148.579687	59.710	-76.957	345.193	33.834	103.3	102.5
8149.497859	38.869	-77.067	345.029	32.104	107.1	102.7
8149.548785	35.574	-77.180	346.704	36.707	107.8	102.8
8149.600463	32.324	-77.929	351.162	39.923	108.7	102.2
8150.367361	353.462	-73.138	340.386	32.110	118.1	102.5
8150.418287	351.352	-72.710	341.307	38.065	118.9	102.3
8150.469965	350.826	-71.745	344.249	43.538	119.3	102.7
8150.520891	348.704	-71.366	351.382	47.658	120.1	102.4
8150.572569	348.357	-70.400	0.306	49.840	120.5	102.7
8150.623495	349.780	-69.906	9.105	49.110	120.2	103.0
8151.392650	7.505	-75.604	343.278	31.049	114.2	94.3
8151.444329	9.346	-76.481	344.934	34.943	113.7	93.4
8151.495255	10.386	-75.845	346.407	38.955	113.5	93.7
8151.546933	12.435	-76.697	350.732	41.235	113.0	92.7
8151.597859	13.354	-76.051	355.280	43.677	112.8	93.1
8224.530382	34.286	-31.982	77.492	79.275	133.3	90.1
8224.581308	33.709	-31.382	79.458	63.159	134.0	90.5
8309.308866	90.914	-59.323	328.846	50.228	97.1	90.6
8309.359792	91.530	-60.050	339.565	56.548	96.3	90.8
8309.410718	90.922	-60.724	356.460	59.418	95.7	91.4
8309.461644	91.535	-61.441	12.490	57.452	94.9	91.6
8309.512569	90.920	-62.091	24.299	51.616	94.4	92.1
8312.437975	94.707	-53.743	7.815	66.182	102.4	90.3
8312.488900	94.198	-54.439	28.705	60.216	101.7	90.6
8313.263380	95.850	-51.620	314.180	42.858	104.4	91.7
8313.314306	96.310	-50.919	316.549	53.956	105.1	91.5
8313.365984	95.723	-50.116	327.873	64.784	105.9	91.9
8313.416910	95.880	-49.383	355.126	70.767	106.6	91.8
8313.468588	95.311	-48.588	30.108	67.652	107.5	92.1
8313.519514	95.753	-47.877	46.445	58.204	108.1	91.9

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8314.287164	96.960	-40.469	298.328	48.993	115.3	95.9
8314.338843	96.325	-41.171	302.524	63.398	114.7	96.4
8314.390521	96.847	-41.965	323.880	74.832	113.9	95.8
8314.442199	97.380	-42.765	19.757	76.545	113.0	95.3
8314.493125	96.993	-43.483	49.288	66.212	112.4	95.4
8315.268356	97.538	-44.286	304.080	44.386	111.6	98.7
8315.319282	97.924	-43.571	304.676	57.336	112.3	98.8
8315.370208	98.301	-42.856	314.082	69.805	113.0	98.9
8315.421887	97.759	-42.047	357.913	78.184	113.8	99.7
8315.473565	97.228	-41.245	48.716	71.378	114.7	100.4
8315.525243	97.857	-40.549	60.692	58.668	115.3	100.4
8443.407755	240.870	24.382	204.188	31.226	133.8	105.7
8443.458681	241.607	24.196	185.569	35.354	133.5	105.8
8443.509606	241.218	23.509	164.588	34.643	134.3	105.6
8503.294919	305.844	-63.402	328.848	35.997	134.8	110.0
8503.345845	304.356	-63.619	331.786	44.540	135.1	108.8
8503.396771	305.225	-64.289	338.905	50.559	134.4	108.4
8503.447697	306.740	-64.066	348.699	54.883	134.1	108.7
8503.499375	307.314	-63.177	2.605	57.002	134.6	109.0
8503.551053	308.126	-62.247	16.998	55.215	135.0	109.4
8503.601979	307.253	-61.588	28.048	49.177	135.8	109.0
8504.320961	310.005	-61.129	326.346	39.097	135.3	103.0
8504.371887	311.358	-60.889	329.112	47.081	135.0	103.2
8504.422813	312.295	-61.527	337.478	53.582	134.3	102.8
8504.474491	311.621	-62.459	352.182	57.239	133.9	101.6
8504.526169	311.174	-63.347	8.021	56.288	133.5	100.6
8504.577847	310.428	-64.284	19.886	51.308	133.1	99.4
8505.293067	317.229	-73.140	340.385	31.912	125.4	91.0
8505.343993	318.624	-73.781	342.069	36.571	124.7	90.5
8505.394919	319.706	-74.482	345.609	40.448	124.1	90.0
8519.299433	322.637	-54.370	317.654	36.378	139.8	93.3
8519.351111	323.602	-54.952	319.667	46.488	139.0	93.5
8519.402789	324.596	-55.527	326.784	55.508	138.2	93.7
8519.454468	325.619	-56.095	341.425	61.903	137.4	94.0
8519.506146	327.644	-56.394	1.292	63.837	136.4	93.7
8519.557824	328.738	-56.940	20.561	60.318	135.6	94.0
8519.609502	328.706	-57.797	31.955	52.420	135.1	95.0
8520.279062	325.712	-55.234	319.370	31.059	138.2	102.7
8520.330741	324.709	-54.666	318.266	42.291	139.0	103.5

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8520.382419	323.733	-54.090	321.974	53.431	139.8	104.3
8520.434097	323.861	-53.230	333.185	62.715	140.4	104.5
8520.485775	322.928	-52.648	359.009	67.588	141.2	105.4
8520.537454	322.914	-51.829	26.545	64.634	141.7	105.9
8520.589132	322.022	-51.239	42.025	55.213	142.6	106.9
8521.311123	331.924	-59.474	324.004	34.873	133.3	110.9
8521.362801	333.183	-59.982	325.946	43.502	132.5	110.7
8521.413727	334.379	-59.632	330.652	51.527	132.2	110.4
8521.465405	333.114	-59.131	342.970	58.845	133.0	111.3
8521.517083	333.214	-58.235	1.546	61.990	133.5	111.5
8521.568762	333.156	-57.387	21.386	59.486	134.0	111.9
8521.619688	332.138	-56.827	34.284	51.845	134.8	112.9
8522.290752	326.069	-51.811	314.763	33.999	140.9	122.7
8522.342431	327.030	-52.376	315.498	44.843	140.1	122.4
8522.394109	326.960	-53.228	321.969	55.388	139.6	122.9
8522.445787	327.963	-53.785	336.076	63.054	138.8	122.7
8522.497465	328.994	-54.335	359.289	65.903	138.0	122.5
8522.549144	330.053	-54.876	21.491	62.500	137.2	122.4
8522.600069	331.132	-54.563	35.285	55.450	136.9	122.3
8523.322813	331.127	-53.717	316.766	38.648	137.6	129.2
8523.374491	332.201	-54.246	319.476	48.787	136.8	128.8
8523.426169	332.081	-55.133	329.213	57.986	136.4	129.0
8523.477847	333.206	-55.652	346.308	63.458	135.6	128.7
8523.529525	333.255	-56.496	9.557	63.179	135.1	128.9
8523.580451	334.284	-57.049	25.860	57.990	134.3	128.6
8524.302442	330.097	-52.335	315.222	35.378	139.3	138.1
8524.354120	330.114	-51.490	314.632	46.866	139.8	138.5
8524.405799	329.129	-50.943	320.414	58.645	140.6	139.5
8524.457477	329.031	-50.138	337.533	67.837	141.2	140.0
8524.509155	328.085	-49.582	12.605	70.026	142.0	141.0
8524.560081	329.068	-49.295	36.782	63.700	141.7	140.8
8524.611759	330.021	-49.845	45.758	53.211	140.9	140.4
8525.334502	337.879	-59.446	324.058	38.138	131.9	137.1
8525.385428	339.035	-59.078	326.077	46.799	131.7	136.9
8525.437106	339.003	-58.199	332.822	55.578	132.2	137.4
8525.488785	337.720	-57.728	349.381	61.754	133.0	138.3
8525.540463	337.722	-56.849	11.021	62.616	133.5	138.8
8525.592141	337.589	-56.017	29.317	57.545	134.0	139.4
8526.314132	332.111	-50.048	312.127	37.808	140.3	149.0

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8526.365810	333.117	-50.578	313.813	48.999	139.5	148.2
8526.417488	333.148	-51.413	322.560	59.573	139.1	147.6
8526.469167	334.196	-51.933	341.231	66.577	138.3	146.7
8526.520845	335.269	-52.446	8.925	67.416	137.4	145.9
8526.572523	336.367	-52.950	30.002	61.703	136.6	145.0
8526.624201	336.332	-53.821	39.614	51.846	136.2	144.4
8527.295266	338.654	-54.798	318.890	30.878	134.7	143.7
8527.346944	338.519	-53.973	317.260	41.739	135.3	144.3
8527.398623	337.367	-53.486	320.694	53.200	136.1	145.0
8527.450301	337.383	-52.619	331.534	62.862	136.6	145.6
8527.501979	336.280	-52.121	357.983	68.101	137.5	146.1
8527.553657	335.201	-51.614	27.379	64.619	138.3	146.7
8527.605336	334.147	-51.100	42.507	54.903	139.2	147.2
8528.327326	336.044	-49.640	311.487	39.592	139.2	146.4
8528.379005	335.019	-49.127	312.633	52.352	140.1	146.7
8528.429931	334.852	-48.337	320.751	63.829	140.6	147.3
8528.481609	333.865	-47.815	348.700	71.982	141.5	147.5
8528.536701	335.973	-48.816	23.748	69.100	139.8	146.2
8528.588380	337.003	-49.323	41.448	60.284	139.0	145.4
8533.530312	334.418	-44.284	38.693	70.697	145.2	103.7
8533.581991	335.456	-44.775	51.985	59.404	144.4	103.6
8534.303981	338.787	-47.867	309.606	35.994	141.0	95.3
8534.354907	338.582	-47.088	308.354	48.518	141.5	95.0
8534.406586	337.572	-46.586	313.617	61.613	142.4	94.1
8534.458264	337.487	-45.770	333.507	72.135	143.0	93.9
8534.509942	336.413	-45.293	21.340	73.566	143.9	93.0
8534.561620	336.346	-44.475	48.747	64.347	144.4	92.9
8534.612546	337.230	-44.174	55.606	52.360	144.1	93.2
8548.384329	354.173	-43.735	304.259	55.091	139.4	90.7
8548.435255	353.894	-42.979	311.851	68.190	140.0	91.0
8548.486933	352.794	-42.564	351.546	77.519	140.9	92.2
8548.537859	352.477	-41.828	43.977	72.548	141.5	92.7
8548.589537	351.406	-41.401	58.914	59.052	142.4	93.9
8549.308519	351.450	-38.808	297.914	37.225	144.1	100.0
8549.360197	352.486	-39.241	296.341	50.852	143.2	100.0
8549.411875	351.980	-40.307	301.652	65.332	143.0	101.4
8549.462801	352.225	-41.068	326.864	76.661	142.4	102.1
8549.514479	353.299	-41.490	27.543	77.049	141.5	102.2
8549.565405	353.621	-42.223	52.926	65.979	141.0	103.0

