GENERAL REPORT OF POSITION OBSERVATIONS BY THE ALPO MINOR PLANETS SECTION FOR THE YEAR 2014

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Observations of positions of minor planets by members of the Minor Planets Section in calendar year 2014 are summarized.

During the year 2014 a total of 533 positions of 160 different minor planets were reported by members of the Minor Planets Section. All are approximate visual positions.

The summary lists minor planets in numerical order, the observer and telescope aperture (in cm), UT dates of the observations, and the total number of observations in that period. The year is 2014 in each case.

Positional observations were contributed by the following observers:

Observer, Instrument	Location	Planets	Positions
Faure, Gerard 5 cm binoculars 45 cm Dobsonian 40 cm Meade LX200	Observations of Vesta from Rajasthan, India Others from Valdrome, France with Jean-michel Rayon	3	47(42CCD)
Harvey, G. Roger 73 cm Newtonian 60 cm reflector at Scout Key, Florida, USA	Concord, North Carolina, USA	128	444
Pryal, Jim 20 cm f/10 S-C 12 cm refractor	Ellensburg, WA USA	30	72
Watson, William W. 20 cm Celestron	Tonawanda, NY USA	4	14

PLANET	OBSERVER & APERTURE (cm)	OBSERVING PERIOD (2014)	NO. OBS.
1 Ceres	Pryal, 12, 20	Mar 30-Jul 1	5
2 Pallas	Pryal, 12	Mar 20-23	4
4 Vesta	Faure, 5	Mar 3-6	2
	Pryal, 12, 20	Mar 30-Jul 1	4
5 Astraea	Pryal, 20	Sep 26-27	2
23 Thalia	Pryal, 20	Nov 28	2
26 Proserpina	Pryal, 20	Aug 18-20	2
37 Fides	Pryal, 20	Oct 20	2
55 Pandora	Pryal, 20	Oct 20	2
63 Ausonia	Pryal, 20	Aug 21	2
66 Maja	Pryal, 20	Nov 23	2
80 Sappho	Pryal, 20	Aug 18-20	2
84 Klio	Pryal, 20	Sep 29	2
97 Klotho	Pryal, 20	Aug 18-20	2
104 Klymene	Pryal, 20	Nov 28	2
114 Kassandra	Watson, 20	Mar 7-8	2
146 Lucina	Pryal, 20	Jun 2-3	2
165 Loreley	Watson, 20	Jul 6	2
190 Ismene	Pryal, 20	Jan 1-5	5
233 Asterope	Pryal, 20	Aug 18-20	2
253 Mathilde	Pryal, 20	Sep 20-21	2
259 Aletheia	Pryal, 20	Jun 2-3	2
283 Emma	Pryal, 20	Sep 29	2
313 Chaldaea	Watson, 20	Mar 7-Apr 3	5
373 Melusina	Pryal, 20	Sep 20-21	2
379 Huenna	Pryal, 20	Sep 20-21	2
393 Lampetia	Pryal, 20	Sep 20-21	2
481 Emita	Pryal, 20	Nov 28	2
584 Semiramis	Pryal, 20	Aug 6-7	3
	Watson, 20	Sep 24-28	5
598 Octavia	Pryal, 20	Dec 14	2
606 Brangäne	Pryal, 20	Aug 21	2
952 Caia	Pryal, 20	Sep 26-27	2
1093 Freda	Pryal, 20	Jun 6	2
1931 Čapek	Harvey, 73	Nov 22	3
1957 Angara	Harvey, 73	Nov 22	3
2225 Serkowski	Harvey, 73	Dec 27	3
2340 Hathor	Harvey, 73	Oct 25	6
2400 Derevskaya	Harvey, 73	Jul 27	3
2440 Educatio	Harvey, 73	Oct 18 0.5m fainter@15.6	3
2472 Bradman	Harvey, 73	Mar 8	3
2481 Bürgi	Harvey, 73	Sep 28	3
2528 Mohler	Harvey, 73	Aug 26	3
2558 Viv	Harvey, 73	Oct 1	3
2683 Brian	Harvey, 73	Nov 22	3
2812 Scaltriti	Harvey, 73	Mar 8	3
3026 Sarastro	Harvey, 73	Oct 23	3
3100 Zimmerman	Harvey, 73	Jan 25	3
3144 Brosche	Harvey, 73	Oct 1	3
3383 Koyama	Harvey, 73	Jul 27 0.5m fainter@15.6	3
3405 Diawensai	Harvey, 73	Jul 24	6
3656 Hemingway	Harvey, 73	Aug 30	3
3681 Boyan	Harvey, 73	Oct 1	3
3710 Bogoslovskij	Harvey, 73	Aug 30	3
3755 Lecointe	Harvey, 73	Sep 28	3
3771 Alexejtolstoj	Harvey, 73	Nov 16	3
3965 Konopleva	Harvey, 73	Nov 22	3
3991 Basilevsky	Harvey, 73	Oct 1	3
4059 Balder	Harvey, 73	Nov 28	3
4083 Jody	Harvey, 73	Jan 25	3
4225 Hobart	Harvey, 73	Oct 19	3
4245 Nairc	Harvey, 73	Nov 28	3
4319 Jackierobinson	Harvey, 73	Aug 30	3
4359 Berlage	Harvey, 73	Sep 28	3
4401 Aditi	Harvey, 73	Oct 23	6
4402 Tsunemor	Harvey, 73	Oct 25	3

