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EDITORIAL NOTICE

Contributors of perturbed orbital elements are advised that the use of the epoch 2012 Sept. 30.0 TT (rather than 2012 Mar. 14.0 TT) will become effective after the publication of *this* batch of *Minor Planet Circulars*.

ERRATUM

MPC Line
74325 18

The assignment of observatory code I42 (OWC Observatory, Niceville) is to be retracted. See also the deletion of code I42 observations on MPC 76680.

NEW OBSERVATORY CODES

The following listing is a continuation to that on MPC 79109. The longitudes λ are measured in degrees eastward from Greenwich, and the parallax constants $\rho \cos \phi'$ and $\rho \sin \phi'$ are the product of the geocentric distance (in earth equatorial radii) and the cosine and sine, respectively, of the geocentric latitude.

Obs.	λ	$\rho \cos \phi'$	$\rho \sin \phi'$	
D04	38.4308	0.70960	+0.70225	Krasnodar
G42	259.0230	0.90391	+0.42687	Observatorio Astronómico UAdC, Saltillo
I55	359.64214	0.772769	+0.632566	Valencia
I56	357.71066	0.801182	+0.596429	Observatorio Astronómico John Beckman, Almería
I57	359.3256	0.78579	+0.61646	Elche

DELETED OBSERVATIONS

The following observations are to be deleted.

Object	Date	UT	α_{2000}	δ_{2000}	Reference	N	Obs.
2000 CG ₁₅₀	*2000 02 07.36460	09 42 55.25	+14 33 30.1		MPC 77873	691	
2000 CG ₁₅₀	2000 02 07.38629	09 42 54.16	+14 33 34.7		MPC 77873	691	
2000 CG ₁₅₀	2000 02 07.40811	09 42 53.04	+14 33 39.1		MPC 77873	691	
2006 BZ ₇	2003 07 12.40044	17 07 41.57	+17 41 58.0		MPS 167133	608	
2006 BZ ₇	2003 07 12.40591	17 07 40.83	+17 42 02.4		MPS 167133	608	
2006 BZ ₇	2003 07 12.41142	17 07 40.12	+17 42 07.5		MPS 167133	608	
2006 BZ ₇	2003 07 28.26234	16 39 09.02	+19 54 47.7		MPS 167133	608	
2006 BZ ₇	2007 06 09.370266	21 18 05.81	+56 22 50.0		MPS 210720	H55	
2006 BZ ₇	2007 06 09.386226	21 18 05.92	+56 23 37.5		MPS 210720	H55	
2009 SM ₁₆₈	2009 09 24.13579	23 44 25.30	-07 06 06.4		MPS 299507	809	

2011 AZ ₇₈	*2011 01 11.22050	07 36 22.57	+20 07 33.2	MPC 79111	703
2011 AZ ₇₈	2011 01 11.22684	07 36 22.28	+20 07 34.4	MPC 79111	703
2011 AZ ₇₈	2011 01 11.23312	07 36 21.81	+20 07 34.3	MPC 79111	703
2011 AZ ₇₈	2011 01 11.23943	07 36 21.42	+20 07 36.0	MPC 79111	703
2012 HO	2012 06 09.170516	16 19 27.67	+58 31 13.8	MPS 426561	K H21
2012 HO	2012 06 09.194419	16 19 29.64	+58 31 23.2	MPS 426561	K H21
2012 HO	2012 06 09.221725	16 19 31.89	+58 31 33.7	MPS 426561	K H21
2012 HO	2012 06 14.197124	16 27 28.77	+58 53 02.0	MPS 426561	K H21
2012 HO	2012 06 14.216464	16 27 30.28	+58 53 03.7	MPS 426561	K H21
2012 HO	2012 06 14.235403	16 27 31.87	+58 53 06.2	MPS 426561	K H21
2012 HO	2012 06 15.208724	16 29 04.13	+58 54 53.4	MPS 426561	K H21
2012 HO	2012 06 15.229394	16 29 05.75	+58 54 55.2	MPS 426561	K H21
2012 HH ₂	2002 04 10.15681	11 53 44.56	+30 56 27.0	MPS 423784	K 644
2012 HH ₂	2002 04 10.16749	11 53 44.51	+30 56 27.1	MPS 423784	K 644
2012 HH ₂	2002 04 10.17835	11 53 44.47	+30 56 27.5	MPS 423784	K 644
2012 HH ₂	2003 02 01.55759	12 12 15.83	+28 26 19.3	MPS 423784	K 644
2012 HH ₂	2003 02 01.56462	12 12 15.81	+28 26 19.1	MPS 423784	K 644
2012 KA ₄₃	2012 05 15.41281	16 27 56.814	-19 08 13.11	MPS 426583	F51
2012 KA ₄₃	2012 05 15.42274	16 27 56.233	-19 08 14.58	MPS 426583	F51
2012 KA ₄₃	2012 05 15.43308	16 27 55.610	-19 08 16.23	MPS 426583	F51
2012 KA ₄₃	2012 05 15.44322	16 27 55.001	-19 08 17.80	MPS 426583	F51

IDENTIFICATION CHANGES

Continuation to MPC 79430.

Object	Date	UT	α_{2000}	δ_{2000}	Originally	Mag.	N	Obs.
2001 UY ₂₃₁	*2001 10 25.35779	02 47 37.00	+12 36 48.0		2001 UR ₂₂₃	19.5	R	644
2001 UY ₂₃₁	2001 10 25.37895	02 47 35.65	+12 36 41.3		2001 UR ₂₂₃			644
2001 UY ₂₃₁	2001 10 25.39998	02 47 34.69	+12 36 35.6		2001 UR ₂₂₃			644
2005 UB ₅₃₁	*2005 10 31.22884	00 40 08.36	+02 06 21.8		2005 SL ₂₀₁	21.2	V	G96
2005 UB ₅₃₁	2005 10 31.23515	00 40 08.14	+02 06 21.2		2005 SL ₂₀₁	21.4	V	G96
2005 UB ₅₃₁	2005 10 31.24149	00 40 07.86	+02 06 20.0		2005 SL ₂₀₁	22.0	V	G96
2005 UB ₅₃₁	2005 10 31.24777	00 40 07.57	+02 06 19.6		2005 SL ₂₀₁	21.6	V	G96
2005 VT ₁₃₆	*2005 11 12.37015	04 17 12.12	+22 30 18.1		2002 JX ₁₄₉	20.7	V	691
2005 VT ₁₃₆	2005 11 12.38766	04 17 11.15	+22 30 20.0		2002 JX ₁₄₉	20.7	V	691
2005 VT ₁₃₆	2005 11 12.40522	04 17 10.23	+22 30 21.5		2002 JX ₁₄₉	20.9	V	691
2005 VU ₁₃₆	*2005 11 01.38207	04 27 10.58	+18 32 09.2		2005 UZ ₄₁₂	21.4	V	G96
2005 VU ₁₃₆	2005 11 01.39008	04 27 10.29	+18 32 07.4		2005 UZ ₄₁₂	20.9	V	G96
2005 VU ₁₃₆	2005 11 01.39814	04 27 10.00	+18 32 05.6		2005 UZ ₄₁₂	21.1	V	G96
2005 VU ₁₃₆	2005 11 01.40616	04 27 09.61	+18 32 04.2		2005 UZ ₄₁₂	20.6	V	G96

2010 VV ₂₀₂	2010 11 14.17839	02 10 54.62	+03 12 08.1	2002 JX ₁₄₉	22.1 V	291
2010 VV ₂₀₂	2010 11 14.18215	02 10 54.42	+03 12 07.6	2002 JX ₁₄₉	21.8 V	291
2011 CE ₁₁₇	*2011 02 09.29496	08 54 59.29	+18 47 48.7	2011 CU ₃₁	21.3 V	G96
2011 CE ₁₁₇	2011 02 09.30056	08 54 59.00	+18 47 50.1	2011 CU ₃₁	20.9 V	G96
2011 CE ₁₁₇	2011 02 09.30612	08 54 58.68	+18 47 50.9	2011 CU ₃₁	20.9 V	G96
2011 CE ₁₁₇	2011 02 09.31168	08 54 58.39	+18 47 53.0	2011 CU ₃₁	20.8 V	G96
2011 WR ₁₄₉	*2011 11 24.26745	02 09 28.40	+13 23 07.2	2011 UX ₃₉₆	20.5 V	G96
2011 WR ₁₄₉	2011 11 24.27322	02 09 28.22	+13 23 05.7	2011 UX ₃₉₆	20.2 V	G96
2011 WR ₁₄₉	2011 11 24.27903	02 09 28.04	+13 23 04.1	2011 UX ₃₉₆	20.3 V	G96
2011 WR ₁₄₉	2011 11 24.28481	02 09 27.82	+13 23 02.2	2011 UX ₃₉₆	20.4 V	G96
2011 WS ₁₄₉	*2011 11 22.24108	02 19 05.77	+13 27 45.9	2011 VG ₂₁	20.2 V	G96
2011 WS ₁₄₉	2011 11 22.24634	02 19 05.52	+13 27 44.7	2011 VG ₂₁	20.2 V	G96
2011 WS ₁₄₉	2011 11 22.25157	02 19 05.30	+13 27 45.2	2011 VG ₂₁	20.6 V	G96
2011 WS ₁₄₉	2011 11 22.25686	02 19 05.01	+13 27 44.1	2011 VG ₂₁	21.5 V	G96
2011 WS ₁₄₉	2011 11 24.26454	02 17 33.68	+13 25 56.8	2011 VG ₂₁	21.0 V	G96
2011 WS ₁₄₉	2011 11 24.27035	02 17 33.43	+13 25 56.2	2011 VG ₂₁	20.6 V	G96
2011 WS ₁₄₉	2011 11 24.27431	02 17 33.549	+13 25 57.25	2011 VG ₂₁	21.7 g	F51
2011 WS ₁₄₉	2011 11 24.27611	02 17 33.18	+13 25 55.9	2011 VG ₂₁	21.2 V	G96
2011 WS ₁₄₉	2011 11 24.28191	02 17 32.89	+13 25 55.7	2011 VG ₂₁	21.3 V	G96
2011 WS ₁₄₉	2011 11 24.29910	02 17 32.417	+13 25 56.07	2011 VG ₂₁	21.5 r	F51
2011 WS ₁₄₉	2011 11 24.31032	02 17 31.876	+13 25 55.69	2011 VG ₂₁	21.7 r	F51
2012 AP ₂₃	*2012 01 01.53697	14 36 08.64	-08 20 17.0	2009 WD ₆₄	21.4 V	G96
2012 AP ₂₃	2012 01 01.54226	14 36 09.07	-08 20 19.1	2009 WD ₆₄	22.2 V	G96
2012 AP ₂₃	2012 01 01.54749	14 36 09.50	-08 20 21.5	2009 WD ₆₄	21.5 V	G96
2012 AP ₂₃	2012 01 01.55296	14 36 09.86	-08 20 24.2	2009 WD ₆₄	21.1 V	G96
2012 BG ₁₅₁	*2012 01 19.45923	10 26 08.540	+00 10 59.48	2012 DB ₁₃	21.9 w	F51
2012 BG ₁₅₁	2012 01 19.48205	10 26 07.808	+00 10 57.49	2012 DB ₁₃	21.8 w	F51
2012 BG ₁₅₁	2012 01 19.51019	10 26 06.912	+00 10 55.09	2012 DB ₁₃	21.9 w	F51
2012 LH ₁₅	*2012 06 11.24514	15 41 08.34	-16 30 20.6	2009 UK ₃₈	22.0 V	G96
2012 LH ₁₅	2012 06 11.25255	15 41 07.98	-16 30 19.7	2009 UK ₃₈	22.3 V	G96
2012 LH ₁₅	2012 06 11.26000	15 41 07.62	-16 30 17.7	2009 UK ₃₈	21.8 V	G96
2012 LH ₁₅	2012 06 11.26745	15 41 07.26	-16 30 16.7	2009 UK ₃₈	21.4 V	G96

NUMBERING OF PERIODIC COMETS

Continuation to the list on *MPC* 79431.

263P/2006 Y2 = 2012 K9 (Gibbs)
 264P/2004 H3 = 2012 L4 (Larsen)
 265P/2003 O2 = 2012 M1 (LINEAR)

OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

033	Karl Schwarzschild Observatory, Tautenburg. Observer B. Stecklum. 1.34-m $f/4$ Schmidt + CCD.
104	San Marcello Pistoiese. Observer P. Bacci. Measurers P. Bacci, L. Tesi, G. Fagioli. 0.60-m $f/4$ reflector + CCD.
106	Črni Vrh. Observer H. Mikuž. 0.6-m $f/3.3$ Deltagraph + CCD.
118	Modra. Observers Š. Gajdoš, J. Világi. Measurer Š. Gajdoš. 0.6-m $f/5.5$ reflector + CCD.
130	Lumezzane. Observers M. Casali, A. Coffano, W. Marinello, M. Micheli, G. Pizzetti. Measurer W. Marinello. 0.40-m $f/4.2$ reflector + CCD, 0.40-m $f/5.12$ reflector + CCD.
152	Moletai Astronomical Observatory. Observers K. Černis, V. Laugalys, H. Selevicius. Measurer K. Černis. 0.35-m $f/3.5$ reflector + CCD.
157	Frasso Sabino. Observers R. Haver, R. Gorelli, M. Solarino. Measurer R. Haver. 0.37-m $f/6.85$ Cassegrain + CCD.
160	Castelmartini. Observers M. Jaeger, E. Prosperi, S. Prosperi, W. Vollmann. Measurer E. Prosperi. 0.35-m $f/10$ Schmidt-Cassegrain + CCD.
203	GiaGa Observatory. Observers S. Foglia, G. Galli. Measurer G. Galli. 0.28-m $f/6.8$ Schmidt-Cassegrain + CCD.
204	Schiaparelli Observatory. Observer L. Buzzi. 0.38-m $f/6.8$ reflector + CCD.
212	Observatorio La Dehesilla. Observer I. Almendros. 0.30-m $f/10$ Schmidt-Cassegrain + CCD.
213	Observatorio Montcabre. Observer R. Naves. Measurer M. Campas. 0.30-m $f/10$ Schmidt-Cassegrain.
215	Buchloe. Observer W. Hasubick. 0.44-m $f/4.6$ reflector + CCD.
232	Masquefa Observatory. Observer E. Reina. 0.25-m $f/10.6$ Schmidt-Cassegrain + CCD.
235	CAST Observatory, Talmassons. Observer R. Ligustri. 0.35-m $f/6$ reflector + CCD.
291	LPL/Spacewatch II. Observers T. H. Bressi, J. V. Scotti. 1.8-m $f/2.7$ reflector + CCD.
349	Ageo. Observer K. Kadota. 0.25-m $f/5.0$ reflector + CCD.
367	Yatsuka. Observer H. Abe. 0.26-m $f/6.0$ reflector + CCD.
461	University of Szeged, Piskésető Stn. (Konkoly). Observer K. Sárneczky. 0.60-m Schmidt + CCD.
467	Auckland Observatory. Observers G. W. Christie, T. Natusch. Measurer G. W. Christie. 0.40-m $f/10$ Schmidt-Cassegrain + CCD.
510	Siegen. Observers J. Klein, K. Antonova, J. Willmes, K.-F. Osterhage, M. Jung, H. Bill. Measurer H. Bill. 0.43-m $f/6.8$ reflector + CCD.
511	Haute Provence. Observer L. Arnold. 0.20-m $f/5.5$ Newtonian reflector + CCD.
566	Haleakala-NEAT/GEODSS. Observers E. F. Helin, S. H. Pravdo, K. J. Lawrence. Measurer A. Odasso. 1.0-m $f/2.2$ GEODSS telescope + CCD.
568	Mauna Kea. Observers M. Micheli, G. T. Elliott. Measurer D. J. Tholen. 2.24-m University of Hawaii reflector.
583	Odessa-Mayaki. Observers S. Kashuba, V. Kashuba, Y. Gorbanev, S. Podlesnyak. Measurer I. Stogneeva. 0.60-m $f/8.0$ Ritchey-Chrétien + CCD.
585	Kiev comet station. Observers A. Baransky, K. Barinova, A. Zhdanov. Measurer A. Baransky. 0.7-m $f/4$ reflector + CCD.
644	Palomar Mountain/NEAT. Measurer M. Meyer.
691	Steward Observatory, Kitt Peak. Observer J. V. Scotti. 0.9-m $f/3$ reflector + CCD.
695	Kitt Peak. Observer T. Vorobjov. 1.3-m $f/13$ Cassegrain + CCD.
703	Catalina Sky Survey. Observers R. E. Hill, A. Boattini, J. A. Johnson, R. A. Kowalski, S. M. Larson. Measurers A. Boattini, E. J. Christensen, A. R. Gibbs, A. D. Grauer, R. E. Hill, R. A. Kowalski, S. M. Larson, R. H. McNaught. 0.68-m Schmidt + CCD.

- 704 Lincoln Laboratory ETS, New Mexico. Observers M. Blythe, G. Spitz, R. Brungard, J. Paige, P. Festler, T. McVey, A. Valdivia, C. Gall. 1.0-m $f/2.15$ reflector + CCD.
- 718 Wiggins Observatory, Tooele. Observer P. Wiggins. 0.35-m $f/5.5$ Schmidt-Cassegrain + CCD.
- 750 Hobbs Observatory, Fall Creek. Observer N. Moritz. Measurer R. Elliott. 0.6-m $f/5$ Newtonian reflector + CCD.
- 762 Four Winds Observatory, Lake Leelanau. Observer R. Elliott. 0.3-m $f/10$ Schmidt-Cassegrain + CCD.
- 857 Iowa Robotic Observatory, Sonoita. Observers A. Kostin, M. Langbroek. 0.37-m $f/14$ Cassegrain + CCD, 0.37-m $f/14$ reflector + CCD.
- 926 Tenagra II Observatory. Observers M. Schwartz, P. R. Holvorcem. 0.41-m $f/3.75$ astrograph + CCD.
- 939 Observatorio Rodeno. Observer J. Castellano. 0.20-m $f/10$ Schmidt-Cassegrain + CCD.
- 941 Observatorio Pla D'Arguines. Observers R. Ferrando, M. Ferrando. Measurer R. Ferrando. 0.40-m $f/10$ Ritchey-Chrétien + CCD.
- 945 Observatorio Monte Deva. Observer J. R. Vidal. 0.36-m $f/4.48$ Schmidt-Cassegrain + CCD.
- 954 Teide Observatory. Observers N. D. Díaz, A. Chapman. 0.26-m $f/11.6$ reflector + CCD.
- 958 Observatoire de Dax. Observer P. Dupouy. 0.20-m $f/3.3$ Schmidt-Cassegrain + CCD, 0.25-m $f/6.3$ Schmidt-Cassegrain + CCD.
- 970 Chelmsford. Observer N. James. 0.28-m $f/10$ Schmidt-Cassegrain + CCD.
- A24 New Millennium Observatory, Mozzate. Observer E. Cozzi. 0.36-m $f/11$ Schmidt-Cassegrain + CCD.
- A71 Stixendorf. Observers M. Jaeger, E. Prosperi, S. Prosperi, W. Vollmann. Measurer W. Vollmann. 0.2-m $f/2.8$ reflector + CCD, 0.35-m $f/3.1$ reflector + CCD.
- A77 Observatoire Chante-Perdrix, Dauban. Observers F. Kugel, C. Rinner. 0.08-m $f/5$ refractor + CCD, 0.4-m $f/3$ reflector + CCD.
- A81 Balzaretto Observatory, Rome. Observer L. Franco. 0.20-m $f/5.3$ reflector + CCD.
- B18 Terskol. Observers M. Andreev, A. Sergeev, N. Parakhin, V. Kozlov, N. Karpov. Measurer M. Andreev. 0.6-m $f/13.3$ Cassegrain + CCD.
- B20 Observatorio Carmelita, Tiana. Observer J. M. Aymami. 0.25-m $f/4.3$ Schmidt-Cassegrain + CCD.
- B42 Vitebsk. Observer V. Nevski. 0.3-m $f/5.0$ reflector + CCD.
- B49 Paus Observatory, Sabadell. Observer J. Camarasa. 0.30-m $f/4$ Newtonian reflector + CCD.
- B51 Vallauris. Observer J. Nicolas. 0.41-m $f/3.3$ reflector + CCD.
- B54 Ager. Observer J. Bel. 0.30-m $f/6.5$ Schmidt-Cassegrain + CCD.
- B56 Observatorio Sant Pere, Mataró. Observer J. Lopesino. 0.30-m $f/10$ Schmidt-Cassegrain + CCD.
- B70 Sant Celoni. Observer L. Montoro. 0.20-m $f/10$ Schmidt-Cassegrain + CCD, 0.20-m $f/4$ Schmidt-Cassegrain + CCD.
- B74 Santa Maria de Montmagastrell. Observers J. M. Bosch, R. M. Olivera, F. Juregui, P. Horts. Measurer J. M. Bosch. 0.40-m $f/10$ Schmidt-Cassegrain + CCD.
- B83 Gières. Observer T. Noel. 0.20-m $f/5.0$ reflector + CCD.
- B92 Chinon. Observer M. Audejean. 0.32-m $f/6$ Newtonian reflector + CCD.
- C09 Rouet. Observer G. Sachot. 0.13-m $f/7.0$ refractor + CCD.
- C10 Maisoncelles. Observer J. F. Soulier. 0.30-m $f/3$ Newtonian reflector + CCD, 0.30-m $f/4$ Newtonian reflector + CCD.
- C23 Olmen. Observer A. Diepvens. 0.20-m $f/9$ refractor + CCD.
- C35 Terrassa. Observer J. Aledo. 0.30-m $f/3.7$ reflector + CCD.
- C40 Kuban State University Astrophysical Observatory. Observers A. Ivanov, V. Ivanov, A. Lyashenko, N. Bogachev, V. Lysenko, I. Koval, K. Yekimochkin, A. Levchenko, D. Ius, A. Barkov, V. Nikitin, V. NiKitin. Measurer A. Ivanov. 0.51-m $f/6.3$ reflector + CCD.
- C41 MASTER-II Observatory, Kislovodsk. Observer S. Shurpakov. 0.4-m $f/2.5$ reflector + CCD.
- C42 Xingming Observatory, Mt. Nanshan. Observers X. Gao, M.-T. Hui, Z. Xu. Measurers M.-T. Hui, Z. Xu. 0.11-m $f/5.0$ refractor + CCD, 0.36-m $f/6.9$ Schmidt-Cassegrain + CCD.
- C43 Hoyerwerda. Observer P. Lindner. 0.30-m $f/6.3$ Schmidt-Cassegrain + CCD.
- C47 Nonndorf. Observer G. Dangl. 0.25-m $f/4.8$ reflector + CCD.
- C60 Argelander Institute for Astronomy Obs., Bonn. Observer A. Tudorica. 0.5-m reflector + CCD.
- C71 Sant Marti Sescueioles. Observer F. Grau Horta.
- C73 Galați Observatory. Observers O. Tercu, A. Dumitriu. 0.4-m $f/8$ Ritchey-Chrétien + CCD.
- C74 Observatorio El Teatrillo de Lyra, Àger. Observer M. Soriano. 0.08-m $f/6.5$ refractor.
- C86 Blanes. Observer J. Gaitan. 0.25-m $f/6.8$ reflector + CCD.
- C90 Vinyols. Observer L. Tremosa. 0.20-m $f/5$ reflector + CCD.
- D18 Mt. Guizi Observatory. Observer M.-T. Hui. 0.89-m $f/4$ refractor + CCD.
- D88 Hiratsuka. Observer Y. Sugiyama. 0.25-m $f/5.0$ reflector + CCD.
- D90 RAS Observatory, Moorook. Observer K. Hills. 0.41-m $f/9$ Ritchey-Chrétien + CCD.
- D95 Kurihara. Observer T. Takahashi. 0.25-m $f/4.2$ reflector + CCD.
- E07 Murrumbateman. Observer D. Herald. 0.40-m $f/10$ Schmidt-Cassegrain + CCD.
- E10 Siding Spring-Faulkes Telescope South. Observers R. Miles, E. Guido, N. Howes, G. Sostero. Measurers R. Miles, G. A. Faillace, E. Guido, N. Howes, G. Sostero. 2.0-m $f/10.0$ Ritchey-Chrétien + CCD.
- E94 Possum Observatory, Gisborne. Observer J. Drummond. 0.35-m $f/10$ Schmidt-Cassegrain + CCD.
- F51 Pan-STARRS 1, Haleakala. Observers N. Primak, A. Schultz, S. Watters, J. Thiel, T. Goggia. Measurer PS1 Science Consortium. 1.8-m Ritchey-Chrétien + CCD.
- F65 Haleakala-Faulkes Telescope North. Observers P. Miller, P. Roche, A. Tripp, R. Miles, R. Holmes, S. Foglia, L. Buz. Measurers L. Buzzi, S. Foglia. 2.0-m $f/10$ Ritchey-Chrétien + CCD.
- G68 Sierra Stars Observatory, Markleeville. Observer R. Dymock. 0.61-m $f/10$ reflector + CCD.
- G96 Mt. Lemmon Survey. Observers R. A. Kowalski, A. D. Grauer, A. Boattini. Measurers A. Boattini, E. J. Christensen, A. R. Gibbs, A. D. Grauer, R. E. Hill, R. A. Kowalski, S. M. Larson, R. H. McNaught. 1.5-m reflector + CCD.
- H06 RAS Observatory, Mayhill. Observers R. Ligustri, H. Sato, E. Bryssinck, M. Urbanik, M. Suzuki, T. Yusa. 0.25-m $f/3.4$ hyperbolic astrograph + CCD, 0.43-m $f/6.8$ astrograph + CCD + $f/4.5$ focal reducer, 0.51-m $f/6.8$ astrograph + CCD + $f/4.5$ focal reducer.

H15	ISON-NM Observatory, Mayhill. Observer L. Elenin. 0.45-m $f/2.8$ astrograph + CCD.						C/2006 S3	2012 05 22.01943	17 03 48.66	-12 47 07.5	14.0 N	585
							C/2006 S3	2012 05 22.02086	17 03 48.52	-12 47 07.7	13.9 N	585
H21	Astronomical Research Observatory, Westfield. Observer R. Holmes. Measurers T. Vorobjov, L. Buzzi, S. Foglia, H. Devore. 0.61-m $f/4.0$ astrograph + CCD, 0.81-m $f/4.0$ astrograph + CCD.						C/2006 S3	2012 05 22.02652	17 03 47.96	-12 47 07.0	14.0 N	585
							C/2006 S3	2012 05 22.02795	17 03 47.85	-12 47 07.2	13.9 N	585
H23	Pear Tree Observatory, Valparaiso. Observer T. Haugh. 0.25-m $f/5.4$ Newtonian reflector + CCD.						C/2006 S3	2012 05 25.01209	16 59 14.21	-12 43 41.5	14.2 N	K 958
							C/2006 S3	2012 05 25.02536	16 59 12.98	-12 43 40.5	14.1 N	K 958
							C/2006 S3	2012 05 25.03675	16 59 11.92	-12 43 40.0	14.2 N	K 958
H45	Arkansas Sky Obs., Petit Jean Mountain South. Observer P. C. Sherrod. 0.51-m $f/4.3$ astrograph + CCD.						C/2006 S3	2012 05 25.27873	16 58 49.55	-12 43 23.0	15.3 N	A H06
							C/2006 S3	2012 05 25.28150	16 58 49.22	-12 43 22.0	15.0 N	A H06
H47	Vicksburg. Observer C. Bell. 0.3-m Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 25.28427	16 58 49.02	-12 43 22.1	15.0 N	A H06
I32	Observatorio Beta Orionis, Rosario. Observer F. Tifner. 0.25-m $f/10$ Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 27.99461	16 54 37.74	-12 40 15.9	13.8 N	K 958
							C/2006 S3	2012 05 28.00683	16 54 36.55	-12 40 15.1	13.9 N	K 958
I39	Observatorio Cruz del Sur, San Justo. Observer A. Chapman. Measurers A. Chapman, N. D. Diaz. 0.20-m $f/4$ reflector + CCD.						C/2006 S3	2012 05 28.04624	16 54 32.87	-12 40 11.8	13.7 N	K 958
							C/2006 S3	2012 05 29.03703	16 53 00.54	-12 39 05.0	13.5 N	K 958
I47	Pierre Auger Observatory, Malargüe. Observers M. Masek, J. Cerny, J. Ebr, M. Prouza, P. Kubanek, M. Jelinek. Measurer M. Masek. 0.3-m $f/10$ reflector + CCD.						C/2006 S3	2012 05 29.04888	16 52 59.42	-12 39 04.2	13.5 N	K 958
							C/2006 S3	2012 05 29.06121	16 52 58.24	-12 39 03.6	13.4 N	K 958
							C/2006 S3	2012 05 29.86843	16 51 42.95	-12 38 08.4	14.6 N	585
I57	Elche. Observer J. Lozano. 0.25-m $f/10$ Schmidt-Cassegrain + CCD						C/2006 S3	2012 05 29.86955	16 51 42.83	-12 38 07.9	14.7 N	585
I72	Observatorio Carpe-Noctem, Madrid. Observer J. L. Martin. 0.10-m $f/6.1$ refractor + CCD.						C/2006 S3	2012 05 29.87065	16 51 42.75	-12 38 08.1	14.6 N	585
							C/2006 S3	2012 05 29.87174	16 51 42.65	-12 38 08.6	14.6 N	585
I75	Observatorio Castellon. Observer A. Betoret. 0.20-m $f/5.0$ Newtonian reflector + CCD.						C/2006 S3	2012 05 29.87282	16 51 42.52	-12 38 08.4	14.5 N	585
							C/2006 S3	2012 05 30.48557	16 50 45.34	-12 37 25.3	13.8 T	D95
I88	Fuensanta de Martos. Observer J. Carrillo. 0.36-m $f/5$ reflector + CCD.						C/2006 S3	2012 05 30.48777	16 50 45.14	-12 37 25.3		D95
I89	RAS Observatory, Nerpio. Observer M. Suzuki. 0.15-m $f/7.3$ refractor + CCD, 0.43-m $f/6.8$ astrograph + CCD.						C/2006 S3	2012 05 30.48996	16 50 44.96	-12 37 25.1		D95
							C/2006 S3	2012 05 30.96583	16 50 00.29	-12 36 53.2	13.4 N	585
I99	Observatorio Blanquita, Vaciamadrid. Observer F. Limon. 0.20-m $f/3.3$ Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 30.97009	16 49 59.98	-12 36 52.1	13.3 N	585
							C/2006 S3	2012 05 30.98612	16 49 58.42	-12 36 52.0	13.4 N	585
J01	Observatorio Cielo Profundo, Oviedo. Observer J. Gonzalez. 0.23-m $f/10$ Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 31.93424	16 48 29.74	-12 35 47.4	13.4 N	585
							C/2006 S3	2012 05 31.93684	16 48 29.52	-12 35 47.1	13.5 N	585
J24	Observatorio Altamira. Observer J. F. Hernandez. 0.4-m $f/10$ Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 31.93828	16 48 29.39	-12 35 46.6	13.4 N	585
							C/2006 S3	2012 05 31.94111	16 48 29.09	-12 35 46.9	13.5 N	585
J38	Observatorio La Vara, Valdés. Observer F. García. 0.25-m $f/8.1$ Ritchey-Chrétien + CCD.						C/2006 S3	2012 05 31.94253	16 48 28.96	-12 35 47.1	13.4 N	585
							C/2006 S3	2012 05 31.94538	16 48 28.72	-12 35 46.7	13.5 N	585
J47	Observatorio Nazaret. Observer G. Muler. Measurers J. M. Ruiz, G. Muler. 0.30-m Schmidt-Cassegrain + CCD.						C/2006 S3	2012 05 31.94682	16 48 28.62	-12 35 46.4	13.4 N	585
							C/2006 S3	2012 05 31.94965	16 48 28.30	-12 35 46.3	13.4 N	585
J84	South Observatory, Clanfield. Observer D. Briggs. 0.61-m $f/4.75$ reflector + CCD.						C/2006 S3	2012 06 01.96752	16 46 53.10	-12 34 37.2	12.6 N	C10
							C/2006 S3	2012 06 01.97337	16 46 52.55	-12 34 36.9	12.5 N	C10
J93	Mount Tuffley Observatory, Gloucester. Observer J. Fletcher. 0.25-m $f/5.5$ Schmidt-Cassegrain + CCD.						C/2006 S3	2012 06 01.98066	16 46 51.86	-12 34 36.4	12.5 N	C10
							C/2006 S3	2012 06 01.99288	16 46 50.71	-12 34 35.5	12.4 N	C10
							C/2006 S3	2012 06 02.00045	16 46 49.98	-12 34 35.2	12.4 N	C10
							C/2006 S3	2012 06 02.00796	16 46 49.29	-12 34 34.7	12.4 N	C10
							C/2006 S3	2012 06 02.01384	16 46 48.73	-12 34 34.2	12.4 N	C10
							C/2006 S3	2012 06 03.08211	16 45 08.70	-12 33 21.4	13.7 N	J24
							C/2006 S3	2012 06 03.08600	16 45 08.33	-12 33 21.2	13.6 N	J24
							C/2006 S3	2012 06 03.08990	16 45 07.98	-12 33 20.8	13.7 N	J24
							C/2006 S3	2012 06 05.01759	16 42 07.69	-12 31 13.1	13.9 N	945
							C/2006 S3	2012 06 05.02222	16 42 07.28	-12 31 13.3	13.8 N	945
							C/2006 S3	2012 06 05.03060	16 42 06.51	-12 31 12.2	13.9 N	945
							C/2006 S3	2012 06 05.03478	16 42 06.12	-12 31 12.4	13.8 N	945
							C/2006 S3	2012 06 05.03881	16 42 05.73	-12 31 10.3	13.8 N	945
							C/2006 S3	2012 06 05.708643	16 41 03.26	-12 30 24.9	12.2 T	30D90
							C/2006 S3	2012 06 05.715582	16 41 02.58	-12 30 24.4	12.2 T	30D90
							C/2006 S3	2012 06 05.722405	16 41 01.95	-12 30 24.0	12.3 T	30D90
Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N Obs.						
C/2005 L3 (McNaught)												
C/2005 L3	2012 01	14.61473	10 43 24.86	+38 39 32.4	17.7 T	349						
C/2005 L3	2012 01	14.62348	10 43 24.66	+38 39 34.5		349						
C/2006 S3 (LONEOS)												
C/2006 S3	2012 05	04.37971	17 28 51.73	-13 06 43.6						A H06		
C/2006 S3	2012 05	04.38250	17 28 51.52	-13 06 43.7						A H06		
C/2006 S3	2012 05	04.38530	17 28 51.34	-13 06 43.5						A H06		
C/2006 S3	2012 05	15.29612	17 13 48.9	-12 54 46.3	15.5 N					A H06		
C/2006 S3	2012 05	15.30192	17 13 48.4	-12 54 45.7	15.5 N					A H06		
C/2006 S3	2012 05	22.01234	17 03 49.28	-12 47 07.8	14.0 N	585						
C/2006 S3	2012 05	22.01377	17 03 49.19	-12 47 07.8	13.9 N	585						

C/2006 S3	2012 06 06.55169	16 39 44.81	-12 29 31.7		KD88	C/2006 S3	2012 06 11.18636	16 32 35.78	-12 24 35.8	11.7 T	H45
C/2006 S3	2012 06 06.55349	16 39 44.63	-12 29 31.5		KD88	C/2006 S3	2012 06 11.18843	16 32 35.59	-12 24 35.7	11.8 T	H45
C/2006 S3	2012 06 06.55528	16 39 44.46	-12 29 31.4	12.8 T	KD88	C/2006 S3	2012 06 11.19027	16 32 35.44	-12 24 35.6	11.7 T	H45
C/2006 S3	2012 06 07.90941	16 37 38.47	-12 28 03.7	14.7 N	A71	C/2006 S3	2012 06 12.91831	16 29 57.35	-12 22 49.8	14.5 N	J01
C/2006 S3	2012 06 07.91228	16 37 38.22	-12 28 03.9	14.6 N	A71	C/2006 S3	2012 06 12.92498	16 29 56.73	-12 22 49.7	14.4 N	J01
C/2006 S3	2012 06 07.91515	16 37 37.95	-12 28 03.3	14.7 N	A71	C/2006 S3	2012 06 12.93166	16 29 56.11	-12 22 49.2	14.4 N	J01
C/2006 S3	2012 06 07.91801	16 37 37.69	-12 28 03.3	14.7 N	A71	C/2006 S3	2012 06 13.28839	16 29 23.59	-12 22 27.2	11.5 T	H45
C/2006 S3	2012 06 08.93425	16 36 03.50	-12 26 57.6	13.7 N	I99	C/2006 S3	2012 06 13.29189	16 29 23.26	-12 22 27.1	11.6 T	H45
C/2006 S3	2012 06 08.94220	16 36 02.75	-12 26 57.1	13.7 N	I99	C/2006 S3	2012 06 13.29369	16 29 23.10	-12 22 26.9	11.6 T	H45
C/2006 S3	2012 06 08.94417	16 36 02.56	-12 26 57.2	13.7 N	I99	C/2006 S3	2012 06 13.29569	16 29 22.92	-12 22 26.8	11.4 T	H45
C/2006 S3	2012 06 08.97677	16 35 59.52	-12 26 55.1	13.8 N	B92	C/2006 S3	2012 06 13.29750	16 29 22.74	-12 22 26.7	11.6 T	H45
C/2006 S3	2012 06 08.97766	16 35 59.42	-12 26 55.1	13.7 N	B92	C/2006 S3	2012 06 13.29937	16 29 22.57	-12 22 26.6	15.5 T	H45
C/2006 S3	2012 06 08.97854	16 35 59.34	-12 26 54.6	13.9 N	B92	C/2006 S3	2012 06 14.03321	16 28 15.95	-12 21 42.8	13.9 N	945
C/2006 S3	2012 06 08.97941	16 35 59.20	-12 26 54.7	14.0 N	B92	C/2006 S3	2012 06 14.03824	16 28 15.48	-12 21 42.4	13.9 N	945
C/2006 S3	2012 06 08.98028	16 35 59.22	-12 26 54.8	14.0 N	B92	C/2006 S3	2012 06 14.04723	16 28 14.65	-12 21 42.0	13.9 N	945
C/2006 S3	2012 06 08.98117	16 35 59.09	-12 26 54.8	14.4 N	B92	C/2006 S3	2012 06 14.05213	16 28 14.23	-12 21 41.3	13.9 N	945
C/2006 S3	2012 06 08.98292	16 35 58.89	-12 26 54.6	14.3 N	B92	C/2006 S3	2012 06 14.05708	16 28 13.78	-12 21 41.3	13.9 N	945
C/2006 S3	2012 06 08.98378	16 35 58.84	-12 26 54.5	13.9 N	B92	C/2006 S3	2012 06 14.28243	16 27 53.53	-12 21 27.6	12.7 T	G96
C/2006 S3	2012 06 08.98468	16 35 58.74	-12 26 54.1	13.9 N	B92	C/2006 S3	2012 06 14.28853	16 27 53.02	-12 21 26.9	12.7 T	G96
C/2006 S3	2012 06 09.01057	16 35 56.41	-12 26 52.8	13.7 N	K 958	C/2006 S3	2012 06 14.29473	16 27 52.48	-12 21 26.2	12.7 T	G96
C/2006 S3	2012 06 09.01231	16 35 56.29	-12 26 52.9	13.3 N	C74	C/2006 S3	2012 06 14.30084	16 27 51.91	-12 21 25.9	12.7 T	G96
C/2006 S3	2012 06 09.01376	16 35 56.11	-12 26 52.3	13.2 N	C74	C/2006 S3	2012 06 14.52405	16 27 31.68	-12 21 14.0		K 367
C/2006 S3	2012 06 09.02234	16 35 55.23	-12 26 52.2	13.8 N	K 958	C/2006 S3	2012 06 14.52729	16 27 31.38	-12 21 13.7		K 367
C/2006 S3	2012 06 09.02896	16 35 54.73	-12 26 52.3	13.2 N	C74	C/2006 S3	2012 06 14.53053	16 27 31.09	-12 21 13.5	13.6 T	K 367
C/2006 S3	2012 06 09.03540	16 35 54.02	-12 26 51.1	14.0 N	K 958	C/2006 S3	2012 06 14.86817	16 27 00.58	-12 20 53.2	13.1 N	A77
C/2006 S3	2012 06 09.09039	16 34 33.34	-12 25 55.7	15.2 T	583	C/2006 S3	2012 06 14.89017	16 26 58.38	-12 20 54.4	13.5 N	A77
C/2006 S3	2012 06 09.91666	16 34 32.63	-12 25 55.0	14.4 T	583	C/2006 S3	2012 06 14.91293	16 26 56.41	-12 20 53.9	13.5 N	A77
C/2006 S3	2012 06 09.91694	16 34 32.64	-12 25 54.7	14.0 T	583	C/2006 S3	2012 06 14.97917	16 26 50.53	-12 20 47.5	14.0 N	J38
C/2006 S3	2012 06 10.01638	16 34 23.43	-12 25 49.1	13.9 N	C23	C/2006 S3	2012 06 14.98205	16 26 50.30	-12 20 47.3	14.0 N	J38
C/2006 S3	2012 06 10.02142	16 34 22.98	-12 25 48.5	13.6 N	J93	C/2006 S3	2012 06 14.98638	16 26 49.92	-12 20 46.6	14.0 N	J38
C/2006 S3	2012 06 10.02215	16 34 22.88	-12 25 49.0	13.8 N	C23	C/2006 S3	2012 06 15.19854	16 26 30.79	-12 20 34.5	11.6 T	H45
C/2006 S3	2012 06 10.02793	16 34 22.38	-12 25 48.0	14.1 N	C23	C/2006 S3	2012 06 15.20047	16 26 30.61	-12 20 34.4	11.7 T	H45
C/2006 S3	2012 06 10.02810	16 34 22.35	-12 25 48.4	13.6 N	J93	C/2006 S3	2012 06 15.20168	16 26 30.51	-12 20 34.4	11.7 T	H45
C/2006 S3	2012 06 10.03167	16 34 22.01	-12 25 48.2	13.5 N	J93	C/2006 S3	2012 06 15.20310	16 26 30.38	-12 20 34.3	11.7 T	H45
C/2006 S3	2012 06 10.10653	16 34 15.06	-12 25 42.6	13.7 N	J24	C/2006 S3	2012 06 15.20522	16 26 30.18	-12 20 34.1	11.7 T	H45
C/2006 S3	2012 06 10.10991	16 34 14.71	-12 25 42.1	13.6 N	J24	C/2006 S3	2012 06 15.20853	16 26 29.88	-12 20 33.9	11.7 T	H45
C/2006 S3	2012 06 10.11554	16 34 14.16	-12 25 42.1	13.7 N	J24	C/2006 S3	2012 06 15.86841	16 25 30.61	-12 19 56.0	14.6 N	235
C/2006 S3	2012 06 10.48748	16 33 40.11	-12 25 19.2		K 367	C/2006 S3	2012 06 15.87706	16 25 29.85	-12 19 55.8	14.6 N	235
C/2006 S3	2012 06 10.48910	16 33 39.97	-12 25 19.1		K 367	C/2006 S3	2012 06 15.92865	16 25 25.18	-12 19 52.5	14.0 N	I75
C/2006 S3	2012 06 10.49072	16 33 39.82	-12 25 19.0	13.8 T	K 367	C/2006 S3	2012 06 15.94501	16 25 23.67	-12 19 51.4	13.9 N	I75
C/2006 S3	2012 06 11.00491	16 32 52.37	-12 24 46.7	14.4 T	C40	C/2006 S3	2012 06 15.94506	16 25 23.74	-12 19 51.8	14.6 N	B83
C/2006 S3	2012 06 11.00519	16 32 52.36	-12 24 46.8	14.5 T	C40	C/2006 S3	2012 06 15.96137	16 25 22.20	-12 19 50.7	13.9 N	I75
C/2006 S3	2012 06 11.00547	16 32 52.33	-12 24 46.6	14.4 T	C40	C/2006 S3	2012 06 15.96192	16 25 22.26	-12 19 50.6	14.6 N	B83
C/2006 S3	2012 06 11.00575	16 32 52.30	-12 24 46.7	14.2 T	C40	C/2006 S3	2012 06 15.97315	16 25 21.26	-12 19 49.6	13.9 N	I72
C/2006 S3	2012 06 11.00603	16 32 52.30	-12 24 46.6	14.2 T	C40	C/2006 S3	2012 06 15.97390	16 25 21.19	-12 19 49.7	13.9 N	I72
C/2006 S3	2012 06 11.00631	16 32 52.25	-12 24 46.8	14.2 T	C40	C/2006 S3	2012 06 15.97465	16 25 21.11	-12 19 49.7	13.9 N	I72
C/2006 S3	2012 06 11.00659	16 32 52.25	-12 24 46.3	14.4 T	C40	C/2006 S3	2012 06 15.97678	16 25 20.89	-12 19 49.9	14.1 N	C86
C/2006 S3	2012 06 11.00687	16 32 52.25	-12 24 46.8	14.2 T	C40	C/2006 S3	2012 06 15.97730	16 25 20.86	-12 19 49.5	14.7 N	B83
C/2006 S3	2012 06 11.00715	16 32 52.18	-12 24 46.5	14.2 T	C40	C/2006 S3	2012 06 15.98125	16 25 20.51	-12 19 49.5	14.0 N	C86
C/2006 S3	2012 06 11.00743	16 32 52.16	-12 24 46.4	14.2 T	C40	C/2006 S3	2012 06 15.98423	16 25 20.24	-12 19 49.0	14.0 N	C86
C/2006 S3	2012 06 11.17948	16 32 36.41	-12 24 36.2	11.7 T	H45	C/2006 S3	2012 06 15.99845	16 25 18.93	-12 19 48.5	13.9 N	I99
C/2006 S3	2012 06 11.18237	16 32 36.15	-12 24 36.1	11.7 T	H45	C/2006 S3	2012 06 16.00286	16 25 18.53	-12 19 48.2	13.9 N	I99
C/2006 S3	2012 06 11.18450	16 32 35.93	-12 24 35.9	11.6 T	H45	C/2006 S3	2012 06 16.00493	16 25 18.34	-12 19 48.2	13.9 N	I99

C/2006 S3	2012 06 16.698889	16 24 16.29	-12 19 06.2	13.5 T	30D90	C/2006 S3	2012 06 20.17050	16 19 10.65	-12 16 01.1	15.0 N	H23
C/2006 S3	2012 06 16.705804	16 24 15.67	-12 19 05.8	13.5 T	30D90	C/2006 S3	2012 06 20.32608	16 18 57.05	-12 15 52.7	14.4 N	H47
C/2006 S3	2012 06 16.712714	16 24 15.05	-12 19 05.4	13.5 T	30D90	C/2006 S3	2012 06 20.32892	16 18 56.81	-12 15 52.6	14.2 N	H47
C/2006 S3	2012 06 16.86351	16 24 01.73	-12 18 59.9	15.5 N	A71	C/2006 S3	2012 06 20.90181	16 18 07.30	-12 15 24.0	14.5 N	C23
C/2006 S3	2012 06 16.87170	16 24 00.97	-12 18 59.0	15.7 N	A71	C/2006 S3	2012 06 20.90614	16 18 06.90	-12 15 23.7	14.7 N	C23
C/2006 S3	2012 06 16.87814	16 24 00.41	-12 18 58.8	16.0 N	A71	C/2006 S3	2012 06 20.91047	16 18 06.55	-12 15 23.4	14.5 N	C23
C/2006 S3	2012 06 16.88457	16 23 59.82	-12 18 58.4	16.1 N	A71	C/2006 S3	2012 06 21.12060	16 17 48.43	-12 15 11.8	14.8 N	H23
C/2006 S3	2012 06 16.89105	16 23 59.23	-12 18 58.1	15.9 N	A71	C/2006 S3	2012 06 21.13519	16 17 47.17	-12 15 11.1	14.6 N	H23
C/2006 S3	2012 06 16.89281	16 23 59.10	-12 18 57.8	14.0 T	B51	C/2006 S3	2012 06 21.14981	16 17 45.90	-12 15 10.4	14.8 N	H23
C/2006 S3	2012 06 16.89632	16 23 58.79	-12 18 57.3	14.0 T	B51	C/2006 S3	2012 06 21.93091	16 16 38.77	-12 14 32.6	14.7 N	C10
C/2006 S3	2012 06 16.90057	16 23 58.41	-12 18 57.5	14.0 T	B51	C/2006 S3	2012 06 21.94158	16 16 37.85	-12 14 32.0	14.7 N	C10
C/2006 S3	2012 06 16.90455	16 23 58.04	-12 18 56.9	13.9 T	B51	C/2006 S3	2012 06 21.95173	16 16 36.98	-12 14 31.5	14.7 N	C10
C/2006 S3	2012 06 16.90934	16 23 57.63	-12 18 56.7	14.0 T	B51	C/2006 S3	2012 06 21.98575	16 16 34.05	-12 14 30.0	13.8 N	C90
C/2006 S3	2012 06 16.96810	16 23 52.38	-12 18 53.6	14.1 N	232	C/2006 S3	2012 06 22.00922	16 16 32.07	-12 14 28.3	13.9 N	C90
C/2006 S3	2012 06 16.97373	16 23 51.88	-12 18 53.2	14.1 N	232	C/2006 S3	2012 06 22.03324	16 16 29.96	-12 14 27.3	14.0 N	C90
C/2006 S3	2012 06 16.97936	16 23 51.38	-12 18 52.9	14.1 N	232	C/2006 S3	2012 06 22.52628	16 15 47.94	-12 14 03.1	13.6 T	D95
C/2006 S3	2012 06 16.98215	16 23 51.11	-12 18 53.1	14.1 N	213	C/2006 S3	2012 06 22.52774	16 15 47.79	-12 14 03.1		D95
C/2006 S3	2012 06 16.99148	16 23 50.28	-12 18 52.5	14.1 N	213	C/2006 S3	2012 06 22.52920	16 15 47.70	-12 14 03.0		D95
C/2006 S3	2012 06 17.00878	16 23 48.71	-12 18 51.4	14.1 N	213	C/2006 S3	2012 06 22.91113	16 15 15.27	-12 13 44.8	14.7 N	J01
C/2006 S3	2012 06 17.88962	16 22 30.64	-12 18 02.7	14.6 N	C43	C/2006 S3	2012 06 22.93975	16 15 12.75	-12 13 43.7	14.9 N	J01
C/2006 S3	2012 06 17.89016	16 22 30.60	-12 18 02.6	14.7 N	C43	C/2006 S3	2012 06 22.96747	16 15 10.39	-12 13 42.8	14.6 N	B92
C/2006 S3	2012 06 17.89052	16 22 30.58	-12 18 02.7	14.7 N	C43	C/2006 S3	2012 06 22.96834	16 15 10.36	-12 13 42.3	14.9 N	J01
C/2006 S3	2012 06 17.89088	16 22 30.54	-12 18 02.6	14.7 N	C43	C/2006 S3	2012 06 22.96837	16 15 10.31	-12 13 42.7	14.7 N	B92
C/2006 S3	2012 06 17.89933	16 22 29.80	-12 18 01.6	14.3 T	583	C/2006 S3	2012 06 22.96924	16 15 10.27	-12 13 42.4	14.7 N	B92
C/2006 S3	2012 06 17.90595	16 22 29.18	-12 18 01.5	14.4 T	583	C/2006 S3	2012 06 22.96949	16 15 10.26	-12 13 42.0	14.0 N	I99
C/2006 S3	2012 06 17.90623	16 22 29.16	-12 18 01.0	14.4 T	583	C/2006 S3	2012 06 22.97010	16 15 10.21	-12 13 42.4	14.7 N	B92
C/2006 S3	2012 06 17.95238	16 22 25.06	-12 17 59.2	14.7 N	C43	C/2006 S3	2012 06 22.97097	16 15 10.09	-12 13 42.5	14.7 N	B92
C/2006 S3	2012 06 17.95293	16 22 25.02	-12 17 59.3	14.7 N	C43	C/2006 S3	2012 06 22.97143	16 15 10.08	-12 13 41.9	14.1 N	I99
C/2006 S3	2012 06 17.95383	16 22 24.94	-12 17 59.2	14.6 N	C43	C/2006 S3	2012 06 22.97184	16 15 10.02	-12 13 42.4	14.7 N	B92
C/2006 S3	2012 06 17.95438	16 22 24.89	-12 17 59.1	14.7 N	C43	C/2006 S3	2012 06 22.97271	16 15 09.95	-12 13 42.6	14.7 N	B92
C/2006 S3	2012 06 18.00236	16 22 20.60	-12 17 57.7	14.4 N	C35	C/2006 S3	2012 06 22.97358	16 15 09.86	-12 13 42.3	14.6 N	B92
C/2006 S3	2012 06 18.00452	16 22 20.41	-12 17 58.0	14.4 N	C35	C/2006 S3	2012 06 22.97447	16 15 09.80	-12 13 42.2	14.6 N	B92
C/2006 S3	2012 06 18.00512	16 22 20.37	-12 17 57.0	14.6 N	C35	C/2006 S3	2012 06 22.97534	16 15 09.72	-12 13 42.1	14.7 N	B92
C/2006 S3	2012 06 18.00628	16 22 20.24	-12 17 58.3	14.8 N	C35	C/2006 S3	2012 06 22.97730	16 15 09.61	-12 13 41.7	14.0 N	I99
C/2006 S3	2012 06 18.93226	16 20 58.80	-12 17 06.3	14.9 N	K C10	C/2006 S3	2012 06 23.02912	16 15 05.16	-12 13 39.1	14.1 N	939
C/2006 S3	2012 06 18.98265	16 20 54.32	-12 17 03.6	15.1 N	K C10	C/2006 S3	2012 06 23.03403	16 15 04.74	-12 13 38.8	14.1 N	939
C/2006 S3	2012 06 19.46055	16 20 12.56	-12 16 35.8	15.6 N	2 E10	C/2006 S3	2012 06 23.03892	16 15 04.32	-12 13 38.6	14.1 N	939
C/2006 S3	2012 06 19.46545	16 20 12.12	-12 16 35.7	15.5 N	2 E10	C/2006 S3	2012 06 23.23012	16 14 48.48	-12 13 28.2	12.7 T	703
C/2006 S3	2012 06 19.94339	16 19 30.39	-12 16 12.6	14.6 N	I88	C/2006 S3	2012 06 23.23635	16 14 48.04	-12 13 27.6	12.7 T	703
C/2006 S3	2012 06 19.94763	16 19 29.99	-12 16 12.2	14.6 N	I88	C/2006 S3	2012 06 23.24271	16 14 47.43	-12 13 27.5	12.8 T	703
C/2006 S3	2012 06 19.95137	16 19 29.69	-12 16 12.3	14.6 N	I88	C/2006 S3	2012 06 23.24890	16 14 46.89	-12 13 27.1	12.7 T	703
C/2006 S3	2012 06 19.95815	16 19 29.12	-12 16 12.1	14.4 N	J93	C/2006 S3	2012 06 23.26730	16 14 44.96	-12 13 28.2	11.8 T	H45
C/2006 S3	2012 06 19.96013	16 19 28.90	-12 16 11.9	14.2 N	B56	C/2006 S3	2012 06 23.26920	16 14 44.84	-12 13 28.1	11.6 T	H45
C/2006 S3	2012 06 19.96465	16 19 28.50	-12 16 11.6	14.1 N	B56	C/2006 S3	2012 06 23.27124	16 14 44.65	-12 13 28.0	11.7 T	H45
C/2006 S3	2012 06 19.96808	16 19 28.21	-12 16 11.5	14.2 N	B56	C/2006 S3	2012 06 23.27310	16 14 44.49	-12 13 28.0	11.7 T	H45
C/2006 S3	2012 06 19.99631	16 19 25.81	-12 16 09.7	14.4 N	J93	C/2006 S3	2012 06 23.27561	16 14 44.28	-12 13 27.7	11.8 T	H45
C/2006 S3	2012 06 20.00338	16 19 25.19	-12 16 09.6	14.4 N	J93	C/2006 S3	2012 06 23.27790	16 14 44.09	-12 13 27.5	11.7 T	H45
C/2006 S3	2012 06 20.06668	16 19 19.69	-12 16 04.0	13.8 T	K I47	C/2006 S3	2012 06 23.90319	16 13 51.42	-12 12 58.2	15.0 T	B51
C/2006 S3	2012 06 20.07028	16 19 19.40	-12 16 03.9	13.8 T	K I47	C/2006 S3	2012 06 23.90812	16 13 51.00	-12 12 58.2	14.9 T	B51
C/2006 S3	2012 06 20.07457	16 19 19.02	-12 16 03.6	13.8 T	K I47	C/2006 S3	2012 06 23.91313	16 13 50.57	-12 12 57.9	14.9 T	B51
C/2006 S3	2012 06 20.07885	16 19 18.61	-12 16 03.6	13.8 T	K I47	C/2006 S3	2012 06 23.91876	16 13 50.10	-12 12 57.7	14.9 T	B51
C/2006 S3	2012 06 20.14124	16 19 13.21	-12 16 02.5	14.7 N	H23	C/2006 S3	2012 06 23.95435	16 13 47.13	-12 12 56.1	14.1 N	I72
C/2006 S3	2012 06 20.15584	16 19 11.95	-12 16 01.7	15.1 N	H23	C/2006 S3	2012 06 23.95635	16 13 46.96	-12 12 56.1	14.2 N	I72

C/2006 S3	2012 06 23.95940	16 13 46.71	-12 12 56.0	14.1 N	I72
C/2006 S3	2012 06 24.02898	16 13 40.77	-12 12 53.0	14.0 N	945
C/2006 S3	2012 06 24.03484	16 13 40.27	-12 12 52.5	14.1 N	945
C/2006 S3	2012 06 24.04036	16 13 39.79	-12 12 52.5	14.1 N	945
C/2006 S3	2012 06 24.05144	16 13 38.88	-12 12 51.8	14.1 N	945
C/2006 S3	2012 06 24.05883	16 13 38.23	-12 12 51.5	14.1 N	945
C/2006 S3	2012 06 24.27541	16 13 20.12	-12 12 41.7	12.0 T	H45
C/2006 S3	2012 06 24.27726	16 13 19.99	-12 12 41.7	12.0 T	H45
C/2006 S3	2012 06 24.27905	16 13 19.85	-12 12 41.5	11.9 T	H45
C/2006 S3	2012 06 24.28076	16 13 19.69	-12 12 41.5	11.9 T	H45
C/2006 S3	2012 06 24.28231	16 13 19.57	-12 12 41.4	11.8 T	H45
C/2006 S3	2012 06 24.28388	16 13 19.44	-12 12 41.3	12.0 T	H45
C/2006 S3	2012 06 24.47840	16 13 03.19	-12 12 30.1	14.9 N	467
C/2006 S3	2012 06 24.47891	16 13 03.15	-12 12 30.1	14.9 N	467
C/2006 S3	2012 06 24.47943	16 13 03.10	-12 12 30.0	15.0 N	467
C/2006 S3	2012 06 24.88535	16 12 29.29	-12 12 14.3	14.2 N	I57
C/2006 S3	2012 06 24.89649	16 12 28.37	-12 12 13.7	14.2 N	I57
C/2006 S3	2012 06 24.90258	16 12 27.84	-12 12 14.0	14.8 N	C23
C/2006 S3	2012 06 24.90542	16 12 27.61	-12 12 13.7	14.2 N	I57
C/2006 S3	2012 06 24.90980	16 12 27.27	-12 12 13.5	14.8 N	C23
C/2006 S3	2012 06 24.91020	16 12 27.25	-12 12 12.9	14.2 N	C86
C/2006 S3	2012 06 24.91462	16 12 26.86	-12 12 12.8	14.2 N	C86
C/2006 S3	2012 06 24.91610	16 12 26.77	-12 12 12.9	14.2 N	C86
C/2006 S3	2012 06 24.91719	16 12 26.66	-12 12 13.2	14.9 N	C23
C/2006 S3	2012 06 24.98053	16 12 21.30	-12 12 10.1	14.1 N	945
C/2006 S3	2012 06 24.98564	16 12 20.89	-12 12 10.1	14.1 N	945
C/2006 S3	2012 06 24.99866	16 12 19.84	-12 12 09.2	14.2 N	J38
C/2006 S3	2012 06 24.99958	16 12 19.73	-12 12 09.3	14.1 N	945
C/2006 S3	2012 06 25.00045	16 12 19.69	-12 12 09.2	14.3 N	J38
C/2006 S3	2012 06 25.00498	16 12 19.27	-12 12 09.1	14.1 N	945
C/2006 S3	2012 06 25.00581	16 12 19.24	-12 12 08.9	14.3 N	J38
C/2006 S3	2012 06 25.01027	16 12 18.83	-12 12 08.9	14.1 N	945
C/2006 S3	2012 06 25.14841	16 12 07.44	-12 12 02.5	15.5 T	762
C/2006 S3	2012 06 25.16843	16 12 05.78	-12 12 01.7	15.2 T	762
C/2006 S3	2012 06 25.21507	16 12 01.89	-12 11 59.7	15.1 T	762
C/2006 S3	2012 06 25.28157	16 11 56.33	-12 11 56.7	12.9 T	H45
C/2006 S3	2012 06 25.28289	16 11 56.22	-12 11 56.6	12.9 T	H45
C/2006 S3	2012 06 25.28505	16 11 56.04	-12 11 56.6	13.0 T	H45
C/2006 S3	2012 06 25.28782	16 11 55.80	-12 11 56.4	12.9 T	H45
C/2006 S3	2012 06 25.29820	16 11 54.93	-12 11 56.0	12.9 T	H45
C/2006 S3	2012 06 25.29906	16 11 54.87	-12 11 55.9	12.9 T	H45
C/2006 S3	2012 06 25.52998	16 11 35.83	-12 11 46.1	13.5 T	D95
C/2006 S3	2012 06 25.53144	16 11 35.71	-12 11 45.9		D95
C/2006 S3	2012 06 25.53291	16 11 35.58	-12 11 45.9		D95
C/2006 S3	2012 06 25.91525	16 11 04.04	-12 11 29.8	14.2 N	B20
C/2006 S3	2012 06 25.91719	16 11 03.90	-12 11 29.3	14.1 N	B20
C/2006 S3	2012 06 25.91912	16 11 03.74	-12 11 29.4	14.2 N	B20
C/2006 S3	2012 06 26.12913	16 10 46.49	-12 11 20.4	14.9 T	750
C/2006 S3	2012 06 26.14023	16 10 45.56	-12 11 19.9	14.8 T	750
C/2006 S3	2012 06 26.15377	16 10 44.44	-12 11 19.4	14.9 T	750
C/2006 S3	2012 06 26.27818	16 10 34.13	-12 11 14.2	12.8 T	H45
C/2006 S3	2012 06 26.27994	16 10 33.99	-12 11 14.1	12.8 T	H45
C/2006 S3	2012 06 26.28330	16 10 33.73	-12 11 14.1	12.7 T	H45

C/2006 S3	2012 06 26.28459	16 10 33.62	-12 11 14.0	12.8 T	H45
C/2006 S3	2012 06 26.29186	16 10 33.02	-12 11 13.7	12.7 T	H45
C/2006 S3	2012 06 26.29277	16 10 32.94	-12 11 13.7	12.7 T	H45
C/2006 S3	2012 06 26.88935	16 09 44.20	-12 10 49.3	14.0 N	585
C/2006 S3	2012 06 26.89079	16 09 44.09	-12 10 49.1	13.8 N	585
C/2006 S3	2012 06 26.89575	16 09 43.73	-12 10 49.0	14.0 N	585
C/2006 S3	2012 06 26.89718	16 09 43.59	-12 10 48.8	13.8 N	585
C/2006 S3	2012 06 26.90215	16 09 43.17	-12 10 48.8	13.9 N	585
C/2006 S3	2012 06 26.90358	16 09 43.02	-12 10 48.1	13.9 N	585
C/2006 S3	2012 06 26.90712	16 09 42.74	-12 10 48.5	14.1 N	585
C/2006 S3	2012 06 26.90854	16 09 42.63	-12 10 48.6	13.9 N	585
C/2006 S3	2012 06 26.90998	16 09 42.55	-12 10 48.2	13.8 N	585
C/2006 S3	2012 06 26.91351	16 09 42.24	-12 10 48.3	14.1 N	585
C/2006 S3	2012 06 26.91494	16 09 42.10	-12 10 48.3	14.0 N	585
C/2006 S3	2012 06 26.91637	16 09 42.00	-12 10 48.0	13.9 N	585
C/2006 S3	2012 06 28.27821	16 07 51.89	-12 09 53.9	12.5 T	H45
C/2006 S3	2012 06 28.27952	16 07 51.79	-12 09 53.8	12.6 T	H45
C/2006 S3	2012 06 28.28106	16 07 51.68	-12 09 53.7	12.5 T	H45
C/2006 S3	2012 06 28.28264	16 07 51.56	-12 09 53.7	12.6 T	H45
C/2006 S3	2012 06 28.28455	16 07 51.41	-12 09 53.6	12.6 T	H45
C/2006 S3	2012 06 28.28587	16 07 51.29	-12 09 53.6	12.5 T	H45
C/2006 S3	2012 06 28.91237	16 07 01.27	-12 09 30.3	14.2 N	C86
C/2006 S3	2012 06 28.91534	16 07 01.01	-12 09 30.5	14.2 N	C86
C/2006 S3	2012 06 28.91683	16 07 00.90	-12 09 30.4	14.2 N	C86
C/2006 S3	2012 06 28.92174	16 07 00.55	-12 09 29.9	14.1 N	I72
C/2006 S3	2012 06 28.92319	16 07 00.43	-12 09 29.8	14.1 N	I72
C/2006 S3	2012 06 28.92464	16 07 00.29	-12 09 29.9	14.1 N	I72
C/2006 S3	2012 06 29.07409	16 06 48.49	-12 09 24.6	15.0 N	H23
C/2006 S3	2012 06 29.08862	16 06 47.33	-12 09 24.0	14.8 N	H23
C/2006 S3	2012 06 29.10316	16 06 46.14	-12 09 23.8	15.3 N	H23
C/2006 S3	2012 06 29.23883	16 06 35.26	-12 09 18.1	15.4 N	H45
C/2006 S3	2012 06 29.24032	16 06 35.18	-12 09 17.9	15.4 N	H45
C/2006 S3	2012 06 29.24194	16 06 35.04	-12 09 17.9	15.5 N	H45
C/2006 S3	2012 06 29.24347	16 06 34.93	-12 09 17.8	15.5 N	H45
C/2006 S3	2012 06 29.24502	16 06 34.80	-12 09 17.7	15.5 N	H45
C/2006 S3	2012 06 29.24723	16 06 34.63	-12 09 17.7	15.5 N	H45
C/2006 S3	2012 06 29.95732	16 05 38.58	-12 08 52.7	14.1 N	I99
C/2006 S3	2012 06 29.95940	16 05 38.41	-12 08 52.5	14.2 N	I99
C/2006 S3	2012 06 29.96146	16 05 38.25	-12 08 52.6	14.2 N	I99

C/2008 S3 (Boattini)

C/2008 S3	2012 06 17.07429	23 38 17.50	+14 17 33.2	18.9 N	K 160
C/2008 S3	2012 06 17.07707	23 38 17.45	+14 17 33.3	19.1 N	K 160
C/2008 S3	2012 06 17.07981	23 38 17.41	+14 17 34.4		K 160
C/2008 S3	2012 06 20.06381	23 37 31.43	+14 20 30.2	18.7 N	K 160
C/2008 S3	2012 06 20.06587	23 37 31.44	+14 20 32.1	19.0 N	K 160
C/2008 S3	2012 06 20.06793	23 37 31.42	+14 20 32.4	19.0 N	K 160
C/2008 S3	2012 06 23.05581	23 36 40.80	+14 23 06.4	18.1 N	K 160
C/2008 S3	2012 06 23.05786	23 36 40.76	+14 23 06.1	18.1 N	K 160
C/2008 S3	2012 06 23.05991	23 36 40.72	+14 23 05.5	18.6 N	K 160
C/2008 S3	2012 06 24.809090	23 36 08.96	+14 24 25.7	18.2 T	30D90
C/2008 S3	2012 06 24.818684	23 36 08.73	+14 24 26.2	18.1 T	30D90
C/2008 S3	2012 06 24.828233	23 36 08.58	+14 24 27.2	18.2 T	30D90

C/2009 F4 (McNaught)

C/2009 F4	2012 06 30.41243	04 36 18.79	-52 31 56.3	15.5 T	K I47
C/2009 F4	2012 06 30.41764	04 36 19.01	-52 31 57.6	15.5 T	K I47
C/2009 F4	2012 06 30.42334	04 36 19.26	-52 31 56.2	15.5 T	K I47

C/2009 P1 (Garradd)

C/2009 P1	2011 11 20.36280	17 31 23.64	+19 37 01.8	7.6 T	349
C/2009 P1	2011 11 20.39767	17 31 23.35	+19 37 11.4		349
C/2009 P1	2012 03 24.60815	10 16 19.22	+64 08 33.0	10.6 N	KD18
C/2009 P1	2012 03 24.61347	10 16 16.97	+64 08 18.8	10.7 N	KD18
C/2009 P1	2012 03 24.61875	10 16 14.47	+64 08 03.4	10.7 N	KD18
C/2009 P1	2012 03 24.62411	10 16 12.02	+64 07 48.3	10.7 N	KD18
C/2009 P1	2012 03 24.62940	10 16 09.46	+64 07 32.6	10.6 N	KD18
C/2009 P1	2012 03 24.63493	10 16 07.01	+64 07 16.5	10.6 N	KD18
C/2009 P1	2012 03 24.64024	10 16 04.48	+64 07 00.4	10.7 N	KD18
C/2009 P1	2012 03 24.64560	10 16 02.04	+64 06 46.1	10.7 N	KD18
C/2009 P1	2012 03 24.65089	10 15 59.59	+64 06 30.5	10.6 N	KD18
C/2009 P1	2012 03 24.65655	10 15 57.13	+64 06 15.0	10.7 N	KD18
C/2009 P1	2012 03 24.66182	10 15 54.60	+64 05 59.1	10.7 N	KD18
C/2009 P1	2012 03 24.66707	10 15 52.14	+64 05 43.6	10.7 N	KD18
C/2009 P1	2012 03 24.67233	10 15 49.97	+64 05 29.5	10.6 N	KD18
C/2009 P1	2012 03 24.67760	10 15 47.46	+64 05 13.8	10.6 N	KD18
C/2009 P1	2012 03 24.68322	10 15 42.48	+64 04 42.9	10.6 N	KD18
C/2009 P1	2012 03 24.69355	10 15 40.10	+64 04 27.4	10.7 N	KD18
C/2009 P1	2012 03 24.69883	10 15 37.73	+64 04 12.4	10.7 N	KD18
C/2009 P1	2012 03 24.70428	10 15 35.07	+64 03 55.7	10.7 N	KD18
C/2009 P1	2012 03 24.71378	10 15 30.97	+64 03 29.5	10.6 N	KD18
C/2009 P1	2012 03 24.72729	10 15 24.54	+64 02 49.4	10.6 N	KD18
C/2009 P1	2012 03 24.73341	10 15 21.77	+64 02 30.9	10.7 N	KD18
C/2009 P1	2012 03 24.74388	10 15 17.08	+64 02 00.9	10.7 N	KD18
C/2009 P1	2012 03 24.74921	10 15 14.48	+64 01 44.9	10.6 N	KD18
C/2009 P1	2012 03 24.75451	10 15 12.27	+64 01 30.1	10.6 N	KD18
C/2009 P1	2012 03 24.75983	10 15 09.90	+64 01 14.9	10.7 N	KD18
C/2009 P1	2012 03 24.76539	10 15 07.39	+64 00 58.5	10.7 N	KD18
C/2009 P1	2012 05 03.92160	08 49 39.62	+36 37 13.5	12.9 N	152
C/2009 P1	2012 05 03.92933	08 49 39.58	+36 37 00.4	12.8 N	152
C/2009 P1	2012 05 03.93647	08 49 39.55	+36 36 48.4	12.9 N	152
C/2009 P1	2012 05 03.94323	08 49 39.50	+36 36 36.9	12.9 N	152
C/2009 P1	2012 05 03.95012	08 49 39.52	+36 36 25.0	13.0 N	152
C/2009 P1	2012 05 03.95751	08 49 39.49	+36 36 13.2	12.9 N	152
C/2009 P1	2012 05 03.96433	08 49 39.44	+36 36 01.5	12.9 N	152
C/2009 P1	2012 05 03.97105	08 49 39.39	+36 35 50.7	13.1 N	152
C/2009 P1	2012 05 08.86919	08 49 40.74	+34 24 59.3	12.6 N	152
C/2009 P1	2012 05 08.87619	08 49 40.77	+34 24 48.2	12.7 N	152
C/2009 P1	2012 05 08.88293	08 49 40.80	+34 24 37.8	12.8 N	152
C/2009 P1	2012 05 08.88985	08 49 40.85	+34 24 27.1	13.0 N	152
C/2009 P1	2012 05 08.89728	08 49 40.93	+34 24 15.7	12.9 N	152
C/2009 P1	2012 05 08.90407	08 49 40.94	+34 24 05.2	12.9 N	152
C/2009 P1	2012 05 08.91080	08 49 40.95	+34 23 55.0	12.9 N	152
C/2009 P1	2012 05 08.91745	08 49 40.99	+34 23 44.9	13.0 N	152
C/2009 P1	2012 05 21.84396	08 52 33.69	+29 28 36.5	13.2 N	585
C/2009 P1	2012 05 21.85036	08 52 33.79	+29 28 29.2	13.2 N	585
C/2009 P1	2012 05 21.85675	08 52 33.96	+29 28 20.7	13.2 N	585

C/2009 P1	2012 05 21.86315	08 52 34.09	+29 28 12.7	13.2 N	585
C/2009 P1	2012 05 21.86954	08 52 34.23	+29 28 04.9	13.2 N	585
C/2009 P1	2012 05 21.87626	08 52 34.36	+29 27 57.2	13.2 N	585
C/2009 P1	2012 05 23.82381	08 53 15.90	+28 48 39.9	12.4 N	152
C/2009 P1	2012 05 23.82478	08 53 15.96	+28 48 38.1	12.8 N	152
C/2009 P1	2012 05 23.82575	08 53 16.04	+28 48 38.4	12.8 N	152
C/2009 P1	2012 05 23.82670	08 53 16.05	+28 48 36.5	12.7 N	152
C/2009 P1	2012 05 23.82763	08 53 16.09	+28 48 34.1	12.7 N	152
C/2009 P1	2012 05 23.82859	08 53 16.07	+28 48 33.8	12.8 N	152
C/2009 P1	2012 05 23.82994	08 53 16.12	+28 48 32.9	12.7 N	152
C/2009 P1	2012 05 23.83179	08 53 16.12	+28 48 31.0	12.7 N	152
C/2009 P1	2012 05 23.83344	08 53 16.20	+28 48 28.7	12.8 N	152
C/2009 P1	2012 05 23.83459	08 53 16.18	+28 48 26.3	12.8 N	152
C/2009 P1	2012 05 23.83516	08 53 16.22	+28 48 27.0	12.7 N	152
C/2009 P1	2012 05 23.83574	08 53 16.22	+28 48 26.0	12.9 N	152
C/2009 P1	2012 05 23.83632	08 53 16.32	+28 48 25.4	12.9 N	152
C/2009 P1	2012 05 24.82384	08 53 38.67	+28 28 57.1	13.0 N	152
C/2009 P1	2012 05 24.82484	08 53 38.66	+28 28 57.0	13.1 N	152
C/2009 P1	2012 05 24.82870	08 53 38.70	+28 28 50.6	12.5 N	152
C/2009 P1	2012 05 24.82970	08 53 38.83	+28 28 49.4	12.9 N	152
C/2009 P1	2012 05 24.83163	08 53 38.83	+28 28 48.4	12.9 N	152
C/2009 P1	2012 05 24.83262	08 53 38.93	+28 28 46.4	12.9 N	152
C/2009 P1	2012 05 24.88381	08 53 39.95	+28 27 46.7	13.3 N	K 958
C/2009 P1	2012 05 24.89647	08 53 40.22	+28 27 31.9	13.2 N	K 958
C/2009 P1	2012 05 24.90809	08 53 40.49	+28 27 18.2	13.1 N	K 958
C/2009 P1	2012 05 27.90033	08 54 52.83	+27 30 04.5	13.8 N	K 958
C/2009 P1	2012 05 27.91305	08 54 53.11	+27 29 50.1	13.6 N	K 958
C/2009 P1	2012 05 27.92502	08 54 53.43	+27 29 34.6	13.7 N	K 958
C/2009 P1	2012 05 28.89734	08 55 18.29	+27 11 33.0	13.2 N	172
C/2009 P1	2012 05 28.89816	08 55 18.31	+27 11 32.1	13.2 N	172
C/2009 P1	2012 05 28.89899	08 55 18.33	+27 11 30.9	13.2 N	172
C/2009 P1	2012 05 30.89105	08 56 11.20	+26 35 16.5	13.4 N	172
C/2009 P1	2012 05 30.89250	08 56 11.24	+26 35 14.9	13.4 N	172
C/2009 P1	2012 05 30.89395	08 56 11.28	+26 35 13.2	13.4 N	172
C/2009 P1	2012 05 31.50817	08 56 28.04	+26 24 13.8	11.6 T	D95
C/2009 P1	2012 05 31.50889	08 56 28.05	+26 24 13.0		D95
C/2009 P1	2012 05 31.51108	08 56 28.12	+26 24 10.6		D95
C/2009 P1	2012 06 01.84815	08 57 05.34	+26 00 35.4	13.4 N	C86
C/2009 P1	2012 06 01.84973	08 57 05.44	+26 00 33.8	13.3 N	C86
C/2009 P1	2012 06 01.85052	08 57 05.47	+26 00 33.4	13.3 N	C86
C/2009 P1	2012 06 04.87833	08 58 33.35	+25 08 38.4	13.4 N	172
C/2009 P1	2012 06 04.87984	08 58 33.41	+25 08 36.7	13.3 N	172
C/2009 P1	2012 06 04.88133	08 58 33.46	+25 08 35.2	13.4 N	172
C/2009 P1	2012 06 04.88141	08 58 33.47	+25 08 34.9	13.3 N	945
C/2009 P1	2012 06 04.88477	08 58 33.58	+25 08 31.5	13.3 N	945
C/2009 P1	2012 06 04.89212	08 58 33.75	+25 08 23.8	13.3 N	945
C/2009 P1	2012 06 04.89473	08 58 33.85	+25 08 21.6	13.4 N	J38
C/2009 P1	2012 06 04.89510	08 58 33.84	+25 08 21.2	13.3 N	945
C/2009 P1	2012 06 04.89670	08 58 33.90	+25 08 19.6	13.5 N	J38
C/2009 P1	2012 06 04.89860	08 58 33.94	+25 08 17.6	13.3 N	945
C/2009 P1	2012 06 04.90072	08 58 34.02	+25 08 15.7	13.4 N	J38
C/2009 P1	2012 06 04.91688	08 58 34.51	+25 07 58.7	13.4 N	K 958
C/2009 P1	2012 06 04.92951	08 58 34.87	+25 07 46.2	13.4 N	K 958

C/2009 P1	2012 06 04.94216	08 58 35.25	+25 07 33.2	13.5 N	K 958
C/2009 P1	2012 06 05.87565	08 59 03.27	+24 51 58.1	13.4 N	K 958
C/2009 P1	2012 06 05.88811	08 59 03.64	+24 51 45.5	13.3 N	K 958
C/2009 P1	2012 06 05.89866	08 59 03.98	+24 51 35.2	13.5 N	I72
C/2009 P1	2012 06 05.89941	08 59 04.00	+24 51 34.6	13.4 N	I72
C/2009 P1	2012 06 05.90016	08 59 04.02	+24 51 33.7	13.4 N	I72
C/2009 P1	2012 06 05.90039	08 59 04.00	+24 51 33.2	13.5 N	K 958
C/2009 P1	2012 06 07.89363	09 00 05.20	+24 18 50.8	14.2 N	C23
C/2009 P1	2012 06 07.89940	09 00 05.41	+24 18 45.2	14.1 N	C23
C/2009 P1	2012 06 07.90518	09 00 05.58	+24 18 39.6	14.1 N	C23
C/2009 P1	2012 06 08.87708	09 00 36.03	+24 03 00.6	13.2 N	212
C/2009 P1	2012 06 08.87931	09 00 36.09	+24 02 58.4	13.2 N	212
C/2009 P1	2012 06 08.88153	09 00 36.17	+24 02 56.4	13.2 N	212
C/2009 P1	2012 06 09.33793	09 00 50.63	+23 55 42.0	14.6 N	K E07
C/2009 P1	2012 06 09.33878	09 00 50.66	+23 55 41.1	14.6 N	K E07
C/2009 P1	2012 06 10.94750	09 01 42.12	+23 30 17.1	10.5 T	I47
C/2009 P1	2012 06 10.94963	09 01 42.21	+23 30 14.2	10.5 T	I47
C/2009 P1	2012 06 10.95175	09 01 42.18	+23 30 12.7	10.5 T	I47
C/2009 P1	2012 06 10.95387	09 01 42.49	+23 30 10.2	10.6 T	I47
C/2009 P1	2012 06 10.95600	09 01 42.29	+23 30 09.7	10.6 T	I47
C/2009 P1	2012 06 10.95811	09 01 42.53	+23 30 06.8	10.6 T	I47
C/2009 P1	2012 06 10.96024	09 01 42.74	+23 30 06.0	10.6 T	I47
C/2009 P1	2012 06 10.96236	09 01 42.69	+23 30 04.3	10.6 T	I47
C/2009 P1	2012 06 13.89428	09 03 18.95	+22 44 51.0	13.5 N	945
C/2009 P1	2012 06 13.89722	09 03 19.00	+22 44 48.7	13.6 N	945
C/2009 P1	2012 06 13.90102	09 03 19.17	+22 44 44.3	13.5 N	945
C/2009 P1	2012 06 13.90477	09 03 19.25	+22 44 41.4	13.5 N	945
C/2009 P1	2012 06 13.90785	09 03 19.46	+22 44 38.5	13.5 N	945
C/2009 P1	2012 06 13.90877	09 03 19.43	+22 44 37.8	13.5 N	J38
C/2009 P1	2012 06 13.91165	09 03 19.53	+22 44 35.2	13.5 N	J38
C/2009 P1	2012 06 13.91598	09 03 19.68	+22 44 31.2	13.4 N	J38
C/2009 P1	2012 06 14.47891	09 03 38.53	+22 36 01.6		K 367
C/2009 P1	2012 06 14.48053	09 03 38.56	+22 36 00.1		K 367
C/2009 P1	2012 06 14.48215	09 03 38.62	+22 35 58.7	11.1 T	K 367
C/2009 P1	2012 06 15.84660	09 04 24.64	+22 15 33.6	14.5 N	235
C/2009 P1	2012 06 15.84884	09 04 24.67	+22 15 32.5	14.4 N	235
C/2009 P1	2012 06 15.87090	09 04 25.54	+22 15 12.4	13.5 N	J24
C/2009 P1	2012 06 15.87533	09 04 25.67	+22 15 08.4	13.5 N	J24
C/2009 P1	2012 06 15.87664	09 04 25.72	+22 15 07.2	13.6 N	C86
C/2009 P1	2012 06 15.87823	09 04 25.78	+22 15 06.0	13.6 N	C86
C/2009 P1	2012 06 15.87829	09 04 25.76	+22 15 06.4	13.5 N	J24
C/2009 P1	2012 06 15.87902	09 04 25.80	+22 15 05.5	13.6 N	C86
C/2009 P1	2012 06 19.94439	09 06 46.13	+21 16 02.2	12.1 T	I47
C/2009 P1	2012 06 19.94650	09 06 46.29	+21 16 00.8	12.1 T	I47
C/2009 P1	2012 06 19.94862	09 06 46.34	+21 15 58.6	12.1 T	I47
C/2009 P1	2012 06 19.95499	09 06 46.56	+21 15 52.9	12.1 T	I47
C/2009 P1	2012 06 19.96135	09 06 46.76	+21 15 47.6	12.1 T	I47
C/2009 P1	2012 06 25.48666	09 10 03.68	+19 58 56.6	11.8 T	D95
C/2009 P1	2012 06 25.48739	09 10 03.70	+19 58 55.2		D95
C/2009 P1	2012 06 25.48958	09 10 03.82	+19 58 53.7		D95
C/2009 P1	2012 06 25.96789	09 10 21.16	+19 52 30.0	13.3 T	I47
C/2009 P1	2012 06 25.97554	09 10 21.50	+19 52 23.9	13.3 T	I47

C/2010 D3 (WISE)

C/2010 D3	2012 06 20.266150	17 16 13.84	-01 03 33.6		I H21
C/2010 D3	2012 06 20.275353	17 16 13.52	-01 03 30.6		I H21
C/2010 D3	2012 06 20.284542	17 16 13.25	-01 03 28.3		KH21
C/2010 D3	2012 06 20.294305	17 16 12.87	-01 03 26.3	20.7 T	KH21

C/2010 R1 (LINEAR)

C/2010 R1	2012 05 27.48117	15 07 08.75	+08 14 13.3	17.3 T	D95
C/2010 R1	2012 05 27.48259	15 07 08.67	+08 14 14.0		D95
C/2010 R1	2012 05 27.48403	15 07 08.54	+08 14 14.2		D95
C/2010 R1	2012 05 27.95748	15 06 32.76	+08 15 09.2	17.4 N	K 958
C/2010 R1	2012 05 27.97204	15 06 31.73	+08 15 12.5	17.3 N	K 958
C/2010 R1	2012 05 27.98708	15 06 30.55	+08 15 13.9	17.3 N	K 958
C/2010 R1	2012 05 28.37102	15 06 01.53	+08 15 59.3	17.6 T	AH06
C/2010 R1	2012 05 28.37378	15 06 01.29	+08 15 59.0	18.0 T	AH06
C/2010 R1	2012 05 29.04394	15 05 11.20	+08 17 14.3	17.4 N	K 958
C/2010 R1	2012 05 29.05625	15 05 10.27	+08 17 15.8	17.4 N	K 958
C/2010 R1	2012 05 29.06905	15 05 09.25	+08 17 16.6	17.3 N	K 958
C/2010 R1	2012 05 29.97684	15 04 01.59	+08 18 54.0	17.0 N	A24
C/2010 R1	2012 05 29.97756	15 04 01.56	+08 18 54.1	16.8 N	A24
C/2010 R1	2012 05 30.02290	15 03 58.14	+08 18 59.2	17.1 N	A24
C/2010 R1	2012 05 30.02361	15 03 58.14	+08 18 59.0	17.2 N	A24
C/2010 R1	2012 05 30.94431	15 02 49.97	+08 20 29.7	17.1 N	585
C/2010 R1	2012 05 30.95440	15 02 49.29	+08 20 30.2	16.9 N	585
C/2010 R1	2012 06 01.02545	15 01 30.47	+08 22 09.7	17.5 N	K 958
C/2010 R1	2012 06 01.03898	15 01 29.54	+08 22 10.4	17.4 N	K 958
C/2010 R1	2012 06 01.05197	15 01 28.61	+08 22 12.1	17.1 N	K 958
C/2010 R1	2012 06 01.22322	15 01 16.02	+08 22 27.3	17.3 N	G68
C/2010 R1	2012 06 01.24405	15 01 14.52	+08 22 29.0	17.0 N	G68
C/2010 R1	2012 06 01.26512	15 01 12.94	+08 22 31.2	17.0 N	G68
C/2010 R1	2012 06 04.98340	14 56 45.36	+08 27 00.8	17.0 N	K 958
C/2010 R1	2012 06 04.99601	14 56 44.56	+08 27 05.6	17.1 N	K 958
C/2010 R1	2012 06 05.00868	14 56 43.57	+08 27 04.8	17.1 N	K 958
C/2010 R1	2012 06 05.586244	14 56 02.77	+08 27 39.4	17.3 T	30D90
C/2010 R1	2012 06 05.593131	14 56 02.32	+08 27 40.1	17.2 T	30D90
C/2010 R1	2012 06 05.599988	14 56 01.82	+08 27 40.3	17.2 T	30D90
C/2010 R1	2012 06 06.48017	14 55 00.21	+08 28 25.2		KD88
C/2010 R1	2012 06 06.48335	14 55 00.07	+08 28 25.0		KD88
C/2010 R1	2012 06 06.48653	14 54 59.80	+08 28 24.0	17.2 T	KD88
C/2010 R1	2012 06 07.20192	14 54 09.97	+08 28 58.3	17.4 N	G68
C/2010 R1	2012 06 07.24336	14 54 07.12	+08 28 59.9	17.3 N	G68
C/2010 R1	2012 06 07.27854	14 54 04.61	+08 29 01.6	17.4 N	G68
C/2010 R1	2012 06 07.28502	14 54 04.16	+08 29 02.0	17.4 N	G68
C/2010 R1	2012 06 07.95231	14 53 18.13	+08 29 29.3	16.4 N	C23
C/2010 R1	2012 06 07.95645	14 53 17.80	+08 29 29.3	16.7 N	C23
C/2010 R1	2012 06 07.97655	14 53 16.48	+08 29 29.0	16.2 N	C23
C/2010 R1	2012 06 08.94644	14 52 10.13	+08 30 05.2	17.3 N	212
C/2010 R1	2012 06 08.95362	14 52 09.68	+08 30 04.6	17.3 N	212
C/2010 R1	2012 06 08.959002	14 52 09.21	+08 30 04.6	18.0 N	K 510
C/2010 R1	2012 06 08.96225	14 52 09.06	+08 30 05.4	17.4 N	212
C/2010 R1	2012 06 08.967144	14 52 08.63	+08 30 04.9	17.9 N	K 510
C/2010 R1	2012 06 08.975287	14 52 08.12	+08 30 05.2	17.9 N	K 510
C/2010 R1	2012 06 08.97750	14 52 07.99	+08 30 06.3	17.4 N	K 958

C/2010 R1	2012 06 08.99015	14 52 07.09	+08 30 05.9	17.5 N	K 958
C/2010 R1	2012 06 09.00276	14 52 06.18	+08 30 05.5	17.5 N	K 958
C/2010 R1	2012 06 09.21716	14 51 51.72	+08 30 12.9	17.2 T	H45
C/2010 R1	2012 06 09.21905	14 51 51.57	+08 30 13.2	17.3 T	H45
C/2010 R1	2012 06 09.22047	14 51 51.46	+08 30 13.2	17.2 T	H45
C/2010 R1	2012 06 09.23019	14 51 50.81	+08 30 13.3	17.3 T	H45
C/2010 R1	2012 06 09.23256	14 51 50.61	+08 30 13.5	17.3 T	H45
C/2010 R1	2012 06 09.23499	14 51 50.47	+08 30 13.6	17.2 T	H45
C/2010 R1	2012 06 10.05965	14 50 54.70	+08 30 37.7	17.0 N	J24
C/2010 R1	2012 06 10.06554	14 50 54.35	+08 30 37.4	16.8 N	J24
C/2010 R1	2012 06 10.07144	14 50 53.92	+08 30 37.2	17.0 N	J24
C/2010 R1	2012 06 10.93363	14 49 56.24	+08 30 55.3	17.1 T	C40
C/2010 R1	2012 06 10.93690	14 49 56.04	+08 30 55.3	17.0 T	C40
C/2010 R1	2012 06 10.94344	14 49 55.57	+08 30 55.4	16.9 T	C40
C/2010 R1	2012 06 10.95803	14 49 54.63	+08 30 55.1	16.9 T	C40
C/2010 R1	2012 06 10.96736	14 49 54.03	+08 30 55.4	16.8 T	C40
C/2010 R1	2012 06 12.26154	14 48 28.76	+08 31 12.8	16.8 T	703
C/2010 R1	2012 06 12.26934	14 48 28.26	+08 31 12.9	16.6 T	703
C/2010 R1	2012 06 12.27722	14 48 27.68	+08 31 13.6	16.8 T	703
C/2010 R1	2012 06 12.28516	14 48 27.18	+08 31 12.9	16.8 T	703
C/2010 R1	2012 06 12.86817	14 47 48.99	+08 31 18.6	17.6 N	K 511
C/2010 R1	2012 06 12.88416	14 47 47.96	+08 31 18.8	17.5 N	K 511
C/2010 R1	2012 06 12.89962	14 47 46.94	+08 31 18.9	17.4 N	K 511
C/2010 R1	2012 06 14.22348	14 46 21.60	+08 31 21.6	17.8 T	704
C/2010 R1	2012 06 14.23387	14 46 20.93	+08 31 19.7	18.5 T	704
C/2010 R1	2012 06 14.24431	14 46 20.20	+08 31 20.3	18.3 T	704
C/2010 R1	2012 06 14.26509	14 46 18.86	+08 31 20.6	18.2 T	704
C/2010 R1	2012 06 14.93316	14 45 36.30	+08 31 16.1	17.5 N	K 511
C/2010 R1	2012 06 14.94185	14 45 35.77	+08 31 15.7	17.7 N	K 511
C/2010 R1	2012 06 14.99319	14 45 32.51	+08 31 15.5	17.2 N	J38
C/2010 R1	2012 06 14.99806	14 45 32.20	+08 31 15.4	17.3 N	J38
C/2010 R1	2012 06 15.00032	14 45 32.09	+08 31 14.8	17.3 N	J38
C/2010 R1	2012 06 15.90866	14 44 34.86	+08 31 05.0	17.0 N	K 203
C/2010 R1	2012 06 15.94893	14 44 32.36	+08 31 04.4	16.8 N	K 203
C/2010 R1	2012 06 15.98498	14 44 30.14	+08 31 03.8	17.3 N	I72
C/2010 R1	2012 06 15.99454	14 44 29.44	+08 31 04.2	17.3 N	I72
C/2010 R1	2012 06 15.99737	14 44 29.39	+08 31 04.5	17.3 N	I72
C/2010 R1	2012 06 16.571195	14 43 53.54	+08 30 56.2	17.1 T	30D90
C/2010 R1	2012 06 16.578108	14 43 53.09	+08 30 56.2	17.1 T	30D90
C/2010 R1	2012 06 16.585006	14 43 52.67	+08 30 56.0	17.3 T	30D90
C/2010 R1	2012 06 16.86093	14 43 35.68	+08 30 49.5	17.1 T	K B51
C/2010 R1	2012 06 16.87079	14 43 35.07	+08 30 49.3	17.3 T	K B51
C/2010 R1	2012 06 16.88209	14 43 34.34	+08 30 49.0	17.3 T	K B51
C/2010 R1	2012 06 16.91697	14 43 32.11	+08 30 47.5	17.6 N	K 160
C/2010 R1	2012 06 16.91954	14 43 31.99	+08 30 47.3	17.8 N	K 160
C/2010 R1	2012 06 16.92223	14 43 31.80	+08 30 47.5	17.9 N	K 160
C/2010 R1	2012 06 17.89140	14 42 32.53	+08 30 25.0	16.9 T	A77
C/2010 R1	2012 06 17.89568	14 42 32.26	+08 30 25.0	16.8 T	A77
C/2010 R1	2012 06 17.89996	14 42 32.01	+08 30 24.6	16.8 T	A77
C/2010 R1	2012 06 17.94715	14 42 28.98	+08 30 22.9	17.2 N	K 160
C/2010 R1	2012 06 17.94998	14 42 28.82	+08 30 22.8	17.3 N	K 160
C/2010 R1	2012 06 17.95261	14 42 28.67	+08 30 22.8	17.4 N	K 160
C/2010 R1	2012 06 18.28661	14 42 08.64	+08 30 12.9	16.9 T	703

C/2010 R1	2012 06 18.30152	14 42 07.77	+08 30 12.4	16.9 T	703
C/2010 R1	2012 06 18.30898	14 42 07.34	+08 30 12.2	16.8 T	703
C/2010 R1	2012 06 19.89645	14 40 32.07	+08 29 18.7	17.9 N	K 160
C/2010 R1	2012 06 19.89851	14 40 31.95	+08 29 18.5	17.7 N	K 160
C/2010 R1	2012 06 19.90030	14 40 31.83	+08 29 18.4	17.4 N	K 160
C/2010 R1	2012 06 20.03994	14 40 23.72	+08 29 13.9	18.0 T	K 147
C/2010 R1	2012 06 20.04736	14 40 23.19	+08 29 15.8	18.0 T	K 147
C/2010 R1	2012 06 21.21471	14 39 14.98	+08 28 23.9	18.9 T	704
C/2010 R1	2012 06 21.22531	14 39 14.40	+08 28 22.6	18.8 T	704
C/2010 R1	2012 06 21.23552	14 39 13.75	+08 28 22.6	18.5 T	704
C/2010 R1	2012 06 21.24563	14 39 13.20	+08 28 20.7	18.9 T	704
C/2010 R1	2012 06 21.25588	14 39 12.53	+08 28 20.6	18.1 T	704
C/2010 R1	2012 06 21.89447	14 38 35.62	+08 27 48.9	18.1 N	K 160
C/2010 R1	2012 06 21.89705	14 38 35.55	+08 27 48.2		K 160
C/2010 R1	2012 06 21.89893	14 38 35.45	+08 27 48.3		K 160
C/2010 R1	2012 06 22.90267	14 37 38.32	+08 26 54.8	18.0 N	K 160
C/2010 R1	2012 06 22.90537	14 37 38.16	+08 26 54.5	18.2 N	K 160
C/2010 R1	2012 06 22.90794	14 37 38.02	+08 26 54.3	17.8 N	K 160
C/2010 R1	2012 06 22.92507	14 37 36.93	+08 26 53.3	17.9 N	C35
C/2010 R1	2012 06 22.93229	14 37 36.65	+08 26 52.3	17.3 N	C23
C/2010 R1	2012 06 22.94079	14 37 36.12	+08 26 52.1	17.3 N	C23
C/2010 R1	2012 06 22.94323	14 37 35.99	+08 26 53.8	17.8 N	C35
C/2010 R1	2012 06 22.94928	14 37 35.62	+08 26 51.5	17.0 N	C23
C/2010 R1	2012 06 24.48611	14 36 10.14	+08 25 20.1	17.8 N	467
C/2010 R1	2012 06 24.48859	14 36 09.94	+08 25 19.1	18.0 N	467
C/2010 R1	2012 06 24.49109	14 36 09.76	+08 25 20.0	17.9 N	467
C/2010 R1	2012 06 25.01271	14 35 41.30	+08 24 42.6	17.3 N	J38
C/2010 R1	2012 06 25.02126	14 35 40.82	+08 24 42.0	17.3 N	J38
C/2010 R1	2012 06 25.02340	14 35 40.72	+08 24 41.8	17.4 N	J38
C/2010 R1	2012 06 25.51777	14 35 13.94	+08 24 07.7	17.2 T	D95
C/2010 R1	2012 06 25.52204	14 35 13.70	+08 24 07.5		D95
C/2010 R1	2012 06 25.52632	14 35 13.40	+08 24 07.0		D95
C/2010 R1	2012 06 27.89006	14 33 08.33	+08 21 02.9	18.2 N	K 160
C/2010 R1	2012 06 27.89281	14 33 08.19	+08 21 02.6	18.2 N	K 160
C/2010 R1	2012 06 27.89555	14 33 07.98	+08 21 02.4	17.7 N	K 160
C/2010 R1	2012 06 29.87907	14 31 27.09	+08 18 06.5	17.8 N	K 160
C/2010 R1	2012 06 29.88190	14 31 26.95	+08 18 06.5	17.7 N	K 160
C/2010 R1	2012 06 29.88454	14 31 26.85	+08 18 06.2	17.6 N	K 160

C/2010 S1 (LINEAR)

C/2010 S1	2012 05 29.08096	23 27 05.71	+53 02 43.9	14.6 N	K 958
C/2010 S1	2012 05 29.09703	23 27 05.39	+53 02 49.6	14.8 N	K 958
C/2010 S1	2012 05 29.11439	23 27 05.19	+53 02 55.4	14.6 N	K 958
C/2010 S1	2012 06 02.02968	23 26 00.23	+53 24 50.7	14.8 N	C10
C/2010 S1	2012 06 02.04282	23 26 00.14	+53 24 56.3	14.9 N	C10
C/2010 S1	2012 06 02.05906	23 25 59.73	+53 25 00.6	14.9 N	C10
C/2010 S1	2012 06 02.07315	23 25 59.40	+53 25 05.7	14.9 N	C10
C/2010 S1	2012 06 05.04247	23 24 59.64	+53 41 46.8	14.8 N	K 958
C/2010 S1	2012 06 05.05467	23 24 59.35	+53 41 50.4	14.8 N	K 958
C/2010 S1	2012 06 05.06714	23 24 59.25	+53 41 55.4	14.6 N	K 958
C/2010 S1	2012 06 08.99786	23 23 25.00	+54 03 58.9	15.0 N	945
C/2010 S1	2012 06 09.00476	23 23 24.91	+54 04 01.2	15.1 N	945
C/2010 S1	2012 06 09.01178	23 23 24.71	+54 04 03.5	15.1 N	945

C/2010 S1	2012 06 09.02119	23 23 24.43	+54 04 05.9	15.2 N	945	C/2010 S1	2012 06 21.03089	23 16 43.91	+55 09 41.8	15.4 N	C23
C/2010 S1	2012 06 09.02560	23 23 24.36	+54 04 08.3	15.2 N	945	C/2010 S1	2012 06 21.03523	23 16 43.75	+55 09 43.6	15.0 T	B51
C/2010 S1	2012 06 09.05202	23 23 23.75	+54 04 16.0	14.8 N	K 958	C/2010 S1	2012 06 21.03666	23 16 43.70	+55 09 43.3	15.0 N	C23
C/2010 S1	2012 06 09.06472	23 23 23.29	+54 04 20.8	14.9 N	K 958	C/2010 S1	2012 06 21.04497	23 16 43.31	+55 09 46.7	15.2 T	B51
C/2010 S1	2012 06 09.07726	23 23 23.02	+54 04 24.7	14.9 N	K 958	C/2010 S1	2012 06 21.58800	23 16 21.03	+55 12 36.5	14.9 T	D95
C/2010 S1	2012 06 10.05727	23 22 56.68	+54 09 53.8	15.1 N	C23	C/2010 S1	2012 06 21.59165	23 16 20.90	+55 12 37.7		D95
C/2010 S1	2012 06 10.06160	23 22 56.74	+54 09 54.5	14.3 N	C23	C/2010 S1	2012 06 21.59238	23 16 20.82	+55 12 37.8		D95
C/2010 S1	2012 06 10.06593	23 22 56.61	+54 09 56.5	14.1 N	C23	C/2010 S1	2012 06 23.02641	23 15 19.82	+55 20 04.0	16.6 N	C35
C/2010 S1	2012 06 11.93631	23 22 03.39	+54 20 20.9	15.0 N	A71	C/2010 S1	2012 06 23.02753	23 15 19.76	+55 20 04.7	14.6 N	C35
C/2010 S1	2012 06 11.93703	23 22 03.37	+54 20 21.3	15.2 N	A71	C/2010 S1	2012 06 23.02825	23 15 19.63	+55 20 05.1	14.9 N	C35
C/2010 S1	2012 06 11.93774	23 22 03.29	+54 20 21.7	15.5 N	A71	C/2010 S1	2012 06 23.03032	23 15 19.51	+55 20 05.7	16.1 N	K 160
C/2010 S1	2012 06 11.93846	23 22 03.27	+54 20 21.9	15.4 N	A71	C/2010 S1	2012 06 23.03271	23 15 19.41	+55 20 06.4	15.8 N	K 160
C/2010 S1	2012 06 14.95806	23 20 28.57	+54 37 02.1	16.4 N	C47	C/2010 S1	2012 06 23.03484	23 15 19.33	+55 20 07.2	15.6 N	K 160
C/2010 S1	2012 06 14.96166	23 20 28.39	+54 37 03.6	16.4 N	C47	C/2010 S1	2012 06 23.03664	23 15 19.35	+55 20 08.1	16.0 N	K C35
C/2010 S1	2012 06 14.96454	23 20 28.34	+54 37 04.4	15.9 N	C47	C/2010 S1	2012 06 23.03904	23 15 19.16	+55 20 09.0	15.2 N	C35
C/2010 S1	2012 06 16.06440	23 19 51.11	+54 43 05.4	16.2 N	J01	C/2010 S1	2012 06 23.03959	23 15 19.20	+55 20 08.1	16.1 N	C35
C/2010 S1	2012 06 16.07166	23 19 50.81	+54 43 07.8	16.2 N	J01	C/2010 S1	2012 06 23.04071	23 15 19.20	+55 20 08.7	15.9 N	C35
C/2010 S1	2012 06 16.07892	23 19 50.57	+54 43 10.2	16.2 N	J01	C/2010 S1	2012 06 23.04238	23 15 19.09	+55 20 09.5	15.4 N	C35
C/2010 S1	2012 06 16.11751	23 19 49.24	+54 43 23.0	15.3 N	K 160	C/2010 S1	2012 06 23.04350	23 15 18.96	+55 20 09.7	15.4 N	C35
C/2010 S1	2012 06 16.11834	23 19 49.21	+54 43 23.3	15.4 N	K 160	C/2010 S1	2012 06 23.04405	23 15 18.92	+55 20 10.2	15.6 N	C35
C/2010 S1	2012 06 16.11945	23 19 49.15	+54 43 23.9	15.3 N	K 160	C/2010 S1	2012 06 23.04470	23 15 18.92	+55 20 10.0	15.7 N	C35
C/2010 S1	2012 06 16.20889	23 19 46.19	+54 43 53.8	14.9 N	J24	C/2010 S1	2012 06 23.04527	23 15 18.96	+55 20 10.3	15.7 N	C35
C/2010 S1	2012 06 16.21175	23 19 46.01	+54 43 54.7	14.9 N	J24	C/2010 S1	2012 06 23.04861	23 15 18.78	+55 20 11.8	16.6 N	C35
C/2010 S1	2012 06 16.21462	23 19 45.82	+54 43 56.0	14.9 N	J24	C/2010 S1	2012 06 23.06422	23 15 18.21	+55 20 16.6	15.0 N	939
C/2010 S1	2012 06 16.21748	23 19 45.74	+54 43 56.7	14.8 N	J24	C/2010 S1	2012 06 23.07307	23 15 17.81	+55 20 19.2	15.0 N	939
C/2010 S1	2012 06 17.05636	23 19 16.18	+54 48 28.8	15.9 N	K 160	C/2010 S1	2012 06 23.08190	23 15 17.40	+55 20 21.9	15.0 N	939
C/2010 S1	2012 06 17.05911	23 19 16.11	+54 48 29.7	15.5 N	K 160	C/2010 S1	2012 06 24.00418	23 14 36.55	+55 25 04.9	15.5 T	C71
C/2010 S1	2012 06 17.06176	23 19 16.11	+54 48 30.7	15.2 N	232	C/2010 S1	2012 06 24.02785	23 14 35.57	+55 25 12.3	14.8 N	C90
C/2010 S1	2012 06 17.06187	23 19 16.01	+54 48 30.6	15.4 N	K 160	C/2010 S1	2012 06 24.04512	23 14 34.67	+55 25 17.6	15.4 T	C71
C/2010 S1	2012 06 17.06940	23 19 15.83	+54 48 33.4	15.2 N	232	C/2010 S1	2012 06 24.05701	23 14 34.12	+55 25 21.1	16.2 N	J01
C/2010 S1	2012 06 17.07704	23 19 15.53	+54 48 35.7	15.2 N	232	C/2010 S1	2012 06 24.06391	23 14 34.03	+55 25 22.9	14.8 N	C90
C/2010 S1	2012 06 17.08751	23 19 15.10	+54 48 39.2	15.2 N	213	C/2010 S1	2012 06 24.06774	23 14 33.63	+55 25 24.5	16.2 N	J01
C/2010 S1	2012 06 17.10517	23 19 14.47	+54 48 45.0	15.2 N	213	C/2010 S1	2012 06 24.08152	23 14 33.04	+55 25 28.9	15.3 T	C71
C/2010 S1	2012 06 17.11929	23 19 13.90	+54 48 49.7	15.2 N	213	C/2010 S1	2012 06 24.09598	23 14 32.91	+55 25 31.5	14.4 N	C90
C/2010 S1	2012 06 18.07670	23 18 39.01	+54 53 59.5	16.0 N	K 160	C/2010 S1	2012 06 24.09637	23 14 32.31	+55 25 33.4	16.2 N	J01
C/2010 S1	2012 06 18.07947	23 18 38.89	+54 54 00.3	16.1 N	K 160	C/2010 S1	2012 06 24.93978	23 13 54.05	+55 29 49.4	15.0 N	C86
C/2010 S1	2012 06 18.08223	23 18 38.77	+54 54 01.2	16.2 N	K 160	C/2010 S1	2012 06 24.94847	23 13 53.67	+55 29 51.4	15.0 N	C86
C/2010 S1	2012 06 18.08599	23 18 38.88	+54 54 02.0	15.9 N	K C35	C/2010 S1	2012 06 24.95065	23 13 53.48	+55 29 52.5	15.1 N	C86
C/2010 S1	2012 06 18.09273	23 18 38.56	+54 54 03.8	16.3 N	K C35	C/2010 S1	2012 06 24.96685	23 13 52.76	+55 29 57.0	16.5 T	C60
C/2010 S1	2012 06 18.09575	23 18 38.35	+54 54 05.0	16.5 N	K C35	C/2010 S1	2012 06 24.96765	23 13 52.71	+55 29 57.6	16.4 T	C60
C/2010 S1	2012 06 18.10702	23 18 37.98	+54 54 09.1	16.5 N	K C35	C/2010 S1	2012 06 24.96845	23 13 52.63	+55 29 57.5	16.4 T	C60
C/2010 S1	2012 06 18.97391	23 18 05.26	+54 58 47.6	16.5 N	C47	C/2010 S1	2012 06 24.96925	23 13 52.65	+55 29 58.1	16.5 T	C60
C/2010 S1	2012 06 18.97607	23 18 05.13	+54 58 48.3	16.3 N	C47	C/2010 S1	2012 06 24.97006	23 13 52.60	+55 29 58.5	16.4 T	C60
C/2010 S1	2012 06 18.97894	23 18 05.10	+54 58 48.8	16.8 N	C47	C/2010 S1	2012 06 24.97086	23 13 52.52	+55 29 58.3	16.4 T	C60
C/2010 S1	2012 06 18.98181	23 18 04.95	+54 58 50.1	16.6 N	C47	C/2010 S1	2012 06 24.97166	23 13 52.53	+55 29 58.6	16.5 T	C60
C/2010 S1	2012 06 18.98540	23 18 04.81	+54 58 51.3	16.3 N	C47	C/2010 S1	2012 06 24.97246	23 13 52.43	+55 29 58.4	16.5 T	C60
C/2010 S1	2012 06 20.03803	23 17 23.83	+55 04 27.6	16.2 N	K 160	C/2010 S1	2012 06 24.97326	23 13 52.42	+55 29 58.9	16.5 T	C60
C/2010 S1	2012 06 20.04007	23 17 23.74	+55 04 28.3	16.3 N	K 160	C/2010 S1	2012 06 24.97406	23 13 52.41	+55 29 59.5	16.5 T	C60
C/2010 S1	2012 06 20.04211	23 17 23.68	+55 04 28.8	15.8 N	K 160	C/2010 S1	2012 06 24.97486	23 13 52.40	+55 29 59.6	16.0 T	C60
C/2010 S1	2012 06 21.00864	23 16 44.82	+55 09 35.0	15.2 T	B51	C/2010 S1	2012 06 24.97566	23 13 52.31	+55 29 59.7	16.5 T	C60
C/2010 S1	2012 06 21.01539	23 16 44.56	+55 09 37.3	15.1 T	B51	C/2010 S1	2012 06 24.97646	23 13 52.33	+55 30 00.3	16.0 T	C60
C/2010 S1	2012 06 21.02252	23 16 44.25	+55 09 39.3	15.3 T	B51	C/2010 S1	2012 06 24.97726	23 13 52.25	+55 30 00.5	16.5 T	C60
C/2010 S1	2012 06 21.02476	23 16 44.18	+55 09 39.5	15.0 N	C23	C/2010 S1	2012 06 24.97806	23 13 52.19	+55 30 00.7	16.5 T	C60

C/2010 S1	2012 06 25.03059	23 13 49.88	+55 30 16.3	14.9 N	J38
C/2010 S1	2012 06 25.03348	23 13 49.75	+55 30 17.3	14.9 N	J38
C/2010 S1	2012 06 25.03383	23 13 49.62	+55 30 17.7	14.8 N	945
C/2010 S1	2012 06 25.03492	23 13 49.69	+55 30 17.7	14.9 N	J38
C/2010 S1	2012 06 25.05049	23 13 48.88	+55 30 22.5	14.8 N	945
C/2010 S1	2012 06 25.05563	23 13 48.62	+55 30 24.3	14.8 N	945
C/2010 S1	2012 06 25.06488	23 13 48.27	+55 30 27.3	14.9 N	945
C/2010 S1	2012 06 25.06951	23 13 47.92	+55 30 28.5	14.9 N	945
C/2010 S1	2012 06 25.03492	23 13 01.84	+55 35 23.7	15.0 T	B51
C/2010 S1	2012 06 26.05933	23 13 01.60	+55 35 25.2	15.1 T	B51
C/2010 S1	2012 06 26.06405	23 13 01.36	+55 35 26.9	15.3 T	B51
C/2010 S1	2012 06 26.07058	23 13 01.02	+55 35 28.6	15.1 T	B51
C/2010 S1	2012 06 26.74618	23 12 29.09	+55 38 48.2	14.5 N	C42
C/2010 S1	2012 06 26.77571	23 12 27.48	+55 38 57.4	14.7 N	C42
C/2010 S1	2012 06 26.80527	23 12 25.96	+55 39 06.2	14.7 N	C42
C/2010 S1	2012 06 26.83503	23 12 24.48	+55 39 14.9	14.7 N	C42
C/2010 S1	2012 06 27.00507	23 12 15.97	+55 40 04.8	15.0 N	213
C/2010 S1	2012 06 27.01772	23 12 15.35	+55 40 08.6	15.0 N	213
C/2010 S1	2012 06 27.03038	23 12 14.76	+55 40 12.6	15.0 N	213
C/2010 S1	2012 06 27.04714	23 12 14.00	+55 40 17.1	15.5 N	B92
C/2010 S1	2012 06 27.04802	23 12 13.84	+55 40 17.4	15.6 N	B92
C/2010 S1	2012 06 27.04889	23 12 13.84	+55 40 17.6	15.5 N	B92
C/2010 S1	2012 06 27.04976	23 12 13.75	+55 40 18.0	15.6 N	B92
C/2010 S1	2012 06 27.05064	23 12 13.82	+55 40 18.1	15.5 N	B92
C/2010 S1	2012 06 27.05150	23 12 13.72	+55 40 18.5	15.5 N	B92
C/2010 S1	2012 06 27.05237	23 12 13.75	+55 40 18.5	15.5 N	B92
C/2010 S1	2012 06 27.05324	23 12 13.63	+55 40 19.1	15.5 N	B92
C/2010 S1	2012 06 27.05411	23 12 13.59	+55 40 19.1	15.5 N	B92
C/2010 S1	2012 06 27.05523	23 12 13.52	+55 40 19.5	15.5 N	B92
C/2010 S1	2012 06 27.13517	23 12 09.62	+55 40 43.0	14.8 N	B56
C/2010 S1	2012 06 27.13881	23 12 09.57	+55 40 44.4	14.8 N	B56
C/2010 S1	2012 06 27.14168	23 12 09.40	+55 40 45.5	14.8 N	B56
C/2010 S1	2012 06 28.05456	23 11 23.97	+55 45 11.0	16.2 N	K 160
C/2010 S1	2012 06 28.05718	23 11 23.84	+55 45 11.8	16.2 N	K 160
C/2010 S1	2012 06 28.06003	23 11 23.71	+55 45 12.7	15.3 N	K 160
C/2010 S1	2012 06 28.90869	23 10 40.78	+55 49 15.4	14.9 N	I72
C/2010 S1	2012 06 28.91014	23 10 40.66	+55 49 16.3	15.0 N	I72
C/2010 S1	2012 06 28.91159	23 10 40.70	+55 49 16.7	14.8 N	I72
C/2010 S1	2012 06 29.97126	23 09 45.15	+55 54 17.0	15.9 N	K 160
C/2010 S1	2012 06 29.97399	23 09 45.00	+55 54 17.8	15.9 N	K 160
C/2010 S1	2012 06 29.97672	23 09 44.83	+55 54 18.4	15.9 N	K 160
C/2010 S1	2012 06 30.00754	23 09 43.33	+55 54 27.5	14.9 N	I99
C/2010 S1	2012 06 30.01204	23 09 43.08	+55 54 28.5	15.0 N	I99
C/2010 S1	2012 06 30.01654	23 09 42.88	+55 54 29.9	15.0 N	I99
C/2010 S1	2012 06 30.40342	23 09 22.28	+55 56 17.5	19.0 T	704
C/2010 S1	2012 06 30.41370	23 09 21.60	+55 56 21.4	18.0 T	704
C/2010 S1	2012 06 30.42389	23 09 21.05	+55 56 26.1	17.4 T	704

C/2011 A3 (Gibbs)

C/2011 A3	2012 03 31.81245	21 34 39.15	-14 12 15.3	14.8 T	349
C/2011 A3	2012 03 31.81569	21 34 39.43	-14 12 13.8		349
C/2011 A3	2012 06 19.35013	23 09 46.88	-16 34 57.9	15.8 T	K I47
C/2011 A3	2012 06 19.35776	23 09 47.16	-16 35 01.1	15.8 T	K I47

C/2011 A3	2012 06 19.40977	23 09 48.95	-16 35 25.3	16.7 N	H47
C/2011 A3	2012 06 19.41670	23 09 49.17	-16 35 28.5	16.7 N	H47
C/2011 A3	2012 06 19.42246	23 09 49.30	-16 35 30.5	16.2 N	H47
C/2011 A3	2012 06 26.38574	23 13 15.62	-17 24 52.5	16.8 N	KH47
C/2011 A3	2012 06 26.39530	23 13 15.85	-17 24 56.9	16.8 N	KH47
C/2011 A3	2012 06 26.41107	23 13 16.24	-17 25 04.2	16.6 N	KH47
C/2011 A3	2012 06 27.38884	23 13 40.57	-17 32 32.3	16.4 N	H47
C/2011 A3	2012 06 27.39661	23 13 40.77	-17 32 35.4	16.8 N	H47
C/2011 A3	2012 06 27.40123	23 13 40.84	-17 32 37.3	16.8 N	H47
C/2011 A3	2012 06 27.40580	23 13 40.97	-17 32 40.2	17.0 N	H47
C/2011 A3	2012 06 30.37689	23 14 47.80	-17 56 05.5	16.4 T	K I47
C/2011 A3	2012 06 30.38538	23 14 47.91	-17 56 08.7	16.4 T	K I47

C/2011 F1 (LINEAR)