Continued on next page



**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8549.617083	354.723	-42.635	58.011	53.287	140.1	103.2
8550.294630	351.167	-38.069	297.825	34.201	145.1	110.6
8550.346308	350.157	-37.626	293.933	49.439	146.0	111.7
8550.397234	349.890	-36.883	292.991	64.270	146.6	112.1
8550.448160	349.628	-36.140	304.903	78.843	147.2	112.7
8550.499838	348.598	-35.707	49.824	81.118	148.2	114.0
8550.550764	349.372	-35.396	69.801	67.651	147.8	114.0
8550.602442	350.404	-35.826	69.420	53.337	146.9	114.1
8551.327500	2.667	-49.007	310.893	37.021	132.5	115.9
8551.379178	3.926	-49.360	311.775	48.353	131.7	115.5
8551.430104	4.322	-50.102	319.099	59.156	131.1	115.7
8551.481782	5.625	-50.438	336.241	67.173	130.2	115.4
8551.532708	6.511	-50.034	6.206	70.053	129.9	115.2
8551.584387	5.208	-49.702	35.371	63.830	130.8	116.4
8552.354699	17.806	-55.191	318.777	34.877	121.8	115.5
8552.405625	17.153	-54.519	318.818	45.822	122.4	115.9
8552.456551	16.563	-53.823	324.191	56.400	123.0	116.4
8552.508229	15.059	-53.587	341.576	64.791	123.9	117.5
8552.559155	15.953	-53.145	6.702	66.873	123.6	117.2
8552.610833	14.473	-52.900	31.241	61.142	124.5	118.5
8553.378484	17.454	-53.377	316.378	40.638	122.9	121.2
8553.429410	18.050	-54.066	320.195	50.819	122.3	121.0
8553.480336	18.706	-54.732	330.436	59.334	121.7	120.8
8553.531262	19.345	-55.415	349.430	64.176	121.1	120.6
8553.582188	20.047	-56.074	11.939	63.295	120.5	120.4
8554.352500	10.500	-49.113	310.794	39.739	128.9	131.1
8554.403426	9.994	-48.424	311.383	52.170	129.5	131.7
8554.455104	8.686	-48.110	321.099	64.440	130.5	132.8
8554.506030	9.541	-47.714	346.045	71.846	130.2	132.5
8554.557708	8.253	-47.394	27.491	69.932	131.1	133.6
8554.608634	9.101	-47.003	46.184	60.809	130.8	133.5
8555.326516	13.561	-48.595	311.216	32.199	127.6	133.3
8555.378194	14.929	-48.873	310.453	43.564	126.7	132.4
8555.429120	15.461	-49.554	314.627	54.900	126.1	131.8
8555.480046	15.978	-50.247	327.524	64.438	125.5	131.2
8555.530972	16.541	-50.923	353.928	69.160	125.0	130.6
8555.582650	17.993	-51.166	22.188	66.701	124.0	129.8
8556.349549	20.090	-52.053	314.990	34.466	122.7	129.8
8556.400475	19.466	-51.397	314.352	46.215	123.3	130.4

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8556.451400	18.859	-50.737	319.100	57.777	123.9	131.0
8556.503079	17.408	-50.498	337.485	67.405	124.9	131.8
8556.554005	16.840	-49.827	10.548	69.967	125.5	132.5
8556.604931	16.316	-49.140	37.487	63.541	126.1	133.2
8557.370324	18.270	-50.075	312.023	40.812	124.8	131.6
8557.425417	20.958	-51.616	316.363	51.337	122.7	129.2
8557.476343	21.579	-52.276	326.409	60.763	122.1	128.3
8557.527269	22.244	-52.919	347.105	66.487	121.5	127.4
8557.578194	22.903	-53.573	13.400	65.724	120.9	126.6
8558.350764	26.589	-56.750	320.912	32.633	117.9	121.2
8558.401690	27.421	-57.361	321.909	42.138	117.3	120.3
8558.453368	27.365	-58.488	328.144	51.149	116.9	119.1
8558.504294	28.251	-57.983	337.884	58.460	116.7	119.1
8558.555972	28.226	-59.113	356.685	61.050	116.3	117.9
8558.606898	29.110	-58.600	14.984	59.985	116.1	118.0
8559.375301	40.058	-62.676	328.093	31.453	109.9	109.6
8559.426227	41.274	-63.196	329.068	39.218	109.3	108.7
8559.477153	42.535	-63.706	333.105	46.269	108.6	107.8
8559.528079	43.844	-64.203	340.819	51.807	108.0	106.9
8559.579757	45.903	-64.087	351.375	55.417	107.1	106.4
8578.323194	24.344	-34.632	292.585	37.066	134.9	93.4
8578.374120	24.843	-35.271	289.911	51.596	134.3	93.9
8578.425046	25.363	-35.901	291.089	66.104	133.6	94.5
8578.475972	25.878	-36.535	309.827	79.592	132.9	95.0
8578.526898	26.415	-37.160	41.401	80.463	132.2	95.6
8578.577824	26.947	-37.789	63.541	67.446	131.6	96.2
8579.344722	24.114	-30.453	284.846	43.389	137.6	101.3
8579.395648	24.588	-31.094	281.090	58.597	137.0	101.7
8579.446574	25.069	-31.735	280.121	73.867	136.3	102.2
8579.498252	24.824	-32.698	2.728	87.539	136.0	103.4
8579.549178	25.331	-33.329	73.915	74.399	135.4	103.9
8593.335150	34.098	-29.536	283.516	43.457	136.3	90.4
8593.386829	34.252	-28.634	276.137	58.984	136.7	90.5
8593.437755	33.728	-28.014	265.552	75.166	137.5	90.1
8637.296354	68.632	-18.027	271.641	35.046	136.8	90.2
8637.347280	68.695	-18.786	262.553	51.157	136.2	91.0
8637.398206	68.630	-19.568	247.687	66.942	135.6	91.9
8637.449132	68.566	-20.351	201.783	79.420	135.1	92.8
8637.500810	69.362	-20.976	123.745	74.587	134.1	92.9

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8638.318634	68.824	-15.682	264.269	41.656	138.9	98.6
8638.370312	68.176	-15.027	249.043	57.559	139.8	99.8
8638.421238	68.887	-14.901	222.104	70.230	139.5	99.7
8638.472917	69.538	-15.557	163.545	74.765	138.6	99.9
8638.523843	69.477	-16.337	118.467	64.890	138.1	100.7
8789.400081	218.921	16.120	208.057	38.862	147.9	137.2
8789.451007	219.603	15.871	186.267	43.666	147.7	137.3
8789.501933	219.720	16.640	162.594	41.335	147.1	137.6
8789.553611	219.554	17.512	142.501	32.973	146.6	138.1
8790.369931	221.011	19.417	218.116	30.323	144.5	141.5
8790.420856	220.887	18.650	199.436	38.772	145.2	142.5
8790.471782	220.360	18.029	176.157	41.642	146.0	143.8
8790.522708	220.241	17.262	153.535	38.173	146.6	144.7
8791.392963	224.573	23.008	210.668	30.060	139.9	140.2
8791.444641	224.720	22.146	191.751	36.713	140.5	141.0
8791.496319	224.164	21.531	169.361	37.500	141.3	141.9
8791.547998	223.612	20.916	148.533	32.071	142.1	142.8
8792.419757	224.312	20.670	200.720	36.306	142.1	141.2
8792.471435	224.866	21.285	179.573	38.473	141.3	140.4
8792.523113	225.425	21.899	159.008	34.926	140.5	139.5
8793.396377	223.825	15.193	211.130	38.711	146.7	141.4
8793.448056	223.677	16.049	187.816	43.362	146.2	140.1
8793.498981	223.803	16.811	164.141	41.468	145.6	138.9
8793.550660	224.345	17.430	144.290	34.028	144.8	138.0
8794.374502	225.168	17.955	217.758	32.296	144.2	131.3
8794.425428	225.037	17.195	198.286	40.566	144.8	131.4
8794.477106	224.492	16.575	173.771	42.961	145.6	131.2
8794.528032	224.364	15.814	150.824	38.784	146.3	131.2
8795.401296	228.823	21.557	208.865	32.505	139.5	120.9
8795.452975	228.954	20.712	188.904	38.548	140.0	121.1
8795.504653	228.381	20.097	165.824	38.399	140.9	120.7
8795.556331	227.813	19.481	145.049	32.009	141.7	120.3
8796.377917	228.513	19.253	217.044	31.141	141.7	113.5
8796.429595	229.084	19.869	197.978	37.847	140.9	112.9
8796.481273	229.660	20.485	176.302	39.189	140.1	112.3
8796.532951	229.532	21.327	155.188	34.321	139.6	111.0
8797.355289	227.940	15.439	225.586	30.432	145.2	105.9
8797.406968	228.499	16.060	207.198	39.234	144.4	105.5
8797.457894	228.636	16.814	184.402	42.833	143.7	104.6

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8797.509572	229.202	17.434	161.479	40.263	142.9	104.0
8797.561250	229.772	18.052	142.455	32.299	142.1	103.4
8798.388507	228.495	14.466	214.369	38.141	145.9	96.4
8798.440185	228.625	13.628	192.162	45.326	146.4	96.3
8798.491111	229.312	13.416	167.559	45.504	146.1	96.4
8798.542789	229.185	14.251	145.046	38.120	145.6	95.3
8815.328542	243.524	8.199	237.551	30.600	147.1	97.6
8815.379468	243.370	7.456	220.849	43.331	147.8	98.3
8815.430394	243.217	6.712	196.415	51.789	148.4	99.0
8815.482072	242.373	6.112	164.572	52.555	149.5	100.3
8815.532998	242.222	5.368	138.362	45.484	150.1	100.8
8815.583924	242.071	4.624	119.922	33.566	150.8	101.2
8816.349317	243.604	5.085	233.169	38.751	149.7	109.6
8816.400243	243.452	4.342	212.778	50.350	150.4	110.5
8816.451169	243.299	3.598	183.106	56.121	151.0	111.3
8816.502095	243.990	3.462	152.865	53.006	150.7	111.2
8816.553021	244.143	4.205	130.511	42.513	150.1	111.6
8817.319167	244.992	2.498	244.810	32.125	151.0	120.1
8817.370845	245.530	1.627	229.532	45.910	151.2	120.5
8817.421771	246.222	1.503	205.784	55.459	150.8	120.6
8817.473449	245.685	2.370	170.955	57.054	150.6	121.7
8817.525127	245.372	3.200	141.498	49.521	150.4	122.6
8817.576053	245.527	3.943	122.866	37.215	149.8	122.8
8818.341447	246.219	3.817	237.409	37.166	149.8	130.9
8818.392373	246.064	3.073	218.445	49.694	150.4	132.0
8818.444051	246.378	2.246	189.991	57.105	150.7	132.7
8818.495729	246.915	1.382	156.756	56.136	150.9	133.0
8818.546655	247.071	2.126	132.074	46.207	150.4	133.2
8818.598333	246.756	2.951	115.746	31.989	150.1	133.8
8819.363727	247.764	4.318	230.013	42.022	148.8	139.9
8819.414653	247.606	3.575	207.527	52.780	149.5	141.1
8819.465579	247.449	2.831	175.843	56.857	150.1	142.2
8819.517257	247.765	2.008	144.940	52.228	150.5	142.9
8819.568935	248.143	2.716	124.591	40.376	149.7	142.6
8820.338495	250.707	4.620	239.640	33.986	147.0	145.0
8820.389421	251.405	4.518	222.684	46.007	146.6	145.1
8820.441100	250.868	5.363	195.123	53.368	146.4	145.3
8820.492025	251.566	5.262	165.336	53.535	146.0	145.3
8820.543704	251.029	6.106	138.979	44.888	145.9	145.2