PLANET	OBSERVER & APERTURE (cm)	OBSERVING PERIOD (2014)	NO. OBS.
4583 Lugo	Harvey, 73	Jul 5	6
4652 Iannini	Harvey, 73	Oct 1	3
		0.5m fainter@15.6	
4909 Couteau	Harvey, 73	Aug 26	3
4921 Volonté	Harvey, 73	Nov 22	3
5134 Ebilson	Harvey, 73	Dec 14	3
5182 Bray	Harvey, 73	Jul 24	3
5235 Jean-Loup	Harvey, 73	Jul 26-27	3
5268 Chernohorsky	Harvey, 73	Oct 25	3
5385 Kamenka	Harvey, 73	Oct 25	3
5546 Salavat	Harvey, 73	Jan 25	3
5576 Albanese	Harvey, 73	Nov 22	3
5595 Roth	Harvey, 73	Oct 26	3
5617 Emelyanenko	Harvey, 73	Dec 27	3
5670 Rosstaylor	Harvey, 73	Dec 26	3
5703 Hevelius	Harvey, 73	Nov 22	3
5803 Ötzi	Harvey, 73	Jul 5	6
5852 Nanette	Harvey, 73	Jun 1	3
5945 Roachapproach	Harvey, 73	Oct 26	3
6038 1989 EQ	Harvey, 73	Dec 13	3
6050 Miwablock	Harvey, 73	Dec 13	3
6095 1991 UU	Harvey, 73	Jul 24	6
6098 Mutojunkyu	Harvey, 73	Aug 25	3
6115 Martinduncan	Harvey, 73	Oct 18	3
		0.5m fainter@15.8	
6164 Gerhardmüller	Harvey, 73	Aug 25	3
		0.7m fainter@15.6	
6171 Uttorp	Harvey, 73	Oct 26	3
6182 Katygord	Harvey, 73	Aug 25	3
6341 1993 UN3	Harvey, 73	Nov 16	3
6735 Madhatter	Harvey, 73	Oct 26	3
6737 Okabayashi	Harvey, 73	Jan 25	3
6754 Burdenko	Harvey, 73	Oct 18	3
6969 Santaro	Harvey, 73	Dec 14	3
7075 Sadovnichij	Harvey, 73	Sep 28	3
7124 Glinos	Harvey, 73	Dec 27	3
		0.5m fainter@16.0	
7196 Baroni	Harvey, 73	Dec 13	3
7240 Hasebe	Harvey, 73	Oct 26	3
7330 Annelemaître	Harvey, 73	Oct 1	3
7783 1994 JD	Harvey, 73	Dec 26	3
7860 Zahnle	Harvey, 73	Aug 25	3
8147 Colemanhawkins	Harvey, 73	Sep 28	3
8274 Soejima	Harvey, 73	Oct 25	3
8350 1989 AG	Harvey, 73	Dec 26	3
8355 Masuo	Harvey, 73	Sep 28	3
8730 Iidesan	Harvey, 73	Oct 1	3
8917 1996 EU2	Harvey, 73	Dec 27	3
9120 1998 DR8	Harvey, 73	Oct 25	3
9156 Malanin	Harvey, 73	Aug 25	3
9190 Masako	Harvey, 73	Oct 25	3