C/2011 F1	2012 05 24.92704	14 30 23.30	+54 24 50.6	14.6 N	K 958
C/2011 F1	2012 05 24.93936	14 30 22.34	+54 24 43.0	14.6 N	K 958
C/2011 F1	2012 05 24.95167	14 30 21.40	+54 24 35.2	14.6 N	K 958
C/2011 F1	2012 05 27.94018	14 26 45.56	+53 51 20.2	14.5 N	K 958
C/2011 F1	2012 05 27.95252	14 26 44.59	+53 51 12.0	14.3 N	K 958
C/2011 F1	2012 05 27.96497	14 26 43.68	+53 51 02.7	14.5 N	K 958
C/2011 F1	2012 05 27.97745	14 26 42.79	+53 50 54.4	14.6 N	K 958
C/2011 F1	2012 05 28.99761	14 25 32.21	+53 38 46.7	14.3 N	K 958
C/2011 F1	2012 05 29.00996	14 25 31.34	+53 38 37.5	14.4 N	K 958
C/2011 F1	2012 05 29.02239	14 25 30.41	+53 38 28.8	14.6 N	K 958
C/2011 F1	2012 05 29.90927	14 24 30.39	+53 27 37.9	16.0 N	585
C/2011 F1	2012 05 29.91079	14 24 30.25	+53 27 37.0	15.9 N	585
C/2011 F1	2012 05 29.91157	14 24 30.20	+53 27 36.2	16.0 N	585
C/2011 F1	2012 05 29.91309	14 24 30.08	+53 27 35.6	15.8 N	585
C/2011 F1	2012 05 29.91388	14 24 29.97	+53 27 34.5	16.2 N	585
C/2011 F1	2012 05 29.97594	14 24 25.87	+53 26 48.9	15.9 N	A24
C/2011 F1	2012 05 29.97619	14 24 25.86	+53 26 48.8	15.8 N	A24
C/2011 F1	2012 05 30.02199	14 24 22.73	+53 26 14.4	15.8 N	A24
C/2011 F1	2012 05 30.02225	14 24 22.69	+53 26 14.2	15.7 N	A24
C/2011 F1	2012 06 01.36815	14 21 49.977	+52 56 07.19	16.5 T	F51
C/2011 F1	2012 06 01.37119	14 21 49.764	+52 56 04.86	16.6 T	F51
C/2011 F1	2012 06 01.37415	14 21 49.592	+52 56 02.55	16.9 T	F51
C/2011 F1	2012 06 01.38005	14 21 49.214	+52 55 57.83	16.8 T	F51
C/2011 F1	2012 06 01.38300	14 21 49.014	+52 55 55.32	16.7 T	F51
C/2011 F1	2012 06 01.38595	14 21 48.812	+52 55 52.94	15.5 T	F51
C/2011 F1	2012 06 01.90144	14 21 16.45	+52 48 58.8	14.6 N	C10
C/2011 F1	2012 06 01.90832	14 21 15.99	+52 48 53.2	14.6 N	C10
C/2011 F1	2012 06 01.91833	14 21 15.37	+52 48 45.3	14.5 N	C10
C/2011 F1	2012 06 01.92883	14 21 14.71	+52 48 36.7	14.6 N	C10
C/2011 F1	2012 06 01.93785	14 21 14.13	+52 48 29.4	14.5 N	C10
C/2011 F1	2012 06 01.94642	14 21 13.58	+52 48 22.7	14.5 N	C10
C/2011 F1	2012 06 01.95656	14 21 12.94	+52 48 14.4	14.6 N	C10
C/2011 F1	2012 06 03.09474	14 20 02.99	+52 32 41.7	15.0 N	J24
C/2011 F1	2012 06 03.09880	14 20 02.73	+52 32 39.0	15.0 N	J24
C/2011 F1	2012 06 03.10184	14 20 02.54	+52 32 35.9	15.0 N	J24
C/2011 F1	2012 06 03.36913	14 19 46.644	+52 28 53.95	16.7 T	F51
C/2011 F1	2012 06 03.37209	14 19 46.466	+52 28 51.49	16.8 T	F51
C/2011 F1	2012 06 03.37504	14 19 46.291	+52 28 48.99	16.8 T	F51
C/2011 F1	2012 06 03.37799	14 19 46.095	+52 28 46.53	16.7 T	F51

C/2011 F1	2012 06 03.38094	14 19 45.923	+52 28 44.05	16.9 T	F51	C/2011 F1	2012 06 08.98403	14 14 37.12	+51 05 24.1	14.6 N	K 958
C/2011 F1	2012 06 03.38389	14 19 45.733	+52 28 41.66	16.6 T	F51	C/2011 F1	2012 06 08.99608	14 14 36.50	+51 05 12.3	14.6 N	K 958
C/2011 F1	2012 06 03.38979	14 19 45.363	+52 28 36.48	16.7 T	F51	C/2011 F1	2012 06 08.99682	14 14 36.49	+51 05 11.8	15.4 N	B92
C/2011 F1	2012 06 04.89637	14 18 17.10	+52 07 12.5	14.7 N	I72	C/2011 F1	2012 06 08.99770	14 14 36.50	+51 05 11.0	15.5 N	B92
C/2011 F1	2012 06 04.89925	14 18 16.93	+52 07 10.1	14.7 N	I72	C/2011 F1	2012 06 08.99859	14 14 36.32	+51 05 10.5	15.6 N	B92
C/2011 F1	2012 06 04.90214	14 18 16.78	+52 07 07.8	14.7 N	I72	C/2011 F1	2012 06 08.99949	14 14 36.37	+51 05 08.9	15.4 N	B92
C/2011 F1	2012 06 04.93671	14 18 14.57	+52 06 37.6	14.6 N	945	C/2011 F1	2012 06 09.00036	14 14 36.41	+51 05 08.1	15.4 N	B92
C/2011 F1	2012 06 04.94279	14 18 14.37	+52 06 31.3	14.6 N	945	C/2011 F1	2012 06 09.00123	14 14 36.33	+51 05 07.8	15.4 N	B92
C/2011 F1	2012 06 04.94905	14 18 14.03	+52 06 26.6	14.8 N	J38	C/2011 F1	2012 06 09.00209	14 14 36.30	+51 05 06.7	15.4 N	B92
C/2011 F1	2012 06 04.95333	14 18 13.78	+52 06 22.9	14.8 N	J38	C/2011 F1	2012 06 09.00300	14 14 36.20	+51 05 05.9	15.4 N	B92
C/2011 F1	2012 06 04.95760	14 18 13.53	+52 06 19.0	14.7 N	J38	C/2011 F1	2012 06 09.00387	14 14 36.22	+51 05 05.0	15.4 N	B92
C/2011 F1	2012 06 04.96519	14 18 13.02	+52 06 12.2	14.6 N	945	C/2011 F1	2012 06 09.00473	14 14 36.11	+51 05 04.2	15.4 N	B92
C/2011 F1	2012 06 04.96990	14 18 12.77	+52 06 07.5	15.5 N	C23	C/2011 F1	2012 06 09.20667	14 14 26.08	+51 01 53.8	13.9 N	H45
C/2011 F1	2012 06 04.97523	14 18 12.44	+52 06 02.8	14.6 N	945	C/2011 F1	2012 06 09.20793	14 14 26.01	+51 01 52.6	13.9 N	H45
C/2011 F1	2012 06 04.97567	14 18 12.44	+52 06 02.6	15.2 N	C23	C/2011 F1	2012 06 09.20955	14 14 25.95	+51 01 51.2	14.0 N	H45
C/2011 F1	2012 06 04.97728	14 18 12.38	+52 06 02.1	14.6 N	945	C/2011 F1	2012 06 09.21102	14 14 25.85	+51 01 49.7	13.8 N	H45
C/2011 F1	2012 06 04.98145	14 18 12.11	+52 05 57.6	15.3 N	C23	C/2011 F1	2012 06 09.21238	14 14 25.78	+51 01 48.4	13.8 N	H45
C/2011 F1	2012 06 04.99749	14 18 11.08	+52 05 44.2	14.6 N	K 958	C/2011 F1	2012 06 09.21372	14 14 25.72	+51 01 47.1	13.9 N	H45
C/2011 F1	2012 06 05.01011	14 18 10.33	+52 05 32.4	14.5 N	K 958	C/2011 F1	2012 06 09.95822	14 13 49.21	+50 49 53.3	15.4 N	C23
C/2011 F1	2012 06 05.02176	14 18 09.47	+52 05 22.6	14.7 N	K 958	C/2011 F1	2012 06 09.96400	14 13 48.89	+50 49 47.8	15.3 N	C23
C/2011 F1	2012 06 05.36083	14 17 50.605	+52 00 28.02	16.5 T	F51	C/2011 F1	2012 06 09.96977	14 13 48.60	+50 49 42.2	15.2 N	C23
C/2011 F1	2012 06 05.36378	14 17 50.434	+52 00 25.49	16.9 T	F51	C/2011 F1	2012 06 10.98199	14 13 00.52	+50 33 15.7	14.2 T	C40
C/2011 F1	2012 06 05.36970	14 17 50.078	+52 00 20.46	16.4 T	F51	C/2011 F1	2012 06 10.98359	14 13 00.44	+50 33 14.3	14.0 T	C40
C/2011 F1	2012 06 05.37266	14 17 49.926	+52 00 17.39	17.1 T	F51	C/2011 F1	2012 06 10.98387	14 13 00.40	+50 33 14.0	13.9 T	C40
C/2011 F1	2012 06 05.37856	14 17 49.575	+52 00 12.58	16.4 T	F51	C/2011 F1	2012 06 10.98416	14 13 00.34	+50 33 13.9	13.6 T	C40
C/2011 F1	2012 06 05.38152	14 17 49.393	+52 00 09.92	16.4 T	F51	C/2011 F1	2012 06 10.98444	14 13 00.38	+50 33 13.6	13.8 T	C40
C/2011 F1	2012 06 05.91516	14 17 19.50	+51 52 18.3	14.8 N	K 958	C/2011 F1	2012 06 10.98472	14 13 00.36	+50 33 13.1	13.8 T	C40
C/2011 F1	2012 06 05.93147	14 17 18.56	+51 52 04.5	14.6 N	I72	C/2011 F1	2012 06 10.98500	14 13 00.33	+50 33 13.0	14.2 T	C40
C/2011 F1	2012 06 05.93292	14 17 18.55	+51 52 03.3	14.6 N	I72	C/2011 F1	2012 06 10.98528	14 13 00.33	+50 33 12.6	14.2 T	C40
C/2011 F1	2012 06 05.93436	14 17 18.40	+51 52 02.4	14.6 N	I72	C/2011 F1	2012 06 10.98556	14 13 00.32	+50 33 12.2	14.1 T	C40
C/2011 F1	2012 06 06.02077	14 17 13.48	+51 50 43.7	14.7 N	K 958	C/2011 F1	2012 06 10.98585	14 13 00.29	+50 33 12.2	13.8 T	C40
C/2011 F1	2012 06 06.03380	14 17 12.82	+51 50 33.2	14.7 N	K 958	C/2011 F1	2012 06 10.98613	14 13 00.29	+50 33 11.6	14.0 T	C40
C/2011 F1	2012 06 06.33555	14 16 56.362	+51 46 04.68	16.8 T	F51	C/2011 F1	2012 06 10.98700	14 13 00.24	+50 33 10.9	13.6 T	C40
C/2011 F1	2012 06 06.33850	14 16 56.199	+51 46 01.98	16.6 T	F51	C/2011 F1	2012 06 10.98751	14 13 00.20	+50 33 10.4	13.9 T	C40
C/2011 F1	2012 06 06.34146	14 16 56.032	+51 45 59.53	16.3 T	F51	C/2011 F1	2012 06 10.98803	14 13 00.21	+50 33 09.9	14.3 T	C40
C/2011 F1	2012 06 06.34736	14 16 55.691	+51 45 54.05	16.6 T	F51	C/2011 F1	2012 06 10.98854	14 13 00.17	+50 33 09.3	14.0 T	C40
C/2011 F1	2012 06 06.35624	14 16 55.189	+51 45 46.09	17.1 T	F51	C/2011 F1	2012 06 10.98905	14 13 00.15	+50 33 08.8	14.5 T	C40
C/2011 F1	2012 06 07.95580	14 15 29.76	+51 21 27.0	15.4 N	K B70	C/2011 F1	2012 06 10.98956	14 13 00.13	+50 33 08.2	14.4 T	C40
C/2011 F1	2012 06 07.96617	14 15 29.18	+51 21 17.4	15.5 N	K B70	C/2011 F1	2012 06 10.99008	14 13 00.10	+50 33 07.9	14.1 T	C40
C/2011 F1	2012 06 07.97702	14 15 28.57	+51 21 07.5	15.5 N	K B70	C/2011 F1	2012 06 10.99059	14 13 00.06	+50 33 07.3	14.2 T	C40
C/2011 F1	2012 06 08.31914	14 15 10.71	+51 15 48.5	14.5 T	A H06	C/2011 F1	2012 06 10.99110	14 13 00.04	+50 33 06.8	14.2 T	C40
C/2011 F1	2012 06 08.32110	14 15 10.58	+51 15 46.7	14.5 T	A H06	C/2011 F1	2012 06 10.99161	14 13 00.04	+50 33 06.3	14.5 T	C40
C/2011 F1	2012 06 08.32304	14 15 10.49	+51 15 44.6	14.5 T	A H06	C/2011 F1	2012 06 10.99294	14 12 59.97	+50 33 05.0	14.3 T	C40
C/2011 F1	2012 06 08.89811	14 14 41.63	+51 06 46.0	14.6 N	I99	C/2011 F1	2012 06 10.99369	14 12 59.92	+50 33 04.1	13.8 T	C40
C/2011 F1	2012 06 08.90294	14 14 41.42	+51 06 41.3	14.5 N	I99	C/2011 F1	2012 06 10.99443	14 12 59.89	+50 33 03.5	14.6 T	C40
C/2011 F1	2012 06 08.90815	14 14 41.10	+51 06 37.2	14.5 N	I99	C/2011 F1	2012 06 10.99517	14 12 59.86	+50 33 02.7	14.1 T	C40
C/2011 F1	2012 06 08.93233	14 14 39.80	+51 06 13.8	14.5 N	212	C/2011 F1	2012 06 10.99592	14 12 59.81	+50 33 01.9	14.3 T	C40
C/2011 F1	2012 06 08.93520	14 14 39.66	+51 06 11.1	14.5 N	212	C/2011 F1	2012 06 11.84783	14 12 21.18	+50 18 59.9	14.7 N	213
C/2011 F1	2012 06 08.93950	14 14 39.44	+51 06 07.1	14.5 N	212	C/2011 F1	2012 06 11.85095	14 12 21.05	+50 18 56.6	14.7 N	213
C/2011 F1	2012 06 08.95668	14 14 38.52	+51 05 50.8	14.5 N	I72	C/2011 F1	2012 06 11.85410	14 12 20.92	+50 18 53.7	14.7 N	213
C/2011 F1	2012 06 08.95814	14 14 38.44	+51 05 49.4	14.5 N	I72	C/2011 F1	2012 06 12.88780	14 11 35.42	+50 01 30.7	16.0 N	J01
C/2011 F1	2012 06 08.95958	14 14 38.38	+51 05 48.2	14.5 N	I72	C/2011 F1	2012 06 12.89941	14 11 34.94	+50 01 19.3	15.9 N	J01
C/2011 F1	2012 06 08.97124	14 14 37.72	+51 05 36.6	14.7 N	K 958	C/2011 F1	2012 06 12.91021	14 11 34.45	+50 01 08.7	15.8 N	J01

C/2011 F1	2012 06 12.91471	14 11 34.18	+50 01 04.0	14.8 N	K 511	C/2011 F1	2012 06 15.89068	14 09 34.64	+49 09 19.5	14.7 N	C86
C/2011 F1	2012 06 12.91649	14 11 34.13	+50 01 02.0	14.5 N	I99	C/2011 F1	2012 06 15.89660	14 09 34.40	+49 09 13.2	14.7 N	C86
C/2011 F1	2012 06 12.91889	14 11 34.01	+50 00 59.5	14.6 N	I99	C/2011 F1	2012 06 15.89807	14 09 34.29	+49 09 11.4	14.7 N	C86
C/2011 F1	2012 06 12.92061	14 11 33.90	+50 00 57.7	14.8 N	K 511	C/2011 F1	2012 06 15.89856	14 09 34.27	+49 09 10.9	15.2 N	B83
C/2011 F1	2012 06 12.92129	14 11 33.93	+50 00 57.0	14.6 N	I99	C/2011 F1	2012 06 15.90363	14 09 34.10	+49 09 05.4	15.9 N	K 160
C/2011 F1	2012 06 12.92651	14 11 33.62	+50 00 52.1	14.8 N	K 511	C/2011 F1	2012 06 15.90634	14 09 33.99	+49 09 02.4	15.9 N	K 160
C/2011 F1	2012 06 13.22312	14 11 20.95	+49 55 49.3	13.7 N	H45	C/2011 F1	2012 06 15.90884	14 09 33.85	+49 09 00.0	14.8 N	B83
C/2011 F1	2012 06 13.22455	14 11 20.89	+49 55 47.8	13.7 N	H45	C/2011 F1	2012 06 15.90906	14 09 33.89	+49 08 59.6	15.9 N	K 160
C/2011 F1	2012 06 13.22532	14 11 20.85	+49 55 46.9	13.8 N	H45	C/2011 F1	2012 06 15.91453	14 09 33.65	+49 08 53.9	14.2 N	K 203
C/2011 F1	2012 06 13.22660	14 11 20.80	+49 55 45.8	13.8 N	H45	C/2011 F1	2012 06 15.92107	14 09 33.47	+49 08 47.2	14.7 N	I99
C/2011 F1	2012 06 13.22900	14 11 20.72	+49 55 43.2	13.8 N	H45	C/2011 F1	2012 06 15.92580	14 09 33.27	+49 08 41.8	14.7 N	I99
C/2011 F1	2012 06 13.23034	14 11 20.63	+49 55 41.9	13.8 N	H45	C/2011 F1	2012 06 15.92720	14 09 33.26	+49 08 39.9	15.5 N	K 970
C/2011 F1	2012 06 13.91679	14 10 52.03	+49 43 55.4	14.2 N	945	C/2011 F1	2012 06 15.92807	14 09 33.19	+49 08 39.4	14.7 N	I99
C/2011 F1	2012 06 13.93125	14 10 51.44	+49 43 40.2	14.2 N	945	C/2011 F1	2012 06 15.93136	14 09 33.07	+49 08 35.5	15.6 N	K 970
C/2011 F1	2012 06 13.93639	14 10 51.21	+49 43 34.2	14.2 N	945	C/2011 F1	2012 06 15.95365	14 09 32.06	+49 08 11.7	13.9 N	K 203
C/2011 F1	2012 06 13.94193	14 10 50.96	+49 43 29.1	14.2 N	945	C/2011 F1	2012 06 15.95520	14 09 32.06	+49 08 10.6	14.6 N	I72
C/2011 F1	2012 06 13.94856	14 10 50.67	+49 43 22.3	14.2 N	945	C/2011 F1	2012 06 15.95681	14 09 31.98	+49 08 08.8	14.6 N	I72
C/2011 F1	2012 06 14.28137	14 10 36.66	+49 37 37.4	13.1 T	703	C/2011 F1	2012 06 15.95831	14 09 31.96	+49 08 07.1	14.5 N	I72
C/2011 F1	2012 06 14.28936	14 10 36.30	+49 37 29.3	13.2 T	703	C/2011 F1	2012 06 15.99849	14 09 30.44	+49 07 22.7	16.9 N	C47
C/2011 F1	2012 06 14.29735	14 10 36.08	+49 37 20.6	13.2 T	703	C/2011 F1	2012 06 16.00072	14 09 30.38	+49 07 20.2	16.5 N	C47
C/2011 F1	2012 06 14.30543	14 10 35.72	+49 37 12.0	13.2 T	703	C/2011 F1	2012 06 16.00295	14 09 30.30	+49 07 18.0	16.7 N	C47
C/2011 F1	2012 06 14.51296	14 10 27.91	+49 33 35.9		K 367	C/2011 F1	2012 06 16.00517	14 09 30.22	+49 07 15.9	16.7 N	C47
C/2011 F1	2012 06 14.51539	14 10 27.83	+49 33 33.4		K 367	C/2011 F1	2012 06 16.00739	14 09 30.12	+49 07 13.7	16.5 N	C47
C/2011 F1	2012 06 14.51782	14 10 27.73	+49 33 30.7	13.2 T	K 367	C/2011 F1	2012 06 16.00998	14 09 30.04	+49 07 10.5	16.7 N	C47
C/2011 F1	2012 06 14.879347	14 10 13.42	+49 27 11.1	15.7 N	K 510	C/2011 F1	2012 06 16.87213	14 08 58.78	+48 51 42.7	15.9 N	K 160
C/2011 F1	2012 06 14.886149	14 10 13.14	+49 27 03.8	15.9 N	K 510	C/2011 F1	2012 06 16.87494	14 08 58.68	+48 51 39.6	15.9 N	K 160
C/2011 F1	2012 06 14.893170	14 10 12.87	+49 26 56.1	15.9 N	K 510	C/2011 F1	2012 06 16.87752	14 08 58.59	+48 51 36.9	15.9 N	K 160
C/2011 F1	2012 06 14.899971	14 10 12.56	+49 26 49.2	15.9 N	K 510	C/2011 F1	2012 06 16.90194	14 08 57.72	+48 51 10.2	14.7 N	213
C/2011 F1	2012 06 14.94695	14 10 10.69	+49 25 59.2	16.0 N	C47	C/2011 F1	2012 06 16.90947	14 08 57.41	+48 51 02.6	14.7 N	213
C/2011 F1	2012 06 14.94880	14 10 10.61	+49 25 57.3	16.6 N	C47	C/2011 F1	2012 06 16.91549	14 08 57.23	+48 50 56.1	14.7 N	213
C/2011 F1	2012 06 14.95028	14 10 10.55	+49 25 55.9	16.0 N	C47	C/2011 F1	2012 06 16.98457	14 08 54.68	+48 49 40.5	14.8 N	232
C/2011 F1	2012 06 14.95176	14 10 10.47	+49 25 54.5	16.5 N	C47	C/2011 F1	2012 06 16.98633	14 08 54.64	+48 49 38.0	14.9 T	583
C/2011 F1	2012 06 14.95287	14 10 10.45	+49 25 53.0	16.2 N	C47	C/2011 F1	2012 06 16.98716	14 08 54.61	+48 49 37.1	14.7 T	583
C/2011 F1	2012 06 14.95471	14 10 10.37	+49 25 51.1	16.4 N	C47	C/2011 F1	2012 06 16.99405	14 08 54.32	+48 49 30.2	14.8 N	232
C/2011 F1	2012 06 14.95786	14 10 10.23	+49 25 48.4	14.5 N	J38	C/2011 F1	2012 06 16.99426	14 08 54.34	+48 49 29.2	14.2 T	583
C/2011 F1	2012 06 14.95966	14 10 10.19	+49 25 46.5	14.5 N	J38	C/2011 F1	2012 06 16.99507	14 08 54.27	+48 49 28.7	14.6 T	583
C/2011 F1	2012 06 14.96324	14 10 10.02	+49 25 42.8	14.6 N	J38	C/2011 F1	2012 06 17.00443	14 08 53.94	+48 49 18.8	14.7 N	232
C/2011 F1	2012 06 15.15841	14 10 02.50	+49 22 17.8	12.8 N	H45	C/2011 F1	2012 06 17.87134	14 08 24.16	+48 33 31.2	15.9 N	K 160
C/2011 F1	2012 06 15.16083	14 10 02.42	+49 22 15.2	13.0 N	H45	C/2011 F1	2012 06 17.87410	14 08 24.06	+48 33 28.1	15.9 N	K 160
C/2011 F1	2012 06 15.16227	14 10 02.35	+49 22 13.7	12.8 N	H45	C/2011 F1	2012 06 17.87687	14 08 23.99	+48 33 24.9	15.9 N	K 160
C/2011 F1	2012 06 15.16321	14 10 02.31	+49 22 12.5	13.0 N	H45	C/2011 F1	2012 06 17.94186	14 08 21.68	+48 32 13.6	14.7 N	I72
C/2011 F1	2012 06 15.16455	14 10 02.26	+49 22 11.2	13.0 N	H45	C/2011 F1	2012 06 17.94262	14 08 21.65	+48 32 12.8	14.6 N	I72
C/2011 F1	2012 06 15.16591	14 10 02.20	+49 22 09.7	12.9 N	H45	C/2011 F1	2012 06 17.94337	14 08 21.62	+48 32 12.1	14.6 N	I72
C/2011 F1	2012 06 15.84427	14 09 36.40	+49 10 09.2	15.2 N	K A81	C/2011 F1	2012 06 17.96138	14 08 21.04	+48 31 51.1	15.5 N	C43
C/2011 F1	2012 06 15.85274	14 09 36.02	+49 10 00.1	15.3 N	K A81	C/2011 F1	2012 06 17.96174	14 08 21.02	+48 31 50.6	15.4 N	C43
C/2011 F1	2012 06 15.85354	14 09 36.02	+49 09 58.7	16.7 N	A71	C/2011 F1	2012 06 17.96228	14 08 21.00	+48 31 50.3	15.4 N	C43
C/2011 F1	2012 06 15.85641	14 09 35.90	+49 09 55.4	16.7 N	A71	C/2011 F1	2012 06 17.96300	14 08 20.99	+48 31 49.3	15.5 N	C43
C/2011 F1	2012 06 15.85818	14 09 35.85	+49 09 54.8	15.4 N	235	C/2011 F1	2012 06 17.99640	14 08 19.83	+48 31 12.3	15.4 N	C43
C/2011 F1	2012 06 15.85928	14 09 35.78	+49 09 52.7	16.7 N	A71	C/2011 F1	2012 06 17.99676	14 08 19.83	+48 31 11.8	15.4 N	C43
C/2011 F1	2012 06 15.86265	14 09 35.65	+49 09 49.5	15.3 N	K A81	C/2011 F1	2012 06 17.99748	14 08 19.80	+48 31 11.0	15.4 N	C43
C/2011 F1	2012 06 15.86396	14 09 35.58	+49 09 47.4	15.0 N	235	C/2011 F1	2012 06 17.99802	14 08 19.78	+48 31 10.5	15.5 N	C43
C/2011 F1	2012 06 15.86584	14 09 35.53	+49 09 46.1	16.9 N	A71	C/2011 F1	2012 06 18.90865	14 07 50.15	+48 14 20.3	16.6 N	C47
C/2011 F1	2012 06 15.87367	14 09 35.23	+49 09 36.8	16.8 N	A71	C/2011 F1	2012 06 18.91051	14 07 50.09	+48 14 18.4	16.7 N	C47

C/2011 F1	2012 06 18.91236	14 07 50.08	+48 14 16.3	16.6 N	C47	C/2011 F1	2012 06 23.00729	14 05 55.50	+46 55 54.6	15.5 N	B92
C/2011 F1	2012 06 18.91422	14 07 49.96	+48 14 13.9	16.7 N	C47	C/2011 F1	2012 06 23.91377	14 05 34.45	+46 38 01.3	14.6 N	945
C/2011 F1	2012 06 18.91609	14 07 49.93	+48 14 12.1	16.6 N	C47	C/2011 F1	2012 06 23.92662	14 05 34.05	+46 37 45.0	14.5 N	945
C/2011 F1	2012 06 18.91757	14 07 49.87	+48 14 10.3	16.3 N	C47	C/2011 F1	2012 06 23.93060	14 05 33.99	+46 37 40.9	14.6 N	945
C/2011 F1	2012 06 19.87548	14 07 20.33	+47 56 13.9	16.1 N	K 160	C/2011 F1	2012 06 23.93322	14 05 34.02	+46 37 38.3	15.8 N	J01
C/2011 F1	2012 06 19.87875	14 07 20.23	+47 56 10.2	16.2 N	K 160	C/2011 F1	2012 06 23.93510	14 05 33.88	+46 37 35.8	14.6 N	945
C/2011 F1	2012 06 19.88236	14 07 20.08	+47 56 06.1	16.3 N	K 160	C/2011 F1	2012 06 23.94025	14 05 33.75	+46 37 29.6	14.5 N	945
C/2011 F1	2012 06 19.90079	14 07 19.59	+47 55 45.6	14.7 N	I72	C/2011 F1	2012 06 23.94451	14 05 33.75	+46 37 24.9	15.8 N	J01
C/2011 F1	2012 06 19.90369	14 07 19.49	+47 55 42.1	14.7 N	I72	C/2011 F1	2012 06 23.95525	14 05 33.47	+46 37 12.5	15.8 N	J01
C/2011 F1	2012 06 19.90464	14 07 19.46	+47 55 41.3	14.7 N	I99	C/2011 F1	2012 06 23.96920	14 05 33.09	+46 36 55.7	14.6 N	I72
C/2011 F1	2012 06 19.90661	14 07 19.41	+47 55 38.8	14.7 N	I72	C/2011 F1	2012 06 23.97073	14 05 33.10	+46 36 53.9	14.7 N	I72
C/2011 F1	2012 06 19.90668	14 07 19.39	+47 55 38.8	14.7 N	I99	C/2011 F1	2012 06 23.97225	14 05 33.03	+46 36 52.1	14.7 N	I72
C/2011 F1	2012 06 19.91080	14 07 19.26	+47 55 34.1	14.6 N	I99	C/2011 F1	2012 06 24.01781	14 05 32.02	+46 35 57.0	14.7 N	B54
C/2011 F1	2012 06 19.93552	14 07 18.54	+47 55 06.3	14.7 N	B56	C/2011 F1	2012 06 24.01799	14 05 32.01	+46 35 56.7	14.6 N	B54
C/2011 F1	2012 06 19.94146	14 07 18.30	+47 54 59.8	14.8 N	B56	C/2011 F1	2012 06 24.01836	14 05 32.01	+46 35 56.3	14.6 N	B54
C/2011 F1	2012 06 19.94502	14 07 18.19	+47 54 55.1	14.8 N	B56	C/2011 F1	2012 06 24.21078	14 05 27.89	+46 32 07.9	14.7 N	G68
C/2011 F1	2012 06 19.96147	14 07 17.70	+47 54 36.1	14.7 T	106	C/2011 F1	2012 06 24.23161	14 05 27.36	+46 31 42.8	14.7 N	G68
C/2011 F1	2012 06 19.97184	14 07 17.38	+47 54 23.9	14.7 T	106	C/2011 F1	2012 06 24.25244	14 05 26.88	+46 31 18.0	14.6 N	G68
C/2011 F1	2012 06 19.98221	14 07 17.05	+47 54 12.0	14.7 T	106	C/2011 F1	2012 06 24.27304	14 05 26.46	+46 30 53.0	14.7 N	G68
C/2011 F1	2012 06 19.99262	14 07 16.76	+47 54 00.1	14.7 T	106	C/2011 F1	2012 06 24.29388	14 05 25.95	+46 30 27.7	14.7 N	G68
C/2011 F1	2012 06 20.01045	14 07 16.21	+47 53 40.3	14.9 N	J93	C/2011 F1	2012 06 24.89538	14 05 13.22	+46 18 26.5	14.5 N	I99
C/2011 F1	2012 06 20.01481	14 07 15.99	+47 53 35.4	14.9 N	J93	C/2011 F1	2012 06 24.89732	14 05 13.19	+46 18 23.7	14.6 N	C86
C/2011 F1	2012 06 20.01980	14 07 15.90	+47 53 29.6	14.9 N	J93	C/2011 F1	2012 06 24.89940	14 05 13.11	+46 18 21.8	14.5 N	I99
C/2011 F1	2012 06 20.91846	14 06 50.09	+47 36 24.6	15.4 N	C23	C/2011 F1	2012 06 24.90156	14 05 13.06	+46 18 18.8	14.4 N	945
C/2011 F1	2012 06 20.92423	14 06 49.86	+47 36 17.8	15.2 N	C23	C/2011 F1	2012 06 24.90175	14 05 13.10	+46 18 18.6	14.6 N	C86
C/2011 F1	2012 06 20.93001	14 06 49.73	+47 36 11.0	15.2 N	C23	C/2011 F1	2012 06 24.90347	14 05 13.05	+46 18 16.9	14.6 N	I99
C/2011 F1	2012 06 21.86400	14 06 24.42	+47 18 13.2	16.1 N	K 160	C/2011 F1	2012 06 24.90470	14 05 13.06	+46 18 15.1	14.6 N	C86
C/2011 F1	2012 06 21.86881	14 06 24.29	+47 18 07.5	16.2 N	K 160	C/2011 F1	2012 06 24.90755	14 05 12.90	+46 18 11.2	14.4 N	945
C/2011 F1	2012 06 21.87382	14 06 24.16	+47 18 02.0	16.2 N	K 160	C/2011 F1	2012 06 24.92001	14 05 12.73	+46 17 56.6	14.4 N	945
C/2011 F1	2012 06 21.93447	14 06 22.51	+47 16 51.5	14.6 N	I99	C/2011 F1	2012 06 24.92767	14 05 12.59	+46 17 46.8	14.4 N	945
C/2011 F1	2012 06 21.93551	14 06 22.48	+47 16 50.3	14.6 N	I99	C/2011 F1	2012 06 24.93128	14 05 12.52	+46 17 42.7	14.5 N	945
C/2011 F1	2012 06 21.93971	14 06 22.38	+47 16 45.4	14.6 N	I99	C/2011 F1	2012 06 24.97607	14 05 11.50	+46 16 48.8	14.6 N	J38
C/2011 F1	2012 06 22.88495	14 05 58.55	+46 58 19.6	15.5 N	K 160	C/2011 F1	2012 06 24.97953	14 05 11.43	+46 16 44.6	14.6 N	J38
C/2011 F1	2012 06 22.88772	14 05 58.48	+46 58 16.2	15.5 N	K 160	C/2011 F1	2012 06 24.98126	14 05 11.40	+46 16 42.4	14.6 N	J38
C/2011 F1	2012 06 22.89051	14 05 58.40	+46 58 12.9	15.5 N	K 160	C/2011 F1	2012 06 25.88714	14 04 53.58	+45 58 25.5	14.4 N	B20
C/2011 F1	2012 06 22.89265	14 05 58.39	+46 58 10.7	14.7 N	I99	C/2011 F1	2012 06 25.89118	14 04 53.53	+45 58 20.3	14.5 N	B20
C/2011 F1	2012 06 22.90066	14 05 58.18	+46 58 01.5	14.7 N	I99	C/2011 F1	2012 06 25.89725	14 04 53.39	+45 58 13.0	14.5 N	B20
C/2011 F1	2012 06 22.90270	14 05 58.13	+46 57 58.9	14.6 N	I99	C/2011 F1	2012 06 27.85248	14 04 19.92	+45 18 06.7	16.2 N	K 160
C/2011 F1	2012 06 22.92544	14 05 57.56	+46 57 32.3	14.7 N	I72	C/2011 F1	2012 06 27.85521	14 04 19.88	+45 18 03.2	16.1 N	K 160
C/2011 F1	2012 06 22.92699	14 05 57.49	+46 57 30.2	14.7 N	I72	C/2011 F1	2012 06 27.85795	14 04 19.83	+45 18 00.2	16.1 N	K 160
C/2011 F1	2012 06 22.92852	14 05 57.48	+46 57 28.5	14.7 N	I72	C/2011 F1	2012 06 27.99647	14 04 17.69	+45 15 06.8	15.5 N	B92
C/2011 F1	2012 06 22.98799	14 05 55.92	+46 56 18.1	14.5 N	939	C/2011 F1	2012 06 27.99979	14 04 17.60	+45 15 02.7	15.5 N	B92
C/2011 F1	2012 06 22.99550	14 05 55.76	+46 56 09.2	14.5 N	939	C/2011 F1	2012 06 28.00229	14 04 17.59	+45 14 59.7	15.6 N	B92
C/2011 F1	2012 06 22.99939	14 05 55.71	+46 56 04.0	15.6 N	B92	C/2011 F1	2012 06 28.86920	14 04 05.21	+44 56 56.8	14.6 N	C86
C/2011 F1	2012 06 23.00029	14 05 55.70	+46 56 03.0	15.5 N	B92	C/2011 F1	2012 06 28.87069	14 04 05.20	+44 56 54.7	14.6 N	C86
C/2011 F1	2012 06 23.00051	14 05 55.63	+46 56 03.1	14.5 N	939	C/2011 F1	2012 06 28.87813	14 04 05.08	+44 56 45.7	14.6 N	C86
C/2011 F1	2012 06 23.00116	14 05 55.67	+46 56 01.8	15.6 N	B92	C/2011 F1	2012 06 28.89006	14 04 04.94	+44 56 30.8	14.6 N	I72
C/2011 F1	2012 06 23.00203	14 05 55.63	+46 56 00.9	15.5 N	B92	C/2011 F1	2012 06 28.89157	14 04 04.93	+44 56 28.7	14.6 N	I72
C/2011 F1	2012 06 23.00289	14 05 55.61	+46 55 59.7	15.5 N	B92	C/2011 F1	2012 06 28.89309	14 04 04.88	+44 56 26.8	14.6 N	I72
C/2011 F1	2012 06 23.00380	14 05 55.60	+46 55 58.7	15.5 N	B92	C/2011 F1	2012 06 29.91794	14 03 51.88	+44 34 53.5	14.6 N	I99
C/2011 F1	2012 06 23.00466	14 05 55.55	+46 55 57.7	15.5 N	B92	C/2011 F1	2012 06 29.92178	14 03 51.83	+44 34 48.5	14.5 N	I99
C/2011 F1	2012 06 23.00553	14 05 55.53	+46 55 56.7	15.5 N	B92	C/2011 F1	2012 06 29.92559	14 03 51.79	+44 34 43.7	14.6 N	I99
C/2011 F1	2012 06 23.00640	14 05 55.54	+46 55 55.6	15.5 N	B92	C/2011 F1	2012 06 29.96965	14 03 51.33	+44 33 46.0	16.3 N	C60

C/2011 F1	2012 06 29.97114	14 03 51.18	+44 33 44.8	16.3 N	C60
C/2011 F1	2012 06 29.97264	14 03 51.25	+44 33 42.8	15.5 N	C60
C/2011 F1	2012 06 29.97413	14 03 51.24	+44 33 41.4	16.5 N	C60
C/2011 F1	2012 06 29.97563	14 03 51.15	+44 33 39.4	15.7 N	C60
C/2011 F1	2012 06 29.97712	14 03 51.18	+44 33 36.8	16.5 N	C60
C/2011 F1	2012 06 29.97862	14 03 51.14	+44 33 35.0	16.5 N	C60
C/2011 F1	2012 06 29.98011	14 03 51.13	+44 33 34.4	16.5 N	C60
C/2011 F1	2012 06 29.98161	14 03 51.14	+44 33 31.3	16.5 N	C60
C/2011 F1	2012 06 29.98310	14 03 51.07	+44 33 29.8	16.5 N	C60
C/2011 F1	2012 06 29.98460	14 03 51.16	+44 33 27.2	16.7 N	C60
C/2011 F1	2012 06 29.98609	14 03 51.08	+44 33 25.8	16.7 N	C60
C/2011 F1	2012 06 29.98916	14 03 51.00	+44 33 22.0	16.6 N	C60
C/2011 F1	2012 06 29.99065	14 03 51.01	+44 33 19.6	16.6 N	C60
C/2011 F1	2012 06 29.99215	14 03 51.00	+44 33 18.1	16.7 N	C60
C/2011 F1	2012 06 29.99364	14 03 50.94	+44 33 16.3	16.6 N	C60
C/2011 F1	2012 06 29.99514	14 03 50.88	+44 33 15.0	16.7 N	C60
C/2011 F1	2012 06 29.99663	14 03 50.91	+44 33 12.3	16.7 N	C60
C/2011 F1	2012 06 29.99813	14 03 50.86	+44 33 11.0	16.6 N	C60
C/2011 F1	2012 06 29.99962	14 03 50.89	+44 33 08.4	16.1 N	C60
C/2011 F1	2012 06 30.00112	14 03 50.90	+44 33 06.4	16.5 N	C60
C/2011 F1	2012 06 30.00261	14 03 50.94	+44 33 03.9	16.6 N	C60
C/2011 F1	2012 06 30.00411	14 03 50.89	+44 33 03.5	16.6 N	C60

P/2011 FR₁₄₃ (Lemmon)

P/2011 FR ₁₄₃	2012 06 10.51839	16 09 03.53	-04 05 44.7	21.7 N	KE07
P/2011 FR ₁₄₃	2012 06 10.52720	16 09 03.21	-04 05 43.1	20.0 N	KE07

C/2011 J2 (LINEAR)

C/2011 J2	2012 06 03.366259	10 22 17.86	+13 10 55.8	17.0 T	30D90
C/2011 J2	2012 06 03.373192	10 22 17.88	+13 10 57.1	17.0 T	30D90
C/2011 J2	2012 06 03.380075	10 22 17.84	+13 10 58.5	17.0 T	30D90

C/2011 KP₃₆ (Spacewatch)

C/2011 KP ₃₆	2012 06 10.12528	17 00 53.01	-01 54 57.5	18.5 N	J24
C/2011 KP ₃₆	2012 06 10.12885	17 00 53.01	-01 54 58.0	18.7 N	J24
C/2011 KP ₃₆	2012 06 10.13241	17 00 52.92	-01 54 58.1	18.6 N	J24
C/2011 KP ₃₆	2012 06 10.658063	17 00 43.96	-01 54 43.6	19.0 T	30D90
C/2011 KP ₃₆	2012 06 10.667569	17 00 43.76	-01 54 43.3	18.8 T	30D90
C/2011 KP ₃₆	2012 06 14.99165	16 59 30.17	-01 53 17.2	19.6 N	KB74
C/2011 KP ₃₆	2012 06 15.00154	16 59 29.98	-01 53 17.6	19.5 N	KB74
C/2011 KP ₃₆	2012 06 15.00629	16 59 29.90	-01 53 17.8	19.5 N	KB74
C/2011 KP ₃₆	2012 06 15.96238	16 59 13.71	-01 53 03.9	19.4 N	A71
C/2011 KP ₃₆	2012 06 15.96630	16 59 13.64	-01 53 03.9	19.6 N	A71
C/2011 KP ₃₆	2012 06 15.97021	16 59 13.61	-01 53 04.5	19.6 N	A71
C/2011 KP ₃₆	2012 06 15.97803	16 59 13.48	-01 53 04.2	19.7 N	A71
C/2011 KP ₃₆	2012 06 15.98584	16 59 13.31	-01 53 03.2	19.7 N	A71
C/2011 KP ₃₆	2012 06 15.98976	16 59 13.25	-01 53 03.9	20.2 N	A71
C/2011 KP ₃₆	2012 06 22.689626	16 57 21.66	-01 52 25.3	18.8 T	30D90
C/2011 KP ₃₆	2012 06 22.699082	16 57 21.53	-01 52 25.1	18.5 T	30D90
C/2011 KP ₃₆	2012 06 22.708565	16 57 21.38	-01 52 25.6	19.2 T	30D90
C/2011 KP ₃₆	2012 06 22.93449	16 57 17.69	-01 52 26.3	18.6 N	B74
C/2011 KP ₃₆	2012 06 22.94032	16 57 17.61	-01 52 26.6	19.0 N	B74
C/2011 KP ₃₆	2012 06 22.94615	16 57 17.51	-01 52 26.7	18.8 N	B74

C/2011 L4 (PANSTARRS)

C/2011 L4	2011 06 06.96986	16 10 20.90	-16 38 18.5	19.5 T	033
C/2011 L4	2011 06 06.97251	16 10 20.82	-16 38 18.5	19.5 T	033
C/2011 L4	2011 06 06.97515	16 10 20.73	-16 38 18.5	19.5 T	033
C/2011 L4	2011 06 06.97779	16 10 20.65	-16 38 18.5	19.5 T	033
C/2011 L4	2011 06 06.98043	16 10 20.56	-16 38 18.4	19.5 T	033
C/2011 L4	2012 02 13.676100	16 55 31.052	-23 05 48.07	15.8 T	2 568
C/2011 L4	2012 02 13.677199	16 55 31.077	-23 05 48.24	15.7 T	2 568
C/2011 L4	2012 02 13.678148	16 55 31.093	-23 05 48.33	15.8 T	2 568
C/2011 L4	2012 02 13.679028	16 55 31.113	-23 05 48.39	15.8 T	2 568
C/2011 L4	2012 03 24.79909	17 00 01.42	-24 25 14.4	14.9 T	349
C/2011 L4	2012 03 24.80581	17 00 01.34	-24 25 15.3		349
C/2011 L4	2012 04 09.76997	16 55 06.01	-24 56 20.5	14.4 T	349
C/2011 L4	2012 04 09.78166	16 55 05.70	-24 56 21.5		349
C/2011 L4	2012 05 25.05446	16 15 30.21	-25 54 12.9	13.6 N	K 958
C/2011 L4	2012 05 25.06688	16 15 29.32	-25 54 12.9	13.5 N	K 958
C/2011 L4	2012 05 25.07961	16 15 28.39	-25 54 13.0	13.4 N	K 958
C/2011 L4	2012 05 29.00537	16 10 37.18	-25 54 41.5	13.3 N	K 958
C/2011 L4	2012 05 29.01784	16 10 36.28	-25 54 41.3	13.4 N	K 958
C/2011 L4	2012 05 29.03041	16 10 35.28	-25 54 41.2	13.2 N	K 958
C/2011 L4	2012 05 30.33560	16 08 57.22	-25 54 34.0	13.4 N	E94
C/2011 L4	2012 05 30.37653	16 08 54.07	-25 54 34.0	13.3 N	E94
C/2011 L4	2012 05 30.37756	16 08 53.99	-25 54 34.8	13.3 N	E94
C/2011 L4	2012 05 30.40056	16 08 52.22	-25 54 34.9	13.2 N	E94
C/2011 L4	2012 05 30.50163	16 08 44.61	-25 54 37.5	14.2 N	D95
C/2011 L4	2012 05 30.50308	16 08 44.52	-25 54 37.4	14.1 N	D95
C/2011 L4	2012 05 30.50455	16 08 44.40	-25 54 37.1	14.2 N	D95
C/2011 L4	2012 05 31.90987	16 06 57.85	-25 54 25.8	13.3 N	585
C/2011 L4	2012 05 31.91174	16 06 57.69	-25 54 26.2	13.3 N	585
C/2011 L4	2012 05 31.91316	16 06 57.59	-25 54 26.4	13.2 N	585
C/2011 L4	2012 05 31.91513	16 06 57.45	-25 54 26.1	13.3 N	585
C/2011 L4	2012 05 31.91655	16 06 57.34	-25 54 26.3	13.2 N	585
C/2011 L4	2012 05 31.92366	16 06 56.77	-25 54 25.9	13.3 N	585
C/2011 L4	2012 05 31.92509	16 06 56.67	-25 54 25.8	13.2 N	585
C/2011 L4	2012 05 31.92859	16 06 56.38	-25 54 26.0	13.3 N	585
C/2011 L4	2012 06 02.743698	16 04 38.06	-25 53 57.7	12.8 T	30D90
C/2011 L4	2012 06 02.750503	16 04 37.54	-25 53 57.5	12.8 T	30D90
C/2011 L4	2012 06 02.757431	16 04 37.01	-25 53 57.3	12.7 T	30D90
C/2011 L4	2012 06 04.99051	16 01 46.24	-25 53 13.2	13.3 N	945
C/2011 L4	2012 06 04.99868	16 01 45.48	-25 53 13.3	13.3 N	945
C/2011 L4	2012 06 05.00422	16 01 45.17	-25 53 13.0	13.2 N	945
C/2011 L4	2012 06 05.00851	16 01 44.85	-25 53 13.0	13.2 N	945
C/2011 L4	2012 06 05.01247	16 01 44.57	-25 53 12.8	13.2 N	945
C/2011 L4	2012 06 05.02411	16 01 43.64	-25 53 13.1	13.6 N	K 958
C/2011 L4	2012 06 05.04065	16 01 42.35	-25 53 11.8	13.6 N	K 958
C/2011 L4	2012 06 05.05756	16 01 41.04	-25 53 11.4	13.6 N	K 958
C/2011 L4	2012 06 05.685764	16 00 52.82	-25 52 52.1	12.8 T	30D90
C/2011 L4	2012 06 05.692795	16 00 52.28	-25 52 51.9	12.9 T	30D90
C/2011 L4	2012 06 05.699864	16 00 51.74	-25 52 51.7	12.8 T	30D90
C/2011 L4	2012 06 06.49544	15 59 50.90	-25 52 31.4		KD88
C/2011 L4	2012 06 06.49723	15 59 50.76	-25 52 31.3		KD88
C/2011 L4	2012 06 06.49903	15 59 50.61	-25 52 31.2	13.5 T	KD88
C/2011 L4	2012 06 07.58256	15 58 27.27	-25 51 54.2	14.3 N	KE07

C/2011 L4	2012 06 07.58418	15 58 27.15	-25 51 54.3	14.3 N	K E07	C/2011 L4	2012 06 14.90756	15 49 08.14	-25 46 25.4	13.4 N	B74
C/2011 L4	2012 06 08.32860	15 57 29.99	-25 51 30.6	13.7 T	A H06	C/2011 L4	2012 06 14.91154	15 49 07.84	-25 46 25.3	13.4 N	B74
C/2011 L4	2012 06 08.33057	15 57 29.82	-25 51 30.3	13.8 T	A H06	C/2011 L4	2012 06 15.88170	15 47 54.74	-25 45 30.1	13.7 N	235
C/2011 L4	2012 06 08.91568	15 56 45.07	-25 51 08.9	13.2 N	I99	C/2011 L4	2012 06 15.88536	15 47 54.45	-25 45 29.6	14.9 N	A71
C/2011 L4	2012 06 08.92124	15 56 44.63	-25 51 08.7	13.2 N	I99	C/2011 L4	2012 06 15.89039	15 47 54.06	-25 45 29.7	14.6 N	A71
C/2011 L4	2012 06 08.92848	15 56 44.06	-25 51 08.4	13.2 N	I99	C/2011 L4	2012 06 15.89179	15 47 53.97	-25 45 29.4	13.7 N	235
C/2011 L4	2012 06 08.98179	15 56 40.06	-25 51 03.5	13.9 N	I32	C/2011 L4	2012 06 15.89544	15 47 53.68	-25 45 29.4	14.9 N	A71
C/2011 L4	2012 06 08.99072	15 56 39.37	-25 51 03.3	13.9 N	I32	C/2011 L4	2012 06 15.90049	15 47 53.29	-25 45 28.6	14.5 N	A71
C/2011 L4	2012 06 09.00441	15 56 38.14	-25 51 05.7	13.8 N	I88	C/2011 L4	2012 06 15.91986	15 47 51.87	-25 45 27.9	13.5 N	B83
C/2011 L4	2012 06 09.00553	15 56 38.20	-25 51 02.6	13.9 N	I32	C/2011 L4	2012 06 15.93158	15 47 50.99	-25 45 26.8	13.7 N	B83
C/2011 L4	2012 06 09.00722	15 56 37.92	-25 51 05.6	13.8 N	I88	C/2011 L4	2012 06 15.93791	15 47 50.49	-25 45 26.7	13.4 N	213
C/2011 L4	2012 06 09.00944	15 56 37.75	-25 51 05.3	13.8 N	I88	C/2011 L4	2012 06 15.94111	15 47 50.30	-25 45 26.9	13.3 N	B83
C/2011 L4	2012 06 09.01680	15 56 37.27	-25 51 05.2	13.3 N	K 958	C/2011 L4	2012 06 15.94123	15 47 50.25	-25 45 26.6	13.4 N	213
C/2011 L4	2012 06 09.02939	15 56 36.25	-25 51 04.4	13.4 N	K 958	C/2011 L4	2012 06 15.94228	15 47 50.22	-25 45 26.2	13.3 N	I99
C/2011 L4	2012 06 09.04240	15 56 35.27	-25 51 04.1	13.5 N	K 958	C/2011 L4	2012 06 15.94493	15 47 50.01	-25 45 26.1	13.2 N	I99
C/2011 L4	2012 06 10.07534	15 55 15.98	-25 50 22.1	13.1 N	J24	C/2011 L4	2012 06 15.94621	15 47 49.87	-25 45 26.1	13.4 N	213
C/2011 L4	2012 06 10.08124	15 55 15.54	-25 50 21.7	13.1 N	J24	C/2011 L4	2012 06 15.95011	15 47 49.62	-25 45 26.0	13.2 N	I99
C/2011 L4	2012 06 10.08567	15 55 15.21	-25 50 21.8	13.1 N	J24	C/2011 L4	2012 06 15.96712	15 47 48.26	-25 45 25.0	13.3 N	C86
C/2011 L4	2012 06 10.49592	15 54 43.99	-25 50 04.3		K 367	C/2011 L4	2012 06 15.96860	15 47 48.16	-25 45 24.9	13.3 N	C86
C/2011 L4	2012 06 10.49754	15 54 43.87	-25 50 04.4		K 367	C/2011 L4	2012 06 15.97008	15 47 48.04	-25 45 24.9	13.3 N	C86
C/2011 L4	2012 06 10.49916	15 54 43.73	-25 50 04.3	12.8 T	K 367	C/2011 L4	2012 06 16.91216	15 46 37.52	-25 44 28.2	13.4 N	232
C/2011 L4	2012 06 10.96669	15 54 07.86	-25 49 44.0	13.3 T	C90	C/2011 L4	2012 06 16.91840	15 46 37.05	-25 44 27.8	13.4 N	232
C/2011 L4	2012 06 10.98485	15 54 06.45	-25 49 43.0	13.3 T	C90	C/2011 L4	2012 06 16.92462	15 46 36.56	-25 44 27.5	13.4 N	232
C/2011 L4	2012 06 11.00073	15 54 05.25	-25 49 42.2	13.4 T	C90	C/2011 L4	2012 06 17.89426	15 45 24.25	-25 43 28.2	14.0 N	C43
C/2011 L4	2012 06 11.05343	15 54 01.31	-25 49 36.9	12.1 T	I47	C/2011 L4	2012 06 17.89480	15 45 24.19	-25 43 27.8	14.0 N	C43
C/2011 L4	2012 06 11.05579	15 54 01.14	-25 49 36.7	12.1 T	I47	C/2011 L4	2012 06 17.89535	15 45 24.19	-25 43 27.3	14.0 N	C43
C/2011 L4	2012 06 11.05721	15 54 01.02	-25 49 36.7	12.1 T	I47	C/2011 L4	2012 06 17.89589	15 45 24.14	-25 43 26.7	14.0 N	C43
C/2011 L4	2012 06 11.05865	15 54 00.93	-25 49 36.8	12.1 T	I47	C/2011 L4	2012 06 17.98436	15 45 17.72	-25 43 20.3	14.1 N	C35
C/2011 L4	2012 06 12.37705	15 52 20.145	-25 48 37.68	14.7 T	F51	C/2011 L4	2012 06 17.98481	15 45 17.61	-25 43 20.5	14.1 N	C35
C/2011 L4	2012 06 12.39107	15 52 19.055	-25 48 36.98	14.7 T	F51	C/2011 L4	2012 06 17.98699	15 45 17.48	-25 43 20.2	14.5 N	C35
C/2011 L4	2012 06 12.94544	15 51 36.92	-25 48 10.0	14.1 N	J01	C/2011 L4	2012 06 18.90581	15 44 09.33	-25 42 22.7	13.9 N	C10
C/2011 L4	2012 06 12.94906	15 51 36.62	-25 48 09.9	14.0 N	J01	C/2011 L4	2012 06 18.91332	15 44 08.78	-25 42 22.2	13.9 N	C10
C/2011 L4	2012 06 12.95269	15 51 36.32	-25 48 09.7	14.0 N	J01	C/2011 L4	2012 06 18.92776	15 44 07.70	-25 42 21.3	13.9 N	C10
C/2011 L4	2012 06 13.72183	15 50 37.86	-25 47 29.8	13.4 N	K C42	C/2011 L4	2012 06 19.32606	15 43 38.24	-25 41 51.1	12.7 T	I47
C/2011 L4	2012 06 13.72672	15 50 37.49	-25 47 29.6	13.4 N	K C42	C/2011 L4	2012 06 19.32645	15 43 38.20	-25 41 50.8	12.7 T	I47
C/2011 L4	2012 06 13.73159	15 50 37.13	-25 47 29.7	13.4 N	K C42	C/2011 L4	2012 06 19.32738	15 43 38.06	-25 41 50.1	12.7 T	I47
C/2011 L4	2012 06 13.93242	15 50 21.94	-25 47 18.7	13.7 N	I88	C/2011 L4	2012 06 19.32881	15 43 37.96	-25 41 50.9	12.7 T	I47
C/2011 L4	2012 06 13.93773	15 50 21.55	-25 47 18.5	13.5 N	I88	C/2011 L4	2012 06 19.33023	15 43 37.85	-25 41 51.2	12.7 T	I47
C/2011 L4	2012 06 13.94255	15 50 21.13	-25 47 18.3	13.4 N	I88	C/2011 L4	2012 06 19.49327	15 43 26.01	-25 41 40.8	14.8 N	2 E10
C/2011 L4	2012 06 14.00439	15 50 16.38	-25 47 14.7	13.3 N	945	C/2011 L4	2012 06 19.49686	15 43 25.75	-25 41 40.6	14.8 N	2 E10
C/2011 L4	2012 06 14.00943	15 50 16.00	-25 47 14.5	13.3 N	945	C/2011 L4	2012 06 19.69620	15 43 11.03	-25 41 30.3	13.4 N	K C42
C/2011 L4	2012 06 14.01884	15 50 15.27	-25 47 14.2	13.3 N	945	C/2011 L4	2012 06 19.70157	15 43 10.62	-25 41 29.6	13.4 N	K C42
C/2011 L4	2012 06 14.02378	15 50 14.91	-25 47 13.2	13.3 N	945	C/2011 L4	2012 06 19.70689	15 43 10.25	-25 41 29.4	13.3 N	K C42
C/2011 L4	2012 06 14.02809	15 50 14.54	-25 47 13.4	13.3 N	945	C/2011 L4	2012 06 19.89575	15 42 56.49	-25 41 16.9	13.7 N	J01
C/2011 L4	2012 06 14.22025	15 50 00.09	-25 47 03.2	14.6 N	857	C/2011 L4	2012 06 19.90641	15 42 55.71	-25 41 16.1	13.7 N	J01
C/2011 L4	2012 06 14.22882	15 49 59.45	-25 47 02.7	14.6 N	857	C/2011 L4	2012 06 19.91352	15 42 55.16	-25 41 15.7	13.7 N	J01
C/2011 L4	2012 06 14.23578	15 49 58.92	-25 47 02.1	14.6 N	857	C/2011 L4	2012 06 20.05240	15 42 45.04	-25 41 03.3	12.2 T	K I47
C/2011 L4	2012 06 14.24109	15 49 58.52	-25 47 02.1	14.6 N	857	C/2011 L4	2012 06 20.05651	15 42 44.74	-25 41 02.9	12.2 T	K I47
C/2011 L4	2012 06 14.24803	15 49 57.94	-25 47 01.4	14.6 N	857	C/2011 L4	2012 06 20.06080	15 42 44.41	-25 41 02.4	12.2 T	K I47
C/2011 L4	2012 06 14.25266	15 49 57.63	-25 47 01.6	14.6 N	857	C/2011 L4	2012 06 20.06436	15 42 44.14	-25 41 02.1	12.2 T	K I47
C/2011 L4	2012 06 14.53302	15 49 36.50	-25 46 46.2		K 367	C/2011 L4	2012 06 20.87270	15 41 45.08	-25 40 09.5	13.4 N	J47
C/2011 L4	2012 06 14.53383	15 49 36.44	-25 46 46.1	12.7 T	K 367	C/2011 L4	2012 06 20.89630	15 41 43.34	-25 40 08.0	13.4 N	J47
C/2011 L4	2012 06 14.90473	15 49 08.36	-25 46 25.6	13.4 N	B74	C/2011 L4	2012 06 20.91985	15 41 41.58	-25 40 06.5	13.4 N	J47

C/2011 L4	2012 06 21.16301	15 41 24.25	-25 39 48.5	14.8 T	926	C/2011 L4	2012 06 24.92438	15 36 55.33	-25 35 15.3	13.4 N	C86
C/2011 L4	2012 06 21.17456	15 41 23.40	-25 39 48.4	15.0 T	926	C/2011 L4	2012 06 24.95003	15 36 53.48	-25 35 13.6	13.4 N	945
C/2011 L4	2012 06 21.18612	15 41 22.56	-25 39 47.0	15.1 T	926	C/2011 L4	2012 06 24.95578	15 36 53.07	-25 35 13.3	13.4 N	945
C/2011 L4	2012 06 21.54569	15 40 56.22	-25 39 23.0	13.4 T	D95	C/2011 L4	2012 06 24.96757	15 36 52.24	-25 35 12.4	13.3 N	945
C/2011 L4	2012 06 21.55079	15 40 55.84	-25 39 22.7		D95	C/2011 L4	2012 06 24.97227	15 36 51.90	-25 35 12.0	13.4 N	945
C/2011 L4	2012 06 21.55225	15 40 55.74	-25 39 22.4		D95	C/2011 L4	2012 06 24.97712	15 36 51.55	-25 35 11.6	13.4 N	945
C/2011 L4	2012 06 21.90061	15 40 30.59	-25 38 57.9	13.9 N	C10	C/2011 L4	2012 06 24.98924	15 36 50.73	-25 35 10.8	13.4 N	J38
C/2011 L4	2012 06 21.91143	15 40 29.78	-25 38 57.0	13.3 N	I99	C/2011 L4	2012 06 24.99104	15 36 50.61	-25 35 10.7	13.5 N	J38
C/2011 L4	2012 06 21.91407	15 40 29.60	-25 38 56.9	13.2 N	I99	C/2011 L4	2012 06 24.99462	15 36 50.36	-25 35 10.4	13.4 N	J38
C/2011 L4	2012 06 21.91579	15 40 29.47	-25 38 56.9	13.9 N	C10	C/2011 L4	2012 06 25.18911	15 36 36.74	-25 34 55.4		31H06
C/2011 L4	2012 06 21.91919	15 40 29.21	-25 38 56.4	13.3 N	I99	C/2011 L4	2012 06 25.19425	15 36 36.44	-25 34 55.6	13.0 T	31H06
C/2011 L4	2012 06 21.92658	15 40 28.69	-25 38 55.9	13.9 N	C10	C/2011 L4	2012 06 25.50795	15 36 14.52	-25 34 31.7	13.6 T	D95
C/2011 L4	2012 06 22.17969	15 40 10.70	-25 38 37.1	12.7 T	703	C/2011 L4	2012 06 25.51013	15 36 14.37	-25 34 31.6		D95
C/2011 L4	2012 06 22.18529	15 40 10.30	-25 38 36.6	12.7 T	703	C/2011 L4	2012 06 25.51233	15 36 14.21	-25 34 31.3		D95
C/2011 L4	2012 06 22.19090	15 40 09.91	-25 38 36.2	12.7 T	703	C/2011 L4	2012 06 26.03047	15 35 38.25	-25 33 48.4	13.1 T	I47
C/2011 L4	2012 06 22.19656	15 40 09.51	-25 38 35.7	12.7 T	703	C/2011 L4	2012 06 26.03284	15 35 38.08	-25 33 48.2	13.1 T	I47
C/2011 L4	2012 06 22.91664	15 39 17.53	-25 37 44.8	13.3 N	I99	C/2011 L4	2012 06 26.03426	15 35 37.98	-25 33 48.1	13.1 T	I47
C/2011 L4	2012 06 22.92478	15 39 16.96	-25 37 44.2	13.2 N	I99	C/2011 L4	2012 06 26.03569	15 35 37.90	-25 33 47.8	13.1 T	I47
C/2011 L4	2012 06 22.92995	15 39 16.60	-25 37 43.9	13.2 N	I99	C/2011 L4	2012 06 26.03712	15 35 37.81	-25 33 47.6	13.1 T	I47
C/2011 L4	2012 06 22.94484	15 39 15.49	-25 37 42.9	13.8 N	B92	C/2011 L4	2012 06 26.03855	15 35 37.68	-25 33 47.6	13.1 T	I47
C/2011 L4	2012 06 22.94539	15 39 15.44	-25 37 42.9	13.8 N	B92	C/2011 L4	2012 06 26.03998	15 35 37.56	-25 33 47.6	13.1 T	I47
C/2011 L4	2012 06 22.94591	15 39 15.38	-25 37 42.4	13.8 N	B92	C/2011 L4	2012 06 26.04140	15 35 37.47	-25 33 47.5	13.1 T	I47
C/2011 L4	2012 06 22.94644	15 39 15.35	-25 37 42.8	13.8 N	B92	C/2011 L4	2012 06 26.04284	15 35 37.35	-25 33 47.3	13.1 T	I47
C/2011 L4	2012 06 22.94696	15 39 15.34	-25 37 42.7	13.9 N	B92	C/2011 L4	2012 06 26.04426	15 35 37.31	-25 33 47.1	13.1 T	I47
C/2011 L4	2012 06 22.94748	15 39 15.28	-25 37 42.3	13.8 N	B92	C/2011 L4	2012 06 26.13454	15 35 31.01	-25 33 43.7	13.9 T	750
C/2011 L4	2012 06 22.94800	15 39 15.25	-25 37 42.2	13.8 N	B92	C/2011 L4	2012 06 26.14458	15 35 30.31	-25 33 42.9	13.9 T	750
C/2011 L4	2012 06 22.94852	15 39 15.21	-25 37 42.1	13.8 N	B92	C/2011 L4	2012 06 26.15566	15 35 29.53	-25 33 42.0	13.9 T	750
C/2011 L4	2012 06 22.94904	15 39 15.18	-25 37 42.2	13.9 N	B92	C/2011 L4	2012 06 26.16713	15 35 28.77	-25 33 41.0	13.1 N	H15
C/2011 L4	2012 06 22.94956	15 39 15.14	-25 37 42.2	13.8 N	B92	C/2011 L4	2012 06 26.17038	15 35 28.54	-25 33 40.7	13.0 N	H15
C/2011 L4	2012 06 23.85524	15 38 10.71	-25 36 35.9	13.3 N	K 157	C/2011 L4	2012 06 26.17365	15 35 28.32	-25 33 40.4	12.9 N	H15
C/2011 L4	2012 06 23.85600	15 38 10.67	-25 36 36.1	13.4 N	K 157	C/2011 L4	2012 06 26.17698	15 35 28.08	-25 33 40.2	13.0 N	H15
C/2011 L4	2012 06 23.85678	15 38 10.58	-25 36 35.7	13.3 N	K 157	C/2011 L4	2012 06 26.17932	15 34 51.49	-25 32 59.4	13.4 N	K C42
C/2011 L4	2012 06 23.85754	15 38 10.54	-25 36 35.1	13.5 N	K 157	C/2011 L4	2012 06 26.71106	15 34 51.14	-25 32 59.1	13.4 N	K C42
C/2011 L4	2012 06 23.85831	15 38 10.49	-25 36 35.7	13.4 N	K 157	C/2011 L4	2012 06 26.71675	15 34 50.74	-25 32 58.3	13.4 N	K C42
C/2011 L4	2012 06 23.85909	15 38 10.42	-25 36 35.8	13.3 N	K 157	C/2011 L4	2012 06 28.90023	15 32 22.52	-25 30 08.2	13.4 N	C86
C/2011 L4	2012 06 23.86007	15 38 10.35	-25 36 35.6	13.3 N	K 157	C/2011 L4	2012 06 28.90616	15 32 22.11	-25 30 08.0	13.5 N	C86
C/2011 L4	2012 06 23.92991	15 38 05.43	-25 36 30.1	13.3 N	C90	C/2011 L4	2012 06 28.90764	15 32 22.00	-25 30 07.9	13.4 N	C86
C/2011 L4	2012 06 23.95747	15 38 03.43	-25 36 28.1	13.4 N	K 215						
C/2011 L4	2012 06 23.95836	15 38 03.36	-25 36 28.1	13.4 N	K 215						
C/2011 L4	2012 06 23.95926	15 38 03.30	-25 36 27.9	13.4 N	K 215						
C/2011 L4	2012 06 23.97236	15 38 02.39	-25 36 26.9	13.3 N	C90	C/2011 O1	2012 06 02.809057	20 45 03.45	-66 31 57.6	16.1 T	30D90
C/2011 L4	2012 06 23.97770	15 38 02.03	-25 36 26.5	13.0 N	C90	C/2011 O1	2012 06 02.815940	20 45 03.29	-66 32 07.5	15.9 T	30D90
C/2011 L4	2012 06 23.99681	15 38 00.60	-25 36 25.3	13.3 N	945	C/2011 O1	2012 06 02.822853	20 45 03.39	-66 32 15.4	16.2 T	30D90
C/2011 L4	2012 06 24.00220	15 38 00.23	-25 36 24.9	13.3 N	945	C/2011 O1	2012 06 07.67335	20 44 36.45	-68 15 12.0	17.0 N	K E07
C/2011 L4	2012 06 24.00701	15 37 59.87	-25 36 24.5	13.3 N	945	C/2011 O1	2012 06 07.67665	20 44 36.41	-68 15 16.2	16.8 N	K E07
C/2011 L4	2012 06 24.01193	15 37 59.47	-25 36 24.1	13.3 N	945	C/2011 O1	2012 06 11.21666	20 43 35.32	-69 29 56.7	16.0 T	K I47
C/2011 L4	2012 06 24.01450	15 37 59.38	-25 36 23.5	13.3 N	C90	C/2011 O1	2012 06 11.22595	20 43 35.03	-69 30 09.3	16.0 T	K I47
C/2011 L4	2012 06 24.01671	15 37 59.19	-25 36 23.7	13.3 N	945	C/2011 O1	2012 06 15.774954	20 41 15.45	-71 04 52.3	15.4 T	30D90
C/2011 L4	2012 06 24.47507	15 37 26.81	-25 35 46.8	13.9 N	467	C/2011 O1	2012 06 15.781817	20 41 15.20	-71 05 00.8	15.4 T	30D90
C/2011 L4	2012 06 24.47559	15 37 26.77	-25 35 46.8	14.1 N	467	C/2011 O1	2012 06 15.792153	20 41 14.78	-71 05 13.6	15.4 T	30D90
C/2011 L4	2012 06 24.47610	15 37 26.73	-25 35 46.8	14.0 N	467	C/2011 O1	2012 06 19.66690	20 38 12.96	-72 24 08.0	16.2 N	E94
C/2011 L4	2012 06 24.92000	15 36 55.62	-25 35 15.9	13.4 N	C86	C/2011 O1	2012 06 19.75941	20 38 07.56	-72 25 58.4	16.8 N	E94
C/2011 L4	2012 06 24.92290	15 36 55.39	-25 35 15.9	13.4 N	C86	C/2011 O1	2012 06 19.76944	20 38 06.93	-72 26 10.9	16.7 N	E94
						C/2011 O1	2012 06 21.51583	20 36 23.36	-73 01 00.7	16.7 N	467

C/2011 O1 (LINEAR)

C/2011 O1	2012 06 21.51669	20 36 23.37	-73 01 01.3	16.8 N	467
C/2011 O1	2012 06 21.51755	20 36 23.21	-73 01 02.8	16.6 N	467
C/2011 O1	2012 06 26.04881	20 30 41.61	-74 28 47.5	16.0 T	K I47
C/2011 O1	2012 06 26.05708	20 30 40.83	-74 28 56.5	16.0 T	K I47
C/2011 O1	2012 06 26.06279	20 30 40.24	-74 29 03.1	16.0 T	K I47

C/2011 Q1 (PANSTARRS)

C/2011 Q1	2012 06 25.40603	21 46 00.51	+05 43 27.1		32H06
C/2011 Q1	2012 06 25.40942	21 46 00.46	+05 43 26.4		32H06
C/2011 Q1	2012 06 25.41280	21 46 00.40	+05 43 25.7	20.2 T	32H06

C/2011 R1 (McNaught)

C/2011 R1	2012 06 11.37606	03 05 52.80	-43 23 24.7	14.0 T	K I47
C/2011 R1	2012 06 11.38067	03 05 53.34	-43 23 32.7	14.0 T	K I47
C/2011 R1	2012 06 11.38550	03 05 53.62	-43 23 36.2	14.0 T	K I47
C/2011 R1	2012 06 11.38936	03 05 54.07	-43 23 41.3	14.0 T	K I47

C/2011 UF₃₀₅ (LINEAR)

C/2011 UF ₃₀₅	2012 04 28.72507	21 31 21.65	+69 10 45.4	13.1 T	349
C/2011 UF ₃₀₅	2012 04 28.72749	21 31 22.07	+69 10 51.6		349
C/2011 UF ₃₀₅	2012 04 28.72991	21 31 22.46	+69 10 57.9		349
C/2011 UF ₃₀₅	2012 05 30.90191	05 09 09.01	+84 35 17.2	14.0 N	I72
C/2011 UF ₃₀₅	2012 05 30.90544	05 09 13.94	+84 35 13.1	14.0 N	I72
C/2011 UF ₃₀₅	2012 05 30.90897	05 09 19.79	+84 35 08.8	14.0 N	I72
C/2011 UF ₃₀₅	2012 05 31.51450	05 24 19.72	+84 22 16.3	13.2 T	D95
C/2011 UF ₃₀₅	2012 05 31.51669	05 24 22.91	+84 22 13.5		D95
C/2011 UF ₃₀₅	2012 05 31.51889	05 24 26.09	+84 22 10.8		D95
C/2011 UF ₃₀₅	2012 06 04.88554	06 42 23.56	+82 22 29.4	13.8 N	I72
C/2011 UF ₃₀₅	2012 06 04.88844	06 42 25.77	+82 22 24.2	13.7 N	I72
C/2011 UF ₃₀₅	2012 06 04.89133	06 42 28.05	+82 22 18.6	13.8 N	I72
C/2011 UF ₃₀₅	2012 06 04.95841	06 43 21.09	+82 20 12.7	14.0 N	C23
C/2011 UF ₃₀₅	2012 06 04.96274	06 43 24.37	+82 20 04.7	14.1 N	C23
C/2011 UF ₃₀₅	2012 06 04.96707	06 43 28.13	+82 19 56.5	14.2 N	C23
C/2011 UF ₃₀₅	2012 06 05.04450	06 44 27.77	+82 17 30.7	13.8 N	945
C/2011 UF ₃₀₅	2012 06 05.04964	06 44 31.75	+82 17 21.6	13.8 N	945
C/2011 UF ₃₀₅	2012 06 05.05222	06 44 33.62	+82 17 16.7	13.7 N	945
C/2011 UF ₃₀₅	2012 06 05.06049	06 44 40.13	+82 17 00.9	13.8 N	945
C/2011 UF ₃₀₅	2012 06 05.06256	06 44 41.66	+82 16 57.5	13.8 N	945
C/2011 UF ₃₀₅	2012 06 05.92544	06 55 03.36	+81 49 44.5	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 05.92690	06 55 04.44	+81 49 41.8	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 05.92834	06 55 05.38	+81 49 38.8	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 06.895345	07 05 27.29	+81 18 24.9	14.6 N	510
C/2011 UF ₃₀₅	2012 06 06.902419	07 05 31.49	+81 18 11.0	14.6 N	510
C/2011 UF ₃₀₅	2012 06 06.908707	07 05 35.47	+81 17 58.3	14.6 N	510
C/2011 UF ₃₀₅	2012 06 06.916566	07 05 40.30	+81 17 43.1	14.6 N	510
C/2011 UF ₃₀₅	2012 06 08.96312	07 23 59.35	+80 09 52.2	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 08.96596	07 24 00.69	+80 09 46.4	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 08.96880	07 24 02.12	+80 09 40.6	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 09.94698	07 31 25.58	+79 36 42.3	13.9 N	J24
C/2011 UF ₃₀₅	2012 06 09.95164	07 31 27.69	+79 36 32.9	13.8 N	J24
C/2011 UF ₃₀₅	2012 06 09.95788	07 31 30.70	+79 36 20.3	13.9 N	J24
C/2011 UF ₃₀₅	2012 06 14.06763	07 55 55.71	+77 16 20.5	13.6 N	945
C/2011 UF ₃₀₅	2012 06 14.07538	07 55 58.05	+77 16 04.2	13.6 N	945
C/2011 UF ₃₀₅	2012 06 14.07902	07 55 59.25	+77 15 57.0	13.6 N	945

C/2011 UF ₃₀₅	2012 06 14.08236	07 56 00.10	+77 15 49.9	13.6 N	945
C/2011 UF ₃₀₅	2012 06 14.08578	07 56 01.21	+77 15 42.5	13.6 N	945
C/2011 UF ₃₀₅	2012 06 14.48767	07 57 57.33	+77 02 02.6		K 367
C/2011 UF ₃₀₅	2012 06 14.48889	07 57 57.68	+77 02 00.1		K 367
C/2011 UF ₃₀₅	2012 06 14.49010	07 57 58.03	+77 01 57.5	12.7 T	K 367
C/2011 UF ₃₀₅	2012 06 14.93790	08 00 04.61	+76 46 40.2	15.1 N	C47
C/2011 UF ₃₀₅	2012 06 14.94051	08 00 05.10	+76 46 34.6	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 14.94236	08 00 05.70	+76 46 31.2	14.9 N	C47
C/2011 UF ₃₀₅	2012 06 14.94384	08 00 05.96	+76 46 27.6	14.9 N	C47
C/2011 UF ₃₀₅	2012 06 14.94495	08 00 06.22	+76 46 26.4	15.0 N	C47
C/2011 UF ₃₀₅	2012 06 15.89744	08 04 19.63	+76 14 00.8	13.6 N	J24
C/2011 UF ₃₀₅	2012 06 15.90446	08 04 21.58	+76 13 46.7	13.6 N	J24
C/2011 UF ₃₀₅	2012 06 15.91151	08 04 23.44	+76 13 32.2	13.6 N	J24
C/2011 UF ₃₀₅	2012 06 15.94732	08 04 32.81	+76 12 18.0	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 15.94869	08 04 32.89	+76 12 15.8	13.7 N	I72
C/2011 UF ₃₀₅	2012 06 15.95014	08 04 33.30	+76 12 12.8	13.6 N	I72
C/2011 UF ₃₀₅	2012 06 15.95159	08 04 33.66	+76 12 09.8	13.6 N	I72
C/2011 UF ₃₀₅	2012 06 15.95324	08 04 34.42	+76 12 05.9	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 15.95472	08 04 34.83	+76 12 02.9	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 17.91813	08 12 24.32	+75 05 31.4	15.2 N	C47
C/2011 UF ₃₀₅	2012 06 17.91962	08 12 24.69	+75 05 27.8	15.2 N	C47
C/2011 UF ₃₀₅	2012 06 17.92186	08 12 25.20	+75 05 24.0	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 17.92260	08 12 25.33	+75 05 22.8	15.1 N	C47
C/2011 UF ₃₀₅	2012 06 17.92555	08 12 26.07	+75 05 16.2	15.2 N	C47
C/2011 UF ₃₀₅	2012 06 17.92704	08 12 26.45	+75 05 13.4	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 17.98409	08 12 38.81	+75 03 17.6	13.7 N	I72
C/2011 UF ₃₀₅	2012 06 17.98478	08 12 39.33	+75 03 15.7	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.98532	08 12 39.47	+75 03 14.7	14.3 N	C43
C/2011 UF ₃₀₅	2012 06 17.98553	08 12 39.09	+75 03 14.5	13.7 N	I72
C/2011 UF ₃₀₅	2012 06 17.98605	08 12 39.61	+75 03 13.2	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.98677	08 12 39.77	+75 03 11.7	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.98698	08 12 39.44	+75 03 12.1	13.8 N	I72
C/2011 UF ₃₀₅	2012 06 17.98922	08 12 40.34	+75 03 06.8	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.98977	08 12 40.48	+75 03 05.6	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.99031	08 12 40.57	+75 03 04.6	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 17.99086	08 12 40.71	+75 03 03.5	14.2 N	C43
C/2011 UF ₃₀₅	2012 06 18.92012	08 16 01.15	+74 31 46.6	15.2 N	C47
C/2011 UF ₃₀₅	2012 06 18.92160	08 16 01.63	+74 31 43.7	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 18.92345	08 16 01.86	+74 31 38.9	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 18.92530	08 16 02.48	+74 31 36.7	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 18.92715	08 16 03.03	+74 31 31.2	15.0 N	C47
C/2011 UF ₃₀₅	2012 06 19.88777	08 19 17.98	+73 59 22.0	13.9 N	I72
C/2011 UF ₃₀₅	2012 06 19.89082	08 19 18.56	+73 59 15.8	13.9 N	I72
C/2011 UF ₃₀₅	2012 06 19.89172	08 19 18.94	+73 59 13.5	14.2 T	106
C/2011 UF ₃₀₅	2012 06 19.89259	08 19 19.04	+73 59 11.6	14.1 T	106
C/2011 UF ₃₀₅	2012 06 19.89346	08 19 19.22	+73 59 10.3	14.1 T	106
C/2011 UF ₃₀₅	2012 06 19.89432	08 19 19.36	+73 59 08.4	14.1 T	106
C/2011 UF ₃₀₅	2012 06 19.89518	08 19 19.59	+73 59 06.8	14.3 T	106
C/2011 UF ₃₀₅	2012 06 19.89595	08 19 19.60	+73 59 05.5	13.9 N	I72
C/2011 UF ₃₀₅	2012 06 19.89605	08 19 19.71	+73 59 04.5	14.1 T	106
C/2011 UF ₃₀₅	2012 06 20.93465	08 22 38.99	+73 24 27.3	14.2 N	C23
C/2011 UF ₃₀₅	2012 06 20.94043	08 22 40.03	+73 24 15.9	14.2 N	C23
C/2011 UF ₃₀₅	2012 06 20.94620	08 22 41.17	+73 24 04.2	14.2 N	C23

C/2011 UF ₃₀₅	2012 06 21.52476	08 24 26.81	+73 04 53.5	13.4 T	D95
C/2011 UF ₃₀₅	2012 06 21.52549	08 24 26.97	+73 04 52.0		D95
C/2011 UF ₃₀₅	2012 06 21.52622	08 24 27.07	+73 04 50.5		D95
C/2011 UF ₃₀₅	2012 06 22.91297	08 28 28.06	+72 19 07.4	13.7 N	K 215
C/2011 UF ₃₀₅	2012 06 22.91387	08 28 28.21	+72 19 05.6	13.7 N	K 215
C/2011 UF ₃₀₅	2012 06 22.91476	08 28 28.34	+72 19 03.9	13.8 N	K 215
C/2011 UF ₃₀₅	2012 06 22.91942	08 28 29.05	+72 18 55.1	13.9 N	I72
C/2011 UF ₃₀₅	2012 06 22.92039	08 28 29.27	+72 18 53.3	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 22.92123	08 28 29.42	+72 18 51.6	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 23.96338	08 31 19.40	+71 44 46.2	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 23.96491	08 31 19.79	+71 44 43.0	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 23.96642	08 31 19.90	+71 44 40.1	14.0 N	I72
C/2011 UF ₃₀₅	2012 06 23.99249	08 31 24.29	+71 43 48.5	14.0 N	A71
C/2011 UF ₃₀₅	2012 06 23.99465	08 31 24.64	+71 43 44.3	14.1 N	A71
C/2011 UF ₃₀₅	2012 06 23.99681	08 31 25.00	+71 43 40.1	14.6 N	A71
C/2011 UF ₃₀₅	2012 06 23.99897	08 31 25.33	+71 43 35.8	14.1 N	A71
C/2011 UF ₃₀₅	2012 06 24.00113	08 31 25.71	+71 43 31.2	14.5 N	A71
C/2011 UF ₃₀₅	2012 06 24.00330	08 31 26.04	+71 43 27.3	14.0 N	A71
C/2011 UF ₃₀₅	2012 06 24.07150	08 31 36.95	+71 41 13.3	14.0 N	945
C/2011 UF ₃₀₅	2012 06 24.07530	08 31 37.51	+71 41 05.7	13.9 N	945
C/2011 UF ₃₀₅	2012 06 24.08236	08 31 38.69	+71 40 51.8	13.9 N	945
C/2011 UF ₃₀₅	2012 06 24.08587	08 31 39.24	+71 40 45.7	13.9 N	945
C/2011 UF ₃₀₅	2012 06 24.08902	08 31 39.72	+71 40 39.1	14.0 N	945
C/2011 UF ₃₀₅	2012 06 24.88613	08 33 42.84	+71 14 48.9	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 24.88911	08 33 43.32	+71 14 42.8	13.9 N	C86
C/2011 UF ₃₀₅	2012 06 24.89060	08 33 43.61	+71 14 40.1	13.9 N	C86
C/2011 UF ₃₀₅	2012 06 25.07681	08 34 12.20	+71 08 36.3	13.9 N	945
C/2011 UF ₃₀₅	2012 06 25.08204	08 34 13.04	+71 08 26.1	13.9 N	945
C/2011 UF ₃₀₅	2012 06 25.08688	08 34 13.78	+71 08 16.8	13.9 N	945
C/2011 UF ₃₀₅	2012 06 25.09279	08 34 14.71	+71 08 05.3	13.9 N	945
C/2011 UF ₃₀₅	2012 06 25.09734	08 34 15.37	+71 07 56.3	13.9 N	945
C/2011 UF ₃₀₅	2012 06 25.47523	08 35 11.29	+70 55 46.9	13.1 T	D95
C/2011 UF ₃₀₅	2012 06 25.47596	08 35 11.37	+70 55 45.5		D95
C/2011 UF ₃₀₅	2012 06 25.47743	08 35 11.58	+70 55 43.0		D95
C/2011 UF ₃₀₅	2012 06 25.90003	08 36 13.73	+70 42 06.5	14.2 N	C23
C/2011 UF ₃₀₅	2012 06 25.90437	08 36 14.35	+70 41 58.0	14.1 N	C23
C/2011 UF ₃₀₅	2012 06 25.90870	08 36 15.04	+70 41 49.6	14.1 N	C23
C/2011 UF ₃₀₅	2012 06 26.87171	08 38 32.10	+70 11 00.0	15.1 N	C47
C/2011 UF ₃₀₅	2012 06 26.87243	08 38 32.18	+70 10 58.7	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 26.87315	08 38 32.31	+70 10 56.9	15.3 N	C47
C/2011 UF ₃₀₅	2012 06 26.87386	08 38 32.35	+70 10 55.9	15.4 N	C47
C/2011 UF ₃₀₅	2012 06 28.88369	08 43 01.10	+69 07 19.3	13.9 N	C86
C/2011 UF ₃₀₅	2012 06 28.88517	08 43 01.24	+69 07 17.3	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 28.88815	08 43 01.54	+69 07 11.2	13.8 N	C86
C/2011 UF ₃₀₅	2012 06 28.89934	08 43 03.05	+69 06 50.3	13.8 N	I72
C/2011 UF ₃₀₅	2012 06 28.90087	08 43 03.23	+69 06 47.8	13.8 N	I72
C/2011 UF ₃₀₅	2012 06 28.90238	08 43 03.39	+69 06 44.7	13.8 N	I72

P/2011 W1 (PANSTARRS)

P/2011 W1	2012 01 14.52861	04 41 59.99	+17 23 03.7	18.5 T	349
P/2011 W1	2012 01 14.53748	04 41 59.84	+17 23 04.2		349

P/2011 W2 (Rinner)

P/2011 W2	2012 01 14.56593	07 37 52.08	+00 19 54.6	16.5 T	349
P/2011 W2	2012 01 14.57939	07 37 51.41	+00 19 52.8		349

C/2012 A2 (LINEAR)

C/2012 A2	2012 03 24.51283	10 59 53.10	+64 49 07.5	17.0 T	349
C/2012 A2	2012 03 24.52283	10 59 51.23	+64 49 12.6		349
C/2012 A2	2012 03 24.53292	10 59 49.28	+64 49 18.4		349
C/2012 A2	2012 05 24.96857	08 58 59.92	+63 33 13.4	16.9 N	K 958
C/2012 A2	2012 05 24.98118	08 58 59.31	+63 33 07.8	16.8 N	K 958
C/2012 A2	2012 05 24.99348	08 58 58.43	+63 33 04.4	16.9 N	K 958
C/2012 A2	2012 05 29.91065	08 56 45.34	+63 10 07.7	17.4 N	A24
C/2012 A2	2012 05 29.91137	08 56 45.27	+63 10 07.5	17.3 N	A24
C/2012 A2	2012 05 29.95228	08 56 44.44	+63 09 55.6	17.0 N	A24
C/2012 A2	2012 05 29.95300	08 56 44.41	+63 09 55.7	17.1 N	A24
C/2012 A2	2012 06 02.89732	08 55 31.77	+62 52 23.8	17.0 N	J24
C/2012 A2	2012 06 02.90878	08 55 31.62	+62 52 20.6	16.8 N	J24
C/2012 A2	2012 06 02.92310	08 55 31.40	+62 52 16.9	16.9 N	J24
C/2012 A2	2012 06 04.95714	08 55 05.36	+62 43 34.1	16.7 N	K 958
C/2012 A2	2012 06 04.96869	08 55 05.04	+62 43 30.6	16.6 N	K 958
C/2012 A2	2012 06 04.98098	08 55 04.62	+62 43 27.9	16.6 N	K 958
C/2012 A2	2012 06 09.94320	08 54 29.01	+62 23 23.7	16.8 N	C23
C/2012 A2	2012 06 09.95126	08 54 29.01	+62 23 22.3	16.7 N	C23
C/2012 A2	2012 06 09.95559	08 54 28.85	+62 23 20.8	16.8 N	C23
C/2012 A2	2012 06 17.49362	08 54 43.67	+61 56 25.4	17.1 T	D95
C/2012 A2	2012 06 17.49505	08 54 43.96	+61 56 24.2		D95
C/2012 A2	2012 06 20.94882	08 55 15.27	+61 45 40.2	16.0 N	C23
C/2012 A2	2012 06 20.95315	08 55 15.45	+61 45 39.3	16.1 N	C23
C/2012 A2	2012 06 20.95748	08 55 15.57	+61 45 38.8	16.0 N	C23
C/2012 A2	2012 06 22.48548	08 55 33.92	+61 41 15.3	16.4 T	D95
C/2012 A2	2012 06 22.48833	08 55 33.84	+61 41 15.4		D95
C/2012 A2	2012 06 22.49119	08 55 33.83	+61 41 14.6		D95
C/2012 A2	2012 06 22.92062	08 55 39.65	+61 40 02.0	16.5 T	K 215
C/2012 A2	2012 06 22.92189	08 55 39.67	+61 40 01.8	16.6 T	K 215
C/2012 A2	2012 06 22.92317	08 55 39.69	+61 40 01.6	16.5 T	K 215

P/2012 B1 (PANSTARRS)

P/2012 B1	1997 06 01.30604	13 33 10.76	-09 39 11.1	16.2 T	566
P/2012 B1	1997 06 01.31448	13 33 10.67	-09 39 11.4	16.2 T	566
P/2012 B1	1997 06 01.32291	13 33 10.58	-09 39 11.8	16.2 T	566
P/2012 B1	2012 01 29.64325	08 42 48.18	+28 07 41.0	18.9 T	349
P/2012 B1	2012 01 29.66054	08 42 47.56	+28 07 42.9		349
P/2012 B1	2012 06 09.36295	08 58 42.00	+23 58 08.5	19.5 N	KE07
P/2012 B1	2012 06 09.36672	08 58 42.24	+23 58 07.2	18.7 N	KE07

C/2012 B3 (La Sagra)

C/2012 B3	2012 05 27.49379	14 35 32.05	+75 12 23.9	18.0 T	D95
C/2012 B3	2012 05 27.49949	14 35 30.69	+75 12 26.3		D95
C/2012 B3	2012 06 02.93495	14 06 36.48	+75 11 43.3	18.4 N	J24
C/2012 B3	2012 06 02.93890	14 06 35.86	+75 11 43.3	18.4 N	J24
C/2012 B3	2012 06 02.94172	14 06 34.89	+75 11 43.3	18.4 N	J24
C/2012 B3	2012 06 09.92786	13 38 53.23	+74 48 46.6	18.3 N	J24
C/2012 B3	2012 06 09.93376	13 38 51.74	+74 48 44.7	18.4 N	J24
C/2012 B3	2012 06 09.94041	13 38 50.39	+74 48 43.1	18.4 N	J24

C/2012 B3	2012 06 09.99713	13 38 37.60	+74 48 25.2	17.6 N	C23
C/2012 B3	2012 06 10.00368	13 38 36.12	+74 48 25.4	17.6 N	C23
C/2012 B3	2012 06 10.01218	13 38 34.43	+74 48 21.7	17.7 N	C23
C/2012 B3	2012 06 21.98862	13 02 39.92	+73 33 06.9	18.0 N	C23
C/2012 B3	2012 06 21.99639	13 02 39.06	+73 33 03.3	18.1 N	C23
C/2012 B3	2012 06 22.00495	13 02 37.87	+73 32 59.7	18.1 N	C23
C/2012 B3	2012 06 23.92228	12 58 13.78	+73 18 25.3	18.2 T	K 215
C/2012 B3	2012 06 23.92356	12 58 13.54	+73 18 23.9	18.6 T	K 215
C/2012 B3	2012 06 23.92484	12 58 13.34	+73 18 23.1	18.5 T	K 215

C/2012 BJ₉₈ (Lemmon)

C/2012 BJ ₉₈	2012 05 06.51625	08 24 59.46	+20 16 17.0	18.0 T	349
C/2012 BJ ₉₈	2012 05 06.52574	08 25 00.09	+20 16 14.0		349
C/2012 BJ ₉₈	2012 06 09.37786	09 14 58.69	+17 13 48.5	18.6 N	K E07
C/2012 BJ ₉₈	2012 06 09.38390	09 14 59.30	+17 13 46.0	18.9 N	K E07
C/2012 BJ ₉₈	2012 06 12.16120	09 19 42.75	+16 53 26.1		32H06
C/2012 BJ ₉₈	2012 06 12.16288	09 19 42.94	+16 53 25.5		32H06
C/2012 BJ ₉₈	2012 06 12.16456	09 19 43.14	+16 53 24.8	17.4 T	32H06
C/2012 BJ ₉₈	2012 06 15.88247	09 26 09.83	+16 24 58.3	17.3 N	J24
C/2012 BJ ₉₈	2012 06 15.88471	09 26 10.08	+16 24 56.9	17.3 N	J24
C/2012 BJ ₉₈	2012 06 15.88810	09 26 10.36	+16 24 55.6	17.3 N	J24

C/2012 C1 (McNaught)

C/2012 C1	2012 06 08.36996	06 12 16.41	-36 24 41.1	18.6 N	K E07
C/2012 C1	2012 06 08.37599	06 12 16.63	-36 24 42.2	19.0 N	K E07

C/2012 CH₁₇ (MOSS)

C/2012 CH ₁₇	2012 05 13.59248	10 49 03.02	+35 52 01.7	16.8 T	349
C/2012 CH ₁₇	2012 05 13.60537	10 49 03.13	+35 51 59.2		349
C/2012 CH ₁₇	2012 06 02.99722	11 01 05.81	+33 43 23.9	17.5 N	J24
C/2012 CH ₁₇	2012 06 03.01411	11 01 06.50	+33 43 16.7	17.3 N	J24
C/2012 CH ₁₇	2012 06 03.01973	11 01 06.95	+33 43 13.5	17.4 N	J24
C/2012 CH ₁₇	2012 06 09.90374	11 07 59.28	+32 42 54.9	17.6 N	C23
C/2012 CH ₁₇	2012 06 09.90889	11 07 59.63	+32 42 51.5	17.4 N	C23
C/2012 CH ₁₇	2012 06 09.92022	11 08 00.30	+32 42 46.0	17.3 N	C23
C/2012 CH ₁₇	2012 06 09.98641	11 08 04.53	+32 42 09.8	17.2 N	J24
C/2012 CH ₁₇	2012 06 09.98935	11 08 04.82	+32 42 08.3	17.1 N	J24
C/2012 CH ₁₇	2012 06 09.99156	11 08 05.00	+32 42 07.3	17.5 N	J24
C/2012 CH ₁₇	2012 06 12.90681	11 11 23.85	+32 14 01.6	17.7 N	B74
C/2012 CH ₁₇	2012 06 12.91865	11 11 24.72	+32 13 54.8	17.7 N	B74
C/2012 CH ₁₇	2012 06 12.92507	11 11 25.10	+32 13 50.5	17.6 N	B74
C/2012 CH ₁₇	2012 06 15.12598	11 14 04.51	+31 51 40.0	17.5 N	H45
C/2012 CH ₁₇	2012 06 15.12768	11 14 04.52	+31 51 40.0	17.4 N	H45
C/2012 CH ₁₇	2012 06 15.12887	11 14 04.63	+31 51 39.5	17.6 N	H45
C/2012 CH ₁₇	2012 06 15.12983	11 14 04.64	+31 51 38.9	17.5 N	H45
C/2012 CH ₁₇	2012 06 15.13093	11 14 04.81	+31 51 38.7	17.6 N	H45
C/2012 CH ₁₇	2012 06 15.84322	11 14 58.00	+31 44 15.8	18.4 N	K 160
C/2012 CH ₁₇	2012 06 15.84598	11 14 58.22	+31 44 13.9	18.5 N	K 160
C/2012 CH ₁₇	2012 06 15.84873	11 14 58.44	+31 44 11.9	17.9 N	K 160
C/2012 CH ₁₇	2012 06 15.94238	11 15 05.54	+31 43 13.4	17.0 N	J24
C/2012 CH ₁₇	2012 06 15.94914	11 15 06.01	+31 43 09.9	17.0 N	J24
C/2012 CH ₁₇	2012 06 15.95590	11 15 06.56	+31 43 05.6	16.8 N	J24
C/2012 CH ₁₇	2012 06 16.84824	11 16 14.49	+31 33 42.9	18.0 N	K 160
C/2012 CH ₁₇	2012 06 16.85104	11 16 14.72	+31 33 41.1	17.9 N	K 160

C/2012 CH ₁₇	2012 06 16.85384	11 16 14.94	+31 33 39.4	17.6 N	K 160
C/2012 CH ₁₇	2012 06 19.16032	11 19 16.50	+31 08 45.7	15.3 T	703
C/2012 CH ₁₇	2012 06 19.16644	11 19 17.04	+31 08 42.6	15.3 T	703
C/2012 CH ₁₇	2012 06 19.17251	11 19 17.50	+31 08 38.7	15.6 T	703
C/2012 CH ₁₇	2012 06 19.17862	11 19 18.01	+31 08 34.5	15.9 T	703
C/2012 CH ₁₇	2012 06 22.90802	11 24 29.19	+30 26 18.3	16.8 N	C23
C/2012 CH ₁₇	2012 06 22.91652	11 24 29.80	+30 26 11.6	16.7 N	C23
C/2012 CH ₁₇	2012 06 22.92502	11 24 30.56	+30 26 04.9	16.1 N	C23
C/2012 CH ₁₇	2012 06 23.93994	11 25 58.92	+30 14 11.4	17.7 N	K 215
C/2012 CH ₁₇	2012 06 23.94083	11 25 59.01	+30 14 10.4	17.6 N	K 215
C/2012 CH ₁₇	2012 06 23.94173	11 25 59.09	+30 14 09.7	17.8 N	K 215
C/2012 CH ₁₇	2012 06 24.95331	11 27 28.80	+30 02 06.0	17.4 N	J38
C/2012 CH ₁₇	2012 06 24.95487	11 27 28.90	+30 02 05.1	17.4 N	J38
C/2012 CH ₁₇	2012 06 24.95643	11 27 29.00	+30 02 04.2	17.4 N	J38

C/2012 E3 (PANSTARRS)

C/2012 E3	2012 06 18.17772	12 18 11.79	+15 02 09.1		32H06
C/2012 E3	2012 06 18.18135	12 18 11.74	+15 02 07.2		32H06
C/2012 E3	2012 06 18.18498	12 18 11.70	+15 02 05.3	20.4 T	32H06

C/2012 F1 (Gibbs)

C/2012 F1	2012 04 01.56382	10 18 58.29	-13 20 12.8	18.4 T	349
C/2012 F1	2012 04 01.57147	10 18 56.77	-13 19 56.6		349

P/2012 F5 (Gibbs)

P/2012 F5	2012 04 25.20793	11 00 41.15	-01 53 28.0		32H06
P/2012 F5	2012 04 25.21339	11 00 41.14	-01 53 25.9	19.5 T	32H06
P/2012 F5	2012 06 10.43351	11 16 08.30	-00 31 58.9	19.9 N	K E07
P/2012 F5	2012 06 10.44452	11 16 08.76	-00 31 59.9	19.9 N	K E07
P/2012 F5	2012 06 13.44557	11 18 20.10	-00 36 13.2	20.2 N	K E07
P/2012 F5	2012 06 13.45438	11 18 20.52	-00 36 13.8	20.4 N	K E07

C/2012 F6 (Lemmon)

C/2012 F6	2012 06 10.16144	09 35 26.18	+19 43 21.3	19.7 N	12H06
C/2012 F6	2012 06 10.16959	09 35 26.31	+19 43 18.5	20.0 N	12H06
C/2012 F6	2012 06 14.15949	09 36 27.20	+19 18 28.3		32H06
C/2012 F6	2012 06 14.16221	09 36 27.24	+19 18 27.2		32H06
C/2012 F6	2012 06 14.16493	09 36 27.28	+19 18 25.8	19.0 T	32H06

C/2012 H2 (McNaught)

C/2012 H2	2012 06 10.36956	08 49 04.31	-24 04 50.4	19.4 N	K E07
C/2012 H2	2012 06 10.37294	08 49 04.97	-24 04 43.4	19.6 N	K E07
C/2012 H2	2012 06 10.37881	08 49 06.10	-24 04 31.4	20.2 N	K E07

C/2012 J1 (Catalina)

C/2012 J1	2012 05 25.05898	23 01 44.32	+27 35 11.2	16.3 N	K 958
C/2012 J1	2012 05 25.07169	23 01 45.12	+27 35 18.5	16.2 N	K 958
C/2012 J1	2012 05 25.08391	23 01 45.83	+27 35 26.8	16.3 N	K 958
C/2012 J1	2012 05 30.07280	23 06 45.28	+28 29 00.2		204
C/2012 J1	2012 05 30.07666	23 06 45.50	+28 29 02.6	15.8 N	204
C/2012 J1	2012 05 30.08051	23 06 45.73	+28 29 05.2		204
C/2012 J1	2012 05 31.00258	23 07 39.95	+28 38 57.7	15.9 N	585
C/2012 J1	2012 05 31.00334	23 07 40.11	+28 38 57.3	16.4 N	585
C/2012 J1	2012 05 31.00454	23 07 40.16	+28 38 59.4	16.1 N	585
C/2012 J1	2012 05 31.00594	23 07 40.25	+28 39 00.4	16.3 N	585
C/2012 J1	2012 05 31.00875	23 07 40.42	+28 39 02.4	16.2 N	585

C/2012 J1	2012 05 31.01016	23 07 40.47	+28 39 02.7	16.2 N	585	C/2012 J1	2012 06 17.04350	23 23 15.99	+31 39 02.8	15.7 N	C09
C/2012 J1	2012 05 31.01156	23 07 40.48	+28 39 04.4	16.1 N	585	C/2012 J1	2012 06 17.04524	23 23 16.12	+31 39 04.1	15.8 N	232
C/2012 J1	2012 05 31.01296	23 07 40.68	+28 39 04.6	16.1 N	585	C/2012 J1	2012 06 17.05008	23 23 16.38	+31 39 07.3	15.8 N	232
C/2012 J1	2012 06 02.08760	23 09 41.57	+29 01 17.2	16.1 N	213	C/2012 J1	2012 06 17.05052	23 23 16.36	+31 39 07.1	15.7 N	C09
C/2012 J1	2012 06 02.09101	23 09 41.76	+29 01 19.1	16.2 N	213	C/2012 J1	2012 06 17.05251	23 23 16.50	+31 39 08.8	15.9 N	232
C/2012 J1	2012 06 02.09442	23 09 41.83	+29 01 21.0	16.1 N	213	C/2012 J1	2012 06 17.05580	23 23 16.66	+31 39 10.8	15.9 N	213
C/2012 J1	2012 06 05.05595	23 12 31.36	+29 32 57.0	16.0 N	C23	C/2012 J1	2012 06 17.05755	23 23 16.72	+31 39 11.6	15.7 N	C09
C/2012 J1	2012 06 05.06300	23 12 31.76	+29 33 01.2	15.6 N	C23	C/2012 J1	2012 06 17.06458	23 23 17.06	+31 39 15.9	15.7 N	C09
C/2012 J1	2012 06 05.07358	23 12 32.41	+29 33 08.2	15.8 N	C23	C/2012 J1	2012 06 17.06569	23 23 17.14	+31 39 17.0	16.3 N	K 160
C/2012 J1	2012 06 05.08121	23 12 32.74	+29 33 13.0	15.8 N	K 958	C/2012 J1	2012 06 17.06843	23 23 17.28	+31 39 18.7	16.3 N	K 160
C/2012 J1	2012 06 05.09386	23 12 33.52	+29 33 21.8	16.0 N	K 958	C/2012 J1	2012 06 17.07116	23 23 17.42	+31 39 20.4	16.2 N	K 160
C/2012 J1	2012 06 05.10669	23 12 34.26	+29 33 29.6	15.8 N	K 958	C/2012 J1	2012 06 17.07161	23 23 17.40	+31 39 20.4	15.7 N	C09
C/2012 J1	2012 06 06.37728	23 13 45.81	+29 47 01.0	16.0 T	926	C/2012 J1	2012 06 17.08174	23 23 17.99	+31 39 27.0	15.9 N	213
C/2012 J1	2012 06 06.39228	23 13 46.64	+29 47 10.7	15.9 T	926	C/2012 J1	2012 06 17.40819	23 23 34.36	+31 42 49.1	15.7 T	703
C/2012 J1	2012 06 06.40707	23 13 47.47	+29 47 20.3	15.9 T	926	C/2012 J1	2012 06 17.41440	23 23 34.65	+31 42 53.1	15.8 T	703
C/2012 J1	2012 06 08.33373	23 15 34.58	+30 07 46.2	15.5 N	H15	C/2012 J1	2012 06 17.42074	23 23 34.98	+31 42 57.0	15.8 T	703
C/2012 J1	2012 06 08.34506	23 15 35.19	+30 07 53.8	15.8 N	H15	C/2012 J1	2012 06 17.42703	23 23 35.30	+31 43 01.0	15.8 T	703
C/2012 J1	2012 06 08.39022	23 15 37.67	+30 08 22.5	15.5 N	H15	C/2012 J1	2012 06 17.67603	23 23 48.02	+31 45 35.9	16.1 T	349
C/2012 J1	2012 06 08.40152	23 15 38.28	+30 08 29.8	15.7 N	H15	C/2012 J1	2012 06 17.68311	23 23 48.39	+31 45 40.4		349
C/2012 J1	2012 06 09.09192	23 16 16.18	+30 15 47.4	16.2 N	K 958	C/2012 J1	2012 06 17.69030	23 23 48.73	+31 45 44.6		349
C/2012 J1	2012 06 09.10402	23 16 16.92	+30 15 54.7	16.0 N	K 958	C/2012 J1	2012 06 17.96927	23 24 02.73	+31 48 36.6	17.3 N	A71
C/2012 J1	2012 06 09.11605	23 16 17.47	+30 16 02.4	15.9 N	K 958	C/2012 J1	2012 06 17.97571	23 24 03.06	+31 48 40.5	17.2 N	A71
C/2012 J1	2012 06 09.38920	23 16 32.49	+30 18 56.5	16.7 T	704	C/2012 J1	2012 06 17.98214	23 24 03.38	+31 48 44.5	17.3 N	A71
C/2012 J1	2012 06 09.39952	23 16 33.03	+30 19 02.9	16.8 T	704	C/2012 J1	2012 06 17.98862	23 24 03.69	+31 48 48.5	17.3 N	A71
C/2012 J1	2012 06 09.40981	23 16 33.63	+30 19 10.0	16.8 T	704	C/2012 J1	2012 06 17.99828	23 24 04.18	+31 48 54.5	17.3 N	A71
C/2012 J1	2012 06 10.06882	23 17 09.45	+30 26 06.5	15.8 N	C23	C/2012 J1	2012 06 18.08602	23 24 08.57	+31 49 49.3	16.2 N	K 160
C/2012 J1	2012 06 10.07459	23 17 09.79	+30 26 10.2	15.8 N	C23	C/2012 J1	2012 06 18.08874	23 24 08.70	+31 49 51.0	16.2 N	K 160
C/2012 J1	2012 06 10.07892	23 17 10.02	+30 26 12.7	15.8 N	C23	C/2012 J1	2012 06 18.09147	23 24 08.84	+31 49 52.7	16.3 N	K 160
C/2012 J1	2012 06 10.826473	23 17 50.40	+30 34 08.8	16.0 T	30D90	C/2012 J1	2012 06 18.98722	23 24 53.55	+31 59 05.2	16.6 N	C47
C/2012 J1	2012 06 10.830475	23 17 50.62	+30 34 12.1		30D90	C/2012 J1	2012 06 18.99009	23 24 53.67	+31 59 06.7	17.2 N	C47
C/2012 J1	2012 06 10.834488	23 17 50.84	+30 34 14.2	15.8 T	30D90	C/2012 J1	2012 06 18.99367	23 24 53.85	+31 59 08.9	16.7 N	C47
C/2012 J1	2012 06 14.36480	23 20 58.24	+31 11 12.9	16.2 N	H47	C/2012 J1	2012 06 18.99727	23 24 54.05	+31 59 11.4	16.9 N	C47
C/2012 J1	2012 06 14.36791	23 20 58.40	+31 11 15.1	15.9 N	H47	C/2012 J1	2012 06 19.00086	23 24 54.21	+31 59 13.5	16.9 N	C47
C/2012 J1	2012 06 14.37077	23 20 58.55	+31 11 17.0	16.3 N	H47	C/2012 J1	2012 06 20.04677	23 25 45.79	+32 09 57.3	16.2 N	K 160
C/2012 J1	2012 06 14.37730	23 20 58.88	+31 11 21.0	15.7 N	H47	C/2012 J1	2012 06 20.04883	23 25 45.89	+32 09 58.6	16.0 N	K 160
C/2012 J1	2012 06 14.38215	23 20 59.18	+31 11 24.0	16.2 N	H47	C/2012 J1	2012 06 20.05075	23 25 45.99	+32 09 59.8	16.2 N	K 160
C/2012 J1	2012 06 16.05706	23 22 25.71	+31 28 49.8	16.1 N	K 157	C/2012 J1	2012 06 20.19644	23 25 53.12	+32 11 29.8	16.4 N	K J47
C/2012 J1	2012 06 16.05925	23 22 25.82	+31 28 51.2	15.8 N	K 157	C/2012 J1	2012 06 20.20444	23 25 53.53	+32 11 35.1	16.6 N	K J47
C/2012 J1	2012 06 16.06144	23 22 25.94	+31 28 52.5	16.0 N	K 157	C/2012 J1	2012 06 20.21325	23 25 53.90	+32 11 40.6	16.8 N	K J47
C/2012 J1	2012 06 16.06363	23 22 26.05	+31 28 53.9	15.7 N	K 157	C/2012 J1	2012 06 20.36420	23 26 01.30	+32 13 12.4	15.3 N	H47
C/2012 J1	2012 06 16.06392	23 22 26.07	+31 28 53.8	15.8 N	K 104	C/2012 J1	2012 06 20.36769	23 26 01.48	+32 13 14.7	15.5 N	H47
C/2012 J1	2012 06 16.07109	23 22 26.43	+31 28 58.3	15.8 N	K 104	C/2012 J1	2012 06 20.37172	23 26 01.69	+32 13 17.2	15.5 N	H47
C/2012 J1	2012 06 16.07826	23 22 26.80	+31 29 02.8	15.8 N	K 104	C/2012 J1	2012 06 20.37762	23 26 01.95	+32 13 20.8	15.5 N	H47
C/2012 J1	2012 06 16.17917	23 22 31.99	+31 30 07.5	16.2 N	J24	C/2012 J1	2012 06 21.04004	23 26 34.17	+32 20 05.4	15.9 N	C23
C/2012 J1	2012 06 16.20132	23 22 33.11	+31 30 21.2	16.2 N	J24	C/2012 J1	2012 06 21.04726	23 26 34.55	+32 20 09.7	15.8 N	C23
C/2012 J1	2012 06 16.20574	23 22 33.35	+31 30 23.9	16.2 N	J24	C/2012 J1	2012 06 21.05304	23 26 34.85	+32 20 13.4	15.8 N	C23
C/2012 J1	2012 06 16.99620	23 23 13.62	+31 38 33.4	16.4 N	C47	C/2012 J1	2012 06 21.05409	23 26 34.87	+32 20 14.5	15.9 T	B51
C/2012 J1	2012 06 16.99908	23 23 13.76	+31 38 35.1	16.6 N	C47	C/2012 J1	2012 06 21.05842	23 26 35.11	+32 20 17.3	15.9 T	B51
C/2012 J1	2012 06 17.00195	23 23 13.92	+31 38 36.9	16.5 N	C47	C/2012 J1	2012 06 21.06309	23 26 35.34	+32 20 20.3	16.0 T	B51
C/2012 J1	2012 06 17.00410	23 23 14.03	+31 38 38.2	16.8 N	C47	C/2012 J1	2012 06 21.06702	23 26 35.54	+32 20 22.3	16.0 T	B51
C/2012 J1	2012 06 17.00698	23 23 14.18	+31 38 40.1	16.3 N	C47	C/2012 J1	2012 06 21.07108	23 26 35.70	+32 20 25.0	15.9 T	B51
C/2012 J1	2012 06 17.03166	23 23 15.47	+31 38 55.6	15.9 N	213	C/2012 J1	2012 06 21.07662	23 26 35.99	+32 20 28.1	16.0 T	B51
C/2012 J1	2012 06 17.03647	23 23 15.64	+31 38 58.3	15.7 N	C09	C/2012 J1	2012 06 23.03865	23 28 09.81	+32 40 21.5	16.0 N	K 160

C/2012 J1	2012 06 23.04071	23 28 09.91	+32 40 22.9	16.0 N	K 160
C/2012 J1	2012 06 23.04276	23 28 10.00	+32 40 24.2	16.1 N	K 160
C/2012 J1	2012 06 23.05262	23 28 10.45	+32 40 29.7	16.2 N	C10
C/2012 J1	2012 06 23.06297	23 28 10.93	+32 40 36.0	16.3 N	C10
C/2012 J1	2012 06 23.07528	23 28 11.51	+32 40 43.5	16.2 N	C10
C/2012 J1	2012 06 23.08962	23 28 12.18	+32 40 52.4	15.7 N	939
C/2012 J1	2012 06 23.09641	23 28 12.49	+32 40 56.6	15.7 N	939
C/2012 J1	2012 06 23.10321	23 28 12.81	+32 41 00.6	15.7 N	939
C/2012 J1	2012 06 24.02640	23 28 56.18	+32 50 17.5	15.7 N	I72
C/2012 J1	2012 06 24.02925	23 28 56.31	+32 50 19.4	15.7 N	I72
C/2012 J1	2012 06 24.03208	23 28 56.42	+32 50 21.2	15.7 N	I72
C/2012 J1	2012 06 24.10531	23 28 59.83	+32 51 06.0	16.2 N	J01
C/2012 J1	2012 06 24.11248	23 29 00.18	+32 51 10.2	16.3 N	J01
C/2012 J1	2012 06 24.12321	23 29 00.66	+32 51 16.7	16.3 N	J01
C/2012 J1	2012 06 26.07596	23 30 30.43	+33 10 47.2	15.9 T	B51
C/2012 J1	2012 06 26.08165	23 30 30.68	+33 10 50.9	15.9 T	B51
C/2012 J1	2012 06 26.09047	23 30 31.08	+33 10 56.0	16.0 T	B51
C/2012 J1	2012 06 26.09457	23 30 31.26	+33 10 58.6	16.1 T	B51
C/2012 J1	2012 06 26.09866	23 30 31.45	+33 11 02.1	15.8 T	B51
C/2012 J1	2012 06 26.10335	23 30 31.64	+33 11 03.8	16.0 T	B51
C/2012 J1	2012 06 27.04576	23 31 14.12	+33 20 23.3	15.7 N	213
C/2012 J1	2012 06 27.08226	23 31 15.73	+33 20 45.4	15.8 N	213
C/2012 J1	2012 06 27.11470	23 31 17.17	+33 21 04.6	15.7 N	213
C/2012 J1	2012 06 27.35762	23 31 28.01	+33 23 28.5	15.8 N	K H47
C/2012 J1	2012 06 27.36874	23 31 28.50	+33 23 35.2	15.8 N	K H47
C/2012 J1	2012 06 27.37894	23 31 28.95	+33 23 41.2	15.9 N	K H47
C/2012 J1	2012 06 28.06316	23 31 59.27	+33 30 24.8	15.9 N	K 160
C/2012 J1	2012 06 28.06591	23 31 59.39	+33 30 26.4	15.9 N	K 160
C/2012 J1	2012 06 28.06865	23 31 59.50	+33 30 28.0	16.0 N	K 160
C/2012 J1	2012 06 29.98020	23 33 22.60	+33 49 07.4	16.1 N	K 160
C/2012 J1	2012 06 29.98294	23 33 22.70	+33 49 08.8	16.1 N	K 160
C/2012 J1	2012 06 29.98569	23 33 22.78	+33 49 10.5	16.4 N	K 160
C/2012 J1	2012 06 30.02877	23 33 24.67	+33 49 35.6	15.6 N	I99
C/2012 J1	2012 06 30.03182	23 33 24.80	+33 49 37.6	15.6 N	I99
C/2012 J1	2012 06 30.04401	23 33 25.32	+33 49 44.6	15.8 N	I99

C/2012 K1 (PANSTARRS)

C/2012 K1	2012 05 30.05174	17 31 10.48	+13 54 30.2		204
C/2012 K1	2012 05 30.05369	17 31 10.41	+13 54 31.0		204
C/2012 K1	2012 05 30.05565	17 31 10.33	+13 54 31.1	18.5 N	204
C/2012 K1	2012 06 02.02876	17 29 29.21	+14 00 38.3	18.7 N	K 213
C/2012 K1	2012 06 02.04589	17 29 28.65	+14 00 40.3	18.9 N	K 213
C/2012 K1	2012 06 02.06614	17 29 28.01	+14 00 42.4	19.1 N	K 213
C/2012 K1	2012 06 08.31589	17 25 50.10	+14 11 24.3	18.1 N	H15
C/2012 K1	2012 06 08.32758	17 25 49.66	+14 11 24.8	18.2 N	H15
C/2012 K1	2012 06 08.33926	17 25 49.20	+14 11 26.3	18.1 N	H15
C/2012 K1	2012 06 08.35104	17 25 48.84	+14 11 26.9	18.3 N	H15
C/2012 K1	2012 06 08.97465	17 25 26.78	+14 12 20.7	18.3 N	J01
C/2012 K1	2012 06 08.99266	17 25 26.13	+14 12 22.3	18.6 N	J01
C/2012 K1	2012 06 08.99988	17 25 25.89	+14 12 23.1	18.5 N	J01
C/2012 K1	2012 06 11.21634	17 24 07.21	+14 15 19.4	19.0 T	H45
C/2012 K1	2012 06 11.22606	17 24 06.82	+14 15 20.7	19.0 T	H45
C/2012 K1	2012 06 11.22948	17 24 06.67	+14 15 21.1	19.0 T	H45