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8820.594630	250.331	6.211	120.916	32.116	146.3	145.7
8821.363785	252.590	6.651	230.718	38.401	144.8	146.6
8821.414711	252.427	5.907	210.057	49.483	145.4	147.5
8821.465637	252.265	5.164	180.943	54.592	146.1	148.3
8821.520729	252.753	7.394	151.242	48.242	144.2	146.0
8821.572407	252.216	8.234	130.248	36.958	144.0	145.3
8822.340810	250.972	12.251	231.088	30.480	142.1	140.0
8822.391736	251.028	11.475	213.782	41.844	142.7	140.6
8822.443414	251.570	10.627	190.270	48.598	143.1	141.2
8822.495093	252.328	9.751	163.458	48.632	143.3	141.9
8822.546771	252.867	8.910	139.775	41.881	143.6	142.5
8823.365347	253.148	11.168	225.162	36.233	142.1	136.6
8823.416273	253.098	11.940	204.050	44.677	141.5	135.5
8823.467199	253.047	12.712	178.276	47.032	141.0	134.3
8823.518125	253.215	13.454	153.998	42.472	140.3	133.3
8823.573218	253.831	14.899	134.900	31.476	138.8	131.7
8824.399375	255.220	15.482	210.694	38.563	137.9	127.1
8824.450301	255.264	14.713	188.345	44.661	138.5	127.2
8824.501979	254.593	14.034	162.084	43.937	139.4	126.8
8824.552905	254.639	13.264	140.429	36.950	140.0	126.9
8902.314190	333.742	-39.522	297.580	43.223	150.2	93.8
8902.365868	334.704	-40.026	297.951	56.807	149.3	93.9
8902.416794	334.836	-40.812	307.669	70.044	148.7	94.7
8902.468472	335.824	-41.308	347.544	78.626	147.9	94.7
8902.519398	335.972	-42.091	41.350	73.111	147.3	95.4
8902.570324	336.124	-42.875	55.200	60.729	146.8	96.1
8902.622002	337.061	-43.392	57.254	47.867	145.9	96.1
8903.287049	332.989	-34.828	293.167	36.034	153.8	104.9
8903.338727	333.587	-33.802	287.781	50.449	153.9	104.7
8903.389653	333.400	-33.044	284.039	65.827	154.5	105.1
8903.441331	333.986	-32.020	284.114	81.076	154.6	104.8
8903.493009	333.114	-31.502	78.654	81.915	155.5	105.7
8903.548102	334.175	-32.776	76.625	65.951	154.1	105.8
8903.599028	334.368	-33.532	72.740	50.852	153.7	106.4
8904.315752	339.654	-42.482	301.938	41.029	145.6	115.0
8904.367431	338.702	-41.980	301.248	55.516	146.5	116.1
8904.418356	338.525	-41.203	307.632	69.089	147.1	116.6
8904.469282	338.353	-40.427	345.287	79.422	147.7	117.0
8904.520961	337.355	-39.943	49.235	73.655	148.6	118.0

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8904.571887	337.200	-39.164	63.031	60.330	149.2	118.3
8904.623565	336.228	-38.672	63.916	45.090	150.1	119.2
8905.287859	335.345	-34.014	292.220	35.751	153.6	127.5
8905.338785	335.472	-34.795	289.312	50.667	153.1	128.3
8905.389711	335.601	-35.576	290.178	65.578	152.6	128.9
8905.440637	335.813	-36.329	307.951	79.447	152.1	129.4
8905.491562	335.949	-37.110	41.682	80.487	151.6	129.9
8905.543241	336.899	-37.606	63.956	67.582	150.7	129.7
8905.594167	337.048	-38.385	65.128	53.225	150.2	130.0
8906.311644	337.707	-37.319	294.756	42.179	150.7	137.7
8906.363322	336.754	-36.827	292.103	57.713	151.6	139.1
8906.414248	336.611	-36.048	294.664	72.579	152.2	139.8
8906.465174	336.394	-35.297	350.250	84.865	152.8	140.4
8906.516100	336.258	-34.518	69.239	74.673	153.3	140.9
8906.567025	336.124	-33.739	73.910	59.444	153.9	141.4
8906.618704	336.688	-32.712	72.241	44.329	154.0	141.2
8907.282998	339.656	-38.286	298.265	33.636	149.3	145.5
8907.333924	339.834	-39.058	296.292	47.770	148.7	145.9
8907.385602	340.840	-39.530	298.017	61.379	147.8	145.6
8907.436528	341.034	-40.299	313.471	74.155	147.3	145.7
8907.487454	341.233	-41.069	12.307	78.880	146.7	145.8
8907.539132	342.199	-41.558	50.290	69.779	145.9	145.3
8907.590058	343.038	-41.246	59.702	57.287	145.6	145.0
8908.306782	338.003	-31.410	287.051	40.883	154.6	157.4
8908.357708	337.790	-30.662	280.937	56.310	155.2	158.4
8908.408634	338.542	-30.385	275.951	71.337	154.7	158.4
8908.459560	338.760	-31.132	287.448	86.874	154.3	158.5
8908.510486	338.980	-31.878	78.818	77.330	153.8	158.4
8908.562164	338.440	-32.905	75.818	61.141	153.7	158.6
8908.613090	338.594	-33.678	71.351	46.126	153.2	158.4
8909.278889	343.720	-40.144	301.223	31.421	146.4	153.0
8909.329815	343.500	-39.382	297.060	45.343	147.0	153.9
8909.380741	343.286	-38.620	295.755	59.769	147.6	154.8
8909.432419	342.272	-38.159	305.491	74.746	148.6	155.8
8909.483345	342.074	-37.394	17.089	82.486	149.2	156.7
8909.535023	341.085	-36.925	64.284	70.222	150.1	157.5
8909.585949	340.901	-36.157	69.049	55.457	150.7	158.2
8910.301169	340.304	-33.878	290.816	39.555	152.7	158.5
8910.352095	340.545	-34.621	288.379	54.460	152.1	157.5

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8910.403021	340.721	-35.389	290.726	69.333	151.6	156.6
8910.454699	341.690	-35.863	318.913	82.348	150.7	155.9
8910.505625	341.880	-36.629	54.246	78.140	150.2	154.9
8910.557303	342.872	-37.094	66.459	64.499	149.3	154.2
8910.608229	343.077	-37.857	65.780	50.079	148.7	153.2
8911.274780	341.504	-35.097	294.826	32.115	151.6	151.3
8911.325706	341.321	-34.331	289.440	46.806	152.2	151.6
8911.376632	341.075	-33.590	285.519	62.091	152.8	151.8
8911.427558	340.900	-32.824	285.703	77.618	153.4	152.0
8911.478484	340.727	-32.058	62.804	85.869	153.9	152.2
8911.529410	341.483	-31.772	79.697	71.145	153.6	152.2
8911.580336	341.662	-32.536	75.543	55.835	153.1	151.2
8912.301227	344.598	-33.916	291.450	37.709	150.6	144.7
8912.352905	345.580	-34.373	288.349	52.162	149.7	144.1
8912.403831	345.801	-35.127	289.357	67.076	149.2	143.0
8912.455509	346.805	-35.575	307.474	80.724	148.3	142.4
8912.506435	347.580	-35.268	52.803	81.226	147.9	142.5
8912.558113	346.574	-34.824	71.611	65.854	148.9	142.0
8912.609039	346.348	-34.072	71.805	50.512	149.4	142.1
8913.331435	348.393	-32.416	287.450	43.955	149.1	137.8
8913.386528	0.489	-49.054	311.793	50.269	133.0	125.6
8913.437454	1.372	-48.668	318.077	61.219	132.7	125.7
8913.489132	0.155	-48.294	341.159	70.605	133.6	125.5
8913.540058	359.773	-47.559	20.202	71.207	134.2	125.7
8913.590984	359.459	-46.799	44.777	62.673	134.8	125.9
8914.309965	356.977	-43.435	304.459	34.262	138.3	122.9
8914.360891	356.669	-42.691	301.701	47.753	138.9	122.9
8914.412569	355.548	-42.291	304.375	62.230	139.8	122.3
8914.463495	355.261	-41.542	321.367	74.777	140.4	122.2
8914.514421	354.929	-40.814	23.302	78.340	141.0	122.1
8914.565347	354.656	-40.063	57.243	67.630	141.6	122.1
8914.617025	353.590	-39.645	63.033	52.777	142.5	121.4
8915.331493	358.129	-43.823	303.891	39.760	137.7	113.9
8915.383171	359.298	-44.202	304.433	52.312	136.8	113.5
8915.434097	359.595	-44.959	312.635	64.478	136.3	112.4
8915.485023	359.951	-45.694	338.912	73.154	135.7	111.4
8915.536701	1.170	-46.055	21.102	72.748	134.8	111.0
8915.588380	2.358	-46.429	44.151	63.978	133.9	110.6
8916.306609	358.308	-41.993	302.862	33.556	138.9	106.2

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8916.358287	357.183	-41.600	300.067	48.125	139.8	105.3
8916.409213	356.882	-40.858	301.172	62.155	140.4	105.0
8916.460139	356.541	-40.135	316.246	75.409	141.1	104.7
8916.511065	356.255	-39.392	24.721	79.802	141.6	104.3
8916.562743	355.183	-38.980	60.258	67.571	142.6	103.3
8916.613669	354.868	-38.253	65.347	53.174	143.2	102.9
8917.328889	1.639	-44.958	305.602	38.131	135.7	96.0
8917.380567	2.860	-45.311	305.899	50.410	134.8	95.8
8917.432245	4.053	-45.677	312.023	62.163	133.9	95.5
8917.483171	4.464	-46.392	333.720	71.432	133.3	94.6
8917.534850	5.693	-46.742	13.243	72.931	132.4	94.4
8917.586528	6.984	-47.063	40.041	65.567	131.5	94.2
9082.300949	127.868	-22.104	265.932	54.812	139.1	109.1
9082.351875	127.543	-22.801	251.698	70.955	138.4	109.1
9082.403553	126.940	-23.413	182.924	83.164	137.8	109.5
9082.455231	127.055	-24.247	106.010	72.803	137.0	109.2
9082.506157	126.721	-24.943	90.102	57.033	136.3	109.4
9082.557836	126.835	-25.778	80.934	41.342	135.5	109.3
9083.276817	129.528	-17.834	265.303	45.023	143.6	120.0
9083.328495	130.101	-17.215	251.033	60.023	144.2	120.4
9083.380174	129.975	-16.379	218.076	72.943	145.1	121.5
9083.431100	130.114	-15.626	153.530	73.896	145.8	122.4
9083.482778	129.988	-14.792	116.929	61.441	146.7	123.5
9083.533704	130.679	-15.005	100.759	47.069	146.5	123.5
9084.305868	128.297	-26.242	271.345	59.005	135.4	121.9
9084.356794	127.967	-26.939	261.034	75.314	134.7	121.6
9084.407720	128.702	-27.178	158.771	86.722	134.5	121.4
9084.458646	129.028	-26.480	97.669	72.550	135.2	122.3
9084.510324	128.906	-25.636	88.274	56.124	136.1	123.5
9084.561250	129.227	-24.936	81.668	40.374	136.8	124.4
9085.281736	132.060	-15.439	261.536	45.001	146.5	137.9
9085.333414	132.194	-16.281	247.713	60.860	145.7	137.3
9085.384340	132.058	-17.036	215.356	74.216	145.0	136.9
9085.436019	132.192	-17.880	144.285	75.149	144.1	136.3
9085.487697	131.627	-18.498	108.076	61.810	143.5	136.2
9085.538623	131.487	-19.253	93.383	46.427	142.8	135.9
9086.258356	130.363	-26.116	278.299	44.135	136.1	132.7
9086.309282	130.675	-25.414	269.382	59.486	136.8	133.5
9086.360961	130.547	-24.565	251.181	75.199	137.7	134.5