9192 1992 AR1	Harvey, 73	Jan 31	3
9387 Tweedledee	Harvey, 73	Aug 26	3
		0.5m fainter@15.5	
9729 1981 RQ	Harvey, 73	Aug 25	3
10076 1989 PK	Harvey, 73	Aug 25	3
10141 Gotenba	Harvey, 73	Oct 25	3
10483 Tomburns	Harvey, 73	Oct 19	3
11017 Billputnam	Harvey, 73	Dec 27	3
11065 1991 XE2	Harvey, 73	Oct 19	3
14095 1997 PE2	Harvey, 73	Jul 27	3
14497 1995 DD	Harvey, 73	Sep 28	3
15166 2000 GX90	Harvey, 73	Aug 25	3
		0.5m fainter@15.6	
15199 Rodnyanskaya	Harvey, 73	Nov 22	3
19133 1988 PC2	Harvey, 73	Jul 27	3
19140 Jansmit	Harvey, 73	Nov 28	3
19144 1989 UP1	Harvey, 73	Dec 13	3
19243 Bunting	Harvey, 73	Sep 28	3
19318 Somanah	Harvey, 73	Dec 27	3
20470 1999 NS5	Harvey, 73	Jul 24	3
20562 1999 RV120	Harvey, 73	Aug 25	3
21023 1989 DK	Harvey, 73	Jan 25-26	3
21028 1989 TO	Harvey, 73	Oct 17	3
		0.6m fainter@15.7	
21035 Iwabu	Harvey, 73	Dec 27	3
23766 1998 MZ23	Harvey, 73	Oct 25	3
		0.5m fainter@16.1	
25916 2011 CP44	Harvey, 73	Jun 1	6
26632 2000 HS30	Harvey, 73	Dec 14	3
27176 1993 BR3	Harvey, 73	Jan 25	3
27221 1999 FA27	Harvey, 73	Nov 28	3
31843 2000 CQ80	Harvey, 73	Aug 14	3
32555 2001 QZ29	Harvey, 73	Oct 25	3
		0.5m fainter@15.8	
32570 Peruindiana	Harvey, 73	Dec 27	3
32575 2001 QY78	Harvey, 73	Aug 25	3
		0.5m fainter@15.4	
34459 2000 SC91	Harvey, 73	Jan 25	3
37306 2001 KW46	Harvey, 73	Nov 22	3
		0.5m fainter@15.5	
39525 1989 TR2	Harvey, 73	Nov 22	3
43815 1991 VD4	Harvey, 73	Nov 22	3
68267 2001 EA16	Harvey, 73	Oct 17	6
69971 Tanzi	Harvey, 73	Jan 25	3
162566 2000 RJ34	Harvey, 60	Feb 24	6
163132 2002 CU11	Harvey, 73	Aug 27-29	6
214088 2004 JN13	Harvey, 73	Nov 28	6
275677 2000 RS11	Harvey, 73	Mar 23	6
285944 2011 RZ11	Faure, 45	Aug 24	3
	Faure and Rayon, 40	Aug 24	19C
	Harvey, 73	Aug 24	6
387733 2003 GS	Harvey, 73	Apr 21	6
398188 2010 LE15	Harvey, 73	Aug 5	6