C/2012 K1	2012 06 11.23138	17 24 06.53	+14 15 21.2	18.9 T	H45
C/2012 K1	2012 06 11.23380	17 24 06.50	+14 15 21.6	19.0 T	H45
C/2012 K1	2012 06 11.23615	17 24 06.43	+14 15 21.7	18.9 T	H45
C/2012 K1	2012 06 11.23839	17 24 06.34	+14 15 21.8	19.0 T	H45
C/2012 K1	2012 06 12.96123	17 23 04.73	+14 17 23.7	18.3 T	C41
C/2012 K1	2012 06 12.98330	17 23 03.97	+14 17 24.6	18.3 T	C41
C/2012 K1	2012 06 13.00537	17 23 03.05	+14 17 26.3	18.5 T	C41
C/2012 K1	2012 06 13.97965	17 22 28.39	+14 18 27.3	18.3 N	J01
C/2012 K1	2012 06 13.98324	17 22 28.25	+14 18 27.7	18.2 N	J01
C/2012 K1	2012 06 13.98684	17 22 28.12	+14 18 28.0	18.4 N	J01
C/2012 K1	2012 06 13.99044	17 22 27.98	+14 18 28.3	18.6 N	J01
C/2012 K1	2012 06 15.92834	17 21 18.45	+14 20 18.6	18.2 N	K J47
C/2012 K1	2012 06 15.93496	17 21 18.25	+14 20 18.8	17.9 N	K J47
C/2012 K1	2012 06 15.94012	17 21 18.06	+14 20 18.6	18.0 N	K J47
C/2012 K1	2012 06 15.95121	17 21 17.63	+14 20 19.0	17.9 N	K 157
C/2012 K1	2012 06 15.95552	17 21 17.47	+14 20 18.9	17.4 N	K 157
C/2012 K1	2012 06 15.95981	17 21 17.30	+14 20 19.4	17.9 N	K 157
C/2012 K1	2012 06 16.00080	17 21 15.82	+14 20 21.1	18.6 N	A71
C/2012 K1	2012 06 16.00436	17 21 15.70	+14 20 21.1	19.1 N	A71
C/2012 K1	2012 06 16.00793	17 21 15.57	+14 20 21.5	19.1 N	A71
C/2012 K1	2012 06 16.01171	17 21 15.44	+14 20 21.8	19.0 N	A71
C/2012 K1	2012 06 16.01530	17 21 15.32	+14 20 21.8	18.7 N	A71
C/2012 K1	2012 06 16.01852	17 21 15.19	+14 20 22.1	18.7 N	A71
C/2012 K1	2012 06 16.05383	17 21 13.89	+14 20 24.0	18.1 N	J24
C/2012 K1	2012 06 16.06529	17 21 13.49	+14 20 25.4	18.1 N	J24
C/2012 K1	2012 06 16.07389	17 21 13.16	+14 20 27.4	18.3 N	J24
C/2012 K1	2012 06 16.96251	17 20 41.32	+14 21 08.4	18.2 N	K 941
C/2012 K1	2012 06 16.96997	17 20 41.05	+14 21 08.7	18.1 N	K 941
C/2012 K1	2012 06 16.97967	17 20 40.69	+14 21 09.1	18.1 N	K 941
C/2012 K1	2012 06 19.92554	17 18 54.84	+14 23 04.5	18.2 N	J01
C/2012 K1	2012 06 19.93981	17 18 54.34	+14 23 04.8	18.0 N	J01
C/2012 K1	2012 06 19.95766	17 18 53.72	+14 23 06.0	18.2 N	J01
C/2012 K1	2012 06 20.88095	17 18 20.58	+14 23 32.6	18.1 N	K 511
C/2012 K1	2012 06 20.89320	17 18 20.13	+14 23 32.9	18.1 N	K 511
C/2012 K1	2012 06 20.90385	17 18 19.74	+14 23 33.5	18.3 N	K 511
C/2012 K1	2012 06 21.88568	17 17 44.54	+14 23 57.3	18.1 N	K 511
C/2012 K1	2012 06 21.89743	17 17 44.12	+14 23 57.5	18.2 N	K 511
C/2012 K1	2012 06 21.90799	17 17 43.75	+14 23 57.9	18.2 N	K 511
C/2012 K1	2012 06 21.97562	17 17 41.39	+14 23 58.3	15.4 N	C23
C/2012 K1	2012 06 22.01111	17 17 40.10	+14 24 00.0	17.1 N	C23
C/2012 K1	2012 06 22.91646	17 16 31.93	+14 24 31.5	18.2 N	C10
C/2012 K1	2012 06 23.93456	17 16 31.22	+14 24 31.9	18.6 N	C10
C/2012 K1	2012 06 29.94927	17 12 58.43	+14 24 13.4	18.8 N	B74
C/2012 K1	2012 06 29.95636	17 12 58.15	+14 24 13.5	18.7 N	B74
C/2012 K1	2012 06 29.97006	17 12 57.67	+14 24 13.4	18.9 N	B74

P/2012 K3 (Gibbs)

P/2012 K3	2012 05 30.01632	17 11 26.73	-04 14 24.5		204
P/2012 K3	2012 05 30.02413	17 11 26.35	-04 14 24.9		204
P/2012 K3	2012 05 30.03194	17 11 26.01	-04 14 25.7	18.8 N	204
P/2012 K3	2012 06 10.47762	17 03 08.63	-04 42 51.6	19.4 N	K E07
P/2012 K3	2012 06 10.48643	17 03 08.17	-04 42 54.2	19.1 N	K E07
P/2012 K3	2012 06 14.95264	16 59 46.55	-05 02 26.1	18.7 N	K 130

P/2012 K3	2012 06 14.95867	16 59 46.28	-05 02 28.6	18.5 N	K 130
P/2012 K3	2012 06 14.96345	16 59 46.11	-05 02 30.5	18.1 N	K 130
P/2012 K3	2012 06 16.03202	16 58 58.40	-05 07 47.2	17.9 N	J24
P/2012 K3	2012 06 16.03854	16 58 58.06	-05 07 49.7	17.8 N	J24
P/2012 K3	2012 06 16.04506	16 58 57.80	-05 07 52.1	17.9 N	J24
P/2012 K3	2012 06 16.04942	16 58 57.58	-05 07 53.7	17.8 N	J24
P/2012 K3	2012 06 16.90615	16 58 19.82	-05 12 22.2	19.8 N	A71
P/2012 K3	2012 06 16.91397	16 58 19.45	-05 12 24.8	19.4 N	A71
P/2012 K3	2012 06 16.91788	16 58 19.31	-05 12 25.9	19.5 N	A71
P/2012 K3	2012 06 16.92179	16 58 19.11	-05 12 28.0	19.2 N	A71
P/2012 K3	2012 06 16.92571	16 58 18.98	-05 12 28.3	19.5 N	A71
P/2012 K3	2012 06 16.92961	16 58 18.76	-05 12 30.0	19.7 N	A71
P/2012 K3	2012 06 17.29903	16 58 02.46	-05 14 27.9	17.6 T	G96
P/2012 K3	2012 06 17.30483	16 58 02.17	-05 14 30.1	17.6 T	G96
P/2012 K3	2012 06 17.31068	16 58 01.95	-05 14 31.9	17.6 T	G96
P/2012 K3	2012 06 17.31643	16 58 01.70	-05 14 33.5	17.8 T	G96
P/2012 K3	2012 06 18.21875	16 57 22.52	-05 19 32.2		32H06
P/2012 K3	2012 06 18.22147	16 57 22.39	-05 19 33.1		32H06
P/2012 K3	2012 06 18.22420	16 57 22.26	-05 19 33.8	18.1 T	32H06
P/2012 K3	2012 06 23.25845	16 53 51.72	-05 50 37.3	17.6 T	703
P/2012 K3	2012 06 23.26525	16 53 51.39	-05 50 40.8	17.6 T	703
P/2012 K3	2012 06 23.27211	16 53 51.14	-05 50 44.7	17.6 T	703
P/2012 K3	2012 06 23.27897	16 53 50.89	-05 50 46.5	17.6 T	703
P/2012 K3	2012 06 23.94019	16 53 24.74	-05 55 16.8	18.8 N	K C10
P/2012 K3	2012 06 23.95669	16 53 24.07	-05 55 24.2	19.0 N	K C10
P/2012 K3	2012 06 24.93124	16 52 46.29	-06 02 10.8	18.4 T	K C60
P/2012 K3	2012 06 24.94470	16 52 45.75	-06 02 16.5	18.3 T	K C60
P/2012 K3	2012 06 24.95324	16 52 45.44	-06 02 19.7	18.3 T	K C60

C/2012 K5 (LINEAR)

C/2012 K5	2012 05 27.52027	19 17 57.21	+27 53 19.5	17.6 N	D95
C/2012 K5	2012 05 27.52384	19 17 56.98	+27 53 26.6	17.4 N	D95
C/2012 K5	2012 05 27.52811	19 17 56.71	+27 53 33.2	17.8 N	D95
C/2012 K5	2012 05 30.32609	19 14 28.43	+29 13 42.9	16.9 T	A H06
C/2012 K5	2012 05 30.32803	19 14 28.36	+29 13 50.8	17.7 T	A H06
C/2012 K5	2012 05 30.32993	19 14 28.23	+29 13 53.4	17.2 T	A H06
C/2012 K5	2012 05 30.54240	19 14 11.52	+29 19 59.0	17.1 T	D95
C/2012 K5	2012 05 30.54810	19 14 11.22	+29 20 09.9		D95
C/2012 K5	2012 06 01.96456	19 10 50.59	+30 30 02.4	17.6 N	K 213
C/2012 K5	2012 06 01.97562	19 10 49.62	+30 30 21.1	17.6 N	K 213
C/2012 K5	2012 06 01.99085	19 10 48.25	+30 30 47.8	18.2 N	K 213
C/2012 K5	2012 06 03.12003	19 09 08.02	+31 03 35.0	17.4 N	J24
C/2012 K5	2012 06 03.12169	19 09 07.87	+31 03 38.2	17.6 N	J24
C/2012 K5	2012 06 03.12333	19 09 07.69	+31 03 41.2	17.5 N	J24
C/2012 K5	2012 06 05.00598	19 06 11.59	+31 58 21.3	17.6 N	J38
C/2012 K5	2012 06 05.00908	19 06 11.29	+31 58 26.8	17.1 N	J38
C/2012 K5	2012 06 05.01115	19 06 11.12	+31 58 30.1	17.5 N	J38
C/2012 K5	2012 06 07.86433	19 01 21.19	+33 21 19.9	17.0 N	A71
C/2012 K5	2012 06 07.86719	19 01 20.88	+33 21 25.4	17.4 N	A71
C/2012 K5	2012 06 07.87005	19 01 20.58	+33 21 29.3	17.8 N	A71
C/2012 K5	2012 06 07.87507	19 01 20.02	+33 21 38.9	17.2 N	A71
C/2012 K5	2012 06 07.87757	19 01 19.75	+33 21 43.0	17.4 N	A71
C/2012 K5	2012 06 07.88008	19 01 19.43	+33 21 48.4	17.1 N	A71

C/2012 K5	2012 06 09.01226	18 59 16.43	+33 54 34.3	16.7 N	J01
C/2012 K5	2012 06 09.01535	18 59 16.10	+33 54 39.6	16.8 N	J01
C/2012 K5	2012 06 09.02153	18 59 15.44	+33 54 50.9	16.8 N	J01
C/2012 K5	2012 06 09.03942	18 59 13.37	+33 55 21.2	17.1 N	C10
C/2012 K5	2012 06 09.04829	18 59 12.27	+33 55 34.8	16.3 N	C10
C/2012 K5	2012 06 09.05580	18 59 11.55	+33 55 49.6	16.9 N	C10
C/2012 K5	2012 06 09.05622	18 59 11.52	+33 55 50.1	16.8 N	K 958
C/2012 K5	2012 06 09.06453	18 59 10.56	+33 56 05.2	16.7 N	C10
C/2012 K5	2012 06 09.06890	18 59 10.05	+33 56 11.7	17.0 N	K 958
C/2012 K5	2012 06 09.08167	18 59 08.61	+33 56 34.8	17.1 N	K 958
C/2012 K5	2012 06 09.97940	18 57 27.85	+34 22 28.6	16.3 N	C23
C/2012 K5	2012 06 09.98661	18 57 26.94	+34 22 41.3	16.7 N	C23
C/2012 K5	2012 06 09.99383	18 57 26.13	+34 22 54.1	16.6 N	C23
C/2012 K5	2012 06 10.30160	18 56 50.84	+34 31 45.7	17.7 T	704
C/2012 K5	2012 06 10.31180	18 56 49.55	+34 32 02.1	17.8 T	704
C/2012 K5	2012 06 10.32256	18 56 48.39	+34 32 21.6	17.7 T	704
C/2012 K5	2012 06 10.33266	18 56 47.17	+34 32 38.7	17.7 T	704
C/2012 K5	2012 06 10.34289	18 56 45.91	+34 32 55.3	17.8 T	704
C/2012 K5	2012 06 10.56198	18 56 20.541	+34 39 17.08	18.6 T	F51
C/2012 K5	2012 06 10.58382	18 56 17.963	+34 39 54.63	18.3 T	F51
C/2012 K5	2012 06 11.19559	18 55 06.45	+34 57 27.9	16.5 T	K 147
C/2012 K5	2012 06 11.20417	18 55 05.38	+34 57 44.9	16.5 T	K 147
C/2012 K5	2012 06 11.30637	18 54 53.21	+35 00 35.6	17.4 T	704
C/2012 K5	2012 06 11.31670	18 54 51.90	+35 00 51.9	17.7 T	704
C/2012 K5	2012 06 11.32733	18 54 50.68	+35 01 12.9	17.6 T	704
C/2012 K5	2012 06 11.33759	18 54 49.36	+35 01 27.9	17.7 T	704
C/2012 K5	2012 06 11.34788	18 54 48.12	+35 01 45.4	18.2 T	704
C/2012 K5	2012 06 12.41192	18 52 39.654	+35 32 12.60	18.8 T	F51
C/2012 K5	2012 06 12.43292	18 52 37.028	+35 32 48.69	18.5 T	F51
C/2012 K5	2012 06 12.44274	18 52 35.807	+35 33 05.52	18.4 T	F51
C/2012 K5	2012 06 12.88070	18 51 41.55	+35 45 29.2	17.0 N	B42
C/2012 K5	2012 06 12.88355	18 51 41.17	+35 45 34.1	17.3 N	B42
C/2012 K5	2012 06 12.88640	18 51 40.84	+35 45 39.2	17.1 N	B42
C/2012 K5	2012 06 12.88925	18 51 40.46	+35 45 43.0	17.1 N	B42
C/2012 K5	2012 06 12.89221	18 51 40.12	+35 45 49.2	17.0 N	B42
C/2012 K5	2012 06 12.89506	18 51 39.74	+35 45 53.5	17.1 N	B42
C/2012 K5	2012 06 13.96148	18 49 24.70	+36 16 04.2	16.8 N	J01
C/2012 K5	2012 06 13.96451	18 49 24.28	+36 16 09.4	16.9 N	J01
C/2012 K5	2012 06 13.96906	18 49 23.70	+36 16 17.2	16.6 N	J01
C/2012 K5	2012 06 14.90690	18 47 21.42	+36 42 37.0	16.5 N	K 511
C/2012 K5	2012 06 14.91648	18 47 20.11	+36 42 53.4	16.6 N	K 511
C/2012 K5	2012 06 14.94682	18 47 16.08	+36 43 44.7	17.8 N	K B49
C/2012 K5	2012 06 14.95002	18 47 15.66	+36 43 50.1	17.2 N	K B49
C/2012 K5	2012 06 14.95282	18 47 15.28	+36 43 54.7	17.2 N	K B49
C/2012 K5	2012 06 15.02474	18 47 05.57	+36 45 54.8	16.5 N	130
C/2012 K5	2012 06 15.02524	18 47 05.55	+36 45 56.2	16.8 N	130
C/2012 K5	2012 06 15.02624	18 47 05.38	+36 45 57.7	16.5 N	130
C/2012 K5	2012 06 15.02725	18 47 05.28	+36 45 59.6	16.6 N	130
C/2012 K5	2012 06 15.25567	18 46 34.96	+36 52 23.1	18.2 T	H45
C/2012 K5	2012 06 15.25903	18 46 34.51	+36 52 28.7	18.0 T	H45
C/2012 K5	2012 06 15.26046	18 46 34.32	+36 52 31.3	18.0 T	H45
C/2012 K5	2012 06 15.26134	18 46 34.21	+36 52 32.5	18.0 T	H45
C/2012 K5	2012 06 15.26728	18 46 33.41	+36 52 42.4	18.0 T	H45

C/2012 K5	2012 06 15.26824	18 46 33.26	+36 52 44.5	17.9 T	H45	C/2012 K5	2012 06 18.94796	18 37 56.52	+38 33 32.2	17.7 N	C47
C/2012 K5	2012 06 15.26972	18 46 33.10	+36 52 46.8	18.0 T	H45	C/2012 K5	2012 06 18.95084	18 37 56.07	+38 33 37.4	17.7 N	C47
C/2012 K5	2012 06 15.88372	18 45 10.45	+37 09 51.0	16.3 T	K B51	C/2012 K5	2012 06 18.95371	18 37 55.64	+38 33 41.3	17.9 N	C47
C/2012 K5	2012 06 15.89117	18 45 09.46	+37 10 03.5	16.5 T	K B51	C/2012 K5	2012 06 18.95658	18 37 55.22	+38 33 45.7	17.3 N	C47
C/2012 K5	2012 06 15.89864	18 45 08.38	+37 10 15.5	16.5 T	K B51	C/2012 K5	2012 06 18.95946	18 37 54.77	+38 33 50.5	17.6 N	C47
C/2012 K5	2012 06 15.95918	18 45 00.15	+37 11 56.9	17.4 N	K J47	C/2012 K5	2012 06 20.02435	18 35 15.67	+39 02 15.6	18.0 N	K J47
C/2012 K5	2012 06 15.96480	18 44 59.42	+37 12 08.4	17.3 N	K J47	C/2012 K5	2012 06 20.07756	18 35 07.51	+39 03 40.3	17.9 N	K J47
C/2012 K5	2012 06 15.97042	18 44 58.65	+37 12 17.8	17.3 N	K J47	C/2012 K5	2012 06 20.12997	18 34 59.44	+39 05 03.0	16.9 N	K J47
C/2012 K5	2012 06 15.98077	18 44 57.14	+37 12 32.5	16.5 N	K 157	C/2012 K5	2012 06 20.90086	18 33 01.74	+39 25 16.3	16.5 T	B51
C/2012 K5	2012 06 15.98098	18 44 57.22	+37 12 32.9	17.6 N	J01	C/2012 K5	2012 06 20.90673	18 33 00.84	+39 25 25.2	16.7 T	B51
C/2012 K5	2012 06 15.98401	18 44 56.70	+37 12 37.9	16.7 N	K 157	C/2012 K5	2012 06 20.91158	18 33 00.08	+39 25 32.8	16.6 T	B51
C/2012 K5	2012 06 15.98725	18 44 56.25	+37 12 43.3	17.1 N	K 157	C/2012 K5	2012 06 20.91755	18 32 59.16	+39 25 43.1	16.9 T	B51
C/2012 K5	2012 06 15.99047	18 44 55.81	+37 12 48.8	17.0 N	K 157	C/2012 K5	2012 06 20.92387	18 32 58.20	+39 25 53.3	16.7 T	B51
C/2012 K5	2012 06 15.99183	18 44 55.74	+37 12 51.1	17.6 N	J01	C/2012 K5	2012 06 20.93257	18 32 56.87	+39 26 04.9	16.9 T	A77
C/2012 K5	2012 06 16.01044	18 44 53.13	+37 13 22.2	17.4 N	J01	C/2012 K5	2012 06 20.93843	18 32 55.96	+39 26 14.0	16.7 T	A77
C/2012 K5	2012 06 16.06468	18 44 45.58	+37 14 51.9	17.1 N	K 160	C/2012 K5	2012 06 20.94429	18 32 55.03	+39 26 23.2	16.7 T	A77
C/2012 K5	2012 06 16.06607	18 44 45.39	+37 14 54.1	17.3 N	K 160	C/2012 K5	2012 06 20.98239	18 32 49.00	+39 27 22.5	16.0 N	C23
C/2012 K5	2012 06 16.06745	18 44 45.19	+37 14 56.4	17.6 N	K 160	C/2012 K5	2012 06 20.98961	18 32 47.88	+39 27 35.2	16.9 N	C23
C/2012 K5	2012 06 16.06883	18 44 45.00	+37 14 58.6	17.4 N	K 160	C/2012 K5	2012 06 20.99827	18 32 46.57	+39 27 48.3	16.6 N	C23
C/2012 K5	2012 06 16.07022	18 44 44.80	+37 15 00.8	16.9 N	K 160	C/2012 K5	2012 06 21.95125	18 30 17.38	+39 52 29.7	17.0 N	I88
C/2012 K5	2012 06 16.13388	18 44 36.07	+37 16 48.5	16.5 N	J24	C/2012 K5	2012 06 21.96235	18 30 15.62	+39 52 47.2	17.0 N	I88
C/2012 K5	2012 06 16.13778	18 44 35.54	+37 16 55.5	16.5 N	J24	C/2012 K5	2012 06 21.97322	18 30 13.90	+39 53 03.8	17.0 N	I88
C/2012 K5	2012 06 16.14244	18 44 34.90	+37 17 03.0	16.5 N	J24	C/2012 K5	2012 06 22.50641	18 28 48.82	+40 06 40.5	17.0 N	D95
C/2012 K5	2012 06 16.91934	18 42 47.69	+37 38 26.3	16.6 T	K B51	C/2012 K5	2012 06 22.51212	18 28 48.08	+40 06 50.6	16.4 N	D95
C/2012 K5	2012 06 16.92271	18 42 47.27	+37 38 31.6	18.1 N	C47	C/2012 K5	2012 06 22.86100	18 27 51.76	+40 15 40.7	16.7 N	A71
C/2012 K5	2012 06 16.92558	18 42 46.88	+37 38 35.7	18.2 N	C47	C/2012 K5	2012 06 22.86292	18 27 51.44	+40 15 43.3	16.6 N	A71
C/2012 K5	2012 06 16.92846	18 42 46.46	+37 38 40.8	18.0 N	C47	C/2012 K5	2012 06 22.86485	18 27 51.09	+40 15 45.8	16.4 N	A71
C/2012 K5	2012 06 16.92862	18 42 46.39	+37 38 40.4	16.4 T	K B51	C/2012 K5	2012 06 22.86678	18 27 50.82	+40 15 48.7	16.8 N	A71
C/2012 K5	2012 06 16.93133	18 42 46.04	+37 38 45.4	17.5 N	C47	C/2012 K5	2012 06 22.87606	18 27 49.30	+40 16 03.3	16.3 N	A71
C/2012 K5	2012 06 16.93348	18 42 45.73	+37 38 49.0	17.1 N	C47	C/2012 K5	2012 06 22.88015	18 27 48.65	+40 16 09.7	16.7 N	A71
C/2012 K5	2012 06 16.93856	18 42 45.00	+37 38 57.6	16.5 T	K B51	C/2012 K5	2012 06 22.88424	18 27 47.97	+40 16 16.4	16.9 N	A71
C/2012 K5	2012 06 16.94020	18 42 44.75	+37 38 59.7	17.0 N	A71	C/2012 K5	2012 06 22.89037	18 27 46.98	+40 16 25.3	17.1 N	A71
C/2012 K5	2012 06 16.94657	18 42 43.86	+37 39 10.3	17.1 N	A71	C/2012 K5	2012 06 22.91145	18 27 43.52	+40 16 58.8	16.4 T	B51
C/2012 K5	2012 06 16.94716	18 42 43.89	+37 39 10.8	16.7 N	C09	C/2012 K5	2012 06 22.91660	18 27 42.70	+40 17 06.7	16.6 T	B51
C/2012 K5	2012 06 16.95089	18 42 43.25	+37 39 17.3	16.8 N	A71	C/2012 K5	2012 06 22.92212	18 27 41.79	+40 17 15.4	16.6 T	B51
C/2012 K5	2012 06 16.95420	18 42 42.94	+37 39 21.9	16.9 N	C09	C/2012 K5	2012 06 22.92744	18 27 40.91	+40 17 23.2	16.5 T	B51
C/2012 K5	2012 06 16.95440	18 42 42.83	+37 39 24.0	17.5 N	K 213	C/2012 K5	2012 06 22.95473	18 27 36.45	+40 18 03.7	16.6 N	C23
C/2012 K5	2012 06 16.95521	18 42 42.64	+37 39 24.6	17.1 N	A71	C/2012 K5	2012 06 22.96333	18 27 35.11	+40 18 16.7	17.1 T	215
C/2012 K5	2012 06 16.95718	18 42 42.42	+37 39 28.0	16.6 N	K 511	C/2012 K5	2012 06 22.97146	18 27 33.74	+40 18 29.2	16.5 N	C23
C/2012 K5	2012 06 16.95773	18 42 42.35	+37 39 29.4	16.8 N	K 213	C/2012 K5	2012 06 22.97359	18 27 33.40	+40 18 31.7	17.0 N	C10
C/2012 K5	2012 06 16.96123	18 42 41.95	+37 39 33.4	17.0 N	C09	C/2012 K5	2012 06 22.97928	18 27 32.52	+40 18 41.9	17.7 N	J01
C/2012 K5	2012 06 16.96148	18 42 41.77	+37 39 33.2	16.9 N	K 213	C/2012 K5	2012 06 22.98012	18 27 32.32	+40 18 42.0	16.5 N	C23
C/2012 K5	2012 06 16.96185	18 42 41.75	+37 39 36.1	16.7 N	K 511	C/2012 K5	2012 06 22.98381	18 27 31.74	+40 18 47.3	16.9 N	C10
C/2012 K5	2012 06 16.98867	18 42 37.95	+37 40 20.4	16.7 N	K 511	C/2012 K5	2012 06 22.99476	18 27 29.95	+40 19 03.7	17.0 N	C10
C/2012 K5	2012 06 16.99377	18 42 37.23	+37 40 28.7	16.6 N	K 511	C/2012 K5	2012 06 23.00316	18 27 28.63	+40 19 18.3	17.6 N	J01
C/2012 K5	2012 06 17.06799	18 42 26.74	+37 42 29.9	16.7 N	C10	C/2012 K5	2012 06 23.00963	18 27 27.54	+40 19 26.7	16.5 N	939
C/2012 K5	2012 06 17.07400	18 42 25.87	+37 42 39.9	16.6 N	C10	C/2012 K5	2012 06 23.01124	18 27 27.23	+40 19 29.4	16.5 N	K B70
C/2012 K5	2012 06 17.08171	18 42 24.80	+37 42 50.4	16.7 N	C10	C/2012 K5	2012 06 23.01375	18 27 26.85	+40 19 32.8	16.5 N	939
C/2012 K5	2012 06 17.63625	18 41 06.42	+37 58 04.7	16.5 T	349	C/2012 K5	2012 06 23.01512	18 27 26.61	+40 19 34.9	16.6 N	939
C/2012 K5	2012 06 17.64010	18 41 05.91	+37 58 10.3		349	C/2012 K5	2012 06 23.01874	18 27 26.00	+40 19 40.7	16.4 N	K B70
C/2012 K5	2012 06 18.03119	18 40 09.88	+38 08 47.6	16.9 N	K 160	C/2012 K5	2012 06 23.01958	18 27 25.96	+40 19 42.9	17.8 N	J01
C/2012 K5	2012 06 18.03402	18 40 09.47	+38 08 52.2	16.8 N	K 160	C/2012 K5	2012 06 23.02060	18 27 25.70	+40 19 42.8	16.5 N	939
C/2012 K5	2012 06 18.03686	18 40 09.07	+38 08 57.0	16.8 N	K 160	C/2012 K5	2012 06 23.02582	18 27 24.83	+40 19 51.2	17.1 N	K B70

C/2012 K5	2012 06 23.04473	18 27 21.78	+40 20 20.9	16.9 N	K I89
C/2012 K5	2012 06 23.05211	18 27 20.56	+40 20 32.5	17.4 N	K I89
C/2012 K5	2012 06 23.34682	18 26 32.46	+40 27 56.9	16.8 T	H45
C/2012 K5	2012 06 23.34774	18 26 32.31	+40 27 58.5	16.8 T	H45
C/2012 K5	2012 06 23.34976	18 26 31.92	+40 28 01.5	16.8 T	H45
C/2012 K5	2012 06 23.35163	18 26 31.66	+40 28 04.6	16.7 T	H45
C/2012 K5	2012 06 23.35351	18 26 31.34	+40 28 06.9	16.7 T	H45
C/2012 K5	2012 06 23.35509	18 26 31.10	+40 28 09.4	16.8 T	H45
C/2012 K5	2012 06 23.35642	18 26 30.86	+40 28 11.6	16.8 T	H45
C/2012 K5	2012 06 23.97698	18 24 48.85	+40 43 39.3	16.4 T	K 215
C/2012 K5	2012 06 23.97788	18 24 48.70	+40 43 40.7	16.5 T	K 215
C/2012 K5	2012 06 23.97877	18 24 48.55	+40 43 42.1	16.4 T	K 215
C/2012 K5	2012 06 24.33259	18 23 49.54	+40 52 27.9	16.2 T	H45
C/2012 K5	2012 06 24.33418	18 23 49.32	+40 52 29.6	16.2 T	H45
C/2012 K5	2012 06 24.33534	18 23 49.12	+40 52 32.3	16.4 T	H45
C/2012 K5	2012 06 24.33650	18 23 48.91	+40 52 33.6	16.3 T	H45
C/2012 K5	2012 06 24.33807	18 23 48.65	+40 52 36.5	16.3 T	H45
C/2012 K5	2012 06 24.33939	18 23 48.43	+40 52 38.2	16.4 T	H45
C/2012 K5	2012 06 24.34036	18 23 48.26	+40 52 39.7	16.2 T	H45
C/2012 K5	2012 06 25.00063	18 21 57.35	+41 08 48.5	17.6 T	C60
C/2012 K5	2012 06 25.00177	18 21 57.11	+41 08 50.2	17.5 T	C60
C/2012 K5	2012 06 25.00292	18 21 56.93	+41 08 52.4	17.5 T	C60
C/2012 K5	2012 06 25.00407	18 21 56.76	+41 08 53.6	17.5 T	C60
C/2012 K5	2012 06 25.00522	18 21 56.55	+41 08 55.4	17.5 T	C60
C/2012 K5	2012 06 25.00636	18 21 56.38	+41 08 56.7	17.4 T	C60
C/2012 K5	2012 06 25.00751	18 21 56.17	+41 08 58.3	17.3 T	C60
C/2012 K5	2012 06 25.00866	18 21 55.98	+41 09 00.8	17.6 T	C60
C/2012 K5	2012 06 25.00981	18 21 55.87	+41 09 01.4	17.1 T	C60
C/2012 K5	2012 06 25.01096	18 21 55.62	+41 09 04.0	17.3 T	C60
C/2012 K5	2012 06 25.01211	18 21 55.40	+41 09 05.2	17.3 T	C60
C/2012 K5	2012 06 25.01239	18 21 55.33	+41 09 06.2	17.1 N	K 213
C/2012 K5	2012 06 25.01325	18 21 55.14	+41 09 07.1	17.5 T	C60
C/2012 K5	2012 06 25.02768	18 21 52.74	+41 09 28.5	17.4 T	C60
C/2012 K5	2012 06 25.02883	18 21 52.48	+41 09 29.7	17.4 T	C60
C/2012 K5	2012 06 25.02998	18 21 52.39	+41 09 31.3	17.6 T	C60
C/2012 K5	2012 06 25.03112	18 21 52.08	+41 09 33.6	17.5 T	C60
C/2012 K5	2012 06 25.03227	18 21 51.93	+41 09 34.9	17.5 T	C60
C/2012 K5	2012 06 25.03342	18 21 51.71	+41 09 36.5	17.6 T	C60
C/2012 K5	2012 06 25.03457	18 21 51.56	+41 09 38.1	17.2 T	C60
C/2012 K5	2012 06 25.03572	18 21 51.31	+41 09 40.0	17.4 T	C60
C/2012 K5	2012 06 25.03687	18 21 51.06	+41 09 41.6	17.6 T	C60
C/2012 K5	2012 06 25.03802	18 21 50.95	+41 09 43.3	17.4 T	C60
C/2012 K5	2012 06 25.03916	18 21 50.75	+41 09 44.6	17.3 T	C60
C/2012 K5	2012 06 25.04293	18 21 50.11	+41 09 51.1	17.3 N	K 213
C/2012 K5	2012 06 25.04655	18 21 49.55	+41 09 54.9	16.6 N	J38
C/2012 K5	2012 06 25.04747	18 21 49.40	+41 09 56.2	16.5 N	J38
C/2012 K5	2012 06 25.05023	18 21 48.92	+41 10 00.3	16.5 N	J38
C/2012 K5	2012 06 25.06938	18 21 45.59	+41 10 29.0	17.3 N	K 213
C/2012 K5	2012 06 25.34444	18 20 58.79	+41 17 08.7	16.7 T	H45
C/2012 K5	2012 06 25.34763	18 20 58.25	+41 17 13.3	16.6 T	H45
C/2012 K5	2012 06 25.34906	18 20 57.99	+41 17 15.6	16.7 T	H45
C/2012 K5	2012 06 25.35674	18 20 56.67	+41 17 26.5	16.8 T	H45
C/2012 K5	2012 06 25.35754	18 20 56.53	+41 17 27.8	16.8 T	H45

C/2012 K5	2012 06 25.35876	18 20 56.32	+41 17 29.5	16.7 T	H45
C/2012 K5	2012 06 26.33440	18 18 08.33	+41 40 47.3	16.8 T	H45
C/2012 K5	2012 06 26.33551	18 18 08.08	+41 40 48.8	16.8 T	H45
C/2012 K5	2012 06 26.33669	18 18 07.87	+41 40 50.3	16.7 T	H45
C/2012 K5	2012 06 26.33771	18 18 07.73	+41 40 51.8	16.6 T	H45
C/2012 K5	2012 06 26.33898	18 18 07.50	+41 40 54.0	16.6 T	H45
C/2012 K5	2012 06 26.34049	18 18 07.22	+41 40 55.7	16.7 T	H45
C/2012 K5	2012 06 26.34162	18 18 07.02	+41 40 57.3	16.7 T	H45
C/2012 K5	2012 06 27.32798	18 15 13.86	+42 03 59.3	16.2 T	H45
C/2012 K5	2012 06 27.32946	18 15 13.58	+42 04 01.6	16.1 T	H45
C/2012 K5	2012 06 27.33067	18 15 13.40	+42 04 03.0	16.0 T	H45
C/2012 K5	2012 06 27.33166	18 15 13.20	+42 04 04.1	16.0 T	H45
C/2012 K5	2012 06 27.33267	18 15 13.03	+42 04 05.6	16.0 T	H45
C/2012 K5	2012 06 27.33396	18 15 12.78	+42 04 08.2	16.2 T	H45
C/2012 K5	2012 06 27.33488	18 15 12.63	+42 04 09.2	16.2 T	H45
C/2012 K5	2012 06 27.99882	18 13 14.32	+42 19 20.8	16.7 N	K 160
C/2012 K5	2012 06 28.00154	18 13 13.83	+42 19 24.5	16.5 N	K 160
C/2012 K5	2012 06 28.00425	18 13 13.33	+42 19 28.1	16.5 N	K 160
C/2012 K5	2012 06 28.32313	18 12 15.89	+42 26 41.2	17.0 T	H45
C/2012 K5	2012 06 28.32494	18 12 15.55	+42 26 43.8	17.0 T	H45
C/2012 K5	2012 06 28.32665	18 12 15.26	+42 26 46.1	17.1 T	H45
C/2012 K5	2012 06 28.32815	18 12 15.00	+42 26 47.8	17.0 T	H45
C/2012 K5	2012 06 28.32965	18 12 14.74	+42 26 50.0	17.0 T	H45
C/2012 K5	2012 06 28.33126	18 12 14.40	+42 26 52.3	17.0 T	H45
C/2012 K5	2012 06 28.93406	18 10 25.31	+42 40 18.9	16.4 N	I72
C/2012 K5	2012 06 28.93552	18 10 25.12	+42 40 20.9	16.5 N	I72
C/2012 K5	2012 06 28.93697	18 10 24.80	+42 40 22.6	16.5 N	I72
C/2012 K5	2012 06 29.31520	18 09 15.31	+42 48 44.8	16.8 T	H45
C/2012 K5	2012 06 29.31685	18 09 15.00	+42 48 47.1	16.9 T	H45
C/2012 K5	2012 06 29.31872	18 09 14.66	+42 48 49.5	16.9 T	H45
C/2012 K5	2012 06 29.32015	18 09 14.39	+42 48 51.3	16.9 T	H45
C/2012 K5	2012 06 29.32166	18 09 14.10	+42 48 53.2	16.9 T	H45
C/2012 K5	2012 06 29.32959	18 09 12.64	+42 49 03.6	16.8 T	H45
C/2012 K5	2012 06 29.33079	18 09 12.42	+42 49 05.2	16.9 T	H45
C/2012 K5	2012 06 29.89723	18 07 28.33	+43 01 23.5	17.3 N	K J01
C/2012 K5	2012 06 29.90071	18 07 27.67	+43 01 28.0	17.2 N	K J01
C/2012 K5	2012 06 29.90255	18 07 27.30	+43 01 31.3	16.9 N	K J01
C/2012 K5	2012 06 30.27814	18 06 17.22	+43 09 35.8	16.8 T	H45
C/2012 K5	2012 06 30.27950	18 06 16.92	+43 09 37.5	16.7 T	H45
C/2012 K5	2012 06 30.28157	18 06 16.54	+43 09 40.1	16.8 T	H45
C/2012 K5	2012 06 30.28284	18 06 16.30	+43 09 41.9	16.8 T	H45
C/2012 K5	2012 06 30.28414	18 06 16.06	+43 09 43.7	16.8 T	H45
C/2012 K5	2012 06 30.28519	18 06 15.87	+43 09 44.8	16.8 T	H45
C/2012 K5	2012 06 30.28652	18 06 15.63	+43 09 46.3	16.8 T	H45
C/2012 K5	2012 06 30.97819	18 04 06.06	+43 24 21.7	17.7 N	J01
C/2012 K5	2012 06 30.98418	18 04 04.87	+43 24 30.9	16.3 N	J01
C/2012 K5	2012 06 30.99015	18 04 03.81	+43 24 37.0	17.6 N	J01

C/2012 K8 (Lemmon)

C/2012 K8	2012 06 02.702434	20 43 33.32	+01 43 28.1		30D90
C/2012 K8	2012 06 02.716439	20 43 32.96	+01 43 32.0	18.9 T	30D90
C/2012 K8	2012 06 02.730459	20 43 32.67	+01 43 35.1	19.0 T	30D90
C/2012 K8	2012 06 10.17890	20 40 37.24	+02 12 05.1	19.1 N	J24

C/2012 K8	2012 06 10.18462	20 40 37.09	+02 12 06.9	19.8 N	J24	C/2012 L1	2012 06 04.38693	19 30 58.24	+67 48 22.7	17.8 T	30H06
C/2012 K8	2012 06 10.19036	20 40 36.98	+02 12 08.1	19.3 N	J24	C/2012 L1	2012 06 04.90345	19 30 05.98	+68 01 11.3	17.5 T	C23
C/2012 K8	2012 06 13.34220	20 39 14.75	+02 23 35.6		32H06	C/2012 L1	2012 06 04.91515	19 30 04.68	+68 01 27.4	17.5 T	K J84
C/2012 K8	2012 06 13.34492	20 39 14.65	+02 23 36.1		32H06	C/2012 L1	2012 06 04.91756	19 30 04.54	+68 01 31.1	17.9 T	C23
C/2012 K8	2012 06 13.34764	20 39 14.56	+02 23 36.5	18.9 T	32H06	C/2012 L1	2012 06 04.91899	19 30 04.25	+68 01 33.2	17.5 T	K J84
C/2012 K8	2012 06 19.04781	20 36 33.82	+02 43 15.9	20.1 T	K C10	C/2012 L1	2012 06 04.93167	19 30 03.03	+68 01 53.6	17.6 T	C23
C/2012 K8	2012 06 19.05227	20 36 33.82	+02 43 20.7	20.3 T	K C10	C/2012 L1	2012 06 05.00695	19 29 55.01	+68 03 47.4	17.2 T	C23
C/2012 K8	2012 06 22.04537	20 35 03.89	+02 53 10.5	19.6 N	K C10	C/2012 L1	2012 06 05.01048	19 29 54.49	+68 03 51.4	18.2 T	C23
C/2012 K8	2012 06 22.07499	20 35 02.88	+02 53 16.2	20.0 N	K C10	C/2012 L1	2012 06 05.02106	19 29 53.44	+68 04 08.0	17.6 T	C23
C/2012 K8	2012 06 22.747315	20 34 42.11	+02 55 27.0	19.3 T	30D90	C/2012 L1	2012 06 05.307602	19 29 23.22	+68 11 13.7	18.6 T	K H21
C/2012 K8	2012 06 22.754201	20 34 41.92	+02 55 27.9	19.2 T	30D90	C/2012 L1	2012 06 05.313776	19 29 22.59	+68 11 22.9	18.6 T	K H21
C/2012 K8	2012 06 22.761146	20 34 41.68	+02 55 29.4		30D90	C/2012 L1	2012 06 05.319950	19 29 21.95	+68 11 32.2	18.8 T	K H21
C/2012 K8	2012 06 24.01908	20 34 02.39	+02 59 25.1	18.9 T	K 215	C/2012 L1	2012 06 05.33975	19 29 19.93	+68 12 01.3	18.4 T	718
C/2012 K8	2012 06 24.02100	20 34 02.34	+02 59 25.6	19.0 T	K 215	C/2012 L1	2012 06 05.34400	19 29 19.30	+68 12 07.6	18.0 T	718
C/2012 K8	2012 06 24.02292	20 34 02.29	+02 59 26.0	18.9 T	K 215	C/2012 L1	2012 06 05.36715	19 29 16.82	+68 12 40.8	18.4 T	718
C/2012 K8	2012 06 27.05330	20 32 25.02	+03 08 39.7	19.3 N	K 130	C/2012 L1	2012 06 05.37244	19 29 16.43	+68 12 49.5	18.7 T	926
C/2012 K8	2012 06 27.05834	20 32 24.81	+03 08 41.1	18.8 N	K 130	C/2012 L1	2012 06 05.38303	19 29 15.22	+68 13 06.0	18.0 T	926
C/2012 K8	2012 06 27.06347	20 32 24.69	+03 08 42.4	18.9 N	K 130	C/2012 L1	2012 06 05.39328	19 29 14.11	+68 13 19.9	18.4 T	718
						C/2012 L1	2012 06 05.39370	19 29 14.02	+68 13 21.1	18.1 T	926
						C/2012 L1	2012 06 05.40387	19 29 12.88	+68 13 36.3		32H06
						C/2012 L1	2012 06 05.40499	19 29 12.76	+68 13 38.5	18.6 T	32H06
						C/2012 L1	2012 06 05.408148	19 29 12.610	+68 13 43.12	18.8 T	31 695
						C/2012 L1	2012 06 05.409988	19 29 12.236	+68 13 45.67		31 695
						C/2012 L1	2012 06 05.416528	19 29 11.573	+68 13 55.57	18.6 T	31 695
						C/2012 L1	2012 06 05.418356	19 29 11.357	+68 13 57.95	18.8 T	31 695
						C/2012 L1	2012 06 07.91445	19 24 25.46	+69 14 50.5	17.9 N	C23
						C/2012 L1	2012 06 07.93743	19 24 22.81	+69 15 24.0	17.4 N	C23
						C/2012 L1	2012 06 07.96000	19 24 19.84	+69 15 57.0	17.4 N	C23
						C/2012 L1	2012 06 08.91078	19 22 19.59	+69 38 42.1	18.0 N	C10
						C/2012 L1	2012 06 08.92120	19 22 18.20	+69 38 56.6	18.1 N	C10
						C/2012 L1	2012 06 08.93174	19 22 16.88	+69 39 12.0	18.4 N	C10
						C/2012 L1	2012 06 08.93687	19 22 16.10	+69 39 20.2	17.4 N	C23
						C/2012 L1	2012 06 08.94328	19 22 15.31	+69 39 29.3	17.2 N	C23
						C/2012 L1	2012 06 08.95171	19 22 14.19	+69 39 41.1	17.8 N	J01
						C/2012 L1	2012 06 08.95469	19 22 13.62	+69 39 44.9	18.4 N	C23
						C/2012 L1	2012 06 08.96043	19 22 13.19	+69 39 52.8	17.8 N	J01
						C/2012 L1	2012 06 08.96916	19 22 11.94	+69 40 05.2	16.8 N	J01
						C/2012 L1	2012 06 10.03985	19 19 48.47	+70 05 25.3	17.7 N	C23
						C/2012 L1	2012 06 10.04088	19 19 48.26	+70 05 26.8	18.1 N	J24
						C/2012 L1	2012 06 10.04551	19 19 47.50	+70 05 32.9	17.7 N	C23
						C/2012 L1	2012 06 10.04709	19 19 47.37	+70 05 35.1	17.9 N	J24
						C/2012 L1	2012 06 10.05255	19 19 46.89	+70 05 44.0	18.0 N	J24
						C/2012 L1	2012 06 10.05401	19 19 46.38	+70 05 44.7	17.8 N	C23
						C/2012 L1	2012 06 15.03569	19 06 40.43	+71 58 30.1	18.1 N	K 130
						C/2012 L1	2012 06 15.03720	19 06 40.19	+71 58 31.8	17.9 N	K 130
						C/2012 L1	2012 06 15.03870	19 06 39.89	+71 58 34.0	18.0 N	K 130
						C/2012 L1	2012 06 15.04021	19 06 39.61	+71 58 36.1	18.2 N	K 130
						C/2012 L1	2012 06 15.27260	19 05 57.99	+72 03 39.1	18.1 N	H45
						C/2012 L1	2012 06 15.27404	19 05 57.61	+72 03 40.9	18.0 N	H45
						C/2012 L1	2012 06 15.27486	19 05 57.59	+72 03 41.8	18.0 N	H45
						C/2012 L1	2012 06 15.27613	19 05 57.39	+72 03 43.6	18.1 N	H45
						C/2012 L1	2012 06 15.27844	19 05 56.96	+72 03 47.5	18.0 N	H45
						C/2012 L1	2012 06 15.28041	19 05 56.51	+72 03 49.3	18.1 N	H45

C/2012 L1 (LINEAR)

C/2012 L1	2012 06 15.28252	19 05 56.04	+72 03 51.7	18.2 N	H45	C/2012 L1	2012 06 23.04618	18 37 38.74	+74 37 56.2	17.5 N	C23
C/2012 L1	2012 06 15.28389	19 05 55.90	+72 03 54.2	18.0 N	H45	C/2012 L1	2012 06 23.95136	18 33 39.95	+74 53 50.9	18.3 T	KB51
C/2012 L1	2012 06 15.91350	19 04 00.40	+72 17 25.7	17.8 T	KB51	C/2012 L1	2012 06 23.96295	18 33 36.81	+74 54 03.2	18.3 T	KB51
C/2012 L1	2012 06 15.93071	19 03 57.24	+72 17 47.5	17.9 T	KB51	C/2012 L1	2012 06 23.96531	18 33 36.47	+74 54 05.7	18.9 N	J01
C/2012 L1	2012 06 16.00563	19 03 42.99	+72 19 24.2	17.9 N	K 157	C/2012 L1	2012 06 23.97489	18 33 33.44	+74 54 15.7	18.5 T	KB51
C/2012 L1	2012 06 16.00993	19 03 42.09	+72 19 28.9	17.7 N	K 157	C/2012 L1	2012 06 23.98062	18 33 32.30	+74 54 20.6	18.5 N	J01
C/2012 L1	2012 06 16.01422	19 03 41.32	+72 19 34.7	17.9 N	K 157	C/2012 L1	2012 06 23.98768	18 33 30.13	+74 54 28.1	17.7 T	K 215
C/2012 L1	2012 06 16.02038	19 03 40.30	+72 19 43.2	18.1 N	J01	C/2012 L1	2012 06 23.98908	18 33 29.76	+74 54 29.7	17.8 T	K 215
C/2012 L1	2012 06 16.03160	19 03 38.27	+72 19 57.1	18.3 N	J01	C/2012 L1	2012 06 23.99023	18 33 29.43	+74 54 30.9	17.8 T	K 215
C/2012 L1	2012 06 16.04731	19 03 35.21	+72 20 17.4	18.3 N	J01	C/2012 L1	2012 06 24.00690	18 33 24.93	+74 54 50.1	18.4 N	J01
C/2012 L1	2012 06 16.11764	19 03 21.68	+72 21 46.7	17.6 N	J24	C/2012 L1	2012 06 24.03753	18 33 16.74	+74 55 20.3	18.0 N	I72
C/2012 L1	2012 06 16.12230	19 03 20.71	+72 21 52.8	17.7 N	J24	C/2012 L1	2012 06 24.04038	18 33 15.98	+74 55 22.8	18.2 N	I72
C/2012 L1	2012 06 16.12697	19 03 19.97	+72 22 00.0	17.8 N	J24	C/2012 L1	2012 06 24.04321	18 33 15.08	+74 55 26.5	18.1 N	I72
C/2012 L1	2012 06 16.93837	19 00 44.29	+72 39 05.2	18.3 N	C47	C/2012 L1	2012 06 24.34432	18 31 53.07	+75 00 37.0	18.8 T	H45
C/2012 L1	2012 06 16.94124	19 00 43.64	+72 39 09.4	18.2 N	C47	C/2012 L1	2012 06 24.34625	18 31 52.40	+75 00 38.7	18.7 T	H45
C/2012 L1	2012 06 16.94340	19 00 43.25	+72 39 14.1	18.4 N	C47	C/2012 L1	2012 06 24.34855	18 31 52.10	+75 00 40.4	18.7 T	H45
C/2012 L1	2012 06 16.94699	19 00 42.44	+72 39 17.3	18.1 N	C47	C/2012 L1	2012 06 24.35022	18 31 51.58	+75 00 42.3	18.7 T	H45
C/2012 L1	2012 06 16.94843	19 00 42.11	+72 39 17.5	18.9 N	C47	C/2012 L1	2012 06 24.35214	18 31 51.16	+75 00 44.6	18.9 T	H45
C/2012 L1	2012 06 16.97089	19 00 37.77	+72 39 47.4	18.9 N	A71	C/2012 L1	2012 06 24.35347	18 31 50.72	+75 00 46.0	18.9 T	H45
C/2012 L1	2012 06 16.98053	19 00 35.92	+72 39 58.8	19.2 N	A71	C/2012 L1	2012 06 24.35534	18 31 50.22	+75 00 47.4	18.8 T	H45
C/2012 L1	2012 06 16.98375	19 00 35.20	+72 40 03.2	19.2 N	A71	C/2012 L1	2012 06 24.36441	18 31 47.66	+75 00 56.4	18.9 T	H45
C/2012 L1	2012 06 16.98701	19 00 34.62	+72 40 07.1	19.0 N	A71	C/2012 L1	2012 06 25.36076	18 27 09.73	+75 17 37.0	18.7 T	H45
C/2012 L1	2012 06 16.98815	19 00 34.48	+72 40 07.2	18.2 N	C09	C/2012 L1	2012 06 25.36237	18 27 09.22	+75 17 39.9	18.6 T	H45
C/2012 L1	2012 06 16.99022	19 00 33.90	+72 40 11.7	19.2 N	A71	C/2012 L1	2012 06 25.36328	18 27 09.00	+75 17 40.7	18.6 T	H45
C/2012 L1	2012 06 16.99344	19 00 33.27	+72 40 15.3	19.1 N	A71	C/2012 L1	2012 06 25.36469	18 27 08.55	+75 17 41.5	18.6 T	H45
C/2012 L1	2012 06 16.99519	19 00 33.02	+72 40 16.4	18.3 N	C09	C/2012 L1	2012 06 25.36605	18 27 08.19	+75 17 42.9	18.7 T	H45
C/2012 L1	2012 06 17.00221	19 00 31.75	+72 40 24.9	18.1 N	C09	C/2012 L1	2012 06 25.36726	18 27 07.87	+75 17 43.7	18.7 T	H45
C/2012 L1	2012 06 17.00861	19 00 30.26	+72 40 33.8	18.1 N	K C10	C/2012 L1	2012 06 25.36829	18 27 07.50	+75 17 45.3	18.6 T	H45
C/2012 L1	2012 06 17.00980	19 00 30.12	+72 40 35.2	18.1 N	C09	C/2012 L1	2012 06 26.34993	18 22 22.82	+75 33 33.5	18.6 T	H45
C/2012 L1	2012 06 17.01736	19 00 28.52	+72 40 45.5	18.0 N	K 511	C/2012 L1	2012 06 26.35111	18 22 22.40	+75 33 35.8	18.5 T	H45
C/2012 L1	2012 06 17.02528	19 00 26.96	+72 40 55.9	18.0 N	K 511	C/2012 L1	2012 06 26.35227	18 22 22.17	+75 33 36.0	18.5 T	H45
C/2012 L1	2012 06 17.02671	19 00 26.68	+72 40 56.4	18.4 N	K C10	C/2012 L1	2012 06 26.35398	18 22 21.50	+75 33 37.7	18.5 T	H45
C/2012 L1	2012 06 17.03307	19 00 25.45	+72 41 05.6	18.0 N	K 511	C/2012 L1	2012 06 26.35556	18 22 21.00	+75 33 39.8	18.4 T	H45
C/2012 L1	2012 06 17.03419	19 00 25.31	+72 41 06.0	18.2 N	K C10	C/2012 L1	2012 06 26.35694	18 22 20.72	+75 33 40.1	18.5 T	H45
C/2012 L1	2012 06 18.96132	18 53 47.42	+73 20 30.0	18.8 N	C47	C/2012 L1	2012 06 26.35840	18 22 20.28	+75 33 41.5	18.5 T	H45
C/2012 L1	2012 06 18.96562	18 53 46.56	+73 20 36.5	18.4 N	C47	C/2012 L1	2012 06 27.34144	18 17 24.43	+75 48 54.7	18.7 T	H45
C/2012 L1	2012 06 18.96777	18 53 45.94	+73 20 39.0	17.5 N	C47	C/2012 L1	2012 06 27.34319	18 17 23.57	+75 48 55.6	18.7 T	H45
C/2012 L1	2012 06 18.96993	18 53 45.56	+73 20 42.6	18.5 N	C47	C/2012 L1	2012 06 27.34414	18 17 23.43	+75 48 55.8	18.9 T	H45
C/2012 L1	2012 06 20.93828	18 46 20.65	+73 59 06.0	17.8 T	KB51	C/2012 L1	2012 06 27.34512	18 17 23.07	+75 48 57.0	18.8 T	H45
C/2012 L1	2012 06 20.94962	18 46 17.93	+73 59 18.8	17.9 T	KB51	C/2012 L1	2012 06 27.34679	18 17 22.56	+75 48 58.9	18.7 T	H45
C/2012 L1	2012 06 20.96102	18 46 15.27	+73 59 32.5	17.8 T	KB51	C/2012 L1	2012 06 27.34804	18 17 22.12	+75 48 59.1	18.8 T	H45
C/2012 L1	2012 06 21.57426	18 43 48.46	+74 11 03.7	17.5 T	KD95	C/2012 L1	2012 06 28.34062	18 12 12.28	+76 03 40.0	18.7 N	H45
C/2012 L1	2012 06 21.57996	18 43 46.98	+74 11 09.8		KD95	C/2012 L1	2012 06 28.34174	18 12 11.98	+76 03 40.9	18.6 N	H45
C/2012 L1	2012 06 21.58281	18 43 46.20	+74 11 12.7		KD95	C/2012 L1	2012 06 28.34318	18 12 11.51	+76 03 42.1	18.7 N	H45
C/2012 L1	2012 06 22.94029	18 38 06.29	+74 36 03.3	17.9 T	KB51	C/2012 L1	2012 06 28.34482	18 12 10.98	+76 03 43.9	18.6 N	H45
C/2012 L1	2012 06 22.94846	18 38 04.05	+74 36 12.3	17.9 T	KB51	C/2012 L1	2012 06 28.34586	18 12 10.57	+76 03 44.2	18.6 N	H45
C/2012 L1	2012 06 22.95787	18 38 01.78	+74 36 21.7	17.8 T	KB51	C/2012 L1	2012 06 28.34692	18 12 10.25	+76 03 45.4	18.2 T	H45
C/2012 L1	2012 06 23.00080	18 37 50.57	+74 37 07.4	18.2 N	C10	C/2012 L1	2012 06 28.34793	18 12 09.89	+76 03 46.0	18.2 T	H45
C/2012 L1	2012 06 23.00672	18 37 48.96	+74 37 13.6	18.3 N	C10	C/2012 L1	2012 06 29.30437	18 07 01.19	+76 17 14.6	18.7 T	H45
C/2012 L1	2012 06 23.01410	18 37 47.01	+74 37 22.1	18.3 N	C10	C/2012 L1	2012 06 29.30556	18 07 00.75	+76 17 15.0	18.7 T	H45
C/2012 L1	2012 06 23.02169	18 37 45.12	+74 37 29.5	18.2 N	C10	C/2012 L1	2012 06 29.30749	18 07 00.01	+76 17 17.0	18.6 T	H45
C/2012 L1	2012 06 23.02262	18 37 44.76	+74 37 30.9	17.7 N	C23	C/2012 L1	2012 06 29.30918	18 06 59.45	+76 17 18.1	18.6 T	H45
C/2012 L1	2012 06 23.03416	18 37 41.85	+74 37 42.7	17.5 N	C23	C/2012 L1	2012 06 29.31076	18 06 58.96	+76 17 19.5	18.6 T	H45

C/2012 L1	2012 06 29.31238	18 06 58.39	+76 17 20.9	18.6 T	H45
C/2012 L1	2012 06 29.31380	18 06 57.88	+76 17 22.4	18.6 T	H45
C/2012 L1	2012 06 30.28939	18 01 32.59	+76 30 25.0	18.7 T	H45
C/2012 L1	2012 06 30.29094	18 01 32.20	+76 30 26.5	18.7 T	H45
C/2012 L1	2012 06 30.29204	18 01 31.76	+76 30 27.4	18.8 T	H45
C/2012 L1	2012 06 30.29311	18 01 31.35	+76 30 28.0	18.8 T	H45
C/2012 L1	2012 06 30.29446	18 01 30.76	+76 30 28.8	18.7 T	H45
C/2012 L1	2012 06 30.29594	18 01 30.28	+76 30 30.7	18.8 T	H45
C/2012 L1	2012 06 30.29762	18 01 29.85	+76 30 31.2	18.8 T	H45

C/2012 L2 (LINEAR)

C/2012 L2	2012 06 01.37497	23 33 52.83	+68 13 01.3	19.4 T	704
C/2012 L2	2012 06 01.38589	23 33 53.86	+68 13 09.1	19.5 T	704
C/2012 L2	2012 06 01.39634	23 33 54.94	+68 13 18.1	19.9 T	704
C/2012 L2	2012 06 01.40681	23 33 55.92	+68 13 24.9	19.7 T	704
C/2012 L2	2012 06 01.41730	23 33 56.94	+68 13 33.5	19.8 T	704
C/2012 L2	2012 06 02.96226	23 36 20.51	+68 33 34.3		K 118
C/2012 L2	2012 06 02.98305	23 36 22.40	+68 33 50.6		K 118
C/2012 L2	2012 06 02.99344	23 36 23.39	+68 33 59.0		K 118
C/2012 L2	2012 06 03.00035	23 36 24.06	+68 34 04.1	18.5 T	B18
C/2012 L2	2012 06 03.00037	23 36 24.02	+68 34 03.0		K 118
C/2012 L2	2012 06 03.00449	23 36 24.35	+68 34 07.6	18.5 T	B18
C/2012 L2	2012 06 03.00660	23 36 24.60	+68 34 09.2	18.5 T	B18
C/2012 L2	2012 06 03.01505	23 36 25.49	+68 34 16.0	18.8 T	K C73
C/2012 L2	2012 06 03.01986	23 36 25.67	+68 34 19.2	18.9 T	K C73
C/2012 L2	2012 06 03.02227	23 36 26.08	+68 34 20.6	19.1 T	K C73
C/2012 L2	2012 06 03.02709	23 36 26.57	+68 34 25.8	19.2 T	K C73
C/2012 L2	2012 06 03.323526	23 36 54.03	+68 38 15.3	19.2 T	K H21
C/2012 L2	2012 06 03.328928	23 36 54.58	+68 38 19.4	19.2 T	K H21
C/2012 L2	2012 06 03.334330	23 36 55.04	+68 38 23.9	19.9 T	K H21
C/2012 L2	2012 06 03.338972	23 36 55.67	+68 38 28.7	19.6 T	K H21
C/2012 L2	2012 06 04.99064	23 39 29.90	+68 59 56.8	17.1 T	C23
C/2012 L2	2012 06 05.02675	23 39 33.14	+69 00 25.5	17.6 T	C23
C/2012 L2	2012 06 05.04919	23 39 35.35	+69 00 42.7	17.6 T	C23
C/2012 L2	2012 06 05.16377	23 39 45.90	+69 02 13.9	18.6 T	K 954
C/2012 L2	2012 06 05.18245	23 39 47.66	+69 02 27.9	18.4 T	K 954
C/2012 L2	2012 06 05.19875	23 39 49.35	+69 02 40.7	18.3 T	K 954
C/2012 L2	2012 06 05.327639	23 40 01.34	+69 04 20.5	19.1 T	K H21
C/2012 L2	2012 06 05.334206	23 40 02.00	+69 04 25.3	19.2 T	K H21
C/2012 L2	2012 06 05.340767	23 40 02.54	+69 04 30.9	19.3 T	K H21
C/2012 L2	2012 06 05.41800	23 40 09.96	+69 05 31.4		32H06
C/2012 L2	2012 06 05.42162	23 40 10.20	+69 05 34.1		32H06
C/2012 L2	2012 06 05.42461	23 40 10.35	+69 05 36.6	18.1 T	30H06
C/2012 L2	2012 06 05.42525	23 40 10.50	+69 05 36.9	18.5 T	32H06
C/2012 L2	2012 06 05.43104	23 40 11.08	+69 05 42.6	18.4 T	30H06
C/2012 L2	2012 06 05.44072	23 40 11.68	+69 05 49.1	18.0 T	30H06
C/2012 L2	2012 06 05.44219	23 40 12.03	+69 05 50.3	18.5 T	926
C/2012 L2	2012 06 05.45304	23 40 13.31	+69 05 59.1	18.7 T	926
C/2012 L2	2012 06 05.46400	23 40 14.10	+69 06 07.2	18.4 T	926
C/2012 L2	2012 06 08.93942	23 45 41.13	+69 51 30.1	19.0 N	K C10
C/2012 L2	2012 06 08.95161	23 45 42.25	+69 51 40.4	18.9 N	K C10
C/2012 L2	2012 06 08.96587	23 45 43.53	+69 51 51.3	17.3 N	C23
C/2012 L2	2012 06 08.96740	23 45 43.86	+69 51 52.3	18.8 N	K C10

C/2012 L2	2012 06 08.97442	23 45 44.36	+69 51 59.2	17.6 N	C23
C/2012 L2	2012 06 08.98725	23 45 45.80	+69 52 08.7	17.8 N	C23
C/2012 L2	2012 06 09.11225	23 45 57.58	+69 53 48.1	19.4 N	K 189
C/2012 L2	2012 06 09.11988	23 45 58.24	+69 53 53.5	19.4 N	K 189
C/2012 L2	2012 06 09.40316	23 46 25.14	+69 57 36.6		32H06
C/2012 L2	2012 06 09.40651	23 46 25.42	+69 57 39.3		32H06
C/2012 L2	2012 06 09.40987	23 46 25.70	+69 57 42.0	18.3 T	32H06
C/2012 L2	2012 06 10.21153	23 47 41.79	+70 08 14.3	18.0 N	J24
C/2012 L2	2012 06 10.21300	23 47 41.93	+70 08 15.4	18.0 N	J24
C/2012 L2	2012 06 10.22037	23 47 42.48	+70 08 21.6	17.8 N	J24
C/2012 L2	2012 06 15.01176	23 55 19.62	+71 11 22.8	17.8 T	K B51
C/2012 L2	2012 06 15.04752	23 55 23.21	+71 11 51.9	18.0 T	K B51
C/2012 L2	2012 06 16.04296	23 56 58.73	+71 24 59.8	18.1 N	K 157
C/2012 L2	2012 06 16.04672	23 56 59.26	+71 25 02.9	18.2 N	K 157
C/2012 L2	2012 06 16.04995	23 56 59.42	+71 25 05.1	17.9 N	K 157
C/2012 L2	2012 06 17.00444	23 58 31.43	+71 37 41.6	19.1 N	A71
C/2012 L2	2012 06 17.01157	23 58 32.18	+71 37 47.5	19.0 N	A71
C/2012 L2	2012 06 17.01870	23 58 32.81	+71 37 53.1	18.8 N	A71
C/2012 L2	2012 06 17.02937	23 58 33.78	+71 38 01.1	18.8 N	A71
C/2012 L2	2012 06 17.05754	23 58 36.42	+71 38 24.1	17.9 N	K 511
C/2012 L2	2012 06 17.07293	23 58 37.97	+71 38 36.1	17.8 N	K 511
C/2012 L2	2012 06 23.02823	00 08 17.54	+72 57 24.4	18.2 N	C10
C/2012 L2	2012 06 23.03734	00 08 18.36	+72 57 31.4	18.1 N	C10
C/2012 L2	2012 06 23.04773	00 08 19.34	+72 57 40.1	18.3 N	C10
C/2012 L2	2012 06 24.00338	00 09 53.37	+73 10 20.2	17.8 T	K B51
C/2012 L2	2012 06 24.02586	00 09 55.56	+73 10 38.0	18.0 T	K B51
C/2012 L2	2012 06 24.98052	00 11 29.67	+73 23 17.1	18.3 T	K C60
C/2012 L2	2012 06 24.98421	00 11 29.98	+73 23 19.4	18.3 T	K C60
C/2012 L2	2012 06 24.98790	00 11 30.42	+73 23 23.5	18.5 T	K C60
C/2012 L2	2012 06 24.99158	00 11 30.80	+73 23 25.8	17.2 T	K C60
C/2012 L2	2012 06 24.99527	00 11 31.06	+73 23 28.2	18.2 T	K C60
C/2012 L2	2012 06 25.03797	00 11 35.23	+73 24 02.9	18.0 T	K B51
C/2012 L2	2012 06 25.06429	00 11 37.67	+73 24 23.4	18.5 T	K B51
C/2012 L2	2012 06 25.09001	00 11 40.49	+73 24 44.1	18.5 T	K B51

C/2012 L3 (LINEAR)

C/2012 L3	2012 06 10.30718	20 31 47.62	+36 22 19.5	18.5 T	704
C/2012 L3	2012 06 10.32814	20 31 44.29	+36 22 24.5	19.0 T	704
C/2012 L3	2012 06 10.33836	20 31 42.81	+36 22 28.1	18.7 T	704
C/2012 L3	2012 06 10.34847	20 31 41.04	+36 22 31.1	18.8 T	704
C/2012 L3	2012 06 11.29519	20 29 13.43	+36 27 01.6		H 291
C/2012 L3	2012 06 11.29623	20 29 13.24	+36 27 02.1	19.5 T	H 291
C/2012 L3	2012 06 11.29727	20 29 13.08	+36 27 02.4	19.5 T	H 291
C/2012 L3	2012 06 11.31259	20 29 10.66	+36 27 06.5	18.7 T	K H15
C/2012 L3	2012 06 11.32148	20 29 09.23	+36 27 09.8	18.9 T	K H15
C/2012 L3	2012 06 11.33039	20 29 07.77	+36 27 12.8	18.3 T	MH15
C/2012 L3	2012 06 11.36859	20 29 01.74	+36 27 21.8	19.5 T	704
C/2012 L3	2012 06 11.37250	20 29 01.13	+36 27 23.3	18.5 T	K H15
C/2012 L3	2012 06 11.37830	20 29 00.19	+36 27 23.0	17.9 T	718
C/2012 L3	2012 06 11.37879	20 29 00.15	+36 27 24.8	18.9 T	704
C/2012 L3	2012 06 11.38251	20 28 59.48	+36 27 24.5	18.1 T	718
C/2012 L3	2012 06 11.38361	20 28 59.34	+36 27 26.1	18.4 T	K H15
C/2012 L3	2012 06 11.38777	20 28 58.69	+36 27 26.2	18.0 T	718

C/2012 L3	2012 06 11.38916	20 28 58.41	+36 27 27.7	19.0 T	704
C/2012 L3	2012 06 11.39141	20 28 58.12	+36 27 26.6	17.9 T	718
C/2012 L3	2012 06 11.39955	20 28 56.78	+36 27 30.7	18.9 T	704
C/2012 L3	2012 06 11.40630	20 28 55.72	+36 27 31.7	17.8 T	K H15
C/2012 L3	2012 06 11.42683	20 28 52.44	+36 27 37.2	18.8 T	30H06
C/2012 L3	2012 06 11.42838	20 28 52.41	+36 27 38.3		7 F65
C/2012 L3	2012 06 11.42867	20 28 52.13	+36 27 38.1	19.0 T	30H06
C/2012 L3	2012 06 11.43049	20 28 51.82	+36 27 39.0		30H06
C/2012 L3	2012 06 11.43067	20 28 52.02	+36 27 39.0	19.2 T	7 F65
C/2012 L3	2012 06 11.43228	20 28 51.62	+36 27 39.5		30H06
C/2012 L3	2012 06 11.43296	20 28 51.74	+36 27 39.5		7 F65
C/2012 L3	2012 06 11.43412	20 28 51.27	+36 27 40.0		30H06
C/2012 L3	2012 06 11.43477	20 28 51.39	+36 27 40.0		7 F65
C/2012 L3	2012 06 11.43600	20 28 51.00	+36 27 40.9		30H06
C/2012 L3	2012 06 11.43798	20 28 50.61	+36 27 41.1	18.3 T	19H06
C/2012 L3	2012 06 11.43961	20 28 50.40	+36 27 41.6		30H06
C/2012 L3	2012 06 11.44136	20 28 50.19	+36 27 42.1	18.3 T	19H06
C/2012 L3	2012 06 11.44146	20 28 50.16	+36 27 42.6		30H06
C/2012 L3	2012 06 11.442674	20 28 49.939	+36 27 41.89	18.8 T	31 695
C/2012 L3	2012 06 11.44360	20 28 49.73	+36 27 43.1	17.8 T	19H06
C/2012 L3	2012 06 11.444329	20 28 49.689	+36 27 42.41	18.3 T	31 695
C/2012 L3	2012 06 11.445984	20 28 49.370	+36 27 43.42	18.2 T	31 695
C/2012 L3	2012 06 11.447639	20 28 49.145	+36 27 43.38	18.5 T	31 695
C/2012 L3	2012 06 12.33101	20 26 28.42	+36 31 29.8	17.6 N	K H15
C/2012 L3	2012 06 12.34967	20 26 25.36	+36 31 34.3	17.4 N	K H15
C/2012 L3	2012 06 12.90591	20 24 55.47	+36 33 46.8	18.6 T	K B42
C/2012 L3	2012 06 12.91161	20 24 54.51	+36 33 48.7	18.6 T	K B42
C/2012 L3	2012 06 12.91661	20 24 53.65	+36 33 49.9	18.3 T	K B42
C/2012 L3	2012 06 12.96617	20 24 45.73	+36 34 01.8	18.5 N	K J01
C/2012 L3	2012 06 12.97150	20 24 44.86	+36 34 02.7	18.6 N	K J01
C/2012 L3	2012 06 12.97758	20 24 43.86	+36 34 04.0	18.7 N	K J01
C/2012 L3	2012 06 13.23111	20 24 02.50	+36 35 01.0		32H06
C/2012 L3	2012 06 13.23311	20 24 02.17	+36 35 01.9		32H06
C/2012 L3	2012 06 13.23510	20 24 01.84	+36 35 02.2		32H06
C/2012 L3	2012 06 13.23708	20 24 01.53	+36 35 02.6	18.2 T	32H06
C/2012 L3	2012 06 13.33593	20 23 45.26	+36 35 25.1	18.8 N	K H15
C/2012 L3	2012 06 13.35402	20 23 42.16	+36 35 28.0	18.7 N	K H15
C/2012 L3	2012 06 13.39174	20 23 36.01	+36 35 37.7	18.9 N	K H15
C/2012 L3	2012 06 13.42279	20 23 30.86	+36 35 45.2	18.8 N	12H06
C/2012 L3	2012 06 13.43810	20 23 28.31	+36 35 47.6	17.4 N	12H06
C/2012 L3	2012 06 14.37585	20 20 53.17	+36 38 58.5	18.8 T	704
C/2012 L3	2012 06 14.38613	20 20 51.38	+36 39 00.9	19.0 T	704
C/2012 L3	2012 06 14.39658	20 20 49.71	+36 39 01.8	18.9 T	704
C/2012 L3	2012 06 14.41712	20 20 46.16	+36 39 05.8	19.0 T	704
C/2012 L3	2012 06 15.04852	20 19 00.07	+36 40 59.9	18.6 N	K 130
C/2012 L3	2012 06 15.05053	20 18 59.73	+36 40 59.9	18.5 N	K 130
C/2012 L3	2012 06 15.05254	20 18 59.39	+36 40 59.9	18.2 N	K 130
C/2012 L3	2012 06 15.05455	20 18 59.06	+36 41 00.0	18.0 N	K 130
C/2012 L3	2012 06 15.23164	20 18 29.26	+36 41 30.7	18.0 N	30H06
C/2012 L3	2012 06 15.23770	20 18 28.27	+36 41 32.0	17.7 N	30H06
C/2012 L3	2012 06 15.24176	20 18 27.50	+36 41 32.2	17.5 N	30H06
C/2012 L3	2012 06 15.24377	20 18 27.19	+36 41 33.0	17.5 N	30H06
C/2012 L3	2012 06 15.356361	20 18 07.90	+36 41 51.3	18.3 T	K H21

C/2012 L3	2012 06 15.359953	20 18 07.24	+36 41 51.9	18.4 T	K H21
C/2012 L3	2012 06 15.362808	20 18 06.74	+36 41 52.4	18.3 T	K H21
C/2012 L3	2012 06 16.02803	20 16 13.14	+36 43 33.3	18.9 N	K 157
C/2012 L3	2012 06 16.03126	20 16 12.53	+36 43 34.0	18.3 N	K 157
C/2012 L3	2012 06 16.03450	20 16 11.99	+36 43 34.6	18.4 N	K 157
C/2012 L3	2012 06 16.14594	20 15 52.74	+36 43 50.7	17.9 N	J24
C/2012 L3	2012 06 16.16471	20 15 49.48	+36 43 53.3	17.8 N	J24
C/2012 L3	2012 06 16.17372	20 15 47.87	+36 43 53.7	17.7 N	J24
C/2012 L3	2012 06 17.05172	20 13 15.73	+36 45 41.0	19.1 T	C10
C/2012 L3	2012 06 17.05774	20 13 14.59	+36 45 41.2	18.8 T	C10
C/2012 L3	2012 06 17.06507	20 13 13.33	+36 45 41.5	18.8 T	C10
C/2012 L3	2012 06 17.89890	20 10 46.76	+36 47 00.3	17.9 N	A71
C/2012 L3	2012 06 17.90175	20 10 46.22	+36 47 01.9	18.1 N	A71
C/2012 L3	2012 06 17.90461	20 10 45.68	+36 47 01.8	18.3 N	A71
C/2012 L3	2012 06 17.90747	20 10 45.22	+36 47 01.6	18.1 N	A71
C/2012 L3	2012 06 17.91031	20 10 44.69	+36 47 02.0	18.0 N	A71
C/2012 L3	2012 06 17.91317	20 10 44.20	+36 47 02.3	18.1 N	A71
C/2012 L3	2012 06 17.94200	20 10 39.09	+36 47 05.7	19.1 N	K B51
C/2012 L3	2012 06 17.95738	20 10 36.32	+36 47 06.8	18.8 N	K B51
C/2012 L3	2012 06 21.00619	20 01 23.91	+36 48 32.1	16.8 N	C23
C/2012 L3	2012 06 21.00902	20 01 23.31	+36 48 31.6	17.3 N	C23
C/2012 L3	2012 06 21.01881	20 01 21.53	+36 48 31.7	15.9 N	C23
C/2012 L3	2012 06 22.92836	19 55 24.18	+36 46 34.4	18.1 T	K C60
C/2012 L3	2012 06 22.93959	19 55 22.07	+36 46 33.4	18.2 T	K C60
C/2012 L3	2012 06 22.95082	19 55 19.99	+36 46 33.0	17.2 T	K C60
C/2012 L3	2012 06 23.01013	19 55 08.57	+36 46 27.3	16.2 N	C23
C/2012 L3	2012 06 23.01590	19 55 07.61	+36 46 25.5	17.2 N	C23
C/2012 L3	2012 06 23.01734	19 55 07.31	+36 46 23.9	17.5 N	C23
C/2012 L3	2012 06 23.99896	19 52 00.27	+36 44 28.1		K 215
C/2012 L3	2012 06 24.00087	19 52 00.08	+36 44 28.0		K 215
C/2012 L3	2012 06 24.00279	19 51 59.59	+36 44 26.4		K 215
C/2012 L3	2012 06 24.01583	19 51 57.09	+36 44 25.0	18.2 N	K C10
C/2012 L3	2012 06 24.02925	19 51 54.51	+36 44 24.1	18.4 N	K C10
C/2012 L3	2012 06 24.04252	19 51 51.81	+36 44 22.4	19.0 N	K C10
C/2012 L3	2012 06 27.20832	19 41 37.12	+36 33 38.7		32H06
C/2012 L3	2012 06 27.21112	19 41 36.56	+36 33 37.8		32H06
C/2012 L3	2012 06 27.21391	19 41 36.00	+36 33 37.0	18.1 T	32H06

9P/Tempel

9P	2012 01 14.37692	00 04 05.48	-08 13 25.9	18.9 T	349
9P	2012 01 14.39610	00 04 06.41	-08 13 18.1		349

17P/Holmes

17P	2012 06 07.51226	12 43 35.83	-27 10 26.7	20.4 N	K E07
17P	2012 06 07.52108	12 43 35.75	-27 10 23.6	20.6 N	K E07
17P	2012 06 09.40784	12 43 23.01	-27 02 29.3	21.1 N	K E07
17P	2012 06 09.42106	12 43 22.92	-27 02 26.2	21.1 N	K E07
17P	2012 06 13.46631	12 43 07.96	-26 46 18.4	21.0 N	5 E10
17P	2012 06 13.47627	12 43 07.93	-26 46 15.9	21.0 N	5 E10
17P	2012 06 19.40090	12 43 16.30	-26 24 56.0	21.2 N	5 E10
17P	2012 06 19.41140	12 43 16.33	-26 24 54.0	21.0 N	5 E10

96P	2012 06 22.41949	04 30 41.56	-14 31 41.9		K I39	123P	2012 06 12.37239	15 31 50.919	-26 09 13.58	19.5 T	F51	
96P	2012 06 25.43874	04 53 25.99	-10 38 24.9	12.5 T	K I47	123P	2012 06 12.38645	15 31 50.315	-26 09 13.69	19.5 T	F51	
96P	2012 06 25.46353	04 53 37.14	-10 36 25.7	12.5 T	K I47	123P	2012 06 15.694421	15 29 40.94	-26 09 18.4	18.7 T	30D90	
	105P/Singer Brewster						123P	2012 06 15.702240	15 29 40.67	-26 09 18.5	18.6 T	30D90
105P	2012 06 08.61841	19 35 06.05	-06 01 13.8	20.0 N	K E07	123P	2012 06 15.709227	15 29 40.38	-26 09 18.3	18.7 T	30D90	
105P	2012 06 08.62943	19 35 05.83	-06 01 11.8	19.5 N	K E07	123P	2012 06 16.00713	15 29 29.55	-26 09 22.3	18.2 N	J24	
105P	2012 06 10.14700	19 34 36.53	-05 56 09.4	17.9 N	J24	123P	2012 06 16.01286	15 29 29.28	-26 09 22.3	18.0 N	J24	
105P	2012 06 10.15846	19 34 36.31	-05 56 05.3	16.6 N	J24	123P	2012 06 16.01860	15 29 29.07	-26 09 22.7	18.0 N	J24	
105P	2012 06 10.49022	19 34 29.626	-05 55 04.87	19.8 T	F51		152P/Helin-Lawrence					
105P	2012 06 10.50024	19 34 29.392	-05 55 02.85	20.0 T	F51	152P	2012 05 30.51662	16 25 44.38	-15 36 38.3	16.8 T	D95	
105P	2012 06 10.51100	19 34 29.137	-05 55 00.83	19.7 T	F51	152P	2012 05 30.51805	16 25 44.30	-15 36 38.0		D95	
105P	2012 06 10.52186	19 34 28.870	-05 54 58.70	19.8 T	F51	152P	2012 05 30.52091	16 25 44.25	-15 36 37.8		D95	
105P	2012 06 14.50361	19 32 53.487	-05 43 59.62	19.7 T	F51	152P	2012 06 05.631600	16 21 31.14	-15 45 07.7	16.4 T	30D90	
105P	2012 06 14.51379	19 32 53.183	-05 43 58.22	19.8 T	F51	152P	2012 06 05.638634	16 21 30.84	-15 45 08.1	16.5 T	30D90	
105P	2012 06 14.52493	19 32 52.855	-05 43 56.54	19.5 T	F51	152P	2012 06 05.646039	16 21 30.54	-15 45 08.8	16.4 T	30D90	
105P	2012 06 14.53624	19 32 52.518	-05 43 55.11	19.6 T	F51	152P	2012 06 06.51072	16 20 55.55	-15 46 33.2		KD88	
105P	2012 06 19.00530	19 30 39.07	-05 35 34.6	19.0 N	K C10	152P	2012 06 06.51390	16 20 55.41	-15 46 33.8		KD88	
105P	2012 06 19.02256	19 30 38.51	-05 35 27.2	19.1 N	K C10	152P	2012 06 06.51708	16 20 55.23	-15 46 34.8	16.8 T	KD88	
105P	2012 06 22.02323	19 28 55.46	-05 32 16.4	18.1 N	K C10	152P	2012 06 08.27148	16 19 44.83	-15 49 24.5	15.7 T	703	
105P	2012 06 22.03433	19 28 55.07	-05 32 15.1	18.5 N	K C10	152P	2012 06 08.27648	16 19 44.58	-15 49 24.7	15.5 T	703	
105P	2012 06 23.96583	19 27 43.92	-05 31 12.7	19.8 N	K C10	152P	2012 06 08.28148	16 19 44.36	-15 49 25.0	15.7 T	703	
105P	2012 06 24.00150	19 27 42.40	-05 31 12.2	20.2 N	K C10	152P	2012 06 08.28653	16 19 44.11	-15 49 25.2	15.7 T	703	
105P	2012 06 25.27664	19 26 53.67	-05 30 54.6		32H06	152P	2012 06 09.24501	16 19 06.27	-15 51 01.6	15.7 T	G96	
105P	2012 06 25.27834	19 26 53.59	-05 30 54.7	19.6 T	32H06	152P	2012 06 09.25317	16 19 05.98	-15 51 02.8	15.8 T	G96	
105P	2012 06 27.00490	19 25 45.23	-05 31 09.0	19.3 N	K 130	152P	2012 06 09.26142	16 19 05.66	-15 51 03.7	15.8 T	G96	
105P	2012 06 27.01093	19 25 45.01	-05 31 08.5	19.4 N	K 130	152P	2012 06 09.26957	16 19 05.34	-15 51 04.6	15.8 T	G96	
105P	2012 06 27.01696	19 25 44.69	-05 31 10.8	18.7 N	K 130	152P	2012 06 10.08920	16 18 33.06	-15 52 29.2	15.9 N	J24	
	117P/Helin-Roman-Alu						152P	2012 06 10.09354	16 18 32.94	-15 52 28.7	15.9 N	J24
117P	2011 11 20.77698	11 21 38.83	+13 08 49.5	18.4 T	349	152P	2012 06 10.09788	16 18 32.70	-15 52 29.1	15.8 N	J24	
117P	2011 11 20.78576	11 21 39.11	+13 08 47.5		349	152P	2012 06 10.10222	16 18 32.56	-15 52 30.5	15.8 N	J24	
117P	2012 01 14.70780	11 39 08.22	+13 06 21.7	17.6 T	349	152P	2012 06 13.27046	16 16 31.99	-15 58 14.5	17.3 T	704	
117P	2012 01 14.72056	11 39 08.11	+13 06 24.3		349	152P	2012 06 13.28081	16 16 31.57	-15 58 17.9	18.6 T	704	
117P	2012 06 04.92909	10 58 35.12	+15 10 27.1	17.3 N	J38	152P	2012 06 13.29114	16 16 30.99	-15 58 18.4	18.5 T	704	
117P	2012 06 04.93655	10 58 35.27	+15 10 25.0	17.5 N	J38	152P	2012 06 13.31245	16 16 30.20	-15 58 19.9	17.1 T	704	
117P	2012 06 04.94152	10 58 35.37	+15 10 23.4	17.3 N	J38	152P	2012 06 15.27385	16 15 18.64	-16 02 08.5	16.2 T	G96	
117P	2012 06 15.91828	11 03 39.70	+14 14 26.8	17.0 N	J24	152P	2012 06 15.27904	16 15 18.43	-16 02 08.8	15.9 T	G96	
117P	2012 06 15.92697	11 03 39.98	+14 14 23.6	16.9 N	J24	152P	2012 06 15.28429	16 15 18.21	-16 02 09.2	15.9 T	G96	
117P	2012 06 15.93565	11 03 40.26	+14 14 21.3	16.8 N	J24	152P	2012 06 15.28958	16 15 17.96	-16 02 09.7	15.8 T	G96	
117P	2012 06 18.15507	11 04 51.63	+14 02 13.0	17.4 T	703	152P	2012 06 15.715475	16 15 02.73	-16 02 56.8	16.4 T	30D90	
117P	2012 06 18.16185	11 04 51.85	+14 02 11.3	17.2 T	703	152P	2012 06 15.718912	16 15 02.60	-16 02 57.1	16.5 T	30D90	
117P	2012 06 18.16865	11 04 52.06	+14 02 08.5	17.4 T	703	152P	2012 06 15.730995	16 15 02.16	-16 02 58.4	16.4 T	30D90	
117P	2012 06 18.17543	11 04 52.28	+14 02 06.4	17.3 T	703	152P	2012 06 15.91006	16 14 56.01	-16 03 25.7	17.9 N	A71	
	123P/West-Hartley						152P	2012 06 15.91362	16 14 55.90	-16 03 25.9	17.9 N	A71
123P	2012 06 05.608860	15 36 53.50	-26 08 13.3	18.6 T	30D90	152P	2012 06 15.91719	16 14 55.74	-16 03 26.4	17.8 N	A71	
123P	2012 06 05.622755	15 36 52.71	-26 08 14.6	18.0 T	30D90	152P	2012 06 15.92075	16 14 55.62	-16 03 26.4	18.0 N	A71	
123P	2012 06 07.54349	15 35 22.06	-26 08 37.5	19.2 N	K E07	152P	2012 06 15.92432	16 14 55.48	-16 03 27.2	17.8 N	A71	
123P	2012 06 07.55011	15 35 21.72	-26 08 38.8	18.6 N	I E07	152P	2012 06 15.92788	16 14 55.36	-16 03 27.7	17.9 N	A71	
123P	2012 06 09.57048	15 33 50.30	-26 08 54.9	19.3 N	K E07	152P	2012 06 15.93168	16 14 55.23	-16 03 28.3	17.9 N	A71	
123P	2012 06 09.57708	15 33 49.99	-26 08 54.7	18.9 N	K E07	152P	2012 06 15.96177	16 14 54.24	-16 03 31.2	16.4 N	I99	
123P	2012 06 12.34441	15 31 52.110	-26 09 13.50	19.5 T	F51	152P	2012 06 15.97259	16 14 53.84	-16 03 32.6	16.3 N	I99	
123P	2012 06 12.35841	15 31 51.514	-26 09 13.59	19.4 T	F51	152P	2012 06 15.98336	16 14 53.41	-16 03 34.2	16.3 N	I99	
						152P	2012 06 16.93219	16 14 20.16	-16 05 31.2	16.3 N	232	

152P	2012 06 16.94794	16 14 19.63	-16 05 32.5	16.4 N	232	185P	2012 06 22.44662	01 18 26.13	+21 36 26.9	18.5 T	K 291
152P	2012 06 16.96319	16 14 19.09	-16 05 35.0	16.4 N	232	185P	2012 06 22.44978	01 18 27.07	+21 36 31.0	18.4 T	K 291
152P	2012 06 17.26624	16 14 08.59	-16 06 11.9	15.9 T	703	185P	2012 06 22.45294	01 18 27.99	+21 36 34.6	18.4 T	K 291
152P	2012 06 17.27642	16 14 08.19	-16 06 12.8	15.7 T	703	185P	2012 06 23.07310	01 21 32.06	+21 49 08.6	18.2 N	K 160
152P	2012 06 17.28673	16 14 07.80	-16 06 14.6	15.6 T	703	185P	2012 06 23.07517	01 21 32.67	+21 49 11.1	18.0 N	K 160
152P	2012 06 17.29704	16 14 07.51	-16 06 16.2	15.7 T	703	185P	2012 06 23.07724	01 21 33.26	+21 49 13.2	18.2 N	K 160
152P	2012 06 18.23427	16 13 35.71	-16 08 14.2		32H06	185P	2012 06 24.03023	01 26 18.87	+22 08 14.4	18.4 N	KA71
152P	2012 06 18.23595	16 13 35.65	-16 08 14.6		32H06	185P	2012 06 24.03072	01 26 18.89	+22 08 14.5	17.3 N	K 215
152P	2012 06 18.23762	16 13 35.60	-16 08 14.7	16.1 T	32H06	185P	2012 06 24.03200	01 26 19.27	+22 08 16.1	17.4 N	K 215
152P	2012 06 21.91258	16 11 37.78	-16 16 26.9	16.6 N	B74	185P	2012 06 24.03328	01 26 19.68	+22 08 17.6	17.5 N	K 215
152P	2012 06 21.92161	16 11 37.50	-16 16 28.2	16.6 N	B74	185P	2012 06 24.04103	01 26 22.01	+22 08 26.9	18.1 N	KA71
152P	2012 06 21.92701	16 11 37.32	-16 16 28.8	16.6 N	B74	185P	2012 06 24.05067	01 26 24.92	+22 08 38.6	18.4 N	KA71
152P	2012 06 22.93746	16 11 07.10	-16 18 51.4	16.6 N	I99	185P	2012 06 24.05181	01 26 25.21	+22 08 39.3	17.1 N	KC10
152P	2012 06 22.94828	16 11 06.79	-16 18 52.0	16.5 N	I99	185P	2012 06 24.05773	01 26 26.95	+22 08 46.6	17.1 N	KC10
152P	2012 06 22.95369	16 11 06.57	-16 18 52.8	16.1 N	I99	185P	2012 06 24.06540	01 26 29.38	+22 08 55.4	17.0 N	KC10
152P	2012 06 23.20747	16 10 59.33	-16 19 28.6	17.6 T	704	185P	2012 06 24.07282	01 26 31.57	+22 09 02.9	17.2 N	KC10
152P	2012 06 23.21768	16 10 58.94	-16 19 32.3	19.1 T	704	185P	2012 06 24.44176	01 28 23.07	+22 16 21.1		31H06
152P	2012 06 23.22809	16 10 58.62	-16 19 34.7	18.8 T	704	185P	2012 06 24.44617	01 28 24.34	+22 16 26.9	16.0 T	31H06
152P	2012 06 23.23821	16 10 58.28	-16 19 34.2	19.0 T	704	185P	2012 06 28.10114	01 47 13.33	+23 24 41.4	17.2 N	K 160
152P	2012 06 23.24593	16 10 58.04	-16 19 34.8	15.9 T	G96	185P	2012 06 28.10128	01 47 13.40	+23 24 41.6	17.9 N	K 160
152P	2012 06 23.24842	16 10 57.81	-16 19 36.3	18.6 T	704	185P	2012 06 28.10197	01 47 13.63	+23 24 42.3	17.7 N	K 160
152P	2012 06 23.25229	16 10 57.82	-16 19 35.6	15.8 T	G96	185P	2012 06 30.05190	01 57 33.91	+23 58 06.1	18.0 N	K 160
152P	2012 06 23.25868	16 10 57.61	-16 19 36.5	15.8 T	G96	185P	2012 06 30.05328	01 57 34.29	+23 58 08.0	17.1 N	K 160
152P	2012 06 23.26504	16 10 57.43	-16 19 37.5	15.9 T	G96	185P	2012 06 30.05468	01 57 34.80	+23 58 09.0	17.5 N	K 160
160P/LINEAR						185P	2012 07 01.12808	02 03 21.26	+24 15 33.5	17.2 N	J01
160P	2012 06 21.43089	23 27 04.46	-10 06 35.8		32H06	185P	2012 07 01.13277	02 03 22.80	+24 15 38.3	16.9 N	J01
160P	2012 06 21.43387	23 27 04.66	-10 06 33.9		32H06	185P	2012 07 01.13745	02 03 24.37	+24 15 43.2	17.2 N	J01
160P	2012 06 21.43686	23 27 04.88	-10 06 32.7	19.4 T	32H06	189P/NEAT					
185P/Petrieve						189P	2012 06 07.44998	17 54 20.54	-58 12 02.5	18.1 N	KE07
185P	2001 06 12.41799	23 28 38.47	+15 08 59.8	18.5 N	644	189P	2012 06 07.45880	17 54 21.37	-58 11 48.1	18.0 N	KE07
185P	2001 06 12.41964	23 28 38.78	+15 09 01.9		644	189P	2012 06 08.460815	17 56 04.34	-57 41 31.5	17.5 T	30D90
185P	2012 06 18.02460	00 57 12.98	+20 02 33.1	18.4 N	KA71	189P	2012 06 08.480840	17 56 06.24	-57 40 56.0	17.2 T	30D90
185P	2012 06 18.03924	00 57 17.20	+20 02 53.9	18.4 N	KA71	189P	2012 06 08.59395	17 56 15.78	-57 37 30.5	17.9 N	KE07
185P	2012 06 18.42559	00 59 05.74	+20 11 23.1		32H06	189P	2012 06 08.60277	17 56 16.51	-57 37 14.1	17.8 N	KE07
185P	2012 06 18.42714	00 59 06.17	+20 11 25.6		32H06	189P	2012 06 09.716725	17 58 08.41	-57 00 18.4	17.5 N	30D90
185P	2012 06 18.42868	00 59 06.61	+20 11 27.7		32H06	189P	2012 06 09.724838	17 58 09.13	-57 00 01.1	17.4 N	30D90
185P	2012 06 18.43023	00 59 07.05	+20 11 29.7	15.6 T	32H06	189P	2012 06 09.726863	17 58 09.27	-56 59 56.7	17.5 N	30D90
185P	2012 06 19.857225	01 05 51.99	+20 42 24.7	17.5 T	30D90	189P	2012 06 19.819178	18 14 42.44	-48 31 38.8	16.1 T	30D90
185P	2012 06 19.859777	01 05 52.74	+20 42 29.0	17.4 T	30D90	189P	2012 06 19.821227	18 14 42.61	-48 31 30.1	16.1 T	30D90
185P	2012 06 19.862381	01 05 53.48	+20 42 32.2	17.9 T	30D90	189P	2012 06 19.828333	18 14 43.23	-48 30 59.9	16.1 T	30D90
185P	2012 06 20.08096	01 06 56.43	+20 47 02.1	18.2 N	K 160	189P	2012 06 25.25226	18 23 18.31	-41 10 50.7		32H06
185P	2012 06 20.08303	01 06 57.02	+20 47 04.9	18.1 N	K 160	189P	2012 06 25.25423	18 23 18.50	-41 10 40.2		32H06
185P	2012 06 20.08510	01 06 57.53	+20 47 07.1	16.6 N	K 160	189P	2012 06 25.25620	18 23 18.68	-41 10 29.0	16.4 T	32H06
185P	2012 06 21.41503	01 13 22.86	+21 15 09.6	18.0 T	691	195P/Hill					
185P	2012 06 21.42777	01 13 26.52	+21 15 25.1	17.6 T	691	195P	2012 06 07.61134	15 52 29.75	-20 28 01.9	21.5 N	KE07
185P	2012 06 21.44050	01 13 30.24	+21 15 41.2	17.8 T	691	195P	2012 06 07.62236	15 52 29.42	-20 27 58.8	21.6 N	KE07
185P	2012 06 22.40304	01 18 13.36	+21 35 34.0	17.4 T	857	195P	2012 06 08.54228	15 52 05.29	-20 24 34.7	21.8 N	I E07
185P	2012 06 22.40306	01 18 13.38	+21 35 33.3	17.9 T	857	195P	2012 06 08.55330	15 52 04.96	-20 24 32.1	21.4 N	KE07
185P	2012 06 22.40977	01 18 15.32	+21 35 40.2	18.1 T	857	231P/LINEAR-NEAT					
185P	2012 06 22.41671	01 18 17.31	+21 35 50.6	17.7 T	857	231P	2012 06 13.33657	16 20 52.803	-06 01 44.37	21.0 T	F51
185P	2012 06 22.42366	01 18 19.17	+21 35 58.9	17.9 T	857	231P	2012 06 13.35131	16 20 52.255	-06 01 45.50	21.1 T	F51
185P	2012 06 22.43060	01 18 21.30	+21 36 06.8	18.1 T	857						

231P	2012 06 13.36605	16 20 51.686	-06 01 46.89	21.1 T	F51	246P	2012 06 16.89597	12 52 36.09	+09 59 51.1	16.1 N	K 160	
231P	2012 06 13.38078	16 20 51.130	-06 01 48.06	21.2 T	F51	246P	2012 06 16.90181	12 52 36.16	+09 59 47.3	15.0 N	232	
	244P/Scotti						246P	2012 06 17.88948	12 52 53.09	+09 51 12.4	15.7 N	K 160
244P	2012 01 14.44257	05 04 09.39	+25 42 15.5	17.4 T	349	246P	2012 06 17.89230	12 52 53.14	+09 51 11.0	15.7 N	K 160	
244P	2012 01 14.45598	05 04 09.04	+25 42 14.9		349	246P	2012 06 17.89508	12 52 53.19	+09 51 09.5	15.7 N	K 160	
	246P/NEAT						246P	2012 06 19.85654	12 53 29.88	+09 33 51.4	15.9 N	K 160
246P	2012 01 25.70015	13 32 03.79	+09 34 30.8	15.7 T	349	246P	2012 06 19.85891	12 53 29.93	+09 33 50.1	15.9 N	K 160	
246P	2012 01 25.70772	13 32 03.97	+09 34 31.4		349	246P	2012 06 19.86125	12 53 29.98	+09 33 48.9	15.9 N	K 160	
246P	2012 05 24.93198	12 51 15.56	+12 51 26.3	14.9 N	K 958	246P	2012 06 19.88217	12 53 30.40	+09 33 37.2	15.1 N	I99	
246P	2012 05 24.94447	12 51 15.45	+12 51 22.2	15.0 N	K 958	246P	2012 06 19.88615	12 53 30.48	+09 33 35.3	15.2 N	I99	
246P	2012 05 24.95652	12 51 15.30	+12 51 17.6	14.9 N	K 958	246P	2012 06 19.89018	12 53 30.56	+09 33 33.0	15.0 N	I99	
246P	2012 05 27.91668	12 50 51.16	+12 32 42.0	14.8 N	K 958	246P	2012 06 19.98512	12 53 32.57	+09 32 46.5	15.0 T	K I47	
246P	2012 05 27.92906	12 50 51.10	+12 32 36.4	14.7 N	K 958	246P	2012 06 19.98924	12 53 32.64	+09 32 44.6	15.0 T	K I47	
246P	2012 05 27.94126	12 50 50.95	+12 32 31.4	14.7 N	K 958	246P	2012 06 19.99352	12 53 32.63	+09 32 42.2	15.0 T	K I47	
246P	2012 06 04.98206	12 50 38.01	+11 36 15.2	15.0 N	J38	246P	2012 06 20.00131	12 53 32.78	+09 32 39.5	15.0 T	K I47	
246P	2012 06 04.98420	12 50 38.03	+11 36 14.1	14.9 N	J38	246P	2012 06 21.53630	12 54 04.50	+09 18 47.6	14.8 T	D95	
246P	2012 06 04.98847	12 50 38.04	+11 36 12.2	14.9 N	J38	246P	2012 06 21.53773	12 54 04.54	+09 18 46.9		D95	
246P	2012 06 06.432700	12 50 43.90	+11 25 21.9	14.1 T	30D90	246P	2012 06 21.53915	12 54 04.57	+09 18 46.1		D95	
246P	2012 06 06.439592	12 50 43.92	+11 25 18.7	14.1 T	30D90	246P	2012 06 21.84750	12 54 11.33	+09 15 59.1	15.6 N	K 160	
246P	2012 06 06.447798	12 50 43.94	+11 25 14.4	14.1 T	30D90	246P	2012 06 21.85004	12 54 11.38	+09 15 57.7	15.5 N	K 160	
246P	2012 06 08.91804	12 50 59.25	+11 05 58.6	15.0 N	212	246P	2012 06 21.85137	12 54 11.39	+09 15 57.1	15.7 N	K 160	
246P	2012 06 08.92237	12 50 59.28	+11 05 56.5	15.0 N	212	246P	2012 06 22.89435	12 54 34.82	+09 06 27.6	15.7 N	C23	
246P	2012 06 08.92667	12 50 59.31	+11 05 54.6	15.0 N	212	246P	2012 06 22.89884	12 54 34.85	+09 06 24.8	15.5 N	C23	
246P	2012 06 09.92469	12 51 07.52	+10 57 58.0	15.4 N	C23	246P	2012 06 22.90456	12 54 35.01	+09 06 22.2	15.6 N	C23	
246P	2012 06 09.92902	12 51 07.55	+10 57 55.8	15.5 N	C23	246P	2012 06 22.95179	12 54 36.00	+09 05 55.3	15.7 N	K 215	
246P	2012 06 09.93335	12 51 07.61	+10 57 53.8	15.6 N	C23	246P	2012 06 22.95269	12 54 36.05	+09 05 54.9	15.8 N	K 215	
246P	2012 06 11.88456	12 51 26.92	+10 42 04.9	15.3 N	A71	246P	2012 06 22.95358	12 54 36.08	+09 05 54.6	15.9 N	K 215	
246P	2012 06 11.88553	12 51 26.91	+10 42 04.4	15.2 N	A71	246P	2012 06 22.95903	12 54 36.17	+09 05 51.8	14.9 N	939	
246P	2012 06 11.88652	12 51 27.00	+10 42 04.1	15.5 N	A71	246P	2012 06 22.97020	12 54 36.43	+09 05 45.9	14.9 N	939	
246P	2012 06 11.88839	12 51 26.96	+10 42 03.2	15.5 N	A71	246P	2012 06 22.97764	12 54 36.60	+09 05 41.9	14.9 N	939	
246P	2012 06 12.88352	12 51 38.52	+10 33 51.2	14.9 N	I99	246P	2012 06 23.20849	12 54 41.90	+09 03 33.8	14.4 T	G96	
246P	2012 06 12.89481	12 51 38.64	+10 33 45.7	15.0 N	I99	246P	2012 06 23.21365	12 54 42.04	+09 03 31.3	14.4 T	G96	
246P	2012 06 12.90045	12 51 38.69	+10 33 42.6	15.0 N	I99	246P	2012 06 24.96022	12 55 24.33	+08 47 26.8	15.0 N	J38	
246P	2012 06 14.17133	12 51 55.03	+10 23 10.7	17.5 T	704	246P	2012 06 24.96311	12 55 24.41	+08 47 25.2	15.0 N	J38	
246P	2012 06 14.18175	12 51 55.31	+10 23 02.1	19.8 T	704	246P	2012 06 24.96743	12 55 24.51	+08 47 22.9	15.0 N	J38	
246P	2012 06 14.19210	12 51 55.46	+10 22 56.8	19.6 T	704	246P	2012 06 26.00541	12 55 51.17	+08 37 47.5	15.1 T	I47	
246P	2012 06 14.20327	12 51 55.58	+10 22 50.8	19.3 T	704	246P	2012 06 26.00683	12 55 51.29	+08 37 47.9	15.2 T	I47	
246P	2012 06 15.88860	12 52 19.98	+10 08 30.6	15.0 N	I99	246P	2012 06 26.00826	12 55 51.26	+08 37 46.0	15.2 T	I47	
246P	2012 06 15.89410	12 52 20.06	+10 08 28.1	14.9 N	I99	246P	2012 06 26.00969	12 55 51.30	+08 37 45.5	15.2 T	I47	
246P	2012 06 15.91175	12 52 20.33	+10 08 18.8	14.9 N	I99	246P	2012 06 26.01111	12 55 51.38	+08 37 45.0	15.2 T	I47	
246P	2012 06 15.92152	12 52 20.45	+10 08 14.4	15.9 N	K 160	246P	2012 06 26.01255	12 55 51.34	+08 37 44.1	15.2 T	I47	
246P	2012 06 15.92428	12 52 20.49	+10 08 12.9	15.9 N	K 160	246P	2012 06 26.01397	12 55 51.36	+08 37 43.4	15.2 T	I47	
246P	2012 06 15.92704	12 52 20.54	+10 08 11.4	15.8 N	K 160	246P	2012 06 26.01539	12 55 51.50	+08 37 42.5	15.2 T	I47	
246P	2012 06 15.98398	12 52 21.43	+10 07 41.7	14.9 N	J24	246P	2012 06 26.01683	12 55 51.53	+08 37 40.7	15.2 T	I47	
246P	2012 06 15.99265	12 52 21.54	+10 07 38.2	14.9 N	J24	246P	2012 06 26.01825	12 55 51.48	+08 37 41.4	15.2 T	I47	
246P	2012 06 15.99916	12 52 21.64	+10 07 34.5	14.9 N	J24	246P	2012 06 26.01969	12 55 51.53	+08 37 39.1	15.2 T	I47	
246P	2012 06 16.30304	12 52 26.504	+10 04 59.24	16.3 T	F51	246P	2012 06 27.82973	12 56 40.48	+08 20 34.5		K 160	
246P	2012 06 16.31494	12 52 26.685	+10 04 53.16	16.4 T	F51	246P	2012 06 27.83313	12 56 40.55	+08 20 32.2	15.6 N	K 160	
246P	2012 06 16.88553	12 52 35.92	+09 59 55.7	14.9 N	232	246P	2012 06 27.83482	12 56 40.61	+08 20 31.4		K 160	
246P	2012 06 16.89065	12 52 35.99	+09 59 53.5	16.4 N	K 160	246P	2012 06 29.83934	12 57 38.51	+08 01 26.6	16.3 N	K 160	
246P	2012 06 16.89327	12 52 36.05	+09 59 52.4	16.2 N	K 160	246P	2012 06 29.84201	12 57 38.60	+08 01 24.9	16.2 N	K 160	
246P	2012 06 16.89366	12 52 36.05	+09 59 51.0	15.0 N	232	246P	2012 06 29.84469	12 57 38.69	+08 01 22.8	15.9 N	K 160	
						246P	2012 06 29.89596	12 57 40.21	+08 00 53.0	15.0 N	I99	

246P	2012 06 29.90286	12 57 40.38	+08 00 49.2	15.1 N	I99
246P	2012 06 29.90627	12 57 40.49	+08 00 47.5	15.1 N	I99

257P/Catalina

257P	2012 06 07.547376	14 15 15.37	-04 32 28.0	19.2 T	30D90
257P	2012 06 07.554271	14 15 15.19	-04 32 27.0	18.5 T	30D90
257P	2012 06 07.561207	14 15 15.02	-04 32 25.2	18.7 T	30D90
257P	2012 06 10.01281	14 14 23.95	-04 21 53.9	19.3 N	J24
257P	2012 06 10.02140	14 14 23.77	-04 21 52.0	19.2 N	J24
257P	2012 06 14.92418	14 13 01.76	-04 03 26.3	17.3 N	K 130
257P	2012 06 14.92744	14 13 01.75	-04 03 26.0	17.7 N	K 130
257P	2012 06 14.93070	14 13 01.77	-04 03 25.7	17.7 N	K 130
257P	2012 06 14.93397	14 13 01.72	-04 03 26.6	17.7 N	K 130
257P	2012 06 16.593848	14 12 40.04	-03 58 00.9	19.2 T	30D90
257P	2012 06 16.600738	14 12 39.93	-03 57 59.4	19.0 T	30D90
257P	2012 06 16.607639	14 12 39.89	-03 57 58.4	19.1 T	30D90
257P	2012 06 22.93436	14 11 47.69	-03 41 22.0	18.9 T	K 215
257P	2012 06 22.93627	14 11 47.69	-03 41 21.1	18.9 T	K 215
257P	2012 06 22.93819	14 11 47.69	-03 41 20.5	19.2 T	K 215

260P/McNaught

260P	2012 06 15.845347	23 45 30.95	-15 07 39.7	16.9 T	30D90
260P	2012 06 15.849465	23 45 31.44	-15 07 35.6	17.0 T	30D90
260P	2012 06 15.853464	23 45 31.92	-15 07 31.5	16.9 T	30D90
260P	2012 06 27.41614	00 08 45.88	-11 40 51.0	16.0 N	K H47
260P	2012 06 27.42188	00 08 46.53	-11 40 44.8	16.1 N	K H47
260P	2012 06 27.42656	00 08 47.13	-11 40 38.7	16.1 N	K H47
260P	2012 06 30.32042	00 14 29.14	-10 45 08.4	16.5 T	K I47
260P	2012 06 30.32525	00 14 29.71	-10 45 03.0	16.5 T	K I47
260P	2012 06 30.33007	00 14 30.22	-10 44 56.4	16.5 T	K I47
260P	2012 06 30.33441	00 14 30.69	-10 44 53.3	16.6 T	K I47

263P/Gibbs

263P	2012 05 16.14203	06 48 44.10	+27 10 26.4		32H06
263P	2012 05 16.14484	06 48 44.69	+27 10 27.3		32H06
263P	2012 05 16.14765	06 48 45.30	+27 10 27.4	20.1 T	32H06
263P	2012 05 17.14183	06 52 43.73	+27 12 03.8		32H06
263P	2012 05 17.14479	06 52 44.46	+27 12 04.4		32H06
263P	2012 05 17.14775	06 52 45.20	+27 12 04.7	20.0 T	32H06
263P	2012 06 13.14586	08 42 04.29	+25 10 06.1		32H06
263P	2012 06 13.15120	08 42 05.63	+25 10 02.9	19.9 T	32H06
263P	2012 06 14.14832	08 46 03.72	+24 59 36.5		32H06
263P	2012 06 14.15113	08 46 04.34	+24 59 34.0		32H06
263P	2012 06 14.15394	08 46 05.13	+24 59 33.0	20.0 T	32H06

264P/Larsen

264P	2012 06 15.92057	17 21 58.23	+03 04 14.0	19.7 T	K 461
264P	2012 06 15.92650	17 21 57.94	+03 04 16.4	20.1 T	K 461
264P	2012 06 15.93243	17 21 57.62	+03 04 18.2	19.3 T	K 461
264P	2012 06 16.01293	17 21 54.03	+03 04 44.8	19.2 T	K 461
264P	2012 06 16.88944	17 21 15.79	+03 09 37.1		K 461
264P	2012 06 16.90938	17 21 14.88	+03 09 42.8	19.5 T	K 461
264P	2012 06 16.91530	17 21 14.60	+03 09 44.9	19.4 T	K 461
264P	2012 06 18.27022	17 20 15.75	+03 16 52.4		32H06

264P	2012 06 18.27359	17 20 15.58	+03 16 52.9		32H06
264P	2012 06 18.27697	17 20 15.39	+03 16 53.0	19.8 T	32H06

265P/LINEAR

265P	2012 06 18.43592	02 53 48.47	+23 13 16.2		32H06
265P	2012 06 18.43928	02 53 49.22	+23 13 19.6		32H06
265P	2012 06 18.44264	02 53 49.88	+23 13 23.8	19.3 T	32H06
265P	2012 06 20.43958	03 00 02.78	+23 52 21.2		32H06
265P	2012 06 20.44407	03 00 03.58	+23 52 25.7	19.4 T	32H06
265P	2012 06 23.44350	03 09 27.07	+24 49 15.8		32H06
265P	2012 06 23.44799	03 09 27.91	+24 49 21.3	19.2 T	32H06

OBSERVATIONS OF NATURAL SATELLITES

Observations are published here for the following observatory code:

E07 Murrumbateman. Observer D. Herald. 0.40-m $f/10$ Schmidt-Cassegrain + CCD.

Object	Date	UT	α_{2000}	δ_{2000}	Mag.	N Obs.
Neptune II	2012 06 07.64936		22 20 51.62	-10 55 30.9	19.3 V	KE07
Neptune II	2012 06 07.65818		22 20 51.60	-10 55 31.0	19.4 V	KE07
Neptune II	2012 06 08.65018		22 20 51.40	-10 55 34.1	19.5 V	KE07
Neptune II	2012 06 08.65679		22 20 51.42	-10 55 34.0	19.3 V	KE07
Saturn IX	2012 06 07.34314		13 26 13.19	-06 09 38.7	16.9 V	KE07
Saturn IX	2012 06 07.34558		13 26 13.17	-06 09 38.6	16.8 V	KE07
Saturn IX	2012 06 08.43852		13 26 05.94	-06 09 14.1	16.9 V	KE07
Saturn IX	2012 06 08.44032		13 26 05.93	-06 09 14.1	16.9 V	KE07
Saturn IX	2012 06 09.45602		13 25 59.61	-06 08 53.9	17.0 V	KE07
Saturn IX	2012 06 09.45719		13 25 59.60	-06 08 53.9	17.0 V	KE07
Saturn XXVI	2012 06 07.36781		13 26 55.79	-06 32 57.1	21.4 V	KE07
Saturn XXVI	2012 06 07.38324		13 26 55.72	-06 32 56.1	21.7 V	KE07
Saturn XXVI	2012 06 08.46351		13 26 48.17	-06 32 15.8	21.7 V	KE07
Saturn XXVI	2012 06 08.48241		13 26 48.03	-06 32 15.1	21.0 V	KE07
Saturn XXVI	2012 06 09.47058		13 26 41.55	-06 31 39.8	20.9 V	KE07
Saturn XXVI	2012 06 09.48379		13 26 41.44	-06 31 39.3	21.5 V	KE07
Saturn XXIX	2012 06 07.40711		13 29 40.09	-07 18 35.7	20.6 V	KE07
Saturn XXIX	2012 06 07.42033		13 29 40.03	-07 18 35.4	20.5 V	KE07
Saturn XXIX	2012 06 08.50389		13 29 32.11	-07 17 56.8	20.7 V	KE07
Saturn XXIX	2012 06 08.51840		13 29 32.02	-07 17 56.8	20.8 V	KE07
Saturn XXIX	2012 06 09.51464		13 29 25.13	-07 17 24.1	21.8 V	KE07
Saturn XXIX	2012 06 09.52566		13 29 25.08	-07 17 23.9	20.3 V	KE07

OBSERVATIONS OF MINOR PLANETS

The summary lists, for each observatory code, provide a count of the total number of observations, of the number of objects and of the number of discoveries followed by an asterisk, together with the total range of dates covered by the observations.