Continued on next page



**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9086.412639	131.137	-23.956	158.835	83.289	138.3	135.4
9086.463565	131.439	-23.252	105.753	70.253	139.0	136.3
9086.515243	131.308	-22.404	92.915	53.914	139.9	137.4
9087.286655	132.888	-19.713	265.425	49.364	142.8	141.4
9087.338333	133.025	-20.563	252.695	65.437	142.0	140.7
9087.390012	132.458	-21.177	211.534	79.517	141.4	140.0
9087.441690	132.594	-22.028	122.908	75.994	140.5	139.4
9087.493368	132.019	-22.640	97.258	60.558	139.9	138.7
9087.545046	132.153	-23.491	85.951	44.883	139.1	138.1
9088.265532	133.728	-20.801	270.866	43.334	142.0	139.0
9088.317211	133.588	-19.948	258.132	59.136	142.8	139.4
9088.368137	133.725	-19.189	232.228	73.156	143.6	139.8
9088.419815	134.281	-18.572	161.523	77.762	144.3	140.6
9088.471493	134.139	-17.721	115.825	65.724	145.1	140.9
9088.522419	134.271	-16.962	100.001	50.310	145.9	141.4
9089.297998	134.575	-21.899	266.117	53.984	141.2	133.5
9089.349676	135.134	-21.285	249.710	69.023	141.8	134.0
9089.401354	134.988	-20.426	192.583	79.965	142.7	134.0
9089.452280	135.123	-19.666	122.609	72.136	143.5	134.2
9089.503958	135.673	-19.049	102.012	57.258	144.1	134.8
9089.555637	135.525	-18.191	91.463	40.772	145.0	134.8
9090.277280	137.730	-18.154	266.352	44.181	145.2	129.4
9090.328206	137.604	-18.918	254.676	60.283	144.4	128.7
9090.379884	137.760	-19.785	228.451	75.026	143.6	128.3
9090.430810	137.219	-20.402	145.425	78.277	143.0	127.4
9090.482488	137.787	-21.418	105.390	65.770	142.0	127.5
9090.533414	137.917	-20.653	93.353	49.901	142.8	127.5
9091.259225	138.989	-19.417	271.416	38.834	144.2	120.6
9091.310150	139.113	-18.650	259.869	54.227	145.0	120.1
9091.361076	139.640	-18.029	239.961	68.443	145.6	120.1
9091.412755	139.804	-18.902	185.047	78.621	144.7	119.9
9091.463681	139.682	-19.670	119.778	71.009	144.0	119.4
9091.515359	139.847	-20.545	98.139	56.271	143.1	119.3
9091.567037	140.013	-21.422	86.762	40.672	142.3	119.2
9092.286771	139.296	-26.066	275.385	50.328	137.9	111.0
9092.338449	139.133	-25.183	264.106	66.302	138.8	110.2
9092.389375	139.680	-24.569	234.678	80.650	139.4	110.1
9092.440301	140.221	-23.955	124.495	79.498	140.0	110.0
9092.491979	140.054	-23.072	99.054	63.804	140.9	109.3

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9092.542905	140.588	-22.455	89.360	48.215	141.5	109.3
9093.260382	140.011	-26.340	279.355	42.481	137.9	102.0
9093.312060	140.484	-27.349	273.878	58.355	136.9	102.0
9093.363738	140.653	-28.242	266.986	74.509	136.0	101.9
9093.415417	140.822	-29.139	145.560	88.667	135.2	101.9
9093.466343	140.576	-29.872	86.322	73.145	134.4	101.6
9093.517269	140.009	-30.479	79.610	56.992	133.9	101.0
9093.568947	140.492	-31.507	73.180	41.951	132.8	101.5
9094.287176	141.760	-20.445	267.452	48.115	144.1	90.0
9112.273727	155.599	-23.581	272.324	48.431	147.1	115.9
9112.324653	156.293	-23.879	262.919	63.787	146.9	115.7
9112.375579	156.987	-24.178	240.714	78.534	146.6	115.5
9112.427257	156.217	-24.685	124.457	80.659	146.1	116.1
9112.478183	155.521	-24.385	96.771	64.899	146.4	117.4
9112.529109	155.068	-25.029	85.579	48.854	145.7	117.8
9112.580035	155.767	-25.330	78.150	33.843	145.5	117.8
9113.245081	154.204	-28.866	282.654	43.211	142.0	122.5
9113.296759	153.009	-29.192	276.790	60.182	141.5	123.1
9113.347685	153.726	-29.504	271.325	75.446	141.3	123.0
9113.398611	153.242	-30.141	92.636	88.191	140.7	123.0
9113.449537	153.964	-30.457	84.254	72.976	140.5	123.0
9113.501215	152.752	-30.775	78.776	56.044	140.0	123.7
9113.552141	153.477	-31.093	73.528	41.301	139.8	123.7
9114.277951	155.935	-27.086	276.218	52.209	144.2	133.3
9114.329630	156.187	-28.040	270.388	68.296	143.3	132.7
9114.380556	156.899	-28.352	254.799	83.529	143.1	132.7
9114.432234	156.643	-27.395	102.467	79.273	144.0	134.1
9114.483160	157.351	-27.705	88.224	64.151	143.8	134.1
9114.534838	157.094	-26.748	82.306	47.636	144.8	135.6
9115.255324	160.425	-21.476	273.493	40.335	150.4	146.4
9115.307002	159.684	-21.992	263.960	57.262	149.9	146.3
9115.358681	159.626	-22.804	247.538	73.306	149.1	145.9
9115.410359	158.875	-23.317	160.394	82.679	148.6	145.8
9115.462037	158.811	-24.129	102.669	70.055	147.8	145.4
9115.512963	158.379	-24.782	88.741	54.113	147.1	145.1
9115.564641	158.311	-25.593	79.817	38.295	146.3	144.6
9116.231944	160.315	-23.104	278.590	34.635	149.1	150.2
9116.283623	160.371	-22.290	269.116	50.352	150.0	151.2
9116.335301	161.110	-21.773	255.899	65.489	150.5	152.1

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9116.386979	161.161	-20.957	216.084	78.745	151.4	153.1
9116.438657	161.210	-20.143	131.448	75.496	152.2	154.1
9116.489583	161.890	-20.437	103.531	61.917	151.9	154.2
9116.541262	161.844	-21.254	90.105	46.216	151.1	153.6
9117.260995	159.920	-27.990	280.137	46.337	144.6	145.9
9117.312674	159.986	-27.172	271.647	62.088	145.4	146.5
9117.363600	160.414	-26.515	256.287	77.328	146.1	147.3
9117.415278	160.475	-25.698	135.730	83.778	146.9	147.8
9117.466204	160.895	-25.039	98.922	69.201	147.6	148.5
9117.517882	160.951	-24.222	89.068	52.921	148.5	149.0
9117.569560	161.697	-23.707	81.914	37.336	149.0	149.7
9118.239873	161.117	-26.825	281.393	39.345	146.1	142.3
9118.290799	160.693	-27.484	275.404	55.596	145.4	141.5
9118.342477	160.630	-28.304	269.012	71.922	144.6	141.0
9118.394155	160.912	-29.279	244.454	87.815	143.7	140.7
9118.445081	160.477	-29.937	87.035	75.683	143.0	140.0
9118.496007	161.197	-30.258	81.152	60.552	142.8	140.3
9118.546933	161.628	-29.598	77.033	45.188	143.5	140.7
9119.268171	164.547	-23.276	273.753	44.829	150.2	136.5
9119.319850	163.818	-23.797	264.378	61.733	149.6	135.4
9119.371528	163.776	-24.621	245.721	77.727	148.8	134.9
9119.423206	163.036	-25.138	127.418	81.915	148.3	134.0
9119.474884	162.989	-25.961	94.315	66.903	147.5	133.6
9119.525810	162.579	-26.626	83.950	50.875	146.8	133.0
9119.577488	162.527	-27.449	76.020	35.222	146.0	132.6
9120.244792	164.471	-24.927	278.929	39.059	148.9	125.4
9120.296470	164.510	-24.101	269.629	54.807	149.7	124.8
9120.348148	165.238	-23.580	255.681	69.976	150.3	124.8
9120.399826	165.271	-22.753	197.866	82.160	151.1	124.3
9120.451505	165.303	-21.927	116.282	73.408	152.0	123.7
9120.502431	165.988	-22.228	96.765	58.836	151.7	124.0
9120.554109	165.959	-23.056	85.637	43.016	150.9	123.8
9121.273843	164.199	-29.895	281.542	50.451	144.2	114.5
9121.325521	164.247	-29.064	274.109	66.203	145.1	113.8
9121.376447	164.653	-28.395	259.698	81.570	145.8	113.5
9121.428125	164.696	-27.565	106.166	81.537	146.7	112.8
9121.479051	165.093	-26.893	91.246	65.969	147.4	112.6
9121.530729	165.131	-26.064	84.318	49.688	148.2	112.0
9121.582407	165.866	-25.544	78.050	34.232	148.8	112.0