PLANET	OBSERVER & APERTURE (cm)	OBSERVING PERIOD (2014)	NO. OBS.
1995 CR	Harvey, 73	Feb 21	6
2006 DP16	Harvey, 73	Feb 16	6
2013 WT67	Faure and Rayon, 40	Aug 23	23C
	Harvey, 73	Aug 19	6
2014 SC324	Harvey, 73	Oct 23	6
2014 WZ120	Harvey, 73	Nov 28	6

LIGHTCURVE ANALYSIS OF THE HUNAGARIA ASTEROID 30935 DAVASOBEL

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After a single night of observations at the Sopot Astronomical Observatory on 2014 Dec 31, there were possible indications of an attenuation that would indicate that the asteroid was binary. A collaboration was formed by the authors to obtain data from well-separated locations in case the potential satellite had an orbital period commensurate with an Earth day. The final data set contained no significant secondary period and led to a single period solution of P = 3.9769 ± 0.0005 h, A = 0.60 ± 0.03 mag.

Observations of the Hungaria asteroid 30935 Davesobel were started on 2014 Dec 31 by Benishek at the Sopot Astronomical Observatory (SAO). A preliminary analysis appeared to show an attenuation and the possibility of something other than a single period solution. Benishek contacted Warner to obtain additional data while continuing his observations. The advantage would be two stations well-separated in longitude, which could help resolve ambiguities should a secondary period be commensurate with an Earth day. Also, if conditions allowed, observations ending in Serbia would almost overlap those starting in California, thus providing a very long set of nearly continuous observations. Unfortunately, the moon and weather did not cooperate in this regard.

OBS	Telescope	Camera
Warner	0.35-m *f*/9.1 Schmidt-Cass	STL-1001E
Benishek	0.35-m *f*/10 Schmidt-Cass	ST-8XME

Table I. List of observers and equipment.

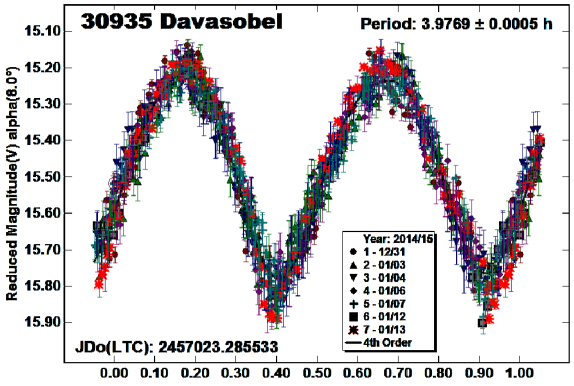
Obs	Dates (2014/2015)	Sessions
Warner (CS3-PDS)	12/31 01/12 13	1 6 7
Benishek (SAO)	01/03 04 06 07	2-5

Table II. Dates of observation for each observer. The Sessions column gives the session numbers shown in the lightcurve legend.

Tables I and II give the equipment used and the dates of observations for each observer. Over the range of observations, the asteroid's phase angle started at α = 8.0°, dropped to 6.8°, and increased back to 9.1°. The phase angle bisector longitude was nearly constant at L_{PAB} = 103° while the latitude went from B_{PAB} = 10° to 6° (see Harris *et al.*, 1984, for the derivation of the phase angle bisector).

Both observers used *MPO Canopus* to measure the images. The Comp Star Selector utility found up to five solar-colored stars for each session. The magnitudes for the comparisons were taken from the MPOSC3 catalog, which is based on the 2MASS catalog converted to the BVRcIc system using formulae developed by Warner (2007). Benishek sent his *MPO Canopus* export data sets to Warner for period analysis, which was also done in *MPO Canopus*, which incorporates the FALC Fourier analysis algorithm developed by Harris (Harris *et al.*, 1989) and modified by Warner to allow subtracting a Fourier model lightcurve from a data set to search for a secondary period.

The search for a second period found nothing that rose above the noise in the period spectrum covering 5 to 30 hours. Instead, a unique single period solution was found with P = 3.9769 ± 0.0005 h, A = 0.60 ± 0.03 mag. It should be noted that the observations on 2014 Dec 31 were hampered by moonlight and weather conditions. It's possible that the deviation was the result of a systematic error.



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