033 Karl Schwarzschild Observatory, Tautenburg

B. Stecklum, Thüringer Landessternwarte, Sternwarte 5, D-07778 Tautenburg, Germany [stecklum@tls-tautenburg.de]

1.34-m $f/4$ Schmidt + CCD
USNO-B1.0

2002 PD₁₃₀, 2, 1, 0; 2003 SH₁₇, 2, 1, 0; 2008 VH, 5, 1, 0; 2010 EX₁₁, 7, 1, 0; 2010 FM, 2, 1, 0; 2010 UY₆, 3, 1, 0; 2010 XG, 2, 1, 0; 2011 AG₃, 2, 1, 0; 2011 AU₄, 3, 1, 0; 2011 KH₂₀, 5, 1, 0; 2011 LE₈, 5, 1, 0; 2011 LH₈, 5, 1, 0; 2011 LG₁₆, 2, 1, 0; 2011 OG₁₀, 5, 1, 0; 2011 OK₂₆, 4, 1, 0; 2011 PY, 5, 1, 0; 2011 PY₁, 5, 1, 0; 2011 PB₂, 5, 1, 0; (306194), 5, 1, 0; [74, 19, 0*, 2010/03/09–2011/08/08]

046 Klet

J. Tichá, Hvězdárna Kleť, Zátckovo nábřeží 4, CZ-37001 České Budějovice, South Bohemia, Czech Republic [klet@klet.cz]

Observers M. Honková, M. Tichý, J. Tichá, M. Kočer
0.57-m $f/5.2$ reflector + CCD
USNO-B1.0

2012 LZ₁, 5, 1, 0; 2012 LU₇, 5, 1, 0; 2012 LE₁₁, 5, 1, 0; 2012 LG₁₁, 6, 1, 0; [21, 4, 0*, 2012/06/16]

069 Baldone

I. Eglitis, Institute of Astronomy University of Latvia, Boulevard Rainis 19, Riga, Latvia [ilgmars@latnet.lv]

Observer I. Eglitis
Measurer K. Černis
0.80-m $f/3.0$ Schmidt + CCD
UCAC-2

(9283), 5, 1, 0; (13490), 2, 1, 0; (17775), 3, 1, 0; (69355), 3, 1, 0; (218590), 4, 1, 0; [17, 5, 0*, 2012/04/28–2012/05/08]

089 Nikolaev

O. V. Shulga, 1 Observatornaya vul., Nikolaev Astronomical Observatory, UA-54030 Mykolaiv, Ukraine [avshulga@mail.ru] (2)

Observers Y. Sybiryakova, Y. Kozryyev, N. Kulichenko, V. Vovk
Measurers Y. Sybiryakova, O. V. Shulga
0.5-m $f/6.0$ Maksutov + CCD
UCAC-3

2012 LJ, 7, 1, 0; [7, 1, 0*, 2012/06/10]

104 San Marcello Pistoiese

L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028 San Marcello Pistoiese (PT), Italy [iau@arcetri.astro.it]

Observers P. Bacci, S. Vergari
Measurers P. Bacci, L. Tesi, G. Fagioli
0.60-m $f/4$ reflector + CCD
UCAC-3

2004 CL, 2, 1, 0; 2006 BZ₇, 4, 1, 0; 2012 GG₃₀, 3, 1, 0; 2012 KT₁₈, 3, 1, 0; 2012 LR₁, 3, 1, 0; 2012 LZ₁, 10, 3, 4; 2012 LL₉, 3, 1, 0; 2012 LA₁₁, 4, 1, 0; 2012 LE₁₁, 5, 2, 13; 2012 LF₁₁, 3, 1, 0; 2012 LJ₁₁, 3, 1, 0; 2012 LK₁₁, 9, 3, 13; 2012 MT₂, 3, 1, 0; 2012 MU₂, 3, 1, 0; 2012 MY₂, 5, 2, 3; 2012 MQ₃, 2, 1, 0; 2012 MV₄, 2, 1, 0; 2012 MM₁₁, 2, 1, 0; (11065), 3, 1, 0; (15589), 3, 1, 0; (25880), 2, 1, 0; (26042), 2, 1, 0; (40165), 2, 1, 0; (40979), 2, 1, 0; (66802), 2, 1, 0; (71712), 2, 1, 0; (81692), 2, 1, 0; (139759), 2, 1, 0; [91, 28, 0*, 2007/03/13–2012/06/29]

106 Črni Vrh

H. Mikuš, Kersnikova 11, SI-61000 Ljubljana, Slovenia [herman.mikuz@uni-lj.si]

Observers J. Skvarč, B. Mikuš, H. Mikuš
0.6-m $f/3.3$ Deltagraph + CCD
UCAC-2

2001 FC₁₀₂, 4, 1, 0; 2005 PH, 4, 1, 0; 2007 EG₁₉₁, 4, 1, 0; 2011 EE₇₃, 4, 1, 0; 2012 FR₈₀ *, 4, 1, 0; 2012 GX₃₈, 4, 1, 0; 2012 HF, 4, 1, 0; 2012 JG₄₆, 4, 1, 0; 2012 KL, 4, 1, 0; 2012 KB₁₂, 4, 1, 0; 2012 LP₂, 4, 1, 0; 2012 LG₈, 4, 1, 0; (1104), 4, 1, 0; (2601), 4, 1, 0; (2998), 4, 1, 0; (3306), 4, 1, 0; (3782), 4, 1, 0; (3830), 4, 1, 0; (5607), 4, 1, 0; (5634), 4, 1, 0; (5744), 4, 1, 0; (5910), 4, 1, 0;

(5953), 4, 1, 0; (5977), 4, 1, 0; (6472), 4, 1, 0; (6670), 4, 1, 0; (7592), 4, 1, 0; (9003), 4, 1, 0; (11026), 4, 1, 0; (11378), 4, 1, 0; (11501), 4, 1, 0; (12261), 4, 1, 0; (12371), 4, 1, 0; (14567), 4, 1, 0; (14972), 4, 1, 0; (15533), 4, 1, 0; (16962), 4, 1, 0; (16970), 4, 1, 0; (17601), 4, 1, 0; (19603), 4, 1, 0; (19975), 4, 1, 0; (20062), 4, 1, 0; (20240), 4, 1, 0; (21653), 4, 1, 0; (22908), 4, 1, 0; (23371), 4, 1, 0; (24393), 4, 1, 0; (25038), 4, 1, 0; (25041), 4, 1, 0; (26474), 4, 1, 0; (27588), 4, 1, 0; (28532), 4, 1, 0; (31813), 4, 1, 0; (31815), 4, 1, 0; (33060), 4, 1, 0; (34848), 4, 1, 0; (38389), 4, 1, 0; (44151), 4, 1, 0; (45635), 4, 1, 0; (45677), 4, 1, 0; (46513), 4, 1, 0; (48670), 4, 1, 0; (49085), 4, 1, 0; (50130), 4, 1, 0; (50487), 4, 1, 0; (52746), 4, 1, 0; (54484), 4, 1, 0; (56276), 4, 1, 0; (57065), 4, 1, 0; (57290), 4, 1, 0; (59711), 4, 1, 0; (61969), 4, 1, 0; (66444), 4, 1, 0; (66693), 4, 1, 0; (66852), 4, 1, 0; (69612), 4, 1, 0; (71135), 4, 1, 0; (73762), 4, 1, 0; (74723), 4, 1, 0; (78150), 4, 1, 0; (79620), 4, 1, 0; (80769), 4, 1, 0; (82212), 4, 1, 0; (89921), 4, 1, 0; (93322), 4, 1, 0; (93381), 4, 1, 0; (93672), 4, 1, 0; (93855), 4, 1, 0; (96851), 4, 1, 0; (99479), 4, 1, 0; (101204), 4, 1, 0; (116031), 4, 1, 0; (119268), 4, 1, 0; (127428), 4, 1, 0; (129186), 4, 1, 0; (141735), 4, 1, 0; (156623), 4, 1, 0; (162188), 4, 1, 0; (162920), 4, 1, 0; (165683), 4, 1, 0; (165781), 4, 1, 0; (219979), 4, 1, 0; (220017), 4, 1, 0; (220079), 4, 1, 0; (226176), 4, 1, 0; (272272), 4, 1, 0; (294080), 4, 1, 0; (316985), 4, 1, 0; (318195), 4, 1, 0; [436, 109, 1*, 2008/07/29–2012/06/20]

114 Engelhardt Observatory, Zelenchukskaya Station

T. V. Kryachko, University Astronomical Station, Lenina 41, Zelenchukskaya, 357140 Karachaevo-Cherkessia Republic, Russia [timur@sao.stavropol.su]

Observers T. Kryachko, B. Satovskii
0.3-m $f/7.7$ reflector + CCD
UCAC-3

2005 VO₇₄, 4, 1, 0; 2012 KE₁₂, 4, 1, 0; 2012 LK₃ *, 17, 4, 3; [25, 3, 1*, 2009/09/17–2012/06/13]

130 Lumezzane

M. Micheli, Via Ronchi S. Francesco di Paola 52, I-25100 Brescia, Italy [marco.bs@tiscali.it]

Observers M. Casali, A. Coffano, W. Marinello, M. Micheli, G. Pizzetti
0.40-m reflector + CCD
PPMXL

2005 YW₃, 4, 1, 0; 2008 JZ₃₀, 2, 1, 0; 2011 YU₆₂, 2, 1, 0; 2012 DH₆₁, 3, 1, 0; 2012 LZ₁, 4, 1, 0; (238), 4, 1, 0; (1221), 2, 1, 0; (24329), 2, 1, 0; (24761), 3, 1, 0; (82599), 4, 1, 0; (102504), 2, 1, 0; (157661), 2, 1, 0; (162854), 2, 1, 0; (329437), 4, 1, 0; [40, 14, 0*, 2012/06/14–2012/06/27]

151 Eschenberg Observatory, Winterthur

M. Griesser, Breitenstrasse 2, CH-8542 Wiesendangen, Switzerland [griesser@spectraweb.ch]

0.40-m $f/5.9$ Hypergraph + CCD
UCAC-3

2011 WV₁₃₄, 7, 1, 0; 2012 HG₃₁, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LA₁₁, 5, 1, 0; [18, 4, 0*, 2012/06/15]

152 Moletai Astronomical Observatory

K. Černis, Institute of Theoretical Physics and Astronomy, Vilnius University, Gostauto 12, LT-2000 Vilnius, Lithuania [cernis@itpa.lt]

Observers K. Černis, V. Laugalys
Measurer K. Černis

0.35-m $f/3.5$ reflector + CCD
UCAC-2

2007 EH₁₉₇, 2, 1, 0; 2007 XJ₃₄, 2, 1, 0; (1193), 3, 1, 0; (1955), 3, 1, 0; (2698), 3, 1, 0; (2793), 16, 2, 2; (7035), 3, 1, 0; (8956), 6, 1, 0; (9119), 3, 1, 0; (10108), 6, 2, 1; (10167), 3, 1, 0; (10243), 4, 1, 0; (10963), 3, 1, 0; (13354), 3, 1, 0; (17683), 3, 1, 0; (17770), 6, 2, 1; (17975), 3, 1, 0; (18408), 3, 1, 0; (21002), 5, 2, 1; (21772), 2, 1, 0; (22031), 3, 1, 0; (23061), 3, 1, 0; (23433), 2, 1, 0; (26580), 3, 1, 0; (27021), 6, 2, 2; (27043), 3, 1, 0; (27252), 3, 1, 0; (28772), 6, 2, 2; (28847), 2, 1, 0; (29321), 4, 1, 0; (30155), 3, 1, 0; (31036), 4, 1, 0; (31480), 5, 2, 2; (31996), 3, 1, 0; (32128), 6, 2, 2; (32237), 4, 1, 0; (32317), 4, 1, 0; (32349), 8, 3, 2; (33305), 3, 1, 0; (33406), 6, 2, 2; (55954), 3, 1, 0; (59503), 3, 1, 0; (61155), 7, 3, 2; (72640), 8, 3, 2; (77668), 2, 1, 0; (86770), 3, 1, 0; (92182), 7, 3, 2; (93197), 6, 2, 1; (95020), 4, 2, 1; (95860), 6, 2, 1; (97062), 3, 1, 0; (119331), 3, 1, 0; (119461), 4, 2, 2; (121202), 2, 1, 0; (123653), 2, 1, 0; (123994), 2, 1, 0; (126192), 3, 1, 0; (127141), 2, 1, 0; (128730), 3, 1, 0; (128921), 3, 1, 0; (153726), 2, 1, 0; (155762), 5, 2, 1; (155876), 6, 3, 2; (156813), 2, 1, 0; (157911),

2, 1, 0; (158965), 2, 1, 0; (197667), 1, 1, 0; (218799), 3, 1, 0; (224481), 1, 1, 0; (226285), 5, 1, 0; (231184), 3, 1, 0; (238058), 1, 1, 0; (305455), 2, 1, 0; [274, 73, 0*, 2007/04/12–2011/09/27]

157 Frasso Sabino

R. Haver, Via dei Giornalisti 64, I-00135 Rome, Italy [me3540@mcclink.it]

Observers R. Haver, R. Gorelli, M. Solarino

0.37-m $f/6.85$ Cassegrain + CCD

UCAC-3

2012 BC₂₀, 3, 1, 0; 2012 LU₃, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LZ₁, 6, 1, 0; 2012 LU₇, 4, 1, 0; 2012 LE₁₁, 4, 1, 0; 2012 LF₁₁, 3, 1, 0; 2012 LG₁₁, 3, 1, 0; 2012 MS₄, 3, 1, 0; 2012 ML₆, 2, 1, 0; (34366), 2, 1, 0; (235921), 2, 1, 0; [38, 12, 0*, 2012/06/15–2012/06/24]

160 Castelmartini

E. Prosperi, Via Bartolini 127, I-51030 Castelmartini (PT), Italy

[e.prosperi@alice.it]

Observers M. Jaeger, E. Prosperi, S. Prosperi, W. Vollmann

0.35-m $f/10$ Schmidt-Cassegrain + CCD

UCAC-3

1994 NK₆, 6, 2, 1; 2004 CL₆, 6, 2, 5; 2012 DH₆₁, 12, 4, 4; 2012 HC₂, 21, 7, 12; 2012 HG₃₁, 11, 4, 10; 2012 JR₁₇, 6, 2, 3; 2012 LZ₁, 26, 8, 14; 2012 LU₇, 15, 5, 14; 2012 LE₁₁, 11, 3, 12; 2012 LF₁₁, 4, 1, 0; 2012 LG₁₁, 3, 1, 0; 2012 MY₂, 5, 1, 0; 2012 MV₄, 3, 1, 0; 2012 MC₇, 4, 1, 0; (153958), 22, 7, 14; (308680), 9, 3, 6; (317685), 6, 2, 5; (326732), 15, 5, 7; (329275), 15, 5, 7; (329291), 16, 5, 7; (329437), 12, 4, 12; [228, 21, 0*, 2012/06/15–2012/06/29]

176 Observatorio Astronómico de Consell

À. López, Apartado de correos 122, E-07320 Santa Maria, Mallorca, Spain

[obsconsell@wanadoo.es]

Observers À. López, R. Pacheco

0.41-m $f/4$ reflector + CCD

UCAC-3

2012 MG₆, 5, 1, 0; 2012 ML₆, 4, 1, 0; 2012 MC₇, 4, 1, 0; [13, 3, 0*, 2012/06/22–2012/06/23]

185 Vicques

M. Ory, 30 Rue Beridier, CH-2800 Delemont, Switzerland [pivate@bluewin.ch]

0.61-m reflector + CCD

GSC-ACT, UCAC-2

2011 WW₄₈, 2, 1, 0; 2011 YF₅₄, 2, 1, 0; [4, 2, 0*, 2007/10/10]

198 Wildberg

R. Apitzsch, Schwarzwaldstrasse 17-2, D-72218 Wildberg, Germany

[astrowild@astro-wildberg.de]

0.35-m $f/4.2$ reflector + CCD

USNO-B1.0

2008 QS₂₉, 3, 7; 2012 LE₁₁, 5, 1, 0; 2012 LK₁₁, 6, 1, 0; 2012 MW₆, 19, 3, 3; 2012 MC₇, 4, 1, 0; (41328), 2, 1, 0; (225704), 3, 1, 0; [68, 7, 1*, 2012/06/15–2012/06/26]

203 GiaGa Observatory

G. Galli, via Mozart 4, Pogliano Milanese (MI), Italy [gllgianni@libero.it]

Observers S. Foglia, G. Galli

0.28-m $f/6.8$ Schmidt-Cassegrain + CCD

UCAC-3

2012 HG₃₁, 2, 1, 0; 2012 LU₇, 2, 1, 0; 2012 LF₁₁, 2, 1, 0; 2012 MY₂, 2, 1, 0; (162980), 2, 1, 0; (329275), 2, 1, 0; [12, 6, 0*, 2012/06/15–2012/06/28]

204 Schiaparelli Observatory

F. Bellini, via A. del Sarto 3, I-21100 Varese, Italy [astrogeo@astrogeo.va.it]

Observer L. Buzzi

0.38-m $f/6.8$ reflector + CCD, 0.60-m $f/4.64$ reflector + CCD

PPMXL, UCAC-3

1984 QY₁, 5, 1, 0; 1999 OQ₃, 3, 1, 0; 2000 EA₁₄, 2, 1, 0; 2004 XK₃₅, 5, 1, 0; 2005 YN₃, 2, 1, 0; 2006 BZ₇, 2, 1, 0; 2006 JY₂₅, 3, 1, 0; 2007 LE₅, 5, 1, 0; 2007 MM₁₃, 3, 1, 0; 2007 MT₂₀, 3, 1, 0; 2008 WM₆₄, 3, 1, 0; 2009 KJ₂₂, 3, 1, 0; 2010 NJ₁, 2, 1, 0; 2012 DH₆₁, 3, 1, 0; 2012 FM₅₂, 3, 1, 0; 2012 HJ₁, 2, 1, 0; 2012 HS₁₅, 2, 1, 0; 2012 HN₄₀, 3, 1, 0; 2012 JB₁₆, 3, 1, 0; 2012 KN₁₈, 3, 1, 0; 2012 KO₁₈, 6, 2, 1; 2012 KZ₄₁, 6, 2, 1; 2012 KT₄₂, 5, 1, 0; 2012 KU₄₂, 3, 1, 0; 2012 KF₄₇, 2, 1, 0; 2012 LU₃, 1, 0; 2012 LC₁, 5, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LZ₁, 5, 1, 0; 2012 LJ₂, 3, 1, 0; 2012 LF₄, 3, 1, 0; 2012 LG₄, 2, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LU₇, 3, 1, 0; 2012 LL₉, 3, 1, 0; 2012 LA₁₁, 2, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 3, 1, 0; 2012 LG₁₁, 3, 1, 0; 2012 LN₂₂, 2, 1, 0; 2012 MP₂, 2, 1, 0; 2012 MW₁, 3, 1, 0; 2012 MU₂, 3, 1, 0; 2012 MY₂, 8, 3, 9; 2012 MQ₃, 2, 1, 0; 2012 MS₄, 5, 1, 0; 2012 MV₄, 3, 1, 0; 2012 ME₅, 3, 1, 0; 2012 MB₇, 2, 1, 0; 2012 MC₇, 3, 1, 0; (8959), 3, 1, 0; (11889), 3, 1, 0; (162173), 3, 1, 0; [171, 53, 0*, 2012/05/28–2012/06/28]

209 Asiago Observatory, Cima Ekar-ADAS

C. Barbieri, Astronomical Observatory and Dept. of Astronomy of the University of Padova, Vicolo Osservatorio 5, I-35122 Padova, Italy

[barbieri@pd.astro.it]

Observers C. Barbieri, G. Pignata, S. Magrin, I. Bertini

Measurers G. Pignata, S. Magrin, G. Hahn, M. Hoffmann, S. Mottola

0.67-m $f/1.4$ Schmidt + CCD

GSC-1.1, USNO-SA2.0

2007 VJ₁₃₃, 3, 1, 0; 2012 BS₁₃₈, 3, 1, 0; [6, 2, 0*, 2002/03/10–2003/02/26]

212 Observatorio La Dehesilla

I. Almendros L., Via del Mar 10, E-29004 Málaga, Spain

[ialmend@supercable.es]

0.30-m $f/10$ Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

(1001), 3, 1, 0; [3, 1, 0*, 2012/06/08]

232 Masquefa Observatory

E. Reina L., Pl. Virgen de Montserrat, 1 Etlo. 2 B, E-08901 Hospitalet, Spain

[estrei@terra.es]

0.25-m $f/10.6$ Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

2011 WV₁₃₄, 3, 1, 0; [3, 1, 0*, 2012/06/22]

247 Roving Observer

M. Deldem, no details supplied [marc.deldem@free.fr]

0.20-m $f/10$ Schmidt-Cassegrain + CCD + $f/7.4$ focal reducer

UCAC-3

(4132), 6, 1, 0; (65661), 6, 1, 0; [12, 2, 0*, 2012/06/16–2012/06/22]

261 Palomar-DSS

S. Foglia, C. Gariboldi 11, I-28100 Novara Vereri, Italy [s.foglia@libero.it] (29)

A. Odasso, Via Francesco Anzani 3, 20135, Milano (MI), Italy

[alessandro.odasso@hotmail.com] (30)

Observers G. Abell, R. Harrington, A. Wilson

Measurers A. Odasso, S. Foglia, M. Tombelli

1.20-m $f/2.5$ Schmidt, 1.2-m Schmidt

USNO-B1.0, UCAC-2

{29} 2008 WR₆₁, 2, 1, 0; [2, 1, 0*, 1991/10/05]

{30} 2000 YZ₁₄, 2, 1, 0; 2003 AD₂₁, 2, 1, 0; 2003 KE₂₀, 2, 1, 0; 2003 UC₂₂₃, 2, 1, 0; 2004 VS₁₀, 2, 1, 0; 2005 MR₁₅, 2, 1, 0; 2006 SD₂₄, 2, 1, 0; 2007 UZ₄, 2, 1, 0; 2008 SR₁₇₄, 2, 1, 0; 2009 SG₁₀₃, 2, 1, 0; 1345 T-2, 2, 1, 0; [22, 11, 0*, 1950/07/19–1955/10/24]

290 Mt. Graham

R. P. Boyle, Vatican Observatory Research Group, Steward Observatory, Tucson,
AZ 85721, U.S.A. [rpb Boyle@mac.com] (5)

Observers R. P. Boyle, V. Laugalys

Measurer K. Černis

2007 HV₄₄, 5, 1, 0; 2008 FH₁, 2, 1, 0; [7, 2, 0*, 2012/02/21–2012/04/22]

291 LPL/Spacewatch II

R. S. McMillan, Space Sciences Building, University of Arizona, Tucson, AZ 85721,
U.S.A. [bob@lpl.arizona.edu]

Observers T. H. Bressi, R. S. McMillan, J. A. Larsen, J. V. Scotti

1.8-m *f*/2.7 reflector + CCD

USNO-B1.0

1998 XN₂, 2, 1, 0; 2000 AE₆, 6, 2, 1; 2000 RD₅₃, 2, 1, 0; 2001 SK₂₇₆, 6, 2, 1; 2002 PY₁₂₂, 3, 1, 0;
2002 PC₂₀₁, 3, 1, 0; 2002 QS₁₄₇, 3, 1, 0; 2002 QT₁₅₀, 3, 1, 0; 2002 RV₁₁₂, 3, 1, 0; 2002 RS₂₅₃, 3,
1, 0; 2003 MK₄, 6, 2, 1; 2003 UO₃₉₃, 3, 1, 0; 2004 BL₈₆, 3, 1, 0; 2004 BD₁₁₈, 3, 1, 0; 2004 DJ₆, 3,
1, 0; 2004 JN₂, 8, 3, 19; 2004 RY₈₉, 3, 1, 0; 2004 VU₄₂, 3, 1, 0; 2005 GE₁₄₂, 3, 1, 0; 2005 KC₃,
1, 0; 2005 MD₃, 3, 1, 0; 2005 MD₄₅, 3, 1, 0; 2005 NU₃₅, 3, 1, 0; 2005 UT₃₂₈, 3, 1, 0; 2005 YN₃,
2, 1, 0; 2005 YR₆₃, 3, 1, 0; 2006 OT₉, 3, 1, 0; 2006 UZ₁₃₆, 3, 1, 0; 2006 VU₇₄, 3, 1, 0; 2006 WU₃,
1, 0; 2007 CX₆₃, 3, 1, 0; 2007 DS₈₄, 3, 1, 0; 2007 EM₈₈, 3, 1, 0; 2007 EG₁₉₁, 3, 1, 0; 2007 JB₁₂, 3,
1, 0; 2007 LA₃, 3, 1, 0; 2007 LC₁₅, 6, 2, 1; 2007 RT₁₄₆, 3, 1, 0; 2007 VQ₃₁₆, 3, 1, 0; 2008 AF₄, 5,
2, 1; 2008 BD₂₁, 3, 1, 0; 2008 CY₉, 3, 1, 0; 2008 CZ₃₀, 3, 1, 0; 2008 CJ₂₀₃, 3, 1, 0; 2008 DA₆₀, 3,
1, 0; 2008 EY₇₄, 3, 1, 0; 2008 EC₁₁₃, 3, 1, 0; 2008 FQ₁₃₄, 3, 1, 0; 2008 GX₄₀, 3, 1, 0; 2008 GC₉₂,
3, 1, 0; 2008 HB₁₄, 3, 1, 0; 2008 HC₂₂, 3, 1, 0; 2008 JD₄, 3, 1, 0; 2008 JM₁₁, 3, 1, 0; 2008 JJ₂₂, 3,
1, 0; 2008 JN₃₈, 3, 1, 0; 2008 QC₄₄, 3, 1, 0; 2008 RD₄₇, 3, 1, 0; 2008 SX₇, 3, 1, 0; 2008 SJ₂₉, 3, 1,
0; 2008 UV₄₆, 3, 1, 0; 2008 UG₅₉, 3, 1, 0; 2008 UG₂₁₇, 3, 1, 0; 2008 WM₆₄, 3, 1, 0; 2009 BD₂, 3,
1, 0; 2009 BO₂, 6, 2, 1; 2009 DF₁, 3, 1, 0; 2009 DQ₁₆, 3, 1, 0; 2009 DJ₂₈, 3, 1, 0; 2009 DL₁₂₇, 9,
1, 0; 2009 JR₅, 3, 1, 0; 2009 QO₄, 2, 1; 2009 SN₃₉, 3, 1, 0; 2009 SX₆₈, 3, 1, 0; 2009 SR₉₂, 3, 1, 0;
2009 SJ₁₂₂, 3, 1, 0; 2009 SS₃₄₇, 3, 1, 0; 2009 XU₃, 3, 1, 0; 2009 XM₅, 3, 1, 0; 2010 AZ₄₃, 3, 1, 0;
2010 CP₁₁₅, 3, 1, 0; 2010 DM₃, 3, 1, 0; 2010 DG₁₇, 3, 1, 0; 2010 EW₄₅, 3, 1, 0; 2010 FQ₆, 2, 12;
2010 HQ₈₀, 2, 1, 0; 2010 JU₃₉, 3, 1, 0; 2010 LR₃₃, 6, 2, 1; 2010 NJ₁, 5, 2, 13; 2010 OS₂₂, 3, 1, 0;
2010 RL₉₃, 3, 1, 0; 2010 RH₁₁₅, 3, 1, 0; 2010 SA₇, 3, 1, 0; 2010 SZ₁₈, 3, 1, 0; 2010 UT₇, 3, 1, 0;
2010 VB₁₇₃, 3, 1, 0; 2010 WP₂₉, 3, 1, 0; 2011 AU₁₀, 3, 1, 0; 2011 BW₈₇, 3, 1, 0; 2011 BN₉₀, 3, 1,
0; 2011 CF₅₈, 3, 1, 0; 2011 CB₆₁, 3, 1, 0; 2011 GD₆₈, 3, 1, 0; 2011 OP₂₄, 3, 1, 0; 2011 QM₇₂, 3,
1, 0; 2011 RO₁₀, 3, 1, 0; 2011 SM₁₀, 3, 1, 0; 2011 SS₃₇, 3, 1, 0; 2011 SY₈₅, 3, 1, 0; 2011 SD₁₆₉, 3,
1, 0; 2011 SE₁₈₉, 3, 1, 0; 2011 ST₂₀₇, 3, 1, 0; 2011 UT₂₀, 6, 2, 1; 2011 UK₇₃, 3, 1, 0; 2011 UD₈₀,
3, 1, 0; 2011 US₁₀₁, 3, 1, 0; 2011 UE₁₃₁, 3, 1, 0; 2011 UE₂₄₅, 3, 1, 0; 2011 UH₂₉₉, 3, 1, 0;
2011 UX₃₉₀, 3, 1, 0; 2011 VC₁₁, 3, 1, 0; 2011 WN₇, 3, 1, 0; 2011 WE₈₁, 3, 1, 0; 2011 WS₉₀, 3, 1,
0; 2011 YP₁₂, 3, 1, 0; 2011 YU₂₂, 3, 1, 0; 2011 YH₂₈, 2, 1, 0; 2011 YU₇₄, 3, 1, 0; 2012 AP₁, 3, 1,
0; 2012 BE₁₂₆, 3, 1, 0; 2012 BB₁₃₃, 3, 1, 0; 2012 CP₂, 3, 1, 0; 2012 CG₅₀, 6, 1, 0; 2012 CV₅₀, 3,
1, 0; 2012 CA₅₅, 2, 1, 0; 2012 DA₄₆, 6, 1, 0; 2012 DV₈₆, 3, 1, 0; 2012 EU₄, 3, 1, 0; 2012 ES₁₁, 3,
1, 0; 2012 ES₁₄, 2, 1, 0; 2012 EU₁₄, 4, 2, 1; 2012 FQ₁, 3, 1, 0; 2012 FR₂, 6, 1, 0; 2012 FT₁₄, 3, 1,
0; 2012 FN₁₅, 3, 1, 0; 2012 FD₂₃, 3, 1, 0; 2012 FW₃₁, 3, 1, 0; 2012 FW₃₃, 3, 1, 0; 2012 FS₃₆, 3, 1,
0; 2012 FT₄₁, 3, 1, 0; 2012 FV₄₃, 3, 1, 0; 2012 FA₄₄, 3, 1, 0; 2012 FD₅₅, 3, 1, 0; 2012 FJ₅₅, 3, 1,
0; 2012 FN₆₂, 3, 1, 0; 2012 FS₆₂, 2, 1, 0; 2012 FG₆₅, 3, 1, 0; 2012 FB₇₂, 3, 1, 0; 2012 GD₅, 2, 1,
0; 2012 GT₅, 3, 1, 0; 2012 GV₁₁, 3, 1, 0; 2012 GV₁₇, 2, 1, 0; 2012 GO₂₃, 3, 1, 0; 2012 HM₁, 3, 1,
0; 2012 HW₁, 3, 1, 0; 2012 HR₂, 7, 3, 10; 2012 HG₈, 2, 1, 0; 2012 HN₈, 6, 2, 1; 2012 HR₁₅, 3, 1,
0; 2012 HY₁₉, 3, 1, 0; 2012 HD₂₀, 5, 2, 15; 2012 HL₂₁, 3, 1, 0; 2012 HX₂₂, 3, 1, 0; 2012 HM₂₄, 3,
1, 0; 2012 HY₃₃, 3, 1, 0; 2012 HV₅₀, 3, 1, 0; 2012 HM₆₂, 3, 1, 0; 2012 HT₆₂, 3, 1, 0; 2012 HA₈₂,
3, 1, 0; 2012 HO₈₂, 3, 1, 0; 2012 JB₃, 3, 1, 0; 2012 JU₄, 3, 1, 0; 2012 JU₅, 3, 1, 0; 2012 JQ₁₀, 3,
1, 0; 2012 JG₁₁, 3, 1, 0; 2012 JH₁₁, 3, 1, 0; 2012 JE₁₃, 3, 1, 0; 2012 JB₁₇, 3, 1, 0; 2012 JS₁₇, 3, 1,
0; 2012 JT₁₇, 3, 1, 0; 2012 JK₁₉, 3, 1, 0; 2012 JR₁₉, 3, 1, 0; 2012 JM₂₂, 3, 1, 0; 2012 JD₂₄, 3, 1,
0; 2012 JL₂₄, 3, 1, 0; 2012 JB₂₅, 3, 1, 0; 2012 JC₂₅, 3, 1, 0; 2012 JC₂₈, 6, 2, 2847; 2012 JG₃₄, 3,
1, 0; 2012 JD₃₇, 3, 1, 0; 2012 JU₄₅, 3, 1, 0; 2012 JL₄₆, 3, 1, 0; 2012 JP₅₀, 3, 1, 0; 2012 JO₅₈, 3, 1,
0; 2012 KM₂, 3, 1, 0; 2012 KY₃, 3, 1, 0; 2012 KA₄, 5, 2, 6; 2012 KC₆, 9, 3, 14; 2012 KD₉, 3, 1, 0;
2012 KA₁₀, 3, 1, 0; 2012 KJ₁₁, 2, 1, 0; 2012 KK₁₁, 5, 2, 9; 2012 KL₁₁, 6, 2, 8; 2012 KN₁₁, 2, 1,
0; 2012 KQ₁₁, 3, 1, 0; 2012 KU₁₂, 4, 2, 1; 2012 KU₁₅, 3, 1, 0; 2012 KE₁₆, 6, 2, 1995; 2012 KL₁₇,
6, 2, 1811; 2012 KK₁₉, 3, 1, 0; 2012 KL₂₄, 3, 1, 0; 2012 KE₂₅, 5, 2, 7; 2012 KX₂₇, 3, 1, 0;
2012 KV₃₀, 3, 1, 0; 2012 KL₃₃, 3, 1, 0; 2012 KO₃₄, 3, 1, 0; 2012 KB₃₅, 3, 1, 0; 2012 KY₄₁, 6, 2, 8;
2012 KG₄₄, 3, 1, 0; 2012 KN₄₅, 3, 1, 0; 2012 KN₄₆, 3, 1, 0; 2012 KF₄₇, 9, 3, 26; 2012 KC₄₈, 3, 1,
0; 2012 KY₄₈, 3, 1, 0; 2012 KZ₄₉, 3, 1, 0; 2012 KE₅₀, 9, 2, 3187; 2012 LC₃, 1, 0; 2012 LD₃, 3, 1,
0; 2012 LE₃, 1, 0; 2012 LF₃, 1, 0; 2012 LG₃, 1, 0; 2012 LK₃, 1, 0; 2012 LV₃, 1, 0; 2012 LC₁,
3, 1, 0; 2012 LE₁, 3, 1, 0; 2012 LG₁, 3, 1, 0; 2012 LH₁, 3, 1, 0; 2012 LJ₁, 3, 1, 0; 2012 LK₁, 3,
1, 0; 2012 LL₁, 3, 1, 0; 2012 LO₁, 3, 1, 0; 2012 LP₁, 3, 1, 0; 2012 LQ₁, 3, 1, 0; 2012 LR₁, 24,
8, 14; 2012 LS₁, 6, 2, 1; 2012 LT₁, 3, 1, 0; 2012 LU₁, 3, 1, 0; 2012 LV₁, 3, 1, 0; 2012 LW₁, 3,

1, 0; 2012 LX₁, 3, 1, 0; 2012 LB₂, 3, 1, 0; 2012 LC₂, 3, 1, 0; 2012 LD₂, 3, 1, 0; 2012 LJ₂, 3, 1,
0; 2012 LK₂, 27, 10, 18; 2012 LL₂, 3, 1, 0; 2012 LM₂, 6, 2, 1; 2012 LN₂, 5, 2, 1; 2012 LW₃, 2,
1, 0; 2012 LX₃, 2, 1, 0; 2012 LY₃, 3, 1, 0; 2012 LZ₃, 3, 1, 0; 2012 LA₄, 3, 1, 0; 2012 LB₄, 3, 1,
0; 2012 LC₄, 3, 1, 0; 2012 LD₄, 3, 1, 0; 2012 LE₄, 3, 1, 0; 2012 LG₄, 9, 3, 3; 2012 LH₄, 3, 1,
0; 2012 LG₅, 3, 1, 0; 2012 LL₅, 3, 1, 0; 2012 LM₅, 3, 1, 0; 2012 LN₅, 3, 1, 0; 2012 LO₅, 3, 1,
0; 2012 LQ₅, 3, 1, 0; 2012 LR₅, 3, 1, 0; 2012 LS₅, 3, 1, 0; 2012 LT₅, 3, 1, 0; 2012 LU₅, 3, 1, 0;
2012 LV₅, 3, 1, 0; 2012 LM₇, 3, 1, 0; 2012 LQ₇, 11, 4, 3; 2012 LT₇, 12, 4, 10; 2012 LU₇, 14, 5, 15;
2012 LW₇, 6, 2, 1; 2012 LK₈, 6, 2, 1; 2012 LK₉, 12, 4, 8; 2012 LZ₁₀, 6, 2, 1; 2012 LA₁₁, 2, 1, 0;
2012 LB₁₁, 3, 1, 0; 2012 LC₁₁, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 15, 5, 10; 2012 LH₁₁, 8, 3,
13; 2012 LJ₁₁, 5, 2, 13; 2012 LK₁₁, 21, 7, 13; 2012 LU₁₁, 3, 1, 0; 2012 LU₁₂, 2, 1, 0; 2012 LV₁₂, 3,
1, 0; 2012 LW₁₂, 9, 3, 2; 2012 LX₁₂, 5, 2, 1; 2012 LY₁₂, 8, 3, 2; 2012 LZ₁₂, 5, 2, 1; 2012 LA₁₃, 9,
3, 2; 2012 LB₁₃, 6, 2, 1; 2012 LC₁₃, 6, 2, 3; 2012 LD₁₃, 27, 9, 10; 2012 LU₁₃, 3, 1, 0; 2012 LV₁₃,
6, 2, 1; 2012 LW₁₃, 3, 1, 0; 2012 LW₁₄, 3, 1, 0; 2012 LO₁₅, 3, 1, 0; 2012 ML₆, 2, 1; 2012 MM₆, 6,
2, 1; 2012 MN₅, 5, 2, 1; 2012 MO₆, 6, 2, 1; 2012 MP₃, 1, 0; 2012 MQ₁₃, 5, 4; 2012 MV₁, 6, 2, 1;
2012 MW₁, 3, 1, 0; 2012 MA₂, 6, 2, 3; 2012 MN₂, 12, 4, 12; 2012 MO₂, 6, 2, 1; 2012 MP₂, 6, 2,
3; 2012 MQ₂, 3, 1, 0; 2012 MR₂, 6, 2, 2; 2012 MS₂, 6, 2, 1; 2012 MT₂, 3, 1, 0; 2012 MU₂, 3, 1,
0; 2012 MV₂, 9, 3, 3; 2012 MW₂, 3, 1, 0; 2012 MY₂, 9, 3, 3; 2012 MA₃, 6, 1, 0; 2012 MO₃, 12, 4,
11; 2012 MP₃, 3, 1, 0; 2012 MR₄, 13, 5, 9; 2012 MS₄, 3, 1, 0; 2012 MT₄, 6, 2, 2; 2012 MD₆, 12,
4, 4; 2012 ME₆, 12, 4, 3; 2012 MF₆, 6, 2, 1; 2012 MG₆, 3, 1, 0; 2012 MH₆, 8, 3, 2; 2012 MM₆, 9,
3, 2; 2012 MN₆, 2, 1, 0; 2012 MY₆, 4, 2, 2; 2012 MA₇, 9, 3, 7; 2012 MB₇, 3, 1, 0; 2012 MC₇, 3,
1, 0; 2012 ME₇, 7, 3, 5; 2012 MH₇, 2, 1, 0; 2012 MJ₇, 2, 1, 0; 2012 MK₇, 2, 1, 0; 2012 ML₇, 2, 1,
0; 2012 MR₇, 5, 2, 5; [1498, 365, 0*, 2001/10/23–2012/06/30]

300 Bisei Spaceguard Center–BATTeRS

S. Nakano, Japan Spaceguard Association, 60-7 2F, Sasazuka 1 Chome, Shibuya-
Ku, 151-0073 Tokyo, Japan [batters@spaceguard.or.jp]

Observers A. Asami, N. Hashimoto

1.0-m *f*/3.0 reflector + CCD

GSC-ACT, UCAC-2, USNO-B1.0

2012 FN₆₇, 6, 1, 0; 2012 LU₃, 1, 0; 2012 LD₁, 4, 1, 0; [13, 3, 0*, 2008/02/13–2012/06/10]

327 Peking Observatory, Xinglong Station

J. Zhu, National Astronomical Observatories, Chinese Academy of Sciences, 20A
Datun Road, Chaoyang District, Beijing 100012, Peoples Republic of China
[zj@bac.pku.edu.cn]

Observers J. Zhu, X. Zhou, S. J. Xue, J. Ma, H. Wu, X. M. Teng, C. H. Liu,

S. L. Kong

Measurers X. M. Teng, S. L. Kong, C. H. Liu, J. Zhu

0.60-m Schmidt + CCD

2002 UB₄₄, 3, 1, 0; 2012 DA₄₆, 3, 1, 0; [6, 2, 0*, 1996/10/18–1998/03/02]

333 Desert Eagle Observatory

W. K. Y. Yeung, 139 Sandringham Place NW, Calgary, AB T3K 3V8, Canada
[microplanet333@yahoo.com]

0.45-m *f*/3 Schmidt-Cassegrain + CCD

USNO-A2.0, GSC-ACT

2007 UW₇₅, 3, 1, 0; [3, 1, 0*, 2005/01/16]

381 Tokyo-Kiso

Y. Ohba, Graduate School of Science, University of Tokyo, Araku 866-152, Iruma,
Saitama-ken 358-0031, Japan [ohba@planeta.sci.isas.ac.jp]

Observers M. Tozuka, K. Kawabata

Measurer T. Sakamoto

1.05-m *f*/3.1 reflector + CCD

GSC-ACT, UCAC-2, USNO-B1.0

(18147), 6, 1, 0; (30081), 6, 1, 0; (32050), 6, 1, 0; (53764), 6, 1, 0; (54996), 6, 1, 0; (59653), 15, 1,
0; (152881), 6, 1, 0; [51, 7, 0*, 2007/03/26]

448 Desert Moon Observatory

B. L. Stevens, 5675 Real del Norte, Las Cruces, NM 88012, U.S.A.

[blslcnm@comcast.net]

0.3-m Schmidt-Cassegrain + CCD

UCAC-3

1999 YA, 3, 1, 0; 2001 AO₂, 3, 1, 0; 2003 DE₆, 3, 1, 0; 2010 AE₇₉, 3, 1, 0; 2012 GK₃₈, 3, 1, 0; 2012 JH₁₁, 3, 1, 0; 2012 JS₁₁, 6, 2, 7; 2012 JB₁₆, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LF₁₁, 3, 1, 0; (7076), 3, 1, 0; (28182), 3, 1, 0; (37755), 3, 1, 0; (53110), 5, 1, 0; (57738), 5, 1, 0; (69335), 3, 1, 0; (101535), 4, 1, 0; (126749), 5, 2, 1; (128065), 3, 1, 0; (138847), 3, 1, 0; (138937), 6, 2, 18; (141056), 10, 2, 8; (154302), 3, 1, 0; (162082), 3, 1, 0; (174764), 3, 1, 0; (186882), 2, 1, 0; (248818), 15, 5, 14; (276397), 5, 1, 0; (277830), 3, 1, 0; (297274), 8, 2, 20; (317685), 3, 1, 0; (326732), 8, 2, 14; (329614), 5, 1, 0; [144, 33, 0*, 2012/06/07–2012/06/27]

461 University of Szeged, Piskéztető Stn. (Konkoly)

K. Sárneczky, P.O. Box 406, H-6701 Szeged, Hungary [sky@titan.physx.u-szeged.hu]

Observers K. Sárneczky, T. Szalai

Measurers K. Sárneczky, S. Kürti, M. Langbroek

0.60-m Schmidt + CCD

USNO-B1.0

2002 QS₁₁₉, 6, 2, 1; 2002 QE₁₅₀, 2, 1, 0; 2002 RF₁₈₆, 3, 1, 0; 2003 SQ₄₀₆, 3, 1, 0; 2004 CR₁₂₀, 3, 1, 0; 2004 RU₃₃₁, 3, 1, 0; 2005 QS₁₈₁, 3, 1, 0; 2005 YM₁₄₃, 3, 1, 0; 2007 DY₁₀, 3, 1, 0; 2007 DQ₃₄, 3, 1, 0; 2007 RF₃₄, 3, 1, 0; 2007 VU₂₃₂, 6, 1, 0; 2007 YM₆₈, 3, 1, 0; 2008 EH₄₀, 3, 1, 0; 2008 LB₁₃, 3, 1, 0; 2008 WR₆₁, 4, 1, 0; 2009 CD₃₉, 3, 1, 0; 2009 HA₇₃, 3, 1, 0; 2009 XN₂₁, 4, 1, 0; 2010 VR₈, 3, 1, 0; 2012 DO₈₈, 2, 1, 0; 2012 FS₈₀ *, 10, 3, 6; 2012 HF, 6, 2, 1; 2012 KE₁₁, 8, 2, 3; 2012 KS₄₆, 3, 1, 0; 2012 KW₄₇, 5, 2, 421; 2012 KH₅₀, 6, 1, 0; 2012 LN, 3, 1, 0; 2012 LM₄, 12, 1, 0; 2012 LU₇, 4, 1, 0; 2012 LL₉, 5, 1, 0; 2012 LH₁₀, 6, 1, 0; 2012 LE₁₁, 10, 1, 0; 2012 LG₁₁ *, 37, 5, 5; 2012 LR₁₂ *, 7, 2, 1; 2012 LS₁₂ *, 8, 2, 1; 2012 LV₁₄ *, 6, 2, 3; 2012 LV₂₁, 3, 1, 0; 2012 MO₂ *, 3, 1, 0; 2012 MR₂ *, 8, 3, 2; 2012 MC₅ *, 3, 1, 0; 2012 MR₅, 3, 1, 0; 2012 MV₆, 3, 1, 0; 2012 MR₈ *, 3, 1, 0; (1621), 3, 1, 0; (1855), 3, 1, 0; (4930), 3, 1, 0; (7958), 3, 1, 0; (10893), 6, 2, 2; (11017), 3, 1, 0; (11079), 3, 1, 0; (14328), 3, 1, 0; (14821), 3, 1, 0; (15963), 3, 1, 0; (17590), 9, 1, 0; (19559), 3, 1, 0; (28269), 6, 1, 0; (35941), 3, 1, 0; (45601), 3, 1, 0; (48951), 2, 1, 0; (51679), 2, 1, 0; (53315), 3, 1, 0; (53502), 3, 1, 0; (59782), 3, 1, 0; (61534), 2, 1, 0; (61626), 3, 1, 0; (66027), 3, 1, 0; (67003), 3, 1, 0; (67759), 2, 1, 0; (71181), 4, 1, 0; (71523), 4, 1, 0; (74712), 3, 1, 0; (75409), 3, 1, 0; (80164), 3, 1, 0; (84876), 3, 1, 0; (87553), 3, 1, 0; (90350), 3, 1, 0; (95252), 3, 1, 0; (97997), 2, 1, 0; (104258), 2, 1, 0; (107587), 2, 1, 0; (108521), 3, 1, 0; (129001), 4, 1, 0; (131395), 3, 1, 0; (134219), 3, 1, 0; (137514), 3, 1, 0; (141748), 2, 1, 0; (146321), 3, 1, 0; (149433), 3, 1, 0; (154302), 3, 1, 0; (158510), 4, 2, 2; (158740), 2, 1, 0; (161234), 6, 2, 1; (180501), 6, 1, 0; (189235), 3, 1, 0; (195809), 2, 1, 0; (202617), 2, 1, 0; (230773), 3, 1, 0; (233586), 3, 1, 0; (233675), 5, 2, 2; (247167), 3, 1, 0; (248818), 3, 1, 0; (252207), 2, 1, 0; (253093), 3, 1, 0; (269536), 3, 1, 0; (269826), 2, 1, 0; (269958), 3, 1, 0; (274096), 2, 1, 0; (274647), 3, 1, 0; (293584), 2, 1, 0; (294080), 3, 1, 0; (329591), 3, 1, 0; [444, 112, 9*, 2010/10/29–2012/06/20]

510 Siegen

H. Bill, Didaktik der Physik, Adolf-Reichweinstr. 2, 57068 Siegen, Germany

[harald@astro1.physik.uni-siegen.de]

Observers K.-F. Osterhage, M. Jung, H. Bill, J. Klein, K. Antonova, J. Willmes

0.43-m $f/6.8$ reflector + CCD

UCAC-3

2012 LC₁, 6, 1, 0; 2012 LZ₁, 52, 2, 1; 2012 MR₅, 4, 1, 0; [62, 3, 0*, 2012/06/08–2012/06/22]

557 Ondřejov

P. Pravec, Astronomical Institute, Czech Academy of Sciences, CZ-25165 Ondřejov, Czech Republic [pavec@asu.cas.cz]

Observers P. Kušnirák, K. Hornoch

0.65-m $f/3.6$ reflector + CCD

UCAC-3

2007 RC₁₀, 6, 1, 0; (2577), 20, 4, 9; (5524), 7, 2, 2; (7758), 15, 3, 12; (145469), 5, 1, 0; (328043), 6, 1, 0; [59, 6, 0*, 2012/05/09–2012/05/23]

560 Madonna di Dossobuono

L. Lai, Via Mantovana 130e, I-37062 Dossobuono (Verona), Italy

[astrofil@astbo1.bo.cnr.it]

0.4-m $f/5$ reflector + CCD

USNO-A2.0

2012 DH₆₁, 3, 1, 0; 2012 HC₂, 3, 1, 0; 2012 LD₁, 3, 1, 0; [9, 3, 0*, 2012/06/12]

566 Haleakala-NEAT/GEODSS

R. Bambery, Jet Propulsion Laboratory, MS 168-527, Pasadena, CA 91109, U.S.A.

[Raymond.J.Bambery@jpl.nasa.gov]

Observers E. F. Helin, S. H. Pravdo, K. J. Lawrence, S. Groom, C. Clark,

D. Bascon, D. L. Rabinowitz

Measurers A. Mimeev, A. Odasso, R. J. Bouma

1.0-m $f/2.2$ GEODSS telescope + CCD

UCAC-2, USNO-B1.0

2009 BF₃, 3, 1, 0; (2574), 3, 1, 0; (4452), 3, 1, 0; [9, 3, 0*, 1996/08/16–1998/01/26]

568 Mauna Kea

D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A. [tholen@cifa.hawaii.edu] (2)

P. A. Wiegert, Physics and Astronomy Department, University of Western Ontario, London N6A 3K7, Canada [pwiegert@uwo.ca] (19)

A. Boattini, Istituto di Astrofisica Spaziale, Via Fosso del Cavaliere, I-00133 Rome, Italy [boattini@ias.rm.cnr.it] (20)

M. Micheli, Via Ronchi S. Francesco di Paola 52, I-25100 Brescia, Italy

[marco.bs@tiscali.it] (29)

Observers M. Micheli, G. T. Elliott, D. J. Tholen

2.24-m University of Hawaii reflector

PPMXL

{19} 2008 DR₃₂, 3, 1, 0; 2009 SK₆₈, 3, 1, 0; 2011 PN₁₃, 4, 2, 1; 2011 YF₇₅, 3, 1, 0; [13, 4, 0*, 2003/08/31–2007/07/29]

{20} 2006 BO₁₈₀, 3, 1, 0; 2006 GG₂₁, 3, 1, 0; 2011 BE₄₅, 3, 1, 0; 2012 HH₁₄, 6, 2, 7; 2012 HF₄₅, 5, 2, 7; 2012 JD₂₆, 3, 1, 0; 2012 KK₁₇, 3, 1, 0; 2012 LH₁₂, 3, 1, 0; [29, 8, 0*, 2005/09/30–2005/12/03]

{2} 2010 OS₂₂, 2, 1, 0; 2010 OB₁₀₁, 3, 1, 0; 2010 TK₅₄, 7, 2, 9; 2011 ON₂₄, 2, 1, 0; 2011 WO₄₁, 3, 1, 0; 2011 WQ₄₆, 3, 1, 0; 2011 YW₁₅, 3, 1, 0; 2012 BK₁₁, 3, 1, 0; 2012 BV₂₆, 3, 1, 0; 2012 BZ₃₄, 3, 1, 0; 2012 BT₆₁, 6, 2, 9; 2012 BU₆₁, 2, 1, 0; 2012 BD₇₇, 3, 1, 0; 2012 BE₇₇, 3, 1, 0; 2012 BN₇₇, 3, 1, 0; 2012 BG₈₆, 2, 1, 0; 2012 BZ₁₃₀, 3, 1, 0; 2012 BH₁₅₁, 10, 1, 0; 2012 CF₁₇, 2, 1, 0; 2012 DV₄₀, 3, 1, 0; 2012 DV₄₃, 3, 1, 0; 2012 DG₅₄, 3, 1, 0; 2012 EX₁₂, 3, 1, 0; 2012 KY₃, 3, 1, 0; 2012 KC₆, 3, 1, 0; 2012 LK₉, 3, 1, 0; 2012 MU₂, 2, 1, 0; 2012 MY₂, 3, 1, 0; (50618), 6, 1, 0; (60803), 3, 1, 0; (79955), 4, 1, 0; (135662), 4, 1, 0; (259962), 3, 1, 0; (278534), 6, 1, 0; (308397), 4, 1, 0; (314704), 2, 1, 0; (315516), 7, 1, 0; [131, 37, 0*, 2004/06/17–2012/06/29]

{29} 2012 HJ₆₃, 3, 1, 0; [3, 1, 0*, 2010/10/29]

585 Kiev comet station

A. Baransky, Astronomical Observatory of Kyiv University, Observatorna 3, Kyiv, Ukraine [bar06@znannya.org.ua]

Observers A. Baransky, K. Barinova, A. Zhdanov

0.7-m $f/4$ reflector + CCD

UCAC-3, UCAC-2

(1685), 16, 1, 0; (21976), 5, 1, 0; [21, 2, 0*, 2012/05/23–2012/06/27]

589 Santa Lucia Stroncone

A. Vagnozzi, Via Santa Lucia 68, I-05039 Stroncone (Terni), Italy

[vagnozzi@freenet.hut.fi]

9, 3, 9; (330895), 3, 1, 0; (330920), 15, 5, 14; (330921), 3, 1, 0; (330947), 3, 1, 0; (330974), 3, 1, 0; (330976), 3, 1, 0; (330978), 3, 1, 0; (331011), 3, 1, 0; (331017), 6, 2, 3; (331088), 6, 2, 4; (331103), 3, 1, 0; (331164), 3, 1, 0; (331213), 3, 1, 0; (331218), 3, 1, 0; (331227), 6, 2, 2; (331244), 3, 1, 0; (331259), 3, 1, 0; (331260), 3, 1, 0; (331279), 3, 1, 0; (331288), 3, 1, 0; (331315), 3, 1, 0; (331316), 3, 1, 0; (331442), 3, 1, 0; [25697, 5133, 136*, 1991/09/09–2012/06/23]

695 Kitt Peak

M. W. Buie, Southwest Research Institute, 1050 Walnut St., Suite 300, Boulder, CO 80302, U.S.A. [buie@boulder.swri.edu] (1)
 D. Wittman, Bell Laboratories, 600 Mountain Ave., Murray Hill, NJ 07974, U.S.A. [wittman@physics.bell-labs.com] (3)
 B. Gladman, Dept. of Physics and Astronomy, University of British Columbia, 6224 Agricultural Road, Vancouver, BC V6T 1Z1, Canada [gladman@astro.ubc.ca] (8)
 L. H. Wasserman, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [lhw@lowell.edu] (23)
 M. Trueblood, Winer Observatory, P.O. Box 797, Sonoita, AZ 85637-0797, U.S.A. [mtrueblood@noao.edu] (27)
 R. Gelderman, Physics & Astronomy Dept, Western Kentucky University, Bowling Green, Kentucky 42101-1077, U.S.A. [rct.wku@gmail.com] (31)
 Observers T. Vorobjov, M. Trueblood, K. Mighell, P. Romero, R. Crawford
 Measurers T. Vorobjov, R. Crawford, M. Rehnberg, P. Romero
 1.3-m *f*/13 Cassegrain + CCD, 2.1-m *f*/7.7 Ritchey-Chrétien + CCD
 PPMXL, USNO-A2.0, USNO-B1.0
 {23} 2006 FM₄₆, 2, 1, 0; 2007 DZ₁₁₀, 2, 1, 0; 2012 FT₄₁, 2, 1, 0; 2012 FB₇₂, 2, 1, 0; 2012 JQ₁₀, 2, 1, 0; 2012 JG₄₈, 2, 1, 0; 2012 KO₁₆, 2, 1, 0; 2012 LK₆, 2, 1, 0; [16, 8, 0*, 2004/10/10–2007/02/21]
 {1} 2002 NR₇₇, 2, 1, 0; 2002 QY₁₅₀, 2, 1, 0; 2005 EW₇₆, 2, 1, 0; 2005 MF₂₃, 2, 1, 0; 2005 NZ₁₅, 2, 1, 0; 2005 VX₁₈, 2, 1, 0; 2005 VJ₁₂₆, 2, 1, 0; 2007 BA₄₇, 2, 1, 0; 2007 HO₅, 2, 1, 0; 2007 VS₉₆, 2, 1, 0; 2007 VL₂₅₅, 2, 1, 0; 2008 CY₉, 2, 1, 0; 2008 DG₇₆, 2, 1, 0; 2008 EX₇₀, 2, 1, 0; 2008 FE₈₁, 2, 1, 0; 2009 SW₆₆, 2, 1, 0; 2010 TV₁₀₂, 2, 1, 0; 2011 CM₉₁, 2, 1, 0; 2011 RO₁₀, 2, 1, 0; 2011 SY₈₅, 2, 1, 0; 2011 SZ₈₅, 2, 1, 0; 2011 SJ₁₄₂, 2, 1, 0; 2012 BU₁₁₄, 2, 1, 0; 2012 DF₅₀, 2, 1, 0; 2012 DR₇₃, 2, 1, 0; 2012 DN₉₁, 2, 1, 0; 2012 DL₉₂, 2, 1, 0; 2012 GL₁₇, 2, 1, 0; 2012 HU₃₄, 2, 1, 0; 2012 HF₄₅, 2, 1, 0; 2012 HV₄₉, 2, 1, 0; 2012 HG₆₃, 2, 1, 0; 2012 HV₇₀, 2, 1, 0; 2012 JO₂₇, 2, 1, 0; 2012 JN₅₈, 2, 1, 0; 2012 KJ₁₅, 2, 1, 0; 2012 KE₃₃, 2, 1, 0; [74, 37, 0*, 2000/02/05–2005/03/11]
 {3} 2008 GX₄₀, 4, 1, 0; [4, 1, 0*, 2003/01/04]
 {8} 2001 FA₂₃₄, 4, 1, 0; [4, 1, 0*, 2001/03/23]
 {27} 2011 YU₇₄, 3, 1, 0; 2012 CA₂₁, 3, 1, 0; 2012 CA₅₅, 3, 1, 0; 2012 FQ₁, 3, 1, 0; 2012 HD₂₀, 3, 1, 0; 2012 HG₃₁, 4, 1, 0; 2012 JX₁₁, 3, 1, 0; 2012 KA₄, 3, 1, 0; 2012 KC₆, 4, 1, 0; 2012 LR₁, 3, 1, 0; 2012 LF₄, 4, 1, 0; [36, 11, 0*, 2012/06/13–2012/06/14]
 {31} 2012 HH₂, 8, 2, 1; 2012 HR₆₉, 3, 1, 0; 2012 KA₂, 6, 2, 1; 2012 KY₁₀, 6, 2, 1; 2012 KD₁₉, 6, 2, 1; 2012 MO₁₁, 3, 1, 0; [32, 6, 0*, 2012/06/09–2012/06/27]

699 Lowell Observatory-LONEOS
 E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff AZ 86001, U.S.A. [elgb@lowell.edu]
 Observers B. W. Koehn, B. A. Skiff, M. E. Van Ness
 Measurers B. W. Koehn, W. Kelly, B. A. Skiff, M. E. Van Ness, R. A. Cash
 0.59-m LONEOS Schmidt + CCD
 USNO-B1.0, USNO-A2.0, GSC-ACT
 2000 HV₅₃, 4, 1, 0; 2001 UP₁₁₂, 4, 1, 0; 2002 NT₇₃, 8, 1, 0; 2002 QY₁₅₀, 4, 1, 0; 2002 US₄₇, 3, 1, 0; 2002 VQ₁₀₂, 3, 1, 0; 2002 VP₁₂₃, 4, 1, 0; 2003 NN₅, 4, 1, 0; 2003 UM₃, 3, 1, 0; 2004 PY₄₇, 4, 1, 0; 2006 HW₁₀₃, 4, 1, 0; 2006 US₁, 4, 1, 0; 2006 WX₁₉₁, 4, 1, 0; 2007 TQ₄₂₇, 4, 1, 0; 2008 CL₁₀₆, 4, 1, 0; 2008 GJ₈₂, 4, 1, 0; 2008 LZ₇, 4, 1, 0; 2008 SS₂₀₄, 4, 1, 0; 2009 BD₁₀₇, 4, 1, 0; 2009 SD₂₃₃, 4, 1, 0; 2009 SQ₃₄₁, 8, 2, 1803; 2009 WA₂₀₂, 4, 1, 0; 2010 AT₄, 4, 1, 0; 2011 AT₉, 4, 1, 0; 2011 QC₁₆, 4, 1, 0; 2011 SN₁₁, 4, 1, 0; 2011 SF₃₂, 3, 1, 0; 2011 SY₁₁₅, 4, 1, 0;

0; 2011 SJ₁₅₈, 4, 1, 0; 2011 ST₂₀₇, 4, 1, 0; 2011 UX₅₃, 4, 1, 0; 2011 UB₁₂₄, 4, 1, 0; 2011 UY₁₂₆, 4, 1, 0; 2011 UY₁₈₁, 4, 1, 0; 2011 UF₁₈₃, 4, 1, 0; 2011 UQ₂₆₅, 4, 1, 0; 2011 UE₃₃₅, 4, 1, 0; 2012 BO₂₂, 4, 1, 0; 2012 BD₁₃₂, 4, 1, 0; 2012 CF₂₉, 4, 1, 0; 2012 DV₂₃, 4, 1, 0; 2012 DF₃₃, 4, 1, 0; 2012 DQ₃₉, 4, 1, 0; 2012 EX₁₂, 3, 1, 0; 2012 FV₄₃, 4, 1, 0; 2012 FN₆₇, 4, 1, 0; 2012 GK₇, 4, 1, 0; 2012 GW₃₇, 4, 1, 0; 2012 GY₃₉, 8, 2, 28; 2012 HE₁₆, 4, 1, 0; 2012 HQ₃₇, 4, 1, 0; 2012 HL₆₄, 8, 2, 507; 2012 HH₈₂, 4, 1, 0; 2012 JZ₄, 4, 1, 0; 2012 JB₈, 4, 1, 0; 2012 JB₁₄, 4, 1, 0; 2012 JL₁₉, 4, 1, 0; 2012 JE₂₅, 8, 2, 31; 2012 JE₃₉, 4, 1, 0; 2012 JF₄₁, 4, 1, 0; 2012 JU₄₅, 4, 1, 0; 2012 JX₄₅, 4, 1, 0; 2012 JB₄₆, 4, 1, 0; 2012 JL₄₆, 4, 1, 0; 2012 KE₁₁, 4, 1, 0; 2012 KC₁₃, 4, 1, 0; 2012 KL₁₇, 4, 1, 0; 2012 KT₁₈, 4, 1, 0; 2012 KM₄₇, 4, 1, 0; 2012 LS₄, 4, 1, 0; 2012 LK₆, 4, 1, 0; 2012 LB₈, 4, 1, 0; 2012 MB₃, 4, 1, 0; (331421), 4, 1, 0; [311, 74, 0*, 1998/09/16–2007/10/13]

701 Junk Bond Observatory, Sierra Vista

D. Healy, Junk Bond Observatory, 6929 Madera Drive, Sierra Vista, AZ 85635, U.S.A. [healydave@cis-broadband.com]
 0.40-m *f*/5 Schmidt-Cassegrain + CCD
 GSC-ACT, USNO-A2.0, UCAC-2
 2005 TR₄₈, 3, 1, 0; 2012 KB₄₇, 4, 1, 0; [7, 2, 0*, 2005/10/07–2006/05/01]

703 Catalina Sky Survey

S. M. Larson, Space Sciences Building, University of Arizona, Tucson, AZ 85721, U.S.A. [slarson@lpl.arizona.edu]
 Observers R. E. Hill, A. Boattini, R. A. Kowalski, J. A. Johnson, S. M. Larson
 Measurers A. Boattini, E. J. Christensen, A. R. Gibbs, A. D. Grauer, R. E. Hill, R. A. Kowalski, S. M. Larson, R. H. McNaught
 0.68-m Schmidt + CCD
 UCAC-2
 1984 QY₁, 12, 3, 7; 1994 NK₄, 4, 1, 0; 1999 GB₁₆, 4, 1, 0; 1999 HW₂, 4, 1, 0; 1999 KQ₆, 4, 1, 0; 1999 NK₃₂, 4, 1, 0; 1999 TR₁₇₀, 4, 1, 0; 1999 WG₁₆, 4, 1, 0; 1999 YZ₃, 4, 1, 0; 2000 RJ₄, 4, 1, 0; 2000 SF₅, 3, 1, 0; 2000 SZ₉₉, 4, 1, 0; 2000 SR₃₁₄, 8, 2, 7; 2000 WB₁₅₆, 4, 1, 0; 2000 XU₁, 4, 1, 0; 2001 AY₂₂, 4, 1, 0; 2001 BJ₆, 8, 2, 2; 2001 CT₂₀, 7, 2, 8; 2001 LB₄, 4, 1, 0; 2001 OQ₁₆, 4, 1, 0; 2001 OF₂₇, 8, 2, 15; 2001 OM₉₁, 4, 1, 0; 2001 PY₉, 4, 1, 0; 2001 PC₃₆, 4, 1, 0; 2001 RC₃, 4, 1, 0; 2001 TX₅₇, 4, 1, 0; 2001 TY₁₃₂, 4, 1, 0; 2001 TS₁₅₃, 4, 1, 0; 2001 UP₁₃₄, 8, 2, 1417; 2001 VG₁₂, 6, 2, 7; 2001 VA₂₉, 4, 1, 0; 2001 VO₈₂, 4, 1, 0; 2001 VY₁₃₂, 4, 1, 0; 2001 WG₂₆, 4, 1, 0; 2001 YA₁₃₇, 8, 2, 2; 2002 EL₁₃₁, 4, 1, 0; 2002 GS₇₀, 3, 1, 0; 2002 LD₃₅, 8, 2, 6; 2002 LM₄₂, 8, 2, 7; 2002 NL₅₅, 4, 1, 0; 2002 NT₇₃, 13, 3, 1568; 2002 NU₇₇, 4, 1, 0; 2002 OQ₃₁, 4, 1, 0; 2002 PK₁₆, 4, 1, 0; 2002 PY₇₁, 4, 1, 0; 2002 PH₈₁, 9, 2, 11; 2002 PH₁₄₁, 4, 1, 0; 2002 PH₁₅₀, 4, 1, 0; 2002 QN₁₅₀, 4, 1, 0; 2002 QB₁₅₁, 4, 1, 0; 2002 QM₁₅₁, 4, 1, 0; 2002 RZ₆₆, 4, 1, 0; 2002 RV₂₉₂, 8, 2, 20; 2002 TL₂₁₈, 4, 1, 0; 2002 VO₄₆, 4, 1, 0; 2002 VZ₁₀₃, 4, 1, 0; 2002 VP₁₂₃, 4, 1, 0; 2002 WM₇, 4, 1, 0; 2002 WV₁₂, 8, 2, 1164; 2002 XA₁₉, 3, 1, 0; 2003 AD₄, 4, 1, 0; 2003 BZ₁₇, 7, 2, 11; 2003 BN₉₄, 4, 1, 0; 2003 EX₃₆, 4, 1, 0; 2003 ER₄₃, 4, 1, 0; 2003 EF₅₉, 4, 1, 0; 2003 EN₅₉, 4, 1, 0; 2003 FW₁₀₇, 8, 2, 58; 2003 HZ₁₂, 4, 1, 0; 2003 HT₄₉, 4, 1, 0; 2003 KL₁₁, 4, 1, 0; 2003 KE₂₀, 3, 1, 0; 2003 MT₂, 4, 1, 0; 2003 PX₁₀, 4, 1, 0; 2003 SW₄, 2, 1, 0; 2003 SN₅₆, 4, 1, 0; 2003 SR₉₆, 4, 1, 0; 2003 SU₉₉, 4, 1, 0; 2003 SL₁₆₅, 4, 1, 0; 2003 SD₂₉₉, 8, 2, 6; 2003 SQ₄₀₆, 12, 3, 877; 2003 SL₄₂₈, 4, 1, 0; 2003 TW₁₂, 4, 1, 0; 2003 UO₄, 4, 1, 0; 2003 UC₄₇, 4, 1, 0; 2003 UA₉₃, 4, 1, 0; 2003 UM₁₃₅, 4, 1, 0; 2003 UH₁₄₅, 4, 1, 0; 2003 UO₁₆₄, 8, 2, 884; 2003 UL₁₈₄, 4, 1, 0; 2003 US₂₂₇, 4, 1, 0; 2003 US₃₇₂, 4, 1, 0; 2003 WN₇, 4, 1, 0; 2003 WX₆₄, 4, 1, 0; 2003 XY₄, 4, 1, 0; 2004 AA₉, 4, 1, 0; 2004 BW₄₄, 4, 1, 0; 2004 CL₄, 4, 1, 0; 2004 CR₁₂₀, 4, 1, 0; 2004 FB₁₃₁, 4, 1, 0; 2004 JQ₃₁, 4, 1, 0; 2004 JG₅₆, 4, 1, 0; 2004 KU₈, 2, 8; 2004 LZ₄, 4, 1, 0; 2004 LV₁₁, 4, 1, 0; 2004 PP₁₂, 4, 1, 0; 2004 PX₈₁, 4, 1, 0; 2004 QH₁₂, 4, 1, 0; 2004 QF₂₅, 4, 1, 0; 2004 RA₃, 4, 1, 0; 2004 RR₁₁₀, 4, 1, 0; 2004 RF₂₀₂, 7, 2, 6; 2004 RK₂₀₉, 4, 1, 0; 2004 RF₂₁₁, 4, 1, 0; 2004 RA₂₄₇, 4, 1, 0; 2004 RM₂₅₄, 4, 1, 0; 2004 RJ₃₄₁, 4, 1, 0; 2004 TN₃₂₅, 4, 1, 0; 2004 TN₃₂₆, 4, 1, 0; 2004 VG₇₅, 4, 1, 0; 2004 XK₂₃, 4, 1, 0; 2004 XS₄₄, 4, 1, 0; 2004 XB₆₁, 3, 1, 0; 2004 XV₁₂₄, 4, 1, 0; 2005 ET₁₆₉, 7, 2, 6; 2005 EA₂₁₀, 4, 1, 0; 2005 GS₁₂₇, 4, 1, 0; 2005 GG₁₅₈, 4, 1, 0; 2005 JH₁₀₀, 4, 1, 0; 2005 JO₁₀₆, 4, 1, 0; 2005 KD₁₂, 4, 1, 0; 2005 LX₉, 4, 1, 0; 2005 OA₃, 12, 3, 8; 2005 PH₄, 4, 1, 0; 2005 PB₂, 4, 1, 0; 2005 PE₃, 4, 1, 0; 2005 SD₁₉, 4, 1, 0; 2005 TZ₁₆₂, 4, 1, 0; 2005 TX₁₆₉, 4, 1, 0; 2005 TW₁₇₈, 4, 1, 0; 2005 UH₁₅₈, 4, 1, 0; 2005 UN₂₁₂, 3, 1, 0; 2005 UG₂₂₂, 3, 1, 0; 2005 UM₂₈₇, 4, 1, 0; 2005 UZ₂₉₇, 4, 1, 0; 2005 UR₅₁₂, 4, 1, 0; 2005 VC₁, 4, 1, 0; 2005 VC₆, 4, 1, 0; 2005 YW₃, 5, 1, 0; 2005 YA₄₆, 8, 2, 466; 2005 YA₇₁, 4, 1, 0; 2005 YL₇₇, 7, 2, 7; 2005 YP₁₉₂, 4, 1, 0; 2005 YS₂₀₄, 4, 1, 0; 2005 YJ₂₃₄, 8, 2, 1811; 2005 YT₂₈₆, 4, 1, 0; 2006 AK₆₇, 4, 1, 0; 2006 BX₉₂, 4, 1, 0; 2006 BR₁₄₄, 4, 1, 0; 2006 BW₁₅₄, 4, 1, 0; 2006 BS₂₂₄, 4, 1, 0; 2006 BG₂₆₃, 4, 1, 0; 2006 CZ₄, 4, 1, 0; 2006 DP₆₈, 4, 1, 0; 2006 FC₉, 5, 1, 0; 2006 FU₁₀, 4, 1, 0; 2006 FP₃₀, 4, 1, 0; 2006 HL₄₂, 4, 1, 0; 2006 HE₆₁, 8, 2, 3; 2006 HW₁₀₃, 4, 1, 0; 2006 KP₁₂, 4, 1, 0; 2006 KW₂₃, 4, 1, 0; 2006 KL₂₅, 4, 1, 0; 2006 KD₇₆, 4, 1, 0; 2006 KP₁₀₃, 5, 1, 0; 2006 KC₁₁₄, 8, 2, 6; 2006 MN₁₁, 4, 1, 0; 2006 MZ₄, 4, 1, 0; 2006 MH₆, 8, 2, 6; 2006 QJ₄₄, 4, 1, 0; 2006 RL₅, 4, 1, 0; 2006 TG₄₂, 4, 1, 0; 2006 UL₃₅, 4, 1, 0;

3, 1, 0; (231840), 4, 1, 0; (231896), 5, 1, 0; (231951), 4, 1, 0; (232075), 4, 1, 0; (232151), 5, 1, 0; (232491), 4, 1, 0; (232918), 3, 1, 0; (233078), 4, 1, 0; (233252), 3, 1, 0; (233737), 5, 1, 0; (233927), 8, 2, 5; (234400), 8, 2, 1; (235571), 3, 1, 0; (235576), 4, 1, 0; (236095), 5, 1, 0; (236710), 5, 1, 0; (236775), 4, 1, 0; (239159), 8, 2, 5; (241648), 4, 1, 0; (241809), 3, 1, 0; (242159), 8, 2, 5; (243080), 9, 2, 10; (243926), 4, 1, 0; (243973), 5, 1, 0; (244133), 4, 1, 0; (244670), 4, 1, 0; (249027), 4, 1, 0; (249494), 8, 2, 7; (251866), 4, 1, 0; (252133), 3, 1, 0; (253127), 4, 1, 0; (253743), 5, 1, 0; (257017), 4, 1, 0; (257956), 5, 1, 0; (258024), 5, 1, 0; (258040), 4, 1, 0; (258722), 4, 1, 0; (258817), 3, 1, 0; (259018), 3, 1, 0; (259063), 4, 1, 0; (259346), 4, 1, 0; (260473), 5, 1, 0; (260718), 5, 1, 0; (261740), 5, 1, 0; (262498), 3, 1, 0; (264413), 4, 1, 0; (264522), 4, 1, 0; (264582), 4, 1, 0; (264629), 4, 1, 0; (265233), 4, 1, 0; (265329), 5, 1, 0; (265452), 5, 1, 0; (265513), 2, 1, 0; (265522), 7, 2, 10; (265588), 4, 1, 0; (265631), 4, 1, 0; (265864), 3, 1, 0; (266023), 4, 1, 0; (266045), 5, 1, 0; (266290), 4, 1, 0; (266309), 5, 1, 0; (266610), 4, 1, 0; (266617), 5, 1, 0; (266844), 3, 1, 0; (267113), 5, 1, 0; (267180), 9, 2, 5; (267232), 10, 2, 7; (267381), 3, 1, 0; (267488), 4, 1, 0; (267756), 3, 1, 0; (267761), 5, 1, 0; (268015), 4, 1, 0; (268158), 4, 1, 0; (269176), 4, 1, 0; (269251), 3, 1, 0; (269286), 4, 1, 0; (269309), 5, 1, 0; (269584), 5, 1, 0; (269942), 4, 1, 0; (270196), 4, 1, 0; (271078), 10, 2, 7; (271101), 3, 1, 0; (271573), 4, 1, 0; (271674), 4, 1, 0; (271743), 4, 1, 0; (271840), 5, 1, 0; (272169), 4, 1, 0; (272295), 3, 1, 0; (272800), 5, 1, 0; (273219), 5, 1, 0; (273976), 3, 1, 0; (274028), 5, 1, 0; (274804), 5, 1, 0; (275739), 5, 1, 0; (275859), 5, 1, 0; (276036), 4, 1, 0; (276317), 9, 2, 5; (276322), 3, 1, 0; (276397), 5, 1, 0; (276724), 4, 1, 0; (277874), 3, 1, 0; (278385), 5, 1, 0; (278450), 3, 1, 0; (278533), 4, 1, 0; (278561), 4, 1, 0; (278595), 4, 1, 0; (278922), 4, 1, 0; (279234), 4, 1, 0; (280997), 5, 1, 0; (282345), 10, 2, 5; (285856), 4, 1, 0; (285863), 3, 1, 0; (287443), 3, 1, 0; (287597), 10, 2, 7; (287641), 4, 1, 0; (290067), 5, 1, 0; (291750), 7, 2, 4; (292071), 5, 1, 0; (293199), 4, 1, 0; (293618), 8, 2, 10; (294996), 3, 1, 0; (295074), 4, 1, 0; (295344), 5, 1, 0; (295441), 4, 1, 0; (295702), 3, 1, 0; (296881), 4, 1, 0; (297146), 5, 1, 0; (297274), 5, 1, 0; (307967), 3, 1, 0; (308083), 5, 1, 0; (308680), 15, 3, 4; (309682), 4, 1, 0; (310379), 9, 2, 5; (310877), 4, 1, 0; (313329), 3, 1, 0; (313577), 4, 1, 0; (315188), 5, 1, 0; (316651), 5, 1, 0; (316939), 4, 1, 0; (317494), 5, 1, 0; (317685), 4, 1, 0; (318050), 4, 1, 0; (318095), 5, 1, 0; (318195), 8, 2, 6; (318596), 7, 2, 5; (318885), 3, 1, 0; (319431), 4, 1, 0; (320072), 4, 1, 0; (322715), 10, 2, 18; (322973), 5, 1, 0; (323173), 10, 2, 2; (323426), 5, 1, 0; (323478), 4, 1, 0; (323813), 5, 1, 0; (326497), 5, 1, 0; (326725), 4, 1, 0; (326732), 4, 1, 0; (326978), 4, 1, 0; (327794), 10, 2, 10; (328356), 5, 1, 0; (328389), 4, 1, 0; (329292), 5, 1, 0; (329303), 5, 1, 0; (329304), 4, 1, 0; (329339), 4, 1, 0; (329374), 5, 1, 0; (329413), 5, 1, 0; (329434), 5, 1, 0; (329492), 3, 1, 0; (329556), 9, 2, 5; (329613), 10, 2, 7; (329614), 15, 3, 11; (329669), 4, 1, 0; (329835), 4, 1, 0; (329838), 4, 1, 0; (329842), 3, 1, 0; (329911), 5, 1, 0; (329972), 3, 1, 0; (329993), 5, 1, 0; (330111), 9, 2, 4; (330323), 4, 1, 0; (330347), 9, 2, 10; (330599), 4, 1, 0; (330623), 4, 1, 0; (330798), 8, 2, 10; (330806), 4, 1, 0; (331139), 4, 1, 0; (331221), 4, 1, 0; (331267), 6, 2, 4; [43102, 7626, 11*, 2012/06/01–2012/06/29]

705 Apache Point

K. Sárneczky, P.O. Box 406, H-6701 Szeged, Hungary [sky@titan.physx.u-szeged.hu] (7)

2008 CD₂₀₂, 3, 1, 0; [3, 1, 0*, 2006/08/28]

711 McDonald Observatory

J. G. Ries, McDonald Observatory, University of Texas, Austin, TX 78712, U.S.A. [moon@astro.as.utexas.edu]

Observer T. Lister

1.0-m *f*/8 Ritchey-Chrétien + CCD

UCAC-3

2012 LX₁, 6, 1, 0; 2012 LZ₁, 58, 1, 0; 2012 LK₂, 13, 1, 0; 2012 LD₁₃, 5, 1, 0; 2012 MU₂, 7, 1, 0; 2012 MY₂, 15, 1, 0; 2012 MB₇, 6, 1, 0; (93489), 6, 1, 0; (119578), 25, 1, 0; [141, 9, 0*, 2012/06/12–2012/06/26]

718 Wiggins Observatory, Tooele

P. Wiggins, University of Utah Hansen Planetarium, 15 South State Street, Salt Lake City, UT 84111-1590, U.S.A. [paw@wirelessbeehive.com]

0.35-m *f*/5.5 Schmidt-Cassegrain + CCD

UCAC-2

2012 LE₁₁, 11, 3, 3; 2012 LG₁₁, 16, 5, 6; 2012 MY₂, 10, 3, 2; (1685), 24, 8, 9; [61, 4, 0*, 2012/06/14–2012/06/30]

734 Farpoint Observatory

G. Hug, RTE 1 Box 35c, Eskridge, KS 66423, U.S.A. [fast@nekaal.org]

0.3-m *f*/6 Schmidt-Cassegrain + CCD

UCAC-2

2008 UE₇₃, 4, 1, 0; [4, 1, 0*, 2006/03/06]

735 George Observatory, Needville

W. G. Dillon, 4703 Birkenhead Circle, Missouri City, TX 77459, U.S.A.

[bdillon@houston.geoquest.slb.com]

Observers J. Dellinger, P. Garossino, D. Wells, W. G. Dillon

0.46-m *f*/4.5 Newtonian + CCD, 0.91-m *f*/7.6 Ritchey-Chrétien Cassegrain + CCD

USNO-A2.0, GSC-ACT

2008 SC₂₄₁, 3, 1, 0; 2012 HL₇₈, 6, 2, 1; 2012 JC₃₃, 3, 1, 0; [12, 3, 0*, 2003/12/17–2008/05/31]

807 Cerro Tololo

M. W. Buie, Southwest Research Institute, 1050 Walnut St., Suite 300, Boulder, CO 80302, U.S.A. [buie@boulder.swri.edu] (1)

L. H. Wasserman, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. [lhwl@lowell.edu] (15)

R. Holmes, 7168 NCR 2750E, Ashmore, IL 61912, U.S.A. [ari@astro-research.org] (32)

Observers T. Linder, R. Holmes

0.41-m *f*/11 Ritchey-Chrétien + CCD

USNO-B1.0, UCAC-3

[15] 2009 FZ₁, 2, 1, 0; 2012 GB₁₇, 2, 1, 0; 2012 JD₃₇, 2, 1, 0; [6, 3, 0*, 2005/08/08–2007/04/22]

{1} 2002 NW₇₉, 2, 1, 0; 2002 PP₂₀₀, 2, 1, 0; 2002 VB₁₃, 2, 1, 0; 2006 BX₉₂, 2, 1, 0; 2007 BL₃₉, 2, 1, 0; 2007 EE₁₃₄, 2, 1, 0; 2007 GK₂₁, 2, 1, 0; 2007 HY₁₃, 2, 1, 0; 2007 HV₉₅, 2, 1, 0; 2007 RB₁₃₀, 2, 1, 0; 2007 UY₁₃₇, 2, 1, 0; 2008 CE₁₁₀, 2, 1, 0; 2008 EK₉₄, 2, 1, 0; 2008 JJ₂₂, 2, 1, 0; 2008 KM₁₈, 2, 1, 0; 2008 SV₂₃, 2, 1, 0; 2008 TL₁₈₀, 2, 1, 0; 2009 BN₅₅, 2, 1, 0; 2009 CH₃₂, 2, 1, 0; 2009 ER₂₉, 2, 1, 0; 2009 RZ₃₇, 2, 1, 0; 2009 SX₃₄, 2, 1, 0; 2009 SL₃₀₈, 2, 1, 0; 2010 BH₁₃₀, 2, 1, 0; 2011 BC₅₄, 2, 1, 0; 2011 QL₃₆, 2, 1, 0; 2011 SZ₁₀₈, 2, 1, 0; 2011 UP₃₅, 2, 1, 0; 2011 UC₁₁₄, 2, 1, 0; 2011 UW₂₆₁, 2, 1, 0; 2011 UO₂₆₂, 2, 1, 0; 2011 UU₃₂₂, 2, 1, 0; 2011 WA₁₄₀, 2, 1, 0; 2012 BR₁₅, 2, 1, 0; 2012 BO₄₄, 2, 1, 0; 2012 BQ₁₁₁, 2, 1, 0; 2012 BD₁₁₉, 2, 1, 0; 2012 BS₁₃₈, 2, 1, 0; 2012 DP₄₀, 2, 1, 0; 2012 DR₇₃, 2, 1, 0; 2012 ET₁₂, 2, 1, 0; 2012 FF₂₆, 2, 1, 0; 2012 FU₇₂, 2, 1, 0; 2012 HE₈, 2, 1, 0; 2012 HS₃₁, 2, 1, 0; 2012 HE₇₂, 2, 1, 0; 2012 JC₂₈, 2, 1, 0; 2012 JG₄₆, 2, 1, 0; 2012 KU₁₅, 2, 1, 0; [98, 49, 0*, 2000/07/30–2006/04/27]

{32} 1999 PJ₁, 5, 1, 0; 2004 CR₂, 4, 1, 0; 2004 LV₃, 3, 1, 0; 2004 TC₁₀, 3, 1, 0; 2005 HA₈, 3, 1, 0; 2005 NE₂₁, 5, 1, 0; 2005 UH₃, 7, 2, 12; 2006 BH₃, 3, 1, 0; 2007 LE₄, 4, 1, 0; 2007 RT₁₉, 3, 1, 0; 2008 NS₁, 10, 2, 2; 2008 RG₉₈, 4, 1, 0; 2008 WZ₁₃, 6, 2, 2; 2009 HH₃₆, 6, 2, 6; 2009 KJ₃, 3, 1, 0; 2011 GL₄₄, 2, 1, 0; 2011 QD₄₈, 3, 1, 0; 2011 VS₅, 3, 1, 0; 2011 XO₃, 3, 1, 0; 2012 AA₁₁, 2, 1, 0; 2012 FA₁₄, 7, 2, 21; 2012 FE₅₈, 4, 1, 0; 2012 GX₁₁, 18, 4, 25; 2012 HJ₁, 4, 1, 0; 2012 HN₂, 3, 1, 0; 2012 HL₈, 5, 1, 0; 2012 HF₃₁, 3, 1, 0; 2012 HZ₃₃, 3, 1, 0; 2012 HN₄₀, 5, 1, 0; 2012 JM₄, 15, 4, 17; 2012 JQ₄, 4, 1, 0; 2012 JS₁₁, 2, 1, 0; 2012 JW₁₁, 32, 8, 27; 2012 JB₁₆, 17, 4, 16; 2012 JR₁₇, 4, 2, 2; 2012 JT₁₇, 3, 1, 0; 2012 JB₂₁, 4, 1, 0; 2012 KX₃, 18, 5, 25; 2012 KY₃, 5, 2, 5; 2012 KZ₃, 3, 1, 0; 2012 KX₄, 3, 1, 0; 2012 KM₁₁, 4, 1, 0; 2012 KJ₁₈, 3, 1, 0; 2012 KK₁₈, 5, 2, 19; 2012 KL₁₈, 33, 8, 27; 2012 KE₂₅, 5, 2, 1; 2012 KU₄₂, 9, 3, 2; 2012 KL₄₅, 6, 2, 2; 2012 KE₄₇, 7, 2, 2; 2012 LU₃₁, 6, 7; 2012 LC₁, 3, 1, 0; 2012 LP₁, 7, 2, 1; 2012 LR₁, 17, 4, 8; 2012 LZ₁, 4, 1, 0; 2012 LJ₂, 10, 2, 4; 2012 LK₂, 2, 1, 0; 2012 LG₄, 9, 3, 6; 2012 LQ₇, 4, 1, 0; 2012 LV₇, 5, 2, 1; 2012 LW₇, 13, 3, 6; 2012 LK₉, 23, 5, 5; 2012 LK₁₁, 3, 1, 0; 2012 LC₁₃, 15, 3, 3; 2012 MP₅, 1, 0; 2012 MQ₁₁, 11, 3, 5; 2012 MA₂, 4, 1, 0; 2012 MN₂, 17, 4, 6; 2012 MQ₂, 4, 1, 0; 2012 MU₂, 4, 1, 0; 2012 MX₂, 9, 2, 5; 2012 MY₂, 9, 2, 2; 2012 MQ₃, 4, 1, 0; 2012 MS₄, 8, 2, 1; 2012 MV₄, 3, 1, 0; 2012 MJ₆, 12, 3, 4; 2012 MK₆, 17, 3, 5; 2012 ML₆, 2, 1, 0; 2012 MO₆, 5, 1, 0; 2012 MP₆, 5, 1, 0; 2012 MQ₆, 7, 2, 2; 2012 MR₆, 4, 1, 0; 2012 MS₆, 5, 1, 0; 2012 MZ₆, 11, 3, 3; 2012 MB₇, 14, 3, 4; 2012 MD₇, 3, 1, 0; 2012 MF₇, 12, 3, 3; 2012 MG₇, 14, 3, 3; 2012 MO₇, 4, 1, 0; (1566), 4, 1, 0; (1580), 11, 2, 3; (4954), 4, 1, 0; (5646), 8, 1, 0; (5660), 6, 1, 0; (66272), 4, 1, 0; (67367), 9, 2, 1; (68216), 3, 1, 0; (142563), 2, 1, 0; (144411), 2, 1, 0; (154330), 3, 1, 0; (155334), 5, 1, 0; (159402), 2, 1, 0; (242450), 11, 2, 1; (248926), 7, 2, 14; (281375), 3, 1, 0; (285110), 3, 1, 0; (308041), 13, 3, 3; (326777), 3, 1, 0; (329915), 3, 1, 0; [761, 108, 0*, 2012/04/08–2012/06/27]

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Observers D. Rabinowitz, M. E. Schwamb, S. Tourtellotte

1.0-m reflector + CCD

USNO-A2.0

{4} 2006 UN₂₁₈, 3, 1, 0; 2010 UT₇₂, 3, 1, 0; 2012 JJ₆₆, 3, 1, 0; [9, 3, 0*, 1993/08/20–1998/06/01]

{8} 2011 EW, 1, 1, 0; 2011 SA₆₇, 1, 1, 0; [2, 2, 0*, 1992/03/03–1996/09/12]

{9} 2006 DM₁₈₄, 2, 1, 0; 2008 RC₈₇, 4, 1, 0; 2009 SJ₃₀₂, 3, 1, 0; 2012 GX₃, 4, 1, 0; 2012 LZ₂₄, 3, 1, 0; [16, 5, 0*, 2005/01/25–2005/03/31]

{37} 2010 GX₃₄, 2, 1, 0; 2011 GY₆₁, 2, 2, 2; 2011 HP₈₃, 4, 2, 87; 2011 JF₃₁, 4, 2, 252; 2012 HG₈₄ *, 7, 3, 67; 2012 KU₅₀ *, 7, 3, 28; [26, 6, 2*, 2011/04/08–2012/06/24]

821 Córdoba-Bosque Alegre

C. Colazo, Observatorio Bosque Alegre, 851 Laprida Street, Córdoba-Capital, Córdoba, Argentina [gatogristanti@gmail.com]

Observers C. Colazo, P. Guzzo, P. Ledesma, U. D'Angelo, A. Diaz, M. Cometto, N. Muguero, C. Bellitti, G. Fassetta

Measurers C. Colazo, D. Peinado

1.54-m $f/4.8$ reflector + CCD

UCAC-3

2004 QJ₁₄, 3, 1, 0; 2012 LZ₃, 3, 1, 0; 2012 LF₄, 3, 1, 0; 2012 LG₄, 3, 1, 0; 2012 LK₉, 3, 1, 0; [15, 5, 0*, 2012/06/12–2012/06/20]

822 Córdoba

C. Colazo, Observatorio Bosque Alegre, 851 Laprida Street, Córdoba-Capital, Córdoba, Argentina [gatogristanti@gmail.com]

Observers C. Colazo, A. Rosanova, R. Vasconi, N. Muguero, E. Puig, G. Fassetta, S. Morero

Measurers C. Colazo, G. Fassetta, S. Morero, C. Bellitti

0.36-m $f/5.10$ Schmidt-Cassegrain + CCD

UCAC-3

2003 AD₅₄, 3, 1, 0; 2005 MY₁₂, 3, 1, 0; [6, 2, 0*, 2012/06/26–2012/06/27]

850 Cordell-Lorenz Observatory, Sewanee

D. T. Durig, SPO 1242, Sewanee, TN 37383, U.S.A. [ddurig@sewanee.edu]

0.30-m Schmidt-Cassegrain + CCD

UCAC-2

2012 LG₁₁, 4, 1, 0; 2012 MS₆, 4, 1, 0; [8, 2, 0*, 2012/06/17–2012/06/24]

854 Sabino Canyon Observatory, Tucson

J. E. McGaha, 5100 Sabino Foothills, Tucson, AZ 85750, U.S.A.

[mcgaha@skepticus.com]

0.36-m $f/10.0$ Schmidt-Cassegrain + CCD

USNO-A2.0

2012 LT, 2, 1, 0; 2012 LU, 3, 1, 0; 2012 LC₁, 3, 1, 0; 2012 LA₁₁, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 2, 1, 0; 2012 LK₁₁, 2, 1, 0; 2012 MS₄, 2, 1, 0; 2012 MV₄, 3, 1, 0; 2012 MK₆, 3, 1, 0; [26, 10, 0*, 2012/06/09–2012/06/22]

857 Iowa Robotic Observatory, Sonoita

R. Mutel, Department of Physics & Astronomy, University of Iowa, Iowa City, IA 52242, U.S.A. [robert-mutel@uiowa.edu]

Observers M. Langbroek, A. Kostin

0.37-m $f/14$ Cassegrain + CCD

USNO-B1.0, PPMXL

2012 LZ₁, 7, 2, 4; [7, 1, 0*, 2012/06/15–2012/06/19]

910 Caussols-ODAS

A. Maury, Observatoire de la Côte d'Azur, B.P. 229, F-06304 Nice, France [maury@obs-azur.fr]

G. Hahn, DLR Institute of Planetary Exploration, Ruderow Chaussee 5, D-12489 Berlin, Germany [Gerhard.Hahn@DLR.de]

Observers A. Maury, D. Albanese, G. Hahn, M. Hoffmann

Measurers A. Maury, G. Hahn

0.90-m Schmidt + CCD

GSC

2007 TL₂₄₃, 3, 1, 0; 2008 GM₁₀₂, 3, 1, 0; 2008 SC₂₄₁, 3, 1, 0; 2012 FM₃₁, 3, 1, 0; [12, 4, 0*, 1997/08/14–1998/10/01]

926 Tenagra II Observatory

M. Schwartz, Tenagra Observatories, HC 2 Box 292, Nogales, AZ 85621, U.S.A. [mbs@tenagraobservatories.com]

Observers M. Schwartz, P. R. Holvorcem, I. Robbins

0.41-m Ritchey-Chrétien + CCD

USNO-B1.0

2000 SX₈₉, 3, 1, 0; 2000 SO₉₁, 3, 1, 0; 2001 KO₁₉, 3, 1, 0; 2001 NM₁, 3, 1, 0; 2001 RD₇₂, 3, 1, 0; 2002 MW₆, 3, 1, 0; 2002 NW₃₅, 3, 1, 0; 2002 NT₇₃, 3, 1, 0; 2002 PP₁₆₂, 3, 1, 0; 2002 QD₁₅₀, 3, 1, 0; 2002 RC₅₅, 3, 1, 0; 2002 RN₉₂, 3, 1, 0; 2002 RH₁₅₆, 3, 1, 0; 2002 TW₁₁₂, 3, 1, 0; 2002 VY₈₈, 3, 1, 0; 2002 YO₅, 3, 1, 0; 2003 GW₅₆, 3, 1, 0; 2003 QS₅₈, 3, 1, 0; 2003 TD₅₁, 3, 1, 0; 2004 DK₄₀, 3, 1, 0; 2004 NH₁₀, 3, 1, 0; 2004 RV₁₅₃, 3, 1, 0; 2004 RD₃₃₂, 3, 1, 0; 2004 VV₈₄, 3, 1, 0; 2005 GY₂₁, 6, 2, 6; 2005 GU₁₄₄, 3, 1, 0; 2005 MR₁₅, 9, 3, 12; 2005 PL₂₃, 6, 2, 12; 2005 RB₂₅, 3, 1, 0; 2005 RF₄₀, 3, 1, 0; 2005 UQ₂₂₈, 3, 1, 0; 2005 VW₃₅, 3, 1, 0; 2005 XH₂₁, 3, 1, 0; 2005 XR₂₄, 3, 1, 0; 2005 YW₃, 3, 1, 0; 2006 BW₂₆₉, 3, 1, 0; 2006 FZ₅₁, 3, 1, 0; 2006 KP₁₂, 3, 1, 0; 2006 MZ₂, 3, 1, 0; 2006 TW₁₂₄, 3, 1, 0; 2006 YV₅₃, 3, 1, 0; 2007 DE₆, 3, 1, 0; 2007 EO₁₆₇, 3, 1, 0; 2007 FT₄₆, 3, 1, 0; 2007 MM₁₃, 3, 1, 0; 2008 EB₁₂₈, 3, 1, 0; 2008 GA₈₂, 3, 1, 0; 2008 HX₅₉, 3, 1, 0; 2008 OY₈, 3, 1, 0; 2008 QG₆, 3, 1, 0; 2008 QK₄₅, 3, 1, 0; 2008 SZ₆₆, 3, 1, 0; 2008 SP₁₇₄, 3, 1, 0; 2008 UM₁₉₉, 3, 1, 0; 2008 UG₂₀₃, 3, 1, 0; 2008 UQ₂₈₃, 3, 1, 0; 2009 UT₁₂₆, 6, 2, 1; 2009 VT₃₇, 4, 1, 0; 2009 WY₁₇₁, 3, 1, 0; 2010 VW₁₉₇, 3, 1, 0; 2011 BR₁₀₄, 3, 1, 0; 2011 ED₄₂, 3, 1, 0; 2011 EU₆₅, 3, 1, 0; 2011 FK₅₄, 3, 1, 0; 2011 FR₈₉, 3, 1, 0; 2011 UW₂₈₂, 3, 1, 0; 2012 DZ₃, 3, 1, 0; 2012 KU₂₄, 3, 1, 0; 2012 LX, 3, 1, 0; 2012 LH₁, 3, 1, 0; 2012 LS₁ *, 9, 3, 2; 2012 LA₂, 3, 1, 0; 2012 LG₂, 3, 1, 0; 2012 LO₂ *, 6, 2, 1; 2012 LR₂ *, 3, 1, 0; 2012 LJ₃, 3, 1, 0; 2012 LK₄ *, 3, 1, 0; 2012 LM₄ *, 3, 1, 0; 2012 LP₄ *, 3, 1, 0; 2012 LJ₁₀, 3, 1, 0; 2012 LH₁₈, 3, 1, 0; 2012 LR₂₁ *, 3, 1, 0; 2012 LS₂₁ *, 3, 1, 0; 2012 LV₂₃, 3, 1, 0; 2012 LK₂₄, 3, 1, 0; 2012 ME₅, 3, 1, 0; 2012 MR₅, 3, 1, 0; 2012 MC₆ *, 3, 1, 0; 2012 MM₇, 3, 1, 0; 2012 MN₇, 3, 1, 0; (38), 3, 1, 0; (77), 3, 1, 0; (205), 3, 1, 0; (307), 3, 1, 0; (321), 6, 2, 9; (357), 3, 1, 0; (361), 3, 1, 0; (445), 3, 1, 0; (479), 3, 1, 0; (496), 3, 1, 0; (515), 3, 1, 0; (519), 3, 1, 0; (541), 3, 1, 0; (549), 6, 2, 10; (570), 3, 1, 0; (581), 6, 2, 6; (604), 3, 1, 0; (633), 3, 1, 0; (677), 3, 1, 0; (703), 3, 1, 0; (707), 6, 2, 10; (710), 3, 1, 0; (847), 6, 2, 8; (943), 3, 1, 0; (974), 3, 1, 0; (989), 3, 1, 0; (995), 3, 1, 0; (1041), 3, 1, 0; (1061), 6, 2, 11; (1063), 6, 2, 8; (1069), 3, 1, 0; (1120), 3, 1, 0; (1129), 6, 2, 10; (1161), 3, 1, 0; (1292), 3, 1, 0; (1333), 6, 2, 5; (1393), 3, 1, 0; (1428), 3, 1, 0; (1436), 3, 1, 0; (1445), 3, 1, 0; (1448), 3, 1, 0; (1461), 6, 2, 8; (1482), 6, 2, 6; (1494), 6, 2, 9; (1513), 6, 2, 6; (1526), 3, 1, 0; (1586), 6, 2, 8; (1621), 3, 1, 0; (1654), 3, 1, 0; (1657), 3, 1, 0; (1664), 3, 1, 0; (1675), 6, 2, 6; (1700), 3, 1, 0; (1745), 3, 1, 0; (1785), 6, 2, 8; (1788), 6, 2, 8; (1797), 3, 1, 0; (1818), 3, 1, 0; (1855), 3, 1, 0; (1902), 6, 2, 10; (1939), 3, 1, 0; (2003), 6, 2, 9; (2013), 6, 2, 11; (2077), 3, 1, 0; (2085), 3, 1, 0; (2142), 3, 1, 0; (2155), 3, 1, 0; (2161), 6, 2, 13; (2195), 3, 1, 0; (2233), 6, 2, 6; (2251), 3, 1, 0; (2346), 3, 1, 0; (2371), 6, 2, 11; (2385), 3, 1, 0; (2398), 3, 1, 0; (2421), 3, 1, 0; (2459), 3, 1, 0; (2517), 3, 1, 0; (2598), 3, 1, 0; (2657), 3, 1, 0; (2666), 3, 1, 0; (2667), 6, 2, 8; (2669), 3, 1, 0; (2700), 3,

1, 0; (2708), 6, 2, 8; (2798), 3, 1, 0; (2813), 3, 1, 0; (2843), 6, 2, 9; (2877), 6, 2, 8; (2904), 3, 1, 0; (2910), 6, 2, 6; (2914), 3, 1, 0; (2936), 3, 1, 0; (2961), 3, 1, 0; (2996), 3, 1, 0; (3062), 6, 2, 8; (3065), 3, 1, 0; (3098), 3, 1, 0; (3179), 3, 1, 0; (3209), 3, 1, 0; (3254), 3, 1, 0; (3277), 3, 1, 0; (3279), 3, 1, 0; (3310), 3, 1, 0; (3318), 6, 2, 8; (3363), 3, 1, 0; (3367), 3, 1, 0; (3379), 3, 1, 0; (3392), 3, 1, 0; (3444), 3, 1, 0; (3497), 3, 1, 0; (3511), 3, 1, 0; (3526), 3, 1, 0; (3575), 3, 1, 0; (3605), 3, 1, 0; (3659), 3, 1, 0; (3707), 3, 1, 0; (3772), 6, 2, 9; (3827), 3, 1, 0; (3828), 3, 1, 0; (3836), 3, 1, 0; (3869), 6, 2, 7; (4046), 6, 2, 13; (4115), 6, 2, 13; (4131), 3, 1, 0; (4175), 3, 1, 0; (4185), 6, 2, 8; (4213), 3, 1, 0; (4214), 3, 1, 0; (4219), 6, 2, 8; (4286), 3, 1, 0; (4299), 6, 2, 11; (4305), 3, 1, 0; (4316), 3, 1, 0; (4324), 3, 1, 0; (4341), 6, 2, 12; (4382), 3, 1, 0; (4423), 3, 1, 0; (4455), 6, 2, 10; (4462), 3, 1, 0; (4488), 9, 3, 9; (4494), 3, 1, 0; (4498), 3, 1, 0; (4513), 3, 1, 0; (4630), 6, 2, 6; (4633), 6, 2, 8; (4724), 6, 2, 12; (4814), 3, 1, 0; (4844), 3, 1, 0; (4871), 3, 1, 0; (4925), 3, 1, 0; (4965), 3, 1, 0; (4966), 3, 1, 0; (5110), 3, 1, 0; (5116), 3, 1, 0; (5228), 6, 2, 10; (5249), 3, 1, 0; (5309), 9, 3, 12; (5314), 3, 1, 0; (5363), 3, 1, 0; (5401), 3, 1, 0; (5409), 6, 2, 7; (5417), 3, 1, 0; (5478), 3, 1, 0; (5489), 6, 2, 9; (5559), 3, 1, 0; (5591), 6, 2, 4; (5612), 3, 1, 0; (5654), 3, 1, 0; (5707), 3, 1, 0; (5720), 3, 1, 0; (5730), 6, 2, 8; (5765), 3, 1, 0; (5769), 3, 1, 0; (5783), 3, 1, 0; (5802), 3, 1, 0; (5807), 3, 1, 0; (5827), 6, 2, 8; (5953), 3, 1, 0; (6024), 3, 1, 0; (6057), 3, 1, 0; (6065), 3, 1, 0; (6067), 3, 1, 0; (6074), 3, 1, 0; (6145), 3, 1, 0; (6210), 3, 1, 0; (6241), 3, 1, 0; (6272), 3, 1, 0; (6278), 3, 1, 0; (6355), 3, 1, 0; (6367), 6, 2, 9; (6383), 3, 1, 0; (6388), 5, 2, 1; (6439), 3, 1, 0; (6484), 6, 2, 7; (6505), 3, 1, 0; (6566), 3, 1, 0; (6567), 3, 1, 0; (6593), 3, 1, 0; (6657), 3, 1, 0; (6752), 3, 1, 0; (6778), 3, 1, 0; (6783), 3, 1, 0; (6796), 3, 1, 0; (6803), 3, 1, 0; (6829), 6, 2, 8; (6899), 3, 1, 0; (7006), 6, 2, 12; (7048), 3, 1, 0; (7124), 6, 2, 8; (7197), 3, 1, 0; (7226), 6, 2, 10; (7235), 6, 2, 6; (7270), 6, 2, 6; (7291), 3, 1, 0; (7323), 3, 1, 0; (7343), 3, 1, 0; (7367), 3, 1, 0; (7370), 3, 1, 0; (7392), 3, 1, 0; (7408), 3, 1, 0; (7434), 6, 2, 13; (7435), 3, 1, 0; (7461), 3, 1, 0; (7466), 3, 1, 0; (7501), 3, 1, 0; (7564), 3, 1, 0; (7589), 3, 1, 0; (7644), 3, 1, 0; (7669), 6, 2, 13; (7689), 3, 1, 0; (7720), 3, 1, 0; (7731), 3, 1, 0; (7830), 3, 1, 0; (7897), 3, 1, 0; (7919), 3, 1, 0; (7926), 3, 1, 0; (7990), 3, 1, 0; (8012), 3, 1, 0; (8049), 3, 1, 0; (8124), 3, 1, 0; (8161), 6, 2, 8; (8186), 3, 1, 0; (8188), 3, 1, 0; (8203), 3, 1, 0; (8278), 6, 2, 10; (8315), 3, 1, 0; (8327), 3, 1, 0; (8362), 3, 1, 0; (8367), 6, 2, 9; (8413), 3, 1, 0; (8471), 3, 1, 0; (8480), 3, 1, 0; (8569), 3, 1, 0; (8572), 3, 1, 0; (8575), 3, 1, 0; (8648), 3, 1, 0; (8663), 3, 1, 0; (8742), 3, 1, 0; (8878), 3, 1, 0; (8882), 3, 1, 0; (8918), 3, 1, 0; (8922), 3, 1, 0; (8932), 3, 1, 0; (8937), 3, 1, 0; (8959), 3, 1, 0; (8991), 3, 1, 0; (8994), 3, 1, 0; (9055), 3, 1, 0; (9073), 3, 1, 0; (9104), 3, 1, 0; (9110), 3, 1, 0; (9111), 3, 1, 0; (9158), 3, 1, 0; (9224), 3, 1, 0; (9226), 3, 1, 0; (9248), 6, 2, 9; (9331), 3, 1, 0; (9355), 3, 1, 0; (9365), 3, 1, 0; (9424), 3, 1, 0; (9490), 3, 1, 0; (9496), 3, 1, 0; (9527), 6, 2, 6; (9709), 6, 2, 6; (9796), 3, 1, 0; (9798), 3, 1, 0; (9834), 3, 1, 0; (9882), 3, 1, 0; (10011), 3, 1, 0; (10012), 6, 2, 8; (10036), 3, 1, 0; (10049), 3, 1, 0; (10068), 3, 1, 0; (10121), 6, 2, 8; (10148), 6, 2, 8; (10213), 3, 1, 0; (10241), 3, 1, 0; (10289), 3, 1, 0; (10314), 3, 1, 0; (10402), 3, 1, 0; (10556), 3, 1, 0; (10573), 3, 1, 0; (10624), 6, 2, 8; (10683), 3, 1, 0; (10697), 3, 1, 0; (10778), 3, 1, 0; (10780), 6, 2, 9; (10784), 3, 1, 0; (10884), 3, 1, 0; (10915), 3, 1, 0; (10996), 3, 1, 0; (11023), 3, 1, 0; (11053), 6, 2, 8; (11105), 3, 1, 0; (11121), 6, 2, 13; (11126), 3, 1, 0; (11151), 6, 2, 4; (11180), 3, 1, 0; (11315), 3, 1, 0; (11320), 3, 1, 0; (11340), 3, 1, 0; (11346), 3, 1, 0; (11362), 3, 1, 0; (11430), 3, 1, 0; (11436), 3, 1, 0; (11499), 3, 1, 0; (11530), 6, 2, 13; (11649), 3, 1, 0; (11724), 3, 1, 0; (11802), 3, 1, 0; (11829), 3, 1, 0; (11853), 3, 1, 0; (11888), 3, 1, 0; (11889), 3, 1, 0; (11897), 3, 1, 0; (12173), 3, 1, 0; (12227), 3, 1, 0; (12337), 3, 1, 0; (12342), 3, 1, 0; (12356), 3, 1, 0; (12440), 3, 1, 0; (12446), 3, 1, 0; (12464), 3, 1, 0; (12492), 3, 1, 0; (12512), 3, 1, 0; (12518), 3, 1, 0; (12570), 3, 1, 0; (12586), 3, 1, 0; (12640), 3, 1, 0; (12757), 3, 1, 0; (12767), 3, 1, 0; (12823), 3, 1, 0; (12827), 3, 1, 0; (12901), 6, 2, 13; (12987), 3, 1, 0; (13075), 6, 2, 6; (13091), 3, 1, 0; (13097), 3, 1, 0; (13116), 3, 1, 0; (13241), 3, 1, 0; (13243), 3, 1, 0; (13336), 6, 2, 9; (13404), 3, 1, 0; (13405), 6, 2, 6; (13412), 3, 1, 0; (13448), 6, 2, 9; (13466), 3, 1, 0; (13491), 3, 1, 0; (13501), 6, 2, 13; (13565), 3, 1, 0; (13570), 6, 2, 8; (13572), 3, 1, 0; (13577), 6, 2, 8; (13635), 3, 1, 0; (13637), 6, 2, 11; (13645), 3, 1, 0; (13685), 3, 1, 0; (13712), 3, 1, 0; (13725), 3, 1, 0; (13772), 3, 1, 0; (13824), 3, 1, 0; (13835), 3, 1, 0; (13892), 3, 1, 0; (13896), 3, 1, 0; (13912), 3, 1, 0; (13916), 3, 1, 0; (13944), 3, 1, 0; (13945), 3, 1, 0; (13973), 3, 1, 0; (13982), 3, 1, 0; (14002), 3, 1, 0; (14016), 6, 2, 9; (14038), 3, 1, 0; (14075), 6, 2, 9; (14100), 6, 2, 11; (14129), 3, 1, 0; (14261), 3, 1, 0; (14263), 3, 1, 0; (14265), 3, 1, 0; (14297), 3, 1, 0; (14314), 3, 1, 0; (14328), 3, 1, 0; (14431), 6, 2, 6; (14445), 3, 1, 0; (14447), 3, 1, 0; (14490), 3, 1, 0; (14558), 3, 1, 0; (14563), 3, 1, 0; (14589), 3, 1, 0; (14645), 3, 1, 0; (14698), 3, 1, 0; (14742), 3, 1, 0; (14747), 3, 1, 0; (14771), 3, 1, 0; (14778), 3, 1, 0; (14804), 3, 1, 0; (14822), 3, 1, 0; (14867), 3, 1, 0; (14883), 3, 1, 0; (15010), 6, 2, 9; (15024), 3, 1, 0; (15055), 3, 1, 0; (15058), 3, 1, 0; (15078), 6, 2, 9; (15087), 3, 1, 0; (15225), 3, 1, 0; (15232), 6, 2, 7; (15258), 3, 1, 0; (15261), 2, 1, 0; (15458), 3, 1, 0; 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(175739), 3, 1, 0; (175815), 3, 1, 0; (177266), 3, 1, 0; (178809), 3, 1, 0; (178852), 6, 2, 8; (179589), 3, 1, 0; (179600), 3, 1, 0; (179610), 3, 1, 0; (179675), 3, 1, 0; (179677), 3, 1, 0; (179841), 3, 1, 0; (179907), 3, 1, 0; (180445), 3, 1, 0; (180448), 3, 1, 0; (180808), 3, 1, 0; (180811), 3, 1, 0; (180818), 3, 1, 0; (180829), 3, 1, 0; (180839), 3, 1, 0; (180841), 3, 1, 0; (180935), 3, 1, 0; (181009), 3, 1, 0; (181062), 3, 1, 0; (181522), 3, 1, 0; (181892), 6, 2, 6; (182066), 3, 1, 0; (182276), 3, 1, 0; (182280), 3, 1, 0; (182308), 3, 1, 0; (182358), 3, 1, 0; (182462), 6, 2, 11; (183078), 3, 1, 0; (183267), 3, 1, 0; (183884), 3, 1, 0; (183948), 3, 1, 0; (183966), 3, 1, 0; (184007), 3, 1, 0; (184011), 3, 1, 0; (184338), 3, 1, 0; (184441), 3, 1, 0; (184464), 3, 1, 0; (184479), 6, 2, 9; (185303), 3, 1, 0; (185337), 3, 1, 0; (185408), 3, 1, 0; (185704), 3, 1, 0; (185859), 3, 1, 0; (186014), 3, 1, 0; (186022), 3, 1, 0; (186393), 3, 1, 0; (186485), 3, 1, 0; (186543), 3, 1, 0; (186698),

3, 1, 0; (186775), 3, 1, 0; (186793), 3, 1, 0; (186804), 3, 1, 0; (186818), 3, 1, 0; (186853), 3, 1, 0; (187054), 6, 2, 9; (187108), 3, 1, 0; (187110), 3, 1, 0; (187112), 3, 1, 0; (187141), 3, 1, 0; (187738), 3, 1, 0; (187770), 3, 1, 0; (187788), 3, 1, 0; (187885), 3, 1, 0; (188383), 3, 1, 0; (188531), 3, 1, 0; (189495), 3, 1, 0; (189614), 3, 1, 0; (189846), 3, 1, 0; (189857), 3, 1, 0; (189860), 3, 1, 0; (190024), 3, 1, 0; (190053), 3, 1, 0; (190255), 3, 1, 0; (190305), 3, 1, 0; (190407), 3, 1, 0; (190409), 3, 1, 0; (190602), 3, 1, 0; (190639), 3, 1, 0; (190640), 3, 1, 0; (190659), 3, 1, 0; (191085), 3, 1, 0; (191159), 3, 1, 0; (191166), 3, 1, 0; (191287), 6, 2, 8; (191289), 3, 1, 0; (191315), 3, 1, 0; (191322), 3, 1, 0; (191336), 3, 1, 0; (191455), 3, 1, 0; (191554), 3, 1, 0; (191681), 3, 1, 0; (191682), 3, 1, 0; (191760), 3, 1, 0; (191788), 3, 1, 0; (192018), 6, 2, 11; (192574), 3, 1, 0; (192855), 3, 1, 0; (193002), 3, 1, 0; (193713), 3, 1, 0; (195279), 3, 1, 0; (195572), 3, 1, 0; (195591), 3, 1, 0; (195646), 3, 1, 0; (195719), 3, 1, 0; (195734), 3, 1, 0; (195761), 3, 1, 0; (195959), 3, 1, 0; (196098), 3, 1, 0; (196105), 3, 1, 0; (196340), 3, 1, 0; (196476), 3, 1, 0; (197123), 3, 1, 0; (197201), 3, 1, 0; (197240), 3, 1, 0; (198174), 3, 1, 0; (198445), 3, 1, 0; (199310), 3, 1, 0; (199848), 3, 1, 0; (201114), 3, 1, 0; (201289), 6, 2, 10; (201378), 3, 1, 0; (201487), 3, 1, 0; (201838), 3, 1, 0; (202610), 3, 1, 0; (202645), 3, 1, 0; (202749), 3, 1, 0; (203754), 3, 1, 0; (204754), 3, 1, 0; (204842), 3, 1, 0; (206183), 6, 2, 7; (207898), 6, 2, 7; (208097), 6, 2, 6; (209492), 3, 1, 0; (213008), 3, 1, 0; (213598), 3, 1, 0; (213755), 3, 1, 0; (215122), 3, 1, 0; (215660), 3, 1, 0; (216611), 3, 1, 0; (217266), 3, 1, 0; (218812), 3, 1, 0; (218841), 3, 1, 0; (218849), 3, 1, 0; (219444), 3, 1, 0; (219984), 3, 1, 0; (220143), 3, 1, 0; (220147), 3, 1, 0; (220157), 3, 1, 0; (220516), 3, 1, 0; (220933), 3, 1, 0; (221035), 3, 1, 0; (221044), 3, 1, 0; (221551), 3, 1, 0; (221822), 3, 1, 0; (222079), 3, 1, 0; (222244), 3, 1, 0; (222313), 3, 1, 0; (222662), 3, 1, 0; (222667), 3, 1, 0; (222960), 6, 2, 8; (222995), 3, 1, 0; (223076), 3, 1, 0; (223090), 3, 1, 0; (223139), 3, 1, 0; (223474), 3, 1, 0; (223499), 3, 1, 0; (223584), 3, 1, 0; (223741), 6, 2, 6; (224004), 3, 1, 0; (224016), 3, 1, 0; (224037), 3, 1, 0; (224085), 3, 1, 0; (224089), 3, 1, 0; (224146), 3, 1, 0; (224191), 3, 1, 0; (224775), 2, 1, 0; (224935), 3, 1, 0; (225004), 3, 1, 0; (225107), 3, 1, 0; (225110), 3, 1, 0; (225159), 3, 1, 0; (225171), 3, 1, 0; (225497), 3, 1, 0; (225502), 3, 1, 0; (225556), 3, 1, 0; (225570), 3, 1, 0; (225677), 3, 1, 0; (225941), 3, 1, 0; (226093), 3, 1, 0; (226204), 3, 1, 0; (226712), 3, 1, 0; (226756), 3, 1, 0; (226805), 3, 1, 0; (226807), 3, 1, 0; (226884), 3, 1, 0; (227133), 3, 1, 0; (227161), 3, 1, 0; (227194), 3, 1, 0; (227207), 3, 1, 0; (227351), 3, 1, 0; (227789), 3, 1, 0; (228020), 3, 1, 0; (229548), 3, 1, 0; (229828), 3, 1, 0; (230062), 3, 1, 0; (230130), 3, 1, 0; (230896), 3, 1, 0; (231462), 3, 1, 0; (232746), 3, 1, 0; (233927), 3, 1, 0; (234168), 3, 1, 0; (234913), 3, 1, 0; (236710), 3, 1, 0; (238829), 3, 1, 0; (240184), 3, 1, 0; (242128), 3, 1, 0; (242159), 3, 1, 0; (243054), 3, 1, 0; (245122), 3, 1, 0; (247041), 3, 1, 0; (247343), 3, 1, 0; (249337), 3, 1, 0; (252190), 3, 1, 0; (254425), 3, 1, 0; (258514), 3, 1, 0; (259334), 3, 1, 0; (260600), 3, 1, 0; (262498), 3, 1, 0; (264413), 3, 1, 0; (264975), 3, 1, 0; (265018), 3, 1, 0; (265338), 3, 1, 0; (265479), 6, 2, 6; (265631), 3, 1, 0; (266418), 3, 1, 0; (266499), 3, 1, 0; (266585), 3, 1, 0; (267183), 3, 1, 0; (267214), 3, 1, 0; (267410), 3, 1, 0; (267461), 3, 1, 0; (267686), 3, 1, 0; (267761), 3, 1, 0; (268589), 3, 1, 0; (268992), 3, 1, 0; (269000), 3, 1, 0; (269174), 3, 1, 0; (269176), 3, 1, 0; (269638), 3, 1, 0; (269935), 3, 1, 0; (270602), 3, 1, 0; (271033), 3, 1, 0; (271634), 3, 1, 0; (272354), 3, 1, 0; (272814), 3, 1, 0; (274095), 3, 1, 0; (274200), 3, 1, 0; (275780), 3, 1, 0; (276642), 3, 1, 0; (277325), 3, 1, 0; (278274), 6, 2, 6; (278533), 3, 1, 0; (278884), 3, 1, 0; (279380), 3, 1, 0; (279494), 3, 1, 0; (282345), 6, 2, 10; (287558), 3, 1, 0; (288314), 3, 1, 0; (289060), 3, 1, 0; (290225), 3, 1, 0; (290525), 3, 1, 0; (293393), 3, 1, 0; (295344), 3, 1, 0; (295702), 3, 1, 0; (306478), 3, 1, 0; (308017), 3, 1, 0; (318157), 3, 1, 0; (319166), 3, 1, 0; (321036), 3, 1, 0; (329292), 3, 1, 0; (329448), 3, 1, 0; (329556), 3, 1, 0; (329812), 3, 1, 0; (329911), 3, 1, 0; (330110), 6, 2, 10; (330200), 3, 1, 0; (330457), 3, 1, 0; (330577), 3, 1, 0; (330962), 3, 1, 0; (331007), 3, 1, 0; [8129, 2404, 9*, 2005/12/02-2012/06/23]

932 John J. McCarthy Obs., New Milford

M. Robson, P.O. Box 1144, New Milford, CT 06776, U.S.A.

[mail@mccarthyobservatory.org]

Observer M. Polansky

0.4-m $f/6.3$ Schmidt-Cassegrain + CCD

UCAC-3

2012 LF₁₁, 3, 1, 0; [3, 1, 0*, 2012/06/16]**939 Observatorio Rodeno**J. Castellano, Av. Primado Reig 183, E-46020 Valencia, Spain [julioc@ono.com]0.20-m $f/10$ Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

(2649), 3, 1, 0; [3, 1, 0*, 2012/06/22]

941 Observatorio Pla D'Arguines

R. Ferrando, Guardia Civil N. 22, ESC-5 PTA.-34, E-46020 Valencia, Spain

[rferrand@pladearguines.com]