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9122.252720	165.364	-28.712	282.296	43.564	145.8	103.9
9122.303646	164.963	-29.384	277.357	59.705	145.1	103.3
9122.355324	164.918	-30.217	274.037	75.893	144.3	103.0
9122.407002	165.232	-31.212	60.009	88.026	143.4	103.3
9122.457928	164.820	-31.884	79.378	72.139	142.7	102.8
9122.508854	165.550	-32.213	76.448	57.237	142.4	103.2
9122.559780	165.958	-31.539	73.191	42.117	143.1	102.9
9123.229340	168.724	-24.276	280.895	32.981	150.7	93.1
9123.281019	168.707	-25.113	274.364	49.240	149.9	92.8
9123.332697	167.989	-25.640	265.443	66.116	149.4	91.8
9123.384375	167.967	-26.476	243.544	82.083	148.5	91.7
9123.436053	167.238	-26.999	105.038	79.432	148.0	90.9
9123.487731	167.209	-27.835	87.644	63.607	147.2	90.9
9123.538657	166.825	-28.513	79.598	47.669	146.5	90.6
9123.590336	166.791	-29.349	72.365	32.258	145.7	90.7
9198.214028	239.353	-70.429	337.610	36.029	129.9	90.3
9198.264954	241.342	-70.636	340.158	41.104	129.7	90.2
9198.316632	241.821	-71.471	346.054	45.201	128.9	90.3
9198.368310	240.172	-72.100	354.558	47.645	128.3	91.2
9198.419236	239.989	-72.876	2.842	47.224	127.5	91.5
9198.474329	238.536	-74.330	10.074	43.719	126.1	92.0
9198.529421	236.794	-75.771	13.875	38.755	124.6	92.4
9198.584514	233.858	-77.115	14.733	33.321	123.2	93.0
9201.350058	260.926	16.423	221.945	31.650	138.2	118.4
9201.401736	260.694	17.201	201.904	39.654	137.7	118.7
9201.452662	260.666	17.963	178.834	41.789	137.0	118.9
9201.503588	260.638	18.724	156.691	37.620	136.3	119.2
9202.376100	261.676	15.608	213.075	37.410	138.9	126.7
9202.427025	261.701	14.847	191.345	44.194	139.6	127.7
9202.477951	261.726	14.086	166.349	44.645	140.3	128.7
9202.528877	262.445	14.038	144.992	38.342	140.0	128.8
9203.400637	263.089	21.579	200.975	35.270	133.3	127.0
9203.451563	263.109	20.820	179.946	38.939	133.9	128.0
9203.502488	263.333	20.049	158.515	36.747	134.6	128.9
9204.370486	264.074	20.007	212.898	32.432	134.5	130.7
9204.421412	263.854	20.776	192.599	37.974	133.9	130.1
9204.472338	263.835	21.535	170.816	37.684	133.3	129.5
9204.524016	264.364	22.263	151.536	31.885	132.4	128.9
9205.341840	264.602	13.920	226.179	31.988	140.0	136.4

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9205.392766	265.322	13.889	208.153	41.287	139.8	136.5
9205.443692	265.308	14.648	184.140	45.017	139.1	135.8
9205.494618	265.294	15.406	159.879	42.011	138.5	135.1
9205.545544	265.280	16.164	140.278	33.336	137.8	134.3
9206.364120	266.296	19.911	215.372	31.279	134.3	127.8
9206.415046	266.307	19.154	196.322	38.954	135.0	128.4
9206.466725	265.776	18.416	172.688	41.023	135.9	128.8
9206.517650	265.789	17.659	150.853	36.742	136.5	129.4
9207.384896	267.369	22.149	206.951	32.628	132.1	121.4
9207.435822	267.165	22.910	186.598	36.563	131.5	120.6
9207.487500	267.719	23.652	166.192	34.819	130.6	120.3
9208.355498	267.992	16.842	220.015	32.331	136.9	118.9
9208.406424	267.986	17.599	200.212	39.682	136.3	118.3
9208.457350	267.980	18.356	177.228	41.358	135.6	117.7
9208.509028	268.523	19.103	155.784	36.926	134.7	117.5
9209.378530	268.911	16.073	212.217	37.256	137.5	111.9
9209.429456	268.914	15.316	190.487	43.824	138.2	112.0
9209.480382	268.917	14.559	165.716	44.061	138.9	112.1
9209.531308	269.639	14.554	144.713	37.609	138.6	112.5
9210.400810	270.559	20.607	201.929	36.024	133.1	103.6
9210.451736	270.741	19.852	180.765	39.903	133.7	103.8
9210.502662	270.739	19.096	158.608	37.785	134.4	103.8
9211.370660	271.879	22.133	212.452	30.197	131.5	96.8
9211.421586	271.701	22.886	193.059	35.741	130.9	96.4
9211.473264	272.281	23.652	172.556	35.737	130.0	96.6
9211.528356	272.055	21.381	150.307	32.346	132.1	96.5
9227.574190	311.743	-73.116	7.948	45.946	125.2	90.7
9227.625116	310.647	-72.436	15.014	43.102	125.9	91.2
9228.290914	303.071	-67.764	334.054	34.077	131.2	98.3
9228.342593	305.486	-68.251	336.081	39.942	130.2	98.1
9228.393519	306.569	-68.910	340.967	45.153	129.5	98.5
9228.444444	307.350	-69.612	348.541	48.668	128.8	99.0
9228.495370	308.184	-70.311	357.612	49.848	128.1	99.5
9228.546296	309.076	-71.005	6.319	48.615	127.4	100.1
9228.597975	311.640	-71.465	12.790	45.864	126.5	100.0
9262.394294	309.752	17.107	191.729	41.845	142.9	139.8
9262.445972	310.322	16.487	168.306	42.481	143.5	140.8
9262.496898	310.807	15.841	146.944	37.151	144.0	141.8
9263.371667	308.622	23.138	197.011	34.669	137.3	136.8

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9263.422593	309.340	23.368	177.155	36.338	137.1	137.0
9263.474271	309.297	22.553	156.421	33.417	137.9	137.8
9264.348287	312.405	17.149	211.786	36.220	143.2	143.6
9264.399965	311.843	17.767	189.156	41.495	142.7	142.7
9264.451644	311.278	18.385	165.033	40.013	142.1	141.9
9264.502569	310.786	19.028	144.871	32.449	141.6	140.9
9265.327917	313.098	17.375	218.614	32.507	143.2	140.3
9265.378843	313.579	16.732	199.810	40.693	143.8	140.9
9265.430521	313.440	15.885	175.696	43.770	144.7	141.1
9265.481447	313.916	15.240	152.914	40.171	145.3	141.5
9265.533125	313.776	14.394	133.443	31.096	146.1	141.5
9266.356215	312.153	23.491	203.290	32.502	137.6	130.8
9266.407894	312.019	22.640	182.929	37.063	138.5	130.8
9266.459572	312.594	22.028	162.197	35.637	139.1	131.3
9267.337755	313.728	20.801	211.832	32.032	140.5	126.0
9267.389433	313.163	21.415	191.006	37.567	139.9	125.2
9267.441111	313.302	22.268	169.402	36.758	139.1	124.9
9267.492789	312.730	22.880	149.515	30.292	138.5	124.0
9268.316632	316.667	16.167	223.698	30.814	145.0	120.5
9268.368310	316.886	17.049	204.536	39.040	144.1	120.5
9268.419988	317.038	17.910	181.550	41.835	143.3	120.4
9268.470914	316.565	18.552	158.511	38.335	142.7	119.7
9269.347187	316.171	20.030	209.367	34.002	141.7	111.0
9269.398866	316.716	19.413	189.262	39.820	142.2	111.2
9269.450544	317.257	18.796	166.898	39.917	142.8	111.3
9269.501470	317.730	18.154	146.687	34.372	143.4	111.2
9270.375486	316.437	24.999	195.921	32.990	137.1	103.2
9270.427164	316.286	24.129	175.404	35.488	138.0	102.6
9270.478090	316.844	23.517	156.113	32.270	138.5	102.6
9271.349097	317.945	22.289	207.294	32.337	140.0	94.5
9271.400023	317.397	22.903	186.682	36.562	139.4	94.0
9271.451701	317.553	23.776	165.874	34.631	138.6	94.3
9286.374329	332.276	23.840	196.804	33.988	142.8	91.2
9286.425255	332.743	23.203	176.885	36.493	143.4	92.0
9286.476181	333.176	22.551	156.955	33.596	144.0	92.7
9288.368715	333.933	25.381	198.060	32.068	141.9	111.6
9288.420394	333.671	24.431	177.754	35.294	142.9	113.2
9288.471319	334.131	23.790	158.242	32.682	143.5	114.2
9290.414780	335.831	27.885	180.211	31.874	140.1	129.4

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9290.465706	336.289	27.240	161.774	30.074	140.7	130.4
9293.303993	356.145	-24.152	277.905	38.977	155.1	158.8
9293.354919	356.447	-24.862	271.040	54.770	154.5	157.8
9293.405845	357.147	-24.563	258.901	69.879	154.1	157.8
9293.457523	357.539	-23.555	205.991	82.614	154.3	158.5
9293.509201	357.927	-22.550	116.760	74.738	154.4	159.2
9293.560127	358.233	-23.256	95.475	59.983	153.9	158.3
9294.278356	358.740	-26.401	284.680	30.571	152.4	150.8
9294.330035	359.149	-25.382	276.486	45.711	152.6	151.6
9294.380961	359.447	-26.096	269.616	61.509	152.1	150.5
9294.432639	359.062	-27.106	257.886	78.142	151.9	149.1
9294.483565	359.770	-26.799	129.098	84.672	151.5	149.1
9294.535243	359.363	-27.820	90.756	69.180	151.3	147.7
9294.586169	358.648	-28.129	82.266	52.800	151.7	146.8
9295.304398	1.015	-29.644	285.576	38.394	149.4	140.0
9295.356076	0.609	-30.669	281.460	54.649	149.1	138.5
9295.407002	359.879	-30.986	277.901	70.971	149.4	137.6
9295.458681	0.932	-31.380	287.478	85.948	148.5	137.1
9295.509606	1.260	-32.089	77.456	78.286	147.9	136.1
9295.560532	1.593	-32.798	76.301	63.059	147.2	135.1
9296.330093	0.477	-26.492	277.754	46.615	152.0	133.0
9296.381019	0.151	-25.791	268.304	62.536	152.6	133.0
9296.431944	359.850	-25.079	247.218	78.105	153.3	133.0
9296.482870	359.552	-24.367	133.623	81.722	153.9	132.9
9296.533796	359.237	-23.662	100.211	66.593	154.5	132.7
9296.584722	358.926	-22.958	89.715	50.266	155.1	132.5
9297.297685	2.845	-27.996	284.368	35.988	149.9	123.1
9297.348611	2.521	-27.291	276.805	51.658	150.5	123.2
9297.399537	2.202	-26.586	266.846	67.604	151.1	123.1
9297.450463	1.886	-25.879	234.215	82.813	151.8	123.0
9297.501389	1.556	-25.180	112.091	78.053	152.4	122.9
9297.552315	1.247	-24.472	94.319	62.022	153.1	122.7
9297.603241	0.942	-23.764	85.939	45.660	153.7	122.4
9298.316204	4.941	-28.771	283.422	40.897	148.3	113.4
9298.367130	4.602	-28.072	276.030	56.648	149.0	113.4
9298.418056	4.267	-27.372	265.348	72.635	149.6	113.3
9298.468981	3.937	-26.671	192.125	86.352	150.3	113.2
9298.519907	3.610	-25.969	100.820	73.703	150.9	113.0
9298.570833	3.287	-25.267	89.690	57.406	151.6	112.7