Observers R. Ferrando, M. Ferrando

0.40-m $f/10$ Ritchey-Chrétien + CCD
UCAC-2

2003 SH₂₉₅, 4, 1, 0; 2007 FJ₁₈, 4, 1, 0; 2007 RM₃₁₁, 3, 1, 0; 2008 RR₂₂, 4, 1, 0; 2011 HR₅₆, 4, 1, 0; 2012 MX₆ *, 12, 2, 1; [31, 6, 1*, 2012/06/15–2012/06/24]

947 Saint-Sulpice

B. Christophe, 63 rue Belliard, F-75018 Paris, France [bchristo@club-internet.fr]

0.60-m $f/5.6$ reflector + CCD
USNO-A2.0

2011 UK₁₂₄, 3, 1, 0; [3, 1, 0*, 2003/12/15]

950 La Palma

O. Vaduvescu, IMCCE, 77 Avenue Denfert Rochereau, F-75014 Paris, France
[ovidiv@astroclubul.org] (23)

2005 VX₁₈, 5, 1, 0; 2007 TH₉₀, 7, 1, 0; 2010 TR₁₆₈, 5, 1, 0; 2012 DA₉₅, 2, 1, 0; [19, 4, 0*, 2011/12/23–2012/02/29]

954 Teide Observatory

R. Casas, A. A. Sabadell P.O. Box 50, E-08200 Sabadell, Spain [rcr@ot.iac.es]
Observers N. D. Díaz, A. Chapman

0.26-m $f/11.6$ reflector + CCD
USNO-B1.0

2002 UD₄, 4, 1, 0; 2002 XZ₆₁, 3, 1, 0; 2005 FD₃, 6, 2, 1; 2005 PB₄, 3, 1, 0; 2008 WR₆₁, 2, 1, 0; 2012 KE₄₇, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LG₁₁, 5, 1, 0; 2012 MM₂, 4, 1, 0; 2012 MS₄, 3, 1, 0; 2012 MJ₆, 3, 1, 0; 2012 MK₆, 3, 1, 0; 2012 ML₆, 2, 1, 0; (2201), 4, 1, 0; (329669), 3, 1, 0; [54, 16, 0*, 2012/05/31–2012/06/23]

970 Chelmsford

N. D. James, 11 Tavistock Road, Chelmsford, Essex CM1 6JL, England
[ndj@blueyonder.co.uk]

0.28-m $f/10$ Schmidt-Cassegrain + CCD
UCAC-3

2012 LZ₁, 5, 1, 0; [5, 1, 0*, 2012/06/18]

A13 Observatoire Naef, Marly

P. Kocher, ufem Berg 23, CH-1734 Tentlingen, Switzerland [kocher@bluewin.ch]
0.5-m $f/3.3$ Hypergraph + CCD
UCAC-3

2007 MT₂₀, 4, 1, 0; 2012 LT₇, 3, 1, 0; (37368), 2, 1, 0; (93667), 2, 1, 0; (153958), 2, 1, 0; (162854), 2, 1, 0; (268233), 2, 1, 0; [17, 7, 0*, 2012/06/13–2012/06/20]

A14 Les Engarouines Observatory

L. Bernasconi, Les Engarouines Observatory, 1302 Les Engarouines, F-84570
Malemort du Comtat, France [Laurent.Bernasconi.51@wanadoo.fr]

0.212-m $f/3.9$ reflector + CCD
USNO-SA2.0

2001 VA₂₉, 3, 1, 0; 2005 UX₅₅, 3, 1, 0; 2007 ET₃₁, 3, 1, 0; 2007 YZ₄₈, 3, 1, 0; 2011 SX₁₂₂, 3, 1, 0; 2012 HK₆₃, 3, 1, 0; 2012 LS, 3, 1, 0; [21, 7, 0*, 2010/11/05–2012/04/25]

A17 Guidestar Observatory, Weinheim

M. Emmerich, Brunhildstrasse 31, D-69469 Weinheim, Germany
[mark@guidestar.de]

Observers M. Emmerich, S. Melchert
0.36-m $f/6$ Schmidt-Cassegrain + CCD
UCAC-2, USNO-B1.0

2004 CL, 3, 1, 0; 2012 BC₂₀, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 3, 1, 0; 2012 LG₁₁, 3, 1, 0; 2012 LK₁₁, 3, 1, 0; (317685), 6, 2, 5; [33, 10, 0*, 2012/06/17–2012/06/23]

A24 New Millennium Observatory, Mozzate

E. Cozzi, Via Borghi 14, I-22076 Mozzate, Italy [new.millennium@tin.it]
0.36-m $f/11$ Schmidt-Cassegrain + CCD
USNO-A2.0

2007 LE, 6, 1, 0; 2012 HG₃₁, 6, 1, 0; 2012 JB₁₆, 7, 1, 0; 2012 KX, 3, 1, 0; 2012 LT₇, 2, 1, 0; 2012 LL₉, 3, 1, 0; 2012 LA₁₁, 3, 1, 0; 2012 LF₁₁, 4, 1, 0; 2012 LG₁₁, 4, 1, 0; 2012 LH₁₁, 2, 1, 0; 2012 LJ₁₁, 2, 1, 0; (475), 4, 1, 0; (2255), 3, 1, 0; (2582), 4, 1, 0; (2699), 4, 1, 0; (2904), 4, 1, 0; (2938), 4, 1, 0; (3352), 2, 1, 0; (4034), 5, 1, 0; (4157), 2, 1, 0; (4533), 4, 1, 0; (4930), 4, 1, 0; (4967), 4, 1, 0; (5587), 4, 1, 0; (6670), 4, 1, 0; (7282), 3, 1, 0; (7889), 4, 1, 0; (10837), 4, 1, 0; (11017), 4, 1, 0; (11233), 4, 1, 0; (17568), 4, 1, 0; (18810), 3, 1, 0; (19506), 4, 1, 0; (20996), 4, 1, 0; (21529), 4, 1, 0; (21690), 4, 1, 0; (24475), 5, 1, 0; (25705), 4, 1, 0; (25956), 3, 1, 0; (29393), 4, 1, 0; (31881), 4, 1, 0; (33167), 3, 1, 0; (33313), 4, 1, 0; (33818), 4, 1, 0; (49513), 3, 1, 0; (53110), 4, 1, 0; (53315), 4, 1, 0; (56343), 3, 1, 0; (63163), 4, 1, 0; (85275), 6, 1, 0; (86024), 4, 1, 0; (86667), 6, 1, 0; (90350), 4, 1, 0; (95963), 4, 1, 0; (96294), 4, 1, 0; (121186), 4, 1, 0; (134256), 4, 1, 0; (154144), 2, 1, 0; (154555), 5, 1, 0; (162980), 6, 1, 0; (318050), 2, 1, 0; [236, 61, 0*, 2012/05/29–2012/06/16]

A48 Povegliano Veronese

F. Rossetti, Via Di Vittorio 6, Povegliano Veronese (Verona), Italy
[rosfla@libero.it]

0.30-m $f/5$ reflector + CCD
USNO-A2.0

2012 LZ₁, 4, 1, 0; [4, 1, 0*, 2012/06/15]

A50 Andrushivka Astronomical Observatory

Y. Ivashchenko, 3-7 Observatorna Sreet, Andrushivka, Zhytomyr reg, Ukraine
[yurets@gluk.org]

Observers Y. Ivashchenko, O. Gerashchenko, P. Kyrylenko
0.6-m reflector + CCD
UCAC-2

2012 MB₇, 5, 1, 0; [5, 1, 0*, 2012/06/23]

A53 Peschiera del Garda

R. Bianco, via della repubblica 31, I-37019 Peschiera del Garda, Italy
[robertobianco1950@libero.it]

0.25-m Schmidt-Cassegrain + CCD
USNO-A2.0

2012 HC₂, 3, 1, 0; 2012 LZ₁, 7, 2, 1; 2012 LE₁₁, 2, 1, 0; (153958), 4, 1, 0; [16, 4, 0*, 2012/06/26–2012/06/27]

A71 Stixendorf

W. Vollmann, Dammaeckergasse 28/D1/20, A-1210 Wien, Austria
[vollmann@gmx.at]

Observers M. Jaeger, E. Prospero, S. Prospero, W. Vollmann
0.35-m $f/3.1$ reflector + CCD, 0.2-m $f/2.8$ reflector + CCD
UCAC-3, NOMAD

(54484), 7, 1, 0; (71135), 7, 1, 0; [14, 2, 0*, 2012/06/15]

A77 Observatoire Chante-Perdrix, Dauban

F. Kugel, Chante Perdrix, Dauban, F-04150 Banon, France [fkugel@wanadoo.fr]
Observers F. Kugel, C. Rinner

0.08-m $f/3$ refractor + CCD, 0.4-m $f/3$ reflector + CCD
USNO-SA2.0, USNO-A2.0

2011 CM₉₁, 3, 1, 0; (326), 3, 1, 0; (60558), 2, 1, 0; [8, 3, 0*, 2007/08/09–2012/06/15]

A78 Stia

G. Bartolozzi, Via 17 Partigiani No. 56, I-52017 Stia, Arezzo, Italy

[giba44@interfree.it]

0.30-m $f/10$ Ritchey-Chrétien + CCD + $f/6.4$ focal reducer

UCAC-3

2012 HC₂, 4, 1, 0; 2012 LC₁, 5, 1, 0; (112221), 4, 1, 0; [13, 3, 0*, 2012/06/14–2012/06/15]

A81 Balzaretto Observatory, Rome

L. Franco, via G. Balzaretto 80, I-00163 Roma, Italy [lor_franco@libero.it]

0.20-m $f/5.3$ reflector + CCD

UCAC-3

(153958), 13, 3, 13; [13, 1, 0*, 2012/06/15–2012/06/29]

B18 Terskol

S. Barabanov, Institute of Astronomy of RAS, 48 Pyatnitskaya, Moscow 109017,

Russia [inasan@burbonz.nalnet.ru]

Observers M. Andreev, A. Sergeev, N. Parakhin, V. Kozlov, N. Karpov,

N. Borachok, V. Petkov

0.6-m $f/13$ Cassegrain + CCD, 2.0-m $f/8$ Ritchey-Chrétien + CCD, 0.35-m $f/10$

Schmidt-Cassegrain + CCD

UCAC-3, NOMAD, UCAC-2

2007 LX, 3, 1, 0; 2012 LQ₁, 3, 1, 0; 2012 LR₁, 3, 1, 0; 2012 LU₁, 3, 1, 0; 2012 LV₁, 3, 1, 0; 2012 LW₁, 3, 1, 0; 2012 LX₁, 3, 1, 0; 2012 LL₂, 3, 1, 0; 2012 LG₄, 3, 1, 0; 2012 LF₅, 3, 1, 0; 2012 LH₅, 3, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LU₇, 3, 1, 0; 2012 LL₉, 3, 1, 0; 2012 LA₁₁, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 3, 1, 0; 2012 LG₁₁, 3, 1, 0; (128728), 4, 1, 0; [58, 19, 0*, 2012/06/11–2012/06/16]

B33 Libbiano Observatory, Peccioli

P. Bacci, Centro Astronomico Libbiano, Loc. Libbiano Via della Chiesa 32, I-56037

Peccioli (PI), Italy [asteroidi@backman.homelinux.org]

Observers P. Bacci, F. Biasci, D. Antonacci

0.5-m $f/10$ Ritchey-Chrétien + CCD

UCAC-3

2012 LR₁, 3, 1, 0; 2012 LL₉, 2, 1, 0; 2012 LE₁₁, 3, 1, 0; [8, 3, 0*, 2012/06/14–2012/06/15]

B38 Santa Mama

S. Trevisan, Castagnoli 127/I, Subbiano, Italy [stelucy3@interfree.it]

0.30-m $f/10$ reflector + CCD + $f/6.3$ focal reducer

UCAC-3

1984 QY₁, 8, 2, 2; 2012 HG₃₁, 3, 1, 0; (5587), 11, 3, 5; (7889), 12, 3, 7; (85818), 4, 1, 0; (112221), 4, 1, 0; (162980), 9, 2, 4; (329437), 4, 1, 0; [55, 8, 0*, 2012/06/21–2012/06/28]

B42 Vitebsk

V. Nevski, Chkalov street, 19/3-24, BY-210027 Vitebsk, Belarus [nevski@tut.by]

0.3-m $f/5.0$ reflector + CCD

UCAC-3

2012 LE₁₁, 4, 1, 0; 2012 LF₁₁, 3, 1, 0; [7, 2, 0*, 2012/06/16]

B49 Paus Observatory, Sabadell

J. Camarasa, CC/ de les Paus no. 96 bajos, E-08202 Sabadell (BCN), Spain

[jordi.camarasa@ya.com]

0.30-m $f/4$ Newtonian reflector + CCD

UCAC-3

2007 LX, 3, 1, 0; 2012 LU₇, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 6, 2, 1; 2012 LG₁₁, 3, 1, 0; [18, 5, 0*, 2012/06/14–2012/06/17]

B67 Sternwarte Mirasteilas, Falera

J. De Queiroz, Sternwarte Mirasteilas, CH-7153 Falera, Graubünden, Switzerland

[encarna@kns.ch]

0.90-m $f/6.7$ reflector + CCD

USNO-B1.0

1994 NK, 3, 1, 0; 2004 CL, 6, 2, 6; 2007 MT₂₀, 3, 1, 0; 2009 KJ₂₂, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LJ₂, 3, 1, 0; [21, 6, 0*, 2012/06/14–2012/06/24]

B74 Santa Maria de Montmagastrell

J. M. Bosch, Carrer del Nord, 29, 3r, 2a, E-25300 Tàrraga, Spain

[jboschi@xtec.cat]

Observers J. M. Bosch, R. M. Olivera, F. Jáuregui, P. Horts

0.40-m $f/10$ Schmidt-Cassegrain + CCD

CMC, UCAC-3

2002 TG₁₈₆, 3, 1, 0; 2007 JJ₈, 3, 1, 0; 2008 SF₇₁, 3, 1, 0; 2008 VZ₇₄, 3, 1, 0; 2011 CL₉₁, 3, 1, 0; 2012 LM₉ *, 6, 2, 1; 2012 MK *, 15, 5, 10; 2012 MA₆ *, 14, 4, 5; 2012 MB₆ *, 12, 4, 5; 2012 MG₆, 3, 1, 0; 2012 MV₆ *, 6, 2, 2; [71, 11, 5*, 2012/06/14–2012/06/27]

B86 Sternwarte Hagen

M. Klein, Hierseier Weg 22, D-58119 Hagen, Germany

[minorplanets@sternwarte-hagen.de]

Observer M. Klein

Measurers H. Behr, P. Scheene, M. Klein

0.50-m $f/3.0$ Deltagraph + CCD

UCAC-3

2012 LM₄, 3, 1, 0; 2012 MR₅, 4, 1, 0; (2016), 3, 1, 0; [10, 3, 0*, 2011/11/28–2012/06/22]

B90 Malina River Observatory, Povoletto

G. Sostero, Via Nievo, nr. 1, I-33040 Povoletto (UD), Italy

[giovanni.sostero@elettra.trie]

Observers E. Guido, N. Howes, G. Sostero

0.3-m reflector + CCD

USNO-B1.0

2012 MG₆, 2, 1, 0; [2, 1, 0*, 2012/06/22]

B92 Chinon

M. Audejean, Place du Général de Gaulle, F-37500 Chinon, France

[maurice.audejean@wanadoo.fr]

0.32-m $f/6$ Newtonian reflector + CCD

UCAC-3

(53), 12, 1, 0; (137), 33, 4, 19; [45, 2, 0*, 2012/06/07–2012/06/30]

B96 Brixii Observatory, Kruibeke

E. Bryssinck, Brixii Observatory, B-9150 Kruibeke, Belgium

[erik.bryssinck@telenet.be]

0.4-m $f/3.8$ astrograph + CCD

PPMXL

2012 LD₁, 4, 1, 0; [4, 1, 0*, 2012/06/10]

C10 Maisoncelles

J. F. Soulier, Maisoncelles, Seine et Marne, France

[jean-francois.soulier2@wanadoo.fr]

0.30-m Newtonian reflector + CCD

UCAC-3

(10001), 3, 1, 0; (49012), 2, 1, 0; (60558), 2, 1, 0; [7, 3, 0*, 2012/06/18–2012/06/22]

C35 Terrassa

J. Aledo-Calderon, c/Calaf No. 67, Terrassa, E-08227 Barcelona, Spain
[alfnemesis@gmail.com]

0.30-m $f/3.7$ reflector + CCD

CMC, USNO-A2.0

2008 UM₄, 3, 1, 0; (134256), 1, 1, 0; [4, 2, 0*, 2012/06/22–2012/06/23]

C36 Starry Wanderer Observatory, Baran'

S. Shurpakov, 211011, 1 Korban Street, f. 22, Baran', Belarus
[shurpakou.A98@belastro.net]

0.11-m $f/7.3$ Newtonian reflector + CCD

CMC

2011 WV₁₃₄, 10, 3, 9; 2012 LZ₁, 9, 2, 1; [19, 2, 0*, 2012/06/03–2012/06/19]

C40 Kuban State University Astrophysical Observatory

A. Ivanov, 350040, st. Stavropolskaya, h. 149, Krasnodar, Russia
[ial63@yandex.ru]

Observers A. Ivanov, V. Ivanov, A. Lyashenko, N. Bogachev, V. Lysenko, I. Koval,
K. Yekimochkin, A. Levchenko, D. Ius, A. Barkov, V. Nikitin

0.51-m $f/6.3$ reflector + CCD

UCAC-3

2007 LE, 108, 1, 0; (5587), 51, 2, 7; (6455), 12, 1, 0; [171, 3, 0*, 2012/06/03–2012/06/10]

C41 MASTER-II Observatory, Kislovodsk

V. Lipunov, 119992 Universitetskij pr. 13, Sternberg Astronomical Institute,
Moscow, Russia [shurpakou.A98@belastro.net]

Observers V. Lipunov, N. Tiurina, P. Balanutsa, E. Gorbovskoy, V. Kornilov,
N. Shatskiy, V. Chazov, A. Kuznetsov, D. Zimmukhov, V. Yurkov, D. Varda,
E. Sinyakov, V. Krushinsky, I. Zalozhniy, A. Popov, K. Ivanov, S. Shurpakov
Measurers N. Budnev, E. Konstantinov, O. Chuvalaev, V. Poleshchuk, O. Gress,
A. Tlatov, D. Dormidontov, V. Senik, V. Shumkov, S. Shurpakov,
A. Punanova

0.4-m $f/2.5$ reflector + CCD

USNO-B1.0

2004 RR₁₁₀, 3, 1, 0; 2005 YW₃, 2, 1, 0; 2009 HY₈₂, 3, 1, 0; 2011 BB₈₀, 2, 1, 0; (130), 3, 1, 0; (238), 4, 1, 0; (741), 2, 1, 0; (1263), 2, 1, 0; (1473), 3, 1, 0; (2303), 2, 1, 0; (3040), 2, 1, 0; (3873), 2, 1, 0; (4202), 2, 1, 0; (4332), 2, 1, 0; (5528), 3, 1, 0; (5647), 2, 1, 0; (6027), 2, 1, 0; (6107), 4, 2, 11; (6289), 3, 1, 0; (6458), 2, 1, 0; (6486), 2, 1, 0; (6957), 3, 1, 0; (7175), 6, 2, 1; (7329), 1, 1, 0; (7448), 2, 1, 0; (8132), 2, 1, 0; (8334), 3, 1, 0; (10080), 3, 1, 0; (10737), 6, 1, 0; (11045), 5, 1, 0; (11048), 2, 1, 0; (11093), 3, 1, 0; (11366), 3, 1, 0; (11368), 1, 1, 0; (11436), 4, 1, 0; (12330), 2, 1, 0; (12463), 3, 1, 0; (13592), 3, 1, 0; (13685), 3, 1, 0; (13936), 2, 1, 0; (14315), 2, 1, 0; (14801), 3, 1, 0; (14835), 3, 1, 0; (15374), 2, 1, 0; (15416), 2, 1, 0; (16362), 4, 1, 0; (16532), 3, 1, 0; (16540), 2, 1, 0; (17007), 3, 1, 0; (17157), 2, 1, 0; (17590), 6, 1, 0; (18332), 6, 1, 0; (18535), 2, 1, 0; (19506), 3, 1, 0; (19732), 2, 1, 0; (20262), 6, 1, 0; (20560), 2, 1, 0; (21252), 4, 1, 0; (21498), 2, 1, 0; (22312), 6, 1, 0; (23255), 2, 1, 0; (23544), 2, 1, 0; (24984), 2, 1, 0; (25310), 2, 1, 0; (25917), 2, 1, 0; (26382), 2, 1, 0; (26383), 3, 1, 0; (27260), 3, 1, 0; (27518), 2, 1, 0; (29251), 3, 1, 0; (29797), 2, 1, 0; (29863), 2, 1, 0; (30100), 3, 1, 0; (30381), 2, 1, 0; (30541), 2, 1, 0; (30787), 2, 1, 0; (32848), 3, 1, 0; (33284), 4, 1, 0; (33489), 2, 1, 0; (33956), 2, 1, 0; (35133), 2, 1, 0; (35604), 2, 1, 0; (36607), 2, 1, 0; (36343), 2, 1, 0; (37581), 2, 1, 0; (38117), 3, 1, 0; (39532), 3, 1, 0; (39619), 2, 1, 0; (39769), 2, 1, 0; (39891), 3, 1, 0; (40391), 1, 1, 0; (40392), 2, 1, 0; (40914), 2, 1, 0; (44118), 4, 1, 0; (45702), 2, 1, 0; (46513), 2, 1, 0; (48857), 7, 2, 1; (49782), 5, 2, 1; (49904), 2, 1, 0; (52269), 3, 1, 0; (52310), 2, 1, 0; (52410), 3, 1, 0; (52441), 3, 1, 0; (52447), 3, 1, 0; (52529), 2, 1, 0; (52632), 3, 1, 0; (53315), 3, 1, 0; (53412), 2, 1, 0; (55760), 4, 1, 0; (55848), 2, 1, 0; (55964), 6, 1, 0; (56461), 2, 1, 0; (56775), 2, 1, 0; (58118), 2, 1, 0; (58806), 3, 1, 0; (59672), 3, 1, 0; (69834), 3, 1, 0; (69933), 5, 1, 0; (76791), 3, 1, 0; (80019), 2, 1, 0; (80238), 2, 1, 0; (81141), 3, 1, 0; (85510), 2, 1, 0; (86024), 3, 1, 0; (90438), 2, 1, 0; (90462), 3, 1, 0; (91322), 2, 1, 0; (91371), 3, 1, 0; (91376), 2, 1, 0; (100835), 3, 1, 0; (105445), 2, 1, 0; (112982), 2, 1, 0; (116735), 2, 1, 0; (118354), 2, 1, 0; (121186), 3, 1, 0; (127870), 2, 1, 0; (130359), 2, 1, 0; (140951), 2, 1, 0; (154082), 3, 1, 0; (171813), 2, 1, 0; (211857), 2, 1, 0; (222919), 4, 1, 0; (232151), 3, 1, 0; (312974), 1, 1, 0; [389, 144, 0*, 2012/06/02–2012/06/30]

C43 Hoyerswerda

P. Lindner, Ringstraße 21, D-02977 Hoyerswerda, Germany
[peter.lindner@arcor.de]

0.30-m $f/6.3$ Schmidt-Cassegrain + CCD

UCAC-3

2012 LG₁₁, 3, 1, 0; (89430), 1, 1, 0; [4, 2, 0*, 2012/06/17]

C47 Nonndorf

G. Dangl, Nonndorf 12, A-3830, Austria [gerhard@dangl.at]

0.25-m $f/4.8$ reflector + CCD

UCAC-3

2007 MM₁₃, 23, 4, 3; 2012 LZ₁, 24, 3, 2; 2012 LE₁₁, 21, 3, 2; (5626), 2, 1, 0; [70, 4, 0*, 2012/06/14–2012/06/18]

C60 Argelander Institute for Astronomy Obs., Bonn

A. Tudorica, Argelander-Institut für Astronomie, Auf dem Hügel 71, D-53121
Bonn, Germany [alex.tudorica@gmail.com]

0.5-m reflector + CCD

USNO-B1.0

1984 QY₁, 11, 1, 0; 2007 RT₁₉, 3, 1, 0; [14, 2, 0*, 2012/06/22–2012/06/30]

C74 Observatorio El Teatrillo de Lyra, Àger

M. Soriano, Taulat 91 4-3, Barcelona 08005, Spainno [margl@hotmail.com]

0.08-m $f/6.5$ refractor

CMC

(456), 3, 1, 0; (798), 3, 1, 0; [6, 2, 0*, 2012/06/02–2012/06/27]

C77 Bernezzo Observatory

A. Mantero, Via Maggiori 28, Bernezzo Italy [manteandrea@libero.it]

Observer M. Andrea

0.2-m $f/4$ reflector + CCD

USNO-B1.0

1984 QY₁, 6, 1, 0; 2012 LZ₁, 4, 1, 0; (16960), 3, 1, 0; (329437), 8, 1, 0; [21, 4, 0*, 2012/06/13–2012/06/22]

C92 Valdicerro Observatory, Loreto

M. Caimmi, via Valdicerro di Sopra 21, 60025 Loreto (AN), Italy [info@oav.name]

0.24-m $f/6.5$ Schmidt-Cassegrain + CCD

UCAC-3

2006 BZ₇, 2, 1, 0; 2012 LT₇, 2, 1, 0; 2012 LA₁₁, 3, 1, 0; 2012 MA₂, 3, 1, 0; 2012 MU₂, 3, 1, 0; 2012 ML₆, 3, 1, 0; 2012 MC₇, 3, 1, 0; [19, 7, 0*, 2012/06/14–2012/06/23]

C93 Bellavista Observatory, L'Aquila

P. Berardi, via De Paulis 15, 67100 L'Aquila, Italy [xberardi@gmail.com]

0.24-m $f/6.5$ Schmidt-Cassegrain + CCD

UCAC-3

2012 MC₇, 2, 1, 0; [2, 1, 0*, 2012/06/24]

C95 SATINO Remote Observatory, Haute Provence

D. Husar, Himmelsmoor 18, 22397 Hamburg, Germany [husar.d@gmx.de]

0.30-m $f/10$ Schmidt-Cassegrain + CCD + $f/6.1$ focal reducer

UCAC-3

(30), 706, 6, 13; (433), 158, 1, 0; (5435), 91, 2, 1; [955, 3, 0*, 2012/01/06–2012/02/18]

D03 Rantiga Osservatorio, Tincana

M. Zolnowski, Godebskiego 55a, Cracow, Poland [michael.zolnowski@gmail.com]

Observers M. Zolnowski, M. Kusiak

0.4-m $f/3.8$ reflector + CCD

UCAC-3

1995 US₁₇, 3, 1, 0; 1996 XM₂₃, 2, 1, 0; 2001 WZ₄₆, 3, 1, 0; 2003 HZ₁₂, 6, 2, 7; 2003 UH₁₄₅, 2, 1, 0; 2004 GT₂₇, 3, 1, 0; 2004 RP₃₀₉, 3, 1, 0; 2005 SE₁₀₈, 3, 1, 0; 2005 TF₅, 2, 1, 0; 2008 GS₁₄₅, 4, 1, 0; 2008 JG₂₆, 2, 1, 0; 2008 SX₃₀₂, 3, 1, 0; 2008 WC₂₇, 4, 1, 0; 2012 FF₇₂, 2, 1, 0; 2012 FD₇₄, 2, 1, 0; 2012 GA₄₀, 3, 1, 0; 2012 HE₂₈, 3, 1, 0; 2012 HL₃₉, 5, 2, 12; 2012 HY₃₉, 3, 1, 0; 2012 HE₅₀, 2, 1, 0; 2012 HV₅₀, 3, 1, 0; 2012 JW₁, 2, 1, 0; 2012 JD₂₄, 12, 4, 4; 2012 KL₅₀, 8, 1, 0; 2012 LN₂, 3, 1, 0; 2012 LZ₈, 6, 2, 1; (294), 7, 2, 2; (353), 3, 1, 0; (1073), 2, 1, 0; (1190), 3, 1, 0; (1271), 3, 1, 0; (1385), 7, 2, 2; (2364), 2, 1, 0; (2552), 3, 1, 0; (2585), 3, 1, 0; (3512), 3, 1, 0; (3829), 3, 1, 0; (3995), 2, 1, 0; (4959), 3, 1, 0; (5856), 3, 1, 0; (6400), 7, 2, 2; (6472), 3, 1, 0; (6965), 7, 2, 2; (7005), 2, 1, 0; (7699), 6, 2, 2; (8076), 3, 1, 0; (8288), 3, 1, 0; (8628), 3, 1, 0; (8778), 3, 1, 0; (9276), 4, 1, 0; (9354), 3, 1, 0; (10305), 4, 1, 0; (10714), 3, 1, 0; (12246), 4, 1, 0; (12726), 2, 1, 0; (13287), 3, 1, 0; (13329), 3, 1, 0; (13333), 3, 1, 0; (13537), 3, 1, 0; (14785), 3, 1, 0; (15333), 3, 1, 0; (15488), 3, 1, 0; (15489), 3, 1, 0; (15653), 3, 1, 0; (16363), 3, 1, 0; (16970), 4, 1, 0; (17858), 3, 1, 0; (18137), 3, 1, 0; (18140), 3, 1, 0; (18381), 3, 1, 0; (18576), 3, 1, 0; (19167), 4, 1, 0; (19340), 3, 1, 0; (19499), 3, 1, 0; (19964), 4, 1, 0; (21173), 2, 1, 0; (21399), 6, 2, 2; (21590), 3, 1, 0; (21643), 2, 1, 0; (21686), 2, 1, 0; (21808), 3, 1, 0; (22070), 3, 1, 0; (22569), 3, 1, 0; (22764), 2, 1, 0; (22967), 2, 1, 0; (23222), 3, 1, 0; (23754), 3, 1, 0; (23977), 2, 1, 0; (23988), 3, 1, 0; (25499), 3, 1, 0; (25721), 3, 1, 0; (25852), 3, 1, 0; (26118), 3, 1, 0; (26698), 3, 1, 0; (28244), 5, 2, 2; (29790), 3, 1, 0; (29884), 4, 1, 0; (30518), 3, 1, 0; (31603), 6, 2, 2; (32729), 3, 1, 0; (34859), 4, 1, 0; (35923), 4, 1, 0; (36022), 2, 1, 0; (36074), 3, 1, 0; (36731), 2, 1, 0; (37178), 3, 1, 0; (37482), 3, 1, 0; (41272), 3, 1, 0; (41318), 3, 1, 0; (41659), 3, 1, 0; (41862), 3, 1, 0; (42816), 3, 1, 0; (42859), 3, 1, 0; (42921), 3, 1, 0; (43206), 3, 1, 0; (43564), 3, 1, 0; (44009), 3, 1, 0; (44147), 2, 1, 0; (44643), 3, 1, 0; (44680), 4, 1, 0; (44992), 3, 1, 0; (45556), 2, 1, 0; (46001), 3, 1, 0; (46139), 3, 1, 0; (46285), 2, 1, 0; (46292), 3, 1, 0; (46456), 6, 1, 0; (46642), 4, 1, 0; (46794), 3, 1, 0; (46813), 3, 1, 0; (47369), 3, 1, 0; (47878), 3, 1, 0; (48939), 3, 1, 0; (49064), 3, 1, 0; (49089), 1, 1, 0; (51644), 3, 1, 0; (51659), 3, 1, 0; (51715), 3, 1, 0; (51767), 3, 1, 0; (52024), 3, 1, 0; (52286), 3, 1, 0; (52447), 3, 1, 0; (53133), 3, 1, 0; (53216), 3, 1, 0; (54531), 7, 2, 2; (54810), 3, 1, 0; (57717), 3, 1, 0; (59575), 2, 1, 0; (61108), 3, 1, 0; (61498), 3, 1, 0; (62109), 3, 1, 0; (62306), 3, 1, 0; (62545), 3, 1, 0; (63606), 2, 1, 0; (64802), 3, 1, 0; (66240), 3, 1, 0; (68321), 3, 1, 0; (68735), 3, 1, 0; (69156), 4, 1, 0; (69872), 3, 1, 0; (69909), 3, 1, 0; (69939), 7, 2, 2; (70059), 2, 1, 0; (71481), 5, 2, 2; (71485), 3, 1, 0; (71554), 2, 1, 0; (71671), 3, 1, 0; (72196), 3, 1, 0; (72315), 2, 1, 0; (72782), 2, 1, 0; (73500), 2, 1, 0; (73516), 3, 1, 0; (73567), 2, 1, 0; (74579), 2, 1, 0; (75206), 4, 1, 0; (76163), 3, 1, 0; (77326), 3, 1, 0; (77694), 4, 1, 0; (77864), 3, 1, 0; (78670), 3, 1, 0; (79197), 3, 1, 0; (79426), 4, 1, 0; (80128), 2, 1, 0; (80842), 3, 1, 0; (81276), 4, 1, 0; (82156), 3, 1, 0; (82221), 7, 2, 2; (83125), 3, 1, 0; (84123), 3, 1, 0; (84392), 3, 1, 0; (84667), 3, 1, 0; (85653), 3, 1, 0; (86012), 3, 1, 0; (86967), 3, 1, 0; (87156), 3, 1, 0; (87450), 3, 1, 0; (89432), 3, 1, 0; (92843), 2, 1, 0; (93586), 2, 1, 0; (93855), 3, 1, 0; (93903), 3, 1, 0; (95684), 3, 1, 0; (96825), 4, 1, 0; (99088), 3, 1, 0; (99250), 3, 1, 0; (99633), 3, 1, 0; (102263), 3, 1, 0; (102365), 4, 1, 0; (104244), 3, 1, 0; (104413), 4, 1, 0; (105043), 2, 1, 0; (107875), 3, 1, 0; (107918), 3, 1, 0; (109729), 2, 1, 0; (110470), 3, 1, 0; (110785), 3, 1, 0; (110983), 3, 1, 0; (112285), 2, 1, 0; (112401), 4, 1, 0; (113847), 3, 1, 0; (115379), 2, 1, 0; (118542), 3, 1, 0; (119574), 3, 1, 0; (119650), 3, 1, 0; (121173), 3, 1, 0; (122296), 3, 1, 0; (127261), 3, 1, 0; (130299), 3, 1, 0; (132947), 6, 2, 2; (132961), 2, 1, 0; (134305), 3, 1, 0; (139240), 2, 1, 0; (141790), 3, 1, 0; (147488), 3, 1, 0; (147592), 4, 1, 0; (147761), 2, 1, 0; (149211), 2, 1, 0; (154514), 3, 1, 0; (155232), 2, 1, 0; (156657), 6, 2, 2; (159796), 3, 1, 0; (163529), 4, 1, 0; (168603), 4, 1, 0; (172098), 3, 1, 0; (176634), 3, 1, 0; (179591), 4, 1, 0; (182245), 6, 2, 2; (184495), 3, 1, 0; (186115), 3, 1, 0; (188058), 4, 1, 0; (189469), 2, 1, 0; (192149), 3, 1, 0; (198511), 4, 1, 0; (200100), 3, 1, 0; (202811), 3, 1, 0; (203995), 3, 1, 0; (215590), 2, 1, 0; (217139), 2, 1, 0; (218096), 3, 1, 0; (218974), 2, 1, 0; (221594), 3, 1, 0; (223656), 2, 1, 0; (241935), 3, 1, 0; (260421), 2, 1, 0; (268158), 3, 1, 0; (268232), 2, 1, 0; (270543), 3, 1, 0; (323531), 3, 1, 0; (324099), 3, 1, 0; (325224), 2, 1, 0; (326375), 3, 1, 0; (327563), 3, 1, 0; (327577), 3, 1, 0; (327928), 7, 2, 2; (328322), 6, 2, 2; (328453), 3, 1, 0; (330649), 1, 1, 0; [884, 277, 1*, 2012/06/12-2012/06/28]

D04 Krasnodar

A. Ivanov, 350058, st. Starokubanskaya, h.95, f.10, Krasnodar, Russia
[ial63@yandex.ru]

Observers A. Ivanov, V. Ivanov, N. Ivanova, V. Lysenko

Measurer V. Ivanov

0.30-m $f/5$ reflector + CCD

UCAC-3

(432), 59, 3, 5; (455), 53, 3, 5; (732), 47, 3, 5; (741), 53, 3, 5; [212, 4, 0*, 2012/06/19-2012/06/24]

D29 Purple Mountain Observatory, XuYi Station

H. B. Zhao, 2# West Beijing Road, Nanjing 210008, China [meteorzh@pmo.ac.cn]

Observers H. B. Zhao, J. S. Yao, H. Lu, Y. Z. Wu, R. Q. Hong, L. F. Hu

Measurers H. B. Zhao, Y. Xia

1.04-m Schmidt + CCD

2006 RX₈₇, 4, 1, 0; 2011 UR₁₄₉, 4, 1, 0; 2012 KF₁₈, 4, 1, 0; 2012 KY₄₆, 6, 1, 0; 2012 LL₂₄, 4, 1, 0; [22, 5, 0*, 2007/05/18-2010/08/07]

D35 Lulin Observatory

H. C. Lin, 300 JungDa Rd, Chung-li City, Tao-yuan Country, Taiwan

[hclin@astro.ncu.edu.tw]

Observers C. W. Chen, Z. W. Zhang

Measurer Z. W. Zhang

0.41-m $f/8.8$ Ritchey-Chrétien + 2K×2K CCD + $f/6.25$ focal reducer

USNO

2008 UM₉₂, 3, 1, 0; 2010 WG₁₆, 3, 1, 0; 2011 VW₁, 3, 1, 0; [9, 3, 0*, 2006/11/27-2007/07/20]

D90 RAS Observatory, Moorook

K. Hills, 2 Brindley Brae, Kinver, DY7 6LR, England [kevinhills@me.com] (30)

0.41-m $f/9$ Ritchey-Chrétien + CCD

UCAC-3

2012 GX₁₁, 3, 1, 0; 2012 HN₄₀, 6, 2, 3; 2012 LZ₁, 4, 1, 0; 2012 LK₉, 3, 1, 0; 2012 LA₁₁, 3, 1, 0; 2012 MA₂, 3, 1, 0; 2012 MM₂, 3, 1, 0; 2012 MS₄, 3, 1, 0; 2012 MB₇, 3, 1, 0; 2012 MO₇, 3, 1, 0; (596), 6, 2, 10; [40, 11, 0*, 2012/06/05-2012/06/25]

D95 Kurihara

T. Takahashi, Kurihara, Miyagi-ken, 989-5171 Japan [pxi16412@nifty.com]

0.25-m $f/4.2$ reflector + CCD

UCAC-3

(437), 3, 1, 0; (5110), 3, 1, 0; (6582), 3, 1, 0; (8783), 3, 1, 0; (8922), 3, 1, 0; (16011), 3, 1, 0; (16527), 3, 1, 0; (19441), 3, 1, 0; (21976), 3, 1, 0; (24986), 2, 1, 0; (29757), 3, 1, 0; (46438), 3, 1, 0; (100839), 2, 1, 0; (123983), 3, 1, 0; [40, 14, 0*, 2012/05/26-2012/06/22]

E07 Murrumbateman

D. Herald, 3 Lupin Pl, Murrumbateman, NSW 2582, Australia

[DRHerald@bigpond.net.au]

0.40-m $f/10$ Schmidt-Cassegrain + CCD

UCAC-3

2005 WC₁₇₇, 2, 1, 0; 2005 XK₅₀, 2, 1, 0; 2008 SU₅₅, 2, 1, 0; (1914), 2, 1, 0; (8264), 4, 2, 1; (14561), 2, 1, 0; (25298), 4, 2, 1; (25418), 2, 1, 0; (33114), 4, 2, 1; (44104), 2, 1, 0; (55062), 2, 1, 0; (75542), 4, 2, 1; (78396), 2, 1, 0; (97623), 2, 1, 0; (100972), 4, 2, 1; (101941), 2, 1, 0; (104931), 2, 1, 0; (133438), 2, 1, 0; (139179), 4, 2, 1; (139683), 4, 2, 1; (150495), 2, 1, 0; (156432), 2, 1, 0; (159321), 4, 2, 1; (174047), 2, 1, 0; (178407), 4, 2, 1; (182508), 4, 2, 1; (196935), 2, 1, 0; (220984), 4, 2, 1; (223914), 2, 1, 0; (224386), 4, 2, 1; (238170), 2, 1, 0; (253612), 2, 1, 0; (260666), 4, 2, 2; (264835), 2, 1, 0; (278312), 2, 1, 0; (322248), 2, 1, 0; (325731), 4, 2, 1; (329484), 4, 2, 1; (330754), 4, 2, 1; [110, 39, 0*, 2012/06/07-2012/06/13]

E09 Oakley Southern Sky Observatory, Coonabarabran

R. Ditteon, 5500 Wabash Ave, Terre Haute, IN 47803, U.S.A.

[richard.p.ditteon@rose-hulman.edu]

Observer R. Ditteon

Measurers P. Moravec, A. Letfullina

0.50-m $f/8.1$ Ritchey-Chrétien + CCD

USNO-B1.0, GSC-1.2

(225), 3, 1, 0; (481), 3, 1, 0; (648), 3, 1, 0; (664), 3, 1, 0; (862), 3, 1, 0; (1177), 3, 1, 0; (1301), 3, 1, 0; (1315), 3, 1, 0; (1714), 3, 1, 0; (2234), 3, 1, 0; (2602), 3, 1, 0; (2632), 3, 1, 0; (2660), 3, 1, 0; (2903), 3, 1, 0; (3178), 3, 1, 0; (3493), 3, 1, 0; (3795), 3, 1, 0; (3810), 3, 1, 0; (3968), 3, 1, 0; (4790), 3, 1, 0; (4892), 3, 1, 0; (4950), 3, 1, 0; (5374), 3, 1, 0; (5870), 3, 1, 0; (5874), 3, 1, 0; (6043), 3, 1, 0; (6121), 3, 1, 0; (6172), 3, 1, 0; (6321), 3, 1, 0; (6574), 3, 1, 0; (6972), 3, 1, 0; (7036), 3, 1, 0; (10765), 3, 1, 0; (12738), 3, 1, 0; (15269), 3, 1, 0; (19774), 3, 1, 0; (21976), 3, 1, 0; (22007), 3, 1, 0; (24809), 3, 1, 0; (30185), 3, 1, 0; (30432), 3, 1, 0; (41572), 3, 1, 0; (44443), 3, 1, 0; (50508), 3, 1, 0; (90076), 3, 1, 0; (96487), 3, 1, 0; (98129), 3, 1, 0; [141, 47, 0*, 2011/09/05-2012/05/21]

E10 Siding Spring-Faulkes Telescope South

T. Lister, 6740 Cortona Drive Suite 102, Goleta, CA 93117, U.S.A.

[tlister@coigt.net] (0)

E. Guido, via Paride del Pozzo 12, Castellammare di Stabia, 80053, Italy

[walcom77@gmail.com] (2)

Observers R. Miles, T. Lister, K. Rochowicz, E. Guido, N. Howes, G. Sostero

Measurers R. Miles, G. A. Faillace, T. Lister, K. Rochowicz, E. Guido, N. Howes,
G. Sostero2.0-m $f/10.0$ Ritchey-Chrétien + CCD

UCAC-3, PPMXL, USNO-B1.0

{0} 2012 LW₇, 9, 1, 0; 2012 MM₂, 6, 1, 0; 2012 MN₂, 3, 1, 0; 2012 MV₂, 3, 1, 0; 2012 MP₆, 4, 1, 0; 2012 MR₁₁, 6, 1, 0; (104976), 18, 1, 0; (108605), 3, 1, 0; (225974), 3, 1, 0; (230936), 11, 3, 6; (266560), 13, 2, 5; [79, 11, 0*, 2012/06/14–2012/06/30]{2} 2006 BZ₇, 2, 1, 0; 2012 MP, 2, 1, 0; [4, 2, 0*, 2012/06/18–2012/06/19]**E12 Siding Spring Survey**

R. H. McNaught, Siding Spring Observatory, Coonabarabran, NSW 2357, Australia

[rmn@mso.anu.edu.au]

Observer R. H. McNaught

Measurers J. D. Ahern, E. C. Beshore, A. Boattini, A. R. Gibbs, A. D. Grauer,

R. E. Hill, R. A. Kowalski, S. M. Larson, R. H. McNaught

0.5-m Uppsala Schmidt + CCD

UCAC-2

1998 RD₂₀, 4, 1, 0; 2000 SV₄, 4, 1, 0; 2000 XA₂, 4, 1, 0; 2002 CO₁, 4, 1, 0; 2002 LJ₂, 4, 1, 0; 2002 OH₂₁, 4, 1, 0; 2002 QK₇₇, 4, 1, 0; 2002 QE₁₅₀, 4, 1, 0; 2002 QG₁₅₀, 4, 1, 0; 2002 RR₁₅₆, 4, 1, 0; 2002 RV₂₉₂, 2, 1, 0; 2002 VZ₇₂, 2, 1, 0; 2002 VQ₁₀₂, 5, 2, 32; 2002 WV₁₂, 8, 2, 31; 2003 EQ₃₈, 3, 1, 0; 2003 QT₁₁₀, 4, 1, 0; 2003 SJ₃₁₅, 3, 1, 0; 2004 FK₁₀₆, 4, 1, 0; 2004 LV₂₆, 4, 1, 0; 2004 ND₆, 3, 1, 0; 2004 NZ₂₂, 4, 1, 0; 2004 QH₁₈, 3, 1, 0; 2004 QU₁₉, 4, 1, 0; 2004 RV₁₅₃, 4, 1, 0; 2004 RD₃₃₂, 11, 3, 1404; 2004 RK₃₃₂, 3, 1, 0; 2005 EJ₁₇₉, 4, 1, 0; 2005 GU₁₄₄, 4, 1, 0; 2005 NL₈₄, 4, 1, 0; 2005 OQ₂₇, 2, 1, 0; 2005 PL₁₇, 3, 1, 0; 2005 TS₁₉₁, 4, 1, 0; 2005 UR₁₄₁, 4, 1, 0; 2005 UH₁₅₈, 4, 1, 0; 2005 UM₂₈₂, 4, 1, 0; 2005 UX₄₉₁, 4, 1, 0; 2005 XH₂₁, 3, 1, 0; 2006 BV₈₉, 7, 2, 10; 2006 HE₆₁, 2, 1, 0; 2006 SF₄₀₁, 2, 1, 0; 2006 TW₁₂₄, 4, 1, 0; 2006 UT₈₀, 4, 1, 0; 2006 VB₁₃₅, 2, 1, 0; 2007 DK₁₀₆, 3, 1, 0; 2007 EH₂₉, 4, 1, 0; 2007 HQ₃₅, 4, 1, 0; 2007 HP₄₆, 4, 1, 0; 2007 MV₁, 4, 1, 0; 2007 QC₁₆, 3, 1, 0; 2007 TZ₃₆, 4, 1, 0; 2007 VX₇, 1, 1, 0; 2007 YG₁₄, 4, 1, 0; 2008 CQ₆₁, 4, 1, 0; 2008 DA₆₀, 4, 1, 0; 2008 EB₈₂, 4, 1, 0; 2008 FF₁₂₈, 4, 1, 0; 2008 JU₂₂, 4, 1, 0; 2008 LB₁₃, 4, 1, 0; 2008 MG₁, 5, 2, 1; 2008 PM₂₁, 4, 1, 0; 2008 SC₁₅₃, 4, 1, 0; 2009 BX₁₇₀, 4, 1, 0; 2009 QR₁₀, 4, 1, 0; 2009 QM₅₆, 4, 1, 0; 2009 SY₂₃, 4, 1, 0; 2009 SG₁₀₃, 4, 1, 0; 2009 UM₁₃₀, 4, 1, 0; 2009 UZ₁₅₂, 8, 2, 13; 2009 VU₁₀₅, 12, 3, 50; 2009 WE₁₀₂, 3, 1, 0; 2009 WY₁₃₃, 4, 1, 0; 2009 WA₂₀₂, 4, 1, 0; 2009 XN₂₁, 2, 1, 0; 2009 XM₂₂, 4, 1, 0; 2010 AT₄, 4, 1, 0; 2010 RR₁₀₉, 4, 1, 0; 2010 SL₂₃, 4, 1, 0; 2010 VH₂₀₀, 4, 1, 0; 2010 WT₁₆, 8, 2, 7; 2011 AT₉, 4, 1, 0; 2011 AP₁₅, 4, 1, 0; 2011 BY₂₅, 7, 2, 9; 2011 FM₁₂₃, 4, 1, 0; 2011 FQ₁₄₆, 4, 1, 0; 2011 GM₄₂, 4, 1, 0; 2011 SR₃₃, 4, 1, 0; 2011 SQ₃₇, 3, 1, 0; 2011 SE₁₃₂, 4, 1, 0; 2011 TB₁₃, 4, 1, 0; 2011 TZ₁₄, 3, 1, 0; 2011 UP₃₅, 2, 1, 0; 2011 UY₁₉₄, 4, 1, 0; 2011 US₂₈₅, 4, 1, 0; 2011 WT₁₁₇, 4, 1, 0; 2012 BF₁₂₂, 4, 1, 0; 2012 BF₁₂₄, 4, 1, 0; 2012 BM₁₃₂, 2, 1, 0; 2012 DL₂₆, 4, 1, 0; 2012 DG₉₀, 11, 3, 66; 2012 EA₇, 4, 1, 0; 2012 FY₁₄, 4, 1, 0; 2012 FM₃₁, 8, 2, 12; 2012 FT₄₁, 4, 1, 0; 2012 FG₇₂, 8, 2, 19; 2012 FN₇₄, 2, 1, 0; 2012 GB, 4, 1, 0; 2012 GY₄, 3, 1, 0; 2012 HC₂, 4, 1, 0; 2012 HA, 4, 1, 0; 2012 HU₃, 4, 1, 0; 2012 HX₁₄, 4, 1, 0; 2012 HG₁₆, 4, 1, 0; 2012 HX₂₂, 4, 1, 0; 2012 HL₄₀, 9, 2, 38; 2012 HO₄₀, 4, 1, 0; 2012 HQ₅₅, 4, 1, 0; 2012 HV₆₅, 4, 1, 0; 2012 HX₆₆, 8, 1, 0; 2012 HP₆₇, 4, 1, 0; 2012 HO₇₂, 7, 2, 19; 2012 HL₇₈, 3, 1, 0; 2012 JN, 8, 2, 116; 2012 JF₂₅, 4, 1, 0; 2012 JD₂₆, 4, 1, 0; 2012 JE₃₉, 8, 2, 50; 2012 JC₅₁, 8, 2, 19; 2012 JJ₆₆, 8, 2, 33; 2012 JK₆₆ *, 6, 2, 21; 2012 JR₆₆ *, 4, 2, 13; 2012 KW₄, 11, 3, 60; 2012 KB₁₀, 4, 1, 0; 2012 KE₁₂, 8, 2, 26; 2012 KM₁₂, 2, 1, 0; 2012 KC₁₃, 4, 1, 0; 2012 KV₁₄, 7, 2, 78; 2012 KF₁₆, 7, 2, 33; 2012 KF₁₈, 4, 1, 0; 2012 KW₂₉, 4, 1, 0; 2012 KW₃₀, 8, 2, 19; 2012 KS₄₄, 6, 2, 8; 2012 KP₄₆, 4, 1, 0; 2012 KT₄₆, 8, 2, 31; 2012 KE₄₇ *, 9, 2, 21; 2012 KQ₄₈ *, 4, 1, 0; 2012 KJ₅₀, 8, 1, 0; 2012 KL₅₀, 4, 1, 0; 2012 LT, 12, 4, 1; 2012 LX, 3, 1, 0; 2012 LZ₁ *, 52, 7, 8; 2012 LR₂, 4, 1, 0; 2012 LJ₃ *, 9, 2, 1; 2012 LM₄, 4, 1, 0; 2012 LP₄, 3, 1, 0; 2012 LS₄ *, 4, 1, 0; 2012 LT₄ *, 4, 1, 0; 2012 LA₅, 4, 1, 0; 2012 LV₇ *, 8, 2, 1; 2012 LL₁₅ *, 3, 1, 0; 2012 LO₁₅, 4, 1, 0; 2012 LV₁₆ *, 4, 1, 0; 2012 MY₂, 5, 2, 2; 2012 MU₃, 4, 1, 0; 2012 MJ₆ *, 7, 2, 4; 2012 MK₆ *, 6, 2, 4; 2012 MP₆ *, 7, 2, 1; 2012 MQ₆ *, 5, 2, 3; 2012 MG₇, 2, 1, 0; 2012 MR₁₁ *, 7, 3, 2; (32), 4, 1, 0; (35), 4, 1, 0; (36), 4, 1, 0; (59), 4, 1, 0; (60), 4, 1, 0; (73), 4, 1, 0; (78), 4, 1, 0; (81), 4, 1, 0; (94), 4, 1, 0; (101), 4, 1, 0; (110), 4, 1, 0; (120), 4, 1, 0; (123), 4, 1, 0; (125), 4, 1, 0; (126), 8, 2, 9; (128), 4, 1, 0; (132), 4, 1, 0; (134), 4, 1, 0; (141), 4, 1, 0; (142), 4, 1, 0; (151), 4, 1, 0; (152), 8, 2, 9; (161), 4, 1, 0; (174), 4, 1, 0; (178), 4, 1, 0; (222), 4, 1, 0; (224), 4, 1, 0; (231),

4, 1, 0; (249), 4, 1, 0; (262), 4, 1, 0; (263), 4, 1, 0; (264), 4, 1, 0; (265), 4, 1, 0; (271), 4, 1, 0; (279), 4, 1, 0; (283), 4, 1, 0; (293), 7, 2, 8; (295), 4, 1, 0; (305), 4, 1, 0; (315), 4, 1, 0; (318), 4, 1, 0; (324), 4, 1, 0; (359), 4, 1, 0; (361), 4, 1, 0; (366), 4, 1, 0; (425), 4, 1, 0; (437), 8, 2, 9; (440), 4, 1, 0; (442), 4, 1, 0; (447), 4, 1, 0; (457), 4, 1, 0; (460), 4, 1, 0; (462), 4, 1, 0; (476), 4, 1, 0; (484), 4, 1, 0; (492), 4, 1, 0; (493), 4, 1, 0; (501), 4, 1, 0; (503), 4, 1, 0; (511), 4, 1, 0; (515), 4, 1, 0; (518), 4, 1, 0; (524), 8, 2, 18; (528), 3, 1, 0; (535), 4, 1, 0; (549), 8, 2, 9; (576), 4, 1, 0; (590), 4, 1, 0; (596), 4, 1, 0; (602), 4, 1, 0; (603), 4, 1, 0; (616), 4, 1, 0; (620), 4, 1, 0; (625), 4, 1, 0; (632), 4, 1, 0; (638), 4, 1, 0; (640), 4, 1, 0; (647), 4, 1, 0; (648), 4, 1, 0; (658), 4, 1, 0; (673), 4, 1, 0; (677), 8, 2, 9; (684), 4, 1, 0; (687), 4, 1, 0; (690), 4, 1, 0; (691), 4, 1, 0; (694), 4, 1, 0; (695), 4, 1, 0; (703), 4, 1, 0; (707), 8, 2, 9; (718), 4, 1, 0; (744), 4, 1, 0; (760), 4, 1, 0; (762), 4, 1, 0; (767), 2, 1, 0; (770), 4, 1, 0; (776), 4, 1, 0; (796), 4, 1, 0; (804), 4, 1, 0; (816), 4, 1, 0; (820), 4, 1, 0; (834), 4, 1, 0; (839), 4, 1, 0; (844), 3, 1, 0; (853), 4, 1, 0; (856), 4, 1, 0; (859), 4, 1, 0; (860), 2, 1, 0; (862), 4, 1, 0; (868), 4, 1, 0; (879), 4, 1, 0; (889), 4, 1, 0; (898), 4, 1, 0; (930), 3, 1, 0; (932), 4, 1, 0; (945), 3, 1, 0; (959), 4, 1, 0; (960), 4, 1, 0; (973), 4, 1, 0; (1001), 4, 1, 0; (1005), 4, 1, 0; (1007), 4, 1, 0; (1012), 8, 2, 6; (1027), 4, 1, 0; (1041), 8, 2, 9; (1044), 4, 1, 0; (1051), 4, 1, 0; (1061), 4, 1, 0; (1067), 3, 1, 0; (1084), 4, 1, 0; (1085), 4, 1, 0; (1095), 4, 1, 0; (1096), 4, 1, 0; (1100), 4, 1, 0; (1111), 4, 1, 0; (1121), 4, 1, 0; (1122), 4, 1, 0; (1126), 3, 1, 0; (1129), 7, 2, 9; (1142), 4, 1, 0; (1149), 4, 1, 0; (1161), 4, 1, 0; (1162), 4, 1, 0; (1176), 4, 1, 0; (1178), 4, 1, 0; (1213), 4, 1, 0; (1218), 4, 1, 0; (1228), 4, 1, 0; (1234), 4, 1, 0; (1238), 4, 1, 0; (1241), 2, 1, 0; (1245), 4, 1, 0; (1246), 4, 1, 0; (1251), 4, 1, 0; (1259), 4, 1, 0; (1267), 4, 1, 0; (1290), 4, 1, 0; (1308), 4, 1, 0; (1310), 4, 1, 0; (1338), 4, 1, 0; (1340), 4, 1, 0; (1342), 4, 1, 0; (1349), 4, 1, 0; (1351), 4, 1, 0; (1359), 4, 1, 0; (1360), 4, 1, 0; (1364), 4, 1, 0; (1374), 7, 2, 2; (1393), 8, 2, 9; (1407), 4, 1, 0; (1416), 12, 3, 18; (1420), 8, 2, 9; (1441), 4, 1, 0; (1444), 4, 1, 0; (1450), 4, 1, 0; (1462), 7, 2, 9; (1463), 4, 1, 0; (1466), 4, 1, 0; (1468), 4, 1, 0; (1474), 4, 1, 0; (1476), 3, 1, 0; (1478), 4, 1, 0; (1482), 2, 1, 0; (1497), 4, 1, 0; (1503), 4, 1, 0; (1512), 4, 1, 0; (1520), 4, 1, 0; (1538), 4, 1, 0; (1542), 4, 1, 0; (1552), 4, 1, 0; (1553), 4, 1, 0; (1563), 4, 1, 0; (1578), 4, 1, 0; (1602), 3, 1, 0; (1636), 4, 1, 0; (1641), 4, 1, 0; (1648), 4, 1, 0; (1653), 4, 1, 0; (1655), 4, 1, 0; (1659), 4, 1, 0; (1660), 4, 1, 0; (1662), 4, 1, 0; (1664), 4, 1, 0; (1669), 4, 1, 0; (1678), 4, 1, 0; (1683), 4, 1, 0; (1697), 4, 1, 0; (1700), 8, 2, 9; (1709), 4, 1, 0; (1721), 4, 1, 0; 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E23 Arcadia

A. Hidas, 31 Geelans Rd, Arcadia NSW 2159, Australia [ash255@tpg.com.au]

0.35-m Schmidt-Cassegrain + CCD

USNO-B1.0

2001 LU₅, 3, 1, 0; 2012 JB₂₁, 6, 1, 0; 2012 MM₂, 3, 1, 0; 2012 MS₄, 6, 1, 0; 2012 MK₆, 3, 1, 0; 2012 MP₆, 3, 1, 0; 2012 MS₆, 3, 1, 0; (10297), 3, 1, 0; (18643), 2, 1, 0; (21036), 3, 1, 0; (31204), 3, 1, 0; (34417), 3, 1, 0; (37759), 3, 1, 0; (71061), 9, 1, 0; (76802), 3, 1, 0; (93338), 3, 1, 0; [59, 16, 0*, 2012/06/07-2012/06/29]

E85 Farm Cove

J. McCormick, 2/4 Rapallo Place, Farm Cove, Pakuranga, Auckland, New Zealand

[farmcoveobs@extra.co.nz]

0.35-m *f*/10 Schmidt-Cassegrain + CCD

UCAC-2

(195703), 3, 1, 0; [3, 1, 0*, 2012/06/16]

E94 Possum Observatory, Gisborne

J. Drummond, 23 Bilham Road, Patutahi, Gisborne, New Zealand

[john.drummond@extra.co.nz]

0.35-m *f*/10 Schmidt-Cassegrain + CCD

UCAC-2

2012 KE₄₇, 5, 1, 0; 2012 MS₄, 10, 1, 0; [15, 2, 0*, 2012/06/01-2012/06/22]

F51 Pan-STARRS 1, Haleakala

A. Milani, Pan-STARRS Project, ISS Key Project, Institute for Astronomy, 2680

Woodlawn Drive, Honolulu, HI 96822-1839, USA [milani@dm.unipi.it]

Observers N. Primak, A. Schultz, S. Watters, J. Thiel, T. Goggia

Measurers PS1 Science Consortium, P. Veres

1.8-m Ritchey-Chrétien + CCD

2MASS

1991 TB₁₆, 4, 1, 0; 1993 BB₉, 7, 3, 4; 1995 KJ₄, 3, 1, 0; 1995 SS₄₇, 3, 1, 0; 1996 AT₆, 4, 1, 0; 1996 TO₂₄, 6, 2, 6; 1996 VR₁₉, 4, 1, 0; 1997 TR₁₉, 4, 1, 0; 1998 FM₉, 2, 1, 0; 1998 KH₁₂, 5, 1, 0; 1998 RM₂₃, 2, 1, 0; 1998 RS₅₃, 3, 1, 0; 1998 SJ₅₃, 4, 1, 0; 1998 VM₄₃, 4, 1, 0; 1998 YM₁₉, 4, 1, 0; 1998 YT₃₃, 2, 1, 0; 1999 AB₁₆, 2, 1, 0; 1999 BA₃₁, 4, 1, 0; 1999 CO₁₅₉, 2, 1, 0; 1999 GB₁₆, 4, 1, 0; 1999 HN₇, 4, 1, 0; 1999 JX₁₁, 2, 1, 0; 1999 KP₃, 6, 2, 6; 1999 LK₁, 3, 1, 0; 1999 RQ₂₁,

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(330364), 4, 1, 0; (330369), 2, 1, 0; (330407), 2, 1, 0; (330413), 3, 1, 0; (330414), 2, 1, 0; (330416), 4, 1, 0; (330419), 2, 1, 0; (330436), 2, 1, 0; (330440), 4, 1, 0; (330449), 4, 1, 0; (330457), 2, 1, 0; (330467), 2, 1, 0; (330471), 4, 1, 0; (330472), 2, 1, 0; (330485), 2, 1, 0; (330494), 3, 1, 0; (330495), 2, 1, 0; (330506), 2, 1, 0; (330512), 4, 1, 0; (330538), 4, 1, 0; (330539), 5, 2, 4; (330543), 2, 1, 0; (330563), 2, 1, 0; (330566), 2, 1, 0; (330571), 2, 1, 0; (330578), 2, 1, 0; (330586), 4, 1, 0; (330591), 2, 1, 0; (330592), 2, 1, 0; (330599), 2, 1, 0; (330603), 2, 1, 0; (330606), 3, 1, 0; (330612), 2, 1, 0; (330623), 2, 1, 0; (330624), 2, 1, 0; (330628), 4, 1, 0; (330636), 8, 1, 0; (330644), 2, 1, 0; (330646), 4, 1, 0; (330652), 2, 1, 0; (330667), 2, 1, 0; (330677), 2, 1, 0; (330685), 2, 1, 0; (330697), 8, 2, 6; (330700), 2, 1, 0; (330702), 2, 1, 0; (330703), 2, 1, 0; (330709), 9, 3, 4; (330711), 2, 1, 0; (330716), 4, 1, 0; (330717), 2, 1, 0; (330718), 4, 1, 0; (330722), 9, 3, 7; 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(331068), 2, 1, 0; (331093), 2, 1, 0; (331097), 2, 1, 0; (331103), 2, 1, 0; (331133), 2, 1, 0; (331139), 3, 1, 0; (331145), 4, 1, 0; (331148), 4, 1, 0; (331154), 3, 1, 0; (331162), 2, 1, 0; (331186), 2, 1, 0; (331188), 2, 1, 0; (331190), 4, 1, 0; (331197), 2, 1, 0; (331202), 2, 1, 0; (331212), 4, 1, 0; (331222), 12, 3, 7; (331230), 8, 3, 4; (331231), 2, 1, 0; (331232), 4, 1, 0; (331239), 2, 1, 0; (331245), 2, 1, 0; (331249), 2, 1, 0; (331251), 4, 1, 0; (331256), 2, 1, 0; (331257), 4, 1, 0; (331266), 2, 1, 0; (331276), 2, 1, 0; (331283), 5, 2, 4; (331287), 8, 3, 6; (331290), 4, 1, 0; (331304), 4, 1, 0; (331306), 2, 1, 0; (331309), 6, 2, 4; (331316), 2, 1, 0; (331317), 6, 1, 0; (331331), 3, 1, 0; (331411), 3, 1, 0; (331429), 3, 1, 0; (331434), 3, 1, 0; (331466), 4, 1, 0; [77435, 23020, 363*, 2011/01/28-2012/06/29]

F65 Haleakala-Faulkes Telescope North

R. Miles, Grange Cottage, Stourton Caundle, Dorset DT10 2JP, England

[rmiles@baa.u-net.com] (6)

P. Roche, FT Project, School of Physics and Astronomy, Cardiff University,

Cardiff, U.K. [info@faulkes-telescope.com] (7)

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[marco.bs@tiscali.it] (9)

T. Lister, LCOGT, 6740 Cortona Drive Suite 102, Goleta, CA 93117, U.S.A. (14)

Observers P. Miller, P. Roche, A. Tripp, R. Miles, R. Holmes, S. Foglia, L. Buzzì,

L. Buz, T. Lister, J. D. Armstrong, J. Pye, G. Sostero, N. Howes, E. Guido

2.0-m *f*/10.0 Ritchey-Chrétien + CCD

PPMXL, UCAC-3, UCAC-2

{14} 2003 SR₃₉₉, 4, 1, 0; 2012 LL₁, 4, 1, 0; 2012 LR₁, 15, 1, 0; 2012 LX₁, 4, 1, 0; 2012 LE₅, 4, 1, 0; 2012 LQ₇, 3, 1, 0; 2012 LT₇, 12, 1, 0; 2012 LK₉, 6, 1, 0; 2012 LY₁₀, 4, 1, 0; 2012 LF₁₁, 10, 1, 0; 2012 LD₁₃, 3, 1, 0; [69, 11, 0*, 2012/06/11-2012/06/16]

{6} 2012 LA, 3, 1, 0; [3, 1, 0*, 2012/06/07]

{7} 2011 YU₆₂, 4, 1, 0; 2012 HR₆₉, 4, 1, 0; 2012 LN₂₂ *, 3, 1, 0; [11, 3, 1*, 2012/06/07-2012/06/14]

{9} 2010 GX₃₄, 4, 1, 0; [4, 1, 0*, 2012/06/10]

G42 Observatorio Astronómico UAdC, Saltillo

J. Segura Sosa, Unidad Campo Redondo, C.P. 25280, Saltillo, Coahuila, Mexico

[observatorio@uadec.edu.mx]

0.4-m Ritchey-Chrétien + CCD

UCAC-3

(666), 6, 2, 1; (712), 6, 2, 1; [12, 2, 0*, 2012/06/26-2012/06/27]

G43 Observatorio Buenaventura Suarez, San Luis

R. Tapia, Observatorio Buenaventura Suarez, ULP, San Luis, Argentina

[rtapiavega@ulp.edu.ar]

0.40-m *f*/10 Ritchey-Chrétien + CCD

UCAC-3

2002 VY₈₈, 3, 1, 0; (60558), 4, 1, 0; [7, 2, 0*, 2012/06/19]

G48 Doc Greiner Research Obs., Rancho Hildalgo

M. Mills, 3186 Danbury Drive W, Janesville, Wisconsin, U.S.A.

[mills@charter.net]

0.40-m *f*/10 Schmidt-Cassegrain + CCD

USNO-B1.0

2007 LE, 47, 2, 1; 2011 WV₁₃₄, 6, 1, 0; 2012 DH₆₁, 3, 1, 0; 2012 HC₂, 8, 2, 1; 2012 HN₄₀, 4, 1, 0; 2012 LU, 3, 1, 0; 2012 LC₁, 20, 3, 11; 2012 LD₁, 3, 1, 0; 2012 LZ₁, 37, 3, 8; 2012 LJ₂, 4, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LU₇, 3, 1, 0; 2012 MS₄, 3, 1, 0; 2012 MV₄, 3, 1, 0; (66272), 6, 1, 0; (141018), 6, 1, 0; (162173), 3, 1, 0; (329437), 4, 1, 0; [166, 18, 0*, 2012/06/07-2012/06/22]

G51 Byrne Observatory, Sedgwick Reserve

T. Lister, LCOGT, 6740 Cortona Drive Suite 102, Goleta, CA 93117, U.S.A.

[tlistner@lcogt.net]

Observer B. J. Fulton

Measurer T. Lister

0.8-m $f/8$ Ritchey-Chrétien + CCD

USNO-B1.0, UCAC-3

2012 JD₂₄, 3, 1, 0; 2012 LW₁₄, 3, 1, 0; [6, 2, 0*, 2012/06/16–2012/06/20]

G68 Sierra Stars Observatory, Markleeville

R. Williams, 115 Chambers Lane, Markleeville, CA 96120, U.S.A.

[richw@sierrastars.com]

Observers R. Dymock, M. Langbroek, M. Ory, C. W. Hergenrother

0.61-m $f/10$ Cassegrain + CCD

USNO-B1.0, CMC

2009 HA₇₃, 15, 3, 3; 2012 LZ₁, 2, 1, 0; 2012 LH₁₀, 2, 1, 0; 2012 MM₁₁, 7, 1, 0; 2012 MS₁₁ *, 14, 3, 2; [40, 5, 1*, 2012/06/15–2012/06/30]

G84 Mount Lemmon SkyCenter

A. Block, no details supplied [ablock@as.arizona.edu]

Observers M. Ory, T. Vorobjov, A. Kostin

0.6-m $f/7.8$ reflector + CCD, 0.81-m $f/7$ Ritchey-Chrétien + CCD

USNO-B1.0, PPMXL

2012 HF, 6, 1, 0; 2012 HR₆₉, 3, 1, 0; 2012 LH₁₀ *, 6, 2, 1; 2012 ME₅, 3, 1, 0; [18, 4, 1*, 2012/06/15–2012/06/21]

G89 Kachina Observatory, Flagstaff

J. Hobart, 975 Mesa Trail, Flagstaff, AZ 86001-9632, U.S.A.

[nova@needspeed.net]

0.36-m $f/11.2$ Schmidt-Cassegrain + CCD

UCAC-2, UCAC-3

2001 OM₉₁, 6, 2, 1; 2001 PR₅₇, 6, 2, 1; 2004 RA₃, 5, 2, 1; 2004 RD₁₃, 6, 2, 1; 2004 TN₃₂₆, 6, 2, 1; 2005 ON₈, 6, 2, 1; 2005 SW₁₃, 5, 2, 2; 2006 FM₄₆, 5, 2, 1; 2007 DE₆, 3, 1, 0; 2007 QE₁₂, 4, 2, 1; 2007 RJ₂₇₃, 6, 2, 2; 2007 TR₁₅₉, 6, 2, 1; 2008 CQ₁₆₅, 6, 2, 2; 2008 OV₂₃, 6, 2, 2; 2008 SF₂₁₀, 5, 2, 1; 2008 SE₂₉₅, 6, 2, 1; 2008 SR₃₀₀, 6, 2, 1; 2011 BX₃₇, 6, 2, 1; 2011 BE₄₅, 4, 2, 1; 2012 GR₁, 3, 1, 0; 2012 HM₂₄, 3, 1, 0; 2012 JD₂₅, 3, 1, 0; 2012 JG₅₇, 3, 1, 0; 2012 KM₂, 3, 1, 0; 2012 KP₁₁, 3, 1, 0; 2012 KR₄₂, 3, 1, 0; 2012 KS₄₄, 3, 1, 0; 2012 KG₄₅, 3, 1, 0; 2012 KH₄₅, 3, 1, 0; 2012 LS₇ *, 11, 4, 15; 2012 MQ₁₁ *, 6, 2, 1; [150, 31, 2*, 2012/06/12–2012/06/29]

G92 Jarnac Observatory, Vail

D. H. Levy, 2500 E. Wetstones Rd., Vail, AZ 85641, U.S.A. [david@jarnac.org]

Observers D. H. Levy, W. Levy, T. Glinos

0.64-m $f/7.2$ Ritchey-Chrétien + CCD

USNO-A2.0

2004 AA₉, 3, 1, 0; 2009 TN₄, 3, 1, 0; 2012 FQ₂₅, 3, 1, 0; 2012 JE₅₁, 3, 1, 0; [12, 4, 0*, 2008/01/10–2011/01/25]

G96 Mt. Lemmon Survey

E. Beshore, 1629 E. University Blvd., Tucson, AZ 85721-0092, U.S.A.

[ebeshore@pl.arizona.edu]

Observers R. E. Hill, A. R. Gibbs, R. A. Kowalski, S. M. Larson, A. D. Grauer,

A. Boattini

Measurers A. Boattini, E. J. Christensen, A. R. Gibbs, A. D. Grauer, R. E. Hill,

R. A. Kowalski, S. M. Larson, R. H. McNaught

1.5-m reflector + CCD

UCAC-2

1981 EM₃₆, 3, 1, 0; 1988 TA, 4, 1, 0; 1993 BB₉, 4, 1, 0; 1993 TF₆, 4, 1, 0; 1994 PO₁₄, 4, 1, 0; 1995 FU₈, 4, 1, 0; 1995 SZ₁₃, 4, 1, 0; 1995 SC₄₁, 16, 4, 1432; 1996 TO₂₄, 3, 1, 0; 1997 RL₁₂, 4, 1, 0; 1997 SH₂₃, 3, 1, 0; 1997 WS₁₁, 4, 1, 0; 1997 WP₁₅, 4, 1, 0; 1998 HJ₅, 7, 1, 0; 1998 HF₄₃, 4, 1, 0; 1998 KH₁₂, 4, 1, 0; 1998 RF₁₄, 8, 2, 9; 1998 SO₄₆, 4, 1, 0; 1998 SY₄₉, 4, 1, 0; 1998 SG₁₅₃, 8, 1, 0; 1998 SG₁₇₁, 3, 1, 0; 1998 UA₄₅, 4, 1, 0; 1998 VQ₅₆, 4, 1, 0; 1998 WA₃₀, 4, 1, 0; 1998 YH₁₄, 4, 1, 0; 1999 BA₃₁, 4, 1, 0; 1999 GB₁₆, 9, 3, 5; 1999 NY₄, 11, 3, 957; 1999 RE₁₂₇, 3, 1, 0; 1999 RG₁₆₈, 4, 1, 0; 1999 RN₂₀₅, 8, 2, 4; 1999 TY₄₅, 4, 1, 0; 1999 TY₂₁₅, 4, 1, 0; 1999 TH₂₃₂, 4, 1, 0;

1999 TD₂₆₇, 4, 1, 0; 1999 TS₂₇₂, 4, 1, 0; 1999 TH₃₀₇, 8, 2, 1; 1999 TQ₃₃₂, 4, 1, 0; 1999 UN₃₆, 8, 2, 8; 1999 VA₁₁₃, 4, 1, 0; 1999 WG₁₆, 16, 3, 470; 1999 XC₂₆₁, 4, 1, 0; 2000 AV₃₉, 4, 1, 0; 2000 BO₁₀, 7, 2, 11; 2000 CW₇₄, 4, 1, 0; 2000 DL₇₇, 4, 1, 0; 2000 DV₈₂, 4, 1, 0; 2000 EP₅₁, 4, 1, 0; 2000 FV₄, 8, 2, 9; 2000 FW₉, 3, 1, 0; 2000 NJ₁₉, 4, 1, 0; 2000 QS₉, 8, 1, 0; 2000 QV₃₂, 4, 1, 0; 2000 QW₄₀, 4, 1, 0; 2000 QS₇₀, 4, 1, 0; 2000 QM₁₆₃, 4, 1, 0; 2000 QD₂₂₇, 4, 1, 0; 2000 RN₁₉, 4, 1, 0; 2000 RJ₉₉, 12, 3, 1481; 2000 RM₁₀₃, 4, 1, 0; 2000 SB₁, 4, 1, 0; 2000 SW₁₃, 12, 3, 11; 2000 SH₅₀, 4, 1, 0; 2000 SK₅₂, 8, 2, 8; 2000 SG₉₀, 4, 1, 0; 2000 SO₉₁, 4, 1, 0; 2000 SY₉₅, 4, 1, 0; 2000 SR₁₂₆, 4, 1, 0; 2000 SM₁₃₅, 4, 1, 0; 2000 SA₁₃₈, 4, 1, 0; 2000 SO₁₄₃, 8, 2, 8; 2000 SX₁₉₉, 4, 1, 0; 2000 SG₂₀₄, 4, 1, 0; 2000 SN₂₇₃, 4, 1, 0; 2000 SH₂₈₄, 4, 1, 0; 2000 TP, 8, 2, 7; 2000 TQ₂₀, 4, 1, 0; 2000 TY₂₃, 4, 1, 0; 2000 TV₃₄, 8, 2, 9; 2000 TZ₃₄, 4, 1, 0; 2000 TK₆₀, 8, 2, 8; 2000 UO₁₄, 4, 1, 0; 2000 UN₅₂, 4, 1, 0; 2000 UE₅₉, 4, 1, 0; 2000 VL₃₉, 4, 1, 0; 2000 VT₄₁, 4, 1, 0; 2000 VF₅₈, 12, 3, 14; 2000 WF₅₃, 4, 1, 0; 2000 XA₂, 4, 1, 0; 2000 XE₅₄, 8, 2, 6; 2000 YL₅₆, 4, 1, 0; 2001 FK₅₈, 4, 1, 0; 2001 FC₁₀₂, 20, 5, 1338; 2001 HW₂₄, 4, 1, 0; 2001 KQ, 4, 1, 0; 2001 KX₁₇, 4, 1, 0; 2001 LB, 4, 1, 0; 2001 MS₇, 2, 1, 0; 2001 OQ₁₆, 8, 2, 10; 2001 OF₂₇, 4, 1, 0; 2001 PN₄₁, 4, 1, 0; 2001 PR₅₇, 4, 1, 0; 2001 QW₃₃, 4, 1, 0; 2001 QO₅₂, 3, 1, 0; 2001 QH₉₂, 4, 1, 0; 2001 QO₁₄₆, 4, 1, 0; 2001 QJ₁₅₄, 4, 1, 0; 2001 QC₁₆₈, 4, 1, 0; 2001 QU₁₇₁, 4, 1, 0; 2001 QW₁₈₇, 4, 1, 0; 2001 QV₂₂₈, 4, 1, 0; 2001 QG₂₄₆, 4, 1, 0; 2001 RG₉, 8, 2, 4; 2001 RB₁₀, 4, 1, 0; 2001 RK₂₁, 16, 4, 485; 2001 RX₃₉, 4, 1, 0; 2001 RK₄₉, 4, 1, 0; 2001 RS₆₅, 4, 1, 0; 2001 RP₉₀, 4, 1, 0; 2001 RU₁₂₇, 4, 1, 0; 2001 SK₈, 4, 1, 0; 2001 SV₁₁₉, 8, 1, 0; 2001 SE₁₄₃, 4, 1, 0; 2001 SP₁₄₃, 8, 2, 2; 2001 SV₁₅₆, 4, 1, 0; 2001 SE₂₁₀, 4, 1, 0; 2001 SO₂₂₅, 4, 1, 0; 2001 SS₂₉₁, 3, 1, 0; 2001 SH₃₃₉, 4, 1, 0; 2001 SM₃₄₅, 4, 1, 0; 2001 TF₁₁, 4, 1, 0; 2001 TZ₂₂, 4, 1, 0; 2001 TX₉₅, 12, 2, 1; 2001 TN₁₀₃, 11, 3, 2; 2001 TL₁₂₀, 4, 1, 0; 2001 TK₁₂₈, 4, 1, 0; 2001 TY₁₇₀, 4, 1, 0; 2001 TF₁₇₉, 8, 2, 1; 2001 TD₂₃₅, 5, 1, 0; 2001 TK₂₃₅, 8, 1, 0; 2001 TQ₂₄₈, 4, 1, 0; 2001 TK₂₆₂, 4, 1, 0; 2001 UD, 3, 1, 0; 2001 UA₄₂, 4, 1, 0; 2001 UQ₁₁₆, 4, 1, 0; 2001 UP₁₃₄, 8, 2, 33; 2001 UF₂₀₈, 4, 1, 0; 2001 US₂₃₀, 4, 1, 0; 2001 VR₂₀, 4, 1, 0; 2001 VA₂₉, 4, 1, 0; 2001 VU₇₈, 4, 1, 0; 2001 VW₈₀, 8, 2, 4; 2001 VO₈₂, 4, 1, 0; 2001 VO₈₃, 4, 1, 0; 2001 WZ₄₆, 4, 1, 0; 2001 WM₅₁, 8, 2, 1; 2001 WD₉₈, 8, 2, 8; 2001 XB₅, 8, 2, 5; 2001 XB₁₉, 4, 1, 0; 2001 XJ₇₇, 4, 1, 0; 2001 XA₉₆, 4, 1, 0; 2001 XE₁₀₂, 4, 1, 0; 2001 XJ₁₀₄, 4, 1, 0; 2001 XY₁₁₀, 4, 1, 0; 2001 XA₁₁₂, 4, 1, 0; 2001 XS₁₂₂, 4, 1, 0; 2001 XN₁₅₀, 7, 2, 25; 2001 XC₁₉₂, 4, 1, 0; 2001 XN₂₁₆, 4, 1, 0; 2001 XK₂₄₅, 12, 3, 11; 2001 XJ₂₅₀, 4, 1, 0; 2001 YB₈₈, 8, 2, 7; 2002 AM₁₄, 11, 3, 1349; 2002 AP₃₉, 4, 1, 0; 2002 AU₄₇, 4, 1, 0; 2002 AZ₆₈, 4, 1, 0; 2002 AO₈₄, 8, 2, 9; 2002 AW₁₄₄, 4, 1, 0; 2002 BL₁₄, 4, 1, 0; 2002 BW₂₄, 4, 1, 0; 2002 CF₁, 12, 3, 1889; 2002 CK₂, 8, 2, 33; 2002 CJ₅₃, 4, 1, 0; 2002 CD₁₁₆, 4, 1, 0; 2002 CH₁₉₁, 4, 1, 0; 2002 CR₃₂, 4, 1, 0; 2002 CB₂₄₇, 4, 1, 0; 2002 CL₂₅₂, 4, 1, 0; 2002 CY₃₀₀, 4, 1, 0; 2002 EQ₂, 4, 1, 0; 2002 E₂₂, 4, 1, 0; 2002 EO₁₁₃, 4, 1, 0; 2002 EL₁₃₁, 4, 1, 0; 2002 FU₄, 4, 1, 0; 2002 FF₁₅, 4, 1, 0; 2002 GQ₄, 4, 1, 0; 2002 GD₂₈, 4, 1, 0; 2002 GB₅₉, 4, 1, 0; 2002 GM₆₃, 4, 1, 0; 2002 GZ₇₁, 4, 1, 0; 2002 GO₁₀₄, 10, 3, 62; 2002 GE₁₁₇, 4, 1, 0; 2002 GP₁₂₆, 4, 1, 0; 2002 GK₁₈₀, 4, 1, 0; 2002 GC₁₈₄, 4, 1, 0; 2002 GU₁₈₆, 8, 2, 1053; 2002 GJ₁₈₉, 8, 2, 30; 2002 GM₁₈₉, 4, 1, 0; 2002 GQ₁₈₉, 4, 1, 0; 2002 HO₇, 4, 1, 0; 2002 HT₁₄, 4, 1, 0; 2002 JK₇, 4, 1, 0; 2002 JV₇, 11, 3, 417; 2002 JZ₁₀₈, 4, 1, 0; 2002 JP₁₂₃, 4, 1, 0; 2002 JX₁₄₉, 8, 2, 914; 2002 JN₁₅₀, 8, 2, 21; 2002 KQ₁₆, 4, 1, 0; 2002 LS₅, 8, 1, 0; 2002 LD₃₅, 4, 1, 0; 2002 MU₅, 4, 1, 0; 2002 NS₃, 4, 1, 0; 2002 ND₅, 4, 1, 0; 2002 NL₆, 12, 3, 580; 2002 NE₃₁, 4, 1, 0; 2002 NT₁₄₈, 4, 1, 0; 2002 NN₅₈, 8, 2, 6; 2002 NW₅₈, 8, 2, 1; 2002 NX₆₈, 4, 1, 0; 2002 NG₇₁, 8, 2, 17; 2002 NT₇₃, 8, 2, 1565; 2002 NR₇₇, 8, 2, 31; 2002 NU₇₇, 4, 1, 0; 2002 NY₇₈, 8, 2, 19; 2002 NF₇₉, 4, 1, 0; 2002 OG₂₀, 8, 2, 7; 2002 OF₂₃, 3, 1, 0; 2002 OJ₃₂, 4, 1, 0; 2002 OJ₃₄, 12, 3, 14; 2002 OA₃₇, 4, 1, 0; 2002 PX₂, 4, 1, 0; 2002 PM₅, 10, 1, 0; 2002 PB₉, 4, 1, 0; 2002 PR₂₅, 12, 2, 2; 2002 PP₃₀, 11, 3, 30; 2002 PF₃₃, 7, 2, 11; 2002 PD₆₆, 4, 1, 0; 2002 PH₈₁, 8, 2, 2; 2002 PH₉₀, 4, 1, 0; 2002 PV₉₉, 4, 1, 0; 2002 PS₁₀₀, 4, 1, 0; 2002 PA₁₀₁, 4, 1, 0; 2002 PS₁₀₁, 8, 2, 7; 2002 PG₁₀₂, 4, 1, 0; 2002 PN₁₀₂, 4, 1, 0; 2002 PT₁₀₃, 4, 1, 0; 2002 PN₁₀₅, 7, 2, 9; 2002 PY₁₂₂, 12, 3, 810; 2002 PH₁₂₉, 4, 1, 0; 2002 PX₁₂₉, 4, 1, 0; 2002 PH₁₃₁, 4, 1, 0; 2002 PH₁₅₀, 4, 1, 0; 2002 PK₁₆₇, 3, 1, 0; 2002 PR₁₇₄, 4, 1, 0; 2002 PY₁₈₀, 4, 1, 0; 2002 PV₁₈₁, 8, 2, 14; 2002 PP₁₈₅, 4, 1, 0; 2002 PU₁₈₉, 4, 1, 0; 2002 PG₁₉₂, 3, 1, 0; 2002 PB₁₉₄, 4, 1, 0; 2002 PA₁₉₅, 4, 1, 0; 2002 PH₁₉₅, 4, 1, 0; 2002 PS₁₉₉, 4, 1, 0; 2002 PX₁₉₉, 12, 3, 59; 2002 PY₁₉₉, 20, 5, 894; 2002 PZ₁₉₉, 8, 2, 1522; 2002 PA₂₀₀, 8, 2, 1472; 2002 PF₂₀₀, 4, 1, 0; 2002 PG₂₀₀, 4, 1, 0; 2002 PM₂₀₀, 8, 2, 542; 2002 PN₂₀₀, 12, 3, 1838; 2002 PP₂₀₀, 20, 5, 1856; 2002 PS₂₀₀, 3, 1, 0; 2002 PX₂₀₀, 16, 4, 2271; 2002 PC₂₀₁, 16, 4, 1274; 2002 PE₂₀₁, 8, 2, 443; 2002 QX₃, 8, 2, 1944; 2002 QA₇, 4, 1, 0; 2002 QG₁₃, 4, 1, 0; 2002 QY₂₄, 4, 1, 0; 2002 QW₃₆, 4, 1, 0; 2002 QB₃₉, 4, 1, 0; 2002 QR₆₀, 4, 1, 0; 2002 QB₆₄, 4, 1, 0; 2002 QA₆₇, 8, 1, 0; 2002 QF₇₉, 4, 1, 0; 2002 QB₉₂, 4, 1, 0; 2002 QE₉₄, 4, 1, 0; 2002 QC₉₉, 4, 1, 0; 2002 QK₁₀₁, 4, 1, 0; 2002 QF₁₀₄, 4, 1, 0; 2002 QF₁₀₆, 4, 1, 0; 2002 QV₁₀₉, 11, 3, 998; 2002 QW₁₁₈, 12, 3, 2033; 2002 QB₁₂₂, 7, 2, 9; 2002 QK₁₂₇, 4, 1, 0; 2002 QZ₁₂₉, 4, 1, 0; 2002 QF₁₃₀, 4, 1, 0; 2002 QR₁₃₀, 8, 2, 11; 2002 QA₁₃₂, 3, 1, 0; 2002 QD₁₄₆, 7, 2, 1558; 2002 QS₁₄₇, 4, 1, 0; 2002 QA₁₄₈, 4, 1, 0; 2002 QC₁₅₀, 8, 2, 10; 2002 QD₁₅₀, 4, 1, 0; 2002 QE₁₅₀, 20, 5, 1014; 2002 QG₁₅₀, 8, 1, 0; 2002 QJ₁₅₀, 4, 1, 0; 2002 QN₁₅₀, 20, 5, 2473; 2002 QT₁₅₀, 7, 2, 2196; 2002 QW₁₅₀, 8, 2, 387; 2002 QX₁₅₀, 21, 5, 1608; 2002 QY₁₅₀, 8, 2, 995; 2002 QA₁₅₁, 16, 4, 94; 2002 QK₁₅₁, 8, 2, 909; 2002 QM₁₅₁, 4, 1, 0; 2002 QO₁₅₁, 4, 1, 0; 2002 RP₂, 4, 1, 0; 2002 RX₄, 8, 2, 1; 2002 RJ₃₆, 8, 2, 489; 2002 RT₄₅, 4, 1, 0; 2002 RO₄₆, 12, 3, 14; 2002 RC₅₅, 4, 1, 0; 2002 RC₇₀, 4, 1, 0; 2002 RV₇₂, 4, 1, 0; 2002 RZ₇₃, 4, 1, 0; 2002 RV₈₉, 3, 1, 0; 2002 RD₁₁₆, 4, 1, 0; 2002 RM₁₂₅, 4, 1, 0; 2002 RQ₁₃₁, 3, 1, 0; 2002 RC₁₃₄, 4, 1, 0; 2002 RL₁₃₅, 4, 1, 0; 2002 RU₁₄₃, 4, 1, 0; 2002 RD₁₄₆, 4, 1, 0; 2002 RR₁₅₆, 8, 2, 851; 2002 RS₁₈₁, 4, 1, 0; 2002 RK₁₈₅, 4, 1, 0; 2002 RY₁₈₉, 4, 1, 0; 2002 RY₂₀₁, 8, 2, 9; 2002 RG₂₀₇, 4, 1, 0; 2002 RD₂₁₇, 4, 1, 0; 2002 RG₂₁₈,

4, 1, 0; 2002 RC₂₂₅, 4, 1, 0; 2002 RF₂₄₀, 4, 1, 0; 2002 RK₂₄₆, 4, 1, 0; 2002 RS₂₅₃, 4, 1, 0; 2002 RV₂₆₀, 4, 1, 0; 2002 RG₂₇₅, 4, 1, 0; 2002 RV₂₈₀, 8, 2, 8; 2002 RX₂₉₂, 8, 2, 545; 2002 SS₅₅, 8, 2, 8; 2002 SC₅₉, 7, 2, 8; 2002 TR₁₀, 3, 1, 0; 2002 TQ₁₄, 4, 1, 0; 2002 TR₂₇, 4, 1, 0; 2002 TS₄₂, 3, 1, 0; 2002 TG₇₁, 4, 1, 0; 2002 TO₈₆, 8, 2, 19; 2002 TU₉₀, 4, 1, 0; 2002 TS₉₄, 4, 1, 0; 2002 TY₉₅, 4, 1, 0; 2002 TZ₉₅, 8, 2, 1257; 2002 TR₁₂₂, 4, 1, 0; 2002 TM₁₂₃, 4, 1, 0; 2002 TW₁₂₆, 4, 1, 0; 2002 TJ₁₂₈, 4, 1, 0; 2002 TS₁₂₉, 4, 1, 0; 2002 TS₁₃₈, 4, 1, 0; 2002 TE₁₆₉, 4, 1, 0; 2002 TH₁₈₄, 8, 1, 0; 2002 TE₁₈₅, 4, 1, 0; 2002 TV₂₁₇, 4, 1, 0; 2002 TL₂₁₈, 4, 1, 0; 2002 TR₂₁₉, 4, 1, 0; 2002 TC₂₆₃, 4, 1, 0; 2002 TJ₂₇₄, 4, 1, 0; 2002 TZ₂₇₈, 4, 1, 0; 2002 TE₂₇₉, 4, 1, 0; 2002 TT₂₉₃, 4, 1, 0; 2002 TW₃₀₃, 4, 1, 0; 2002 TP₃₀₈, 8, 1, 0; 2002 TH₃₁₅, 4, 1, 0; 2002 TA₃₄₂, 4, 1, 0; 2002 TQ₃₄₂, 4, 1, 0; 2002 TJ₃₄₆, 4, 1, 0; 2002 TN₃₅₂, 4, 1, 0; 2002 UO₂, 4, 1, 0; 2002 UD₁₇, 4, 1, 0; 2002 UE₂₂, 8, 1, 0; 2002 UK₂₅, 4, 1, 0; 2002 UB₄₄, 12, 3, 2209; 2002 UN₄₇, 8, 2, 791; 2002 UO₅₈, 4, 1, 0; 2002 UE₇₄, 4, 1, 0; 2002 UF₇₈, 4, 1, 0; 2002 UH₇₉, 4, 1, 0; 2002 VB₁₃, 4, 1, 0; 2002 VB₁₇, 5, 1, 0; 2002 VO₄₆, 4, 1, 0; 2002 VY₅₉, 4, 1, 0; 2002 VY₆₆, 4, 1, 0; 2002 VK₇₁, 4, 1, 0; 2002 VZ₇₂, 12, 3, 9; 2002 VR₉₀, 8, 2, 7; 2002 VW₁₀₀, 8, 2, 22; 2002 VQ₁₀₂, 12, 3, 1484; 2002 VZ₁₀₃, 4, 1, 0; 2002 VZ₁₁₇, 4, 1, 0; 2002 VA₁₂₅, 4, 1, 0; 2002 VB₁₂₅, 4, 1, 0; 2002 VV₁₃₂, 4, 1, 0; 2002 VO₁₃₆, 4, 1, 0; 2002 VC₁₄₃, 4, 1, 0; 2002 VY₁₄₄, 4, 1, 0; 2002 VF₁₄₈, 4, 1, 0; 2002 WH₆, 4, 1, 0; 2002 WM₇, 4, 1, 0; 2002 WV₁₂, 8, 2, 55; 2002 WR₂₁, 5, 1, 0; 2002 XH₉, 8, 2, 6; 2002 XA₁₉, 4, 1, 0; 2002 XZ₃₃, 4, 1, 0; 2002 XT₄₄, 4, 1, 0; 2002 XT₄₆, 4, 1, 0; 2002 XR₅₀, 4, 1, 0; 2002 XW₉₈, 7, 2, 8; 2002 XY₁₀₆, 4, 1, 0; 2002 XS₁₁₀, 4, 1, 0; 2002 XS₁₁₉, 4, 1, 0; 2002 YO₅, 4, 1, 0; 2002 YJ₂₃, 12, 2, 8; 2003 AO₂₉, 4, 1, 0; 2003 AR₇₂, 4, 1, 0; 2003 AK₇₉, 4, 1, 0; 2003 BZ₁₇, 7, 2, 144; 2003 BP₅₃, 4, 1, 0; 2003 CF₁₂, 4, 1, 0; 2003 CY₂₁, 12, 3, 14; 2003 EE₅₃, 8, 2, 21; 2003 EN₅₉, 4, 1, 0; 2003 FG₄, 4, 1, 0; 2003 FY₂₉, 4, 1, 0; 2003 FV₇₀, 3, 1, 0; 2003 FW₁₀₇, 4, 1, 0; 2003 FJ₁₀₈, 4, 1, 0; 2003 GY₃₃, 4, 1, 0; 2003 GQ₄₃, 4, 1, 0; 2003 GB₅, 4, 1, 0; 2003 HZ₆, 4, 1, 0; 2003 HL₁₅, 19, 4, 4; 2003 HK₃₀, 4, 1, 0; 2003 HB₄₄, 4, 1, 0; 2003 HA₄₆, 4, 1, 0; 2003 JM₅, 4, 1, 0; 2003 JV₈, 4, 1, 0; 2003 KO₁₄, 4, 1, 0; 2003 KX₃₅, 3, 1, 0; 2003 LP₅, 4, 1, 0; 2003 MT₂, 4, 1, 0; 2003 MV₄, 4, 1, 0; 2003 MG₆, 12, 2, 9; 2003 NE₁, 4, 1, 0; 2003 NN₅, 8, 2, 499; 2003 ON₁₇, 4, 1, 0; 2003 PX₁₀, 7, 2, 15; 2003 QW₄₇, 4, 1, 0; 2003 QH₄₈, 4, 1, 0; 2003 QP₄₈, 3, 1, 0; 2003 QR₈₀, 4, 1, 0; 2003 QJ₁₀₇, 4, 1, 0; 2003 QA₁₂₀, 4, 1, 0; 2003 RP₇, 4, 1, 0; 2003 RO₁₂, 4, 1, 0; 2003 RY₁₅, 4, 1, 0; 2003 SS₁₀, 4, 1, 0; 2003 SA₁₅, 4, 1, 0; 2003 SD₁₈, 4, 1, 0; 2003 SE₂₅, 4, 1, 0; 2003 SV₄₇, 4, 1, 0; 2003 SJ₅₂, 8, 2, 6; 2003 SY₅₉, 8, 2, 4; 2003 SA₆₀, 4, 1, 0; 2003 SM₆₀, 4, 1, 0; 2003 SC₇₁, 4, 1, 0; 2003 SQ₇₁, 4, 1, 0; 2003 SR₈₆, 4, 1, 0; 2003 SW₁₄₅, 4, 1, 0; 2003 SL₁₆₅, 20, 3, 2; 2003 SQ₁₆₆, 4, 1, 0; 2003 SL₁₉₁, 4, 1, 0; 2003 SH₁₉₅, 11, 3, 6; 2003 SG₂₁₁, 4, 1, 0; 2003 SM₂₂₆, 4, 1, 0; 2003 SF₂₄₉, 11, 3, 14; 2003 SN₂₆₂, 4, 1, 0; 2003 SU₂₇₇, 4, 1, 0; 2003 SZ₂₇₇, 8, 2, 867; 2003 SJ₂₈₂, 4, 1, 0; 2003 SO₃₁₈, 4, 1, 0; 2003 SQ₃₂₃, 8, 2, 8; 2003 SE₃₂₅, 4, 1, 0; 2003 SM₃₇₇, 4, 1, 0; 2003 SC₃₉₂, 4, 1, 0; 2003 SS₃₉₅, 8, 2, 32; 2003 SB₃₉₆, 4, 1, 0; 2003 SQ₄₀₂, 19, 5, 1830; 2003 SF₄₀₃, 4, 1, 0; 2003 SU₄₀₄, 4, 1, 0; 2003 SQ₄₀₆, 8, 2, 21; 2003 SU₄₂₄, 4, 1, 0; 2003 SS₄₂₇, 4, 1, 0; 2003 ST₄₃₂, 8, 2, 868; 2003 TW₁₂, 4, 1, 0; 2003 TK₁₃, 4, 1, 0; 2003 TJ₁₆, 4, 1, 0; 2003 TS₂₆, 10, 3, 1822; 2003 TE₃₆, 4, 1, 0; 2003 TB₃₉, 4, 1, 0; 2003 TX₄₂, 3, 1, 0; 2003 TP₄₆, 4, 1, 0; 2003 TK₅₅, 4, 1, 0; 2003 US₁₅, 4, 1, 0; 2003 UT₂₈, 4, 1, 0; 2003 UD₃₀, 7, 2, 11; 2003 UR₃₈, 4, 1, 0; 2003 UN₅₆, 4, 1, 0; 2003 UU₅₇, 4, 1, 0; 2003 UW₆₉, 4, 1, 0; 2003 UQ₇₂, 4, 1, 0; 2003 UN₇₅, 4, 1, 0; 2003 UL₉₂, 8, 2, 6; 2003 UZ₉₂, 4, 1, 0; 2003 UT₁₀₆, 4, 1, 0; 2003 UB₁₃₅, 3, 1, 0; 2003 UD₁₄₈, 4, 1, 0; 2003 UA₁₅₆, 3, 1, 0; 2003 UO₁₆₄, 12, 3, 76; 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4, 1, 0; 2004 RK₁₁₁, 4, 1, 0; 2004 RW₁₁₆, 4, 1, 0; 2004 RJ₁₁₉, 4, 1, 0; 2004 RM₁₃₆, 12, 3, 46; 2004 RD₁₃₉, 4, 1, 0; 2004 RB₁₅₁, 4, 1, 0; 2004 RW₁₅₂, 4, 1, 0; 2004 RV₁₅₄, 3, 1, 0; 2004 RG₁₅₉, 3, 1, 0; 2004 RQ₁₆₂, 4, 1, 0; 2004 RW₁₆₈, 7, 2, 7; 2004 RL₁₇₉, 4, 1, 0; 2004 RU₁₈₃, 4, 1, 0; 2004 RG₁₈₇, 8, 2, 10; 2004 RV₁₉₂, 4, 1, 0; 2004 RU₁₉₄, 26, 5, 4; 2004 RF₁₉₈, 4, 1, 0; 2004 RH₁₉₉, 4, 1, 0; 2004 RQ₂₀₁, 7, 2, 9; 2004 RF₂₀₂, 7, 2, 11; 2004 RF₂₀₇, 4, 1, 0; 2004 RU₂₀₇, 3, 1, 0; 2004 RK₂₀₉, 8, 2, 11; 2004 RU₂₀₉, 3, 1, 0; 2004 RV₂₁₂, 4, 1, 0; 2004 RA₂₁₄, 4, 1, 0; 2004 RD₂₁₅, 4, 1, 0; 2004 RD₂₄₀, 4, 1, 0; 2004 RM₂₆₉, 4, 1, 0; 2004 RC₂₇₂, 4, 1, 0; 2004 RC₂₈₈, 4, 1, 0; 2004 RM₃₀₃, 4, 1, 0; 2004 RP₃₀₉, 4, 1, 0; 2004 RQ₃₂₇, 4, 1, 0; 2004 RU₃₂₇, 3, 1, 0; 2004 RD₃₃₂, 4, 1, 0; 2004 RK₃₃₂, 11, 3, 950; 2004 RD₃₄₁, 4, 1, 0; 2004 RP₃₅₆, 8, 2, 441; 2004 SD₁₂, 4, 1, 0; 2004 SJ₁₆, 4, 1, 0; 2004 SR₃₄, 8, 2, 13; 2004 SW₄₁, 4, 1, 0; 2004 SH₄₅, 8, 2, 6; 2004 SS₄₇, 4, 1, 0; 2004 SW₅₁, 7, 2, 1; 2004 TV₁₄, 4, 1, 0; 2004 TX₁₆, 5, 1, 0; 2004 TR₂₁, 8, 2, 9; 2004 TK₂₂, 4, 1, 0; 2004 TN₂₅, 3, 1, 0; 2004 TJ₃₄, 4, 1, 0; 2004 TS₄₀, 4, 1, 0; 2004 TD₄₂, 4, 1, 0; 2004 TS₆₆, 4, 1, 0; 2004 TL₁₁₆, 11, 3, 27; 2004 TB₁₂₃, 12, 3, 9; 2004 TX₁₂₇, 4, 1, 0; 2004 TP₁₃₂, 8, 2, 4; 2004 TR₁₄₆, 4, 1, 0; 2004 TL₁₄₉, 4, 1, 0; 2004 TE₁₅₁, 4, 1, 0; 2004 TM₁₆₄, 4, 1, 0; 2004 TP₁₆₆, 12, 3, 14; 2004 TF₁₈₀, 4, 1, 0; 2004 TH₁₉₄, 4, 1, 0; 2004 TF₁₉₅, 4, 1, 0; 2004 TW₁₉₈, 4, 1, 0; 2004 TC₂₀₆, 4, 1, 0; 2004 TQ₂₃₀, 4, 1, 0; 2004 TH₂₄₃, 4, 1, 0; 2004 TR₂₄₃, 8, 2, 21; 2004 TH₂₄₄, 13, 3, 930; 2004 TA₂₅₉, 4, 1, 0; 2004 TR₂₈₀, 8, 2, 34; 2004 TA₂₈₂, 4, 1, 0; 2004 TX₃₀₇, 4, 1, 0; 2004 TU₃₂₂, 4, 1, 0; 2004 TJ₃₂₃, 4, 1, 0; 2004 TN₃₂₆, 4, 1, 0; 2004 TL₃₂₇, 8, 2, 5; 2004 TH₃₂₈, 4, 1, 0; 2004 TB₃₄₃, 4, 1, 0; 2004 TH₃₄₅, 4, 1, 0; 2004 TS₃₅₅, 4, 1, 0; 2004 VZ₃₆, 4, 1, 0; 2004 VH₃₇, 8, 1, 0; 2004 VD₃₉, 8, 2, 1507; 2004 VF₄₂, 4, 1, 0; 2004 VU₄₂, 12, 3, 1635; 2004 VN₇₄, 4, 1, 0; 2004 VV₈₄, 8, 2, 4; 2004 XB₁₈, 4, 1, 0; 2004 XM₂₁, 4, 1, 0; 2004 XK₂₃, 4, 1, 0; 2004 XZ₂₅, 4, 1, 0; 2004 XA₃₄, 8, 2, 6; 2004 XD₃₇, 4, 1, 0; 2004 XF₄₁, 4, 1, 0; 2004 XK₄₁, 8, 2, 7; 2004 XP₆₀, 4, 1, 0; 2004 XY₈₂, 4, 1, 0; 2004 XV₉₁, 4, 1, 0; 2004 XJ₁₈₆, 4, 1, 0; 2004 YZ₂, 4, 1, 0; 2004 YU₇, 12, 3, 14; 2005 AS₁₁, 4, 1, 0; 2005 AU₂₈, 4, 1, 0; 2005 AK₄₆, 8, 1, 0; 2005 AM₄₆, 4, 1, 0; 2005 AR₄₉, 4, 1, 0; 2005 AH₆₆, 4, 1, 0; 2005 AR₇₅, 21, 4, 504; 2005 AG₇₇, 5, 1, 0; 2005 BP₃₆, 4, 1, 0; 2005 BC₃₈, 8, 2, 11; 2005 CT₃₉, 3, 1, 0; 2005 CU₆₄, 4, 1, 0; 2005 CW₆₅, 4, 1, 0; 2005 CO₇₈, 4, 1, 0; 2005 CV₇₉, 3, 1, 0; 2005 CQ₈₀, 4, 1, 0; 2005 CZ₈₀, 5, 1, 0; 2005 EF₃, 3, 1, 0; 2005 EK₉, 4, 1, 0; 2005 EW₁₈, 4, 1, 0; 2005 EA₄₂, 4, 1, 0; 2005 EL₅₆, 8, 2, 11; 2005 EQ₇₄, 4, 1, 0; 2005 EW₇₆, 4, 1, 0; 2005 EW₉₅, 4, 1, 0; 2005 EY₁₃₄, 4, 1, 0; 2005 EH₁₅₂, 4, 1, 0; 2005 EF₁₆₃, 4, 1, 0; 2005 EX₁₇₉, 12, 3, 10; 2005 ED₁₈₁, 4, 1, 0; 2005 EX₂₀₁, 4, 1, 0; 2005 EO₂₃₃, 4, 1, 0; 2005 EF₂₄₄, 8, 2, 9; 2005 EC₂₆₂, 4, 1, 0; 2005 GZ₁₅, 4, 1, 0; 2005 GK₃₄, 4, 1, 0; 2005 GB₅₀, 4, 1, 0; 2005 GC₆₆, 4, 1, 0; 2005 EG₁₁₀, 4, 1, 0; 2005 GE₁₄₂, 7, 2, 10; 2005 GJ₁₇₃, 8, 1, 0; 2005 GZ₁₇₄, 7, 2, 7; 2005 GS₁₈₂, 7, 2, 27; 2005 HP₆, 4, 1, 0; 2005 JK₃₂, 4, 1, 0; 2005 JF₃₆, 4, 1, 0; 2005 JY₃₇, 8, 2, 6; 2005 JU₄₆, 8, 2, 8; 2005 JX₅₀, 8, 2, 1989; 2005 JD₅₅, 4, 1, 0; 2005 JC₅₉, 4, 1, 0; 2005 JJ₅₉, 4, 1, 0; 2005 JX₆₄, 12, 3, 14; 2005 JK₆₉, 4, 1, 0; 2005 JC₇₈, 7, 2, 26; 2005 JN₉₂, 4, 1, 0; 2005 JH₁₀₀, 4, 1, 0; 2005 JO₁₁₁, 4, 1, 0; 2005 JG₁₂₀, 4, 1, 0; 2005 JH₁₂₁, 8, 2, 37; 2005 JN₁₃₉, 4, 1, 0; 2005 KJ₁, 6, 2, 1; 2005 KK₃, 4, 1, 0; 2005 KS₄, 4, 1, 0; 2005 KO₉, 8, 2, 8; 2005 LJ₄, 4, 1, 0; 2005 LR₄, 4, 1, 0; 2005 LZ₄, 8, 2, 1555; 2005 LX₉, 4, 1, 0; 2005 LS₁₃, 4, 1, 0; 2005 LG₁₈, 4, 1, 0; 2005 LG₃₉, 4, 1, 0; 2005 LW₄₁, 4, 1, 0; 2005 MD₁₄, 4, 1, 0; 2005 MR₁₅, 3, 1, 0; 2005 ME₁₈, 12, 3, 11; 2005 MP₂₀, 4, 1, 0; 2005 MF₂₃, 4, 1, 0; 2005 MN₂₅, 4, 1, 0; 2005 MP₂₉, 8, 2, 1509; 2005 MB₃₀, 16, 2, 4; 2005 MS₃₀, 4, 1, 0; 2005 MT₄₂, 12, 3, 14; 2005 ML₅₂, 4, 1, 0; 2005 NO₇, 8, 2, 14; 2005 NN₁₁, 4, 1, 0; 2005 NC₃₀, 4, 1, 0; 2005 NB₂₉, 4, 1, 0; 2005 NL₃₃

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3, 2299; 2011 BN₁₀₇, 4, 1, 0; 2011 BG₁₀₉, 16, 4, 2328; 2011 BE₁₁₂, 4, 1, 0; 2011 BX₁₂₄, 4, 1, 0; 2011 BV₁₂₇, 4, 1, 0; 2011 BR₁₂₈, 28, 7, 1887; 2011 BG₁₃₀, 12, 3, 1873; 2011 BN₁₄₅, 16, 4, 1938; 2011 CH₁, 4, 1, 0; 2011 CM₁, 4, 1, 0; 2011 CZ₁, 4, 1, 0; 2011 CW₅, 4, 1, 0; 2011 CE₉, 4, 1, 0; 2011 CK₁₀, 4, 1, 0; 2011 CK₁₆, 4, 1, 0; 2011 CV₁₈, 8, 2, 30; 2011 CH₂₀, 8, 2, 7; 2011 CE₂₅, 4, 1, 0; 2011 CT₂₆, 4, 1, 0; 2011 CB₃₃, 8, 2, 1853; 2011 CS₃₃, 4, 1, 0; 2011 CV₃₃, 3, 1, 0; 2011 CV₃₄, 4, 1, 0; 2011 CH₄₀, 4, 1, 0; 2011 CC₄₆, 4, 1, 0; 2011 CG₄₆, 5, 1, 0; 2011 CC₄₇, 4, 1, 0; 2011 CV₄₇, 8, 1, 0; 2011 CA₄₈, 4, 1, 0; 2011 CN₅₀, 4, 1, 0; 2011 CO₅₇, 7, 2, 2; 2011 CV₅₉, 4, 1, 0; 2011 CV₆₀, 12, 3, 6; 2011 CB₆₁, 19, 5, 2269; 2011 CT₆₇, 4, 1, 0; 2011 CT₆₈, 4, 1, 0; 2011 CC₇₀, 4, 1, 0; 2011 CL₇₁, 3, 1, 0; 2011 CF₇₄, 4, 1, 0; 2011 CC₇₆, 4, 1, 0; 2011 CA₇₉, 4, 1, 0; 2011 CW₈₆, 4, 1, 0; 2011 CB₈₇, 8, 2, 7; 2011 CK₉₀, 8, 2, 14; 2011 CL₉₁, 4, 1, 0; 2011 CM₉₁, 8, 2, 1603; 2011 CX₉₁, 8, 2, 542; 2011 CY₉₂, 8, 2, 5; 2011 CD₉₇, 12, 3, 14; 2011 CA₁₀₁, 4, 1, 0; 2011 CZ₁₀₁, 12, 3, 910; 2011 CH₁₀₅, 4, 1, 0; 2011 CN₁₀₅, 8, 2, 38; 2011 CV₁₀₇, 8, 1, 0; 2011 CR₁₁₅, 4, 1, 0; 2011 DO₅, 4, 1, 0; 2011 DS₈, 4, 1, 0; 2011 DG₉, 4, 1, 0; 2011 DR₁₀, 4, 1, 0; 2011 DU₁₀, 4, 1, 0; 2011 DJ₁₃, 4, 1, 0; 2011 DM₁₄, 4, 1, 0; 2011 DK₂₄, 7, 2, 7; 2011 DL₂₄, 4, 1, 0; 2011 DM₂₈, 4, 1, 0; 2011 DO₃₀, 4, 1, 0; 2011 DQ₃₁, 5, 1, 0; 2011 DV₃₆, 4, 1, 0; 2011 DV₃₉, 4, 1, 0; 2011 DA₄₁, 4, 1, 0; 2011 DE₄₃, 8, 2, 7; 2011 DF₅₁, 3, 1, 0; 2011 EZ₂, 4, 1, 0; 2011 EA₃, 4, 1, 0; 2011 EA₄, 4, 1, 0; 2011 ET₅, 8, 2, 9; 2011 EA₁₀, 4, 1, 0; 2011 EX₁₂, 4, 1, 0; 2011 EZ₁₅, 4, 1, 0; 2011 ED₁₆, 5, 1, 0; 2011 ET₁₇, 3, 1, 0; 2011 EA₂₃, 4, 1, 0; 2011 EL₂₃, 5, 1, 0; 2011 EO₂₅, 4, 1, 0; 2011 EU₂₅, 4, 1, 0; 2011 EM₂₈, 7, 1, 0; 2011 ER₃₀, 4, 1, 0; 2011 EP₃₅, 4, 1, 0; 2011 EO₃₇, 8, 2, 1; 2011 EQ₃₉, 3, 1, 0; 2011 EA₄₀, 4, 1, 0; 2011 EB₄₂, 5, 1, 0; 2011 ED₄₂, 8, 2, 7; 2011 EU₄₂, 8, 2, 51; 2011 EZ₄₂, 4, 1, 0; 2011 EC₅₀, 8, 2, 7; 2011 EF₅₀, 4, 1, 0; 2011 EH₅₃, 10, 3, 3; 2011 EN₅₃, 4, 1, 0; 2011 EF₅₃, 4, 1, 0; 2011 EL₅₄, 4, 1, 0; 2011 EH₅₆, 4, 1, 0; 2011 EV₆₂, 3, 1, 0; 2011 EU₆₅, 3, 1, 0; 2011 ER₇₃, 8, 2, 432; 2011 EV₇₄, 4, 1, 0; 2011 EE₇₈, 4, 1, 0; 2011 EG₈₀, 8, 1, 0; 2011 ER₈₁, 4, 1, 0; 2011 EB₈₃, 4, 1, 0; 2011 FK₃, 4, 1, 0; 2011 FQ₄, 5, 1, 0; 2011 FR₄, 5, 1, 0; 2011 FY₆, 4, 1, 0; 2011 FM₇, 12, 2, 1; 2011 FO₉, 3, 1, 0; 2011 FS₁₆, 4, 1, 0; 2011 FE₁₇, 4, 1, 0; 2011 FD₂₅, 4, 1, 0; 2011 FC₂₆, 4, 1, 0; 2011 FF₂₆, 4, 1, 0; 2011 FU₂₈, 4, 1, 0; 2011 FJ₂₉, 4, 1, 0; 2011 FD₃₁, 4, 1, 0; 2011 FK₃₅, 7, 1, 0; 2011 FY₃₆, 3, 1, 0; 2011 FO₃₇, 4, 1, 0; 2011 FC₄₁, 5, 1, 0; 2011 FZ₄₅, 8, 1, 0; 2011 FE₄₆, 4, 1, 0; 2011 FX₄₈, 4, 1, 0; 2011 FA₅₁, 4, 1, 0; 2011 FB₅₁, 3, 1, 0; 2011 FR₅₆, 4, 1, 0; 2011 FE₆₃, 4, 1, 0; 2011 FO₆₆, 4, 1, 0; 2011 FF₆₇, 5, 1, 0; 2011 FG₆₇, 5, 1, 0; 2011 FJ₆₈, 4, 1, 0; 2011 FN₆₉, 4, 1, 0; 2011 FE₇₂, 8, 2, 1684; 2011 FT₇₃, 4, 1, 0; 2011 FY₇₅, 12, 2, 1; 2011 FR₇₉, 4, 1, 0; 2011 FL₁₀₄, 8, 2, 6; 2011 FF₁₂₀, 4, 1, 0; 2011 FK₁₂₆, 4, 1, 0; 2011 FR₁₂₆, 4, 1, 0; 2011 FP₁₂₇, 4, 1, 0; 2011 FQ₁₂₈, 4, 1, 0; 2011 FM₁₃₀, 7, 2, 19; 2011 FN₁₃₀, 4, 1, 0; 2011 FH₁₃₃, 4, 1, 0; 2011 FM₁₃₃, 4, 1, 0; 2011 FV₁₄₀, 4, 1, 0; 2011 FT₁₄₇, 5, 1, 0; 2011 FX₁₄₇, 4, 1, 0; 2011 FK₁₄₈, 4, 1, 0; 2011 FL₁₅₂, 8, 2, 9; 2011 FK₁₅₄, 4, 1, 0; 2011 KG₉, 8, 2, 8; 2011 GS₁₁, 4, 1, 0; 2011 GA₃₇, 4, 1, 0; 2011 GV₃₈, 8, 1, 0; 2011 GX₃₈, 5, 1, 0; 2011 GP₄₀, 4, 1, 0; 2011 GM₄₂, 16, 4, 1843; 2011 GE₄₅, 8, 2, 6; 2011 GV₄₅, 4, 1, 0; 2011 GJ₄₆, 4, 1, 0; 2011 GT₅₉, 3, 1, 0; 2011 GM₆₃, 8, 2, 16; 2011 GF₆₆, 4, 1, 0; 2011 GA₆₇, 4, 1, 0; 2011 GZ₈₁, 12, 2, 1247; 2011 GW₈₃, 3, 1, 0; 2011 GW₈₅, 4, 1, 0; 2011 HN₁, 4, 1, 0; 2011 HS₁, 4, 1, 0; 2011 HV₄, 3, 1, 0; 2011 HG₆, 4, 1, 0; 2011 HL₆, 4, 1, 0; 2011 HE₁₉, 4, 1, 0; 2011 HE₃₁, 4, 1, 0; 2011 HU₃₂, 4, 1, 0; 2011 HN₃₄, 5, 1, 0; 2011 HL₃₇, 4, 1, 0; 2011 HW₅₃, 4, 1, 0; 2011 HC₅₄, 8, 2, 409; 2011 HT₆₅, 3, 1, 0; 2011 HG₆₉, 4, 1, 0; 2011 HH₈₄, 4, 1, 0; 2011 HM₈₇, 4, 1, 0; 2011 HE₉₀, 4, 1, 0; 2011 HR₉₅, 4, 1, 0; 2011 HJ₉₉, 20, 5, 938; 2011 JC₁₄, 8, 2, 5; 2011 JJ₂₆, 12, 3, 1675; 2011 JL₂₆, 4, 1, 0; 2011 KO₃₃, 4, 1, 0; 2011 LP₁₄, 4, 1,

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2011 UP₃₅, 4, 1, 0; 2011 UM₃₆, 8, 2, 11; 2011 UL₃₈, 16, 4, 1471; 2011 UN₄₁, 4, 1, 0; 2011 UJ₄₆, 4, 1, 0; 2011 UJ₄₆, 4, 1, 0; 2011 UA₄₆, 4, 1, 0; 2011 UH₄₇, 4, 1, 0; 2011 UK₄₈, 4, 1, 0; 2011 UG₅₁, 4, 1, 0; 2011 UQ₅₁, 8, 2, 1460; 2011 UC₅₃, 4, 1, 0; 2011 UJ₅₃, 4, 1, 0; 2011 US₅₃, 4, 1, 0; 2011 UX₅₃, 4, 1, 0; 2011 UT₅₄, 7, 2, 31; 2011 UB₅₅, 4, 1, 0; 2011 UU₅₅, 4, 1, 0; 2011 UF₅₆, 4, 1, 0; 2011 UA₅₉, 4, 1, 0; 2011 UN₅₉, 8, 2, 8; 2011 UE₆₃, 12, 3, 14; 2011 UP₆₅, 4, 1, 0; 2011 UG₆₆, 4, 1, 0; 2011 UW₇₁, 4, 1, 0; 2011 UW₇₂, 4, 1, 0; 2011 UT₇₅, 8, 2, 30; 2011 UB₇₇, 4, 1, 0; 2011 UJ₇₇, 4, 1, 0; 2011 UN₇₉, 4, 1, 0; 2011 UQ₇₉, 4, 1, 0; 2011 UL₈₀, 4, 1, 0; 2011 UR₈₀, 8, 2, 555; 2011 UF₈₂, 8, 2, 501; 2011 UD₈₃, 4, 1, 0; 2011 UC₈₅, 4, 1, 0; 2011 UR₈₅, 4, 1, 0; 2011 UB₈₈, 4, 1, 0; 2011 UF₈₈, 8, 2, 501; 2011 UH₈₉, 8, 2, 34; 2011 UM₈₉, 4, 1, 0; 2011 UZ₉₂, 4, 1, 0; 2011 UR₉₃, 4, 1, 0; 2011 UB₉₄, 4, 1, 0; 2011 UY₉₈, 4, 1, 0; 2011 UM₁₀₁, 4, 1, 0; 2011 US₁₀₁, 8, 2, 35; 2011 UW₁₀₁, 4, 1, 0; 2011 UM₁₀₃, 4, 1, 0; 2011 UE₁₀₅, 4, 1, 0; 2011 UH₁₁₀, 4, 1, 0; 2011 UP₁₁₂, 4, 1, 0; 2011 UC₁₁₄, 8, 2, 87; 2011 UO₁₁₆, 4, 1, 0; 2011 UX₁₁₆, 4, 1, 0; 2011 UP₁₁₇, 4, 1, 0; 2011 UY₁₁₈, 12, 2, 28; 2011 UE₁₁₉, 8, 2, 9; 2011 UM₁₂₂, 4, 1, 0; 2011 UJ₁₂₃, 8, 2, 27; 2011 UB₁₂₄, 4, 1, 0; 2011 UK₁₂₄, 8, 2, 1476; 2011 UJ₁₂₆, 8, 1, 0; 2011 UP₁₂₆, 4, 1, 0; 2011 UT₁₂₆, 4, 1, 0; 2011 UY₁₂₆, 4, 1, 0; 2011 UC₁₂₈, 4, 1, 0; 2011 UT₁₂₉, 4, 1, 0; 2011 UE₁₃₁, 3, 1, 0; 2011 UH₁₃₁, 2, 1, 0; 2011 UM₁₃₁, 4, 1, 0; 2011 UT₁₃₂, 4, 1, 0; 2011 UC₁₃₃, 20, 4, 924; 2011 UO₁₃₅, 4, 1, 0; 2011 UU₁₃₅, 12, 3, 32; 2011 UZ₁₃₅, 8, 2, 520; 2011 UE₁₄₀, 4, 1, 0; 2011 UV₁₄₀, 4, 1, 0; 2011 UQ₁₄₂, 12, 1, 0; 2011 UC₁₄₄, 4, 1, 0; 2011 UC₁₅₀, 4, 1, 0; 2011 UC₁₅₁, 4, 1, 0; 2011 UE₁₆₁, 4, 1, 0; 2011 UG₁₆₁, 4, 1, 0; 2011 UU₁₆₁, 4, 1, 0; 2011 UK₁₆₄, 8, 2, 15; 2011 UM₁₆₆, 8, 2, 12; 2011 UA₁₇₅, 4, 1, 0; 2011 UD₁₇₅, 4, 1, 0; 2011 UQ₁₇₅, 7, 1, 0; 2011 UA₁₇₉, 4, 1, 0; 2011 UY₁₈₁, 8, 2, 499; 2011 UD₁₈₉, 4, 1, 0; 2011 UR₁₉₁, 4, 1, 0; 2011 UR₁₉₂, 4, 1, 0; 2011 UE₁₉₄, 4, 1, 0; 2011 UC₁₉₈, 4, 1, 0; 2011 UB₂₀₂, 4, 1, 0; 2011 UT₂₀₂, 4, 1, 0; 2011 UW₂₀₂, 12, 2, 11; 2011 UO₂₁₈, 8, 2, 408; 2011 UX₂₂₂, 4, 1, 0; 2011 UG₂₂₅, 4, 1, 0; 2011 US₂₃₃, 4, 1, 0; 2011 UC₂₃₇, 4, 1, 0; 2011 UJ₂₃₇, 3, 1, 0; 2011 UN₂₃₈, 4, 1, 0; 2011 UY₂₃₈, 4, 1, 0; 2011 UY₂₃₉, 4, 1, 0; 2011 UU₂₄₁, 16, 4, 48; 2011 UX₂₄₃, 4, 1, 0; 2011 UE₂₄₅, 12, 3, 994; 2011 UZ₂₄₅, 8, 2, 503; 2011 UH₂₄₆, 8, 2, 20; 2011 UO₂₄₉, 4, 1, 0; 2011 UV₂₅₀, 4, 1, 0; 2011 UV₂₅₄, 4, 1, 0; 2011 UM₂₅₈, 4, 1, 0; 2011 UW₂₆₁, 16, 4, 532; 2011 UK₂₆₄, 4, 1, 0; 2011 UQ₂₆₅, 12, 3, 32; 2011 UO₂₆₇, 4, 1, 0; 2011 UY₂₆₇, 4, 1, 0; 2011 UO₂₆₉, 4, 1, 0; 2011 UX₂₇₃, 4, 1, 0; 2011 UA₂₇₄, 4, 1, 0; 2011 UO₂₇₆, 3, 1, 0; 2011 UR₂₇₆, 4, 1, 0; 2011 UP₂₇₇, 4, 1, 0; 2011 UO₂₇₈, 4, 1, 0; 2011 US₂₈₂, 4, 1, 0; 2011 UW₂₈₂, 7, 2, 30; 2011 UE₂₈₃, 4, 1, 0; 2011 UD₂₈₄, 8, 2, 47; 2011 UD₂₈₅, 16, 4, 508; 2011 US₂₈₅, 4, 1, 0; 2011 UV₂₈₆, 8, 2, 998; 2011 UE₂₉₃, 12, 3, 955; 2011 US₂₉₄, 4, 1, 0; 2011 UZ₂₉₈, 4, 1, 0; 2011 UU₃₀₁, 8, 2, 27; 2011 UJ₃₀₃, 4, 1, 0; 2011 UY₃₀₄, 4, 1, 0; 2011 UW₃₀₅, 12, 3, 511; 2011 UU₃₀₉, 4, 1, 0; 2011 UF₃₁₀, 4, 1, 0; 2011 UG₃₁₁, 4, 1, 0; 2011 UL₃₁₄, 4, 1, 0; 2011 UB₃₁₇, 4, 1, 0; 2011 UR₃₁₈, 11, 3, 539; 2011 UJ₃₂₂, 4, 1, 0; 2011 UM₃₂₅, 4, 1, 0; 2011 UU₃₃₀, 4, 1, 0; 2011 UU₃₃₃, 8, 2, 390; 2011 UG₃₃₇, 4, 1, 0; 2011 UV₃₃₇, 4, 1, 0; 2011 UW₃₃₇, 4, 1, 0; 2011 UG₃₃₈, 8, 2, 8; 2011 UC₃₃₉, 4, 1, 0; 2011 UR₃₃₉, 8, 2, 13; 2011 UG₃₄₃, 4, 1, 0; 2011 UO₃₄₇, 16, 4, 1485; 2011 US₃₅₃, 4, 1, 0; 2011 UB₃₆₃, 4, 1, 0; 2011 UA₃₆₇, 4, 1, 0; 2011 UA₃₇₆, 4, 1, 0; 2011 UZ₃₈₄, 4, 1, 0; 2011 UX₃₉₄, 4, 1, 0; 2011 UE₃₉₈, 4, 1, 0; 2011 UP₃₉₉, 4, 1, 0; 2011 UE₄₀₁, 4, 1, 0; 2011 UC₄₀₂, 4, 1, 0; 2011 UG₄₀₄, 4, 1, 0; 2011 UH₄₀₄, 4, 1, 0; 2011 VW₁, 4, 1, 0; 2011 VC₁₀, 4, 1, 0; 2011 VS₁₀, 4, 1, 0; 2011 VC₁₁, 4, 1, 0; 2011 VQ₁₁, 4, 1, 0; 2011 VE₁₃, 4, 1, 0; 2011 VC₁₄, 4, 1, 0; 2011 VZ₁₅, 4, 1, 0; 2011 VO₁₆, 4, 1, 0; 2011 VH₁₈, 3, 1, 0; 2011 WJ₁, 4, 1, 0; 2011 WO₁, 4, 1, 0; 2011 WR₁, 4, 1, 0; 2011 WW₁, 4, 1, 0; 2011 WF₇, 4, 1, 0; 2011 WR₇, 8, 2, 30; 2011 WX₁₁, 4, 1, 0; 2011 WP₁₂, 8, 1, 0; 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2011 YH₅₃, 4, 1, 0; 2011 YJ₅₇, 4, 1, 0; 2011 YW₅₇, 3, 1, 0; 2011 YU₆₃, 4, 1, 0; 2011 YY₇₂, 4, 1, 0; 2011 YP₇₃, 4, 1, 0; 2011 YH₇₅, 8, 2, 301; 2012 AK₂, 4, 1, 0; 2012 AQ₂, 4, 1, 0; 2012 AE₇, 4, 1, 0; 2012 AG₈, 4, 1, 0; 2012 AK₁₁, 3, 1, 0; 2012 AY₁₈, 8, 2, 113; 2012 AE₂₀, 4, 1, 0; 2012 AH₂₀, 4, 1, 0; 2012 BP₄, 1, 0; 2012 BQ₅, 4, 1, 0; 2012 BR₅, 4, 1, 0; 2012 BN₈, 8, 1, 0; 2012 BR₁₀, 4, 1, 0;

0; 2012 BR₁₅, 7, 1, 0; 2012 BM₁₈, 7, 1, 0; 2012 BJ₂₀, 4, 1, 0; 2012 BK₂₄, 4, 1, 0; 2012 BY₂₇, 4, 1, 0; 2012 BO₄₄, 8, 2, 543; 2012 BQ₅₂, 4, 1, 0; 2012 BO₅₈, 4, 1, 0; 2012 BP₆₈, 4, 1, 0; 2012 BO₇₈, 4, 1, 0; 2012 BW₈₅, 8, 2, 8; 2012 BB₈₉, 4, 1, 0; 2012 BK₉₄, 7, 2, 489; 2012 BT₁₀₃, 4, 1, 0; 2012 BQ₁₁₁, 4, 1, 0; 2012 BU₁₁₄, 8, 2, 31; 2012 BP₁₁₇, 4, 1, 0; 2012 BD₁₁₉, 4, 1, 0; 2012 BP₁₂₁, 12, 3, 540; 2012 BP₁₂₂, 12, 3, 69; 2012 BF₁₂₄, 4, 1, 0; 2012 BE₁₂₆, 20, 5, 2130; 2012 BU₁₂₆, 2, 1, 0; 2012 BH₁₃₂, 4, 1, 0; 2012 BB₁₃₃, 4, 1, 0; 2012 BE₁₃₄, 4, 1, 0; 2012 BS₁₃₈, 8, 2, 922; 2012 BD₁₃₉, 8, 2, 881; 2012 BX₁₄₃, 4, 1, 0; 2012 BU₁₄₄, 8, 2, 1356; 2012 BH₁₅₁, * 12, 3, 1636; 2012 CY₄, 1, 0; 2012 CK₅, 4, 1, 0; 2012 CT₈, 2, 974; 2012 CK₁₀, 8, 1, 0; 2012 CS₁₀, 4, 1, 0; 2012 CD₁₂, 4, 1, 0; 2012 CF₁₉, 4, 1, 0; 2012 CT₂₂, 7, 2, 992; 2012 CR₂₆, 4, 1, 0; 2012 CV₂₈, 8, 2, 7; 2012 CR₃₄, 12, 3, 1058; 2012 CQ₄₀, 8, 2, 1348; 2012 CS₄₂, 4, 1, 0; 2012 CJ₄₄, 4, 1, 0; 2012 CS₄₄, 4, 1, 0; 2012 CX₄₄, 4, 1, 0; 2012 CU₄₆, 4, 1, 0; 2012 CY₄₇, 20, 5, 1021; 2012 CG₅₀, 20, 5, 1537; 2012 CT₅₀, 4, 1, 0; 2012 CV₅₀, 7, 2, 1512; 2012 CX₅₀, 4, 1, 0; 2012 CD₅₁, 4, 1, 0; 2012 DD₆, 8, 2, 1506; 2012 DM₆, 4, 1, 0; 2012 DB₇, 4, 1, 0; 2012 DW₈, 4, 1, 0; 2012 DB₁₅, 4, 1, 0; 2012 DR₁₇, 4, 1, 0; 2012 DM₁₉, 4, 1, 0; 2012 DV₂₂, 4, 1, 0; 2012 DX₂₇, 4, 1, 0; 2012 DX₃₂, 7, 2, 2012 DF₃₃, 16, 4, 2090; 2012 DU₃₃, 4, 1, 0; 2012 DE₃₇, 8, 2, 4; 2012 DH₄₀, 12, 3, 98; 2012 DF₄₀, 8, 2, 451; 2012 DS₄₀, 4, 1, 0; 2012 DV₄₀, 4, 1, 0; 2012 DA₄₁, 8, 2, 562; 2012 DC₄₄, 8, 2, 1319; 2012 DJ₄₇, 4, 1, 0; 2012 DW₄₇, 28, 7, 1846; 2012 DL₄₈, 3, 1, 0; 2012 DW₄₈, 4, 1, 0; 2012 DF₅₀, 8, 2, 15; 2012 DT₅₃, 4, 1, 0; 2012 DR₅₅, 12, 3, 82; 2012 DQ₅₉, 4, 1, 0; 2012 DL₆₀, 4, 1, 0; 2012 DZ₆₅, 4, 1, 0; 2012 DA₆₆, 16, 3, 499; 2012 DC₆₆, 4, 1, 0; 2012 DO₆₇, 4, 1, 0; 2012 DV₆₉, 8, 2, 522; 2012 DR₇₃, 12, 3, 1097; 2012 DX₇₃, 16, 4, 1098; 2012 DS₇₄, 8, 2, 29; 2012 DA₇₅, 16, 4, 1357; 2012 DF₇₅, 20, 5, 1470; 2012 DK₇₅, 8, 2, 23; 2012 DU₇₅, 4, 1, 0; 2012 DF₇₆, 3, 1, 0; 2012 DO₇₆, 4, 1, 0; 2012 DZ₇₇, 4, 1, 0; 2012 DG₇₈, 7, 2, 580; 2012 DS₇₉, 4, 1, 0; 2012 DX₇₉, 4, 1, 0; 2012 DE₈₀, 4, 1, 0; 2012 DJ₈₃, 12, 3, 912; 2012 DZ₈₄, 8, 2, 587; 2012 DV₈₆, 12, 3, 891; 2012 DL₈₈, 4, 1, 0; 2012 DO₈₈, 12, 3, 995; 2012 DG₉₀, 4, 1, 0; 2012 DM₉₀, 8, 2, 889; 2012 DR₉₀, 3, 1, 0; 2012 DT₉₀, 12, 3, 448; 2012 DV₉₀, 19, 5, 2095; 2012 DY₉₀, 8, 2, 2012; 2012 DN₉₁, 28, 7, 2339; 2012 DL₉₂, 16, 4, 488; 2012 DY₉₂, 4, 1, 0; 2012 DZ₉₂, 24, 6, 1417; 2012 DC₉₄, 11, 3, 1601; 2012 DM₉₄, 12, 3, 570; 2012 DX₉₄, 8, 2, 1995; 2012 DE₉₅, 8, 2, 477; 2012 DL₉₅, 4, 1, 0; 2012 ET₄, 1, 0; 2012 EG₁, 4, 1, 0; 2012 EX₂, 4, 1, 0; 2012 ET₃, 4, 1, 0; 2012 EG₄, 4, 1, 0; 2012 EL₄, 8, 2, 995; 2012 EU₄, 8, 2, 2067; 2012 EX₄, 1, 0; 2012 EA₇, 4, 1, 0; 2012 EO₉, 12, 3, 542; 2012 EU₁₀, 19, 5, 1802; 2012 EZ₁₀, 20, 5, 1805; 2012 EO₁₂, 4, 1, 0; 2012 ET₁₂, 8, 2, 429; 2012 EX₁₂, 12, 3, 471; 2012 FP₁, 4, 1, 0; 2012 FR₂, 8, 2, 56; 2012 FA₃, 4, 1, 0; 2012 FA₄, 4, 1, 0; 2012 FH₄, 4, 1, 0; 2012 FL₄, 3, 1, 0; 2012 FD₈, 4, 1, 0; 2012 FS₁₀, 16, 4, 1438; 2012 FL₁₁, 8, 2, 1301; 2012 FT₁₂, 8, 1, 0; 2012 FJ₁₄, 8, 2, 1355; 2012 FN₁₄, 4, 1, 0; 2012 FX₁₄, 4, 1, 0; 2012 FY₁₄, 12, 3, 1864; 2012 FA₁₅, 3, 1, 0; 2012 FL₁₅, 8, 2, 60; 2012 FC₂₁, 8, 2, 1458; 2012 FC₂₃, 4, 1, 0; 2012 FR₂₃, 4, 1, 0; 2012 FP₂₅, 12, 3, 947; 2012 FQ₂₅, 3, 1, 0; 2012 FF₂₆, 4, 1, 0; 2012 FD₂₇, 12, 3, 2125; 2012 FY₂₉, 8, 2, 6; 2012 FD₃₀, 20, 4, 1556; 2012 FC₃₁, 4, 1, 0; 2012 FM₃₁, 4, 1, 0; 2012 FW₃₁, 8, 2, 1326; 2012 FK₃₂, 16, 4, 1828; 2012 FW₃₃, 12, 3, 1918; 2012 FC₃₄, 23, 5, 1068; 2012 FG₃₅, 4, 1, 0; 2012 FS₃₆, 7, 2, 10; 2012 FU₃₆, 16, 3, 1426; 2012 FO₃₈, 4, 1, 0; 2012 FP₄₁, 4, 1, 0; 2012 FT₄₁, 19, 5, 1065; 2012 FT₄₃, 3, 1, 0; 2012 FV₄₃, 4, 1, 0; 2012 FA₄₄, 12, 3, 45; 2012 FL₄₄, 4, 1, 0; 2012 FL₄₄, 4, 1, 0; 2012 FF₄₅, 8, 2, 13; 2012 FW₄₆, 4, 1, 0; 2012 FE₅₂, 8, 2, 390; 2012 FF₅₃, 8, 2, 170; 2012 FT₅₄, 3, 1, 0; 2012 FD₅₅, 12, 3, 1335; 2012 FJ₅₅, 24, 1, 0; 2012 FS₅₆, 16, 4, 1827; 2012 FG₅₇, 4, 1, 0; 2012 FS₆₁, 20, 5, 1590; 2012 FZ₆₁, 4, 1, 0; 2012 FA₆₂, 4, 1, 0; 2012 FN₆₂, 4, 1, 0; 2012 FY₆₂, 4, 1, 0; 2012 FN₆₃, 4, 1, 0; 2012 FV₆₃, 4, 1, 0; 2012 FG₆₅, 4, 1, 0; 2012 FC₆₆, 12, 3, 25; 2012 FH₆₇, 4, 1, 0; 2012 FN₆₇, 4,

2, 6; 2012 HV₁₂, 4, 1, 0; 2012 HY₁₂, 4, 1, 0; 2012 HB₁₃, 4, 1, 0; 2012 HW₁₃, 4, 1, 0; 2012 HH₁₄, 4, 1, 0; 2012 HX₁₄, 4, 1, 0; 2012 HE₁₅, 12, 3, 2; 2012 HN₁₅, 4, 1, 0; 2012 HG₁₇, 4, 1, 0; 2012 HH₁₇, 4, 1, 0; 2012 HJ₁₇, 4, 1, 0; 2012 HQ₁₇, 4, 1, 0; 2012 HS₁₇, 4, 1, 0; 2012 HH₁₉, 4, 1, 0; 2012 HY₁₉, 4, 1, 0; 2012 HL₂₁, 4, 1, 0; 2012 HS₂₁, 4, 1, 0; 2012 HW₂₂, 4, 1, 0; 2012 HP₂₃, 4, 1, 0; 2012 HR₂₃, 4, 1, 0; 2012 HM₂₄, 4, 1, 0; 2012 HF₂₅, 4, 1, 0; 2012 HH₂₅, 3, 1, 0; 2012 HJ₂₆, 4, 1, 0; 2012 HP₂₆, 4, 1, 0; 2012 HM₂₇, 12, 3, 2067; 2012 HQ₂₇, 8, 2, 7; 2012 HR₂₇, 4, 1, 0; 2012 HD₂₈, 4, 1, 0; 2012 HO₂₈, 4, 1, 0; 2012 HW₂₈, 8, 2, 7; 2012 HK₂₉, 4, 1, 0; 2012 HN₃₀, 8, 1, 0; 2012 HN₃₁, 8, 2, 537; 2012 HS₃₁, 4, 1, 0; 2012 HE₃₂, 4, 1, 0; 2012 HC₃₂, 4, 1, 0; 2012 HN₃₄, 4, 1, 0; 2012 HS₃₅, 12, 3, 2173; 2012 HU₃₅, 8, 2, 23; 2012 HH₃₇, 8, 2, 7; 2012 HQ₃₇, 11, 3, 562; 2012 HZ₃₇, 4, 1, 0; 2012 HA₃₈, 4, 1, 0; 2012 HE₃₈, 4, 1, 0; 2012 HG₃₈, 8, 2, 31; 2012 HN₃₈, 8, 2, 5; 2012 HV₃₈, 8, 2, 1566; 2012 HX₃₈, 16, 3, 2582; 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2012 JU₅, 7, 2, 588; 2012 JL₆, 4, 1, 0; 2012 JQ₆, 8, 2, 9; 2012 JS₆, 4, 1, 0; 2012 JA₇, 4, 1, 0; 2012 JD₇, 4, 1, 0; 2012 JJ₇, 16, 4, 1482; 2012 JK₇, 4, 1, 0; 2012 JL₇, 4, 1, 0; 2012 JO₇, 4, 1, 0; 2012 JV₇, 4, 1, 0; 2012 JX₇, 16, 3, 2091; 2012 JB₈, 23, 6, 2554; 2012 JC₈, 4, 1, 0; 2012 JD₈, 24, 6, 1946; 2012 JF₈, 4, 1, 0; 2012 JL₈, 4, 1, 0; 2012 JN₈, 4, 1, 0; 2012 JP₈, 4, 1, 0; 2012 JS₈, 4, 1, 0; 2012 JU₈, 8, 2, 1862; 2012 JZ₈, 4, 1, 0; 2012 JA₉, 4, 1, 0; 2012 JB₉, 4, 1, 0; 2012 JD₉, 4, 1, 0; 2012 JG₉, 8, 2, 9; 2012 JK₉, 4, 1, 0; 2012 JP₉, 4, 1, 0; 2012 JS₉, 4, 1, 0; 2012 JY₉, 4, 1, 0; 2012 JH₁₀, 16, 4, 1492; 2012 JO₁₀, 4, 1, 0; 2012 JQ₁₀, 16, 4, 1553; 2012 JR₁₀, 4, 1, 0; 2012 JD₁₁, 4, 1, 0; 2012 JS₁₂, 8, 2, 43; 2012 JX₁₂, 4, 1, 0; 2012 JZ₁₂, 3, 1, 0; 2012 JB₁₃, 8, 2, 44; 2012 JC₁₃, 12, 3, 493; 2012 JE₁₃, 7, 2, 909; 2012 JF₁₃, 20, 5, 2029; 2012 JH₁₃, 12, 3, 2389; 2012 JM₁₃, 4, 1, 0; 2012 JR₁₃, 4, 1, 0; 2012 JT₁₃, 8, 2, 9; 2012 JB₁₄, 12, 3, 1016; 2012 JO₁₄, 4, 1, 0; 2012 JP₁₄, 4, 1, 0; 2012 JG₁₅, 4, 1, 0; 2012 JM₁₅, 8, 2, 9; 2012 JB₁₆, 4, 1, 0; 2012 JW₁₆, 4, 1, 0; 2012 JY₁₆, 4, 1, 0; 2012 JZ₁₆, 8, 2, 24; 2012 JB₁₇, 8, 2, 8; 2012 JC₁₇, 3, 1, 0; 2012 JD₁₈, 4, 1, 0; 2012 JF₁₉, 8, 2, 21; 2012 JF₁₉, 8, 2, 21; 2012 JJ₁₉, 4, 1, 0; 2012 JK₁₉, 20, 5, 1774; 2012 JL₁₉, 8, 2, 974; 2012 JM₁₉, 8, 2, 8; 2012 JQ₁₉, 4, 1, 0; 2012 JR₁₉, 11, 3, 913; 2012 JY₁₉, 8, 2, 9; 2012 JZ₂₀, 8, 2, 1451; 2012 JM₂₀, 4, 1, 0; 2012 JP₂₀, 3, 1, 0; 2012 JW₂₀, 11, 3, 2513; 2012 JY₂₀, 8, 2, 1; 2012 JJ₂₁, 8,

2, 9; 2012 JL₂₂, 4, 1, 0; 2012 JM₂₂, 4, 1, 0; 2012 JP₂₂, 7, 2, 99; 2012 JR₂₂, 12, 3, 912; 2012 JY₂₂, 3, 1, 0; 2012 JE₂₃, 16, 4, 59; 2012 JG₂₃, 4, 1, 0; 2012 JJ₂₃, 4, 1, 0; 2012 JO₂₃, 20, 5, 898; 2012 JV₂₃, 4, 1, 0; 2012 JW₂₃, 8, 2, 443; 2012 JY₂₃, 8, 2, 2165; 2012 JD₂₄, 20, 4, 935; 2012 JL₂₄, 8, 2, 594; 2012 JM₂₄, 20, 4, 1383; 2012 JQ₂₄, 12, 3, 566; 2012 JR₂₄, 12, 3, 2395; 2012 JZ₂₄, 8, 2, 1; 2012 JA₂₅, 16, 3, 1255; 2012 JB₂₅, 24, 6, 2452; 2012 JC₂₅, 8, 2, 1031; 2012 JF₂₅, 16, 4, 2383; 2012 JQ₂₅, 7, 2, 7; 2012 JR₂₅, 12, 2, 520; 2012 JX₂₅, 16, 4, 1499; 2012 JD₂₆, 24, 6, 1850; 2012 JJ₂₆, 20, 5, 2247; 2012 JO₂₆, 7, 2, 24; 2012 JQ₂₆, 12, 3, 989; 2012 JW₂₆, 4, 1, 0; 2012 JO₂₇, 4, 1, 0; 2012 JP₂₇, 12, 3, 15; 2012 JQ₂₇, 12, 3, 496; 2012 JR₂₇, 12, 3, 549; 2012 JC₂₈, 12, 3, 961; 2012 JE₂₈, 8, 2, 1299; 2012 JF₂₈, 8, 2, 1; 2012 JA₂₉, 3, 1, 0; 2012 JF₃₀, 4, 1, 0; 2012 JH₃₀, 4, 1, 0; 2012 JK₃₀, 16, 4, 1505; 2012 JH₃₂, 4, 1, 0; 2012 JK₃₂, 4, 1, 0; 2012 JC₃₃, 8, 2, 455; 2012 JD₃₃, 4, 1, 0; 2012 JK₃₃, 8, 2, 364; 2012 JE₃₄, 8, 2, 2011; 2012 JG₃₄, 12, 3, 1997; 2012 JV₃₄, 4, 1, 0; 2012 JB₃₅, 4, 1, 0; 2012 JC₃₅, 4, 1, 0; 2012 JW₃₆, 3, 1, 0; 2012 JD₃₇, 12, 3, 918; 2012 JF₃₇, 12, 3, 14; 2012 JG₃₇, 11, 3, 497; 2012 JH₃₇, 4, 1, 0; 2012 JZ₃₇, 4, 1, 0; 2012 JA₃₈, 4, 1, 0; 2012 JF₃₈, 4, 1, 0; 2012 JL₃₈, 3, 1, 0; 2012 JT₃₈, 4, 1, 0; 2012 JE₃₉, 24, 6, 2031; 2012 JN₄₁, 16, 4, 1360; 2012 JV₄₁, 12, 3, 44; 2012 JE₄₃, 4, 1, 0; 2012 JL₄₃, 16, 3, 1353; 2012 JA₄₄, 12, 2, 9; 2012 JM₄₅, 8, 2, 904; 2012 JO₄₅, 8, 2, 9; 2012 JP₄₅, 11, 3, 14; 2012 JQ₄₅, 7, 2, 8; 2012 JR₄₅, 35, 8, 1331; 2012 JT₄₅, 4, 1, 0; 2012 JU₄₅, 4, 1, 0; 2012 JX₄₅, 16, 4, 931; 2012 JB₄₆, 12, 3, 2034; 2012 JF₄₆, 16, 4, 912; 2012 JG₄₆, 12, 3, 476; 2012 JL₄₆, 24, 5, 556; 2012 JF₄₈, 4, 1, 0; 2012 JG₄₈, 12, 3, 1474; 2012 JH₄₈, 4, 1, 0; 2012 JP₄₈, 16, 4, 1448; 2012 JQ₄₈, 16, 3, 2030; 2012 JP₅₀, 12, 3, 1048; 2012 JS₅₀, 7, 2, 2061; 2012 JC₅₁, 8, 2, 430; 2012 JE₅₁, 15, 4, 1549; 2012 JV₅₁, 14, 3, 449; 2012 JX₅₁, 4, 1, 0; 2012 JZ₅₁, 12, 3, 1860; 2012 JA₅₂, 4, 1, 0; 2012 JC₅₂, 4, 1, 0; 2012 JF₅₂, 16, 4, 1001; 2012 JO₅₂, 4, 1, 0; 2012 JN₅₃, 7, 2, 1356; 2012 JP₅₃, 20, 5, 2387; 2012 JN₅₄, 4, 1, 0; 2012 JP₅₄, 8, 2, 15; 2012 JG₅₅, 4, 1, 0; 2012 JM₅₆, 4, 1, 0; 2012 JG₅₇, 4, 1, 0; 2012 JN₅₈, 8, 2, 426; 2012 JP₅₈, 8, 2, 487; 2012 JS₅₉, 24, 6, 2276; 2012 JX₅₉, 8, 2, 1479; 2012 JJ₆₀, 4, 1, 0; 2012 JM₆₀, 4, 1, 0; 2012 JZ₆₀, 4, 1, 0; 2012 JB₆₁, 28, 7, 1897; 2012 JM₆₁, 4, 1, 0; 2012 JF₆₂, 16, 4, 1828; 2012 JL₆₃, 4, 1, 0; 2012 JN₆₃, 16, 4, 87; 2012 JT₆₃, 20, 5, 2012; 2012 JH₆₄, 4, 1, 0; 2012 JS₆₄, 15, 4, 1003; 2012 JT₆₄, 47, 10, 1912; 2012 JU₆₄, 23, 6, 2427; 2012 JB₆₅, 28, 7, 1512; 2012 JH₆₅, 16, 4, 1482; 2012 JL₆₅, 4, 1, 0; 2012 JM₆₅, 4, 1, 0; 2012 JG₆₅, 3, 1, 0; 2012 JO₆₅, 8, 2, 1; 2012 JP₆₅, 4, 1, 0; 2012 JR₆₅, 11, 3, 60; 2012 JT₆₅, 16, 3, 55; 2012 JY₆₅, 4, 1, 0; 2012 JA₆₆, 4, 1, 0; 2012 JG₆₆, 16, 4, 2352; 2012 JP₆₆, 8, 2, 16; 2012 JQ₆₆, 4, 1, 0; 2012 KB₄, 1, 0; 2012 KL₇, 7, 2, 32; 2012 KR₁₂, 12, 3, 1613; 2012 KP₁, 16, 4, 1900; 2012 KV₁, 4, 1, 0; 2012 KZ₁, 4, 1, 0; 2012 KA₂, 12, 3, 430; 2012 KL₂, 4, 1, 0; 2012 KM₂, 6, 2, 2389; 2012 KP₃, 12, 2, 538; 2012 KZ₄, 12, 3, 590; 2012 KE₅, 11, 3, 933; 2012 KC₆, 4, 1, 0; 2012 KX₈, 8, 2, 593; 2012 KD₉, 3, 1, 0; 2012 KF₉, 8, 2, 9; 2012 KN₉, 4, 1, 0; 2012 KO₉, 4, 1, 0; 2012 KV₉, 5, 1, 0; 2012 KA₁₀, 16, 4, 2015; 2012 KB₁₀, 20, 5, 2393; 2012 KH₁₀, 12, 3, 62; 2012 KS₁₀, 8, 2, 7; 2012 KP₁₁, 4, 1, 0; 2012 KQ₁₁, 38, 10, 2419; 2012 KR₁₁, 4, 1, 0; 2012 KB₁₂, 4, 1, 0; 2012 KM₁₂, 7, 4, 1, 0; 2012 KV₁₂, 7, 2, 3; 2012 KW₁₂, 4, 1, 0; 2012 KC₁₃, 4, 1, 0; 2012 KA₁₄, 8, 1, 0; 2012 KQ₁₄, 8, 2, 920; 2012 KX₁₄, 4, 1, 0; 2012 KC₁₅, 4, 1, 0; 2012 KD₁₅, 12, 3, 1930; 2012 KE₁₅, 12, 3, 1580; 2012 KJ₁₅, 4, 1, 0; 2012 KU₁₅, 4, 1, 0; 2012 KW₁₅, 4, 1, 0; 2012 KC₁₆, 4, 1, 0; 2012 KE₁₆, 27, 7, 1557; 2012 KF₁₆, 12, 3, 9; 2012 KH₁₆, 4, 1, 0; 2012 KJ₁₆, 12, 3, 14; 2012 KK₁₆, 12, 3, 1378; 2012 KO₁₆, 8, 2, 1554; 2012 KP₁₆, 4, 1, 0; 2012 KR₁₆, 7, 2, 12; 2012 KA₁₇, 12, 2, 393; 2012 KF₁₇, 4, 1, 0; 2012 KH₁₇, 15, 4, 2249; 2012 KK₁₇, 19, 5, 2344; 2012 KL₁₇, 12, 2, 928; 2012 KM₁₇, 4, 1, 0; 2012 KQ₁₇, 4,

2012 KZ₄₇ *, 28, 7, 1987; 2012 KB₄₈ *, 8, 2, 13; 2012 KC₄₈ *, 20, 5, 571; 2012 KD₄₈ *, 27, 7, 2417; 2012 KE₄₈ *, 16, 4, 23; 2012 KF₄₈ *, 24, 6, 951; 2012 KG₄₈ *, 11, 3, 14; 2012 KH₄₈ *, 8, 2, 13; 2012 KJ₄₈ *, 4, 1, 0; 2012 KK₄₈ *, 8, 2, 476; 2012 KL₄₈ *, 2, 33; 2012 KN₄₈ *, 8, 2, 13; 2012 KO₄₈ *, 31, 7, 2068; 2012 KP₄₈ *, 12, 3, 19; 2012 KQ₄₈ *, 2, 12; 2012 KR₄₈ *, 16, 4, 26; 2012 KS₄₈ *, 7, 2, 12; 2012 KT₄₈ *, 8, 2, 12; 2012 KU₄₈ *, 4, 1, 0; 2012 KV₄₈ *, 8, 2, 11; 2012 KW₄₈ *, 8, 2, 11; 2012 KX₄₈ *, 8, 2, 11; 2012 KY₄₈ *, 19, 5, 942; 2012 KZ₄₈ *, 8, 2, 11; 2012 KA₄₉ *, 15, 4, 2296; 2012 KB₄₉ *, 7, 2, 11; 2012 KC₄₉ *, 8, 2, 11; 2012 KD₄₉ *, 8, 2, 11; 2012 KE₄₉ *, 8, 2, 13; 2012 KF₄₉ *, 12, 3, 17; 2012 KG₄₉ *, 39, 10, 1578; 2012 KH₄₉ *, 8, 2, 3; 2012 KJ₄₉ *, 6, 2, 3; 2012 KK₄₉ *, 8, 2, 8; 2012 KL₄₉ *, 8, 2, 8; 2012 KM₄₉ *, 32, 8, 1482; 2012 KN₄₉ *, 23, 6, 471; 2012 KO₄₉ *, 8, 2, 8; 2012 KP₄₉ *, 19, 4, 23; 2012 KQ₄₉ *, 28, 7, 2654; 2012 KR₄₉ *, 40, 9, 1975; 2012 KS₄₉ *, 12, 3, 19; 2012 KT₄₉ *, 20, 5, 492; 2012 KU₄₉ *, 8, 2, 8; 2012 KV₄₉ *, 19, 5, 29; 2012 KW₄₉ *, 8, 2, 8; 2012 KX₄₉ *, 19, 5, 1345; 2012 KY₄₉ *, 20, 5, 33; 2012 KZ₄₉ *, 16, 4, 24; 2012 KA₅₀ *, 8, 2, 9; 2012 KB₅₀ *, 7, 2, 9; 2012 KC₅₀ *, 8, 2, 9; 2012 KD₅₀ *, 13, 4, 23; 2012 KE₅₀ *, 7, 2, 9; 2012 KF₅₀ *, 8, 2, 9; 2012 KG₅₀ *, 33, 7, 2253; 2012 KH₅₀ *, 23, 5, 2040; 2012 KJ₅₀ *, 15, 4, 1542; 2012 KK₅₀ *, 20, 5, 925; 2012 KL₅₀ *, 9, 2, 587; 2012 KM₅₀ *, 20, 5, 997; 2012 KN₅₀ *, 43, 11, 1970; 2012 KO₅₀ *, 8, 2, 10; 2012 KQ₅₀ *, 8, 2, 17; 2012 KR₅₀ *, 8, 2, 12; 2012 KS₅₀ *, 12, 2, 16; 2012 KT₅₀ *, 4, 1, 0; 2012 KV₅₀ *, 7, 2, 2; 2012 KW₅₀ *, 7, 2, 2; 2012 LA *, 15, 2, 1; 2012 LB *, 11, 3, 6; 2012 LC *, 12, 2, 556; 2012 LE *, 3, 1, 0; 2012 LH *, 14, 3, 549; 2012 LJ *, 13, 1, 0; 2012 LK *, 8, 2, 19; 2012 LL *, 7, 2, 1; 2012 LM *, 7, 2, 1; 2012 LN *, 12, 3, 9; 2012 LO *, 12, 3, 6; 2012 LP *, 14, 4, 15; 2012 LQ *, 26, 7, 1531; 2012 LR *, 18, 5, 33; 2012 LS *, 10, 3, 2128; 2012 LT *, 4, 1, 0; 2012 LV *, 4, 1, 0; 2012 LW *, 4, 1, 0; 2012 LX *, 4, 1, 0; 2012 LA₁ *, 14, 4, 14; 2012 LB₁ *, 11, 3, 1; 2012 LC₁ *, 4, 1, 0; 2012 LD₁ *, 8, 2, 3; 2012 LE₁ *, 7, 2, 1; 2012 LN₁ *, 2, 26; 2012 LO₁ *, 7, 2, 1; 2012 LP₁ *, 7, 1, 0; 2012 LQ₁ *, 3, 1, 0; 2012 LR₁ *, 7, 2, 2; 2012 LT₁ *, 7, 1, 0; 2012 LA₂ *, 3, 1, 0; 2012 LE₂ *, 7, 2, 81; 2012 LF₂ *, 7, 2, 19; 2012 LG₂ *, 8, 2, 1705; 2012 LJ₂ *, 4, 1, 0; 2012 LP₂ *, 8, 2, 1711; 2012 LQ₂ *, 16, 4, 1517; 2012 LS₂ *, 3, 1, 0; 2012 LT₂ *, 4, 1, 0; 2012 LU₂ *, 7, 2, 13; 2012 LV₂ *, 4, 1, 0; 2012 LW₂ *, 4, 1, 0; 2012 LX₂ *, 4, 1, 0; 2012 LA₃ *, 4, 1, 0; 2012 LB₃ *, 4, 1, 0; 2012 LC₃ *, 4, 1, 0; 2012 LD₃ *, 4, 1, 0; 2012 LE₃ *, 4, 1, 0; 2012 LF₃ *, 4, 1, 0; 2012 LG₃ *, 3, 1, 0; 2012 LH₃ *, 3, 1, 0; 2012 LI₃ *, 4, 1, 0; 2012 LJ₃ *, 4, 1, 0; 2012 LK₃ *, 7, 2, 7; 2012 LO₃ *, 8, 2, 8; 2012 LP₃ *, 4, 1, 0; 2012 LQ₃ *, 4, 1, 0; 2012 LR₃ *, 3, 1, 0; 2012 LS₃ *, 3, 1, 0; 2012 LT₃ *, 8, 2, 4; 2012 LA₄ *, 12, 3, 48; 2012 LB₄ *, 12, 3, 48; 2012 LC₄ *, 14, 4, 14; 2012 LD₄ *, 8, 2, 9; 2012 LE₄ *, 4, 1, 0; 2012 LF₄ *, 4, 1, 0; 2012 LG₄ *, 4, 1, 0; 2012 LH₄ *, 4, 1, 0; 2012 LI₄ *, 3, 1, 0; 2012 LJ₄ *, 4, 1, 0; 2012 LA₅ *, 4, 1, 0; 2012 LB₅ *, 4, 1, 0; 2012 LC₅ *, 11, 2, 8; 2012 LD₅ *, 3, 1, 0; 2012 LE₅ *, 4, 1, 0; 2012 LF₅ *, 4, 1, 0; 2012 LG₅ *, 4, 1, 0; 2012 LH₅ *, 4, 1, 0; 2012 LI₅ *, 4, 1, 0; 2012 LJ₅ *, 4, 1, 0; 2012 LK₅ *, 4, 1, 0; 2012 LM₅ *, 4, 1, 0; 2012 LN₅ *, 4, 1, 0; 2012 LO₅ *, 4, 1, 0; 2012 LP₅ *, 4, 1, 0; 2012 LQ₅ *, 4, 1, 0; 2012 LR₅ *, 4, 1, 0; 2012 LS₅ *, 4, 1, 0; 2012 LT₅ *, 4, 1, 0; 2012 LA₆ *, 4, 1, 0; 2012 LB₆ *, 4, 1, 0; 2012 LC₆ *, 4, 1, 0; 2012 LD₆ *, 11, 3, 1002; 2012 LE₆ *, 16, 4, 496; 2012 LF₆ *, 4, 1, 0; 2012 LG₆ *, 4, 1, 0; 2012 LH₆ *, 3, 1, 0; 2012 LJ₆ *, 4, 1, 0; 2012 LK₆ *, 16, 4, 939; 2012 LL₆ *, 8, 2, 6; 2012 LM₆ *, 4, 1, 0; 2012 LN₆ *, 24, 5, 1331; 2012 LO₆ *, 4, 1, 0; 2012 LP₆ *, 16, 4, 454; 2012 LQ₆ *, 4, 1, 0; 2012 LR₆ *, 4, 1, 0; 2012 LS₆ *, 4, 1, 0; 2012 LT₆ *, 4, 1, 0; 2012 LU₆ *, 4, 1, 0; 2012 LV₆ *, 3, 1, 0; 2012 LW₆ *, 4, 1, 0; 2012 LX₆ *, 8, 2, 6; 2012 LA₇ *, 4, 1, 0; 2012 LB₇ *, 4, 1, 0; 2012 LC₇ *, 4, 1, 0; 2012 LD₇ *, 3, 1, 0; 2012 LE₇ *, 4, 1, 0; 2012 LF₇ *, 4, 1, 0; 2012 LG₇ *, 4, 1, 0; 2012 LH₇ *, 3, 1, 0; 2012 LI₇ *, 3, 1, 0; 2012 LK₇ *, 16, 3, 45; 2012 LM₇ *, 12, 3, 21; 2012 LN₇ *, 12, 3, 948; 2012 LO₇ *, 8, 2, 4; 2012 LP₇ *, 20, 4, 4; 2012 LQ₇ *, 8, 1, 0; 2012 LR₇ *, 4, 1, 0; 2012 LS₇ *, 8, 2, 6; 2012 LT₇ *, 4, 1, 0; 2012 LA₈ *, 7, 2, 6; 2012 LB₈ *, 47, 11, 2591; 2012 LC₈ *, 23, 6, 1516; 2012 LD₈ *, 12, 3, 14; 2012 LE₈ *, 1, 0; 2012 LF₈ *, 19, 4, 1478; 2012 LG₈ *, 16, 4, 1685; 2012 LH₈ *, 3, 1, 0; 2012 LI₈ *, 8, 2, 31; 2012 LJ₈ *, 7, 2, 3; 2012 LK₈ *, 3, 1, 0; 2012 LM₈ *, 8, 2, 769; 2012 LN₈ *, 8, 2, 16; 2012 LO₈ *, 4, 1, 0; 2012 LP₈ *, 19, 4, 4; 2012 LQ₈ *, 4, 1, 0; 2012 LR₈ *, 7, 2, 7; 2012 LS₈ *, 8, 2, 7; 2012 LT₈ *, 8, 2, 6; 2012 LA₉ *, 8, 2, 6; 2012 LB₉ *, 4, 1, 0; 2012 LC₉ *, 4, 1, 0; 2012 LD₉ *, 8, 2, 4; 2012 LE₉ *, 8, 2, 4; 2012 LF₉ *, 8, 2, 4; 2012 LG₉ *, 14, 4, 23; 2012 LH₉ *, 8, 2, 2; 2012 LI₉ *, 8, 2, 2; 2012 LJ₉ *, 12, 3, 9; 2012 LK₉ *, 20, 2, 2; 2012 LM₉ *, 7, 2, 2; 2012 LN₉ *, 7, 2, 2; 2012 LO₉ *, 26, 6, 492; 2012 LP₉ *, 8, 2, 1; 2012 LQ₉ *, 7, 2, 1; 2012 LR₉ *, 8, 2, 1; 2012 LS₉ *, 8, 2, 1; 2012 LT₉ *, 19, 4, 3; 2012 LA₁₀ *, 7, 2, 1; 2012 LB₁₀ *, 4, 1, 0; 2012 LC₁₀ *, 11, 3, 2; 2012 LD₁₀ *, 4, 1, 0; 2012 LE₁₀ *, 15, 3, 2; 2012 LF₁₀ *, 15, 3, 2; 2012 LG₁₀ *, 4, 1, 0; 2012 LH₁₀ *, 19, 3, 2; 2012 LI₁₀ *, 13, 2, 2; 2012 LJ₁₀ *, 4, 1, 0; 2012 LK₁₀ *, 4, 1, 0; 2012 LM₁₀ *, 11, 3, 444; 2012 LN₁₀ *, 24, 6, 2018; 2012 LO₁₀ *, 21, 4, 4; 2012 LP₁₀ *, 4, 1, 0; 2012 LQ₁₀ *, 4, 1, 0; 2012 LR₁₀ *, 4, 1, 0; 2012 LS₁₀ *, 4, 1, 0; 2012 LT₁₀ *, 8, 2, 8; 2012 LA₁₁ *, 12, 3, 441; 2012 LB₁₁ *, 8, 2, 2; 2012 LC₁₁ *, 8, 1, 0; 2012 LD₁₁ *, 4, 1, 0; 2012 LE₁₁ *, 11, 3, 2; 2012 LF₁₁ *, 4, 1, 0; 2012 LG₁₁ *, 8, 2, 4; 2012 LH₁₁ *, 8, 2, 4; 2012 LI₁₁ *, 4, 1, 0; 2012 LJ₁₁ *, 13, 2, 2; 2012 LK₁₁ *, 4, 1, 0; 2012 LM₁₁ *, 4, 1, 0; 2012 LN₁₁ *, 11, 3, 444; 2012 LO₁₁ *, 24, 6, 2018; 2012 LP₁₁ *, 21, 4, 4; 2012 LQ₁₁ *, 4, 1, 0; 2012 LR₁₁ *, 4, 1, 0; 2012 LS₁₁ *, 4, 1, 0; 2012 LT₁₁ *, 8, 2, 8; 2012 LA₁₂ *, 12, 3, 441; 2012 LB₁₂ *, 8, 2, 2; 2012 LC₁₂ *, 8, 1, 0; 2012 LD₁₂ *, 4, 1, 0; 2012 LE₁₂ *, 4, 1, 0; 2012 LF₁₂ *, 4, 1, 0; 2012 LG₁₂ *, 8, 2, 8; 2012 LH₁₂ *, 12, 3, 441; 2012 LI₁₂ *, 8, 2, 2; 2012 LJ₁₂ *, 8, 1, 0; 2012 LK₁₂ *, 4, 1, 0; 2012 LM₁₂ *, 11, 3, 2; 2012 LN₁₂ *, 11, 3, 2; 2012 LO₁₂ *, 4, 1, 0; 2012 LP₁₂ *, 19, 4, 3; 2012 LQ₁₂ *, 4, 1, 0; 2012 LR₁₂ *, 4, 1, 0; 2012 LS₁₂ *, 4, 1, 0; 2012 LT₁₂ *, 4, 1, 0; 2012 LA₁₃ *, 4, 1, 0; 2012 LB₁₃ *, 4, 1, 0; 2012 LC₁₃ *, 11, 3, 2; 2012 LD₁₃ *, 4, 1, 0; 2012 LE₁₃ *, 8, 2, 4; 2012 LF₁₃ *, 4, 1, 0; 2012 LG₁₃ *, 4, 1, 0; 2012 LH₁₃ *, 3, 1, 0; 2012 LI₁₃ *, 3, 1, 0; 2012 LJ₁₃ *, 4, 1, 0; 2012 LK₁₃ *, 4, 1, 0; 2012 LM₁₃ *, 4, 1, 0; 2012 LN₁₃ *, 4, 1, 0; 2012 LO₁₃ *, 4, 1, 0; 2012 LP₁₃ *, 4, 1, 0; 2012 LQ₁₃ *, 4, 1, 0; 2012 LR₁₃ *, 4, 1, 0; 2012 LS₁₃ *, 4, 1, 0; 2012 LT₁₃ *, 4, 1, 0; 2012 LA₁₄ *, 3, 1, 0; 2012 LB₁₄ *, 8, 2, 5; 2012 LC₁₄ *, 8, 2, 5; 2012 LD₁₄ *, 8, 2, 5; 2012 LE₁₄ *, 8, 2, 5; 2012 LF₁₄ *, 4, 1, 0; 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G98 Calvin-Rehoboth Observatory, Rehoboth

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0.4-m $f/8$ Ritchey-Chrétien + CCD + $f/5.2$ focal reducer

USNO-A2.0

2002 RB₇₁, 9, 1, 0; 2012 FH₅₇, 4, 1, 0; 2012 HR₈, 4, 1, 0; (7555), 5, 1, 0; [22, 4, 0*, 2006/10/13-2012/05/21]

H01 Magdalena Ridge Observatory, Socorro

W. H. Ryan, Magdalena Ridge Observatory, New Mexico Tech, Socorro, NM
87801, U.S.A. [bryan@nmt.edu]

2.4-m $f/8.9$ reflector + CCD

USNO-B1.0

2007 LC₁₅, 8, 2, 1; 2012 KJ₁₁, 12, 3, 7; 2012 LC₄, 4, 1, 0; 2012 LF₄, 4, 1, 0; 2012 LE₅, 4, 1, 0; 2012 LJ₅, 4, 1, 0; 2012 LK₅, 3, 1, 0; 2012 LQ₇, 4, 1, 0; 2012 LT₇, 4, 1, 0; 2012 LU₇, 4, 1, 0; 2012 LW₇, 3, 1, 0; 2012 LK₉, 8, 2, 1; 2012 LL₉, 8, 2, 1; 2012 LY₁₀, 4, 1, 0; 2012 LB₁₁, 4, 1, 0; 2012 LE₁₁, 4, 1, 0; 2012 LF₁₁, 4, 1, 0; 2012 MT₂, 4, 1, 0; 2012 MU₂, 4, 1, 0; 2012 MY₂, 4, 1, 0; 2012 MQ₃, 4, 1, 0; 2012 MQ₃, 8, 2, 1; 2012 MR₄, 8, 2, 1; 2012 MS₄, 4, 1, 0; 2012 MU₄, 4, 1, 0; 2012 MH₆, 4, 1, 0; (101955), 12, 3, 7; [142, 27, 0*, 2012/06/13-2012/06/21]

H06 RAS Observatory, Mayhill

P. B. Lake, no details supplied [parapion@telstra.com] (8)

N. Falla, 34 Orchard Road, Chessington, Surrey KT9 1AN, England
[n.falla@btopenworld.com] (20)

H. Sato, 46-2-401, Den-en-chofu, Ota-ku, Tokyo, Japan [pite@pc4.so-net.ne.jp]
(32)

M. Urbanik, Moyzesova 1827, SK-02201 Cadca, Slovakia [stone@astronomie.cz]
(42)

M. Henrichs, 2209 Maconda Lane, Houston, TX 77027, U.S.A.
[pmark@swbell.net] (43)

Observers H. Sato, R. Ligustri, K. Sokolovsky, E. Bryssinck, M. Urbanik,

M. Suzuki, N. Falla, P. B. Lake, C. Jacques, E. Pimentel, T. Yusa

0.43-m $f/6.8$ astrograph + CCD + $f/4.5$ focal reducer, 0.51-m $f/6.8$ astrograph +
CCD + $f/4.5$ focal reducer, 0.25-m $f/3.4$ reflector + CCD

USNO-A2.0, UCAC-3, PPMXL, USNO-B1.0, UCAC-2

2012 LZ₁, 10, 1, 0; (3479), 3, 1, 0; (10314), 3, 1, 0; (16011), 3, 1, 0; (18454), 1, 1, 0; (141018), 5,
1, 0; [25, 6, 0*, 2012/05/22-2012/06/29]

{20} 2009 SE₄₁, 2, 1, 0; 2012 JS₂, 3, 1, 0; (141018), 5, 1, 0; [10, 3, 0*, 2012/06/12-2012/06/21]

{8} (162173), 9, 1, 0; [9, 1, 0*, 2012/06/14]

{32} 2008 WR₆₁, 3, 1, 0; 2010 BK₁₁₈, 3, 1, 0; 2010 FH₉₂, 2, 1, 0; 2010 NV₁, 3, 1, 0; 2012 DG₆₁,
4, 1, 0; 2012 KM₄₆, 2, 1, 0; 2012 LC₁, 6, 1, 0; 2012 LS₁, 3, 1, 0; 2012 LN₂, 3, 1, 0; 2012 LU₅, 3,
1, 0; 2012 LL₉, 4, 1, 0; 2012 LF₁₁, 4, 1, 0; 2012 MS₄, 3, 1, 0; 2012 MU₄, 2, 1, 0; 2012 MD₆, 3, 1,
0; (12410), 3, 1, 0; (25982), 2, 1, 0; (33904), 3, 1, 0; (38117), 3, 1, 0; (54484), 3, 1, 0; (59748), 3, 1,
0; (71135), 3, 1, 0; (78491), 3, 1, 0; (93351), 3, 1, 0; (100115), 2, 1, 0; (103091), 2, 1, 0; (113035),
3, 1, 0; (153509), 3, 1, 0; (199696), 3, 1, 0; [87, 29, 0*, 2012/04/25-2012/06/27]

H07 7300 Observatory, Cloudcroft

W. K. Yeung, 139 Sandringham Place NW, Calgary, AB T3K 3V8, Canada

[microplanet333@yahoo.com]

0.45-m $f/3$ Schmidt-Cassegrain + CCD

USNO-A2.0

2012 DZ₅₂, 6, 1, 0; [6, 1, 0*, 2007/10/07]

H15 ISON-NM Observatory, Mayhill

L. Elenin, 47-17 8th March St., Lyubertsy, Moscow region, 140007 Russia

[l.elenin@gmail.com]

0.45-m $f/2.8$ astrograph + CCD

NOMAD, UCAC-3

1999 TA₁₈₈, 4, 1, 0; 2000 WG₁₈, 2, 1, 0; 2002 CP₁₄₃, 4, 1, 0; 2002 QE₁₅₀, 4, 1, 0; 2002 VO₁₃₆, 4,
1, 0; 2003 KJ₂, 3, 1, 0; 2003 RS₁₅, 4, 1, 0; 2004 PY₄₇, 4, 1, 0; 2004 RV₁₅₃, 4, 1, 0; 2004 TU₇₁, 4, 1,
0; 2005 NC₂₀, 4, 1, 0; 2005 PG₁₀, 4, 1, 0; 2005 SV₈₄, 4, 1, 0; 2005 UZ₂₉₇, 4, 1, 0; 2005 XJ₉, 4, 1,
0; 2005 YA₄₆, 4, 1, 0; 2006 AE₃₉, 4, 1, 0; 2006 KN₉, 3, 1, 0; 2007 BX₁₀₁, 4, 1, 0; 2007 CM₅₉, 3, 1,
0; 2007 EU₁₃, 4, 1, 0; 2008 PX₇, 4, 1, 0; 2008 QM₃₂, 4, 1, 0; 2008 WS₁₂₅, 4, 1, 0; 2009 SQ₃₄₁, 4,
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3, 1, 0; 2011 GA₆₇, 3, 1, 0; 2012 DX₂₇, 4, 1, 0; 2012 EG₁, 4, 1, 0; 2012 FC₆₂, 4, 1, 0; 2012 GR₂₈,
4, 1, 0; 2012 HJ₄, 4, 1, 0; 2012 HL₄₀, 4, 1, 0; 2012 HX₆₁, 4, 1, 0; 2012 HF₇₈, 4, 1, 0; 2012 JB₂₁, 7, 2,
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3, 1, 0; 2012 LH₄, 4, 1, 0; 2012 LG₂, 4, 1, 0; 2012 LN₆, 4, 1, 0; 2012 LS₁₂, 4, 1, 0; 2012 MT₆, 4, 1,
0; 2012 MU₆ *, 8, 2, 3; 2012 MN₇ *, 4, 1, 0; 2012 MR₈, 4, 1, 0; (94), 4, 1, 0; (132), 4, 1, 0; (161),
4, 1, 0; (321), 4, 1, 0; (431), 4, 1, 0; (503), 4, 1, 0; (539), 4, 1, 0; (602), 4, 1, 0; (707), 3, 1, 0;
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Observer R. Holmes

Measurers T. Vorobjov, L. Buzzi, S. Foglia, R. Holmes, T. Linder, H. Devore, A. Kostin

0.61-m $f/4.0$ astrograph + CCD, 0.81-m $f/4.0$ astrograph + CCD
PPMXL, UCAC-3, USNO-A2.0, UCAC-2

2001 DF₄₇, 3, 1, 0; 2001 RC₁₂, 2, 1, 0; 2001 SE₂₈₆, 8, 3, 6; 2001 WN₁, 3, 1, 0; 2002 WM₂₇, 3, 1, 0; 2003 UT₂₁₆, 3, 1, 0; 2004 PM₂, 3, 1, 0; 2004 SE, 3, 1, 0; 2004 XK₃₅, 6, 1, 0; 2005 KC, 4, 1, 0; 2005 MD, 3, 1, 0; 2005 MB₃₀, 3, 1, 0; 2005 SK₃₆, 3, 1, 0; 2005 YN₃, 3, 1, 0; 2006 BZ₇, 4, 1, 0;

2006 CF, 3, 1, 0; 2006 KM₁₀₃, 3, 1, 0; 2006 VY₁₃, 15, 4, 4; 2007 CX₆₃, 4, 1, 0; 2007 JV₁₉, 3, 1, 0; 2007 LC₁₅, 3, 1, 0; 2007 XL₅₂, 3, 1, 0; 2008 AF₃₂, 2, 1, 0; 2008 FB₁₀₁, 3, 1, 0; 2008 GD₈₇, 3, 1, 0; 2008 JQ₁₄, 3, 1, 0; 2008 KZ₁₃, 3, 1, 0; 2008 WR₆₁, 3, 1, 0; 2008 WM₆₄, 6, 2, 1; 2009 SY₃₆₀, 3, 1, 0; 2009 VA₂₆, 3, 1, 0; 2010 LJ₁₄, 6, 2, 3; 2011 AM₆₉, 3, 1, 0; 2011 WK₁₀₄, 3, 1, 0; 2011 YV₁₅, 3, 1, 0; 2011 YU₆₂, 7, 2, 4; 2012 BD₂₇, 9, 3, 14; 2012 CA₂₁, 6, 1, 0; 2012 CA₅₅, 3, 1, 0; 2012 DD₃, 1, 0; 2012 DU₃₀, 6, 2, 2; 2012 DG₃₁, 3, 1, 0; 2012 DR₆₁, 3, 1, 0; 2012 DN₆₄, 3, 1, 0; 2012 FJ, 6, 2, 5; 2012 FD₁, 3, 1, 0; 2012 FM₅₂, 3, 1, 0; 2012 FR₆₂, 3, 1, 0; 2012 GV₁₁, 3, 1, 0; 2012 GX₁₁, 6, 2, 3; 2012 HO, 6, 3, 6; 2012 HJ₁, 6, 2, 8; 2012 HR₂, 2, 1, 0; 2012 HG₈, 3, 1, 0; 2012 HN₈, 6, 2, 1; 2012 HO₁₅, 6, 2, 20; 2012 HS₁₅, 6, 2, 8; 2012 HG₃₁, 35, 9, 24; 2012 HR₆₉, 3, 1, 0; 2012 JU₈, 3, 1, 0; 2012 JH₁₁, 3, 1, 0; 2012 JS₁₁, 3, 1, 0; 2012 JU₁₁, 3, 1, 0; 2012 JB₁₆, 36, 9, 13; 2012 JR₁₇, 24, 7, 13; 2012 JS₁₇, 3, 1, 0; 2012 JB₂₁, 4, 1, 0; 2012 JO₂₂, 3, 1, 0; 2012 JF₂₅, 3, 1, 0; 2012 KX, 24, 4, 12; 2012 KA₄, 3, 1, 0; 2012 KC₆, 27, 9, 26; 2012 KK₁₁, 6, 2, 11; 2012 KL₁₁, 3, 1, 0; 2012 KF₁₈, 4, 1, 0; 2012 KM₁₈, 9, 3, 11; 2012 KN₁₈, 13, 4, 4; 2012 KO₁₈, 3, 1, 0; 2012 KT₄₀, 3, 1, 0; 2012 KZ₄₁, 10, 2, 2; 2012 KU₄₂, 33, 10, 14; 2012 KM₄₅, 37, 11, 20; 2012 KF₄₇, 34, 11, 19; 2012 LA, 35, 12, 21; 2012 LB, 3, 1, 0; 2012 LE, 4, 1, 0; 2012 LF, 4, 1, 0; 2012 LJ, 17, 1, 0; 2012 LT, 4, 1, 0; 2012 LU, 25, 7, 6; 2012 LC₁, 40, 11, 21; 2012 LD₁, 28, 9, 20; 2012 LF₁, 2, 1, 0; 2012 LL₁, 3, 1, 0; 2012 LO₁, 3, 1, 0; 2012 LP₁, 6, 2, 2; 2012 LQ₁, 2, 1, 0; 2012 LR₁, 18, 6, 9; 2012 LZ₁, 65, 6, 14; 2012 LJ₂, 15, 4, 5; 2012 LK₂, 8, 3, 5; 2012 LV₃, 2, 1, 0; 2012 LF₄, 24, 6, 9; 2012 LG₄, 26, 7, 8; 2012 LF₅, 3, 1, 0; 2012 LH₅, 3, 1, 0; 2012 LP₅, 3, 1, 0; 2012 LU₅, 4, 1, 0; 2012 LQ₇, 3, 1, 0; 2012 LT₇, 14, 4, 13; 2012 LW₇, 36, 8, 17; 2012 LW₉, 9, 3, 3; 2012 LJ₉, 4, 1, 0; 2012 LK₉, 10, 4, 13; 2012 LL₉, 33, 11, 15; 2012 LA₁₁, 20, 6, 9; 2012 LB₁₁, 2, 1, 0; 2012 LD₁₁, 4, 1, 0; 2012 LE₁₁, 7, 2, 1; 2012 LF₁₁, 31, 8, 15; 2012 LG₁₁, 32, 8, 12; 2012 LH₁₁, 19, 6, 12; 2012 LJ₁₁, 16, 5, 7; 2012 LK₁₁, 10, 3, 11; 2012 LL₁₁, 4, 1, 0; 2012 LV₁₁, 6, 2, 15; 2012 LB₁₃, 3, 1, 0; 2012 LC₁₃, 5, 2, 5; 2012 LD₁₃, 5, 1, 0; 2012 LU₁₃, 3, 1, 0; 2012 LW₁₃, 3, 1, 0; 2012 LW₁₄, 3, 1, 0; 2012 LQ₁₇, 3, 1, 0; 2012 LN₂₂, 3, 1, 0; 2012 MP, 17, 5, 11; 2012 MW₁, 22, 6, 7; 2012 MA₂, 5, 2, 1; 2012 MB₂, 3, 1, 0; 2012 MM₂, 3, 1, 0; 2012 MT₂, 3, 1, 0; 2012 MU₂, 31, 9, 10; 2012 MW₂, 2, 1, 0; 2012 MY₂, 48, 8, 10; 2012 MA₃, 2, 1, 0; 2012 MO₃, 3, 1, 0; 2012 MP₃, 3, 1, 0; 2012 MQ₃, 6, 2, 8; 2012 MR₄, 4, 1, 0; 2012 MS₄, 41, 9, 10; 2012 MU₄, 3, 1, 0; 2012 MV₄, 13, 3, 7; 2012 ME₅ *, 3, 1, 0; 2012 MD₆, 6, 2, 1; 2012 ME₆, 3, 1, 0; 2012 MF₆, 4, 1, 0; 2012 MG₆, 3, 1, 0; 2012 MK₆, 7, 2, 6; 2012 ML₆, 11, 3, 6; 2012 MM₆, 3, 1, 0; 2012 MY₆, 3, 1, 0; 2012 MZ₆, 14, 4, 6; 2012 MB₇, 10, 3, 4; 2012 MC₇, 27, 7, 8; 2012 MG₇, 12, 3, 3; 2012 MP₇, 4, 1, 0; 2012 MQ₇, 4, 1, 0; 2012 MR₇, 3, 1, 0; 2012 MM₁₁, 24, 5, 4; 2012 MO₁₁, 8, 2, 3; (2135), 10, 4, 3; (88254), 4, 1, 0; (138937), 3, 1, 0; (141018), 6, 1, 0; (141527), 3, 1, 0; (142781), 3, 1, 0; (143527), 6, 2, 8; (143637), 3, 1, 0; (153315), 3, 1, 0; (159699), 5, 2, 2; (162173), 3, 1, 0; (163758), 3, 1, 0; (173561), 3, 1, 0; (244977), 3, 1, 0; (276732), 3, 1, 0; [1620, 184, 1*, 2010/09/09-2012/06/30]

H23 Pear Tree Observatory, Valparaiso

T. Haugh, 361 Okaloosa Ave, Valparaiso, FL 32580, U.S.A. [haugh@valp.net]

0.25-m $f/5.4$ Newtonian reflector + CCD

UCAC-3

2007 LE, 3, 1, 0; 2012 HC₂, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LU₇, 3, 1, 0; (2189), 3, 1, 0; (4956), 3, 1, 0; (8686), 3, 1, 0; (11093), 3, 1, 0; (15496), 3, 1, 0; (19330), 3, 1, 0; (48186), 3, 1, 0; (54683), 3, 1, 0; (66805), 3, 1, 0; (76873), 3, 1, 0; (124091), 3, 1, 0; (243914), 3, 1, 0; [48, 16, 0*, 2012/06/03-2012/06/30]

H36 Sandlot Observatory, Scranton

G. Hug, 964 W. 149th St., Scranton, KS 66537, U.S.A. [fast@nekaal.org]

0.56-m reflector + CCD

UCAC-3

1999 TN₁₂, 2, 1, 0; 2005 YN₃, 3, 1, 0; 2006 CF, 5, 2, 1; 2012 JR₁₇, 3, 1, 0; 2012 KU₄₂, 3, 1, 0; 2012 KW₄₂, 2, 1, 0; 2012 KF₄₇, 6, 2, 7; 2012 LA, 3, 1, 0; 2012 LB, 3, 1, 0; 2012 LC, 3, 1, 0; 2012 LJ, 5, 1, 0; 2012 LU, 3, 1, 0; 2012 LC₁, 9, 2, 1; 2012 LD₁, 3, 1, 0; 2012 LR₁, 4, 1, 0; 2012 LA₂ *, 14, 5, 8; 2012 LF₄ *, 3, 1, 0; 2012 LV₄ *, 14, 5, 8; 2012 LU₇, 3, 1, 0; 2012 LG₈ *, 6, 2, 10; 2012 LA₁₁, 9, 3, 7; 2012 LE₁₁, 5, 2, 1; 2012 LF₁₁, 5, 2, 1; 2012 LG₁₁, 3, 1, 0; 2012 LJ₁₁, 2, 1, 0; 2012 LK₁₁, 2, 1, 0; 2012 LD₁₃, 3, 1, 0; 2012 LL₂₄, 12, 4, 29; 2012 MY₂, 3, 1, 0; 2012 MQ₃, 3, 1, 0; 2012 MS₄, 4, 1, 0; 2012 ML₆, 6, 2, 7; 2012 MZ₆, 7, 2, 3; 2012 MA₇, 3, 1, 0; 2012 MB₇, 2, 1, 0; 2012 MC₇, 11, 3, 3; 2012 MG₇, 2, 1, 0; 2012 MR₇, 2, 1, 0; 2012 MM₁₁, 3, 1, 0; 2012 MN₁₁ *, 13, 4, 3; [197, 40, 4*, 2012/05/29-2012/06/29]

H45 Arkansas Sky Obs., Petit Jean Mountain South

P. C. Sherrod, 73 Tanyard Springs Road, Petit Jean Mountain, Morrilton, AR 72110, U.S.A. [drclay@tcworks.net]

0.51-m $f/4.3$ astrograph + CCD

UCAC-3

1994 NK₁₀, 2, 2; 2001 KX₆₇, 30, 6, 7; 2001 LB₁₇, 2, 2; 2002 LD₃₅, 5, 1, 0; 2004 XK₃₅, 20, 4, 4; 2005 YW₃, 52, 10, 19; 2007 MM₁₃, 41, 8, 12; 2007 MT₂₀, 27, 5, 11; 2011 WV₁₃₄, 77, 13, 19; 2012 DU₃₀, 6, 1, 0; 2012 DH₆₁, 14, 2, 6; 2012 HC₂, 66, 11, 20; 2012 HG₃₁, 43, 7, 20; 2012 LU₇, 1, 0; 2012 LD₁, 15, 2, 2; 2012 LZ₁, 159, 10, 14; 2012 LU₇, 69, 11, 15; 2012 LE₁₁, 7, 1, 0; 2012 LF₁₁, 41, 6, 9; 2012 LG₁₁, 47, 7, 10; 2012 MP₅, 1, 0; 2012 MS₄, 44, 6, 5; 2012 MM₁₁, 31, 4, 3; (153958), 10, 2, 1; (329437), 18, 3, 20; [861, 25, 0*, 2012/06/09–2012/06/30]

H47 Vicksburg

C. Bell, 107 Judson Circle, Vicksburg, MS 39180, U.S.A.

[charbell@bellsouth.net]

0.3-m Schmidt-Cassegrain + CCD

PPMXL

1994 NK₃, 3, 1, 0; 2012 LZ₁, 6, 2, 1; [9, 2, 0*, 2012/06/18–2012/06/19]

H55 Astronomical Research Observatory, Charleston

R. Holmes, 7616 NCR 1800E, Charleston, IL 61920, U.S.A. [ari@mchsi.com]

0.81-m $f/4$ astrograph + CCD, 0.61-m $f/4$ astrograph + CCD

USNO-A2.0

2011 UK₁₂₄, 3, 1, 0; 2011 UM₁₆₆, 3, 1, 0; [6, 2, 0*, 2007/09/12–2007/10/07]

H75 Indian Hill North Observatory, Huntsburg

R. Baker, 11288 Woodlake Drive, Kirtland, OH 44094, U.S.A.

[rbaker52@gmail.com]

0.30-m $f/5.1$ Schmidt-Cassegrain + CCD

UCAC-3

2012 LZ₁, 5, 1, 0; [5, 1, 0*, 2012/06/20]

I03 European Southern Obs., La Silla-ASTROVIRTEL

C. Barbieri, Astronomical Observatory and Dept. of Astronomy of the University of Padova, Vicolo Osservatorio 5, I-35122 Padova, Italy

[barbieri@pd.astro.it] (1)

2009 XM₂₂, 3, 1, 0; 2012 HB₇₈, 3, 1, 0; [6, 2, 0*, 1999/07/15–2001/04/26]

I08 Alianza S4, Cerro Burek

R. Gil-Hutton, Casilla de Correo 467, Av. España 1512 sur, J5402DSP, San Juan, Argentina [rgilhutton@casleo.gov.ar]

Observers J. L. Ortiz, N. Morales, R. Gil-Hutton, I. de la Cueva

0.45-m $f/2.8$ reflector + CCD

UCAC-2

2008 GG₁₄₅, 16, 4, 3; 2012 LX₁₃ *, 14, 5, 7; [30, 2, 1*, 2012/05/14–2012/06/18]

I15 Wishing Star Observatory, Barrington

H. G. Peterson, 405 New Meadow Road, Barrington, RI 02806, U.S.A.

[pete@petersonengineering.com]

0.35-m $f/10$ Schmidt-Cassegrain + CCD + $f/5.87$ focal reducer

UCAC-3

2012 DH₆₁, 3, 1, 0; 2012 HC₂, 3, 1, 0; 2012 HG₃₁, 3, 1, 0; 2012 KM₄₅, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LG₁₁, 3, 1, 0; (7092), 3, 1, 0; (162082), 3, 1, 0; (329275), 3, 1, 0; (329437), 6, 2, 8; [33, 10, 0*, 2012/06/11–2012/06/30]

I16 IAA-AI Atacama, San Pedro de Atacama

J. L. Ortiz, Instituto de Astrofísica de Andalucía, P. O. Box 3004, E-18080

Granada, Spain [ortiz@iaa.es]

Observers I. de la Cueva, J. L. Ortiz, N. Morales

0.40-m $f/3.7$ reflector + CCD

UCAC-2

2012 KU₄₇ *, 11, 3, 2; [11, 1, 1*, 2012/05/28–2012/05/30]

I17 Thomas G. Cupillari Observatory, Fleetville

J. D. Sabia, 1112 Fairview Road, South Abington Township, PA 18411, U.S.A.

[sabijohn@aol.com]

0.5-m $f/8.1$ Ritchey-Chrétien + CCD

USNO-A2.0

(38628), 3, 1, 0; [3, 1, 0*, 2012/06/14]

I19 Observatorio El Gato Gris, Tanti

C. Colazo, 145 San Luis Street, Tanti, Argentina [gatogristanti@gmail.com]

0.36-m $f/11$ Schmidt-Cassegrain + CCD

UCAC-3

2012 MR₁₁, 3, 1, 0; [3, 1, 0*, 2012/06/30]

I20 Observatorio Astronomico Salvador, Río Cuarto

F. D. Mazzone, 1469 Achalay Street, AR-5800 Río Cuarto, Argentina

[fmazzone@exa.unrc.edu.ar]

0.20-m $f/4$ Schmidt-Newtonian + CCD

UCAC-3

2012 MS₄, 2, 1, 0; (3122), 3, 1, 0; (4183), 4, 1, 0; (154330), 4, 1, 0; [13, 4, 0*, 2012/06/07–2012/06/22]

I39 Observatorio Cruz del Sur, San Justo

A. Chapman, Observatorio Cruz del Sur, 2556 Chañar Street, San Justo, Buenos Aires, Argentina [andresechapman@gmail.com]

Observer A. Chapman

Measurers A. Chapman, N. D. Díaz

0.20-m $f/4$ reflector + CCD

NOMAD, UCAC-3

2001 TW₆, 2, 2; 2005 SK₁₀, 3, 1, 0; 2012 KE₄₇, 6, 1, 0; 2012 LZ₁, 6, 1, 0; 2012 MS₄, 5, 1, 0; 2012 MK₆, 3, 1, 0; 2012 MS₆, 3, 1, 0; 2012 MO₇, 3, 1, 0; 2012 MM₁₁, 7, 1, 0; 2012 MR₁₁, 2, 1, 0; (4183), 3, 1, 0; (13841), 3, 1, 0; [50, 12, 0*, 2012/05/31–2012/06/30]

I42 Westport Observatory

T. Loeb, 14 Strawberry Lane, Westport, MA 02790, U.S.A. [loebt@gmail.com]

0.15-m reflector + CCD, 0.25-m reflector + CCD

UCAC-3

2007 MT₂₀, 2, 1, 0; 2012 LZ₁, 8, 3, 6; 2012 LU₇, 2, 1, 0; 2012 LG₁₁, 2, 1, 0; (53110), 1, 1, 0; (329437), 2, 1, 0; [17, 6, 0*, 2012/06/16–2012/06/24]

I47 Pierre Auger Observatory, Malargüe

M. Mašek, Zitna 683, Liberec 6, 46006, Liberec 6 [cassi@astronomie.cz]

Observers M. Masek, J. Cerny, J. Ebr, M. Prouza, P. Kubanek, M. Jelinek

0.3-m $f/10$ reflector + CCD

USNO-B1.0

2012 KE₄₇, 3, 1, 0; (39656), 2, 1, 0; [5, 2, 0*, 2012/06/02–2012/06/30]

I48 Observatorio El Catalejo, Santa Rosa

J. Spagnotto, Observatorio El Catalejo, 255 Mussio Street, Santa Rosa, La Pampa, Argentina [spagnotto@speedy.com.ar]

0.20-m $f/5$ reflector + CCD

UCAC-3

2012 KE₄₇, 3, 1, 0; 2012 LC₁, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LR₁, 4, 1, 0; 2012 LZ₁, 8, 2, 1; 2012 MM₁₁, 3, 1, 0; [24, 6, 0*, 2012/06/02–2012/06/26]

I55 Valencia

J. Ceamanos, Calle Poeta Eduardo Buil 3 24 Dcha., Valencia 46020, Spain

[joseceamanos@yahoo.es]

Observers J. Ceamanos, S. Zaragoza
0.20-m $f/7.1$ Schmidt-Cassegrain + CCD
UCAC-3

(437), 8, 4, 8; (503), 8, 4, 8; [16, 2, 0*, 2012/06/15–2012/06/23]

I56 Observatorio Astronómico John Beckman, Almería

L. Enciso-Maldonado, no details supplied [l.enciso.maldonado@gmail.com]

Observers S. Góngora-García, L. Enciso-Maldonado

0.25-m $f/8$ Schmidt-Cassegrain + CCD

UCAC-3

(611), 6, 2, 8; (1263), 6, 2, 8; (6107), 6, 2, 8; (31182), 3, 1, 0; [21, 4, 0*, 2012/05/15–2012/05/24]

I57 Elche

J. Lozano, C/Antonio Garcma Campos no 4.1, Elche 03202, Spain

[juanlo@ono.com]

0.25-m $f/10$ Schmidt-Cassegrain + CCD

CMC

(416), 4, 2, 1; (489), 4, 2, 1; (715), 4, 2, 1; (720), 4, 2, 1; (741), 4, 2, 1; (801), 4, 2, 1; (811), 4, 2, 1; (952), 6, 2, 1; (961), 4, 2, 1; (1029), 4, 2, 1; (1043), 4, 2, 1; (1204), 4, 2, 1; (2224), 4, 2, 1; (2771), 4, 2, 1; (2901), 4, 2, 1; [62, 15, 0*, 2012/05/14–2012/06/14]

I61 Ourense

F. Fernández, C/ Cesáreo González 18, Ourense 32005, Spain

[aristarco@aristarco.org]

0.20-m $f/6.3$ Schmidt-Cassegrain + CCD

CMC

(18), 2, 1, 0; (52), 2, 1, 0; (128), 2, 1, 0; (216), 2, 1, 0; (346), 2, 1, 0; (677), 2, 1, 0; (712), 2, 1, 0; [14, 7, 0*, 2012/06/13–2012/06/22]

I63 Cygnus Observatory, New Airesford

P. J. Russell, Cygnus Observatory, 15 Rosebery Road, New Airesford, Hampshire

SO24 9HQ, United Kingdom [philrussell@zen.co.uk]

0.30-m $f/6.0$ Schmidt-Cassegrain + CCD

CMC

2012 LZ₁, 8, 1, 0; [8, 1, 0*, 2012/06/19]

I76 Observatorio Tesla, Valdemorillo

J. Fernandez, Calle Picasso 8, 28210 Valdemorillo, Spain

[jfdesosa@castillosdesoria.com]

0.24-m $f/10$ Schmidt-Cassegrain + CCD + $f/6.3$ focal reducer

UCAC-3

2001 LB, 3, 1, 0; 2011 WV₁₃₄, 2, 1, 0; 2012 HG₃₁, 2, 1, 0; 2012 LU₇, 2, 2, 1; 2012 LE₁₁, 2, 1, 0; 2012 LG₁₁, 2, 2, 1; (42), 2, 1, 0; [15, 7, 0*, 2012/06/04–2012/06/23]

I88 Fuensanta de Martos

J. Carrillo, 22 Crta de los Martos, Fuensanta de Martos, E-23610 Jaén, Spain

[jcgmilla@gmail.com]

0.36-m $f/5$ reflector + CCD

UCAC-3, CMC

(5110), 3, 1, 0; [3, 1, 0*, 2012/06/13]

I89 RAS Observatory, Nerpio

E. Guido, via Paride del Pozzo 12, I-80053 Castellammare di Stabia, Italy

[walcom77@gmail.com]

Observers M. Suzuki, C. Jacques, E. Pimentel, N. Falla

0.43-m $f/6.8$ reflector + CCD, 0.15-m $f/7.3$ refractor + CCD

USNO-B1.0, UCAC-2, UCAC-3

2007 LC₁₅, 2, 1, 0; 2012 LE₁₁, 6, 1, 0; 2012 MS₄, 3, 1, 0; 2012 MR₆, 3, 1, 0; 2012 MC₇, 3, 1, 0; 2012 MD₇, 3, 1, 0; 2012 MM₁₁, 5, 1, 0; (88249), 5, 1, 0; [30, 8, 0*, 2012/06/15–2012/06/25]

I93 St Pardon de Conques

F. Losse, 12 Roberts, F-33210 St. Pardon de Conques, France

[florent.losse@yahoo.fr]

0.40-m $f/5.0$ reflector + CCD

NOMAD

2004 CL, 4, 1, 0; 2004 HM₄₄, 3, 1, 0; 2006 BZ₇, 3, 1, 0; 2012 KC₆, 3, 1, 0; 2012 KF₄₇, 3, 1, 0; 2012 LJ₂, 4, 1, 0; 2012 LK₂, 3, 1, 0; 2012 LF₄, 3, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LU₇, 4, 1, 0; 2012 LL₉, 3, 1, 0; 2012 LA₁₁, 4, 1, 0; 2012 LE₁₁, 3, 1, 0; 2012 LF₁₁, 3, 1, 0; 2012 LJ₁₁, 3, 1, 0; 2012 LK₁₁, 3, 1, 0; 2012 MY₂, 5, 1, 0; 2012 MS₄, 4, 1, 0; 2012 MV₄, 3, 1, 0; 2012 MZ₅ *, 9, 3, 3; 2012 MG₆, 2, 1, 0; 2012 ML₆, 3, 1, 0; 2012 MC₇, 3, 1, 0; 2012 MM₁₁, 4, 1, 0; (9670), 3, 1, 0; (127097), 3, 1, 0; (162854), 3, 1, 0; (236525), 3, 1, 0; (269991), 3, 1, 0; [100, 29, 1*, 2012/05/31–2012/06/27]

I99 Observatorio Blanquita, Vaciamadrid

F. Limon, Paseo Capa Negra, 6, B14, At B, E-28522 Rivas Vaciamadrid, Spain

[flimon@ea4su.org]

0.20-m $f/3.3$ Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

2011 WV₁₃₄, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LE₁₁, 3, 1, 0; (7889), 3, 1, 0; (71135), 6, 2, 3; (153958), 3, 1, 0; (326732), 3, 1, 0; (329437), 3, 1, 0; [27, 8, 0*, 2012/06/12–2012/06/29]

J03 Observatorio Cielo Profundo, Oviedo

J. J. Gonzalez, Alejandro Casona 1 4C, E-33013 Oviedo, Spain

[juanjosegd@telecable.es]

0.23-m $f/10$ Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

2012 MS₆, 3, 1, 0; (60558), 3, 1, 0; [6, 2, 0*, 2012/06/19–2012/06/24]

J04 ESA Optical Ground Station, Tenerife

D. Koschny, European Space Agency ESA/ESTEC, Keplerlaan 1, NL-2201 AZ

Noordwijk ZH, The Netherlands [Detlef.Koschny@esa.int]

Observers D. Abreu, P. Ruiz

Measurers M. Busch, F. Hormuth, A. Knöfel, D. Koschny, S. Schmalz, E. Schwab,

C. Liefke, R. Kracht, A. Heller, G. Lehmann, C. Lief, V. Bezugly, H. Bill,

T. Häusler, R. Kra

1.0-m $f/4.4$ reflector + CCD

USNO-A2.0, PPMXL, UCAC-3, NOMAD, USNO-B1.0

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J13 La Palma-Liverpool Telescope

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Measurers D. Bowdley, A. Taylor, L. Rees, A. Cunningham, T. Lamma, J. Burden,

E. Balmer, H. Cardwe, L. Jones, K. Vickery, B. Howarth-Henry, N. Evans,

R. Shehmar, F. Lucas, M. Pichler, D. S. Stepan, L. Nesetrl, A. Weigl,

F. Longworth, J. Stone, R. Preedy, J. Punter, K. Wadge, D. Lefley,

C. Adams, E. Gabler, M. Theyer, D. Jones, N. Fowler, C. Fleming,

K. Storrie, A. Baines, M. Rayner, J. Bennetts, A. Strachan, C. Blanchard,

F. Healy, I. Jokin, P. Stepan, T. Meehan, J. Rowlatt, M. Robinson, S. Alsop,

S. Major

2.0-m Ritchey-Chrétien + CCD

USNO-B1.0

2002 EM₆, 4, 1, 0; 2003 BK₄₇, 4, 1, 0; 2003 MT₉, 4, 1, 0; 2006 WO₃, 4, 1, 0; 2007 VH₁₈₆, 4, 1, 0; 2009 VO₂₄, 4, 1, 0; 2010 SV₃, 4, 1, 0; 2011 EB₁₂, 4, 1, 0; 2011 OM₅, 4, 1, 0; 2011 OY₁₇, 4, 1, 0; 2011 QE₃₈, 4, 1, 0; 2012 ES₁₄, 4, 1, 0; 2012 GC₂, 4, 1, 0; 2012 KX, 4, 1, 0; 2012 KZ₄₁, 4, 1, 0; (186823), 4, 1, 0; [64, 16, 0*, 2011/07/05–2012/05/29]

J14 La Corte

E. Ferra, 96 La Corte, E-35630 Antigua, Las Palmas de Gran Canaria, Canary

Islands, Spain [deferrae@hotmail.com]

0.15-m *f*/5 Newtonian reflector + CCD

UCAC-3

(4289), 4, 2, 2; (4866), 4, 2, 2; [8, 2, 0*, 2012/06/17–2012/06/19]

J15 Muxagata

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[paulobao@sapo.pt]

0.23-m *f*/6.3 Schmidt-Cassegrain + CCD

CMC

(251340), 1, 1, 0; [1, 1, 0*, 2010/07/11]

J24 Observatorio Altamira

J. F. Hernandez, C/. Apartadero 4, Fasnía, S. C. de Tenerife, Spain

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0.4-m *f*/10 Schmidt-Cassegrain + CCD

CMC

(22834), 3, 1, 0; (51642), 3, 1, 0; (99710), 3, 1, 0; (157661), 3, 1, 0; (195703), 3, 1, 0; [15, 5, 0*, 2012/06/03–2012/06/16]

J26 The Spaceguard Centre, Knighton

J. R. Tate, Llanshay Lane, Knighton, Powys LD7 1LW, Wales

[mail@spaceguarduk.com]

0.35-m Schmidt-Cassegrain + CCD

USNO-A2.0

(3003), 3, 1, 0; [3, 1, 0*, 2012/06/09]

J37 Huelva

F. J. Alvarez, C/California no. 2, 6, E-21006 Huelva, Spain

[vesta95fjas@gmail.com]

0.15-m *f*/5.0 Newtonian reflector + CCD

UCAC-2

(1394), 3, 1, 0; (2201), 4, 1, 0; (13578), 4, 1, 0; (134340), 3, 1, 0; (153958), 4, 1, 0; (326732), 4, 1, 0; (329614), 4, 1, 0; [26, 7, 0*, 2012/06/29–2012/06/30]

J41 Raheny

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0.36-m $f/4.9$ Schmidt-Cassegrain + CCD

USNO-B1.0

2012 LZ₁, 6, 1, 0; [6, 1, 0*, 2012/06/24]

J43 Oukaïmeden Observatory, Marrakech

Z. Benkhaldoun, Cadi Ayyad University, Physics Department, FSSM, Av. Prince

My Abdellah BP 2390, Marrakech, Morocco [zouhair@ucam.ac.ma]

Observers C. Rinner, M. Ory

0.5-m $f/3$ reflector + CCD

UCAC-3, USNO-A2.0

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J47 Observatorio Nazaret

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[gustavomuler@hotmail.com]

Observer G. Muler

Measurers J. M. Ruiz, G. Muler

0.30-m Schmidt-Cassegrain + CCD

CMC, USNO-A2.0

(1551), 5, 1, 0; [5, 1, 0*, 2012/06/19]

J69 North Observatory, Clanfield

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0.41-m $f/4.5$ reflector + CCD

PPMXL

1984 QY₁, 4, 1, 0; [4, 1, 0*, 2012/06/19]**J75 OAM Observatory, La Sagra**

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Observers S. Sanchez, J. Nomen, M. Hurtado, W. K. Y. Yeung, J. A. Jaume,

P. Rios, F. Serra, V. Rios

0.45-m $f/2.8$ reflector + CCD

UCAC-2

2002 VN₁₀₇, 3, 1, 0; 2005 LU₂, 3, 1, 0; 2006 VJ₂₇, 3, 1, 0; 2008 WR₆₁, 3, 1, 0; 2008 YY₁₁₇, 3, 1, 0; 2011 GM₄₂, 3, 1, 0; 2012 FF₂₆, 3, 1, 0; 2012 KX₈, 3, 1, 0; 2012 LP₂ *, 6, 2, 1; [30, 9, 1*, 2006/11/13–2012/06/17]**J84 South Observatory, Clanfield**

D. Briggs, 124 Redbridge Grove, Havant, Portsmouth PO9 3DF, England

[dbriggs@kepler.demon.co.uk]

0.61-m $f/4.75$ reflector + CCD

PPMXL

2001 LB, 3, 1, 0; 2004 CL, 3, 1, 0; 2012 LJ, 7, 1, 0; 2012 LZ₁, 6, 1, 0; 2012 LF₄, 3, 1, 0; 2012 MY₂, 4, 1, 0; [26, 6, 0*, 2012/06/09–2012/06/25]**J87 La Cañada**

J. Lacruz, Ramon Gomez de la Serna 83 7F, E-28035 Madrid, Spain

[juan@lacanada.es]

0.40-m Ritchey-Chretien + CCD

UCAC-3

2012 JB₂₁, 3, 1, 0; 2012 MB₇, 3, 1, 0; [6, 2, 0*, 2012/06/22]**J93 Mount Tuffley Observatory, Gloucester**

J. Fletcher, 54 Windsor Drive, Tuffley, Gloucester GL4 0QT, England

[jfmto@blueyonder.co.uk]

0.25-m $f/5.5$ Schmidt-Cassegrain + CCD

UCAC-3

2011 WV₁₃₄, 3, 1, 0; (5587), 3, 1, 0; [6, 2, 0*, 2012/06/09–2012/06/19]**J95 Great Shefford**

P. Birtwhistle, Phlox Cottage, Wantage Road, Great Shefford, Berkshire

RG17 7DA, England [peter@birtwhi.demon.co.uk]

0.40-m $f/6.0$ Schmidt-Cassegrain + CCD

UCAC-3

2011 WW₄₈, 2, 1, 0; 2011 YF₅₄, 4, 1, 0; 2012 LJ, 4, 1, 0; 2012 LU, 3, 1, 0; 2012 LD₁, 3, 1, 0; 2012 LZ₁, 3, 1, 0; 2012 LQ₇, 2, 1, 0; 2012 LT₇, 3, 1, 0; 2012 LL₉, 3, 1, 0; 2012 LG₁₁, 2, 1, 0; 2012 LH₁₁, 2, 1, 0; 2012 MY₂, 6, 1, 0; 2012 MG₆, 3, 1, 0; 2012 ML₆, 2, 1, 0; 2012 MS₆, 2, 1, 0; 2012 MB₇, 2, 1, 0; 2012 MC₇, 5, 2, 2; 2012 MM₁₁, 3, 1, 0; [54, 18, 0*, 2007/10/10–2012/06/29]**ORBITAL ELEMENTS**

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MPCADO (entirely automated processing on MPC computer ADONIS)
MPCALB (entirely automated processing on MPC computer ALBERT)
MPCAO (entirely automated processing on MPC computer APOLLO)
MPCLINUX (entirely automated processing on MPC Linux cluster)
MPCMEL (entirely automated processing on MPC computer MELETE)

C/2005 L3 (McNaught)

Epoch 2008 Jan. 15.0 TT = JDT 2454480.5

<i>T</i>	2008 Jan. 16.00591 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	+0.0000158	ω 47.09694	-0.30837263	-0.72516362
	\pm 0.0000001	Ω 288.73910	-0.94495801	+0.30792611
<i>e</i>	0.9999114	<i>i</i> 139.44875	+0.10936489	+0.61588898

From 4862 observations 2004 July 16–2012 May 17, mean residual 0^{''}.52.

C/2006 S3 (LONEOS)

Epoch 2012 Apr. 23.0 TT = JDT 2456040.5

<i>T</i>	2012 Apr. 16.34188 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0006762	ω 140.13098	-0.21558922	-0.96492129
	\pm 0.0000002	Ω 38.37030	-0.94613470	+0.24437128
<i>e</i>	1.0034695	<i>i</i> 166.03270	-0.24155831	-0.09596655

From 3541 observations 2006 Aug. 29–2012 June 29, mean residual 0^{''}.53.

C/2008 S3 (Boattini)

Epoch 2011 June 8.0 TT = JDT 2455720.5

<i>T</i>	2011 June 7.40487 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0001250	ω 39.96469	+0.94225614	+0.23005742
	\pm 0.0000006	Ω 54.94141	+0.17644688	-0.95869220
<i>e</i>	1.0010021	<i>i</i> 162.70402	+0.28463989	-0.16728072

From 1214 observations 2006 Dec. 27–2012 June 24, mean residual 0^{''}.56.

C/2009 F4 (McNaught)

Epoch 2011 Dec. 25.0 TT = JDT 2455920.5

<i>T</i>	2011 Dec. 31.90133 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0002862	ω 260.38453	+0.04750824	+0.61014616
	\pm 0.0000005	Ω 53.58435	+0.16283769	+0.77643463
<i>e</i>	1.0015611	<i>i</i> 79.34748	-0.98550842	+0.15770519

From 701 observations 2009 Mar. 19–2012 June 30, mean residual 0^{''}.47.

C/2009 P1 (Garradd)

Epoch 2011 Dec. 25.0 TT = JDT 2455920.5

<i>T</i>	2011 Dec. 23.67712 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0006888	ω 90.74672	-0.16659904	-0.82691353
	\pm 0.0000000	Ω 325.99764	-0.58720441	+0.52077778
<i>e</i>	1.0010680	<i>i</i> 106.17747	+0.79210842	+0.21214269

From 6937 observations 2009 Aug. 13–2012 June 25, mean residual 0^{''}.68.

C/2010 D3 (WISE)

Epoch 2010 Sept. 1.0 TT = JDT 2455440.5

<i>T</i>	2010 Sept. 3.91638 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	+0.0001051	ω 304.64141	-0.33202463	-0.08030194
	\pm 0.0000019	Ω 255.23814	-0.14099066	-0.98095190
<i>e</i>	0.9995537	<i>i</i> 76.39161	-0.93267426	+0.17687556

From 60 observations 2010 Feb. 24–2012 June 20, mean residual 0^{''}.75.

C/2010 R1 (LINEAR)

Epoch 2012 June 2.0 TT = JDT 2456080.5

<i>T</i>	2012 May 18.89889 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0006526	ω 114.49653	-0.63356082	-0.76579062
	\pm 0.0000009	Ω 343.64950	-0.77180748	+0.63550801
<i>e</i>	1.0036687	<i>i</i> 156.93339	+0.05398058	+0.09845957

From 916 observations 2010 Sept. 4–2012 June 29, mean residual 0^{''}.56.

C/2010 S1 (LINEAR)

Epoch 2013 May 28.0 TT = JDT 2456440.5

<i>T</i>	2013 May 20.31748 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0003227	ω 118.61704	+0.53546362	-0.22398813
	\pm 0.0000003	Ω 93.43040	-0.69562733	-0.66374853
<i>e</i>	1.0019039	<i>i</i> 125.33582	+0.47893771	-0.71362960

From 2335 observations 2010 Sept. 21–2012 June 30, mean residual 0^{''}.45.

C/2011 A3 (Gibbs)

Epoch 2011 Dec. 25.0 TT = JDT 2455920.5

<i>T</i>	2011 Dec. 16.08385 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	+0.0009130	ω 141.16236	-0.01648389	+0.93259748
	\pm 0.0000007	Ω 124.89028	-0.99145457	+0.03142361
<i>e</i>	0.9978590	<i>i</i> 26.07526	-0.12940680	-0.35954764

From 1470 observations 2011 Jan. 15–2012 June 30, mean residual 0^{''}.56.

C/2011 F1 (LINEAR)

Epoch 2013 Jan. 28.0 TT = JDT 2456320.5

<i>T</i>	2013 Jan. 8.01261 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>z</i>	-0.0000518	ω 192.55322	+0.03604708	+0.55369734
	\pm 0.0000006	Ω 85.11485	-0.82945322	+0.48091187
<i>e</i>	1.0000942	<i>i</i> 56.61277	-0.55741185	-0.67981103

From 2898 observations 2011 Mar. 17–2012 June 30, mean residual 0^{''}.45.

P/2011 FR₁₄₃ (Lemmon)

Epoch 2011 Mar. 20.0 TT = JDT 2455640.5

<i>T</i>	2011 Mar. 10.72725 TT		MPC	
<i>q</i>	(2000.0)		P	Q
<i>n</i>	0.05522922	ω 349.93865	-0.99856310	+0.00947222
<i>a</i>	6.8289947	Ω 191.02267	-0.00232721	-0.99099087
<i>e</i>	0.4529883	<i>i</i> 16.01362	-0.05353804	-0.13359404
<i>P</i>	17.85			

From 58 observations 2011 Mar. 5–2012 June 10, mean residual 0^{''}.41.

C/2011 J2 (LINEAR)

Epoch 2013 Dec. 14.0 TT = JDT 2456640.5

<i>T</i>	2013 Dec. 25.28577 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	-0.0001570	ω 85.29440	+0.07045003	+0.97005617
	\pm 0.0000038	Ω 163.94715	+0.16358630	-0.24109841
<i>e</i>	1.0005406	<i>i</i> 122.79920	+0.98401032	-0.02936970

From 463 observations 2011 Mar. 10–2012 June 3, mean residual 0".49.

C/2011 KP₃₆ (Spacewatch)

Epoch 2016 May 12.0 TT = JDT 2457520.5

<i>T</i>	2016 May 27.52095 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0261311	ω 180.60373	+0.99447030	+0.09814347
	\pm 0.0000000	Ω 173.40409	-0.09493732	+0.99229539
<i>e</i>	0.8723641	<i>i</i> 18.98706	-0.04489689	+0.07561556

From 122 observations 2011 May 21–2012 June 22, mean residual 0".36.

C/2011 L4 (PANSTARRS)

Epoch 2013 Mar. 9.0 TT = JDT 2456360.5

<i>T</i>	2013 Mar. 10.16757 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	-0.0000415	ω 333.65173	+0.41006767	+0.10046938
	\pm 0.0000011	Ω 65.66583	+0.90783072	+0.05058750
<i>e</i>	1.0000125	<i>i</i> 84.20704	-0.08768062	+0.99365326

From 869 observations 2011 May 21–2012 June 28, mean residual 0".35.

C/2011 O1 (LINEAR)

Epoch 2012 Aug. 21.0 TT = JDT 2456160.5

<i>T</i>	2012 Aug. 18.47044 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0008188	ω 232.38259	+0.18297445	+0.14503769
	\pm 0.0000048	Ω 89.81666	-0.25418448	+0.96240719
<i>e</i>	0.9968144	<i>i</i> 76.49884	-0.94968974	-0.22964424

From 108 observations 2011 July 31–2012 June 26, mean residual 0".44.

C/2011 Q1 (PANSTARRS)

Epoch 2011 July 18.0 TT = JDT 2455760.5

<i>T</i>	2011 June 29.37513 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0002992	ω 135.92020	+0.60406108	+0.51275462
	\pm 0.0000033	Ω 142.24564	-0.63651770	-0.15021332
<i>e</i>	0.9979712	<i>i</i> 94.85996	+0.47953668	-0.84529205

From 58 observations 2011 Aug. 17–2012 June 25, mean residual 0".42.

C/2011 R1 (McNaught)

Epoch 2012 Sept. 30.0 TT = JDT 2456200.5

<i>T</i>	2012 Oct. 19.62218 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	-0.0003377	ω 308.86085	-0.24321595	-0.76722041
	\pm 0.0000013	Ω 221.40838	-0.33937592	-0.50587073
<i>e</i>	1.0007022	<i>i</i> 116.19720	-0.90866385	+0.39429387

From 414 observations 2010 Oct. 11–2012 June 11, mean residual 0".45.

C/2011 UF₃₀₅ (LINEAR)

Epoch 2012 July 12.0 TT = JDT 2456120.5

<i>T</i>	2012 July 22.16072 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	-0.0003071	ω 121.99244	-0.29610489	-0.35829722
	\pm 0.0000017	Ω 297.43596	+0.07009591	+0.91632557
<i>e</i>	1.0006566	<i>i</i> 93.96070	+0.95257990	-0.17880309

From 660 observations 2011 July 25–2012 June 28, mean residual 0".38.

P/2011 W1 (PANSTARRS)

Epoch 2012 Feb. 3.0 TT = JDT 2455960.5

<i>T</i>	2012 Jan. 22.46836 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.09813268	ω 282.45084	+0.09792607	-0.99498954
<i>a</i>	4.6550777	Ω 161.89261	+0.93641280	+0.08526540
<i>e</i>	0.2885081	<i>i</i> 3.71852	+0.33695928	+0.05220751
<i>P</i>	10.04			

From 154 observations 2011 Nov. 23–2012 Mar. 22, mean residual 0".45.

P/2011 W2 (Rinner)

Epoch 2011 Nov. 15.0 TT = JDT 2455880.5

<i>T</i>	2011 Nov. 6.18905 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.13311420	ω 221.05870	-0.03877425	-0.98146793
<i>a</i>	3.7988586	Ω 232.01739	+0.96770152	+0.00993498
<i>e</i>	0.3937509	<i>i</i> 13.77389	+0.24909901	-0.19136877
<i>P</i>	7.40			

From 579 observations 2011 Nov. 28–2012 Mar. 24, mean residual 0".53.

C/2012 A2 (LINEAR)

Epoch 2012 Nov. 9.0 TT = JDT 2456240.5

<i>T</i>	2012 Nov. 5.08928 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0010236	ω 101.66933	+0.08480942	+0.98342927
	\pm 0.0000021	Ω 191.40417	+0.23708609	+0.13627534
<i>e</i>	0.9963789	<i>i</i> 125.86866	+0.96777970	-0.11956549

From 814 observations 2011 Apr. 2–2012 June 22, mean residual 0".48.

P/2012 B1 (PANSTARRS)

Epoch 2013 July 7.0 TT = JDT 2456480.5

<i>T</i>	2013 July 23.07013 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.05958118	ω 162.16905	-0.94746613	+0.31010332
<i>a</i>	6.4922713	Ω 36.19643	-0.30725018	-0.81425529
<i>e</i>	0.4107848	<i>i</i> 7.62722	-0.08891153	-0.49073847
<i>P</i>	16.54			

From 255 observations 1997 June 1–2012 June 9, mean residual 0".47.

C/2012 B3 (La Sagra)

Epoch 2011 Dec. 25.0 TT = JDT 2455920.5

<i>T</i>	MPC			
2011 Dec. 6.85096 TT			P	Q
<i>q</i>	3.5365414	(2000.0)		
<i>z</i>	-0.0003936	ω 50.73553	-0.40069554	+0.05011817
	\pm 0.0000072	Ω 252.99808	-0.78942548	+0.48790931
<i>e</i>	1.0013919	<i>i</i> 106.93224	+0.46502742	+0.87145434

From 253 observations 2012 Jan. 29–June 23, mean residual 0^{''}.50.**C/2012 BJ₉₈ (Lemmon)**

Epoch 2012 Sept. 30.0 TT = JDT 2456200.5

<i>T</i>	MPC			
2012 Sept. 20.43264 TT			P	Q
<i>q</i>	2.1566547	(2000.0)		
<i>n</i>	0.01397677	ω 72.96707	-0.95548015	+0.29258166
<i>a</i>	17.0686119	Ω 124.03010	-0.28518004	-0.88260686
<i>e</i>	0.8736479	<i>i</i> 2.63685	-0.07569692	-0.36796889

From 145 observations 2011 Dec. 29–2012 June 15, mean residual 0^{''}.50.**C/2012 C1 (McNaught)**

Epoch 2013 Jan. 28.0 TT = JDT 2456320.5

<i>T</i>	MPC			
2013 Feb. 4.61729 TT			P	Q
<i>q</i>	4.8374891	(2000.0)		
<i>z</i>	+0.0007173	ω 279.90550	+0.18033484	+0.48581779
	\pm 0.0000233	Ω 300.63702	+0.30405828	-0.85445616
<i>e</i>	0.9965300	<i>i</i> 96.27706	-0.93542926	-0.18408083

From 90 observations 2012 Feb. 5–June 8, mean residual 0^{''}.38.**C/2012 CH₁₇ (MOSS)**

Epoch 2012 Sept. 30.0 TT = JDT 2456200.5

<i>T</i>	MPC			
2012 Sept. 28.21275 TT			P	Q
<i>q</i>	1.2961284	(2000.0)		
<i>z</i>	-0.0000298	ω 137.99210	-0.04274503	+0.92534848
	\pm 0.0000082	Ω 125.98065	-0.99486240	-0.00478996
<i>e</i>	1.0000386	<i>i</i> 27.74342	-0.09176961	-0.37908739

From 551 observations 2012 Feb. 2–June 24, mean residual 0^{''}.59.**C/2012 E3 (PANSTARRS)**

Epoch 2011 Apr. 29.0 TT = JDT 2455680.5

<i>T</i>	MPC			
2011 May 12.89205 TT			P	Q
<i>q</i>	3.8273230	(2000.0)		
<i>z</i>	+0.0046596	ω 103.51112	-0.20727014	-0.97388142
	\pm 0.0000355	Ω 5.52504	-0.63280556	+0.06120292
<i>e</i>	0.9821662	<i>i</i> 105.66563	+0.74605376	-0.21865313

From 67 observations 2012 Mar. 14–June 18, mean residual 0^{''}.44.**C/2012 F1 (Gibbs)**

Epoch 2012 Feb. 3.0 TT = JDT 2455960.5

<i>T</i>	MPC			
2012 Feb. 19.08067 TT			P	Q
<i>q</i>	2.5510618	(2000.0)		
<i>z</i>	+0.0129856	ω 300.41317	-0.94388154	-0.19063481
	\pm 0.0000000	Ω 129.95801	+0.00106732	+0.81484919
<i>e</i>	0.9668730	<i>i</i> 159.39819	-0.33028244	+0.54742960

From 74 observations 2012 Mar. 16–Apr. 25, mean residual 0^{''}.58.**P/2012 F5 (Gibbs)**

Epoch 2010 Mar. 25.0 TT = JDT 2455280.5

<i>T</i>	MPC			
2010 Mar. 23.45783 TT			P	Q
<i>q</i>	2.8751833	(2000.0)		
<i>n</i>	0.18943127	ω 176.41730	+0.83541305	-0.54017312
<i>a</i>	3.0026285	Ω 216.86748	+0.49997134	+0.82356618
<i>e</i>	0.0424446	<i>i</i> 9.73792	+0.22828426	+0.17306572

From 92 observations 2012 Feb. 20–June 13, mean residual 0^{''}.67.**C/2012 F6 (Lemmon)**

Epoch 2013 Mar. 9.0 TT = JDT 2456360.5

<i>T</i>	MPC			
2013 Mar. 24.42179 TT			P	Q
<i>q</i>	0.7312411	(2000.0)		
<i>z</i>	+0.0016647	ω 304.97103	+0.46099764	+0.76212929
	\pm 0.0001120	Ω 332.71623	-0.00391023	-0.51050666
<i>e</i>	0.9987827	<i>i</i> 82.59706	-0.88739275	+0.39817319

From 52 observations 2012 Mar. 23–June 14, mean residual 0^{''}.46.**C/2012 H2 (McNaught)**

Epoch 2012 Apr. 23.0 TT = JDT 2456040.5

<i>T</i>	MPC			
2012 May 3.73322 TT			P	Q
<i>q</i>	1.7168175	(2000.0)		
<i>n</i>	0.01515188	ω 295.90202	-0.43248835	-0.89875933
<i>a</i>	16.1742836	Ω 184.13453	+0.28776244	-0.21327895
<i>e</i>	0.8938551	<i>i</i> 92.83549	-0.85448616	+0.38307148

P 65.05From 33 observations 2012 Apr. 29–June 10, mean residual 0^{''}.43.**C/2012 J1 (Catalina)**

Epoch 2012 Dec. 19.0 TT = JDT 2456280.5

<i>T</i>	MPC			
2012 Dec. 7.23712 TT			P	Q
<i>q</i>	3.1587531	(2000.0)		
<i>z</i>	-0.0004847	ω 147.27277	+0.84721566	-0.26315824
	\pm 0.0000728	Ω 235.21842	+0.27903005	+0.95964529
<i>e</i>	1.0015310	<i>i</i> 34.18591	+0.45207062	-0.09913959

From 372 observations 2012 May 13–June 30, mean residual 0^{''}.36.**C/2012 K1 (PANSTARRS)**

Epoch 2014 Aug. 11.0 TT = JDT 2456880.5

<i>T</i>	MPC			
2014 Aug. 27.62770 TT			P	Q
<i>q</i>	1.0542630	(2000.0)		
<i>z</i>	-0.0001927	ω 203.11561	-0.47143308	+0.78077798
	\pm 0.0002162	Ω 317.74059	+0.87397108	+0.47583744
<i>e</i>	1.0002031	<i>i</i> 142.42912	+0.11800596	-0.40492527

From 162 observations 2012 May 14–June 29, mean residual 0^{''}.43.

P/2012 K3 (Gibbs)

Epoch 2012 Sept. 30.0 TT = JDT 2456200.5

<i>T</i>	2012 Sept. 30.29122 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.14331093	ω 172.28049	+0.47489644	+0.86037472
<i>a</i>	3.6164559	Ω 125.88508	-0.81913296	+0.50900060
<i>e</i>	0.4257057	<i>i</i> 13.20011	-0.32170571	-0.02595628
<i>P</i>	6.88			

From 103 observations 2012 May 21–June 24, mean residual 0".48.

C/2012 K5 (LINEAR)

Epoch 2012 Nov. 9.0 TT = JDT 2456240.5

<i>T</i>	2012 Nov. 28.68662 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0011923	ω 139.27716	-0.15115896	-0.06530315
	\pm 0.0000567	Ω 279.04228	+0.42282675	+0.89765504
<i>e</i>	0.9986383	<i>i</i> 92.85123	+0.89351469	-0.43583359

From 402 observations 2012 May 25–June 30, mean residual 0".48.

C/2012 K8 (Lemmon)

Epoch 2014 Aug. 21.27086 TT

<i>T</i>	2014 Aug. 21.27086 TT		MPC	
<i>q</i>		(2000.0)	P	Q
		ω 76.05399	-0.03334547	-0.70799625
		Ω 312.77260	-0.70053102	+0.51997603
<i>e</i>	1.0	<i>i</i> 106.05376	+0.71284246	+0.47787680

From 59 observations 2012 May 30–June 27.

C/2012 L1 (LINEAR)

Epoch 2012 Dec. 19.0 TT = JDT 2456280.5

<i>T</i>	2012 Dec. 25.41039 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0012683	ω 140.28879	+0.00725592	-0.05699963
	\pm 0.0001573	Ω 271.76707	+0.45248880	+0.89050129
<i>e</i>	0.9971306	<i>i</i> 87.21964	+0.89174057	-0.45139617

From 201 observations 2012 June 1–June 30, mean residual 0".51.

C/2012 L2 (LINEAR)

Epoch 2013 May 28.0 TT = JDT 2456440.5

<i>T</i>	2013 May 8.97176 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0015815	ω 205.87745	-0.14630466	-0.29108422
	\pm 0.0004254	Ω 270.26308	+0.98901745	-0.06329308
<i>e</i>	0.9976208	<i>i</i> 70.98869	-0.02096265	-0.95460147

From 76 observations 2012 June 1–June 25, mean residual 0".50.

C/2012 L3 (LINEAR)

Epoch 2012 June 2.0 TT = JDT 2456080.5

<i>T</i>	2012 June 12.52292 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>z</i>	+0.0010749	ω 107.13846	+0.35974350	-0.73407624
	\pm 0.0010645	Ω 53.45386	-0.85368481	-0.50808013
<i>e</i>	0.9967252	<i>i</i> 134.20014	+0.37657251	-0.45054042

From 107 observations 2012 June 10–June 27, mean residual 0".56.

105P/Singer Brewster

Epoch 2012 Mar. 14.0 TT = JDT 2456000.5

<i>T</i>	2012 Feb. 26.16712 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.15236385	ω 46.67193	-0.51568070	+0.85609505
<i>a</i>	3.4717471	Ω 192.41873	-0.82496692	-0.50693468
<i>e</i>	0.4092675	<i>i</i> 9.17043	-0.23130716	-0.10059072
<i>P</i>	6.47			

From 250 observations 1993 July 20–2012 June 27, mean residual 0".70. Non-gravitational parameters $A_1 = +0.06 \pm 0.03$, $A_2 = -0.0730 \pm 0.0008$.**185P/Petrew**

Epoch 2012 Aug. 21.0 TT = JDT 2456160.5

<i>T</i>	2012 Aug. 13.57851 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.18051665	ω 181.94321	+0.80923758	-0.57160148
<i>a</i>	3.1006865	Ω 214.09037	+0.54221597	+0.81558821
<i>e</i>	0.6994673	<i>i</i> 14.00764	+0.22613352	+0.08993114
<i>P</i>	5.46			

From 545 observations 2001 June 12–2012 July 1, mean residual 0".74. Non-gravitational parameters $A_1 = +0.16 \pm 0.03$, $A_2 = +0.0173 \pm 0.0000$.**189P/NEAT**

Epoch 2012 July 12.0 TT = JDT 2456120.5

<i>T</i>	2012 July 20.42827 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.19755743	ω 15.35505	+0.44568153	+0.82796049
<i>a</i>	2.9197151	Ω 282.15333	-0.85362797	+0.27856074
<i>e</i>	0.5968012	<i>i</i> 20.37542	-0.26960575	+0.48670869
<i>P</i>	4.99			

From 666 observations 2002 July 30–2012 June 25, mean residual 0".69. Non-gravitational parameters $A_1 = -0.06 \pm 0.01$, $A_2 = -0.0049 \pm 0.0000$.**263P/Gibbs**

Epoch 2012 June 2.0 TT = JDT 2456080.5

<i>T</i>	2012 May 20.86037 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.18405270	ω 34.48859	-0.75912895	-0.62187752
<i>a</i>	3.0608445	Ω 105.87684	+0.54308322	-0.76796052
<i>e</i>	0.5872476	<i>i</i> 11.53462	+0.35886468	-0.15331338
<i>P</i>	5.36			

From 131 observations 2006 Nov. 10–2012 June 14, mean residual 0".6.

264P/Larsen

Epoch 2011 Nov. 15.0 TT = JDT 2455880.5

<i>T</i>	2011 Nov. 21.96282 TT		MPC	
<i>q</i>		(2000.0)	P	Q
<i>n</i>	0.12778368	ω 346.55524	-0.87258493	+0.40149162
<i>a</i>	3.9037842	Ω 220.94654	-0.39964867	-0.91429158
<i>e</i>	0.3723715	<i>i</i> 25.12004	-0.28084957	+0.05362258
<i>P</i>	7.71			

From 89 observations 2004 Apr. 22–2012 June 18, mean residual 0".6.