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9299.283796	4.976	-27.060	285.156	31.353	149.7	104.4
9299.334722	5.314	-27.759	279.602	46.793	149.0	103.8
9299.385648	5.656	-28.456	274.311	62.423	148.4	103.3
9299.436574	6.369	-28.141	263.729	77.605	148.1	103.6
9299.487500	6.023	-27.445	122.865	85.005	148.8	103.4
9299.538426	5.682	-26.749	93.824	69.134	149.4	103.1
9299.589352	5.345	-26.052	85.819	52.788	150.0	102.8
9300.302315	5.710	-25.047	280.269	36.497	150.6	95.1
9300.353241	6.046	-25.743	273.950	52.180	150.0	94.7
9300.404167	6.387	-26.438	266.190	67.947	149.4	94.2
9300.455093	6.731	-27.133	243.747	83.358	148.8	93.7
9300.506019	7.080	-27.826	100.882	79.800	148.2	93.2
9300.557697	8.146	-28.203	87.338	64.737	147.2	93.3
9327.373542	10.553	23.619	194.891	34.639	157.7	125.8
9327.424468	11.254	23.907	175.113	35.692	157.3	126.0
9327.475394	11.957	24.195	156.322	31.610	156.9	126.0
9329.369433	11.923	26.682	194.918	31.474	155.6	105.0
9329.421111	12.858	26.226	176.241	33.434	155.9	105.1
9329.472789	13.828	25.783	157.835	30.417	156.1	105.1
9354.293657	53.901	-19.188	272.715	35.931	140.6	132.5
9354.345336	53.308	-18.569	261.319	52.258	141.5	132.8
9354.397014	53.422	-17.743	241.787	67.073	142.1	133.4
9354.448692	54.013	-18.364	193.879	77.802	141.3	132.7
9354.500370	54.608	-18.984	126.180	72.351	140.4	131.9
9354.552049	55.208	-19.604	101.848	58.332	139.6	131.2
9355.278206	50.487	-9.891	263.388	30.721	150.2	132.6
9355.329884	50.011	-9.239	249.908	46.450	151.0	132.5
9355.381563	49.538	-8.586	227.814	60.245	151.8	132.3
9355.433241	49.066	-7.934	187.034	67.550	152.7	132.0
9355.484919	49.274	-7.080	144.294	62.530	153.2	132.3
9355.535845	48.888	-6.402	119.310	49.783	153.9	131.9
9356.309514	52.663	-14.797	262.881	41.738	145.4	121.4
9356.361192	53.155	-15.446	250.255	57.321	144.6	121.0
9356.412870	53.739	-16.070	224.675	71.048	143.8	120.5
9356.467963	53.358	-14.597	157.589	73.246	145.2	120.8
9356.523056	52.983	-13.124	118.843	59.933	146.6	121.0
9357.303553	50.452	-5.157	251.460	37.624	154.5	116.3
9357.355231	50.925	-5.812	236.004	52.148	153.7	115.9
9357.406157	51.311	-6.492	209.338	63.397	153.0	115.4

Continued on next page



**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9357.457836	51.106	-7.340	164.732	66.395	152.5	114.2
9357.509514	51.582	-7.994	129.397	58.199	151.8	113.7
9445.275602	128.900	-11.294	259.307	39.406	149.4	123.6
9445.326528	128.763	-12.046	245.608	55.077	148.7	122.8
9445.377454	128.625	-12.797	218.930	68.445	148.0	121.9
9445.429132	129.449	-12.248	167.095	71.604	148.5	121.9
9445.480058	129.585	-11.496	127.289	62.028	149.2	121.3
9445.530984	129.721	-10.744	108.532	47.564	150.0	120.6
9446.300891	126.692	-18.569	260.462	53.327	142.5	111.0
9446.352569	126.807	-19.396	243.502	69.005	141.6	110.5
9446.404248	126.212	-20.014	183.299	79.758	141.0	109.3
9446.455926	126.325	-20.841	116.041	71.336	140.2	108.8
9446.507604	126.439	-21.669	95.937	56.273	139.4	108.2
9446.558530	126.105	-22.365	85.274	40.380	138.7	107.3
9447.280521	130.125	-14.039	260.891	42.894	147.2	102.6
9447.332199	129.297	-14.583	245.717	59.311	146.7	101.3
9447.387292	128.706	-16.787	211.116	74.578	144.5	100.6
9447.442384	128.101	-18.989	132.593	74.198	142.3	99.9
9447.497477	127.632	-20.438	100.759	59.080	140.9	99.0
9447.552569	126.824	-22.581	85.845	42.083	138.7	98.1
9448.276875	131.374	-13.628	261.389	41.349	147.9	91.8
9448.327801	131.508	-12.874	246.106	56.095	148.6	91.0
9448.378727	131.641	-12.119	217.047	68.089	149.4	90.1
9463.271667	148.270	-12.319	262.314	37.309	153.4	93.8
9463.322593	147.890	-12.988	249.622	53.378	152.8	94.3
9463.373519	147.796	-13.770	226.411	67.551	152.1	94.5
9463.424444	147.702	-14.551	173.110	74.210	151.3	94.6
9463.475370	147.608	-15.333	123.990	66.068	150.6	94.7
9463.526296	147.512	-16.114	102.780	51.794	149.8	94.7
9464.291690	148.376	-14.814	260.214	45.424	151.4	103.4
9464.342616	148.468	-14.032	243.306	60.033	152.2	104.3
9464.393542	148.559	-13.249	208.272	71.046	153.0	105.2
9464.444468	148.939	-12.580	153.062	70.509	153.6	105.7
9464.495394	149.029	-11.797	120.333	58.770	154.4	106.4
9464.546319	149.696	-12.058	103.696	44.704	154.1	106.1
9465.260035	149.381	-20.978	273.942	38.183	145.6	109.0
9465.311713	149.173	-20.067	262.650	54.093	146.5	110.3
9465.362639	149.267	-19.280	243.385	68.862	147.3	111.3
9465.413565	149.361	-18.493	187.791	78.153	148.1	112.2

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9465.464491	149.453	-17.706	125.885	70.360	148.9	113.0
9465.515417	149.544	-16.920	104.713	55.530	149.7	113.9
9465.566343	149.634	-16.133	93.703	39.577	150.5	114.7
9466.279306	150.042	-18.768	267.661	43.594	148.1	120.5
9466.330231	149.951	-19.557	256.691	59.732	147.4	120.5
9466.381157	149.858	-20.345	232.599	74.732	146.6	120.5
9466.432836	150.070	-21.260	149.640	79.726	145.7	120.2
9466.483762	149.975	-22.050	105.125	66.985	144.9	120.0
9466.534687	150.667	-22.335	91.804	51.983	144.6	119.7
9467.252569	151.826	-15.370	269.201	33.114	151.8	132.0
9467.303495	151.744	-16.160	259.388	49.332	151.0	132.0
9467.354421	151.661	-16.951	243.345	64.888	150.3	132.0
9467.405347	151.577	-17.742	200.727	76.731	149.5	131.9
9467.456273	151.492	-18.533	130.425	73.001	148.7	131.7
9467.507199	151.406	-19.325	103.148	59.058	148.0	131.5
9467.558125	151.318	-20.116	90.283	43.553	147.2	131.2
9468.272593	152.577	-14.851	264.609	39.317	152.7	142.3
9468.324271	152.284	-13.910	249.887	54.810	153.7	143.9
9468.375197	152.954	-14.181	226.373	68.101	153.3	143.9
9468.426875	153.247	-15.124	171.924	74.750	152.4	143.4
9468.477801	153.170	-15.917	122.520	66.279	151.6	143.1
9468.528727	153.092	-16.711	101.764	51.887	150.9	142.8
9469.246956	153.372	-20.969	276.072	34.075	146.9	144.6
9469.298634	153.454	-20.173	265.913	49.787	147.7	145.8
9469.350313	153.533	-19.376	249.854	65.127	148.6	147.0
9469.401238	153.612	-18.580	208.101	76.955	149.4	148.1
9469.452164	153.689	-17.784	136.378	73.512	150.2	149.2
9469.503090	153.766	-16.989	108.836	59.477	151.0	150.3
9469.554016	153.842	-16.193	96.323	43.662	151.8	151.4
9470.274502	154.131	-23.790	275.014	43.856	144.5	147.8
9470.326181	154.369	-24.729	267.599	60.053	143.6	147.1
9470.377859	153.583	-25.231	251.141	76.757	143.1	146.5
9470.429537	153.819	-26.171	134.300	84.286	142.2	145.8
9470.480463	154.284	-25.531	97.857	69.623	142.8	146.6
9470.535556	154.825	-24.087	89.066	52.497	144.3	148.2
9471.258299	155.860	-17.032	270.008	35.547	151.5	155.7
9471.309977	155.791	-17.832	260.190	51.997	150.7	154.8
9471.361655	155.721	-18.632	243.278	67.797	150.0	153.8
9471.413333	155.650	-19.433	190.660	79.020	149.2	152.9

Continued on next page

**Table 2** – continued from previous page

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9471.465012	155.579	-20.234	119.913	72.001	148.4	152.0
9471.516690	155.505	-21.036	97.754	57.009	147.7	151.1
9471.568368	155.431	-21.838	86.431	41.163	146.9	150.3
9472.290359	157.207	-17.598	264.635	45.462	151.3	150.9
9472.342037	157.143	-18.401	251.868	61.663	150.5	149.9
9472.393715	157.078	-19.205	220.646	75.914	149.7	148.9
9472.445394	157.012	-20.009	139.261	76.901	149.0	148.0
9472.497072	156.945	-20.814	104.112	63.308	148.2	147.0
9472.548750	156.876	-21.620	90.338	47.594	147.4	146.2
9506.252535	175.196	-48.966	311.941	51.196	132.5	100.6
9506.303461	176.022	-48.423	318.652	62.186	133.2	100.1
9506.354387	176.449	-47.704	339.565	71.007	133.9	99.3
9506.406065	176.386	-46.772	20.349	72.061	134.8	98.0
9506.456991	176.792	-46.053	45.393	63.758	135.6	97.1
9506.508669	176.722	-45.126	54.211	51.501	136.5	95.9
9506.559595	177.109	-44.406	55.202	38.749	137.3	95.0
9523.230544	138.186	-71.241	0.290	48.999	106.9	91.2
9523.281470	138.463	-71.905	8.416	47.129	106.7	90.7
9523.333148	135.947	-71.480	16.298	43.485	106.1	91.3
9523.384074	135.700	-70.813	21.014	38.609	106.3	92.1
9523.435752	133.570	-71.290	21.795	31.907	105.5	91.8
9524.216655	136.127	-72.150	359.368	48.084	106.0	94.9
9524.271748	140.932	-72.037	6.216	47.555	107.4	95.5
9524.323426	143.026	-71.477	13.232	45.609	108.2	96.4
9524.375104	144.971	-70.894	18.777	41.976	109.1	97.3
9524.426030	147.370	-70.942	21.409	37.176	109.7	97.6
9524.477708	149.126	-70.314	22.938	31.697	110.6	98.5
9557.194468	234.169	-66.600	332.632	33.476	132.5	134.8
9557.246146	235.624	-66.002	333.173	40.379	133.1	135.7
9557.297824	238.131	-65.537	336.452	46.564	133.5	136.3
9557.349502	239.431	-64.910	343.522	52.210	134.1	137.1
9557.401181	239.751	-65.736	355.872	54.322	133.2	136.7
9557.452859	237.258	-66.217	10.136	52.838	132.9	136.9
9557.504537	235.834	-66.827	19.800	47.752	132.3	136.8
9557.556215	234.336	-67.424	24.692	40.754	131.8	136.5
9557.607141	236.058	-67.653	26.052	34.495	131.5	136.5
9558.223519	225.093	-72.651	341.802	39.113	126.5	132.4
9558.274444	223.055	-72.327	346.321	44.225	126.7	132.6
9558.326123	222.771	-73.140	353.755	46.387	125.9	132.0