265P/LINEAR

Epoch 2012 June 2.0 TT = JDT 2456080.5

<i>T</i>	2012 June 10.75829 TT		MPC		
<i>q</i>	1.4989369	ω	(2000.0)	P	Q
<i>n</i>	0.11266869	Ω	32.85481	+0.94854627	-0.30952463
<i>a</i>	4.2455492	Ω	344.74084	+0.20693036	+0.76551183
<i>e</i>	0.6469392	<i>i</i>	14.69021	+0.23966602	+0.56407991
<i>P</i>	8.75				

From 441 observations 2003 July 30–2012 June 23, mean residual 0".6.

Neptune II (Nereid)

Epoch 2012 Mar. 14.0 TT = JDT 2456000.5

<i>M</i>	349.43312		(2000.0)	P	Q
<i>n</i>	0.99958058	ω	296.90933	-0.22636248	+0.97239499
<i>a</i>	0.0368609	Ω	319.87682	-0.85959427	-0.22677504
<i>e</i>	0.7526992	<i>i</i>	5.04224	-0.45810231	-0.05496418
<i>P</i>	360.15 d	<i>H</i>	4.4	<i>G</i>	0.15

From 626 observations 1951 Feb. 7–2012 June 8, mean residual 0".62.

Saturn IX (Phoebe)

Epoch 2012 Mar. 14.0 TT = JDT 2456000.5

<i>M</i>	88.15351		(2000.0)	P	Q
<i>n</i>	0.65600151	ω	2.62154	-0.08710994	-0.98876794
<i>a</i>	0.0864166	Ω	267.60469	-0.91619175	+0.03164745
<i>e</i>	0.1729022	<i>i</i>	173.01814	-0.39115794	+0.14606984
<i>P</i>	548.78 d	<i>H</i>	6.6	<i>G</i>	0.15

From 1965 observations 1898 Aug. 19–2012 June 9, mean residual 0".47.

Saturn XXVI (Albiorix)

Epoch 2012 Mar. 14.0 TT = JDT 2456000.5

<i>M</i>	261.92404		(2000.0)	P	Q
<i>n</i>	0.45518253	ω	80.04944	-0.82388978	-0.09191457
<i>a</i>	0.1102580	Ω	92.97125	-0.09988649	-0.94776589
<i>e</i>	0.5742684	<i>i</i>	34.05579	+0.55787841	-0.30543661
<i>P</i>	790.89 d	<i>H</i>	11.2	<i>G</i>	0.15

From 161 observations 2000 Nov. 9–2012 June 9, mean residual 0".43.

Saturn XXIX (Siarnaq)

Epoch 2012 Mar. 14.0 TT = JDT 2456000.5

<i>M</i>	184.31383		(2000.0)	P	Q
<i>n</i>	0.41149672	ω	78.31665	-0.37309898	-0.75655284
<i>a</i>	0.1179296	Ω	48.29275	+0.27371091	-0.64284132
<i>e</i>	0.4354233	<i>i</i>	46.00288	+0.88649844	-0.11992847
<i>P</i>	874.86 d	<i>H</i>	10.6	<i>G</i>	0.15

From 245 observations 2000 Sept. 23–2012 June 9, mean residual 0".39.

SUMMARY OF NEW NUMBERINGS

The following summary of new numberings of minor planets lists for each object the number, principal provisional designation, date of discovery, observatory code of the discovery site and the names of the discoverers. A separate table lists orbital elements and absolute magnitudes (the slope parameter *G* being 0.15 in every case). Further details, including additional identifications and residuals, are given in the *Minor Planet Circulars Orbit Supplement*.

(331471) 1984 QY ₁	1984 08 27	675	Helin, E. F., Rose, P.
(331472) 1993 BB ₉	1993 01 21	691	Spacewatch
(331473) 1993 TP ₅	1993 10 09	691	Spacewatch
(331474) 1994 PO ₁₄	1994 08 10	809	Elst, E. W.
(331475) 1995 SZ ₁₃	1995 09 18	691	Spacewatch
(331476) 1995 US ₁₇	1995 10 18	691	Spacewatch
(331477) 1996 TO ₂₄	1996 10 06	691	Spacewatch
(331478) 1997 TR ₁₉	1997 10 02	691	Spacewatch
(331479) 1997 WS ₁₁	1997 11 22	691	Spacewatch
(331480) 1997 WP ₁₅	1997 11 23	691	Spacewatch
(331481) 1998 KH ₁₂	1998 05 27	691	Spacewatch
(331482) 1998 RM ₂₃	1998 09 14	704	LINEAR
(331483) 1998 SY ₄₉	1998 09 25	691	Spacewatch
(331484) 1998 UX	1998 10 18	703	CSS
(331485) 1998 VM ₄₃	1998 11 15	691	Spacewatch
(331486) 1998 VQ ₅₆	1998 11 10	699	LONEOS
(331487) 1998 WA ₃₀	1998 11 24	691	Spacewatch
(331488) 1998 YT ₃₃	1998 12 22	691	Spacewatch
(331489) 1999 BA ₃₁	1999 01 19	691	Spacewatch
(331490) 1999 GB ₁₆	1999 04 09	704	LINEAR
(331491) 1999 NK ₃₂	1999 07 14	704	LINEAR
(331492) 1999 RG ₁₆₈	1999 09 09	704	LINEAR
(331493) 1999 RU ₁₉₉	1999 09 08	704	LINEAR
(331494) 1999 RN ₂₀₅	1999 09 08	704	LINEAR
(331495) 1999 RY ₂₂₁	1999 09 06	703	CSS
(331496) 1999 RN ₂₃₈	1999 09 08	704	LINEAR
(331497) 1999 TK ₇₆	1999 10 10	691	Spacewatch
(331498) 1999 TX ₁₂₃	1999 10 15	704	LINEAR
(331499) 1999 TR ₁₇₀	1999 10 10	704	LINEAR
(331500) 1999 TH ₂₃₂	1999 10 05	699	LONEOS
(331501) 1999 TS ₂₇₂	1999 10 03	704	LINEAR
(331502) 1999 TH ₃₀₇	1999 10 03	691	Spacewatch
(331503) 1999 TF ₃₁₅	1999 10 09	704	LINEAR
(331504) 1999 UJ ₁₆	1999 10 29	703	CSS
(331505) 1999 UN ₃₆	1999 10 16	691	Spacewatch
(331506) 1999 VC ₁₂	1999 11 10	678	Juels, C. W.
(331507) 1999 XQ ₁₁₇	1999 12 05	703	CSS
(331508) 1999 XC ₂₆₁	1999 12 08	704	LINEAR
(331509) 1999 YA	1999 12 16	704	LINEAR
(331510) 2000 AE ₆	2000 01 04	704	LINEAR
(331511) 2000 AU ₂₂₃	2000 01 09	691	Spacewatch
(331512) 2000 BP ₄₁	2000 01 30	691	Spacewatch
(331513) 2000 CU ₁₉	2000 01 11	704	LINEAR
(331514) 2000 DO ₇₈	2000 02 29	704	LINEAR
(331515) 2000 DS ₉₅	2000 02 28	704	LINEAR
(331516) 2000 EA ₁₄₇	2000 03 04	704	LINEAR
(331517) 2000 FW ₄	2000 03 27	691	Spacewatch
(331518) 2000 JE ₃₁	2000 05 07	704	LINEAR
(331519) 2000 NJ ₁₉	2000 07 05	699	LONEOS
(331520) 2000 QV ₃₂	2000 08 26	704	LINEAR
(331521) 2000 QY ₄₀	2000 08 24	704	LINEAR
(331522) 2000 QD ₇₀	2000 08 24	704	LINEAR

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(331524)	2000 RJ	2000 09 01	704	LINEAR	(331576)	2001 QR ₂₆₄	2001 08 26	699	LONEOS
(331525)	2000 RM ₁₀₃	2000 09 05	699	LONEOS	(331577)	2001 QR ₂₇₅	2001 08 19	704	LINEAR
(331526)	2000 SF ₅	2000 09 22	704	LINEAR	(331578)	2001 RS ₆₅	2001 09 10	704	LINEAR
(331527)	2000 SM ₂₁	2000 09 24	704	LINEAR	(331579)	2001 RD ₇₂	2001 09 10	704	LINEAR
(331528)	2000 SY ₉₅	2000 09 23	704	LINEAR	(331580)	2001 RP ₉₀	2001 09 11	699	LONEOS
(331529)	2000 SR ₁₂₆	2000 09 24	704	LINEAR	(331581)	2001 SO ₁₃	2001 09 16	704	LINEAR
(331530)	2000 SM ₁₃₅	2000 09 23	704	LINEAR	(331582)	2001 SD ₈₀	2001 09 20	704	LINEAR
(331531)	2000 SO ₁₄₃	2000 09 24	704	LINEAR	(331583)	2001 SV ₁₁₉	2001 09 16	704	LINEAR
(331532)	2000 SJ ₁₉₂	2000 09 24	704	LINEAR	(331584)	2001 SE ₁₄₃	2001 09 16	704	LINEAR
(331533)	2000 SG ₂₀₄	2000 09 24	704	LINEAR	(331585)	2001 SP ₁₄₃	2001 09 16	704	LINEAR
(331534)	2000 SC ₂₅₄	2000 09 24	704	LINEAR	(331586)	2001 SU ₂₀₆	2001 09 19	704	LINEAR
(331535)	2000 SN ₂₇₃	2000 09 28	704	LINEAR	(331587)	2001 TW	2001 10 09	704	LINEAR
(331536)	2000 SC ₂₈₄	2000 09 23	704	LINEAR	(331588)	2001 TZ ₂₂	2001 10 13	704	LINEAR
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(331538)	2000 SO ₃₄₀	2000 09 24	704	LINEAR	(331590)	2001 TY ₁₃₂	2001 10 12	608	NEAT
(331539)	2000 SX ₃₄₈	2000 09 30	699	LONEOS	(331591)	2001 TY ₁₇₀	2001 10 15	608	NEAT
(331540)	2000 SC ₃₄₉	2000 09 30	699	LONEOS	(331592)	2001 TQ ₂₄₈	2001 10 14	645	Sloan Digital Sky Survey
(331541)	2000 TQ ₂₀	2000 09 29	704	LONEOS	(331593)	2001 UJ ₉₇	2001 10 17	704	LINEAR
(331542)	2000 TZ ₃₄	2000 10 06	699	LONEOS	(331594)	2001 UL ₁₀₆	2001 10 20	704	LINEAR
(331543)	2000 TT ₃₆	2000 10 06	699	LONEOS	(331595)	2001 UF ₂₀₈	2001 10 20	691	Spacewatch
(331544)	2000 TG ₅₄	2000 10 01	704	LINEAR	(331596)	2001 UT ₂₂₁	2001 10 24	704	LINEAR
(331545)	2000 UE ₅₉	2000 10 25	704	LINEAR	(331597)	2001 VG ₁₂	2001 11 10	704	LINEAR
(331546)	2000 UG ₆₈	2000 10 25	704	LINEAR	(331598)	2001 VR ₂₀	2001 11 09	704	LINEAR
(331547)	2000 VL ₃₉	2000 11 01	704	LINEAR	(331599)	2001 VW ₈₀	2001 11 10	644	NEAT
(331548)	2000 VO ₄₇	2000 11 01	704	LINEAR	(331600)	2001 VH ₈₉	2001 11 12	704	LINEAR
(331549)	2000 WG ₁₈	2000 11 21	704	LINEAR	(331601)	2001 WL ₁₇	2001 11 17	704	LINEAR
(331550)	2000 WP ₅₃	2000 11 27	691	Spacewatch	(331602)	2001 WZ ₄₆	2001 11 20	704	LINEAR
(331551)	2000 WL ₅₄	2000 11 20	704	LINEAR	(331603)	2001 WM ₅₁	2001 10 14	704	LINEAR
(331552)	2000 WH ₆₅	2000 11 28	691	Spacewatch	(331604)	2001 WD ₉₈	2001 10 18	704	Spacewatch
(331553)	2000 WZ ₇₁	2000 11 19	704	LINEAR	(331605)	2001 XB ₅	2001 12 10	012	Pauwels, T.
(331554)	2000 WH ₁₆₀	2000 11 20	699	LONEOS	(331606)	2001 XB ₁₉	2001 12 09	704	LINEAR
(331555)	2000 XA ₂	2000 12 01	704	LINEAR	(331607)	2001 XA ₉₆	2001 12 10	704	LINEAR
(331556)	2000 XE ₅₄	2000 12 15	012	Pauwels, T.	(331608)	2001 XA ₁₁₂	2001 12 11	704	LINEAR
(331557)	2000 YZ ₁₄	2000 12 20	012	Pauwels, T.	(331609)	2001 XN ₂₁₆	2001 12 14	704	LINEAR
(331558)	2001 BJ ₆	2001 01 19	704	LINEAR	(331610)	2001 XK ₂₄₅	2001 12 15	704	LINEAR
(331559)	2001 DV ₂₄	2001 02 17	704	LINEAR	(331611)	2001 XJ ₂₅₀	2001 12 14	704	LINEAR
(331560)	2001 HB ₄₀	2001 04 29	691	Spacewatch	(331612)	2001 YD ₂₄	2001 12 18	704	LINEAR
(331561)	2001 KO ₁₉	2001 05 21	704	LINEAR	(331613)	2001 YB ₈₈	2001 12 18	704	LINEAR
(331562)	2001 MS ₇	2001 06 23	644	NEAT	(331614)	2001 YA ₁₃₇	2001 12 22	704	LINEAR
(331563)	2001 OJ ₁₈	2001 07 17	608	NEAT	(331615)	2002 AQ ₃₈	2002 01 09	704	LINEAR
(331564)	2001 OF ₂₇	2001 07 18	644	NEAT	(331616)	2002 AP ₃₉	2002 01 09	704	LINEAR
(331565)	2001 OU ₃₁	2001 07 23	644	NEAT	(331617)	2002 AZ ₆₈	2002 01 13	291	Spacewatch
(331566)	2001 PY ₉	2001 08 08	608	NEAT	(331618)	2002 AL ₈₂	2002 01 09	704	LINEAR
(331567)	2001 PR ₅₇	2001 08 14	608	NEAT	(331619)	2002 AO ₈₄	2002 01 09	704	LINEAR
(331568)	2001 QE ₃₇	2001 08 16	704	LINEAR	(331620)	2002 AY ₁₀₂	2002 01 08	704	LINEAR
(331569)	2001 QO ₅₂	2001 08 16	704	LINEAR	(331621)	2002 CT ₅	2002 02 04	608	NEAT
(331570)	2001 QS ₆₇	2001 08 19	704	LINEAR	(331622)	2002 CL ₃₆	2002 01 14	704	LINEAR
(331571)	2001 QH ₉₂	2001 08 19	704	LINEAR	(331623)	2002 CS ₁₃₀	2002 02 07	704	LINEAR
(331572)	2001 QC ₁₆₈	2001 08 24	608	NEAT	(331624)	2002 CR ₂₃₂	2002 02 10	704	LINEAR
(331573)	2001 QL ₁₉₇	2001 08 22	644	NEAT	(331625)	2002 CE ₂₇₂	2002 02 08	644	NEAT
(331574)	2001 QW ₂₂₆	2001 08 24	699	LONEOS	(331626)	2002 DM ₅	2002 02 16	608	NEAT

(331627) 2002 EM ₆₂	2002 03 13	704	LINEAR	(331679) 2002 QG ₁₃	2002 08 26	644	NEAT
(331628) 2002 FU ₄	2002 02 08	644	LONEOS	(331680) 2002 QY ₂₄	2002 08 28	704	LINEAR
(331629) 2002 GD ₂₈	2002 04 06	807	Buie, M. W.	(331681) 2002 QY ₆₅	2002 08 17	644	NEAT
(331630) 2002 GB ₅₉	2002 04 08	644	NEAT	(331682) 2002 QK ₇₇	2002 08 17	644	NEAT
(331631) 2002 GS ₇₀	2002 04 08	644	NEAT	(331683) 2002 QF ₇₉	2004 12 20	644	Mt. Lemmon Survey
(331632) 2002 GE ₁₁₇	2002 04 11	704	LINEAR	(331684) 2002 QJ ₉₀	2002 08 30	644	NEAT
(331633) 2002 GQ ₁₂₄	2002 04 12	291	Spacewatch	(331685) 2002 QB ₉₂	2002 08 28	644	NEAT
(331634) 2002 GW ₁₈₀	2002 04 12	644	NEAT	(331686) 2002 QR ₁₀₁	2002 08 16	644	NEAT
(331635) 2002 GC ₁₈₄	2002 04 14	644	NEAT	(331687) 2002 QF ₁₀₄	2002 08 26	644	NEAT
(331636) 2002 JK ₇	2002 05 04	644	NEAT	(331688) 2002 QB ₁₁₂	2002 08 16	644	NEAT
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(331638) 2002 JP ₁₂₃	2002 05 06	644	NEAT	(331690) 2002 QS ₁₁₉	2002 08 17	644	NEAT
(331639) 2002 NS ₃	2002 07 08	644	NEAT	(331691) 2002 QB ₁₂₂	2002 08 16	644	NEAT
(331640) 2002 ND ₅	2002 07 10	599	CINEOS	(331692) 2002 QK ₁₂₇	2002 08 18	644	NEAT
(331641) 2002 NW ₃₅	2002 07 09	704	LINEAR	(331693) 2002 QR ₁₃₀	2002 08 30	644	NEAT
(331642) 2002 NQ ₃₆	2002 07 09	704	LINEAR	(331694) 2002 QR ₁₄₁	2003 11 24	644	Spacewatch
(331643) 2002 NQ ₃₉	2002 07 14	704	LINEAR	(331695) 2002 QQ ₁₄₂	2008 09 30	644	CSS
(331644) 2002 NN ₅₈	2002 07 12	644	NEAT	(331696) 2002 QA ₁₄₈	2006 10 04	644	Mt. Lemmon Survey
(331645) 2002 NX ₆₈	2002 07 14	644	NEAT	(331697) 2002 RX ₄	2002 09 03	644	NEAT
(331646) 2002 NU ₇₂	2002 07 08	644	NEAT	(331698) 2002 RS ₄₄	2002 09 05	704	LINEAR
(331647) 2002 NF ₇₉	2003 10 23	644	Spacewatch	(331699) 2002 RT ₄₅	2002 09 05	704	LINEAR
(331648) 2002 OQ ₃₁	2002 07 17	644	NEAT	(331700) 2002 RO ₄₆	2002 09 05	704	LINEAR
(331649) 2002 OJ ₃₂	2002 07 20	644	NEAT	(331701) 2002 RC ₅₅	2002 09 05	699	LONEOS
(331650) 2002 OJ ₃₄	2002 07 22	644	NEAT	(331702) 2002 RJ ₆₉	2002 09 04	699	LONEOS
(331651) 2002 PX ₂	2002 08 03	644	NEAT	(331703) 2002 RB ₇₁	2002 09 04	644	NEAT
(331652) 2002 PN ₅	2002 08 04	644	NEAT	(331704) 2002 RV ₇₂	2002 09 05	704	LINEAR
(331653) 2002 PB ₉	2002 08 05	644	NEAT	(331705) 2002 RV ₈₉	2002 09 05	704	LINEAR
(331654) 2002 PK ₁₆	2002 08 06	644	NEAT	(331706) 2002 RN ₉₂	2002 09 05	704	LINEAR
(331655) 2002 PR ₂₅	2002 08 06	644	NEAT	(331707) 2002 RK ₁₀₅	2002 09 05	704	LINEAR
(331656) 2002 PP ₃₀	2002 08 06	644	NEAT	(331708) 2002 RU ₁₄₃	2002 09 11	644	NEAT
(331657) 2002 PF ₃₃	2002 08 05	599	CINEOS	(331709) 2002 RC ₁₅₁	2002 09 12	644	NEAT
(331658) 2002 PC ₃₉	2002 08 06	644	NEAT	(331710) 2002 RK ₁₈₅	2002 09 12	644	NEAT
(331659) 2002 PH ₉₀	2002 08 11	704	LINEAR	(331711) 2002 RF ₁₈₆	2002 09 12	644	NEAT
(331660) 2002 PS ₁₀₁	2002 08 12	704	LINEAR	(331712) 2002 RY ₂₀₁	2002 09 13	699	LONEOS
(331661) 2002 PG ₁₀₂	2002 08 12	704	LINEAR	(331713) 2002 RF ₂₄₀	2002 09 14	644	Matson, R.
(331662) 2002 PT ₁₀₃	2002 08 12	704	LINEAR	(331714) 2002 RS ₂₅₃	2005 03 08	644	Mt. Lemmon Survey
(331663) 2002 PN ₁₀₅	2002 08 12	704	LINEAR	(331715) 2002 RF ₂₅₅	2002 09 15	644	NEAT
(331664) 2002 PC ₁₀₆	2002 08 12	704	LINEAR	(331716) 2002 RU ₂₅₅	2006 03 05	644	Spacewatch
(331665) 2002 PB ₁₃₇	2002 08 15	644	NEAT	(331717) 2002 RV ₂₈₀	2005 01 17	644	Spacewatch
(331666) 2002 PR ₁₃₈	2002 08 11	704	LINEAR	(331718) 2002 RM ₂₈₇	2002 08 16	644	Spacewatch
(331667) 2002 PP ₁₆₂	2002 08 08	644	Hoenig, S. F.	(331719) 2002 SS ₅₅	2002 09 30	704	LINEAR
(331668) 2002 PK ₁₆₇	2002 08 08	644	NEAT	(331720) 2002 SC ₅₉	2002 09 16	644	NEAT
(331669) 2002 PL ₁₆₈	2002 08 08	644	NEAT	(331721) 2002 SJ ₇₃	2002 09 16	644	NEAT
(331670) 2002 PF ₁₇₈	2002 08 15	644	NEAT	(331722) 2002 TR ₁₀	2002 10 01	699	LONEOS
(331671) 2002 PO ₁₈₁	2002 08 15	644	NEAT	(331723) 2002 TG ₇₁	2002 10 03	644	NEAT
(331672) 2002 PF ₁₈₄	2002 08 15	644	NEAT	(331724) 2002 TB ₇₃	2002 10 03	644	NEAT
(331673) 2002 PS ₁₈₄	2002 08 08	644	NEAT	(331725) 2002 TO ₈₆	2002 09 17	704	NEAT
(331674) 2002 PU ₁₈₈	2002 08 08	644	NEAT	(331726) 2002 TU ₉₀	2002 10 03	644	NEAT
(331675) 2002 PB ₁₉₄	2009 02 03	644	Mt. Lemmon Survey	(331727) 2002 TC ₉₉	2002 10 03	704	LINEAR
(331676) 2002 PA ₁₉₅	2008 02 02	644	Spacewatch	(331728) 2002 TP ₁₀₃	2002 10 04	704	LINEAR
(331677) 2002 PS ₁₉₉	2008 07 29	644	Spacewatch	(331729) 2002 TW ₁₁₂	2002 10 03	704	LINEAR
(331678) 2002 QC ₁₀	2002 08 20	049	Uppsala-DLR Asteroid Survey	(331730) 2002 TM ₁₂₃	2002 10 04	644	NEAT

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(331732) 2002 TJ ₁₂₈	2002 10 04	644	NEAT	(331784) 2003 GB ₅₆	2003 04 11	691	Spacewatch
(331733) 2002 TS ₁₃₈	2002 10 04	699	LONEOS	(331785) 2003 HL ₁₅	2003 04 26	735	Needville
(331734) 2002 TS ₁₅₈	2002 10 05	644	NEAT	(331786) 2003 HK ₃₀	2003 04 28	699	LONEOS
(331735) 2002 TE ₁₆₉	2002 10 03	644	NEAT	(331787) 2003 JU ₈	2003 05 02	691	Spacewatch
(331736) 2002 TE ₁₈₅	2002 10 04	704	LINEAR	(331788) 2003 JC ₁₄	2003 05 07	703	CSS
(331737) 2002 TV ₂₁₇	2002 10 08	291	Spacewatch	(331789) 2003 KO ₁₄	2003 05 25	691	Spacewatch
(331738) 2002 TL ₂₁₈	2002 10 05	704	LINEAR	(331790) 2003 KE ₂₀	2003 05 30	704	LINEAR
(331739) 2002 TC ₂₆₃	2002 10 10	644	NEAT	(331791) 2003 LP ₅	2003 06 05	691	Spacewatch
(331740) 2002 TJ ₂₇₄	2002 10 09	704	LINEAR	(331792) 2003 MT ₂	2003 06 25	704	LINEAR
(331741) 2002 TZ ₂₇₈	2002 10 10	704	LINEAR	(331793) 2003 MV ₄	2003 06 26	704	LINEAR
(331742) 2002 TE ₂₇₉	2002 10 10	704	LINEAR	(331794) 2003 MG ₆	2003 06 26	608	NEAT
(331743) 2002 TT ₂₉₃	2002 10 11	644	NEAT	(331795) 2003 MU ₉	2003 06 29	704	LINEAR
(331744) 2002 TP ₃₀₈	2002 10 04	645	Sloan Digital Sky Survey	(331796) 2003 OJ ₃	2003 07 22	608	NEAT
(331745) 2002 TW ₃₄₇	2002 10 05	645	Sloan Digital Sky Survey	(331797) 2003 ON ₁₇	2003 07 28	428	Broughton, J.
(331746) 2002 TN ₃₅₂	2002 10 10	645	Sloan Digital Sky Survey	(331798) 2003 QP ₄₈	2003 08 21	644	NEAT
(331747) 2002 TJ ₃₈₃	2002 10 05	645	Sloan Digital Sky Survey	(331799) 2003 QS ₅₈	2003 08 23	644	NEAT
(331748) 2002 UE ₂₂	2002 10 30	608	NEAT	(331800) 2003 QR ₈₀	2003 08 22	704	LINEAR
(331749) 2002 UM ₄₁	2002 10 31	644	NEAT	(331801) 2003 QJ ₁₀₇	2003 08 31	704	LINEAR
(331750) 2002 VX ₁₃	2002 10 06	704	LINEAR	(331802) 2003 QA ₁₂₀	2003 08 28	644	NEAT
(331751) 2002 VN ₂₁	2002 11 05	704	LINEAR	(331803) 2003 RS ₁₅	2003 09 14	608	NEAT
(331752) 2002 VY ₆₆	2002 11 06	699	LONEOS	(331804) 2003 RY ₁₅	2003 09 14	608	NEAT
(331753) 2002 VL ₁₂₀	2002 11 12	644	NEAT	(331805) 2003 SS ₁₀	2003 09 17	691	Spacewatch
(331754) 2002 VO ₁₃₆	2002 11 14	704	LINEAR	(331806) 2003 SA ₁₅	2003 09 15	691	LONEOS
(331755) 2002 VY ₁₄₄	2002 11 04	644	NEAT	(331807) 2003 SQ ₂₀	2003 09 16	691	Spacewatch
(331756) 2002 VF ₁₄₈	2004 02 18	644	Spacewatch	(331808) 2003 SJ ₅₂	2003 09 18	644	NEAT
(331757) 2002 WH ₆	2002 11 24	644	NEAT	(331809) 2003 SQ ₇₁	2003 09 18	691	Spacewatch
(331758) 2002 XH ₉	2002 11 24	704	NEAT	(331810) 2003 SZ ₉₃	2003 09 18	691	Spacewatch
(331759) 2002 XA ₁₉	2002 12 02	704	LINEAR	(331811) 2003 SU ₉₉	2003 09 19	608	NEAT
(331760) 2002 XR ₂₄	2002 12 05	704	LINEAR	(331812) 2003 SH ₁₈₂	2003 09 20	691	Spacewatch
(331761) 2002 XS ₃₂	2002 12 06	704	LINEAR	(331813) 2003 SL ₁₉₁	2003 09 19	691	Spacewatch
(331762) 2002 XR ₄₉	2002 11 12	704	LINEAR	(331814) 2003 SH ₁₉₅	2003 09 20	644	NEAT
(331763) 2002 XG ₈₁	2002 12 11	704	LINEAR	(331815) 2003 SF ₂₄₉	2003 09 26	704	LINEAR
(331764) 2002 XW ₉₈	2002 12 05	704	LINEAR	(331816) 2003 SJ ₂₈₂	2003 09 19	699	LONEOS
(331765) 2002 XS ₁₁₉	2002 12 10	644	NEAT	(331817) 2003 SV ₂₈₆	2003 09 21	644	NEAT
(331766) 2002 YO ₅	2002 12 30	704	LINEAR	(331818) 2003 SR ₂₉₂	2003 09 25	644	NEAT
(331767) 2002 YJ ₂₃	2002 12 31	704	LINEAR	(331819) 2003 SG ₃₀₆	2003 09 30	704	LINEAR
(331768) 2003 BC ₃	2003 01 26	699	LONEOS	(331820) 2003 SE ₃₂₅	2003 09 17	691	Spacewatch
(331769) 2003 BQ ₃₅	2003 01 26	291	Spacewatch	(331821) 2003 SM ₃₇₇	2006 04 09	645	Spacewatch
(331770) 2003 BP ₅₃	2003 01 27	704	LINEAR	(331822) 2003 SN ₃₉₂	2003 09 26	645	Sloan Digital Sky Survey
(331771) 2003 CY ₂₁	2003 02 02	683	Kessel, J. W.	(331823) 2003 SU ₄₀₄	2003 09 27	645	Sloan Digital Sky Survey
(331772) 2003 DO ₁₂	2003 02 26	599	CINEOS	(331824) 2003 SU ₄₂₄	2003 09 25	568	Wiegert, P. A.
(331773) 2003 EU ₁₅	2003 03 07	644	NEAT	(331825) 2003 TC ₈	2003 10 01	691	Spacewatch
(331774) 2003 EQ ₃₈	2003 03 08	699	LONEOS	(331826) 2003 TW ₁₂	2003 10 15	735	Needville
(331775) 2003 ES ₃₉	2003 03 08	704	LINEAR	(331827) 2003 TD ₁₇	2003 10 15	699	LONEOS
(331776) 2003 EE ₅₃	2003 02 04	644	NEAT	(331828) 2003 TB ₃₉	2003 10 02	691	Spacewatch
(331777) 2003 EF ₅₉	2003 03 12	704	LINEAR	(331829) 2003 TX ₄₂	2003 10 02	691	Spacewatch
(331778) 2003 EN ₅₉	2003 03 10	704	LINEAR	(331830) 2003 UO	2003 10 16	644	NEAT
(331779) 2003 FY ₂₉	2003 03 25	644	NEAT	(331831) 2003 UF ₂	2003 10 16	691	Spacewatch
(331780) 2003 FT ₃₃	2003 03 23	691	Spacewatch	(331832) 2003 UT ₂₈	2003 10 22	608	NEAT
(331781) 2003 FQ ₁₃₁	2003 03 27	691	Spacewatch	(331833) 2003 UD ₃₀	2003 10 01	012	Spacewatch
(331782) 2003 GQ ₄₃	2003 04 09	704	LINEAR	(331834) 2003 UC ₄₇	2003 10 21	683	Tucker, R. A.

(331835) 2003 UN ₅₆	2003 10 22	704	LINEAR	(331887) 2004 EL ₆₇	2004 03 15	691	Spacewatch
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(331838) 2003 UJ ₉₅	2003 10 18	608	NEAT	(331890) 2004 GO ₂	2004 04 12	704	LINEAR
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(332815) 2009 WV ₂₁₁	2003 10 25	691	Spacewatch	(332867) 2010 WE ₁₇	2003 09 22	G96	Spacewatch
(332816) 2009 WN ₂₂₈	2007 03 15	G96	Mt. Lemmon Survey	(332868) 2010 WM ₄₇	2003 11 19	G96	Spacewatch
(332817) 2009 WC ₂₄₀	2002 09 09	703	NEAT	(332869) 2010 WN ₅₈	2006 09 28	G96	Spacewatch
(332818) 2009 WP ₂₅₀	2009 11 23	691	Spacewatch	(332870) 2010 XP ₁	2010 11 08	G96	Mt. Lemmon Survey
(332819) 2009 WQ ₂₅₂	2009 11 08	691	Mt. Lemmon Survey	(332871) 2010 XX ₁₆	2000 11 27	691	LINEAR
(332820) 2009 WQ ₂₅₇	2004 11 11	691	Spacewatch	(332872) 2010 XX ₄₄	2006 01 24	G96	LONEOS
(332821) 2009 WU ₂₆₁	2009 11 16	G96	Mt. Lemmon Survey	(332873) 2010 XG ₇₇	2006 10 02	G96	Mt. Lemmon Survey
(332822) 2009 WW ₂₆₁	2009 11 17	691	Spacewatch	(332874) 2010 XN ₈₆	2003 11 26	G96	Spacewatch

(332875) 2011 AC ₁	2005 12 07	H15	CSS	(332927) 2011 CA ₄₈	2004 12 03	703	Spacewatch
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(332877) 2011 AL ₁₁	2004 09 17	703	LONEOS	(332929) 2011 CV ₅₉	2007 02 17	G96	Spacewatch
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(332879) 2011 AU ₂₇	2006 12 27	691	Mt. Lemmon Survey	(332931) 2011 CB ₇₂	1998 09 19	D29	Sloan Digital Sky Survey
(332880) 2011 AL ₃₈	2006 11 17	691	Mt. Lemmon Survey	(332932) 2011 CD ₇₂	2006 03 06	703	Mt. Lemmon Survey
(332881) 2011 AQ ₄₁	2005 10 26	G96	Spacewatch	(332933) 2011 CB ₇₃	2006 02 28	703	CSS
(332882) 2011 AK ₄₈	2007 01 17	703	Spacewatch	(332934) 2011 CP ₇₅	2009 12 18	703	Mt. Lemmon Survey
(332883) 2011 AA ₄₉	2011 01 12	G96	Mt. Lemmon Survey	(332935) 2011 CA ₇₉	2007 03 14	F51	Spacewatch
(332884) 2011 AG ₅₃	2010 02 12	691	WISE	(332936) 2011 CT ₈₅	2001 03 23	F51	LONEOS
(332885) 2011 AN ₅₃	2005 12 01	691	Spacewatch	(332937) 2011 CB ₈₇	2006 03 26	F51	Spacewatch
(332886) 2011 AH ₅₄	2008 02 09	G96	Mt. Lemmon Survey	(332938) 2011 CK ₉₀	2005 10 24	F51	Boattini, A.
(332887) 2011 AJ ₅₅	2007 03 15	G96	Bickel, W.	(332939) 2011 CY ₉₂	2007 03 13	F51	Spacewatch
(332888) 2011 AW ₆₁	2007 02 26	691	Mt. Lemmon Survey	(332940) 2011 CH ₁₀₅	2006 02 01	F51	Mt. Lemmon Survey
(332889) 2011 AH ₇₄	2009 09 16	703	CSS	(332941) 2011 DZ ₇	2003 09 29	691	Spacewatch
(332890) 2011 AT ₇₆	2008 06 03	691	Mt. Lemmon Survey	(332942) 2011 DO ₁₀	2005 02 02	691	Spacewatch
(332891) 2011 AU ₇₇	1999 03 20	703	Sloan Digital Sky Survey	(332943) 2011 DJ ₁₃	2007 03 10	691	Mt. Lemmon Survey
(332892) 2011 BC ₁₁	2005 08 05	G96	NEAT	(332944) 2011 DK ₂₄	2005 11 30	G98	Spacewatch
(332893) 2011 BP ₁₂	2006 04 02	G96	LONEOS	(332945) 2011 DM ₂₈	2009 08 15	G96	Spacewatch
(332894) 2011 BQ ₁₂	2002 03 10	G96	NEAT	(332946) 2011 DY ₂₉	2006 12 26	G96	Spacewatch
(332895) 2011 BH ₁₃	2011 01 08	G96	Mt. Lemmon Survey	(332947) 2011 DZ ₃₂	2006 02 07	G96	Mt. Lemmon Survey
(332896) 2011 BW ₁₃	2007 03 20	703	CSS	(332948) 2011 DV ₃₆	2006 03 03	G96	Spacewatch
(332897) 2011 BB ₂₅	2007 01 24	G96	Bickel, W.	(332949) 2011 DP ₄₂	2006 06 16	114	Spacewatch
(332898) 2011 BM ₃₆	2007 02 27	G96	Spacewatch	(332950) 2011 DE ₄₃	2003 09 28	G96	Spacewatch
(332899) 2011 BQ ₃₈	2009 10 02	G96	Mt. Lemmon Survey	(332951) 2011 DU ₄₃	2008 08 05	G96	La Sagra
(332900) 2011 BU ₄₄	2005 12 25	B67	Mt. Lemmon Survey	(332952) 2011 DR ₅₀	2007 04 23	691	Mt. Lemmon Survey
(332901) 2011 BA ₅₁	2006 02 22	G96	CSS	(332953) 2011 DF ₅₁	2006 03 23	703	CSS
(332902) 2011 BS ₅₄	2003 03 26	G96	NEAT	(332954) 2011 EA ₄	2005 02 14	G96	Spacewatch
(332903) 2011 BA ₅₅	2005 11 01	G96	NEAT	(332955) 2011 ET ₅	2007 03 26	G96	Spacewatch
(332904) 2011 BD ₅₆	2003 03 26	G96	NEAT	(332956) 2011 EO ₉	2008 09 23	G96	Spacewatch
(332905) 2011 BQ ₆₃	2010 12 14	691	Mt. Lemmon Survey	(332957) 2011 EA ₁₀	2006 12 27	G96	Mt. Lemmon Survey
(332906) 2011 BM ₇₅	2004 02 22	F51	Spacewatch	(332958) 2011 EX ₁₀	2002 07 20	H15	NEAT
(332907) 2011 BP ₇₈	2004 05 17	G96	Broughton, J.	(332959) 2011 EV ₁₅	2006 03 05	703	CSS
(332908) 2011 BR ₇₉	1998 09 19	691	Sloan Digital Sky Survey	(332960) 2011 EZ ₁₅	2002 11 06	703	LONEOS
(332909) 2011 BU ₈₄	1995 09 18	703	Spacewatch	(332961) 2011 EM ₂₈	2006 04 04	691	Ye, Q.-z.
(332910) 2011 BA ₉₃	2009 09 22	G96	CSS	(332962) 2011 EA ₄₀	1995 04 02	691	Spacewatch
(332911) 2011 BD ₁₀₁	2003 10 29	F51	Spacewatch	(332963) 2011 ED ₄₂	2007 06 18	691	Spacewatch
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(332915) 2011 BE ₁₁₂	2006 03 26	F51	Spacewatch	(332967) 2011 EV ₇₄	2008 09 26	G98	Spacewatch
(332916) 2011 BA ₁₁₃	2004 09 17	F51	Spacewatch	(332968) 2011 EM ₇₅	2003 03 31	703	LONEOS
(332917) 2011 BB ₁₁₆	2005 12 25	G96	Spacewatch	(332969) 2011 EZ ₈₀	2002 08 31	691	Spacewatch
(332918) 2011 CH ₁	2003 10 23	461	Sloan Digital Sky Survey	(332970) 2011 ER ₈₁	2002 10 10	G96	Sloan Digital Sky Survey
(332919) 2011 CY ₁	2009 09 16	D29	CSS	(332971) 2011 EH ₈₄	2006 05 20	691	Spacewatch
(332920) 2011 CW ₅	2008 03 31	703	Mt. Lemmon Survey	(332972) 2011 FY ₁	2002 03 10	703	NEAT
(332921) 2011 CE ₉	2006 11 19	703	Spacewatch	(332973) 2011 FG ₃	2006 01 26	691	Spacewatch
(332922) 2011 CN ₁₇	2006 01 07	703	Spacewatch	(332974) 2011 FK ₃	2001 03 02	691	LONEOS
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(332924) 2011 CT ₂₆	2007 06 21	G96	Mt. Lemmon Survey	(332976) 2011 FG ₆	2005 03 09	291	CSS
(332925) 2011 CV ₃₃	2006 12 27	703	Mt. Lemmon Survey	(332977) 2011 FL ₉	2007 09 13	G96	Mt. Lemmon Survey
(332926) 2011 CT ₄₂	2006 01 26	703	LONEOS	(332978) 2011 FR ₁₀	2006 01 28	703	Spacewatch

(332979) 2011 FE ₁₇	2000 04 06	704	LONEOS	(333031) 2011 SX ₄₂	2010 01 27	G96	WISE
(332980) 2011 FJ ₂₉	2002 10 15	B42	NEAT	(333032) 2011 SC ₆₅	2003 10 03	113	Spacewatch
(332981) 2011 FY ₃₆	2002 10 10	G96	Sloan Digital Sky Survey	(333033) 2011 SO ₆₆	2007 09 15	691	Mt. Lemmon Survey
(332982) 2011 FM ₄₃	2002 09 11	691	NEAT	(333034) 2011 SL ₇₂	2007 10 10	G96	Spacewatch
(332983) 2011 FZ ₄₅	1998 09 19	691	Sloan Digital Sky Survey	(333035) 2011 SX ₉₀	2007 10 31	691	Mt. Lemmon Survey
(332984) 2011 FG ₆₇	2008 10 06	G96	Mt. Lemmon Survey	(333036) 2011 SC ₉₁	2007 09 13	691	Mt. Lemmon Survey
(332985) 2011 FJ ₆₈	2003 10 29	G96	Spacewatch	(333037) 2011 SX ₉₁	2007 09 03	691	CSS
(332986) 2011 FY ₇₅	2003 10 20	G96	Spacewatch	(333038) 2011 SM ₁₀₃	2005 01 16	704	Spacewatch
(332987) 2011 FZ ₇₅	2003 08 22	G96	NEAT	(333039) 2011 SZ ₁₀₆	2006 02 25	704	Spacewatch
(332988) 2011 FR ₈₉	2002 08 17	G96	NEAT	(333040) 2011 SF ₁₁₅	2006 05 24	703	Mt. Lemmon Survey
(332989) 2011 FP ₁₂₇	2003 11 19	G96	Spacewatch	(333041) 2011 SY ₁₁₅	1999 10 09	F51	Spacewatch
(332990) 2011 FQ ₁₂₈	2004 04 14	G96	Spacewatch	(333042) 2011 SW ₁₁₉	2007 09 03	704	CSS
(332991) 2011 FX ₁₄₇	2006 01 28	G96	Mt. Lemmon Survey	(333043) 2011 SU ₁₂₉	2004 12 20	F51	Mt. Lemmon Survey
(332992) 2011 FK ₁₅₄	2005 03 17	691	Spacewatch	(333044) 2011 SP ₁₃₁	2006 05 20	F51	Spacewatch
(332993) 2011 GK ₉	2005 10 24	G96	Boattini, A.	(333045) 2011 SE ₁₃₄	2007 08 10	106	Spacewatch
(332994) 2011 GE ₃₇	2005 03 10	G96	LONEOS	(333046) 2011 SQ ₁₃₅	2002 03 21	703	Spacewatch
(332995) 2011 GM ₆₃	2000 05 28	F51	LINEAR	(333047) 2011 SL ₁₄₄	2005 01 18	J04	CSS
(332996) 2011 GX ₆₄	2009 12 20	703	Spacewatch	(333048) 2011 SS ₁₆₄	2003 12 28	F51	LINEAR
(332997) 2011 GF ₆₆	2003 11 19	703	Spacewatch	(333049) 2011 SP ₁₆₈	2003 04 26	G96	Spacewatch
(332998) 2011 GA ₆₇	2010 01 08	703	Spacewatch	(333050) 2011 SA ₁₇₄	2005 03 11	F51	Mt. Lemmon Survey
(332999) 2011 HV ₄	2003 12 16	F51	Spacewatch	(333051) 2011 SA ₁₈₅	1996 04 09	691	Spacewatch
(333000) 2011 HL ₃₇	2002 08 05	F51	NEAT	(333052) 2011 SQ ₁₈₅	2007 10 20	691	Mt. Lemmon Survey
(333001) 2011 HB ₃₈	2007 09 11	F51	Mt. Lemmon Survey	(333053) 2011 SV ₁₈₅	2007 10 11	G96	Spacewatch
(333002) 2011 HW ₅₃	2001 11 20	F51	LINEAR	(333054) 2011 SK ₂₀₀	2006 05 06	G96	Mt. Lemmon Survey
(333003) 2011 HP ₅₈	2008 10 27	F51	Mt. Lemmon Survey	(333055) 2011 SC ₂₂₃	2007 09 15	691	Mt. Lemmon Survey
(333004) 2011 HJ ₆₉	2005 03 11	F51	Spacewatch	(333056) 2011 SE ₂₂₆	2007 10 16	G96	Mt. Lemmon Survey
(333005) 2011 JV ₁₅	2010 02 13	291	Mt. Lemmon Survey	(333057) 2011 SO ₂₃₄	2007 09 12	B01	Mt. Lemmon Survey
(333006) 2011 KK ₂₄	2004 02 16	G96	Spacewatch	(333058) 2011 SD ₂₅₅	2004 02 12	A50	Spacewatch
(333007) 2011 LT ₂₅	2002 10 03	F51	NEAT	(333059) 2011 SG ₂₆₁	2006 02 25	691	Mt. Lemmon Survey
(333008) 2011 LN ₂₈	2007 10 07	G96	Spacewatch	(333060) 2011 TF	2001 03 19	B01	LONEOS
(333009) 2011 OU ₃	2006 05 21	F51	Spacewatch	(333061) 2011 TD ₁₃	2004 12 19	F51	Mt. Lemmon Survey
(333010) 2011 OJ ₄	2007 06 20	J75	Spacewatch	(333062) 2011 TZ ₁₄	2006 04 19	703	Spacewatch
(333011) 2011 OB ₅₅	2007 09 12	F51	CSS	(333063) 2011 UQ ₉	2006 09 17	G96	Spacewatch
(333012) 2011 PP ₇	2005 03 17	F51	Spacewatch	(333064) 2011 UG ₁₅	2007 09 12	D29	CSS
(333013) 2011 PY ₁₁	2004 03 14	J04	Spacewatch	(333065) 2011 UX ₁₇	2007 09 13	691	Mt. Lemmon Survey
(333014) 2011 QA ₂	2003 09 22	F51	Spacewatch	(333066) 2011 UP ₂₁	2007 09 19	H21	Kugel, F.
(333015) 2011 QQ ₁₁	2007 09 15	J75	CSS	(333067) 2011 UE ₂₇	2001 01 26	691	Spacewatch
(333016) 2011 QY ₁₄	2007 09 19	F51	Spacewatch	(333068) 2011 UM ₃₆	2003 09 18	G96	Spacewatch
(333017) 2011 QG ₂₆	1997 03 11	J75	LINEAR	(333069) 2011 US ₄₆	2005 10 07	691	Boattini, A.
(333018) 2011 QE ₂₈	2007 09 14	J75	Mt. Lemmon Survey	(333070) 2011 UK ₄₈	2007 10 15	691	Spacewatch
(333019) 2011 QT ₆₀	2004 10 14	F51	Spacewatch	(333071) 2011 UZ ₄₉	2003 10 19	691	Spacewatch
(333020) 2011 QC ₆₂	2003 10 22	F51	Spacewatch	(333072) 2011 UJ ₅₃	2009 01 01	691	Spacewatch
(333021) 2011 QU ₆₄	2001 02 16	F51	Spacewatch	(333073) 2011 UA ₅₉	1999 10 31	F51	Spacewatch
(333022) 2011 QB ₇₉	2005 02 04	F51	Spacewatch	(333074) 2011 UP ₆₅	2007 09 18	I93	Spacewatch
(333023) 2011 RN ₁	2007 06 25	F51	Spacewatch	(333075) 2011 UV ₇₁	2004 10 08	691	Spacewatch
(333024) 2011 RK ₁₃	2007 08 23	A50	Kugel, F.	(333076) 2011 UL ₈₀	2007 10 16	691	Mt. Lemmon Survey
(333025) 2011 RW ₁₄	2003 09 22	F51	Spacewatch	(333077) 2011 UW ₉₈	2003 09 20	691	NEAT
(333026) 2011 RR ₁₈	1999 10 04	691	Spacewatch	(333078) 2011 UN ₁₀₈	2005 08 28	F51	LONEOS
(333027) 2011 SC ₁₂	1977 10 11	J75	van Houten & Gehrels	(333079) 2011 UP ₁₁₂	2007 10 20	G96	Mt. Lemmon Survey
(333028) 2011 SL ₂₉	2005 12 03	691	Boattini, A.	(333080) 2011 UE ₁₁₉	1992 10 02	G96	Spacewatch
(333029) 2011 SK ₃₂	2007 07 18	691	Mt. Lemmon Survey	(333081) 2011 UM ₁₂₂	2007 09 13	F51	Mt. Lemmon Survey
(333030) 2011 SR ₃₂	2007 08 10	704	Spacewatch	(333082) 2011 UT ₁₂₆	2005 01 13	691	CSS

(333083)	2011 UT ₁₂₉	2006 05 06	G96	Spacewatch	(333135)	2011 WR ₁₄₄	2007 09 10	F51	Spacewatch
(333084)	2011 UH ₁₃₁	2003 04 29	691	LINEAR	(333136)	2011 WA ₁₄₅	2007 09 09	F51	Spacewatch
(333085)	2011 UM ₁₃₁	2003 09 18	F51	Spacewatch	(333137)	2011 YO ₂	2003 09 18	B74	Spacewatch
(333086)	2011 UU ₁₆₁	2007 09 11	691	Spacewatch	(333138)	2011 YW ₄	2007 10 15	106	CSS
(333087)	2011 UK ₁₆₄	2006 02 24	F51	Spacewatch	(333139)	2011 YM ₈	2007 09 11	G96	Mt. Lemmon Survey
(333088)	2011 UM ₁₆₆	2005 01 17	F51	Spacewatch	(333140)	2011 YY ₄₆	2006 04 20	691	LONEOS
(333089)	2011 UD ₁₇₅	2006 01 07	691	Mt. Lemmon Survey	(333141)	2011 YH ₅₃	2004 12 02	691	Spacewatch
(333090)	2011 UE ₁₇₉	2006 11 17	691	Spacewatch	(333142)	2011 YU ₆₃	2007 10 16	G96	Mt. Lemmon Survey
(333091)	2011 UX ₂₂₂	1998 09 19	G96	Sloan Digital Sky Survey	(333143)	2012 AK ₁₁	2004 12 03	J43	Spacewatch
(333092)	2011 UG ₂₂₅	2006 02 20	G96	Spacewatch	(333144)	2012 AE ₁₂	2000 08 31	G96	Spacewatch
(333093)	2011 UN ₂₃₈	1993 11 17	F51	Spacewatch	(333145)	2012 AR ₁₅	2006 01 31	G96	Mt. Lemmon Survey
(333094)	2011 UU ₂₃₉	2006 02 22	F51	Spacewatch	(333146)	2012 AH ₂₀	2004 12 20	703	Mt. Lemmon Survey
(333095)	2011 UA ₂₄₆	2002 03 11	691	NEAT	(333147)	2012 BP	2002 10 06	F51	NEAT
(333096)	2011 UC ₂₄₈	2007 09 13	F51	Mt. Lemmon Survey	(333148)	2012 BC ₁₂	2004 08 22	G96	Siding Spring Survey
(333097)	2011 UT ₂₄₈	2005 03 08	F51	Mt. Lemmon Survey	(333149)	2012 BO ₂₂	2003 02 07	G96	NEAT
(333098)	2011 UA ₂₇₄	2004 12 11	G96	Spacewatch	(333150)	2012 BH ₂₃	2005 02 02	G96	Spacewatch
(333099)	2011 UT ₂₇₄	2004 02 17	G96	Spacewatch	(333151)	2012 BY ₂₇	2009 08 17	691	Spacewatch
(333100)	2011 UL ₂₈₃	2005 01 13	691	Spacewatch	(333152)	2012 BC ₃₀	1996 10 06	G96	Comba, P. G.
(333101)	2011 UE ₂₉₈	2007 09 14	691	Mt. Lemmon Survey	(333153)	2012 BM ₃₉	2002 02 13	G96	Sloan Digital Sky Survey
(333102)	2011 UZ ₂₉₈	2004 09 08	691	NEAT	(333154)	2012 BK ₅₅	2006 01 31	F51	Spacewatch
(333103)	2011 UY ₃₀₇	2000 12 23	703	Sloan Digital Sky Survey	(333155)	2012 BR ₅₇	2003 09 30	F51	Spacewatch
(333104)	2011 UF ₃₀₈	2000 08 24	G96	LINEAR	(333156)	2012 BP ₆₈	2002 02 16	691	NEAT
(333105)	2011 UU ₃₀₉	2003 10 22	J04	Spacewatch	(333157)	2012 BO ₇₈	2007 09 10	J04	Mt. Lemmon Survey
(333106)	2011 UG ₃₁₁	2004 12 20	691	Mt. Lemmon Survey	(333158)	2012 BK ₉₂	2008 02 09	F51	Spacewatch
(333107)	2011 US ₃₅₃	2007 09 12	691	Mt. Lemmon Survey	(333159)	2012 BP ₁₁₇	2005 02 01	G96	Spacewatch
(333108)	2011 UZ ₃₅₅	2000 01 04	G96	Spacewatch	(333160)	2012 BE ₁₂₅	2004 12 09	691	Spacewatch
(333109)	2011 UB ₃₆₃	2002 09 13	691	NEAT	(333161)	2012 BM ₁₃₃	2005 01 17	H15	Spacewatch
(333110)	2011 UZ ₃₈₄	2007 09 02	F51	Mt. Lemmon Survey	(333162)	2012 BP ₁₄₃	2006 06 24	106	Broughton, J.
(333111)	2011 UD ₃₈₉	2003 02 21	D29	NEAT	(333163)	2012 CY	2002 03 10	691	Spacewatch
(333112)	2011 UX ₃₉₀	2003 10 23	F51	Sloan Digital Sky Survey	(333164)	2012 CS ₁₀	2006 04 19	F51	Spacewatch
(333113)	2011 UX ₃₉₄	2003 04 05	H15	Spacewatch	(333165)	2012 CG ₁₂	2004 12 03	F51	Spacewatch
(333114)	2011 UB ₃₉₇	2007 09 12	H15	CSS	(333166)	2012 CF ₁₉	2006 01 23	F51	Mt. Lemmon Survey
(333115)	2011 UE ₄₀₁	2001 07 26	703	NEAT	(333167)	2012 CF ₂₉	2004 09 11	703	Spacewatch
(333116)	2011 VH ₁₈	1993 04 19	J43	Spacewatch	(333168)	2012 CR ₄₁	2002 08 30	F51	NEAT
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(333118)	2011 WW ₁	2001 08 01	G96	NEAT	(333170)	2012 CX ₄₆	2003 10 20	691	Spacewatch
(333119)	2011 WF ₇	2006 03 25	G96	Mt. Lemmon Survey	(333171)	2012 CD ₅₁	2005 04 11	F51	Mt. Lemmon Survey
(333120)	2011 WN ₇	2007 09 11	G96	Mt. Lemmon Survey	(333172)	2012 CR ₅₁	2006 12 24	F51	Mt. Lemmon Survey
(333121)	2011 WN ₁₀	2003 04 11	G96	Spacewatch	(333173)	2012 CR ₅₃	2002 03 22	F51	Hug, G.
(333122)	2011 WP ₁₂	2000 11 28	G96	Spacewatch	(333174)	2012 CP ₅₄	1999 12 12	F51	LINEAR
(333123)	2011 WW ₄₈	2006 04 26	D29	Spacewatch	(333175)	2012 DZ ₃	2006 01 22	703	CSS
(333124)	2011 WA ₄₉	2003 12 29	H15	LONEOS	(333176)	2012 DW ₈	2007 02 25	F51	Mt. Lemmon Survey
(333125)	2011 WT ₅₂	2007 10 10	D29	Mt. Lemmon Survey	(333177)	2012 DB ₁₃	2003 11 30	F51	Spacewatch
(333126)	2011 WY ₅₆	2004 09 22	F51	Spacewatch	(333178)	2012 DZ ₁₆	2005 12 25	691	Mt. Lemmon Survey
(333127)	2011 WB ₇₂	2005 10 23	F51	Spacewatch	(333179)	2012 DZ ₅₂	2007 10 09	F51	Spacewatch
(333128)	2011 WD ₇₆	2006 04 02	703	Spacewatch	(333180)	2012 DP ₅₉	1994 11 05	F51	Spacewatch
(333129)	2011 WE ₈₁	2005 01 13	F51	Spacewatch	(333181)	2012 DZ ₆₅	2007 03 12	G96	Spacewatch
(333130)	2011 WR ₈₃	2003 12 18	F51	Spacewatch	(333182)	2012 DF ₇₆	1995 09 20	F51	Spacewatch
(333131)	2011 WW ₈₇	2000 03 27	F51	Spacewatch	(333183)	2012 DS ₇₉	2007 10 09	703	Mt. Lemmon Survey
(333132)	2011 WR ₉₈	2004 12 18	F51	Mt. Lemmon Survey	(333184)	2012 EU ₈	2005 07 11	G96	Mt. Lemmon Survey
(333133)	2011 WT ₁₁₇	2004 12 15	G96	Spacewatch	(333185)	2012 EZ ₈	2006 01 10	G89	Spacewatch
(333134)	2011 WY ₁₂₃	2004 12 18	691	Mt. Lemmon Survey	(333186)	2012 FQ ₁₂	2003 09 18	G96	Spacewatch

(333187) 2012 FA₂₂ 2005 12 25 I27 Spacewatch
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 (333190) 2012 FZ₅₇ 2006 02 21 F51 CSS
 (333191) 2012 FD₅₉ 2005 10 24 691 Spacewatch
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 (333197) 2012 GF₄ 2003 03 24 G96 Spacewatch
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 (333199) 2012 GB₁₇ 2006 12 24 F51 Spacewatch
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 (333207) 2012 HA₄ 2005 05 08 F51 Mt. Lemmon Survey
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 (333210) 2012 HX₁₄ 2006 01 05 F51 CSS
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 (333267) 2012 JH₃₂ 2006 09 28 G96 Mt. Lemmon Survey
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 (333269) 2012 KR₂₄ 2004 06 10 704 LINEAR
 (333270) 2146 P-L 1960 09 24 675 van Houten & Gehrels
 (333271) 4318 P-L 1960 09 24 675 van Houten & Gehrels
 (333272) 1345 T-2 1973 09 29 675 van Houten & Gehrels
 (333273) 4276 T-2 1973 09 29 675 van Houten & Gehrels

Orbital elements for the newly-numbered objects listed above at the current 200-day standard epoch (2012 Mar. 14.0 TT):

Object	<i>H</i>	<i>M</i>	ω	Ω	<i>i</i>	<i>e</i>	<i>a</i>	<i>MPO</i>
(331471)	15.4	345.34592	336.97783	142.39295	14.23818	0.8944005	2.4976465	232645
(331472)	15.8	255.12300	229.58429	120.94910	15.38727	0.1228057	2.6830258	232645
(331473)	16.8	342.08101	133.44417	257.60073	3.00594	0.2129032	2.7827952	232645
(331474)	16.1	288.90277	49.21761	309.20128	5.14221	0.2602265	2.3612330	232646
(331475)	18.3	48.17685	354.77059	356.28466	12.30423	0.0989310	2.5189942	232646
(331476)	16.6	321.39693	117.64520	217.27421	4.40686	0.2835935	2.6363308	232646
(331477)	16.1	342.36722	47.05408	212.48002	13.58095	0.1293816	2.6183940	232647
(331478)	16.9	305.65975	311.11886	352.52252	2.81755	0.2072179	2.4852156	232647
(331479)	17.3	285.19711	138.99099	228.56200	2.24050	0.2722551	2.4525168	232647
(331480)	16.9	58.90180	281.91761	212.87968	4.79934	0.1502608	2.6386162	232647
(331481)	16.2	273.58471	151.14173	188.53217	12.74983	0.1552930	2.7689574	232648
(331482)	17.1	240.15678	8.40730	359.15542	4.28018	0.2636571	2.3692653	232648
(331483)	14.8	271.26739	335.85448	14.35929	0.62608	0.2699811	3.9316101	232648

(331484)	16.2	288.63258	120.73340	254.40198	21.30394	0.2936430	2.3211456232649	(331536)	16.6	266.96141	118.26799	223.15885	13.20527	0.1697497	2.6219232232664
(331485)	17.7	220.39674	316.94344	92.52098	1.66525	0.1152777	2.3909713232649	(331537)	15.8	291.31090	107.90268	262.92907	13.98277	0.1544552	2.5433532232664
(331486)	16.2	187.23279	157.80436	229.13694	12.35418	0.2398282	2.4464074232649	(331538)	17.0	273.00334	199.10466	136.88940	4.62380	0.1931930	2.6075931232665
(331487)	16.6	212.45346	151.87115	234.02174	10.96034	0.1071357	3.0163480232649	(331539)	16.8	261.37672	225.05907	126.83878	10.38557	0.2291720	2.6202984232665
(331488)	17.1	5.56857	281.43903	282.93147	4.64384	0.1473222	2.5658549232650	(331540)	16.1	275.59377	199.25636	155.17026	19.07778	0.2166846	2.5932220232665
(331489)	15.8	253.25169	278.94732	114.55985	10.67486	0.0978051	3.0322872232650	(331541)	15.9	267.35755	278.79313	56.32280	12.90912	0.2030176	2.6383384232665
(331490)	16.0	64.01563	326.09932	196.04440	13.55531	0.1301803	2.5899600232650	(331542)	17.1	242.21966	331.36431	40.66120	3.49460	0.2021149	2.6454010232666
(331491)	16.4	326.51055	201.22206	124.24238	8.89925	0.3144486	2.6461176232650	(331543)	16.3	256.41206	306.50492	42.60535	12.47792	0.1937238	2.6536958232666
(331492)	16.1	240.32881	248.54160	162.57256	9.18056	0.1938637	2.7176668232651	(331544)	16.5	273.38452	156.17797	205.37050	14.65795	0.1858928	2.6090309232666
(331493)	15.7	317.27680	75.72176	248.61137	10.09563	0.2001262	2.6942704232651	(331545)	16.6	226.22178	130.24891	242.68857	6.46567	0.2087648	2.6819869232666
(331494)	15.9	238.69349	121.51666	286.70445	10.34856	0.1706864	2.7413313232651	(331546)	15.4	302.75039	62.23422	252.44439	14.65688	0.1903241	2.6281372232667
(331495)	17.3	305.50560	53.49236	278.86277	4.22974	0.2584966	2.2115743232652	(331547)	17.0	305.37493	94.10920	248.09582	3.35797	0.2907879	2.5635315232667
(331496)	16.0	259.53119	90.86959	252.85928	11.69987	0.2249485	2.7911814232652	(331548)	15.1	279.45569	105.64328	281.43761	27.33006	0.3792042	2.6241066232667
(331497)	18.2	303.09701	291.21512	25.75564	2.86099	0.1843682	2.2484304232652	(331549)	17.2	108.60424	307.75228	79.48366	6.14920	0.2102979	2.3009948232668
(331498)	16.3	275.60382	190.30386	199.81644	12.56034	0.2328380	2.7103228232652	(331550)	17.7	172.00082	336.72772	65.84411	4.92483	0.1062282	2.2143133232668
(331499)	15.7	319.64721	78.20397	204.00747	12.59762	0.1921357	2.7914106232653	(331551)	15.8	42.42350	271.30738	284.42801	22.98070	0.3169783	2.2780001232668
(331500)	15.9	246.71855	282.48019	139.26489	10.66070	0.3359486	2.7309736232653	(331552)	16.5	215.07978	203.11996	212.86951	15.15068	0.1321150	2.6272897232669
(331501)	15.3	280.35426	76.02441	254.11589	11.10923	0.1799335	2.7816433232653	(331553)	16.3	281.91860	130.16971	255.68987	11.18471	0.2513914	2.5760864232669
(331502)	16.2	276.10173	129.29110	211.11249	11.92735	0.1520908	2.7282633232654	(331554)	16.3	246.34707	153.63523	219.01484	13.37950	0.2773350	2.6635877232669
(331503)	16.7	338.84912	114.07523	189.66011	8.73182	0.0725971	2.7233880232654	(331555)	16.4	80.93731	235.18388	256.61948	24.45458	0.0549900	1.8681239232670
(331504)	16.3	267.96999	141.13275	221.26721	13.29171	0.2116853	2.7725548232654	(331556)	17.5	166.95921	329.98440	89.57858	5.36593	0.0843600	2.2093310232670
(331505)	17.1	295.08696	73.94753	238.23029	2.21616	0.1994750	2.7515089232655	(331557)	16.0	288.70156	112.76190	255.85381	28.26042	0.3141921	2.5910521232670
(331506)	16.0	303.46670	110.35150	268.91470	4.85698	0.4049835	2.6799305232655	(331558)	14.9	312.79890	98.65797	273.93387	16.37897	0.3134924	2.5839340232671
(331507)	15.6	268.24420	126.35574	265.82404	7.83250	0.2002566	2.7456820232655	(331559)	16.2	137.21834	135.16049	359.20767	7.76176	0.1738916	2.8030275232671
(331508)	15.8	217.22072	129.63946	259.00824	11.32533	0.1132828	2.8961110232656	(331560)	18.1	356.31225	34.32711	209.35399	11.24888	0.1891782	2.3387465232671
(331509)	18.2	273.67743	265.56765	106.21800	38.23902	0.3391389	1.6769793232656	(331561)	17.1	352.87169	151.61460	76.60596	5.97114	0.2514242	2.3732399232672
(331510)	17.5	285.02672	279.68444	119.70391	11.89250	0.5534406	2.7167349232656	(331562)	15.5	344.49433	92.40400	204.66289	15.77153	0.3053784	3.0500669232672
(331511)	15.6	23.12044	79.64199	127.33303	22.92640	0.0585105	3.0651083232656	(331563)	14.9	280.01006	102.70024	283.45416	16.35030	0.2242707	3.1042581232672
(331512)	17.3	12.04606	70.95124	129.89961	6.05026	0.1483763	2.4405084232657	(331564)	16.5	318.74206	33.73237	234.19916	15.41546	0.1213210	2.4364235232673
(331513)	15.8	95.10195	334.68754	144.57756	21.46457	0.2591494	3.0707809232657	(331565)	15.4	331.04213	88.84019	227.99377	18.82785	0.3888989	3.1555284232673
(331514)	16.9	345.20416	180.80818	345.23978	13.16332	0.1231655	2.5495583232657	(331566)	16.8	324.62247	56.92920	260.67631	3.37431	0.2287394	2.3703374232673
(331515)	15.4	101.00106	342.04309	144.06076	19.43928	0.1293698	3.0841514232658	(331567)	15.9	324.27087	173.22425	152.73920	19.56562	0.2158415	3.1603333232674
(331516)	15.4	64.38257	18.22543	141.28123	24.54743	0.1652353	3.1399025232658	(331568)	15.6	304.74612	193.19525	133.83906	18.15849	0.1969371	3.1813320232674
(331517)	16.9	346.91286	93.60346	188.79587	4.53404	0.1051534	3.1159304232658	(331569)	16.9	236.75250	203.10951	173.88130	2.56367	0.2002027	2.4672932232674
(331518)	16.2	17.34158	349.75667	237.16731	10.44103	0.1635377	2.4755165232658	(331570)	16.2	280.88048	53.60731	303.66903	7.74688	0.1781752	2.3967742232675
(331519)	17.1	283.16549	61.19412	283.84737	2.26839	0.3202056	2.5666875232659	(331571)	15.9	292.59391	265.73612	100.74815	8.38160	0.2331169	3.1720447232675
(331520)	16.4	253.24091	287.67999	85.28618	4.69762	0.2985066	2.5992832232659	(331572)	17.0	338.05409	246.08516	79.86519	6.78815	0.1226485	2.3508254232675
(331521)	17.5	95.69009	44.38066	307.34953	2.34923	0.2945826	2.3063992232659	(331573)	15.9	289.79398	98.50251	254.00463	13.61218	0.1628187	2.4341355232676
(331522)	16.8	306.56425	160.44873	167.71109	12.41142	0.3703282	2.5535235232660	(331574)	16.8	300.63082	69.67295	266.87796	5.39533	0.1668237	2.4092249232676
(331523)	16.3	251.82861	215.31811	146.54936	10.56451	0.2204208	2.6120276232660	(331575)	16.6	270.42963	103.72172	260.37943	7.03095	0.1069959	2.4192270232676
(331524)	15.8	305.80029	87.19869	230.86238	10.79670	0.2707969	2.5502655232660	(331576)	15.4	305.07440	48.93624	295.79016	15.23982	0.2399988	3.1882585232677
(331525)	16.3	278.83102	168.41834	218.29505	15.13226	0.2245312	2.5519786232661	(331577)	15.2	310.04096	182.44770	140.29564	25.18726	0.1962069	3.2084143232677
(331526)	16.6	104.84726	154.89098	189.93693	24.53812	0.2536970	2.3028167232661	(331578)	14.9	297.50006	106.13269	244.69280	6.82817	0.1470237	3.2377247232677
(331527)	16.6	263.75499	187.67360	182.58113	16.76465	0.2424490	2.5952945232661	(331579)	15.3	315.31357	122.23637	214.08889	12.75386	0.2746024	3.2143919232678
(331528)	17.0	273.94230	118.80340	216.38314	4.40439	0.2760668	2.6119427232662	(331580)	17.6	296.46368	234.68385	110.08473	3.25259	0.2311899	2.4103785232678
(331529)	15.9	223.78672	209.72312	191.02239	14.39831	0.2604148	2.6632464232662	(331581)	17.2	318.51051	148.95608	168.01118	2.59042	0.2270035	2.4028428232679
(331530)	16.0	195.13455	215.64252	214.62669	12.51199	0.2239924	2.6479837232662	(331582)	17.6	275.01959	147.00881	185.44346	4.70396	0.1989144	2.4409071232679
(331531)	16.2	223.45462	153.56686	227.73935	9.48567	0.0981766	2.6493996232663	(331583)	16.1	136.13849	332.76798	321.24226	6.99681	0.1245440	2.7985977232679
(331532)	16.7	317.57420	237.62316	78.19442	6.44310	0.2921812	2.5660705232663	(331584)	17.2	307.55263	66.70225	290.73585	2.78432	0.1652623	2.3819843232679
(331533)	16.4	245.80171	348.40717	11.62062	2.19211	0.1514588	2.6506791232663	(331585)	16.9	273.98375	165.19867	187.54196	10.36670	0.2476307	2.4392442232680
(331534)	16.6	291.04029	170.71091	155.05010	5.89482	0.2689439	2.5970279232663	(331586)	16.2	327.24796	308.80286	7.30339	5.07923	0.1333037	3.2188478232680
(331535)	16.2	250.87292	156.47817	204.46316	15.30087	0.1567513	2.6448474232664	(331587)	15.4	329.34685	279.96362	59.27438	22.28547	0.4908490	3.1296883232680

(331588)	15.8	286.27714	195.29743	196.05227	18.41170	0.2024171	3.1979160232681	(331640)	16.0	222.86048	253.38584	122.87841	12.38457	0.1976709	3.0936276232697
(331589)	17.1	285.67016	125.99565	224.70595	20.60450	0.0821869	1.9957097232681	(331641)	15.3	297.27004	20.80509	278.28847	12.09703	0.1117204	3.0702892232697
(331590)	17.0	336.39949	7.69885	291.97633	4.49701	0.2126503	2.4101366232681	(331642)	15.4	266.99900	75.56051	254.93697	8.71177	0.1456679	3.0723631232697
(331591)	15.1	316.84952	98.26854	230.50979	7.94019	0.1918006	3.2298688232682	(331643)	18.5	304.77377	134.36581	177.10710	6.81028	0.2207591	2.2511977232697
(331592)	17.0	127.42457	241.25691	50.15990	2.50034	0.0735464	2.8600654232682	(331644)	17.9	263.87092	136.79356	212.17081	4.69231	0.2287435	2.2732155232698
(331593)	16.6	106.16728	294.61896	200.84659	14.52322	0.0926688	2.5461061232682	(331645)	18.1	289.41612	176.02786	145.56946	5.84121	0.1867810	2.2608957232698
(331594)	16.0	44.11991	336.72485	206.50642	13.43221	0.0340236	2.5719852232682	(331646)	15.6	243.75795	79.80229	277.25805	9.70684	0.0713704	3.0435579232698
(331595)	18.0	296.75636	30.88823	308.72952	1.82095	0.1934459	2.4263480232683	(331647)	16.1	348.00028	18.94611	325.89698	5.52876	0.0213077	2.7679287232698
(331596)	16.9	249.56059	281.71459	104.62124	0.96181	0.1278857	2.4850460232683	(331648)	15.7	313.12453	136.46058	122.87296	27.95043	0.1042821	3.1053441232699
(331597)	15.2	330.23804	86.73384	251.96190	22.61514	0.4188312	3.1784892232683	(331649)	15.7	283.89007	165.39500	174.30242	11.56444	0.1339625	2.9995193232699
(331598)	16.8	197.40665	167.31933	229.86451	5.72216	0.1537838	2.5634745232684	(331650)	16.8	316.55658	64.48908	222.58740	3.57444	0.1667401	3.0416680232699
(331599)	15.5	115.09632	222.37797	245.87729	21.24597	0.0588106	2.6049629232684	(331651)	17.4	208.09395	156.55369	233.50003	9.23662	0.2173720	2.3269503232699
(331600)	15.7	341.50461	31.67866	257.43481	14.02594	0.1317619	2.4640699232685	(331652)	15.9	264.48494	85.86504	265.92969	8.97594	0.1565132	3.0667066232699
(331601)	17.3	285.24032	69.91908	288.14227	1.18323	0.2227098	2.4392047232685	(331653)	17.0	29.53989	187.13676	171.27977	5.63989	0.1853798	2.6932648232700
(331602)	17.4	311.04659	103.26741	230.46899	5.40385	0.2527288	2.4395703232685	(331654)	16.7	48.82750	173.49256	130.73636	12.17746	0.1375971	2.7303210232700
(331603)	15.6	343.69537	100.93238	224.81118	24.79167	0.2145111	3.1909867232685	(331655)	16.1	332.47130	123.79661	151.65616	12.17969	0.0830876	3.0261802232700
(331604)	16.7	103.94896	234.85400	238.16457	8.32213	0.1404461	2.6221915232686	(331656)	16.2	306.15368	127.66933	179.27235	5.86656	0.2216785	3.0253674232700
(331605)	16.2	143.24817	340.59051	101.61608	13.19049	0.2388586	2.6502558232686	(331657)	18.1	304.10985	136.91305	159.28394	5.62484	0.1768267	2.2629125232701
(331606)	15.9	151.70987	30.05321	45.92233	8.83425	0.1368655	2.6387391232686	(331658)	15.8	282.15722	26.96316	293.57993	8.71906	0.1069224	3.0720802232701
(331607)	16.2	235.49285	103.90586	262.64203	5.43120	0.1155349	2.5666047232687	(331659)	15.3	264.35174	92.79241	243.63137	10.53652	0.2682243	3.1118287232701
(331608)	16.2	129.78716	212.71613	235.80171	13.10236	0.1762885	2.6548830232687	(331660)	18.2	297.60569	75.94628	236.52838	5.65473	0.2373787	2.2631796232701
(331609)	15.9	173.01848	210.31964	247.19947	9.92407	0.1626293	2.5539068232688	(331661)	16.5	304.68616	117.65585	205.49862	6.72972	0.2707123	2.9968703232702
(331610)	15.7	281.78251	68.52110	251.96349	26.89745	0.0913133	2.5531352232688	(331662)	15.5	236.77442	169.00723	192.46452	11.14458	0.1078083	3.1138932232702
(331611)	15.7	211.13241	134.44460	259.02927	11.11339	0.1676190	2.5788444232689	(331663)	17.0	243.08147	156.35908	209.34759	6.12581	0.1659290	2.2992505232702
(331612)	16.8	264.55694	359.16017	20.52887	3.82080	0.1927891	2.4759574232689	(331664)	16.0	285.48203	113.87037	251.83739	9.38058	0.1354008	2.9626698232703
(331613)	16.4	82.77529	28.21687	97.82973	8.77808	0.2278488	2.7245834232689	(331665)	15.8	252.30633	211.20495	148.73585	22.49503	0.0833209	3.0601533232703
(331614)	15.5	316.77856	80.75429	279.66030	20.88426	0.3163639	2.3907296232690	(331666)	15.7	270.84886	180.94466	187.14448	16.32648	0.1996693	3.0451919232703
(331615)	16.5	218.45263	270.16068	118.22161	12.94098	0.2870469	2.5661008232690	(331667)	17.3	342.48200	124.20674	125.70364	8.31950	0.1739562	2.2699541232703
(331616)	15.9	180.47060	321.75436	128.50139	22.75305	0.0448526	2.6003251232690	(331668)	15.8	228.93176	248.35793	136.90074	12.46787	0.0858597	3.0841035232704
(331617)	16.9	214.67968	185.07207	184.51607	6.15757	0.0424335	2.7295418232691	(331669)	16.2	224.49151	236.01995	144.72265	10.57415	0.1084078	3.1109564232704
(331618)	16.1	156.14706	181.96993	253.09862	13.29912	0.1357361	2.6247909232691	(331670)	17.5	301.68638	27.43653	252.88171	6.43968	0.1050702	2.3034044232704
(331619)	16.5	205.37712	287.91034	146.59653	7.92130	0.1890994	2.5459812232691	(331671)	16.0	338.03830	348.20613	263.35229	11.26570	0.0240241	3.1470122232704
(331620)	16.6	246.20577	348.45547	45.17911	2.65817	0.1705357	2.5520859232691	(331672)	16.2	304.50470	281.06733	28.57866	4.77394	0.2497502	3.0152444232704
(331621)	16.1	59.79736	16.42882	137.58590	15.00172	0.1162896	2.7624121232692	(331673)	17.6	313.28303	317.04511	352.88602	4.73153	0.0870124	2.2535855232705
(331622)	16.3	55.52454	196.02691	319.64002	8.83267	0.0926068	2.7601890232692	(331674)	15.9	30.21935	274.03107	320.28297	9.47671	0.0285666	2.9824687232705
(331623)	16.3	125.35937	321.80761	152.56133	22.35085	0.0423669	2.7166194232692	(331675)	16.9	341.84425	247.64048	180.78725	21.93010	0.0407281	2.6666005232705
(331624)	16.1	10.19741	316.68024	335.19741	9.36417	0.0823001	2.6027656232692	(331676)	17.4	324.33984	136.63979	132.40927	7.93861	0.1425731	2.2696884232705
(331625)	15.8	115.77538	281.46202	238.15693	10.54298	0.2032379	2.6375019232693	(331677)	16.0	58.99225	355.10834	159.86642	10.76144	0.0981565	3.1334556232705
(331626)	16.8	55.88242	318.23475	193.19101	8.80675	0.2552104	2.7823010232693	(331678)	17.7	314.23653	16.37850	294.05428	4.83051	0.1848225	2.2611676232706
(331627)	15.9	336.34539	74.83782	183.96926	14.19297	0.0430477	2.7745830232693	(331679)	16.2	241.73276	181.74078	172.60087	11.97862	0.1050460	3.1315203232706
(331628)	16.1	78.99318	16.18480	127.48530	16.57643	0.1893549	2.7578508232694	(331680)	15.0	238.15712	158.42799	235.89788	22.80096	0.3556622	3.1294098232706
(331629)	16.4	249.11779	189.38034	358.09381	6.79900	0.1244115	3.1996075232694	(331681)	18.2	316.34416	310.35901	329.59068	3.58858	0.2417832	2.2705575232706
(331630)	17.8	263.47709	171.02760	10.78573	1.39846	0.1300840	2.3917594232694	(331682)	18.1	321.34690	241.78034	30.12875	3.22933	0.2192510	2.2706113232707
(331631)	15.7	2.59429	41.69796	195.00923	15.06534	0.0977575	2.8465422232694	(331683)	16.7	98.68761	137.48709	106.02835	3.82284	0.0600390	2.7739615232707
(331632)	17.0	233.04854	114.86364	106.90464	5.06476	0.1286064	2.3907219232695	(331684)	16.0	314.72310	170.91975	141.82041	16.63101	0.0606165	3.0366735232707
(331633)	15.9	196.60340	200.93126	202.91068	15.28274	0.1364173	2.7979886232695	(331685)	18.4	294.29519	69.09235	229.15483	2.73688	0.2241109	2.3025782232707
(331634)	16.2	227.64468	8.95927	66.14520	6.72005	0.3017597	2.5707158232695	(331686)	16.0	227.48245	98.82392	275.44098	6.50950	0.0536285	3.1105515232708
(331635)	17.1	359.95639	88.59733	179.06885	4.07331	0.0608166	2.7654898232695	(331687)	18.1	320.72107	105.31397	177.70523	8.95187	0.1496513	2.2720341232708
(331636)	17.1	94.66807	79.50071	152.93854	6.04707	0.1529616	2.6498256232696	(331688)	16.0	216.81435	255.93855	165.51380	14.20410	0.1708213	3.0383086232708
(331637)	17.3	262.16720	231.45842	102.31906	27.85360	0.0772869	1.8292184232696	(331689)	18.0	222.23041	245.99808	137.50239	6.82021	0.0951632	2.3031365232708
(331638)	16.1	40.63130	83.73927	81.42877	15.24902	0.2606058	2.8738160232696	(331690)	17.0	11.88961	62.46005	149.28998	23.08556	0.1597142	2.2955759232708
(331639)	15.6	284.42032	102.29257	233.81803	16.40818	0.1738939	3.0316823232696	(331691)	16.5	291.58150	130.66643	194.89663	7.34194	0.1393879	3.0525224232709

(331692)	15.7	212.98802	267.18262	129.78442	11.23420	0.0781392	3.0849577232709	(331744)	17.8	346.69675	177.87576	122.17737	5.58143	0.1800123	2.2484888232723
(331693)	15.7	205.38346	258.75121	132.44115	9.01136	0.0308043	3.1187113232709	(331745)	17.7	300.27009	176.58289	109.99547	7.82825	0.1138787	2.3642305232723
(331694)	15.7	200.97163	130.30145	263.81045	9.77387	0.0674814	3.1639295232709	(331746)	18.6	325.23924	69.16381	226.00812	4.28815	0.1837868	2.260036232723
(331695)	15.8	220.99787	98.26462	272.89096	8.04647	0.0756341	3.1805131232710	(331747)	16.2	264.22676	264.65202	80.53135	20.36734	0.1642180	3.2245353232724
(331696)	17.5	324.77501	356.24268	268.74491	5.51970	0.1501157	2.2864675232710	(331748)	15.2	236.80108	163.33371	226.32610	27.13948	0.1694106	3.2251117232724
(331697)	15.3	188.36931	167.61419	279.08157	11.99731	0.0447598	3.0483182232710	(331749)	17.0	240.09071	328.31089	70.30549	6.82642	0.1683857	2.3184120232724
(331698)	15.7	278.62386	316.32314	57.37705	2.36540	0.1805115	3.0017843232710	(331750)	17.4	221.98486	126.67315	248.01101	19.90563	0.0897711	1.9098267232725
(331699)	17.2	235.71189	312.82894	48.35221	1.98958	0.2992975	2.3299007232711	(331751)	17.1	243.42746	7.99577	352.33590	5.89874	0.2596945	2.3409807232725
(331700)	17.7	261.32541	218.50040	135.49830	3.51711	0.2457716	2.2950237232711	(331752)	17.5	270.86217	70.24714	308.79432	2.84040	0.2611012	2.3273314232725
(331701)	16.9	280.72778	116.48406	212.72703	6.32988	0.1501904	2.2984136232711	(331753)	15.3	300.72379	58.86284	289.55364	9.68186	0.0751328	3.148980232725
(331702)	15.9	298.38848	158.76320	168.49795	10.64705	0.1750665	3.0509444232712	(331754)	17.0	289.08067	106.63963	239.57291	8.59312	0.1798079	2.3053830232726
(331703)	16.5	313.12268	27.85607	272.55481	6.17588	0.3619800	3.0255466232712	(331755)	17.9	245.65802	154.26393	193.47639	0.80823	0.1910135	2.3675852232726
(331704)	16.3	325.08874	138.14615	172.36113	6.30446	0.1491771	2.9952693232712	(331756)	16.4	184.71404	256.34455	233.37559	6.08485	0.0635848	3.1220635232726
(331705)	17.6	207.22918	200.54908	179.14356	2.13876	0.2088893	2.3560625232712	(331757)	14.6	238.56192	157.97416	240.40254	27.15331	0.2311374	3.1812280232726
(331706)	16.1	321.16739	150.30720	171.12617	8.57288	0.2794960	2.9982155232713	(331758)	17.2	215.01420	296.38946	80.27045	5.18881	0.1737068	2.4031799232727
(331707)	16.9	230.70291	354.50201	17.68289	5.55000	0.2398722	2.3486928232713	(331759)	15.9	275.19271	100.81092	240.10513	22.91737	0.1955775	2.3200877232727
(331708)	17.9	286.53359	118.20813	202.04943	6.65310	0.1348573	2.2997923232713	(331760)	17.7	215.35641	24.11379	28.02369	1.77423	0.1654498	2.3659355232727
(331709)	15.8	238.61835	74.46339	281.66141	7.88022	0.0678010	3.1604285232714	(331761)	14.8	270.86854	124.03698	274.02489	15.35089	0.2295857	3.1181981232728
(331710)	15.9	291.44170	82.70219	270.54047	7.67832	0.0924870	3.0272305232714	(331762)	18.1	157.23672	163.39213	253.48345	19.12014	0.1094614	1.9539402232728
(331711)	15.3	250.34571	177.00891	202.67094	18.01356	0.2501895	3.1046758232714	(331763)	16.2	107.41833	78.43166	24.40755	5.07242	0.1754409	2.5318666232728
(331712)	15.7	276.45641	218.97121	128.71375	11.10497	0.1888764	3.0778258232714	(331764)	17.1	182.73539	285.02114	123.66071	2.45508	0.1280583	2.4229493232729
(331713)	17.7	257.05231	69.81671	311.20721	3.80834	0.1562347	2.2657466232714	(331765)	16.0	284.84400	257.57264	117.65081	9.67838	0.2317639	3.0986434232729
(331714)	16.8	150.84329	61.83221	187.86079	11.60737	0.0316099	2.7006538232715	(331766)	15.1	67.92371	255.49917	247.59343	26.05222	0.2542666	2.5851080232729
(331715)	16.4	291.52765	309.68244	43.51825	2.47513	0.1723525	2.9953939232715	(331767)	16.6	238.16536	285.64275	113.48668	7.33253	0.0990836	2.3710513232730
(331716)	15.9	331.00822	82.58557	185.19281	20.45812	0.1492410	3.0624537232715	(331768)	16.6	28.02797	62.72502	125.59785	30.58208	0.3132564	2.6157523232730
(331717)	16.0	96.70711	28.14206	141.46974	10.66294	0.0330755	3.0210507232715	(331769)	20.0	243.81650	223.87036	137.05219	8.48406	0.2448677	1.4249332232730
(331718)	17.0	95.43551	118.44770	170.33413	9.23898	0.0811504	2.7219276232716	(331770)	17.3	140.96507	161.71255	339.97073	3.51958	0.1001487	2.4348191232731
(331719)	17.3	241.43244	266.51190	106.70462	3.33689	0.2609605	2.3213886232716	(331771)	16.5	95.25281	250.47434	222.60427	5.46046	0.2239855	2.5634812232731
(331720)	15.5	262.79113	276.96426	70.53864	6.27431	0.1686433	3.1507345232716	(331772)	16.7	110.55839	301.21000	167.36442	17.09549	0.1237118	2.5763309232731
(331721)	16.0	228.43646	232.44941	133.42011	9.13142	0.0421709	3.1647510232717	(331773)	16.8	49.57089	121.68099	35.54008	5.26123	0.1750189	2.6011479232732
(331722)	16.5	178.13881	257.54514	179.63980	21.33777	0.3317574	2.3623193232717	(331774)	15.9	349.80560	330.08695	264.57830	10.04894	0.1658968	2.6326014232732
(331723)	15.4	196.34665	177.22819	280.41329	9.82442	0.0742167	3.0839872232717	(331775)	16.3	66.74998	39.61205	105.42070	14.10969	0.1960418	2.6070987232732
(331724)	16.7	178.76846	103.36582	299.47830	5.51787	0.1208740	2.3986340232717	(331776)	16.9	47.12794	66.98611	81.37048	7.15601	0.2763903	2.6335183232732
(331725)	15.5	248.83953	226.87374	158.82517	11.06009	0.1292119	3.0920100232718	(331777)	15.8	9.09084	289.76924	314.50704	28.12599	0.3473994	2.6154583232733
(331726)	16.8	265.30324	128.40232	217.53936	8.58052	0.2154849	2.3188895232718	(331778)	15.9	7.07685	30.98782	172.09225	10.08003	0.3157986	2.6805387232733
(331727)	16.6	91.17895	101.75751	9.34227	6.44286	0.1197475	2.4385521232718	(331779)	16.9	43.39876	37.77200	137.30280	8.42897	0.1485844	2.6202596232733
(331728)	15.7	185.71762	239.46117	204.97316	15.67205	0.0651087	3.1496728232719	(331780)	17.1	352.27227	235.11333	29.78636	5.05453	0.1500422	2.5919191232734
(331729)	15.5	338.69291	74.30148	190.80898	16.32874	0.2014253	3.1297731232719	(331781)	16.1	65.04013	341.20202	178.25533	13.85485	0.1894573	2.6625429232734
(331730)	15.3	272.30565	90.37660	251.21806	9.41602	0.1335602	3.1274178232719	(331782)	15.9	341.88218	171.21732	108.15468	13.87805	0.1669692	2.6272401232734
(331731)	17.7	245.71813	265.81946	100.81027	4.40985	0.2254543	2.3096879232719	(331783)	16.3	340.97706	132.95315	139.46464	13.65440	0.2456689	2.6644820232734
(331732)	15.6	319.35976	22.30314	296.04753	8.88150	0.0845976	3.0582013232720	(331784)	17.0	1.93514	58.98152	178.86487	10.40810	0.0120409	2.6472230232735
(331733)	15.6	99.20591	212.81372	259.67641	8.14137	0.2037566	2.4579391232720	(331785)	16.3	37.57098	277.15135	239.78831	25.40241	0.4315821	2.6675759232735
(331734)	15.5	236.61639	224.18976	159.36941	16.82242	0.2497242	3.1803437232720	(331786)	15.8	49.06843	307.30899	232.33717	12.27371	0.1053979	2.6627732232735
(331735)	15.3	194.44084	164.86430	245.22919	14.30406	0.1391315	3.2230244232721	(331787)	16.1	336.25977	71.93260	185.81366	10.80257	0.1105673	2.6923118232736
(331736)	15.2	281.72538	133.26423	205.78884	9.19042	0.1643634	3.1072098232721	(331788)	16.3	354.37834	58.23791	188.23049	13.08651	0.2222336	2.6761522232736
(331737)	17.6	356.83179	190.13556	92.98221	3.31325	0.2174237	2.2802249232721	(331789)	16.4	10.22414	130.66145	114.49849	13.66760	0.1365018	2.6598028232736
(331738)	16.9	307.88979	43.98321	277.43003	7.23172	0.1719886	2.2682421232722	(331790)	15.3	336.43998	94.85314	232.74088	15.49175	0.2711066	2.6036203232736
(331739)	15.7	291.65957	215.71479	142.04664	2.76786	0.1747931	3.0588004232722	(331791)	16.3	230.09473	303.93770	46.33879	6.94021	0.0445086	2.7068473232737
(331740)	15.6	258.05794	122.54849	229.32392	9.91132	0.2857904	3.1787468232722	(331792)	16.0	10.02904	304.56792	305.19592	27.90787	0.5350710	2.6843023232737
(331741)	15.1	266.83450	79.66593	301.18102	8.80446	0.1042555	3.0968944232722	(331793)	16.2	323.26439	43.44550	269.99565	13.23357	0.2043646	2.7187446232738
(331742)	16.6	184.37839	159.67784	232.77035	11.63242	0.1864389	2.4061506232723	(331794)	15.8	321.17712	53.66524	260.98266	7.53269	0.2407505	2.7302779232738
(331743)	16.2	275.20745	104.47186	254.19100	4.28013	0.3241057	3.0971084232723	(331795)	15.8	329.17748	185.33861	118.81475	16.22136	0.2009813	2.6519798232738

(331796)	15.6	287.85737	83.84686	274.37863	13.36445	0.1315962	2.7542540232739	(331848)	17.5	228.48752	136.35998	243.56120	5.04049	0.2706290	2.1857925232753
(331797)	17.3	108.64148	342.93766	2.07665	2.22603	0.2526577	2.3661946232739	(331849)	15.1	212.38604	149.73136	237.17658	9.06196	0.0897608	3.0717937232753
(331798)	17.5	113.89868	328.04167	353.63607	1.61648	0.2167919	2.4046809232739	(331850)	16.4	80.09983	271.65429	217.59813	21.93020	0.2157713	2.3190579232754
(331799)	16.5	333.67633	214.36347	73.43980	3.43420	0.2416972	2.7865971232739	(331851)	15.1	242.79849	117.60581	242.77316	9.46820	0.1063333	3.0445401232754
(331800)	16.3	287.30267	3.53923	6.54293	1.62718	0.2476899	2.7864754232740	(331852)	16.4	94.56767	302.29270	183.69706	1.94342	0.1142192	3.0780595232754
(331801)	16.9	147.53656	250.67964	65.21971	7.16576	0.2435296	2.3499517232740	(331853)	15.8	269.06604	302.25798	15.14634	8.90382	0.0367935	3.0413249232755
(331802)	15.9	308.23123	33.75091	298.65846	7.75357	0.1085806	2.8055047232740	(331854)	15.4	203.59981	125.28623	247.10627	8.12075	0.0772344	3.1814781232755
(331803)	15.6	331.02449	14.40518	291.12891	8.31146	0.1542904	2.7504974232741	(331855)	16.1	240.52301	312.79441	39.57435	9.10767	0.1231132	3.0534455232755
(331804)	17.6	220.07489	180.53722	186.63468	3.47625	0.1681561	2.1777085232741	(331856)	16.2	252.07036	158.61073	233.14687	8.70194	0.0877687	2.9529957232755
(331805)	16.8	327.07768	336.94317	350.52451	4.69762	0.1578865	2.7771617232741	(331857)	15.2	290.65700	280.45539	106.82605	30.48450	0.4041923	2.7959298232756
(331806)	15.1	202.96518	156.26875	172.99672	23.19466	0.1069625	3.1754414232741	(331858)	17.3	259.85241	109.45820	227.94942	3.73348	0.1890376	2.2047593232756
(331807)	16.5	310.49106	339.78147	349.00800	4.61357	0.1550956	2.7930605232742	(331859)	15.6	240.06980	121.69203	240.99947	9.49045	0.1219550	3.0007571232756
(331808)	16.2	213.71493	267.60509	117.51843	2.74650	0.1139635	3.0011271232742	(331860)	17.2	132.38958	240.68284	243.62934	6.06842	0.0736888	2.2068223232757
(331809)	16.7	304.74018	42.18500	302.45179	6.94001	0.2356677	2.7849710232742	(331861)	16.2	202.12060	282.63354	109.57704	6.31216	0.1435991	3.1142339232757
(331810)	15.9	262.07763	179.15499	204.15951	13.31694	0.1482758	2.8728074232742	(331862)	16.5	325.72090	53.76821	227.16632	8.65553	0.0398922	3.0489533232757
(331811)	15.9	338.84127	115.45044	208.79023	13.74750	0.4072287	2.7289154232743	(331863)	14.8	198.82071	289.96930	126.83603	22.87092	0.1448432	3.1126001232757
(331812)	16.0	219.69156	112.73681	256.43362	7.23191	0.0472960	3.0129386232743	(331864)	17.6	103.02755	22.48246	80.36557	2.93210	0.1621920	2.3196415232758
(331813)	15.9	293.44363	108.19131	219.09921	10.88815	0.1258722	2.8706711232744	(331865)	14.8	210.21813	310.66614	85.50346	21.14005	0.1318603	3.1291104232758
(331814)	16.2	273.02156	119.56748	218.54807	10.55950	0.1351816	2.9479674232744	(331866)	15.3	217.07275	114.91239	297.57329	8.15183	0.1009006	3.1309742232758
(331815)	15.8	222.14464	220.64577	171.88229	2.85125	0.2349836	2.9815228232744	(331867)	15.7	230.68580	292.30178	78.52813	10.57159	0.1748609	3.1012919232758
(331816)	16.0	190.03338	60.33182	4.73326	8.48193	0.1977876	2.9901276232745	(331868)	15.5	239.57824	106.65347	284.11625	8.21630	0.0627511	3.1707412232759
(331817)	17.1	265.00331	78.52111	273.72660	1.34897	0.1714158	2.9037978232745	(331869)	15.1	240.65892	297.65342	77.19160	17.19577	0.2421053	3.0917959232759
(331818)	15.6	176.68657	127.68902	274.84584	6.94110	0.1045457	3.0875321232745	(331870)	17.4	110.45825	132.69839	305.63706	5.56502	0.1807946	2.3500667232759
(331819)	14.9	220.05820	123.70069	249.65950	8.78414	0.1155671	3.0682065232746	(331871)	17.8	135.66213	276.50104	172.04157	5.65980	0.1427859	2.2772755232759
(331820)	16.8	320.43491	33.43508	284.17528	3.28390	0.1957571	2.7872659232746	(331872)	14.8	316.36738	14.16636	309.06079	13.53563	0.1587253	3.1033388232760
(331821)	17.7	158.93393	116.71939	137.81346	1.77858	0.1504388	2.4668870232746	(331873)	15.7	274.78883	230.24407	126.45479	18.55151	0.1391319	3.1715285232760
(331822)	17.8	187.85318	260.14815	133.63179	5.00581	0.0094689	2.2091665232746	(331874)	18.2	67.99420	8.62667	122.09371	3.30781	0.1420676	2.3920631232760
(331823)	16.4	143.94453	9.83705	58.34738	12.34884	0.1229733	3.1553718232747	(331875)	17.7	33.74165	57.60526	127.94129	8.48813	0.0454362	2.3612272232760
(331824)	17.0	197.19691	248.05059	186.06769	1.75934	0.0454881	2.8672657232747	(331876)	20.5	248.95647	274.52881	109.50190	13.30465	0.5362190	1.2845828232761
(331825)	16.0	347.22887	334.06992	305.35984	8.81552	0.0632186	2.9140109232747	(331877)	17.3	161.45329	81.04150	22.00995	6.26867	0.0318949	2.2792626232761
(331826)	15.5	299.93117	80.59239	222.59498	8.64304	0.0505670	2.9436440232747	(331878)	16.8	103.30079	338.60012	133.11027	6.93564	0.0715781	2.3807319232761
(331827)	16.3	342.58541	62.91441	208.54777	12.90744	0.1136952	2.8901063232747	(331879)	15.4	270.14671	247.72126	122.25441	15.01665	0.0405786	3.1912348232761
(331828)	16.2	331.22360	6.70347	246.30436	7.79676	0.2466829	2.9765496232748	(331880)	17.4	177.43679	333.47723	124.63589	6.26236	0.0733594	2.2526241232762
(331829)	16.1	247.26536	135.80522	225.01722	7.30510	0.1047923	3.0105070232748	(331881)	17.2	46.50046	338.28181	60.74381	2.99998	0.2342916	2.5947306232762
(331830)	15.6	331.49544	84.32943	236.72413	17.30563	0.2941371	2.7878042232748	(331882)	15.1	288.33784	170.70249	158.64856	15.43129	0.1338573	3.4171901232762
(331831)	16.3	132.43453	112.52211	340.74370	3.53051	0.0366665	3.0817860232748	(331883)	16.4	287.06619	261.28481	293.44376	6.10190	0.0330442	2.6170292232762
(331832)	17.4	183.04537	208.36478	197.86408	7.54012	0.0464170	2.2053740232749	(331884)	16.2	275.09013	142.14926	29.00203	14.22536	0.1347147	2.7279840232763
(331833)	15.8	155.53311	232.04578	205.02039	10.79172	0.0586462	3.0568248232749	(331885)	17.6	0.14436	60.67767	191.20025	4.97621	0.1042568	2.3781472232763
(331834)	15.8	309.22253	221.24337	145.41775	9.80889	0.3030471	2.7829071232749	(331886)	16.9	10.97058	52.59641	168.88819	9.42260	0.1742664	2.4246111232763
(331835)	15.4	176.79347	207.92666	222.48725	16.44255	0.2309150	3.0907555232749	(331887)	17.5	28.93805	10.66689	177.58101	1.29293	0.1345475	2.4283805232764
(331836)	16.4	179.50913	220.39668	221.76913	8.82472	0.0569128	3.0102457232750	(331888)	17.1	35.48968	314.05339	254.15554	3.40648	0.1816940	2.4180684232764
(331837)	15.3	231.56222	128.13007	248.26190	8.73942	0.1128415	3.0080509232750	(331889)	16.4	326.33341	193.98999	12.23156	12.08150	0.1204692	2.5795322232764
(331838)	15.5	237.40469	316.64718	62.26827	7.18438	0.2207653	2.9763436232750	(331890)	16.2	26.40851	42.23352	66.08479	25.88394	0.2392839	2.5764545232765
(331839)	15.9	193.10437	197.59348	212.37563	10.49491	0.0983832	3.0370991232751	(331891)	16.8	349.35113	108.71170	156.03191	12.90860	0.2215230	2.4578966232765
(331840)	18.2	3.21543	82.18098	136.68183	5.38674	0.0447237	2.2111255232751	(331892)	16.5	324.38614	110.68944	124.21177	12.36497	0.2254582	2.5631281232765
(331841)	16.1	50.33919	322.11503	218.08806	9.86626	0.0223615	3.1126315232751	(331893)	17.0	335.83991	43.19904	242.38359	7.83989	0.0277183	2.4256547232766
(331842)	15.2	178.74383	191.12781	221.52232	21.43481	0.0472357	3.0978537232751	(331894)	16.6	275.82938	109.28304	182.99981	12.79852	0.2739688	2.6182354232766
(331843)	17.4	290.35854	78.12445	232.32254	4.18282	0.1586513	2.1752575232751	(331895)	16.5	277.53066	190.27015	132.29786	6.35844	0.2031361	2.6094439232766
(331844)	15.5	149.82460	217.43451	220.32929	16.61142	0.1890613	3.1398153232752	(331896)	16.4	278.17786	277.40394	50.91528	13.38201	0.1898642	2.6224521232766
(331845)	15.4	318.53527	50.50022	239.72903	10.98035	0.1889617	2.9683833232752	(331897)	16.1	260.92364	209.83746	152.61165	13.43645	0.1953528	2.6368727232767
(331846)	15.7	172.51339	29.97504	18.33073	10.79478	0.0420143	3.1195158232752	(331898)	16.9	259.47104	206.99175	161.12623	6.59739	0.3488252	2.6303641232767
(331847)	15.3	238.38915	136.63163	246.57122	21.78775	0.2218342	3.0145321232753	(331899)	16.6	290.03379	186.29173	131.93401	13.41413	0.1932377	2.6235391232767

(331900)	17.2	321.69021	137.56772	167.10750	5.17180	0.1558809	2.5622811232767	(331952)	15.8	238.81131	230.18948	151.35088	15.76050	0.2940320	2.7421350232782
(331901)	16.6	237.91963	233.54402	137.75919	11.35916	0.2113548	2.6803954232768	(331953)	16.1	39.59583	348.81794	243.00829	8.17635	0.0333748	2.7339882232782
(331902)	16.7	313.47581	239.44757	79.47621	3.49357	0.1762300	2.5751024232768	(331954)	16.0	274.44187	330.88081	349.16072	9.16618	0.1397900	2.7463977232782
(331903)	15.8	296.71205	179.02549	153.19966	13.98670	0.1769729	2.6297651232768	(331955)	15.8	264.82850	155.29457	236.66767	11.94871	0.1756369	2.6464174232783
(331904)	17.3	312.69274	58.39897	234.94215	19.67099	0.0491861	1.9607009232769	(331956)	15.2	154.76383	88.23473	269.10009	14.57766	0.2608622	3.0942016232783
(331905)	16.5	269.65769	255.62461	100.80364	14.23077	0.3056530	2.6537509232769	(331957)	16.6	127.52032	52.91627	40.27765	2.25482	0.0832781	2.9390428232783
(331906)	16.6	265.46643	305.31678	40.92637	3.72142	0.1550191	2.6435839232769	(331958)	17.4	174.26563	31.86555	225.85103	2.95294	0.0577942	2.3346755232783
(331907)	16.7	291.63232	223.26563	111.21203	7.30498	0.3271092	2.6058990232769	(331959)	16.0	286.46824	222.85654	109.48978	13.94914	0.2147737	2.7228915232784
(331908)	16.5	328.20693	194.98923	102.66778	3.98451	0.1527132	2.5789633232770	(331960)	16.0	278.56441	85.54694	246.74536	11.41540	0.1429179	2.7979905232784
(331909)	16.5	315.70671	168.37890	128.77297	4.03538	0.2305522	2.6133640232770	(331961)	15.3	168.00149	310.45138	123.01780	10.86749	0.0656705	3.0197008232784
(331910)	16.3	277.80811	311.39913	21.28759	6.56891	0.1781787	2.6649582232770	(331962)	16.1	84.21904	48.15743	82.83190	10.63999	0.1664692	3.0777368232784
(331911)	16.1	260.12901	328.87904	9.00907	11.59659	0.1653794	2.7136927232771	(331963)	18.2	296.43610	64.04307	263.92322	31.47918	0.4160194	1.9527905232785
(331912)	15.7	340.08043	11.77873	277.48231	13.58534	0.1179515	2.5848776232771	(331964)	15.8	80.15622	69.85369	83.00867	9.89304	0.0357623	2.9879927232785
(331913)	16.0	243.97855	85.91148	275.11592	8.15610	0.1653916	2.7151517232771	(331965)	16.1	106.73629	16.44669	98.69524	8.88958	0.1434150	3.0939828232785
(331914)	16.8	304.37356	272.49836	33.51603	7.90625	0.2300358	2.6219277232771	(331966)	16.0	242.12681	189.97189	272.22763	13.14594	0.0411183	2.6379936232785
(331915)	16.3	226.84505	152.96474	219.80632	5.81364	0.0614782	2.6944588232772	(331967)	16.0	206.40948	137.06156	255.15913	14.27614	0.1416569	2.8507391232786
(331916)	16.3	264.33223	89.55882	240.23042	7.87229	0.1219642	2.7145005232772	(331968)	16.3	277.39768	257.55996	81.04255	13.11601	0.3033924	2.765253232786
(331917)	16.3	291.58776	141.77932	181.29109	32.29172	0.2474507	2.6383395232772	(331969)	16.2	300.02627	67.28360	281.99107	8.12797	0.1770752	2.7590975232786
(331918)	16.2	284.86897	128.72483	213.01129	12.89909	0.2803552	2.6383401232772	(331970)	17.0	282.32980	230.37539	117.38145	2.86685	0.3502646	2.6710204232786
(331919)	17.1	296.73578	137.90609	196.65593	10.80047	0.2913700	2.6103722232773	(331971)	15.7	18.43710	302.39389	264.51686	8.56240	0.0576032	3.1287583232787
(331920)	15.5	287.84930	112.25169	245.95132	11.42381	0.1825872	2.6400241232773	(331972)	16.6	86.88413	1.18195	140.12089	4.16092	0.0702680	3.1341944232787
(331921)	15.7	188.45660	211.70776	203.97937	7.42216	0.2494102	2.7996680232773	(331973)	15.8	126.65215	17.74396	85.94811	6.20564	0.1002599	3.1421892232787
(331922)	16.6	294.98335	84.93496	264.35282	12.08251	0.2019973	2.6082753232774	(331974)	16.0	216.08812	254.29075	135.68387	16.48361	0.1652355	3.0504009232787
(331923)	16.5	247.36308	134.54721	224.21640	1.36323	0.0938412	2.6936983232774	(331975)	15.2	180.52207	277.03670	144.88854	13.46711	0.0932344	3.1413318232787
(331924)	17.6	309.83383	140.18188	158.99461	3.15026	0.1830290	2.6291062232774	(331976)	17.5	23.08968	159.56601	353.93993	4.15899	0.0944931	2.2572838232788
(331925)	16.8	300.98287	111.93683	239.49673	6.23880	0.2186395	2.5786065232775	(331977)	15.3	71.13106	257.03501	292.33909	13.24852	0.1168025	3.0922564232788
(331926)	16.2	219.64485	145.68215	237.94814	10.16147	0.0660726	2.7136738232775	(331978)	15.7	51.06491	19.05743	165.31369	19.20769	0.0984610	3.2201936232788
(331927)	15.9	291.07886	84.31353	266.97443	15.61040	0.1387715	2.6224525232775	(331979)	15.6	136.75162	345.47647	112.68109	15.57559	0.1457667	3.1543315232788
(331928)	17.3	283.74618	186.07347	150.23004	15.12469	0.2521698	2.6377705232776	(331980)	15.5	153.45752	191.00866	299.34320	8.81159	0.0555623	3.0077363232789
(331929)	16.8	304.74369	153.10899	171.48650	13.35894	0.2313535	2.6121340232776	(331981)	17.8	342.19508	237.96250	355.66929	6.50638	0.0967663	2.2422386232789
(331930)	16.3	277.59226	291.06799	38.45446	5.93148	0.1814608	2.7112843232776	(331982)	15.2	66.60266	279.05025	275.03661	27.05716	0.2174525	3.1684104232789
(331931)	16.3	217.32746	175.64179	213.76254	9.35784	0.1800877	2.7149024232776	(331983)	16.1	117.10185	195.21810	311.64755	2.55980	0.0245257	3.0125229232789
(331932)	16.3	274.41350	184.93520	177.39440	8.64596	0.3343182	2.6599577232777	(331984)	17.6	302.83947	138.93151	175.39042	6.98761	0.2580738	2.1846529232790
(331933)	17.5	237.64401	205.74996	229.48921	19.98775	0.0884125	1.9378820232777	(331985)	17.5	133.03011	294.02095	163.10652	6.21164	0.0875983	2.1975957232790
(331934)	16.3	340.92535	66.58417	197.75755	12.45786	0.1416923	2.6842096232777	(331986)	15.7	356.39956	110.34360	177.73823	25.34361	0.2222064	3.1884540232790
(331935)	17.3	2.82573	285.60045	339.55501	1.43752	0.0396284	2.6791381232777	(331987)	18.3	276.41744	59.93168	246.77769	0.96321	0.0744210	2.2184836232791
(331936)	16.6	323.75578	75.18479	201.90862	13.20618	0.1857128	2.7141261232778	(331988)	16.0	263.82712	76.98926	304.67039	8.11711	0.1136228	2.9059162232791
(331937)	16.3	196.24078	172.18255	230.72671	7.40666	0.1127684	2.8150783232778	(331989)	17.1	55.85826	13.99731	134.85985	6.30296	0.1645394	2.2465968232791
(331938)	16.7	306.10481	114.08097	214.38066	12.05551	0.2916637	2.6298255232778	(331990)	19.6	282.43170	270.79650	13.44467	11.33001	0.3938912	1.4603358232791
(331939)	15.5	119.99699	27.80859	39.88421	19.94389	0.2957138	3.0548586232779	(331991)	16.1	353.73482	120.62925	111.36819	39.59945	0.2858200	2.2890903232792
(331940)	16.9	281.90174	207.09831	129.69110	7.76044	0.2692488	2.6487111232779	(331992)	17.8	355.38594	202.59686	18.98824	6.47631	0.1134427	2.2617339232792
(331941)	17.1	274.41597	234.96974	109.00844	2.58562	0.2271421	2.6709994232779	(331993)	17.0	346.26694	116.42352	129.74975	7.46502	0.0574135	2.2376171232792
(331942)	16.2	242.56195	301.89266	55.09203	5.90492	0.1648108	2.7837167232779	(331994)	17.1	105.40849	151.97613	132.49318	0.80472	0.0343349	2.7669368232793
(331943)	17.1	93.74321	298.26309	197.94148	3.46174	0.0128532	2.7680270232779	(331995)	16.9	354.35522	308.83294	299.76684	6.69540	0.1636094	2.2375919232793
(331944)	16.7	270.85952	114.47806	229.44668	12.10230	0.2304562	2.7361382232780	(331996)	16.5	215.12656	173.61851	43.23143	13.37697	0.1946659	2.6399284232793
(331945)	17.1	269.84805	248.36957	59.16322	2.95038	0.0508411	2.8373865232780	(331997)	18.2	353.51333	101.27634	129.61234	2.63071	0.1096098	2.2642179232794
(331946)	16.0	253.52897	138.74770	228.42736	13.04096	0.1769375	2.6704494232780	(331998)	15.9	308.07891	151.71446	191.15577	10.47643	0.1033780	3.1439756232794
(331947)	16.4	296.16254	315.54303	356.10026	4.62024	0.1543445	2.7169730232780	(331999)	19.2	329.22020	173.20974	102.18318	13.39045	0.2861325	1.7405499232794
(331948)	16.4	290.97093	270.20099	34.58474	9.33247	0.1295137	2.8079184232781	(332000)	15.7	31.58189	103.06962	146.22152	16.26614	0.0886416	3.3737121232794
(331949)	15.3	279.28024	94.82404	267.82750	13.60824	0.1219436	2.6814418232781	(332001)	17.8	149.10254	24.77346	64.72867	2.54361	0.0348571	2.2607358232795
(331950)	15.8	229.69671	179.20518	131.45689	11.14758	0.0436014	2.9612943232781	(332002)	17.5	222.30347	179.47942	82.53249	16.03300	0.0804080	2.5412197232795
(331951)	15.6	337.37386	50.69117	220.46056	15.61386	0.1484746	2.7684613232781	(332003)	18.2	304.43042	133.09765	172.57389	5.29976	0.2166299	2.2925985232795

(332004)	17.2	295.13596	44.44426	265.30463	5.83268	0.1466854	2.3500361232795	(332056)	16.9	310.14740	187.88063	124.32503	11.10980	0.3200391	2.3768369232810
(332005)	17.7	23.87611	25.94914	162.94103	3.41495	0.1768208	2.2991594232796	(332057)	17.6	264.46042	187.33132	165.14392	2.24193	0.2289873	2.4300607232810
(332006)	16.9	247.60154	131.88594	235.05365	23.03845	0.1947293	2.2992923232796	(332058)	16.0	277.40360	116.40970	239.09016	6.40024	0.1151500	2.4038092232811
(332007)	15.1	323.55817	135.99535	237.45771	21.63042	0.0894867	3.1400842232796	(332059)	16.1	339.29686	114.71054	194.41425	23.10220	0.2356653	2.3473062232811
(332008)	15.9	296.90314	70.06601	250.09325	21.75303	0.2224201	2.3617511232796	(332060)	15.9	100.74527	353.65704	333.56302	8.49630	0.0964043	3.1141635232811
(332009)	18.3	297.79183	39.66873	271.11155	0.87327	0.1944937	2.3475813232797	(332061)	17.3	212.02986	355.04488	33.43056	1.96147	0.0822427	2.5247679232812
(332010)	14.9	278.15817	146.77452	199.22336	3.43838	0.2320355	3.9999767232797	(332062)	16.7	218.82974	167.30602	255.49296	4.25927	0.1297027	2.4072701232812
(332011)	17.4	257.88878	91.33383	293.95623	5.24638	0.1759381	2.3246042232797	(332063)	16.6	233.05691	357.09519	7.55621	6.33847	0.1182514	2.4735076232812
(332012)	17.2	1.02331	91.10774	127.54954	2.10105	0.1275815	2.3835918232798	(332064)	16.9	354.26402	12.84043	254.77968	5.50778	0.1287634	2.4227526232813
(332013)	17.9	293.86104	3.71642	305.58297	0.67794	0.1972540	2.3705804232798	(332065)	16.7	155.39610	177.06751	251.16137	4.26602	0.0921337	2.5849971232813
(332014)	15.6	284.87953	312.69099	17.92039	2.97239	0.2413875	3.9747928232798	(332066)	18.4	299.10181	355.45242	305.22055	0.55891	0.1844739	2.4565862232813
(332015)	17.5	244.32972	197.79918	175.20215	2.82132	0.2425016	2.3899032232798	(332067)	15.6	180.04591	197.17224	225.61807	10.93292	0.1722539	2.6043978232813
(332016)	17.1	294.00476	343.72409	332.79627	2.19430	0.2257002	2.3536651232799	(332068)	16.8	334.79628	253.70424	63.46922	7.36168	0.1321851	2.3098883232814
(332017)	18.3	314.81617	113.10775	159.99418	1.50778	0.1760296	2.3652509232799	(332069)	16.4	79.21539	294.12477	211.20662	11.59390	0.1075692	2.6180708232814
(332018)	17.6	325.68412	117.83588	150.46483	1.59714	0.1684926	2.3551183232799	(332070)	17.5	301.85025	129.05304	197.97669	5.33023	0.1431186	2.3896788232814
(332019)	14.9	311.05489	72.14029	248.36417	7.81206	0.3013296	3.9750044232799	(332071)	17.9	273.00899	122.91003	217.70416	5.23910	0.2193127	2.4228527232815
(332020)	17.2	297.27981	39.08032	253.76042	6.24902	0.1284734	2.4058422232800	(332072)	15.8	176.98055	161.08765	230.02427	14.23743	0.0893119	2.6352822232815
(332021)	15.9	338.22086	359.15239	289.59513	25.44049	0.2242662	2.3421619232800	(332073)	15.6	27.15531	103.88088	306.90753	10.10887	0.1161451	3.1416029232815
(332022)	17.7	318.48269	12.47576	292.96293	4.72801	0.2083719	2.3244335232800	(332074)	16.3	266.93233	77.86024	274.46841	4.38290	0.3407495	2.5633596232815
(332023)	15.6	250.16634	131.75826	245.39246	23.64775	0.2457385	2.4116818232800	(332075)	17.0	25.40649	158.05867	39.30816	3.78409	0.0403156	2.5509493232816
(332024)	17.0	19.25111	343.81753	243.54173	4.41779	0.1691705	2.3430159232801	(332076)	16.4	254.61105	141.93107	240.90985	9.14947	0.1168300	2.3831236232816
(332025)	17.3	328.00371	84.05253	204.97914	3.52907	0.2357815	2.3265933232801	(332077)	17.4	231.69346	108.59629	294.83981	2.02042	0.1702129	2.4104503232816
(332026)	16.9	306.18817	69.13357	243.69111	10.74431	0.3283304	2.3673373232801	(332078)	17.6	184.54035	198.86282	201.32059	3.91660	0.1515783	2.6087549232817
(332027)	17.2	320.66893	186.01578	143.96325	7.27440	0.2879339	2.3103662232802	(332079)	17.9	104.64877	253.72252	202.84101	3.92144	0.2494550	1.9273744232817
(332028)	18.0	282.40388	256.05512	55.79617	2.23840	0.1998271	2.3834060232802	(332080)	17.4	304.58792	273.83758	49.28424	4.03252	0.1407080	2.3920903232817
(332029)	17.5	268.97808	241.03499	101.08989	4.37911	0.2008660	2.3950307232802	(332081)	17.2	159.58568	242.35670	188.49662	14.27039	0.0837497	2.5571052232817
(332030)	17.4	272.28939	230.62156	103.82617	2.65699	0.1964907	2.4031292232802	(332082)	17.1	29.58295	134.80491	92.77154	3.03326	0.0813716	2.4622856232818
(332031)	14.8	286.84786	239.72545	104.85604	3.81913	0.2723636	4.0185458232803	(332083)	16.7	313.45744	57.46712	276.89179	4.05469	0.2108201	2.3541433232818
(332032)	17.4	310.50130	181.63616	146.65251	5.65933	0.1813267	2.3079888232803	(332084)	16.0	78.45671	289.48472	201.83283	23.47710	0.2435841	2.7285077232818
(332033)	16.7	294.76348	227.37935	107.50536	10.07798	0.3291189	2.3696415232803	(332085)	16.4	90.43201	242.29440	235.14570	11.95132	0.1485937	2.3275903232819
(332034)	17.9	308.32516	173.65422	143.02191	7.26050	0.1228420	2.3301975232803	(332086)	17.3	347.79347	101.13625	229.01758	2.20758	0.1465328	2.2986590232819
(332035)	17.3	275.46295	226.36343	151.12669	2.81808	0.2483346	2.3501972232804	(332087)	16.2	310.01150	19.73060	302.04003	5.14264	0.2635567	2.3760523232819
(332036)	16.3	358.11088	72.84545	158.29641	23.11165	0.2214111	2.3894338232804	(332088)	16.6	209.06195	197.69753	193.42719	8.93474	0.1626222	2.5734170232819
(332037)	17.8	278.20722	219.74584	112.02716	1.20171	0.2206475	2.4018714232804	(332089)	17.0	298.92986	272.33106	85.36380	7.08294	0.1776218	2.3777403232820
(332038)	16.5	258.85549	218.88102	177.81075	11.38650	0.2605168	2.3753041232804	(332090)	17.4	89.87650	296.04968	199.24217	2.56319	0.0591966	2.6248037232820
(332039)	17.3	272.40081	348.61618	352.17007	4.88954	0.2502526	2.3950298232805	(332091)	15.8	274.57302	195.96059	341.96975	6.64643	0.1471281	3.2177912232820
(332040)	17.0	294.57211	139.29549	201.76833	10.81898	0.2669932	2.3464217232805	(332092)	16.2	75.46264	237.79640	242.48940	8.68960	0.2303570	2.8012765232820
(332041)	17.7	289.36941	172.71749	177.78687	6.14360	0.2085966	2.3494334232805	(332093)	17.5	289.04931	245.03971	76.42929	2.75505	0.2225056	2.4832702232821
(332042)	17.4	238.99856	61.04730	314.79375	1.26226	0.2279673	2.4123548232806	(332094)	17.4	269.92130	81.02281	227.06391	3.43713	0.0484769	2.6130944232821
(332043)	16.1	80.83819	348.61151	0.19772	10.05866	0.1071619	3.0205672232806	(332095)	17.0	88.87879	57.56000	48.10191	3.19148	0.1613655	2.7806826232821
(332044)	17.3	296.14076	26.71040	281.55787	3.48615	0.2021333	2.3975589232806	(332096)	16.6	343.43807	8.56637	229.48161	9.94164	0.1295472	2.6211507232821
(332045)	18.1	281.42838	80.93354	247.20177	1.34144	0.2295229	2.4206921232807	(332097)	16.3	188.49396	281.25356	124.59066	6.14661	0.1646034	2.5990863232822
(332046)	17.8	250.12668	114.54025	278.41692	0.78907	0.1678313	2.3634733232807	(332098)	16.3	342.95486	17.40314	230.72187	8.82022	0.0918717	2.5744365232822
(332047)	16.8	243.24145	296.31214	59.33165	7.58302	0.1185443	2.4410206232807	(332099)	15.8	80.95606	253.11772	242.30280	16.11427	0.0646011	2.6982034232822
(332048)	17.4	297.16446	151.33212	195.14012	4.43498	0.2508478	2.3667022232807	(332100)	16.8	270.82290	281.89688	51.79459	5.08418	0.1218561	2.5456477232823
(332049)	17.1	273.11654	316.93409	47.76264	3.82966	0.1975676	2.3755420232808	(332101)	15.5	160.91805	219.94556	60.23580	9.90488	0.1943811	3.1463081232823
(332050)	17.0	341.10044	166.62975	168.41584	9.85876	0.2263312	2.2693689232808	(332102)	17.3	314.26696	228.19457	57.08171	13.89151	0.2090970	2.5296480232823
(332051)	17.4	257.49152	353.11552	359.25729	2.75746	0.1891537	2.4451752232808	(332103)	17.4	279.59403	74.62903	236.43893	10.25006	0.1512747	2.5356855232823
(332052)	17.2	321.61255	180.97702	129.00711	5.92865	0.2244238	2.3564428232809	(332104)	17.1	334.03102	39.25959	250.77897	6.27632	0.0866162	2.4622367232823
(332053)	17.4	283.57197	22.82404	355.24349	3.08198	0.2085855	2.3334969232809	(332105)	16.8	310.93959	147.70473	145.26197	3.27057	0.1400133	2.5273759232824
(332054)	16.5	279.79457	45.59048	311.15480	6.97249	0.2308093	2.3827335232809	(332106)	17.1	256.01597	48.25152	300.84521	3.91474	0.1391487	2.5200617232824
(332055)	15.9	310.50576	128.54817	223.64763	21.93774	0.2377944	2.3365637232809	(332107)	16.5	194.08483	214.30591	194.23379	4.10955	0.1171381	2.5843858232824