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9558.377049	224.890	-73.471	0.528	46.764	125.7	132.1
9558.428727	222.453	-73.954	8.526	44.817	125.1	131.5
9558.479653	224.659	-74.293	13.098	41.894	124.9	131.6
9558.531331	221.406	-74.661	16.691	36.755	124.3	131.0
9558.582257	219.201	-74.299	18.255	31.417	124.5	131.2
9559.198634	215.104	-77.265	347.305	37.412	121.5	126.9
9559.250313	219.141	-76.988	349.615	40.130	122.0	127.7
9559.301991	219.739	-76.176	353.670	43.111	122.9	128.3
9559.352917	220.972	-75.475	359.105	44.748	123.6	129.0
9559.404595	223.690	-75.012	4.840	44.736	124.3	129.8
9559.456273	226.937	-74.618	10.124	43.345	124.8	130.6
9559.507951	227.072	-73.790	15.617	40.321	125.7	131.3
9559.559630	227.188	-72.964	19.248	35.803	126.5	131.9
9559.611308	229.353	-72.436	20.419	30.985	127.1	132.7
9560.183183	238.107	-68.702	335.171	31.598	131.1	134.3
9560.234861	235.252	-69.150	336.971	39.165	130.6	132.9
9560.286539	233.582	-69.737	342.382	45.060	130.0	131.7
9560.338218	233.743	-70.567	350.345	48.217	129.2	131.0
9560.393310	231.392	-71.888	1.221	48.329	127.9	129.3
9560.444988	231.470	-72.719	8.902	46.069	127.0	128.7
9560.496667	229.340	-73.265	14.984	41.855	126.4	127.7
9560.548345	229.319	-74.096	17.378	36.898	125.6	127.1
9560.603437	226.056	-75.349	17.007	30.721	124.3	125.6
9561.223229	241.391	-65.926	332.028	36.370	134.0	129.8
9561.274155	240.589	-66.620	335.748	43.546	133.3	128.6
9561.325833	240.969	-67.449	342.938	48.684	132.5	127.9
9561.377512	239.578	-68.081	353.826	51.678	131.9	126.7
9561.429190	239.945	-68.911	4.567	51.053	131.1	126.1
9561.480868	240.899	-69.802	12.892	47.854	130.2	125.6
9561.531794	242.839	-69.996	18.548	43.819	130.0	125.9
9561.583472	241.810	-69.109	23.517	38.023	130.9	125.6
9562.199850	243.196	-68.465	334.857	32.650	131.6	121.0
9562.251528	243.700	-69.296	337.084	38.965	130.8	120.3
9562.361597	259.608	5.885	228.910	40.663	146.5	125.0
9562.412523	259.778	6.632	206.482	49.734	145.8	124.0
9562.463449	259.947	7.380	177.812	52.357	145.1	123.1
9562.514375	259.918	8.143	150.502	47.182	144.6	122.0
9562.565301	260.088	8.890	130.855	36.514	143.9	121.2
9563.329190	260.652	7.325	238.012	31.463	145.2	115.5

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9563.380116	260.482	6.577	221.103	44.273	145.9	114.8
9563.431042	260.312	5.830	196.126	52.743	146.6	114.1
9563.481968	260.142	5.082	165.053	53.681	147.3	113.5
9563.533646	261.015	5.778	140.212	45.875	146.3	113.4
9563.584572	261.186	6.526	122.905	33.478	145.6	112.7
9640.309051	342.986	-31.198	287.558	38.627	152.5	94.1
9640.359977	342.741	-30.460	281.286	54.041	153.0	94.3
9640.410903	342.499	-29.722	274.428	69.853	153.5	94.6
9640.462581	342.996	-28.699	252.247	85.272	153.6	94.3
9640.513507	342.812	-27.940	97.760	78.046	154.0	94.6
9640.564433	342.576	-27.202	88.147	61.819	154.5	95.1
9640.615359	342.344	-26.464	81.845	45.611	155.0	95.7
9641.329074	343.930	-31.667	286.125	44.754	152.1	107.1
9641.380000	344.130	-32.425	283.375	60.079	151.6	107.7
9641.430926	344.391	-33.159	285.829	75.287	151.1	108.2
9641.481852	345.151	-32.864	11.811	87.319	150.7	108.0
9641.532778	344.886	-32.130	78.500	73.402	151.3	108.4
9641.583704	344.680	-31.375	78.106	57.598	151.8	108.9
9642.297419	344.497	-25.620	282.259	33.764	154.6	117.8
9642.348345	344.741	-26.354	276.256	49.457	154.2	118.3
9642.399271	344.987	-27.087	269.659	65.286	153.8	118.8
9642.450197	345.188	-27.840	256.813	81.085	153.4	119.3
9642.501875	344.709	-28.862	97.344	81.788	153.4	120.5
9642.552801	344.963	-29.595	84.582	66.267	152.9	121.0
9642.603727	345.220	-30.328	77.920	50.929	152.4	121.6
9643.317442	346.913	-30.493	286.064	40.140	151.4	130.7
9643.368368	347.135	-31.242	282.216	55.521	151.0	131.1
9643.419294	347.411	-31.970	280.922	70.931	150.4	131.3
9643.470220	348.159	-31.670	291.160	85.819	150.0	131.0
9643.525312	345.708	-26.801	98.067	74.042	154.0	132.8
9643.576991	346.637	-27.263	86.541	58.874	153.1	132.5
9644.292963	349.634	-33.600	292.872	32.404	148.5	140.3
9644.344641	350.648	-34.032	289.012	46.748	147.6	139.8
9644.395567	350.910	-34.772	288.046	61.688	147.0	139.8
9644.446493	351.176	-35.511	296.478	76.225	146.5	139.8
9644.497419	351.448	-36.250	21.411	83.511	146.0	139.7
9644.549097	352.504	-36.668	63.936	71.750	145.0	139.1
9644.600023	353.279	-36.347	68.797	57.754	144.7	138.8
9645.315995	348.077	-26.682	281.232	39.264	153.2	153.2

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**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9645.366921	347.856	-25.937	272.885	54.976	153.7	153.9
9645.418600	346.885	-25.497	259.819	71.747	154.7	155.1
9645.469525	347.595	-25.210	202.559	84.574	154.2	154.9
9645.521204	348.568	-25.647	104.939	75.669	153.3	154.1
9645.572130	348.793	-26.390	89.077	60.328	152.9	154.0
9646.339028	354.303	-36.775	293.560	44.199	144.5	148.9
9646.389954	355.078	-36.450	291.397	58.254	144.2	148.7
9646.440880	354.819	-35.704	294.041	73.281	144.7	149.4
9646.492558	353.759	-35.295	7.712	84.897	145.7	150.2
9646.543484	353.473	-34.563	70.168	73.002	146.3	150.8
9646.594410	353.192	-33.831	73.499	57.626	146.9	151.4
9647.310382	349.010	-24.632	279.139	37.744	154.4	160.1
9647.362060	349.985	-25.066	272.326	53.071	153.5	159.3
9647.412986	350.220	-25.805	263.578	68.947	153.1	158.3
9647.464664	349.781	-26.821	228.668	84.927	153.1	157.0
9647.515590	350.058	-27.544	99.129	77.596	152.6	156.0
9647.566516	350.338	-28.266	85.984	62.152	152.1	154.9
9647.617442	350.582	-29.005	78.517	46.806	151.6	153.8
9648.333414	355.283	-34.655	290.875	43.007	145.8	143.3
9648.384340	354.988	-33.928	286.608	58.203	146.4	143.6
9648.435266	354.698	-33.201	285.367	73.751	147.0	143.9
9648.486192	354.412	-32.472	356.934	87.765	147.6	144.2
9648.537870	353.389	-32.054	78.781	73.205	148.5	144.1
9648.588796	353.117	-31.322	78.135	57.336	149.1	144.3
9649.305521	351.209	-26.231	281.789	36.603	153.2	141.0
9649.356447	351.492	-26.951	275.966	52.261	152.8	139.9
9649.407373	351.779	-27.671	269.521	68.040	152.3	138.9
9649.458299	352.031	-28.405	254.602	83.758	151.8	137.9
9649.509225	352.287	-29.139	93.588	80.141	151.3	136.9
9649.560903	353.315	-29.552	84.217	64.995	150.3	136.6
9649.611829	353.583	-30.283	77.576	49.686	149.8	135.6
9650.327049	355.897	-31.845	287.396	41.629	147.7	127.7
9650.378727	354.871	-31.432	281.897	58.001	148.7	127.0
9650.429653	354.590	-30.704	276.417	73.845	149.2	126.9
9650.480579	354.314	-29.976	197.855	89.722	149.8	126.8
9650.531505	354.041	-29.248	88.861	73.874	150.4	126.7
9650.583183	353.013	-28.837	82.626	56.857	151.4	126.1
9651.299155	353.472	-27.803	284.556	34.943	151.9	119.2
9651.350081	353.737	-28.533	279.342	50.461	151.4	118.2

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
9651.401759	354.765	-28.942	274.035	65.664	150.4	117.9
9651.452685	355.042	-29.669	268.680	81.397	149.9	116.9
9651.503611	355.323	-30.395	86.681	82.928	149.4	116.1
9651.554537	355.608	-31.120	81.015	67.425	148.8	115.2
9651.606215	356.636	-31.531	76.442	52.543	147.9	115.1
9652.321435	355.768	-29.361	284.178	41.048	149.9	108.5
9652.372361	355.487	-28.637	277.059	56.708	150.5	108.1
9652.424039	354.458	-28.230	267.623	73.594	151.5	107.0
9652.474965	354.189	-27.502	180.529	87.261	152.1	106.6
9652.525891	353.923	-26.773	97.383	73.294	152.7	106.3
9652.576817	353.628	-26.059	87.937	56.993	153.3	106.1
9653.296956	356.781	-29.775	287.544	33.805	149.5	98.6
9653.347882	357.074	-30.496	282.963	49.076	148.9	97.7
9653.399560	358.105	-30.902	279.234	64.087	148.0	97.5
9653.450486	358.412	-31.620	280.658	79.533	147.4	96.6
9653.501412	358.723	-32.336	66.133	84.486	146.8	95.8
9653.552338	359.040	-33.052	75.915	69.391	146.3	95.1
9653.604016	0.108	-33.444	73.709	54.730	145.3	95.2
7523.298970	72.454	-63.192	328.755	31.018	98.1	102.5
7523.349896	73.302	-63.854	329.830	38.790	97.3	101.7
7523.400822	74.190	-64.510	334.024	45.756	96.6	101.0
7523.451748	76.039	-64.466	340.635	51.357	96.0	100.5
7523.502674	75.110	-63.821	352.619	55.894	96.7	101.2
7523.553600	74.222	-63.170	8.054	56.467	97.5	101.9
7524.320498	75.937	-61.785	326.866	33.332	97.7	101.1
7524.371424	75.090	-61.139	327.226	42.504	98.4	101.9
7524.423102	74.883	-60.307	331.635	51.231	99.0	102.7
7524.474028	76.075	-59.935	341.669	57.491	98.8	102.7
7524.525706	76.311	-60.765	358.752	59.463	98.2	101.8
7575.297245	73.963	-61.989	336.558	52.359	95.2	102.7
7575.348171	74.488	-61.269	348.042	57.755	96.0	102.6
7575.399097	74.990	-60.548	4.448	59.539	96.7	102.4
7575.450775	76.134	-59.931	20.144	56.817	97.3	101.9
7575.501701	77.476	-60.134	29.540	50.392	97.1	101.2
7576.269352	79.126	-61.149	329.619	47.208	96.0	101.4
7576.320278	78.713	-61.885	339.001	53.922	95.2	101.5
7576.371204	78.280	-62.620	353.389	57.230	94.5	101.5
7576.422130	77.825	-63.354	8.876	56.141	93.8	101.5
7576.473056	77.346	-64.086	20.392	51.283	93.0	101.4

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
7576.524734	76.057	-64.712	26.944	43.890	92.4	101.7
7610.390845	77.781	-62.970	23.346	50.961	90.7	90.4
7610.441771	79.056	-62.481	29.956	44.505	91.4	90.8
7610.492697	80.290	-61.981	32.854	36.829	92.2	91.2
7611.260347	80.030	-60.689	346.135	57.948	93.1	90.9
7611.311273	79.101	-60.159	4.228	59.945	93.3	90.8
7628.268391	80.980	-61.204	3.411	58.943	91.0	96.5
7628.319317	80.379	-60.567	19.848	56.145	91.2	96.5
7628.370995	78.673	-60.552	30.412	48.521	90.6	97.2
7872.370000	71.836	-63.157	328.523	35.635	98.3	98.1
7872.420926	73.033	-63.700	331.102	43.057	97.6	98.0
7872.471852	74.276	-64.232	337.089	49.337	96.9	97.9
7872.522778	75.567	-64.753	346.747	53.586	96.2	97.9
7873.391528	76.821	-62.425	327.763	37.406	96.6	97.8
7873.442454	75.607	-61.915	330.267	46.343	97.3	98.0
7873.493380	74.434	-61.395	338.147	54.132	98.0	98.4
7873.545058	73.800	-60.615	352.521	59.183	98.6	98.4
7874.362130	80.289	-61.056	326.218	31.199	95.6	97.4
7874.413056	81.541	-61.523	326.915	39.398	94.8	96.9
7924.423866	78.335	-62.416	354.967	57.603	95.8	90.6
7924.474792	78.376	-63.178	10.098	56.099	95.1	91.5
7924.525718	78.419	-63.940	21.028	51.100	94.3	92.4
7953.293113	72.477	-62.994	345.334	55.140	92.4	96.0
7953.344039	73.381	-62.354	359.037	57.878	93.2	95.5
7953.394965	74.246	-61.710	14.136	56.745	93.9	95.0
7953.445891	75.076	-61.059	26.017	51.948	94.6	94.5
7953.496817	75.873	-60.404	32.959	44.685	95.3	94.0
7954.264468	79.736	-60.576	332.772	51.766	95.5	93.9
7954.315394	81.019	-60.888	343.850	57.091	95.3	93.8
7954.367072	79.666	-61.414	1.765	58.801	94.6	94.8
7954.417998	78.927	-62.091	17.179	55.334	93.9	95.8
7954.468924	78.154	-62.764	26.511	48.575	93.2	96.7
7954.519850	77.345	-63.432	30.327	40.334	92.4	97.6
7985.329792	77.485	-61.438	17.925	55.839	90.6	100.7
7985.380718	78.847	-61.049	27.947	50.290	91.3	100.3
7985.432396	80.562	-60.941	32.932	42.844	91.9	99.6
7985.483322	79.795	-60.350	34.872	33.596	92.1	100.2
8258.291609	72.663	-61.719	326.948	31.587	98.9	102.4
8258.343287	72.635	-60.881	326.311	40.552	99.5	102.8

Continued on next page



**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8258.394213	73.920	-60.572	329.645	48.552	99.3	102.3
8258.445891	73.984	-61.410	339.916	54.981	98.7	102.0
8258.496817	74.718	-62.088	354.137	57.857	97.9	101.4
8258.547743	75.485	-62.762	9.115	56.720	97.2	100.7
8259.314641	78.970	-62.730	328.013	33.055	96.1	98.9
8259.365567	79.851	-63.379	329.766	40.864	95.3	98.3
8259.417245	80.097	-64.210	335.450	47.928	94.7	97.8
8259.468171	81.441	-63.830	343.359	53.455	94.5	97.3
8259.519850	81.160	-63.001	356.812	57.148	95.1	97.7
8288.324630	72.451	-61.211	332.785	50.688	97.8	100.3
8288.375556	72.342	-61.972	344.517	56.053	97.1	99.5
8288.426481	72.227	-62.732	0.002	57.509	96.3	98.8
8288.477407	72.107	-63.492	14.198	54.720	95.6	97.9
8288.528333	73.633	-63.915	23.145	49.651	95.0	97.0
8289.244306	76.822	-63.949	329.516	35.884	94.5	95.1
8289.295231	76.821	-63.187	330.835	44.012	95.3	95.7
8289.346157	76.821	-62.425	336.344	51.566	96.0	96.2
8289.397083	76.820	-61.663	347.565	57.223	96.7	96.8
8289.448009	76.820	-60.901	3.959	59.215	97.4	97.3
8289.499687	77.523	-60.137	19.937	56.644	98.1	97.6
8290.265833	81.299	-61.970	327.261	37.992	95.7	94.3
8290.316759	81.415	-62.730	331.289	45.932	95.0	93.4
8290.367685	81.537	-63.490	339.660	52.126	94.3	92.5
8304.489826	72.878	-63.461	24.787	49.007	93.8	90.0
8305.256725	76.366	-63.158	331.355	44.994	94.0	91.7
8305.307650	76.821	-62.425	337.296	52.202	94.7	90.9
8305.358576	77.254	-61.690	348.755	57.453	95.5	90.2
8306.278252	81.102	-63.295	332.659	46.566	93.7	93.0
8306.329178	80.745	-64.040	341.709	52.468	93.0	93.7
8318.349201	74.261	-60.369	359.647	59.871	95.1	94.4
8318.400127	73.432	-61.014	16.617	56.797	94.4	93.5
8318.451053	72.569	-61.653	27.115	49.999	93.7	92.6
8318.501979	71.669	-62.288	31.525	41.484	92.9	91.7
8319.421655	77.615	-61.760	19.128	54.962	94.1	90.3
8319.472581	78.375	-61.090	29.005	49.098	94.8	90.8
8319.524259	79.736	-60.577	33.886	41.407	95.4	91.3
8335.338194	76.686	-63.458	8.012	56.174	90.5	96.4
8335.389120	77.892	-62.925	20.191	52.963	91.3	95.6
8335.440046	79.054	-62.381	28.449	47.088	92.0	94.9

Continued on next page

**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8335.490972	80.174	-61.828	32.643	39.611	92.7	94.1
8335.542650	81.800	-61.499	33.308	31.563	93.4	93.4
8336.258623	79.668	-60.553	341.529	56.701	93.7	95.0
8336.309549	78.649	-60.067	358.678	60.160	93.8	95.1
8336.361227	77.065	-60.358	17.290	57.343	93.2	95.8
8336.412153	75.943	-60.885	28.251	50.292	92.4	96.6
8336.463079	74.784	-61.402	32.759	41.416	91.7	97.3
8336.514005	73.586	-61.909	32.889	32.141	91.0	98.1
8604.403044	81.201	-63.609	329.263	37.412	94.4	91.3
8604.453970	82.143	-63.050	331.250	45.093	94.1	90.9
8604.505648	81.280	-62.311	338.094	52.848	94.8	90.3
8604.556574	79.999	-61.841	351.732	57.813	95.5	90.1
8605.375556	72.360	-62.324	327.647	37.504	98.6	92.5
8605.427234	71.818	-61.525	329.693	46.413	99.2	92.0
8605.478160	72.891	-61.051	336.301	53.558	98.9	91.6
8605.529838	73.452	-61.845	349.945	57.518	98.3	92.4
8606.347662	77.844	-61.912	327.298	30.700	96.5	92.9
8606.398588	79.058	-62.422	327.952	38.691	95.8	93.2
8606.449514	80.312	-62.920	331.675	46.053	95.0	93.5
8606.501192	81.111	-63.678	339.911	52.012	94.4	94.2
8606.552118	82.100	-63.135	350.984	56.345	94.2	93.6
8639.278750	72.797	-63.987	329.624	36.510	96.3	100.0
8639.329676	74.540	-64.225	332.105	43.507	95.7	99.2
8639.380602	74.186	-63.479	337.617	50.876	96.4	99.5
8639.431528	73.850	-62.733	348.611	56.303	97.1	99.9
8639.482454	73.531	-61.985	4.325	58.097	97.9	100.3
8639.533380	73.227	-61.237	19.764	55.342	98.6	100.7
8640.249352	76.062	-60.944	326.200	30.474	98.1	98.9
8640.301030	76.394	-60.121	325.092	39.450	98.8	99.0
8640.351956	77.753	-59.949	327.981	47.671	98.6	98.5
8640.403634	77.459	-60.775	337.785	54.777	97.9	98.5
8640.454560	77.861	-61.512	352.264	58.227	97.2	98.2
8640.505486	78.282	-62.248	8.132	57.412	96.5	97.8
8670.280868	74.884	-62.956	334.302	49.036	94.2	95.9
8670.331794	74.371	-63.683	345.095	54.272	93.4	95.5
8670.383472	73.064	-64.295	0.123	55.945	92.8	95.3
8670.434398	74.603	-64.515	12.392	54.106	92.6	94.8
8670.486076	75.887	-63.889	22.742	50.001	93.2	94.9
8671.252975	79.387	-63.514	330.976	43.350	93.5	92.8

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**Table 2 – continued from previous page**

MJD2000.0	RA	DEC	Az	Elevation	Distance to Sun	Distance to Moon
8671.303900	79.773	-62.772	335.959	50.751	94.3	93.4
8671.354826	80.139	-62.029	346.231	56.488	95.0	94.0
8671.405752	80.488	-61.286	1.642	58.933	95.7	94.6
8671.456678	81.763	-61.802	15.909	56.113	95.2	93.9
8671.507604	81.441	-62.549	25.757	49.690	94.4	93.3
8685.286042	78.731	-63.766	341.432	52.683	92.1	90.1
8700.260486	80.160	-62.864	343.067	54.503	91.8	91.0
8700.311412	78.999	-63.416	358.187	56.794	91.1	90.5
8700.362338	77.792	-63.959	13.056	54.536	90.3	90.0
8701.385370	75.786	-61.917	22.177	53.239	91.5	90.1
8701.436296	76.948	-61.391	30.208	46.888	92.2	90.6
8701.487222	78.071	-60.856	34.018	39.038	92.9	91.1
8701.538900	79.669	-60.553	34.298	30.713	93.6	91.4
8714.459896	76.742	-60.032	35.284	37.004	91.4	90.1
8716.299248	81.240	-62.826	5.815	57.110	90.6	94.3
8716.350174	81.393	-63.621	18.287	53.001	90.0	95.1