(332108)	16.5	327.84847	29.95326	232.38998	11.22126	0.1412819	2.6031478232825	(332160)	15.9	102.05940	61.95402	54.33836	15.62815	0.1043266	2.8529707232838
(332109)	16.7	336.50712	196.48723	51.34144	9.26104	0.1339707	2.6413203232825	(332161)	16.0	202.47947	298.98465	135.22991	13.70592	0.1261194	2.6414648232838
(332110)	17.2	267.49391	291.41926	85.93521	4.75683	0.2131652	2.3990137232825	(332162)	16.5	282.45999	8.35353	306.50618	6.91944	0.1460926	2.7955486232838
(332111)	17.3	286.20109	283.69151	72.36500	6.11604	0.2594558	2.3928253232825	(332163)	16.6	136.13977	309.34259	129.32600	2.96386	0.0368897	2.8635503232838
(332112)	17.3	44.86155	351.63371	214.65561	12.19164	0.2089325	2.5971654232826	(332164)	17.1	245.16351	226.92377	116.71774	23.25124	0.0706023	1.9252013232839
(332113)	17.5	289.47651	45.79232	257.86281	0.15378	0.0571906	2.5590255232826	(332165)	16.7	295.19556	131.38565	167.26399	1.78519	0.0405712	2.7298033232839
(332114)	17.3	257.82082	342.02035	2.88797	1.55841	0.1015032	2.5505619232826	(332166)	16.9	9.10427	130.81550	117.12214	24.20315	0.0888342	1.9000885232839
(332115)	15.8	85.60775	237.52494	234.31880	13.60279	0.1258251	2.7945251232826	(332167)	16.7	249.24462	230.81066	119.88688	5.40623	0.1152135	2.7310339232839
(332116)	16.0	221.16689	318.45539	59.79545	15.30600	0.1293914	2.5816376232826	(332168)	16.5	261.84908	246.76315	87.16092	6.52471	0.1055361	2.6036009232840
(332117)	16.8	156.51581	233.67783	199.10446	10.43155	0.1067627	2.6150361232827	(332169)	15.6	246.28594	277.38993	102.25050	30.08708	0.2459633	2.6206929232840
(332118)	16.6	228.99384	120.36534	288.96468	6.16215	0.1115108	2.4633409232827	(332170)	16.7	215.12978	118.55044	295.08471	3.74635	0.2236886	2.6102460232840
(332119)	16.8	183.27010	165.15986	232.67870	31.98031	0.1616771	2.5997681232827	(332171)	17.2	138.32934	157.21554	306.00740	3.15810	0.0599912	2.7567534232841
(332120)	15.6	53.80758	301.18834	83.58257	11.13133	0.0460005	3.2300496232827	(332172)	16.4	334.10589	358.37650	300.52694	11.33819	0.1089731	2.6531418232841
(332121)	16.9	163.66136	356.74080	97.45391	3.96540	0.0789272	2.5530178232828	(332173)	16.4	271.65378	202.00131	128.51002	7.44273	0.0673219	2.770769232841
(332122)	15.9	100.91284	279.65185	80.93901	8.74801	0.1235044	2.9673219232828	(332174)	16.4	173.04245	262.81479	156.62023	2.56594	0.0651028	2.8574265232841
(332123)	17.4	282.91790	209.76029	89.93186	2.67655	0.0728722	2.5916494232828	(332175)	17.0	24.23156	195.77270	348.35632	1.21610	0.1014973	3.0521044232841
(332124)	16.3	259.46077	132.11858	218.70890	13.46097	0.0697873	2.5475889232828	(332176)	16.5	41.67201	32.17548	133.40104	1.47764	0.2137672	3.0650944232842
(332125)	16.6	278.11685	82.48136	248.96795	7.89909	0.1991918	2.5313353232829	(332177)	17.1	260.48276	314.55304	70.61313	5.70483	0.2226442	2.5780139232842
(332126)	16.7	235.54726	283.86868	97.27770	17.25446	0.2281426	2.5252923232829	(332178)	18.1	26.93394	103.31172	318.63175	4.67949	0.0766742	2.2220441232842
(332127)	15.9	188.44172	145.83969	258.78009	12.54411	0.1396373	2.6507917232829	(332179)	16.1	305.61306	206.13473	129.33149	17.07288	0.1874031	2.6438220232842
(332128)	16.1	70.47025	320.56557	78.42983	11.69913	0.0515810	3.1776942232830	(332180)	15.9	224.79964	242.03049	121.98198	9.18922	0.0327673	2.8669492232843
(332129)	17.4	105.58155	249.70768	235.42569	22.12619	0.1582410	1.9010012232830	(332181)	17.0	245.36298	178.82319	175.94391	2.04614	0.0760040	2.8808997232843
(332130)	17.9	121.57794	215.06583	248.75519	18.95741	0.0399136	1.8716004232830	(332182)	16.0	190.39689	147.38450	302.46581	11.92119	0.1326689	2.6356801232843
(332131)	16.8	233.86380	290.04794	84.46766	3.73923	0.2159159	2.6002514232830	(332183)	15.8	273.42034	194.25165	146.41879	9.19154	0.2022649	2.7918866232843
(332132)	16.0	295.23997	235.78665	74.90057	9.03356	0.1676227	2.5654179232831	(332184)	15.8	52.68014	330.25200	147.15326	15.04448	0.1243711	3.1497588232844
(332133)	16.0	106.28925	13.71864	86.09888	8.85817	0.1682155	2.7915836232831	(332185)	15.5	116.81135	206.95608	306.37700	12.97945	0.0548009	2.7732980232844
(332134)	16.4	195.60372	302.21349	89.00969	7.33836	0.1504403	2.7185564232831	(332186)	16.6	253.43979	72.88819	309.38116	5.64686	0.0460002	2.6952717232844
(332135)	16.1	153.09404	355.46463	73.91692	12.79516	0.0578556	2.6729468232831	(332187)	16.3	210.08542	355.42616	71.76690	4.10549	0.1183819	2.6337132232844
(332136)	17.2	13.41787	83.95849	241.81987	6.33039	0.3446334	2.2522169232832	(332188)	17.4	287.06759	275.57064	86.00353	4.36113	0.2130597	2.5738913232845
(332137)	17.2	197.14518	154.74809	243.41537	0.69734	0.1107366	2.6264327232832	(332189)	16.5	306.91234	309.28115	14.89556	3.21147	0.0877647	2.5792660232845
(332138)	15.9	246.67197	145.36827	210.15166	11.09128	0.1147817	2.5917545232832	(332190)	16.3	258.99495	213.05192	131.18938	5.98023	0.1246193	2.7484949232845
(332139)	15.5	233.76807	280.53280	108.13392	27.96004	0.2415189	2.5844446232832	(332191)	16.5	222.59415	240.80126	161.92011	11.84073	0.1306415	2.7297711232845
(332140)	16.5	153.26317	169.99083	226.64355	3.37485	0.0723224	2.7780905232833	(332192)	16.9	6.37918	128.42097	131.14481	5.07681	0.0491921	2.6651042232845
(332141)	16.2	339.50635	354.76683	253.20487	5.17789	0.0860503	2.7119020232833	(332193)	16.3	0.82055	49.00710	168.70042	5.77066	0.1684280	3.1479594232846
(332142)	16.8	122.20092	34.26182	64.03223	3.82255	0.1098398	2.7816512232833	(332194)	16.2	118.99594	60.54525	91.29492	5.55620	0.0139730	2.7854512232846
(332143)	16.1	140.59165	20.44173	70.12495	22.73733	0.0316745	2.6484805232833	(332195)	16.6	207.20261	89.98115	344.56864	4.45030	0.0955102	2.7384923232846
(332144)	17.4	181.07700	150.29456	253.61367	5.33430	0.1210095	2.6241095232834	(332196)	16.8	231.88496	64.32725	331.26263	4.48513	0.0843079	2.7819909232846
(332145)	16.6	235.91803	80.31629	292.02462	6.00868	0.2419082	2.5703221232834	(332197)	16.4	126.69994	285.38009	174.31190	8.99632	0.1663791	2.9144244232847
(332146)	16.6	222.56868	145.65847	242.91438	6.94018	0.3036978	2.5605339232834	(332198)	17.7	118.94743	167.63298	144.25802	6.20440	0.2087488	2.3403296232847
(332147)	16.3	262.83756	306.60872	44.77846	3.26781	0.2549760	2.5350524232835	(332199)	15.6	64.96145	96.17846	11.34405	13.04035	0.2639081	3.1840789232847
(332148)	16.8	161.91932	145.37912	283.91729	3.76370	0.1666612	2.6894680232835	(332200)	16.9	345.45838	182.12576	49.00605	1.72647	0.1357333	3.1576880232847
(332149)	17.0	206.14180	327.25426	101.50250	4.20079	0.1514763	2.5944823232835	(332201)	16.1	64.93920	297.05448	208.96389	5.58758	0.2288844	3.0579978232848
(332150)	16.9	196.30556	255.25050	130.50685	3.95104	0.0805614	2.7692945232835	(332202)	16.7	325.23354	217.26197	54.84265	2.58187	0.1064754	3.0601173232848
(332151)	17.7	195.02113	280.16134	114.38863	23.41028	0.0999786	1.9054186232836	(332203)	16.3	203.06569	189.18235	218.58472	9.04134	0.3567800	2.6614086232848
(332152)	16.7	110.10456	43.18195	76.34281	4.86314	0.0492413	2.7738079232836	(332204)	16.4	298.31738	217.93559	70.29895	0.92910	0.0987928	3.1007279232848
(332153)	17.3	238.72394	243.33055	99.35614	24.29578	0.0831818	1.9101047232836	(332205)	16.6	9.92850	118.49163	94.75671	2.27651	0.1501014	3.1256744232849
(332154)	17.2	11.15860	182.87643	108.58865	6.50845	0.1823539	2.5254953232836	(332206)	16.5	213.81234	264.29341	161.62646	9.36508	0.1448142	2.7374711232849
(332155)	16.8	311.63427	210.32638	114.46466	11.92935	0.1096839	2.5901420232836	(332207)	16.6	139.18173	258.32037	187.99541	9.41668	0.0265994	2.9793889232849
(332156)	16.7	269.51199	40.76837	277.21950	5.57500	0.0327758	2.7894729232837	(332208)	15.6	48.74064	99.20700	61.37317	26.93685	0.1949961	3.0815774232849
(332157)	16.5	237.91269	282.89830	85.82520	10.97025	0.1531660	2.6390489232837	(332209)	15.7	317.33557	113.01709	192.22591	11.74083	0.2538611	3.1242681232849
(332158)	16.1	271.94974	281.89706	98.88003	11.68963	0.1979994	2.5205435232837	(332210)	16.3	358.51824	65.94506	174.43708	10.18612	0.2754944	3.0655010232850
(332159)	16.8	25.67587	326.06675	237.01124	3.61439	0.0590333	2.7999448232837	(332211)	16.0	16.23354	23.02037	196.60219	16.63189	0.1204189	3.1032381232850

(332212)	15.9	339.02549	262.97702	16.83116	18.89722	0.1216761	3.0124282232850	(332264)	17.8	221.81628	227.33243	144.92997	2.26543	0.1864205	2.2416067232863
(332213)	17.2	56.16518	189.96438	142.02664	3.20352	0.2099168	2.4518235232850	(332265)	18.4	285.46945	220.25056	98.46926	0.92863	0.1821383	2.1746198232863
(332214)	15.6	322.65627	162.43027	145.00985	24.63000	0.1699525	3.1405609232851	(332266)	17.5	344.33032	42.90756	200.96974	6.72953	0.0736909	2.2670171232863
(332215)	15.9	59.84056	82.01932	77.35806	17.54869	0.1162117	3.1354837232851	(332267)	18.1	303.74531	235.12022	53.12862	1.54787	0.0345762	2.2533118232863
(332216)	16.1	38.41391	3.44979	191.04240	11.37340	0.0559596	3.1340020232851	(332268)	17.5	176.38993	194.65721	219.40324	6.41592	0.1361135	2.2641222232863
(332217)	16.2	359.24006	50.79634	184.94840	10.35417	0.1055518	3.1067213232851	(332269)	16.9	163.24290	0.93883	64.23899	9.72303	0.2279596	2.3567638232864
(332218)	15.5	0.66401	87.29609	158.67004	16.86738	0.2238251	3.0927765232852	(332270)	18.2	241.57865	161.90320	204.85588	3.30085	0.1933960	2.2012498232864
(332219)	15.0	327.84582	82.89265	207.85268	15.92368	0.1982393	3.1428260232852	(332271)	18.0	219.51084	229.13691	153.38967	7.29327	0.1395824	2.2237514232864
(332220)	15.4	133.74137	55.98127	32.71327	15.86776	0.0326184	3.2065465232852	(332272)	17.9	343.14079	52.64230	184.76334	4.22885	0.1003557	2.2707243232865
(332221)	15.4	4.61334	329.57021	257.41827	10.86484	0.1169322	3.1271164232852	(332273)	17.4	89.27021	300.97706	216.70227	5.01179	0.1526908	2.2652007232865
(332222)	15.1	320.68174	169.13739	109.15024	18.22662	0.1693499	3.1558110232853	(332274)	17.8	46.08407	152.87869	14.13387	3.70666	0.0218912	2.3266437232865
(332223)	17.0	43.36636	12.82126	157.48531	1.77445	0.1483020	3.1982583232853	(332275)	14.7	261.02369	222.10381	136.45988	10.38716	0.2097321	3.9458944232865
(332224)	17.7	96.70566	37.01620	197.93346	3.28307	0.2314812	2.7419552232853	(332276)	18.3	303.82950	97.89493	202.41096	4.16284	0.2101346	2.1838914232866
(332225)	16.2	300.85774	114.58500	197.40669	21.49867	0.1507414	3.0630851232853	(332277)	17.5	237.08200	154.26090	199.90660	4.00306	0.1893632	2.2364703232866
(332226)	16.0	340.15316	103.38094	184.49044	14.48389	0.1812000	3.1466375232853	(332278)	17.1	64.28981	319.43121	35.25855	10.32875	0.0951212	2.9213642232866
(332227)	15.2	20.94646	74.05935	133.07709	27.01698	0.2051936	3.1603332232854	(332279)	18.1	275.20794	265.78695	52.27503	6.22448	0.2016711	2.1959226232866
(332228)	15.5	276.13835	288.59235	30.12870	12.26096	0.1374743	3.1400348232854	(332280)	18.3	228.96376	243.52018	61.03903	2.78324	0.1829123	2.3775668232867
(332229)	16.1	37.17542	111.27140	58.97230	13.72360	0.2263480	3.1772627232854	(332281)	17.8	312.14656	136.08945	168.23118	2.86931	0.1239413	2.1753732232867
(332230)	15.8	10.08850	43.20259	193.94915	12.39775	0.1733171	3.1311034232855	(332282)	17.0	148.94959	297.50919	342.29836	5.27377	0.0279323	2.8498508232867
(332231)	15.3	230.53234	303.37651	77.34437	34.04175	0.1843786	3.2230143232855	(332283)	17.7	253.18706	193.78186	154.47383	4.62503	0.1656769	2.2299806232867
(332232)	15.8	33.35634	354.61539	207.66459	12.57652	0.0768439	3.2182071232855	(332284)	17.7	276.89784	246.98066	60.74863	7.22028	0.1586550	2.2946475232867
(332233)	16.5	107.32329	76.29667	47.68957	17.06039	0.2702080	3.0581597232855	(332285)	17.7	259.35922	234.82683	111.51408	12.10845	0.2550132	2.2302631232868
(332234)	17.9	80.92297	79.56926	217.99006	1.93291	0.1599644	2.5588461232855	(332286)	17.8	260.29547	79.25725	242.45546	3.74796	0.1292528	2.2484122232868
(332235)	15.8	206.30615	202.56354	188.86430	9.87913	0.0829387	3.1844229232856	(332287)	18.3	288.66885	246.43236	61.28919	5.74086	0.1850909	2.2016410232868
(332236)	15.7	273.60785	234.65969	103.30028	10.02556	0.0707365	3.1782830232856	(332288)	14.7	264.31613	315.58684	42.64574	3.47345	0.2689135	3.9685779232868
(332237)	16.0	232.77869	166.73099	205.56444	2.30964	0.0999343	3.1302950232856	(332289)	17.5	139.29035	185.86555	237.99036	2.83947	0.0966692	2.3839114232869
(332238)	16.8	285.55450	324.48118	154.69604	10.88616	0.1012062	2.4776215232856	(332290)	16.5	37.90643	142.74341	35.34427	6.72585	0.0994355	2.3578078232869
(332239)	15.9	11.33923	80.97870	152.66394	16.46974	0.1963120	3.1811973232857	(332291)	17.1	353.24783	215.89174	9.38153	7.72102	0.0651152	2.3445075232869
(332240)	15.5	346.89101	47.57711	207.64596	16.23784	0.1624830	3.1242339232857	(332292)	17.7	192.49451	147.81058	239.90036	5.10084	0.0712833	2.3341822232870
(332241)	15.4	93.99509	46.69589	95.09820	17.99595	0.0780398	3.1404875232857	(332293)	17.3	250.84507	230.45499	116.22448	7.70979	0.2144138	2.2407680232870
(332242)	15.6	132.51699	334.90664	137.55584	11.50515	0.0085031	3.1175270232857	(332294)	15.3	273.18714	149.43560	207.46425	9.13194	0.2803334	3.9801494232870
(332243)	16.3	346.34630	229.81998	53.25226	2.50335	0.1412099	3.0947790232857	(332295)	17.0	185.09435	167.60013	217.10043	7.52815	0.2188221	2.3432151232870
(332244)	16.3	278.21365	300.17870	35.12682	1.69279	0.1619756	3.2282964232858	(332296)	15.2	299.00311	252.01179	66.61365	3.81837	0.2096642	3.9698283232871
(332245)	15.9	185.53003	163.39225	250.71359	3.11683	0.0532292	3.2035604232858	(332297)	17.5	22.82535	20.59721	68.97216	4.89716	0.1949521	2.7718810232871
(332246)	15.0	202.42087	189.41737	231.41965	22.16763	0.0780325	3.0921976232858	(332298)	17.6	0.47457	43.79034	183.91874	6.78887	0.0631174	2.2949489232871
(332247)	15.5	235.03796	163.48083	230.96421	26.30219	0.0937811	3.0824948232858	(332299)	17.3	220.46483	110.44983	255.61148	6.70875	0.1192039	2.2779943232871
(332248)	15.8	184.01305	340.86217	80.85013	10.01197	0.1031354	3.1997322232859	(332300)	15.2	69.42583	248.03280	245.87324	28.17883	0.3254275	2.6458066232871
(332249)	15.3	350.30472	181.91241	102.65805	20.04958	0.0745676	3.0847230232859	(332301)	18.2	270.15339	111.74602	214.94435	6.14480	0.1535992	2.2303973232872
(332250)	15.0	79.49318	48.68379	102.70853	17.42141	0.0611419	3.1363148232859	(332302)	16.7	298.11858	131.05982	53.23410	4.01489	0.0564620	2.7201560232872
(332251)	16.2	225.69866	242.58425	162.50233	9.92696	0.0331050	3.0928597232859	(332303)	18.4	312.79580	30.03192	288.67757	2.29616	0.1020344	2.1817489232872
(332252)	15.6	24.36287	345.96475	251.40282	19.77446	0.1750399	3.1141756232860	(332304)	17.7	222.28021	286.10622	80.72402	7.61049	0.1564422	2.2898498232873
(332253)	17.2	146.48990	58.14622	238.12574	0.93135	0.1712629	2.5431289232860	(332305)	17.4	10.91969	350.50622	221.02192	6.74945	0.1349562	2.3237756232873
(332254)	15.5	334.42266	191.54007	99.33112	16.91794	0.1659357	3.1734406232860	(332306)	17.8	275.51936	253.50065	69.34380	2.62895	0.2299010	2.2658640232873
(332255)	14.6	16.46630	344.54199	299.14190	29.38513	0.2189472	3.1662326232860	(332307)	17.7	272.18811	121.56840	240.59799	5.63048	0.1378048	2.2082228232873
(332256)	15.5	274.20069	249.92464	80.87575	16.86438	0.0623246	3.1998202232861	(332308)	17.4	163.74494	32.85430	70.60917	6.58861	0.1302911	2.3040314232874
(332257)	18.0	287.91499	40.82435	270.03610	1.92135	0.1664348	2.1698239232861	(332309)	17.7	236.45809	206.50031	190.27545	6.66948	0.1259293	2.2065185232874
(332258)	18.8	272.36720	38.99280	290.92485	0.64794	0.1301766	2.1690212232861	(332310)	16.9	243.72401	301.83316	45.71460	7.29375	0.1605066	2.3114037232874
(332259)	18.0	24.85047	46.10601	144.55906	5.97488	0.1042718	2.2184566232861	(332311)	17.4	128.76173	331.00677	111.16585	2.78242	0.1262924	2.4000181232874
(332260)	16.7	220.04415	177.51598	209.89074	6.25615	0.2226598	2.2441038232861	(332312)	17.1	280.26606	82.06690	240.44381	6.41300	0.1786669	2.2524483232875
(332261)	17.6	223.75800	261.04955	120.61823	7.38485	0.1443358	2.2107730232862	(332313)	17.3	64.69229	328.03322	194.54965	4.95429	0.0727360	2.3873530232875
(332262)	15.2	263.54338	207.51440	136.70997	3.64600	0.2280408	3.9631104232862	(332314)	16.9	132.16486	358.99014	96.41445	6.12199	0.0508030	2.3704281232875
(332263)	17.8	246.04661	300.24374	41.13493	3.03585	0.1964279	2.2147777232862	(332315)	18.1	268.91097	151.55660	216.55593	4.17282	0.1756077	2.2027790232876

(332316)	15.3	49.86036	240.33329	301.49969	29.20774	0.3125792	2.6205652232876	(332368)	16.5	286.55290	154.53813	153.73134	10.85851	0.0370388	2.6578635232889
(332317)	17.8	250.45668	271.93907	110.85271	5.81987	0.1120803	2.2225908232876	(332369)	17.4	193.71022	209.54602	187.28503	3.40657	0.1028757	2.4959513232889
(332318)	17.3	47.90859	227.90924	319.91964	3.89374	0.1837453	2.4002346232877	(332370)	15.7	28.20550	260.11682	308.79769	10.47881	0.2125559	2.6746073232889
(332319)	17.2	251.60407	317.07933	24.94361	7.51546	0.1311493	2.3028413232877	(332371)	16.3	154.93319	248.55638	188.56415	21.70378	0.0581124	2.6664709232890
(332320)	16.7	224.63118	309.31062	72.01464	12.09203	0.1872748	2.3025656232877	(332372)	16.8	150.82275	221.93255	213.93024	8.35138	0.1207142	2.7460799232890
(332321)	17.3	3.96661	143.26774	74.26875	7.32482	0.0921590	2.3956565232877	(332373)	15.9	234.97920	182.88590	115.75279	3.30361	0.0825341	2.9271674232890
(332322)	16.0	81.90263	269.74013	63.49656	12.21146	0.1479776	2.9782188232877	(332374)	16.1	34.96845	282.06194	285.68453	10.07604	0.2189401	2.6638856232890
(332323)	16.8	145.11134	89.72609	345.23041	5.86342	0.1155273	2.4742725232878	(332375)	16.4	90.71062	347.52281	136.53280	11.57539	0.0746522	2.6998533232891
(332324)	17.1	79.46716	348.02430	151.57408	12.35280	0.1726546	2.4016122232878	(332376)	15.4	280.65017	201.31810	141.29318	8.79076	0.2074549	2.5378717232891
(332325)	17.9	221.60563	298.99084	114.73015	0.72388	0.1262893	2.2965016232878	(332377)	17.1	314.82295	89.51133	185.84840	5.64537	0.0445881	2.6943278232891
(332326)	16.9	118.86686	33.38158	109.59332	10.60200	0.0585006	2.3877831232878	(332378)	16.6	3.60902	343.10838	228.18056	8.47064	0.0709902	2.8548303232891
(332327)	17.9	289.14184	265.42995	84.15198	4.78557	0.2267975	2.2213847232879	(332379)	16.9	350.96047	114.30576	152.37062	14.49618	0.2675733	2.6647782232892
(332328)	16.8	24.06537	70.69158	131.39855	13.24146	0.0727093	2.5480218232879	(332380)	16.8	90.42804	296.54452	182.47092	12.45119	0.2205454	2.6966196232892
(332329)	16.7	350.66003	118.15850	124.36828	8.49377	0.1855820	2.5827389232879	(332381)	17.2	13.23113	61.53112	207.95676	0.68057	0.1671666	2.4575302232892
(332330)	16.9	207.51571	267.98866	135.64641	14.87691	0.0726293	2.4433595232879	(332382)	15.9	66.54913	198.35115	357.62900	17.99541	0.1839353	2.6394122232892
(332331)	17.1	182.46380	295.09618	106.17075	7.14117	0.2090806	2.4510746232880	(332383)	16.9	268.53864	171.97262	200.63244	4.07654	0.0906146	2.5512958232893
(332332)	17.2	64.74202	252.95381	299.88798	2.33287	0.0399557	2.4225814232880	(332384)	16.6	332.76747	66.65906	205.21564	6.79882	0.1797475	2.7869527232893
(332333)	16.9	2.95747	4.21047	198.73984	1.79814	0.1357182	2.6579652232880	(332385)	16.1	348.13134	168.02391	74.07469	9.47336	0.1601533	2.8952984232893
(332334)	17.4	54.10674	166.11036	351.61591	1.26681	0.1568539	2.6349485232880	(332386)	16.2	50.72590	35.11418	155.43201	14.16892	0.1858405	2.6670512232893
(332335)	17.5	109.85111	335.79984	128.61150	10.48685	0.0761595	2.6102924232881	(332387)	17.1	77.93574	357.66569	188.58877	4.37643	0.0616497	2.6583710232893
(332336)	16.9	132.83791	1.90725	90.55632	4.42144	0.0670325	2.5413903232881	(332388)	16.3	43.61305	316.24271	223.43781	12.07705	0.1213525	2.7789517232894
(332337)	17.0	166.71710	227.16932	185.28594	3.05374	0.2106348	2.4685641232881	(332389)	15.6	168.45524	229.77565	210.80131	16.87245	0.0324234	2.7445514232894
(332338)	16.8	31.86668	44.74236	149.29521	11.37459	0.1536385	2.6409170232881	(332390)	16.9	346.21251	138.32910	105.09125	4.59238	0.0670010	2.7835886232894
(332339)	17.5	117.96895	48.11768	84.73174	3.65357	0.1518256	2.4472133232882	(332391)	16.9	299.27740	190.75936	141.96899	2.60898	0.0842697	2.6826652232894
(332340)	16.9	70.31843	18.32549	135.01760	10.57292	0.1403630	2.5802503232882	(332392)	16.7	184.82583	351.19194	62.51517	5.85806	0.1042029	2.7571636232895
(332341)	17.5	225.73371	253.48841	159.35469	2.97633	0.1919081	2.3106429232882	(332393)	15.8	307.25894	287.06222	57.18726	11.03269	0.2950598	2.6737943232895
(332342)	16.1	27.92062	313.82852	232.09371	7.57561	0.1900392	2.65806651232882	(332394)	16.7	358.24975	81.34077	183.54406	5.45632	0.0895734	2.7035235232895
(332343)	16.8	42.06181	103.43475	64.24165	6.26460	0.2010351	2.6887528232883	(332395)	16.2	294.41680	251.57193	80.88978	8.32097	0.1327193	2.7338683232896
(332344)	16.0	295.50278	164.69089	159.35214	16.84104	0.1841539	2.5416439232883	(332396)	16.3	38.44460	2.28722	179.90851	13.25277	0.1331184	2.7844867232896
(332345)	16.8	71.66410	329.93965	164.35640	5.77624	0.2154099	2.6565116232883	(332397)	15.6	51.11106	356.58521	132.72871	13.92035	0.0348336	3.1954199232896
(332346)	16.4	81.64254	348.67484	162.50253	15.14713	0.0389857	2.6310244232883	(332398)	16.4	272.62926	259.90001	48.79853	11.08841	0.1230975	2.9657768232896
(332347)	17.3	17.11338	97.70020	99.93872	4.31918	0.0260679	2.5553621232884	(332399)	16.4	342.21103	147.71372	107.79852	13.46160	0.1911663	2.8466212232896
(332348)	17.1	13.90566	232.32532	338.20216	3.05849	0.1523145	2.6979225232884	(332400)	16.1	333.81513	209.19516	90.45950	10.60389	0.2278183	2.7746245232897
(332349)	16.9	271.25332	280.71503	50.12546	3.92540	0.0758403	2.6520354232884	(332401)	17.4	315.35771	149.08862	169.23485	2.96139	0.1039997	2.6777149232897
(332350)	16.8	300.53818	158.75855	140.46229	5.11762	0.1284315	2.6146663232884	(332402)	16.7	339.69470	102.39022	160.26350	11.86918	0.0715138	2.8886211232897
(332351)	16.7	137.22393	266.05418	183.57023	14.91921	0.0024825	2.6821293232884	(332403)	15.9	281.73524	248.30835	119.83196	14.10831	0.2093993	2.7161036232897
(332352)	16.4	320.67194	118.62959	152.74325	12.13052	0.0495301	2.6247516232885	(332404)	16.3	198.86880	287.17469	145.55446	13.09464	0.1550770	2.7252108232898
(332353)	16.2	353.93389	211.93666	13.41751	8.69375	0.0527012	2.6781038232885	(332405)	16.0	326.67413	71.94144	210.20955	6.07050	0.1002098	3.0667242232898
(332354)	16.9	82.14334	347.16558	147.65643	13.89338	0.1225339	2.6261191232885	(332406)	16.8	307.77086	115.30504	181.95587	14.78744	0.1485192	2.8727811232898
(332355)	16.3	90.71401	25.92861	90.26284	6.15357	0.2037413	2.6560214232885	(332407)	16.3	338.78730	206.01423	84.84791	14.29823	0.1494267	2.7364098232898
(332356)	17.3	25.83313	78.93182	118.57804	1.90891	0.0901968	2.6039971232886	(332408)	17.8	337.10024	294.43424	242.65560	38.19502	0.5685459	1.4011647232898
(332357)	17.0	250.28266	195.79916	157.56115	6.96394	0.0508433	2.6595390232886	(332409)	15.1	276.80793	198.91221	155.58849	19.47668	0.2596117	3.0863643232899
(332358)	16.3	350.22040	282.07869	347.49066	8.16469	0.1946291	2.6560148232886	(332410)	16.2	345.52617	82.81667	174.57857	14.67322	0.0856713	3.1430048232900
(332359)	16.9	289.41879	277.95190	35.89111	5.01221	0.1032030	2.6396322232887	(332411)	15.3	299.62153	195.53220	143.22325	28.64198	0.1407678	3.1256356232900
(332360)	17.7	204.99450	322.42195	348.20156	20.36773	0.0652728	1.8841802232887	(332412)	15.5	311.96632	162.56354	161.86078	19.49000	0.2066723	3.0468485232900
(332361)	16.6	260.44209	183.79769	163.03427	15.15560	0.1034420	2.5684691232887	(332413)	15.7	292.85283	192.58461	183.40480	3.98234	0.3147252	3.0849717232900
(332362)	16.8	278.82885	165.61926	155.95569	3.68062	0.0610885	2.6453968232887	(332414)	17.7	246.57100	226.49225	159.09521	19.77020	0.0850952	1.8638306232901
(332363)	16.2	82.49066	345.59297	151.64229	12.54512	0.1263778	2.6610547232887	(332415)	15.9	287.20228	160.10072	195.02629	15.32341	0.1727461	3.1889637232901
(332364)	16.3	79.86602	344.82469	170.59305	17.92709	0.0953202	2.6220299232888	(332416)	17.0	99.70134	276.00163	353.28271	3.90838	0.1668960	2.6042669232901
(332365)	16.9	305.44830	226.43135	73.26730	0.84801	0.1635292	2.6721238232888	(332417)	15.5	282.97782	211.55408	166.85448	11.19365	0.1889262	3.1129467232901
(332366)	17.0	65.09785	341.65249	177.81443	12.00267	0.1264844	2.6892183232888	(332418)	15.6	331.58697	86.19434	216.02454	14.93538	0.2439010	3.1573378232902
(332367)	16.5	337.75907	94.34854	175.64003	9.30236	0.2296216	2.7164018232888	(332419)	14.9	329.11739	28.52096	282.98542	10.81445	0.1403287	3.0793223232902

(332420)	14.7	267.88998	158.66807	242.09900	9.56610	0.2225724	3.1550942232902	(332472)	17.7	319.33899	131.52650	149.29618	2.57337	0.1997900	2.3472555232917
(332421)	15.8	289.55473	131.59479	236.62974	3.48297	0.1547645	3.1447622232903	(332473)	17.6	350.34841	321.43977	271.43182	1.31061	0.1672779	2.4057402232917
(332422)	16.0	309.61887	84.20253	263.26069	7.53300	0.2243394	3.0486020232903	(332474)	18.1	70.58624	324.30346	172.67839	5.97645	0.1795224	2.3302629232917
(332423)	15.8	288.20172	275.61385	101.74068	3.96944	0.2618764	3.0855017232903	(332475)	17.6	343.01128	192.05010	50.81951	5.15063	0.1607233	2.3770822232918
(332424)	15.4	269.74402	241.05460	144.25494	20.54276	0.1764346	3.1380374232904	(332476)	17.8	36.30506	81.60976	91.87198	3.34567	0.1485123	2.3837212232918
(332425)	15.5	310.13979	220.31957	111.83888	11.22150	0.1052248	3.1045675232904	(332477)	16.6	2.78345	269.71530	303.07659	6.11010	0.0885365	2.3755249232918
(332426)	16.8	321.51205	191.48062	210.57133	4.92931	0.0506461	2.7803539232904	(332478)	17.4	351.87595	166.50041	67.41788	7.07155	0.1046428	2.3691071232918
(332427)	17.2	113.66770	309.80621	201.18001	21.08328	0.0546556	1.9118061232904	(332479)	17.3	42.12422	89.03729	91.82330	3.78105	0.0264933	2.3068746232919
(332428)	14.8	331.97908	105.58990	239.10051	17.99198	0.1644735	3.1473222232904	(332480)	17.9	337.74017	302.49775	329.59340	3.28304	0.1482405	2.2193918232919
(332429)	15.5	289.86681	135.74115	264.20302	11.32984	0.1534406	3.0805767232905	(332481)	17.6	312.66831	14.78705	273.91031	3.97261	0.1791913	2.3720136232919
(332430)	15.5	330.65063	59.36263	260.36188	8.09374	0.1728893	3.1192759232905	(332482)	17.8	25.92512	2.96938	176.29656	3.85792	0.1509792	2.4221608232919
(332431)	16.1	2.68515	90.23300	170.59124	11.25161	0.0621214	3.2177653232905	(332483)	16.8	71.27117	89.41933	55.07663	3.34952	0.0953868	2.3278292232919
(332432)	15.8	310.85039	116.43745	200.06696	18.38806	0.1334670	3.2374966232905	(332484)	17.7	335.77558	63.15904	198.44690	9.33005	0.1828126	2.2983044232920
(332433)	15.5	282.06742	267.28589	120.80007	26.14520	0.2971191	3.0915358232906	(332485)	17.6	306.97540	238.29856	61.26509	1.68274	0.2086477	2.3552467232920
(332434)	15.0	318.26657	95.11496	240.91612	16.65358	0.2550440	3.1241193232906	(332486)	17.1	296.49761	152.95735	157.99998	2.49818	0.1932386	2.3301642232920
(332435)	15.5	297.36755	133.49519	236.83175	14.02156	0.2337602	3.1914783232906	(332487)	17.6	336.83107	101.07783	151.18401	5.51468	0.1706280	2.4333629232921
(332436)	17.2	268.79598	331.92748	203.84205	0.83916	0.1322639	2.4561688232907	(332488)	17.7	87.43973	340.14362	147.01935	6.47282	0.1008527	2.3687576232921
(332437)	17.1	35.75529	83.85702	284.89643	4.66491	0.0580812	2.6805398232907	(332489)	17.6	24.44030	5.88036	182.47610	0.84310	0.1328297	2.3667627232921
(332438)	16.9	251.73147	245.53588	111.36445	23.60137	0.1042210	1.9668861232907	(332490)	17.6	329.13412	91.94095	197.19641	6.65400	0.1321482	2.2718082232921
(332439)	17.5	351.49262	138.20169	299.36814	3.77564	0.2195523	2.6175020232907	(332491)	17.0	15.89799	326.04039	195.64959	8.44987	0.1051084	2.5675520232922
(332440)	16.8	6.67869	129.70170	310.49195	7.20124	0.2446664	2.6400529232908	(332492)	17.4	344.20457	208.07744	36.52222	6.33830	0.0662777	2.4232859232922
(332441)	17.5	347.53303	124.57495	83.39458	7.75703	0.0611960	2.2840045232908	(332493)	17.6	5.54896	115.53600	97.35740	3.74696	0.1360748	2.4067128232922
(332442)	14.3	357.49786	63.49182	264.74907	21.97599	0.1148124	3.1986124232908	(332494)	17.4	123.76641	331.52973	121.91102	2.85675	0.1722278	2.3720962232922
(332443)	17.7	119.28750	338.77373	108.31897	3.59637	0.1367122	2.2247380232908	(332495)	17.3	115.86300	18.44258	71.79841	7.06100	0.0965731	2.4203621232922
(332444)	16.7	83.69444	173.11960	310.51288	5.43696	0.0994035	2.3029770232909	(332496)	17.4	343.37217	223.78664	45.61457	6.55924	0.1886905	2.3374224232923
(332445)	17.2	63.83782	247.56510	266.15894	5.16804	0.0875762	2.2230797232909	(332497)	17.0	138.91475	289.28536	165.34249	6.64618	0.0686681	2.3735591232923
(332446)	19.7	235.26482	293.35049	109.41109	8.91961	0.4107572	1.3826007232909	(332498)	18.1	332.27724	130.92910	154.82707	5.96067	0.1639922	2.3013512232923
(332447)	17.9	3.31061	82.10627	134.11778	7.00875	0.0854848	2.2460508232911	(332499)	17.7	339.26667	159.24869	89.68691	2.42124	0.1568287	2.4309429232923
(332448)	18.0	37.50827	50.02901	118.43005	1.67698	0.1549564	2.2953024232911	(332500)	18.0	101.49358	324.38324	139.06290	3.11452	0.1389740	2.3764032232924
(332449)	17.5	1.18895	268.24085	306.92820	2.70815	0.1098603	2.2699361232912	(332501)	17.7	23.37860	28.17089	161.44913	1.50369	0.1364999	2.4532612232924
(332450)	16.9	17.61029	132.68903	68.62715	10.31593	0.0987487	2.2520965232912	(332502)	16.9	2.16872	15.96947	208.42629	5.63990	0.0729203	2.4320191232924
(332451)	17.5	129.35991	307.20320	135.45241	3.61822	0.1047235	2.2717022232912	(332503)	17.6	319.05645	182.82259	101.30924	4.06013	0.2156804	2.4178618232924
(332452)	17.1	15.79477	168.03436	27.88673	2.98602	0.1608532	2.3373185232912	(332504)	17.5	0.91806	103.78919	119.03762	2.08501	0.1386267	2.4241939232924
(332453)	17.1	122.70416	329.39699	123.73336	8.01179	0.0772749	2.2697498232913	(332505)	17.6	3.55725	33.87566	216.50569	4.89449	0.0918371	2.3622387232925
(332454)	17.3	44.54623	55.90176	111.03958	5.28818	0.1770527	2.3289991232913	(332506)	17.9	56.51660	3.51848	152.93364	1.59359	0.1273708	2.3908700232925
(332455)	17.7	196.00238	232.33136	167.41242	3.71641	0.1404611	2.1743885232913	(332507)	17.7	16.97994	47.11719	144.02383	1.98296	0.1294413	2.4367013232925
(332456)	17.3	277.87250	312.20685	0.95525	7.12570	0.1320932	2.2920279232913	(332508)	17.8	313.72912	145.86620	177.99837	2.80596	0.2453424	2.2635810232925
(332457)	17.9	62.11416	11.52132	138.60619	2.74758	0.1444235	2.3277068232914	(332509)	17.3	311.71016	180.03734	114.22125	3.15362	0.2089868	2.3812995232926
(332458)	17.6	27.74284	34.67558	155.52132	6.03181	0.0927101	2.3130598232914	(332510)	16.9	208.18625	325.81636	58.90232	11.10120	0.0962822	2.3687538232926
(332459)	17.8	343.76641	131.31709	98.15012	2.10765	0.1486828	2.3489926232914	(332511)	18.0	21.65854	160.57870	34.48788	3.45469	0.1331310	2.3463999232926
(332460)	17.1	2.14595	184.31735	32.20158	8.10826	0.0776079	2.2996678232914	(332512)	17.6	17.17764	100.32384	104.36899	3.25768	0.1190219	2.4399394232926
(332461)	17.9	0.39697	95.64286	154.21425	6.59067	0.1373524	2.2219175232914	(332513)	17.4	295.72666	167.17241	139.53597	7.35958	0.1270409	2.3548817232926
(332462)	17.2	315.30810	262.66816	21.29133	5.65964	0.2358613	2.3243278232915	(332514)	18.1	331.21990	62.68920	229.78926	5.54819	0.1179573	2.3196048232927
(332463)	17.4	46.32653	262.35060	266.61737	4.19264	0.0383742	2.3156077232915	(332515)	16.8	320.92360	180.15242	95.62887	9.63057	0.2407972	2.4545261232927
(332464)	18.3	51.94584	9.83485	144.53936	2.04895	0.1500949	2.3065851232915	(332516)	16.7	333.37153	343.89185	227.34797	4.93420	0.0189991	2.5709672232927
(332465)	17.3	305.01945	296.89778	354.05713	7.02624	0.2146036	2.3381618232915	(332517)	16.7	338.22144	42.84600	232.04455	22.49429	0.1874419	2.4375020232927
(332466)	17.3	352.13750	146.34706	72.70264	2.53374	0.1268031	2.4195376232916	(332518)	17.6	315.02305	164.16152	141.05798	5.07996	0.1278269	2.2803505232928
(332467)	17.4	319.53893	93.62235	185.61391	8.68726	0.2056706	2.3647516232916	(332519)	15.9	286.40739	197.47747	101.52598	9.18755	0.1847849	2.6140594232928
(332468)	17.4	355.38833	355.47294	230.75405	3.51390	0.2140117	2.3860701232916	(332520)	17.3	272.95394	254.89931	121.00959	7.28325	0.2155485	2.3327020232928
(332469)	17.7	56.90906	4.90259	146.84067	6.77442	0.1720235	2.3501873232916	(332521)	16.3	282.22884	185.15745	133.61930	16.36000	0.1457066	2.5227130232929
(332470)	17.4	84.29617	296.20894	185.15218	7.23125	0.2088333	2.3297508232916	(332522)	17.5	50.16534	357.25308	168.43341	2.95459	0.1170984	2.4785381232929
(332471)	18.1	346.03038	341.46412	284.85372	0.18882	0.2049571	2.3229833232917	(332523)	17.3	59.24539	333.23656	179.21852	9.54064	0.1843075	2.4283992232929

(332524)	17.3	194.11776	271.10698	161.28566	7.31180	0.0847583	2.3285634232929	(332576)	16.0	316.09381	25.92671	313.29183	12.22003	0.2542159	2.6456731232942
(332525)	17.6	311.38624	106.11941	215.87159	5.46381	0.1513736	2.3551822232929	(332577)	15.5	242.98734	246.78815	100.58040	10.69652	0.0793895	3.1757908232942
(332526)	16.7	77.95045	334.31083	171.40674	8.28954	0.1295589	2.4557758232930	(332578)	16.2	323.45301	104.01566	221.70624	14.21293	0.2658237	2.6538160232942
(332527)	17.2	291.75621	143.87899	169.44821	3.81305	0.1057329	2.6954543232930	(332579)	16.0	219.67180	317.43885	62.38861	5.64755	0.1223888	3.1526531232943
(332528)	16.3	329.59411	191.40962	105.67311	11.09862	0.1957549	2.5850039232930	(332580)	15.6	237.39602	108.74304	241.79238	10.74299	0.0615259	3.0599889232943
(332529)	16.2	296.59034	180.56052	140.25683	14.92991	0.2812480	2.6703412232930	(332581)	16.1	255.00476	122.70258	225.91702	8.20431	0.0831685	3.0937365232943
(332530)	16.9	272.84785	149.98281	184.30003	5.56656	0.0522315	2.7403977232931	(332582)	16.3	1.66841	266.13117	358.62317	5.36263	0.0333721	2.9218574232943
(332531)	17.2	5.34233	87.09393	171.02679	6.65636	0.0890282	2.6469422232931	(332583)	16.5	276.15356	108.77482	214.60286	4.30252	0.1328415	3.0820585232944
(332532)	17.5	332.25512	133.39794	162.85786	2.93573	0.0483916	2.6553852232931	(332584)	15.5	302.37969	77.87475	215.25655	25.28201	0.1838960	3.1081034232944
(332533)	16.1	254.10893	217.21502	152.83116	11.30311	0.1842225	2.7911188232931	(332585)	16.2	240.62675	175.82016	196.37364	6.67649	0.1686584	3.1251988232944
(332534)	16.4	251.32344	223.35611	159.89302	11.24542	0.3116374	2.7170144232931	(332586)	16.6	304.69406	97.06178	239.67079	5.30764	0.1654040	2.6952390232944
(332535)	16.5	271.11534	177.41053	201.48518	2.93352	0.2276156	2.5512321232932	(332587)	16.6	263.22763	103.86114	221.86125	8.09823	0.0943188	3.0571744232945
(332536)	16.5	311.28403	155.77492	148.38254	14.77660	0.2547473	2.6275453232932	(332588)	16.5	337.22387	276.63352	2.52217	11.18768	0.2957482	2.6600443232945
(332537)	16.5	268.86469	151.84077	214.81402	13.08792	0.1334409	2.7007378232932	(332589)	15.5	5.13806	198.78297	30.39976	7.18074	0.0680005	3.0975412232945
(332538)	16.8	311.73717	53.33412	272.66288	11.90199	0.2169550	2.5769034232932	(332590)	16.1	72.55938	327.93811	193.16398	11.76740	0.0253231	3.0471766232945
(332539)	15.5	271.65444	254.61206	96.64150	16.66792	0.3030039	2.7317001232933	(332591)	15.7	296.37358	221.50818	128.22301	14.63680	0.2715224	2.7008130232946
(332540)	15.5	256.35489	229.92373	145.55533	25.84434	0.1418566	2.7997020232933	(332592)	15.8	274.52102	94.84592	285.66331	9.95017	0.2369887	2.7003759232946
(332541)	16.5	283.57287	107.13447	230.06733	7.94866	0.2262027	2.7299315232933	(332593)	16.3	326.77831	186.98404	133.40777	5.01468	0.2127356	2.6603475232946
(332542)	16.6	284.35251	178.70563	153.97788	4.08818	0.1987028	2.7431793232933	(332594)	15.9	237.09070	105.15546	269.43223	6.22387	0.1614665	3.0980365232946
(332543)	16.5	332.86851	116.24908	165.72087	13.13950	0.2791746	2.6479938232934	(332595)	16.2	229.08157	155.44219	223.35310	8.17971	0.0733651	3.1653213232946
(332544)	16.1	307.10539	159.51060	168.77799	14.42721	0.2682788	2.6425374232934	(332596)	15.9	5.54875	348.85218	237.39648	5.49417	0.1248674	3.0579575232947
(332545)	16.3	324.97154	108.90472	162.52949	11.73020	0.0432264	2.8737166232934	(332597)	16.7	320.44543	73.05329	243.81360	4.51492	0.0605486	2.7320283232947
(332546)	15.9	264.73340	229.82827	117.77712	11.79644	0.1502027	2.8410821232935	(332598)	15.7	285.98510	277.57554	26.38321	10.98161	0.1001387	3.0753533232947
(332547)	15.9	263.74797	156.69876	188.32201	12.83093	0.1758355	2.7985223232935	(332599)	15.7	302.47764	118.05577	192.52115	10.67285	0.0998752	2.9894689232947
(332548)	16.4	312.68445	123.98093	182.37816	9.36322	0.1857334	2.7365116232935	(332600)	15.9	121.90401	156.53651	331.93017	3.38047	0.1156634	3.2258084232948
(332549)	16.7	322.96201	39.72206	269.86322	5.99796	0.3167868	2.6447372232935	(332601)	16.3	324.17679	58.57632	210.57787	9.88213	0.0993937	3.0394294232948
(332550)	16.5	197.49989	212.79917	203.42196	1.48830	0.0588867	2.8681994232936	(332602)	16.1	190.23208	230.19063	208.34463	9.12247	0.0557760	3.0900801232948
(332551)	16.5	283.30450	141.29993	217.13945	14.29357	0.2411764	2.6876804232936	(332603)	15.4	193.04162	174.52830	215.70342	21.86374	0.0600868	3.2552688232948
(332552)	16.1	290.39326	191.36024	137.24686	17.18782	0.2919412	2.6833775232936	(332604)	16.4	291.19548	279.88820	45.89547	7.68049	0.2094296	3.1107770232948
(332553)	17.0	289.43513	137.65940	181.26992	11.92644	0.0504933	2.9095825232936	(332605)	16.4	182.12581	252.95090	200.48030	11.23252	0.0049139	2.9606676232949
(332554)	17.1	317.22212	154.26277	151.35883	12.74147	0.2605979	2.6306582232936	(332606)	16.1	335.61532	311.49687	297.17866	4.83857	0.0629922	3.2330258232949
(332555)	15.5	303.25440	145.46542	229.83666	27.91925	0.2899753	2.6282119232937	(332607)	16.5	293.45568	81.75286	259.11305	5.30387	0.0699012	2.7330009232949
(332556)	17.0	329.03513	96.35290	180.64147	9.15343	0.1050686	2.8545126232937	(332608)	16.2	261.31723	207.42743	192.80820	9.08765	0.1600888	2.7596001232949
(332557)	16.8	6.01525	60.22940	176.80586	12.22065	0.0342367	2.9926122232937	(332609)	15.7	260.37532	306.18896	115.81163	5.49586	0.1018706	2.6544143232950
(332558)	17.0	315.97970	109.39245	195.49246	6.18327	0.3320128	2.6331675232937	(332610)	16.7	279.58527	166.23892	193.43682	5.31424	0.0604446	2.7515207232950
(332559)	15.7	253.32807	86.74876	258.48742	10.73445	0.0672699	2.9446617232938	(332611)	16.5	331.60001	340.17326	293.51289	1.22286	0.0546171	2.9746983232950
(332560)	17.1	311.40851	121.24357	177.65013	7.44045	0.2092663	2.7246287232938	(332612)	16.5	222.07189	180.00736	202.62397	8.97099	0.0643255	3.0586263232950
(332561)	16.4	237.72183	126.56395	99.70098	3.29785	0.1640999	3.0527662232938	(332613)	16.1	262.99580	150.32875	195.86342	10.37202	0.1183346	3.0559203232950
(332562)	16.5	258.45197	105.93157	222.78217	8.69872	0.0892052	3.1697523232938	(332614)	16.3	259.19500	118.24940	221.69766	2.61213	0.1147518	3.0377837232951
(332563)	16.7	253.77648	133.74949	212.20100	10.18679	0.0716983	3.0682713232939	(332615)	16.4	347.85863	67.66540	190.86697	10.84359	0.0416818	3.0538758232951
(332564)	15.9	192.73733	101.47235	23.16016	5.35808	0.0626840	2.7200333232939	(332616)	16.6	298.36514	29.16427	274.72289	1.44205	0.1061292	3.0698809232951
(332565)	16.0	199.39651	179.91650	216.86746	10.04102	0.0499932	3.1378011232939	(332617)	16.1	312.21038	235.86613	98.63382	13.00999	0.2832020	2.6571465232951
(332566)	16.6	283.99774	327.37380	351.53605	2.74571	0.1787566	2.7998582232939	(332618)	16.9	262.49437	82.26932	297.29135	3.82870	0.1774993	2.7819874232952
(332567)	16.6	270.56564	222.54071	160.05465	14.13669	0.2650042	2.6879776232940	(332619)	16.4	343.50165	53.29068	195.18529	10.47501	0.0927408	3.1377719232952
(332568)	16.1	239.90915	153.33486	218.76962	11.82228	0.1612235	2.8748165232940	(332620)	16.1	255.46576	127.60123	221.42164	5.37000	0.1591754	3.0751887232952
(332569)	16.0	284.74595	243.59762	72.47553	10.29553	0.0243789	3.0252291232940	(332621)	16.0	338.72685	46.96194	213.10994	8.40141	0.0591969	3.1715952232952
(332570)	17.2	316.39885	52.67584	271.03740	3.60031	0.2759216	2.6048289232940	(332622)	15.5	211.75876	187.48258	212.55735	28.37649	0.1831927	3.1573176232952
(332571)	16.0	274.31587	300.68987	21.16535	10.67675	0.0806219	3.1099838232940	(332623)	16.0	244.64288	134.74459	231.66709	8.82143	0.1788663	3.0469929232953
(332572)	15.9	261.59116	155.42034	193.38992	8.43003	0.1126206	3.0232611232941	(332624)	16.4	276.11962	94.89888	276.94884	3.70513	0.1696036	2.7767643232953
(332573)	15.9	156.62061	86.04372	7.86410	10.15357	0.1365223	3.1451525232941	(332625)	16.0	282.88290	129.53604	193.98243	8.61489	0.0437671	3.1513228232953
(332574)	17.2	290.08894	189.62658	168.42518	2.10897	0.2216398	2.6951100232941	(332626)	16.0	112.11929	282.17044	203.22441	10.33001	0.0571984	3.1325530232953
(332575)	15.7	338.40956	227.01455	25.68925	7.10143	0.0762176	3.2370638232942	(332627)	16.5	295.34184	72.17690	239.23528	6.40707	0.2315400	2.9450362232954

(332628)	16.0	284.95752	39.66227	272.08484	4.84536	0.1070544	3.1454845232954	(332680)	17.4	147.82421	264.57474	38.55682	2.52707	0.1949772	2.4590325232966
(332629)	15.9	285.21526	328.40890	340.70251	4.65857	0.1424399	3.1444222232954	(332681)	18.0	345.70920	306.23559	170.28933	1.22033	0.1355031	2.3427616232966
(332630)	16.4	273.37515	240.33870	141.92819	14.27074	0.2247594	2.7243990232954	(332682)	17.0	338.22772	259.99674	169.76715	11.55850	0.1891867	2.6806757232967
(332631)	16.2	334.25478	18.16326	287.89808	13.07488	0.2560616	2.6206430232955	(332683)	16.9	167.21123	40.02704	212.57878	4.27051	0.1049967	2.7944974232967
(332632)	16.0	239.34085	216.39144	161.37622	11.98432	0.1656200	3.0550638232955	(332684)	17.5	28.10050	312.00518	234.53388	19.55540	0.0599891	1.9343492232967
(332633)	15.9	286.29979	86.70748	230.53620	7.83295	0.0838492	3.0170320232955	(332685)	10.7	348.25261	240.09058	72.24136	23.29610	0.4460127	12.7118930232967
(332634)	15.1	219.47080	180.69863	245.04593	17.38905	0.1780821	3.0945723232955	(332686)	17.8	272.32922	177.99482	153.35182	5.39219	0.2134849	2.2080882232968
(332635)	16.7	331.42223	255.85099	43.31573	2.64013	0.0456382	2.8720093232956	(332687)	16.3	248.64507	262.60115	115.76077	23.02631	0.3593515	2.3143543232968
(332636)	16.4	313.07282	104.85433	181.75443	2.17320	0.2635567	3.0681738232956	(332688)	17.7	274.81245	195.82909	139.81782	7.66184	0.1501695	2.2585812232968
(332637)	16.2	295.20355	168.09261	142.78018	4.00497	0.1114736	3.1185895232956	(332689)	16.9	244.89554	307.70688	62.56698	5.92578	0.2237836	2.2919148232968
(332638)	15.7	270.53547	98.42071	270.86474	10.35358	0.0365693	3.0468247232956	(332690)	17.3	331.16593	322.03508	289.32488	4.80623	0.0818327	2.3213636232969
(332639)	16.8	99.47047	330.81395	202.20961	6.48794	0.0163249	2.8417717232957	(332691)	18.3	264.77750	121.07117	219.25217	6.07165	0.2429600	2.2894259232969
(332640)	16.1	216.30930	222.50948	195.12554	11.95367	0.0933802	2.9660405232957	(332692)	16.7	226.36003	116.38466	255.62760	7.66794	0.2412560	2.4410680232969
(332641)	16.1	328.63877	79.27588	226.45804	16.17860	0.3324311	2.6347747232957	(332693)	17.5	214.64321	121.81252	272.41202	1.11900	0.2269460	2.3933204232969
(332642)	15.2	244.69099	92.19651	258.42113	8.99616	0.1286779	3.1944555232957	(332694)	15.7	50.37077	8.76991	153.85964	4.07258	0.1736566	2.5383477232970
(332643)	16.5	281.58855	41.83926	314.32703	2.46934	0.0788055	2.7913837232958	(332695)	16.1	174.97116	178.47823	221.28967	8.38931	0.2149708	2.6940900232970
(332644)	15.8	301.32405	286.22224	10.09987	4.70911	0.1584287	3.1927192232958	(332696)	17.9	243.05090	66.38664	330.19991	2.77705	0.1757048	2.2134392232970
(332645)	16.5	266.03186	219.25161	122.01775	2.04383	0.2019679	3.1329586232958	(332697)	17.5	252.71357	154.43396	188.06410	3.19162	0.1921993	2.3869347232971
(332646)	15.3	327.49484	79.24390	234.64327	8.72504	0.0525900	3.1123476232958	(332698)	17.2	318.53590	4.17444	258.90600	6.28817	0.0708938	2.3505260232971
(332647)	16.2	304.23076	220.28888	84.44793	2.43640	0.1701232	3.1085867232958	(332699)	17.9	250.03241	153.80942	193.95711	6.83572	0.1260050	2.3125362232971
(332648)	16.6	342.19405	249.98988	37.88694	1.83669	0.1281267	3.0363922232959	(332700)	17.1	282.94794	59.85406	254.15546	3.13464	0.1424782	2.3997817232971
(332649)	16.9	272.67685	131.92499	241.21882	3.74982	0.1707905	2.7672277232959	(332701)	17.5	262.16462	119.02816	199.84507	2.21109	0.0747951	2.6627106232971
(332650)	15.0	274.32595	77.10338	251.49005	8.05996	0.0744309	3.1714493232959	(332702)	17.1	232.48436	123.44558	241.36644	5.05814	0.1495874	2.4653360232972
(332651)	15.5	283.16820	69.06474	243.32691	12.89375	0.1333149	3.1486331232959	(332703)	18.0	286.73658	284.40723	29.61135	2.68764	0.1954389	2.3732793232972
(332652)	15.6	351.91655	31.48926	261.56442	10.25755	0.0924976	3.0339486232960	(332704)	17.1	167.58348	294.07484	132.20120	2.74579	0.0574723	2.6454828232972
(332653)	15.9	273.29195	260.93435	77.57895	11.91055	0.1431082	2.9840926232960	(332705)	16.3	102.01140	3.80734	101.50485	2.71416	0.1552920	3.0720901232972
(332654)	16.5	264.22427	77.08591	294.43736	1.15602	0.1104630	3.0468371232960	(332706)	17.2	264.27598	114.53731	263.94423	4.75519	0.1632306	2.2072491232973
(332655)	15.9	331.47473	11.55967	306.21734	13.42566	0.2571831	2.6335979232960	(332707)	17.9	314.69382	234.73303	45.34700	1.79045	0.1834104	2.3636264232973
(332656)	16.2	283.31009	305.54980	49.19163	4.39554	0.1620572	3.0081755232961	(332708)	17.7	144.04880	279.71053	222.68157	4.68295	0.1441357	2.3160429232973
(332657)	16.7	322.60754	270.57616	74.34976	17.08998	0.2336534	2.6634325232961	(332709)	16.9	237.38222	142.24287	226.97947	4.63256	0.2302919	2.3976050232973
(332658)	16.1	303.05486	240.71354	104.56270	9.88888	0.2333683	2.7842422232961	(332710)	16.6	176.38677	351.43302	58.32434	6.17511	0.1396762	2.7154685232974
(332659)	16.0	294.39722	92.44358	225.85793	16.16201	0.1117421	3.0903829232961	(332711)	17.2	316.91449	208.86709	67.15728	6.94491	0.0880244	2.5477296232974
(332660)	16.0	289.17572	266.73607	47.13524	5.83291	0.1562674	3.1382229232961	(332712)	18.3	330.06037	70.26739	187.30701	1.72859	0.1882006	2.2929909232974
(332661)	16.3	274.98341	108.28131	228.17754	4.40746	0.1399953	3.0958237232962	(332713)	17.9	320.60454	95.21044	179.99669	5.19353	0.1650761	2.2692565232975
(332662)	16.4	269.81888	335.19255	358.96253	1.26876	0.1558957	3.1221652232962	(332714)	17.5	285.54942	145.43860	176.19379	7.76851	0.1247248	2.3820877232975
(332663)	18.5	40.26937	258.98071	256.75264	5.62678	0.2000859	1.8698880232962	(332715)	17.8	281.09378	132.78708	207.20611	5.07224	0.2819100	2.3156012232975
(332664)	16.1	315.76539	252.06255	85.83849	6.44831	0.2680309	2.7511028232962	(332716)	17.4	265.49312	128.53390	211.36565	9.38358	0.1708180	2.3563834232975
(332665)	15.5	253.54097	307.67633	81.94641	14.76834	0.1541099	3.0451741232963	(332717)	17.5	267.78864	276.36515	53.07261	6.79492	0.1326493	2.3863531232975
(332666)	16.3	352.07268	78.87764	211.21122	10.33666	0.0357818	3.178338232963	(332718)	17.1	273.61425	72.90687	257.74684	5.71843	0.1358862	2.3290489232976
(332667)	15.8	268.76330	157.22842	192.40590	10.33307	0.1872270	3.0243979232963	(332719)	16.3	303.41310	42.67906	229.70846	22.26291	0.2078016	2.4435737232976
(332668)	15.5	248.87269	129.80124	270.46712	11.00206	0.0930142	3.0873102232963	(332720)	16.5	141.81136	251.54321	191.21359	7.82204	0.1360399	2.7623808232976
(332669)	17.6	223.93207	284.39465	303.70203	6.54553	0.1463495	2.3705057232964	(332721)	17.2	282.93875	236.99983	72.32052	4.01912	0.0587647	2.5675438232976
(332670)	18.4	10.79785	88.91576	304.94657	3.12651	0.2008557	2.3731426232964	(332722)	16.0	210.76689	350.85651	29.40348	12.74370	0.1940334	2.6401890232977
(332671)	17.3	115.77398	208.52551	94.29610	3.33414	0.1802159	2.4163814232964	(332723)	17.1	300.55748	48.36370	241.74187	5.60250	0.1371089	2.4319928232977
(332672)	16.9	21.21909	234.88196	112.03912	8.57321	0.1567014	2.6956004232964	(332724)	17.2	114.54278	275.91149	179.05884	2.64657	0.0784639	2.7956592232977
(332673)	15.7	260.66630	282.44057	128.99893	15.42971	0.3228422	3.0592284232965	(332725)	16.8	33.23438	7.56452	178.67064	7.89729	0.0593771	2.6475404232977
(332674)	16.5	297.69689	121.58754	315.03308	7.88411	0.1301010	2.7745169232965	(332726)	17.7	283.88506	272.73391	47.44869	3.70569	0.1645370	2.3551441232978
(332675)	17.9	39.28596	142.86247	220.63706	1.16198	0.2315625	2.4554799232965	(332727)	16.9	336.40412	204.23752	41.17721	9.35456	0.1153629	2.5562546232978
(332676)	15.5	258.63254	325.68191	100.08486	17.56103	0.0995781	3.0897185232965	(332728)	16.8	177.71803	339.34176	54.72702	6.82575	0.0539693	2.7499555232978
(332677)	17.0	271.16615	230.85529	230.28286	1.44970	0.0210190	2.8749651232966	(332729)	17.7	228.88639	208.39351	164.79431	6.87598	0.1570844	2.4720381232978
(332678)	17.2	215.60179	319.16517	308.23378	4.22959	0.1175595	2.2327662232966	(332730)	15.8	38.57478	129.03417	35.97731	15.18092	0.2167443	3.1149110232978
(332679)	17.4	244.90840	184.42418	39.64623	1.80225	0.1383242	2.4066643232966	(332731)	17.3	221.53893	169.33738	200.49798	3.39898	0.0591086	2.5628644232979

(332732)	17.7	297.04311	357.15504	311.33550	1.66634	0.2454625	2.3232392232979	(332784)	17.4	253.84491	317.61622	71.40484	2.42780	0.1891505	2.3568336232992
(332733)	16.6	292.85717	95.08396	235.46541	8.51388	0.0322172	2.3287740232979	(332785)	17.0	341.28801	17.33801	274.53043	1.72444	0.0853589	2.4659488232992
(332734)	17.5	251.87924	173.09744	170.05451	6.66367	0.0695517	2.5363969232979	(332786)	15.6	126.51071	343.00307	115.40854	12.56157	0.1885088	3.0281989232992
(332735)	15.8	141.10934	23.92676	39.81493	9.84636	0.0322045	2.7876861232979	(332787)	15.4	249.63133	268.15534	92.09676	16.14976	0.1628718	2.5955533232993
(332736)	15.4	101.86196	70.85535	61.50908	9.92271	0.0459258	3.0172934232980	(332788)	15.6	105.19344	233.86723	227.47307	13.55667	0.0626325	3.1411588232993
(332737)	16.8	134.39343	321.56793	134.42604	4.78702	0.0227727	2.5901257232980	(332789)	16.1	251.12615	240.63322	110.68673	10.66798	0.1399905	2.5685304232993
(332738)	16.9	292.81581	228.02483	95.46425	10.29009	0.2374216	2.3358515232980	(332790)	17.0	168.37100	254.90190	167.69086	2.83924	0.0946837	2.7377480232993
(332739)	17.7	293.54850	261.80107	82.53745	0.68821	0.2336659	2.2994150232981	(332791)	16.4	244.63707	279.26589	72.23225	7.75357	0.1184636	2.6906309232994
(332740)	16.1	219.07709	130.83609	225.00336	11.48348	0.1068880	2.7190430232981	(332792)	16.6	236.09642	280.54412	96.12285	6.17714	0.2139749	2.5888720232994
(332741)	16.6	215.56554	301.06133	89.76316	4.711044	0.2032466	2.3974683232981	(332793)	15.9	124.97863	204.93879	248.04254	8.94148	0.0662312	3.0976958232994
(332742)	17.7	284.13101	271.13837	46.51896	3.59112	0.2181841	2.3384524232981	(332794)	16.8	285.27675	50.08511	269.46754	6.41526	0.2151290	2.5877495232994
(332743)	17.7	260.47695	48.16050	306.99239	0.40572	0.2056920	2.3651257232982	(332795)	16.9	246.46315	182.21293	168.76615	4.77143	0.1898335	2.6186739232995
(332744)	16.1	316.00215	72.19480	205.55246	5.30418	0.0972241	2.5616486232982	(332796)	16.9	286.18381	240.28284	61.50928	11.29248	0.1033554	2.7239448232995
(332745)	17.0	272.89482	313.95688	30.14303	1.80577	0.2610744	2.3324760232982	(332797)	16.7	259.42097	147.21396	194.67756	4.21958	0.0792293	2.7708512232995
(332746)	17.3	288.19234	205.72497	110.80846	3.73067	0.1983491	2.3526728232982	(332798)	17.2	333.51367	55.99112	201.76649	3.52523	0.0122553	2.7752409232995
(332747)	16.2	239.92412	139.49764	225.71323	5.30594	0.1122769	2.5854710232983	(332799)	15.7	86.70499	265.23577	230.85998	10.81798	0.0172094	3.0137627232995
(332748)	15.8	192.65376	230.37203	172.07236	13.90995	0.0871715	2.6836051232983	(332800)	15.8	157.65185	353.07228	73.15725	11.87094	0.0362627	3.0098584232996
(332749)	17.4	267.79115	206.87019	142.09496	5.11220	0.2596900	2.3319533232983	(332801)	16.5	212.19881	298.32849	88.47158	5.92242	0.1323745	2.7596447232996
(332750)	15.6	171.94988	337.92673	85.38624	10.34850	0.1507253	2.7530755232983	(332802)	16.6	302.51224	195.02821	98.07395	6.09193	0.1391896	2.7242110232996
(332751)	17.1	290.23226	45.05912	275.32332	3.36590	0.2423512	2.3320558232984	(332803)	15.6	153.05264	192.71422	235.22949	8.73390	0.0851925	3.1138451232996
(332752)	16.1	68.39097	253.30345	246.85920	6.00694	0.1265115	3.1022812232984	(332804)	16.8	321.26878	189.11544	116.22944	5.10308	0.0486492	2.564522232997
(332753)	16.0	239.16970	255.24885	97.60478	12.61146	0.0764277	2.5907479232984	(332805)	15.6	91.68493	50.44258	73.89584	17.08325	0.0262506	3.1337988232997
(332754)	17.5	282.76278	210.02719	113.04066	3.33352	0.1889727	2.3476573232984	(332806)	16.2	282.39616	214.43830	98.85074	6.45789	0.0196811	2.7638708232997
(332755)	16.2	158.88050	42.03663	29.28662	5.58837	0.0680073	2.7336682232985	(332807)	16.6	265.08464	82.72342	244.58353	14.81687	0.1483514	2.6602002232997
(332756)	16.6	56.73877	86.01750	84.01135	3.84165	0.0170892	2.8762737232985	(332808)	15.8	323.72393	202.30120	56.55862	7.93350	0.1153210	3.0993387232998
(332757)	16.6	260.62081	281.71258	46.26033	15.10149	0.1790411	2.6399815232985	(332809)	15.6	53.26496	287.58343	291.41532	8.56030	0.0344551	3.0789437232998
(332758)	16.8	356.32934	142.70123	82.46906	7.31145	0.1385711	2.6508362232985	(332810)	16.5	278.38925	212.19528	90.54875	4.22174	0.0399780	2.9569414232998
(332759)	17.0	248.30953	120.40274	219.14914	13.36083	0.1021183	2.6044915232986	(332811)	17.2	264.93437	30.74109	307.11736	3.87873	0.1590765	2.5663314232998
(332760)	15.8	140.40648	25.11401	32.14516	10.35375	0.1039145	3.1220482232986	(332812)	16.3	352.34186	57.33435	205.33477	8.03928	0.1326021	2.5673210232998
(332761)	17.0	132.13061	303.23402	155.22452	2.38242	0.0244226	2.6660924232986	(332813)	15.8	308.22877	225.35696	49.68959	11.35223	0.1879961	2.7566731232999
(332762)	16.8	199.36155	1.27959	55.25313	15.49690	0.2493304	2.5987875232986	(332814)	15.2	59.62940	70.64423	94.91503	11.78463	0.0543573	3.0858393232999
(332763)	16.6	192.56940	258.14821	136.42665	2.92076	0.0723684	2.8592561232987	(332815)	15.7	18.23025	340.78009	227.40068	10.48470	0.0983226	3.0940068232999
(332764)	16.8	321.21132	42.49643	263.76897	6.14396	0.0768153	2.3682046232987	(332816)	16.5	208.82821	303.42653	76.49746	7.36336	0.0513841	2.7857086232999
(332765)	15.5	104.43947	49.43975	53.11094	23.69751	0.1766582	3.1943978232987	(332817)	17.2	319.11959	212.41085	123.54954	6.23899	0.1810381	2.2234704233000
(332766)	15.0	133.01878	208.95815	243.19774	18.84106	0.2803169	3.1332181232987	(332818)	15.9	191.84392	176.33578	263.29080	13.80119	0.0654995	2.5980719233000
(332767)	16.5	296.78937	240.84032	55.97074	5.11479	0.0517605	2.7686009232988	(332819)	15.5	34.18406	133.17778	64.32835	19.02841	0.0882044	3.1232256233000
(332768)	17.3	294.10776	234.58933	89.42350	3.63509	0.2506776	2.3174467232988	(332820)	16.2	224.17577	292.42350	77.36730	9.64301	0.1150054	2.8931142233000
(332769)	16.3	209.86923	327.86861	45.25790	10.56826	0.2054003	2.7684823232988	(332821)	16.0	32.64161	128.63964	105.46674	11.99515	0.0746288	3.1038740233000
(332770)	16.4	184.00485	127.15967	275.80150	6.53280	0.0856133	2.8765921232988	(332822)	15.4	294.72026	34.86216	261.72956	14.80211	0.0798775	2.9957116233001
(332771)	16.7	271.19370	248.14963	68.74895	5.22855	0.1005882	2.8131547232989	(332823)	15.6	184.22121	339.70314	75.18368	13.24564	0.0451167	2.9679559233001
(332772)	16.6	229.24079	22.42734	334.92703	5.74129	0.0415839	2.6887581232989	(332824)	16.3	234.54335	136.66875	266.75500	4.15611	0.0796072	2.7405223233001
(332773)	17.3	344.37507	272.37602	336.79238	1.22161	0.0242837	2.7236766232989	(332825)	15.8	164.01784	323.65322	112.15548	6.79978	0.1598647	3.2113603233001
(332774)	17.1	291.21893	132.13446	182.31683	3.24280	0.1309386	2.5902901232989	(332826)	16.7	207.00302	347.13211	86.07687	3.17724	0.0793413	2.7521690233002
(332775)	19.7	24.76494	343.48452	163.73603	6.05361	0.4618645	1.5475574232989	(332827)	15.5	175.84559	321.36768	102.47421	19.80752	0.1096090	3.2302369233002
(332776)	16.1	36.69230	270.58563	270.41577	8.04493	0.0598574	3.0749382232990	(332828)	15.3	205.70021	270.01657	129.69455	12.83578	0.0635465	3.2119851233002
(332777)	15.2	161.09239	22.99318	41.32525	10.31655	0.0769639	2.9996875232990	(332829)	14.9	167.60801	317.87277	122.69983	19.63408	0.1637474	3.1859205233002
(332778)	16.1	202.40486	329.49213	51.38738	16.04536	0.1419030	2.8412261232990	(332830)	15.5	254.85047	227.30011	132.54739	16.35968	0.1147712	3.1322926233003
(332779)	16.3	248.78806	297.49612	61.31171	9.25524	0.1477143	2.5870460232991	(332831)	15.9	239.02935	260.38513	100.63462	11.63989	0.0780929	3.1318117233003
(332780)	15.4	147.08796	12.91864	64.53908	17.72303	0.1303703	3.0491172232991	(332832)	15.3	107.52779	32.87522	136.80234	19.75869	0.0422910	3.2268237233003
(332781)	15.4	156.86009	43.42537	26.35031	7.66709	0.0612104	2.9845424232991	(332833)	15.8	232.86115	283.30104	89.83175	12.32221	0.0835526	3.0893063233003
(332782)	17.3	256.69386	213.17220	135.28361	3.24455	0.0916273	2.6180268232991	(332834)	15.9	157.11342	217.18188	262.53227	10.48580	0.0403746	2.9656661233004
(332783)	17.3	270.79349	291.35983	80.42403	3.67520	0.1786574	2.3171252232992	(332835)	15.2	243.30658	230.71807	134.14244	23.06888	0.1438946	3.2283820233004

(332836)	15.9	222.39272	348.47483	69.12038	7.55397	0.0339831	2.7823043233004	(332888)	16.7	3.82406	110.54130	115.36822	7.40126	0.1293953	2.6781829233016
(332837)	16.2	195.58597	148.95627	296.48548	12.14207	0.1462245	2.6628126233004	(332889)	15.8	133.25673	345.33007	73.43086	10.73843	0.0620975	2.9909712233016
(332838)	15.9	3.63797	137.85209	126.76963	12.19073	0.0691936	3.0986789233005	(332890)	16.3	116.32247	351.91897	117.25005	11.13769	0.0257365	2.7430621233017
(332839)	15.1	177.92012	292.79402	137.66310	28.13677	0.1893677	3.0561855233005	(332891)	17.1	115.04854	357.39509	106.18385	6.06186	0.1607361	2.5887825233017
(332840)	15.8	106.31158	268.84857	214.31164	13.28233	0.1508651	3.1980295233005	(332892)	16.8	114.08321	327.89728	141.26849	7.44659	0.1244441	2.4926737233017
(332841)	15.9	252.37288	77.46901	271.54545	8.68154	0.1323873	2.7685211233005	(332893)	15.9	32.14862	48.49660	131.84791	12.83388	0.1941485	3.1555562233018
(332842)	16.7	349.14385	87.72602	271.67508	2.19602	0.0611441	2.5258494233006	(332894)	16.1	56.61106	230.21208	287.77762	7.70076	0.0823575	2.8145170233018
(332843)	15.7	217.00695	77.75643	353.29726	4.41385	0.1068818	3.1502520233006	(332895)	17.4	294.34983	226.50405	77.08735	7.29163	0.1875123	2.3404794233018
(332844)	16.5	154.86233	266.78504	297.71035	10.15654	0.2086017	2.5898699233006	(332896)	15.8	8.74378	106.41614	114.50473	13.94963	0.0997478	2.7561845233018
(332845)	17.4	101.60318	98.41314	164.93262	4.11496	0.2275037	2.7598858233006	(332897)	17.1	96.52749	349.08950	131.80133	7.09547	0.1069683	2.6186389233019
(332846)	16.8	328.32158	139.63926	244.13564	0.33213	0.0467220	2.6208611233006	(332898)	17.1	81.23466	5.97903	143.95836	5.87262	0.0240275	2.6006691233019
(332847)	16.4	277.08151	306.89943	125.18599	2.54508	0.0863530	2.7231093233007	(332899)	16.0	137.86935	304.94278	163.23734	14.79327	0.0776452	2.6246409233019
(332848)	17.0	102.56873	182.91191	138.06695	6.88917	0.1296256	2.3852388233007	(332900)	16.7	79.76194	0.77769	139.25116	3.03637	0.1262310	2.9347570233019
(332849)	16.0	280.67797	221.54842	132.71119	17.57181	0.1270241	2.9525434233007	(332901)	15.7	73.37268	222.69028	281.49171	9.14320	0.0642649	2.9791092233019
(332850)	16.5	100.77748	65.59794	218.39930	8.45513	0.1139615	2.8112071233007	(332902)	16.5	95.69080	14.43891	117.21058	14.63027	0.0845851	2.6177108233020
(332851)	16.3	143.20672	327.69575	236.37475	3.68023	0.0529618	2.7284743233008	(332903)	16.0	234.69772	235.24203	126.48991	26.51460	0.0658788	2.5436364233020
(332852)	16.7	18.26946	202.62756	283.20984	9.97681	0.0875016	2.5176020233008	(332904)	16.4	342.40025	84.76319	158.97278	8.55251	0.0801694	2.6342984233020
(332853)	17.3	99.39705	234.30475	178.03062	6.68356	0.0924216	2.3991170233008	(332905)	16.5	159.91201	309.49814	131.23357	15.44952	0.0206212	2.5803161233020
(332854)	17.6	86.39525	89.24243	343.61686	4.74724	0.1301391	2.2975377233008	(332906)	17.3	281.62921	34.77500	305.51974	5.03352	0.1042887	2.2996860233021
(332855)	18.3	112.73671	206.56486	203.41084	5.08427	0.1420754	2.3747016233009	(332907)	17.2	38.98370	129.46235	78.70453	2.07968	0.1292725	2.4555767233021
(332856)	17.8	278.11840	94.81411	145.19207	5.99442	0.1232601	2.2145013233009	(332908)	17.9	78.37746	114.16835	59.86512	2.24436	0.1282973	2.3749253233021
(332857)	16.9	198.76215	225.81435	100.77612	7.64825	0.1626916	2.2725188233009	(332909)	16.3	29.52168	212.87588	352.03487	12.65130	0.1191045	2.7123447233021
(332858)	16.4	103.63770	231.11278	226.18919	21.88271	0.2684405	2.4123633233009	(332910)	16.7	280.93340	61.42362	251.06329	6.33285	0.0950283	2.4343750233022
(332859)	16.5	210.89105	87.55762	206.17574	3.05398	0.0858331	2.5979712233010	(332911)	17.4	218.46346	305.53275	73.98523	7.01721	0.0965236	2.2059747233022
(332860)	17.6	81.13504	265.00500	228.35960	5.20049	0.0946663	2.2223208233010	(332912)	16.6	57.56085	338.29522	185.44010	4.63352	0.1146189	3.1815472233022
(332861)	16.6	60.12646	75.34982	52.98079	11.61554	0.1919900	2.7644119233010	(332913)	16.7	358.93542	191.62330	31.45970	0.41397	0.0906373	3.1346996233022
(332862)	17.8	61.46346	292.58645	217.75260	2.35369	0.1309286	2.3208498233010	(332914)	16.8	300.69553	153.94284	158.13348	14.44920	0.1653861	2.5850304233023
(332863)	16.9	323.27997	153.48472	47.13887	3.49372	0.0175761	2.7011585233011	(332915)	16.9	38.42917	317.34309	232.13106	2.01344	0.0805184	3.1809226233023
(332864)	16.7	32.10605	311.89925	222.51082	4.05803	0.2472296	2.5970570233011	(332916)	17.5	279.55566	115.32929	208.62047	3.85637	0.0450317	2.7026025233023
(332865)	17.0	101.23785	36.33847	86.15708	7.81572	0.0582000	2.3998806233011	(332917)	16.3	143.28377	324.33514	100.23623	6.88583	0.0360385	2.7705489233023
(332866)	18.1	134.88632	315.81363	123.01700	1.84871	0.0449665	2.1318197233011	(332918)	15.6	5.57390	112.38394	112.03851	11.85142	0.0849540	3.0992904233023
(332867)	17.6	27.97438	140.89109	47.24735	6.76992	0.0665087	2.2005122233011	(332919)	15.8	122.03895	311.55458	143.10606	13.71345	0.1415318	2.7941008233024
(332868)	17.9	100.69984	43.70553	67.20732	6.31507	0.1020878	2.2977233233012	(332920)	17.5	179.35333	288.54929	126.22562	7.28322	0.0975701	2.3750755233024
(332869)	16.9	7.32403	327.08948	241.69129	6.52363	0.1731459	2.3183810233012	(332921)	17.1	79.63153	238.14079	294.74628	5.63058	0.1115670	2.3837405233024
(332870)	16.6	35.30953	350.49729	173.83079	4.96945	0.1895442	2.5603053233012	(332922)	15.1	328.29705	128.34818	130.97541	19.39352	0.1359931	3.2166804233024
(332871)	17.6	157.51377	335.93802	92.17441	6.06273	0.1021187	2.2050127233012	(332923)	16.4	320.94938	179.13625	96.79511	6.08466	0.0751656	2.7211284233025
(332872)	16.4	54.84351	85.23580	67.81849	7.35550	0.1284178	2.9700998233013	(332924)	16.4	11.01193	80.35640	135.34765	6.31362	0.1362701	3.1563509233025
(332873)	17.3	103.52633	118.92058	246.44841	5.93550	0.1149945	2.3446567233013	(332925)	16.8	63.54177	33.67486	131.66517	14.33702	0.1124168	2.6136549233025
(332874)	17.2	2.38009	302.86173	268.01216	7.17202	0.0354063	2.2949180233013	(332926)	16.0	53.69698	258.66747	266.47139	10.41273	0.1688045	3.0011048233025
(332875)	16.3	61.77050	32.07692	119.04778	10.39327	0.1185279	2.7949852233013	(332927)	16.1	57.97313	73.99075	78.60705	6.08602	0.1460150	3.1725641233026
(332876)	17.1	88.96348	183.37997	296.83054	1.18934	0.1522540	2.6546967233013	(332928)	16.1	80.81949	245.84056	292.24787	20.86478	0.2287594	2.5740582233026
(332877)	16.6	237.47261	274.74628	114.49773	24.82617	0.1286065	1.9797231233014	(332929)	16.9	326.78432	132.82981	146.71140	11.01871	0.1373733	2.6292465233026
(332878)	16.5	5.36894	321.97721	291.82883	11.84579	0.2387909	2.3416041233014	(332930)	16.6	322.69383	123.17367	149.64403	5.85061	0.0437145	2.7212169233026
(332879)	17.0	88.08178	9.12307	127.79154	3.70961	0.0746009	2.5475961233014	(332931)	15.7	8.93830	123.28093	89.80616	11.26908	0.0386527	3.0328907233026
(332880)	17.5	100.88821	5.73755	115.48779	6.35261	0.0740447	2.4894563233014	(332932)	15.8	31.80874	49.86804	136.52410	17.62375	0.1803612	3.1437170233027
(332881)	17.1	296.33595	233.73010	45.62639	5.20520	0.0609617	2.6590340233015	(332933)	15.6	38.62337	90.47789	95.90987	11.44740	0.0580348	3.0244016233027
(332882)	16.7	98.16249	2.98291	124.68102	15.55295	0.0557409	2.5731299233015	(332934)	15.4	24.24327	279.66852	278.57050	13.26001	0.0461083	3.2200799233027
(332883)	16.0	324.00257	141.02179	133.74215	9.60556	0.2582359	2.7918373233015	(332935)	17.1	155.70809	172.07685	254.38045	2.72315	0.0832855	2.7280541233027
(332884)	16.4	352.47183	149.49277	112.12181	7.98425	0.2001086	2.5987045233015	(332936)	15.9	20.57613	17.80823	194.75569	8.19770	0.1088265	3.0038854233028
(332885)	16.6	129.61512	349.02324	101.71309	6.18993	0.0831456	2.7261096233016	(332937)	16.3	28.53265	342.80039	213.28188	1.20249	0.0875468	3.1934583233028
(332886)	17.6	299.96107	194.00312	103.26102	5.49184	0.1820801	2.2424673233016	(332938)	16.7	11.88993	41.28239	176.60939	1.82350	0.0422138	2.9262413233028
(332887)	17.2	20.32045	94.90106	105.70177	4.38892	0.1311548	2.7413438233016	(332939)	17.1	335.19499	69.01917	189.97829	6.35016	0.0204692	2.7176461233028

(332940)	16.9	272.86483	80.44143	244.66159	2.52630	0.0946285	2.8050680233029	(332992)	16.1	24.12662	60.01629	188.01295	10.41829	0.0787274	3.2151352233041
(332941)	16.2	201.86605	359.70864	39.27271	2.88359	0.0779882	3.0331989233029	(332993)	15.9	62.14359	62.06558	134.54299	11.48896	0.0838829	2.8817646233041
(332942)	15.6	11.83463	98.27733	156.72153	17.49719	0.1678543	3.1625746233029	(332994)	15.0	186.44828	267.83432	154.81060	21.94048	0.1292876	3.1680684233042
(332943)	16.9	245.58388	177.92611	160.96506	8.85004	0.0798947	2.7619438233029	(332995)	15.3	38.60212	108.74653	114.66438	18.23918	0.1157993	3.1930160233042
(332944)	16.5	123.51792	26.45514	73.80500	6.81102	0.0813029	2.7008832233030	(332996)	15.4	90.96260	85.57962	115.53871	10.21184	0.0462910	3.1607296233042
(332945)	17.3	176.09144	265.04217	154.69509	6.66311	0.1114579	2.4443232233030	(332997)	16.0	37.16920	347.88816	249.51143	6.84100	0.1061288	3.0133597233042
(332946)	16.2	359.93001	100.17506	154.52563	12.74108	0.1836803	2.6935804233030	(332998)	15.1	3.48898	124.48764	142.22410	16.33658	0.0640330	3.1595988233043
(332947)	15.9	112.44252	133.04802	344.87382	2.70599	0.0463481	2.9909928233030	(332999)	16.1	187.84593	323.91206	115.72378	11.03981	0.0639084	3.0413162233043
(332948)	16.7	238.74830	170.80712	183.92976	2.63612	0.0939916	2.9509061233031	(333000)	15.9	221.89781	247.17925	170.17649	9.74108	0.0758871	2.9535858233043
(332949)	15.3	138.48542	314.16277	138.02869	14.44605	0.0395196	3.2359514233031	(333001)	15.8	87.65997	14.29332	175.77546	10.21400	0.0339512	3.2533949233043
(332950)	16.3	80.24601	318.20392	189.68895	3.32458	0.0711875	3.0807476233031	(333002)	16.6	292.84828	297.75394	70.32687	16.57852	0.1220439	2.4557622233044
(332951)	16.4	310.43215	144.27632	161.06084	14.45879	0.0864897	2.6609554233031	(333003)	16.2	267.11051	213.51010	169.43578	11.42700	0.0950002	2.8658949233044
(332952)	16.5	95.00621	358.25147	166.78365	15.26477	0.1870236	2.6469678233031	(333004)	16.0	328.58206	258.45354	51.61275	2.94567	0.1064171	3.1581207233044
(332953)	15.1	106.14060	358.63149	119.50942	17.46357	0.1254486	3.0693080233032	(333005)	15.9	35.88830	75.60114	165.65865	17.31057	0.0655912	3.1347835233044
(332954)	16.1	307.11434	134.99839	167.96377	11.00734	0.0646465	3.1231750233032	(333006)	15.7	298.64578	272.08866	87.65589	10.64803	0.0953647	3.1776340233045
(332955)	16.8	128.84403	315.03333	148.91125	6.48641	0.0451353	2.6979362233032	(333007)	15.4	337.61448	66.77608	261.71665	10.17322	0.0859998	2.9748239233045
(332956)	16.4	124.21088	130.26171	347.71398	7.61047	0.0214268	3.1119345233032	(333008)	16.9	74.00608	43.63106	260.95273	4.08446	0.1476721	2.7122029233045
(332957)	16.5	257.06238	177.26988	161.82772	8.95522	0.1268264	2.6109418233033	(333009)	16.7	99.58025	53.57859	199.68252	3.06073	0.1074545	2.6960533233045
(332958)	15.7	292.89207	148.85445	159.50214	17.41342	0.0554665	3.0331973233033	(333010)	16.6	16.12102	136.79193	239.21226	2.69110	0.2528514	2.4874915233045
(332959)	15.3	341.75732	131.93416	142.18174	12.41628	0.2249904	3.1168876233033	(333011)	17.2	49.71577	191.97103	122.50724	4.09700	0.1817905	2.6239188233046
(332960)	17.1	136.65454	123.38523	355.91166	6.31152	0.1486402	2.3916518233033	(333012)	17.0	174.50346	234.72093	325.99577	6.95552	0.1567239	2.7558839233046
(332961)	16.0	107.66668	351.02654	163.15598	11.25840	0.0424169	2.9752113233034	(333013)	16.1	1.03460	194.86153	162.26448	10.64742	0.0891238	3.0154478233046
(332962)	16.4	83.89895	48.62974	125.90344	6.01433	0.0865135	3.0379019233034	(333014)	18.4	65.02783	123.91159	191.84156	1.77972	0.2109595	2.5705873233046
(332963)	15.9	67.38656	14.75746	155.85529	9.69757	0.0574013	3.1346059233034	(333015)	16.8	39.46993	55.84650	297.05123	13.56302	0.1930281	2.5703563233047
(332964)	15.6	175.35224	272.70458	161.05140	14.68006	0.1011803	3.1953695233034	(333016)	16.8	133.72986	258.17424	342.07596	4.98116	0.1037345	2.5728844233047
(332965)	16.1	304.73540	255.83461	48.07474	10.31612	0.1637764	3.0930221233035	(333017)	16.1	89.88946	303.82267	320.64746	12.07558	0.2407750	2.6545632233047
(332966)	15.3	4.16676	162.36381	64.74914	8.69478	0.0959851	3.1384803233035	(333018)	17.5	74.91455	327.25875	333.50781	1.82861	0.2052316	2.4612578233047
(332967)	16.1	112.15793	315.27940	177.33686	14.53662	0.0239123	3.1363061233035	(333019)	17.0	243.97999	264.61505	248.93073	5.64961	0.0375769	2.4191466233048
(332968)	16.8	55.75422	133.45303	65.34601	4.52977	0.0770672	2.5602462233035	(333020)	16.8	251.35398	245.06583	263.14557	3.35784	0.0221209	2.6022051233048
(332969)	15.7	119.76344	305.79115	166.28702	9.62533	0.0598403	3.1735606233036	(333021)	16.2	105.67872	293.55937	337.87952	10.95857	0.1639443	2.6472748233048
(332970)	16.3	136.17425	99.54994	350.84183	10.43344	0.0314843	3.2373500233036	(333022)	16.9	118.56033	104.88676	150.40283	3.73656	0.0847039	2.6646668233048
(332971)	16.4	6.99359	76.74832	174.89479	15.90034	0.0327571	3.0560484233036	(333023)	17.7	66.85197	115.06617	205.85927	2.01024	0.2056007	2.4384111233048
(332972)	15.7	333.27340	209.30428	83.84868	10.20660	0.0917525	2.7270904233036	(333024)	17.2	35.12754	203.97818	173.96115	7.04548	0.1506754	2.4299156233049
(332973)	16.2	317.58925	140.89502	156.22113	15.61309	0.1434660	2.8490427233037	(333025)	16.8	285.04689	254.75526	213.52349	8.73951	0.1066849	2.6202222233049
(332974)	17.4	53.04373	55.00870	191.05659	5.87896	0.1947081	2.2322331233037	(333026)	18.0	54.82242	205.35044	146.96667	1.63568	0.1074442	2.5211314233049
(332975)	16.4	112.64490	93.33334	25.38295	14.21363	0.1839582	2.9705968233037	(333027)	16.0	63.45138	326.05372	348.17280	13.05813	0.2526583	2.6342941233050
(332976)	15.1	55.44372	92.82041	104.81427	9.06970	0.1148591	3.1764736233037	(333028)	17.4	68.52645	335.23994	357.11240	1.02570	0.2000538	2.4082732233050
(332977)	15.9	351.04516	120.64797	165.05900	9.89242	0.1142953	3.1345168233038	(333029)	17.8	133.38488	352.86119	281.59555	2.46849	0.1148072	2.3733935233050
(332978)	16.0	29.54708	64.78788	166.82929	6.33567	0.1560462	3.0514562233038	(333030)	17.6	18.99846	204.65102	189.20212	1.27793	0.1887703	2.4476073233050
(332979)	15.8	94.76127	307.61696	183.18840	16.51766	0.1976266	3.1475504233038	(333031)	16.5	147.29022	240.02357	357.00201	11.11535	0.1445829	2.6225087233051
(332980)	15.1	150.00776	305.47012	159.44306	15.41309	0.0192988	3.2143229233038	(333032)	16.7	215.10716	265.22795	276.21940	6.74375	0.0296029	2.5778211233051
(332981)	16.3	275.67872	171.10807	161.20203	6.74443	0.0470815	3.1776285233039	(333033)	17.5	68.62281	127.23715	208.52670	2.53719	0.1929792	2.3973897233051
(332982)	15.7	335.41780	99.85903	178.04879	11.09204	0.0209631	3.1091102233039	(333034)	17.6	322.20127	239.21014	205.68257	3.75526	0.0703295	2.6551984233051
(332983)	16.4	98.30533	55.87456	118.86277	3.15714	0.0184366	2.8932550233039	(333035)	17.1	111.76624	45.83480	250.34663	1.91720	0.0975946	2.6026013233052
(332984)	15.4	129.53288	74.49044	32.01088	13.17304	0.0407539	3.1950121233039	(333036)	17.2	69.80098	331.79064	13.70572	5.31894	0.1287788	2.4503805233052
(332985)	16.4	229.46768	299.84827	72.49720	6.10870	0.1633523	3.0488204233040	(333037)	17.1	74.17285	125.72406	218.00728	6.23386	0.1336362	2.4171608233052
(332986)	16.2	142.35478	279.96233	176.92216	10.05499	0.0484843	3.0492604233040	(333038)	17.7	31.40992	244.73734	141.52974	3.72532	0.2120489	2.4416574233052
(332987)	16.4	320.93073	134.10813	177.73541	13.37964	0.1960990	2.7848162233040	(333039)	17.0	65.58177	172.08752	169.86218	2.60326	0.1964603	2.3934067233053
(332988)	15.3	47.40796	56.92063	140.56539	13.26841	0.0141134	3.0883186233040	(333040)	17.1	358.30041	281.06733	154.68076	5.24828	0.2534757	2.4050347233053
(332989)	15.5	30.50805	135.10567	68.94938	9.62750	0.0418219	3.1665734233041	(333041)	17.9	6.82979	204.31866	209.33921	14.01759	0.2495110	2.5381913233053
(332990)	17.9	16.79850	13.85941	257.84868	0.53806	0.1751919	2.3620800233041	(333042)	17.1	21.91042	354.69097	43.78274	3.41793	0.1824860	2.4393812233053
(332991)	16.3	49.16679	210.91894	342.86614	5.57107	0.1201655	2.9875029233041	(333043)	18.2	357.24289	343.46836	99.84784	2.23710	0.1811737	2.4189839233054

(333044)	17.4	124.47183	220.08426	54.80542	6.00743	0.1797096	2.5595946233054	(333096)	17.7	306.33910	305.68595	210.94051	1.60592	0.1122764	2.3737447233066
(333045)	17.1	2.54377	238.05179	187.74553	4.77262	0.1500608	2.4148064233054	(333097)	18.0	19.25174	234.19931	200.42725	1.04020	0.1645482	2.4317037233066
(333046)	16.9	88.79276	273.02365	10.42813	11.58127	0.3128170	2.5761205233054	(333098)	17.4	292.76445	223.65698	286.49552	3.68070	0.1116690	2.4011049233066
(333047)	17.8	3.39789	262.94177	164.84769	4.62510	0.2099271	2.4028611233055	(333099)	16.6	80.98672	350.90424	351.31750	3.22720	0.1013898	2.7666764233066
(333048)	16.5	296.62312	107.04482	31.90669	9.21751	0.1518201	2.6626231233055	(333100)	17.7	26.23635	260.73499	160.78170	3.18759	0.1667721	2.3671658233067
(333049)	17.5	102.07699	78.54692	221.78581	1.85530	0.1877748	2.3542061233055	(333101)	17.7	83.56255	250.04423	87.26293	2.83192	0.1433997	2.5522668233067
(333050)	17.1	5.95755	225.94540	184.31557	11.62982	0.0744480	2.5998521233055	(333102)	17.0	185.55304	36.09622	220.11083	3.76134	0.1454678	2.2355525233067
(333051)	17.1	323.59165	32.26743	91.46608	4.47590	0.1746461	2.6254439233055	(333103)	17.1	8.29305	134.14066	305.54193	7.20248	0.1835359	2.4651515233067
(333052)	16.8	85.16941	217.05127	103.60058	4.00251	0.2245942	2.6148773233056	(333104)	17.4	91.27737	165.21485	158.79438	6.82906	0.1339082	2.3291881233068
(333053)	17.5	79.92883	9.16937	315.62830	1.96101	0.1356884	2.6026809233056	(333105)	18.0	331.53448	50.39869	59.20913	2.34234	0.0997477	2.5300864233068
(333054)	17.3	94.36285	259.53433	27.98273	4.83831	0.1406526	2.6059071233056	(333106)	18.2	350.07273	222.70210	239.88741	1.58375	0.1468477	2.3900681233068
(333055)	17.4	35.71572	138.76197	237.45037	1.22784	0.0755530	2.6278492233056	(333107)	17.8	138.17308	303.21093	346.14745	2.75263	0.1418240	2.2993677233068
(333056)	16.3	230.94778	300.38951	248.56613	8.14126	0.1518820	2.7421032233057	(333108)	17.2	346.63698	355.70489	92.17061	2.93802	0.1289646	2.5904438233068
(333057)	17.0	326.51215	259.82847	190.16003	13.40920	0.1250381	2.6027451233057	(333109)	16.9	354.90782	55.81704	23.81751	2.12760	0.0497755	2.6423682233069
(333058)	16.6	11.84206	124.22411	273.69356	2.80158	0.1051495	2.7706835233057	(333110)	16.9	131.02315	6.59527	292.20571	5.52638	0.1473773	2.3559450233069
(333059)	17.9	106.97666	283.48491	12.23092	1.04902	0.1891270	2.3900602233057	(333111)	16.0	56.50506	8.74324	356.98691	8.87885	0.0858420	2.9811432233069
(333060)	16.5	192.43964	40.26007	175.78476	8.41397	0.0670510	2.6086124233057	(333112)	16.7	88.99141	216.81028	116.88224	9.89682	0.1053202	2.5179239233069
(333061)	17.9	42.16409	72.16392	289.48279	1.56138	0.1994437	2.4459480233058	(333113)	17.4	125.75449	341.85511	305.76471	1.51359	0.1675544	2.3164322233070
(333062)	16.0	31.15247	307.56142	67.77600	10.00584	0.2406379	2.4755288233058	(333114)	16.9	92.32138	257.98790	60.77714	6.80190	0.0923440	2.4654515233070
(333063)	16.7	299.03977	279.25065	221.75108	3.39206	0.0246543	2.7513884233058	(333115)	17.4	87.86751	282.78705	53.57692	7.18488	0.1649575	2.1955734233070
(333064)	17.0	75.97308	281.13429	48.96025	7.60118	0.2016614	2.4718648233058	(333116)	17.3	207.94950	64.09650	169.31525	7.24693	0.0736953	2.2370346233070
(333065)	17.4	9.76653	193.78191	237.90648	1.88882	0.1377513	2.3660767233059	(333117)	17.5	29.38686	349.87053	79.44580	2.86996	0.1627025	2.4175791233070
(333066)	16.7	123.23771	332.31552	308.98057	5.88067	0.0774993	2.4514110233059	(333118)	17.3	55.62086	326.48192	70.06816	8.97475	0.1840666	2.1917076233071
(333067)	18.1	11.84508	301.58748	131.30150	1.86600	0.1681336	2.4492108233059	(333119)	17.7	111.89525	337.36597	335.19745	0.78202	0.1935472	2.3930457233071
(333068)	17.7	353.28762	311.07804	158.03954	2.60951	0.1932148	2.4426901233059	(333120)	17.8	102.28464	303.27450	23.26205	1.63909	0.1506865	2.3877856233071
(333069)	17.0	329.46782	191.37231	283.70568	3.76355	0.0519765	2.2362070233060	(333121)	16.1	134.87802	227.71367	63.83134	6.80474	0.1239442	3.1496917233071
(333070)	16.8	198.43335	205.21047	31.31719	5.05979	0.1019287	2.5304126233060	(333122)	18.4	346.12691	63.90343	52.30091	2.19088	0.1319123	2.3793340233072
(333071)	17.5	96.58154	274.22851	42.95476	4.83965	0.2098725	2.4795040233060	(333123)	17.2	18.99449	235.96470	202.51010	7.17442	0.0854574	2.3406803233072
(333072)	17.3	118.19965	67.76518	245.99598	5.13114	0.1123346	2.3716711233060	(333124)	16.1	247.86433	297.65044	257.03838	13.39847	0.0527274	2.6977131233072
(333073)	17.7	350.42404	29.83201	49.08889	5.73918	0.1620860	2.5237926233060	(333125)	17.8	36.31755	220.90170	184.85686	4.46305	0.1547221	2.5171441233073
(333074)	17.8	1.28136	280.55439	139.25673	4.07960	0.1578213	2.5468109233061	(333126)	16.1	111.92153	117.69154	203.90452	4.93939	0.0600310	3.4484046233073
(333075)	16.5	208.23847	336.85154	243.78547	5.39343	0.1490963	2.3319216233061	(333127)	15.7	157.93121	14.05537	276.54668	8.82746	0.0740407	3.0420377233073
(333076)	17.0	276.56849	285.18160	240.80974	4.57913	0.0675481	2.5854369233061	(333128)	17.0	42.30355	234.59229	173.51113	4.02561	0.2361111	2.3180350233073
(333077)	17.1	339.94291	228.82551	237.65096	13.87694	0.1011874	2.4453292233061	(333129)	18.0	351.48138	257.48482	217.76066	1.65106	0.1728782	2.3638311233073
(333078)	15.4	9.00771	116.60113	290.99837	24.29151	0.1554040	3.1662717233062	(333130)	16.4	135.82591	231.49453	75.06872	14.75138	0.1034351	2.6000813233074
(333079)	17.4	319.88813	287.03516	214.03666	5.28550	0.1773196	2.5553140233062	(333131)	17.1	273.17830	335.62757	212.91990	5.65326	0.0834344	2.6866919233074
(333080)	18.1	64.31851	350.19410	356.24988	0.85816	0.2005286	2.4271009233062	(333132)	18.3	346.96423	40.20442	82.33081	2.27945	0.1364128	2.3598707233074
(333081)	17.8	7.46869	337.77933	79.48223	4.17128	0.1717751	2.4556230233062	(333133)	17.5	80.32734	258.87892	85.31715	6.69990	0.1848706	2.4030300233074
(333082)	17.3	347.73860	228.27393	243.71010	4.52404	0.1763799	2.3793351233062	(333134)	17.8	334.74804	33.09876	95.94621	5.04411	0.0831886	2.3668717233075
(333083)	17.2	279.26300	136.30817	42.84743	7.80008	0.0429423	2.3141510233063	(333135)	18.4	2.59959	12.88501	90.39779	2.44911	0.1427295	2.3648577233075
(333084)	16.9	197.67796	218.43907	28.47667	6.43261	0.1505889	2.2708281233063	(333136)	17.3	248.45672	304.72005	281.36076	4.79534	0.1374248	2.2215710233075
(333085)	17.8	113.22794	36.32533	242.12544	2.26123	0.0781112	2.5687998233063	(333137)	17.8	332.31085	153.01899	348.77709	2.24729	0.1214035	2.3987893233075
(333086)	18.3	21.73976	54.32580	18.89517	4.02332	0.1965169	2.3528576233063	(333138)	16.9	48.03203	349.86092	93.59393	10.80086	0.1787309	2.3163047233076
(333087)	17.2	76.38673	202.81701	157.90724	7.52976	0.1332902	2.2930449233064	(333139)	17.9	18.56080	254.38429	212.91308	1.29200	0.1470105	2.2930918233076
(333088)	18.1	8.58744	282.58617	171.59093	1.03277	0.1535959	2.3803428233064	(333140)	17.2	232.92141	187.42873	85.58672	7.11706	0.1757900	2.2169087233076
(333089)	17.2	137.01346	326.33758	320.11146	5.04782	0.1573861	2.2994578233064	(333141)	17.6	57.75671	282.68482	133.66597	4.44739	0.1715697	2.2914303233077
(333090)	15.3	113.08472	223.67838	76.14946	11.41301	0.2046619	3.1456550233064	(333142)	17.5	46.17588	13.67780	53.66717	4.65736	0.1910489	2.3176027233077
(333091)	17.6	31.29668	355.74270	33.28484	5.76988	0.0411582	2.6391259233065	(333143)	17.6	18.94911	242.26237	226.87159	3.33136	0.1038430	2.3035910233077
(333092)	17.3	139.08158	170.68636	98.65984	2.47465	0.1623928	2.4251470233065	(333144)	17.2	83.85398	136.94031	263.60543	9.40897	0.0556061	2.2448022233077
(333093)	17.1	145.96465	309.31079	333.34021	1.53697	0.1837233	2.3380889233065	(333145)	17.3	213.16801	274.23044	4.11289	5.40498	0.1448286	2.2258120233077
(333094)	17.5	263.06707	150.44277	44.35040	5.73489	0.0970867	2.2580547233065	(333146)	18.0	31.99788	88.04661	357.20894	2.62839	0.2013842	2.3509940233078
(333095)	16.9	170.94256	192.37157	73.33567	7.48011	0.0857102	2.3931490233065	(333147)	16.6	79.81015	282.49150	100.98769	11.91661	0.1938364	2.6244528233078

(333148)	16.0	132.33921	2.73744	338.85641	8.42721	0.1156416	3.0366221233078	(333200)	16.0	272.33764	149.19725	152.82686	14.49476	0.2010308	3.1060701233091
(333149)	16.8	328.40405	22.37807	151.52828	10.21426	0.1179399	2.7523983233078	(333201)	15.4	311.83336	175.43623	99.45492	15.34102	0.1442065	3.1759496233091
(333150)	18.0	358.13072	178.50685	314.90248	4.07634	0.1503051	2.3458795233078	(333202)	15.9	38.59607	293.83156	228.91378	4.12026	0.1770639	3.1856772233091
(333151)	15.8	296.13364	74.00368	146.29918	9.12256	0.1015848	3.1040566233079	(333203)	16.3	306.75444	224.94895	49.74707	12.40404	0.1412154	2.6565416233091
(333152)	17.8	44.25419	301.51615	132.06227	5.64680	0.1954114	2.3768643233079	(333204)	16.7	16.31841	101.81730	70.69593	11.01833	0.2067974	2.5897535233092
(333153)	18.0	27.99806	146.72793	322.02317	4.35940	0.0622624	2.2593275233079	(333205)	17.3	338.87156	181.79819	36.62193	22.26603	0.0259095	1.9364015233092
(333154)	16.3	18.59852	41.35471	99.15168	6.07206	0.1059204	3.1985757233079	(333206)	17.4	60.79251	73.43206	66.84598	23.18104	0.0532290	1.9587017233092
(333155)	18.1	62.19949	286.04785	127.87454	2.02869	0.1461080	2.4083805233080	(333207)	18.0	10.49477	113.70512	67.84087	3.18374	0.1542283	2.3332890233093
(333156)	17.7	293.06614	191.10254	21.81724	1.63081	0.0276617	2.2523307233080	(333208)	17.3	299.87008	243.60158	36.21136	13.25957	0.2558495	2.6211673233093
(333157)	17.8	58.83815	82.87823	351.03232	0.81562	0.1749521	2.2658537233080	(333209)	16.1	345.78269	157.49975	73.72214	16.02538	0.0439562	2.5556849233093
(333158)	16.6	212.99889	351.61081	288.22692	2.82510	0.0686643	2.7776877233080	(333210)	15.2	26.36883	89.08695	71.59588	9.91858	0.0831843	3.0447863233093
(333159)	18.0	339.84568	45.02291	131.09306	6.31854	0.1850936	2.3202202233081	(333211)	16.3	27.01453	98.57301	89.18866	10.04945	0.0420107	2.9841578233094
(333160)	17.5	25.62265	192.37850	291.22551	6.86831	0.0378753	2.2436049233081	(333212)	17.8	320.10645	96.09729	173.48891	6.49217	0.2506438	2.3453840233094
(333161)	18.3	6.59891	336.49371	165.29007	2.39092	0.1789995	2.3376875233081	(333213)	15.8	289.41852	193.76952	108.47827	12.13924	0.1182025	2.8561580233094
(333162)	16.4	148.13423	291.62212	39.07744	5.71266	0.2299297	2.4374987233081	(333214)	16.8	281.16679	182.73048	126.54369	5.82137	0.1314045	2.6021520233094
(333163)	18.3	323.38650	346.71418	203.84418	1.02596	0.0375059	2.2618352233082	(333215)	17.3	348.56510	18.34765	211.48476	21.21731	0.0536636	1.9389441233095
(333164)	18.2	349.32641	33.72138	133.71638	5.12342	0.0741316	2.1850845233082	(333216)	15.5	352.23452	207.03467	2.73589	17.17204	0.1000805	3.0239449233095
(333165)	18.1	82.51554	303.90187	110.02436	3.89607	0.1562074	2.2530492233082	(333217)	16.3	325.31006	73.58468	193.95329	14.46629	0.0863544	2.6062136233095
(333166)	15.3	44.11183	2.42326	97.10379	17.52698	0.0979482	3.0698267233082	(333218)	15.8	347.60041	173.88242	61.33170	10.50044	0.0641880	3.1823662233095
(333167)	15.7	328.38368	3.88682	177.88372	10.60735	0.0305085	3.0188365233082	(333219)	16.3	99.71789	249.88471	225.80932	10.32567	0.0548604	2.9200756233095
(333168)	15.5	202.31099	324.99002	343.91023	9.28564	0.0505428	3.4835101233083	(333220)	17.7	292.74133	245.61270	56.57058	2.94434	0.1908894	2.3793352233096
(333169)	18.5	70.15299	288.12978	150.92718	1.09292	0.1100150	2.1911428233083	(333221)	17.1	307.84704	324.82386	296.05311	5.55041	0.1474196	2.1555294233096
(333170)	15.7	277.25869	285.41230	333.95230	25.30941	0.1932832	3.1180610233083	(333222)	15.9	356.56979	155.80518	49.22195	17.47657	0.2062409	3.1600208233096
(333171)	15.3	321.29809	36.50978	166.03041	3.16029	0.0990532	3.9726836233083	(333223)	16.2	359.00694	37.60872	175.22900	10.87900	0.1740384	2.5633753233096
(333172)	16.0	305.99607	253.80067	325.58727	10.07616	0.0618910	2.9380915233084	(333224)	17.4	331.26140	187.62203	47.78294	6.20580	0.2040985	2.2607352233097
(333173)	15.1	181.26623	193.74245	131.83564	26.29785	0.1196944	3.1563518233084	(333225)	16.5	339.51129	175.68477	56.98179	5.71955	0.1186614	2.6060038233097
(333174)	15.5	339.95900	169.93599	2.89823	9.47293	0.0255915	3.1314717233084	(333226)	15.5	9.98753	341.57587	214.68595	12.63265	0.1299247	3.0459136233097
(333175)	15.5	348.33967	125.62499	123.53487	26.26050	0.4437393	3.1319840233084	(333227)	15.4	316.36800	182.72044	83.61604	6.54958	0.1407354	3.1503932233098
(333176)	16.3	186.12641	190.25058	140.47148	4.50007	0.0993555	2.8145557233085	(333228)	15.6	328.49196	174.01958	84.51412	9.97169	0.0254585	3.1353988233098
(333177)	17.5	273.86426	33.98600	215.43929	6.08335	0.0509390	2.3611342233085	(333229)	16.4	261.57204	252.26835	71.02668	6.17614	0.1301675	2.7698823233098
(333178)	16.3	329.04414	77.73563	131.16952	5.32711	0.1349186	3.1478341233085	(333230)	16.1	188.74303	310.17685	84.95556	14.82254	0.0382207	2.7460342233098
(333179)	18.7	114.18341	253.15316	160.50234	2.24985	0.1225130	2.1735809233085	(333231)	16.5	313.45774	131.98278	153.94183	7.58762	0.2228301	2.5632487233099
(333180)	16.9	258.90109	265.36652	21.14459	6.16136	0.1197527	2.4782950233086	(333232)	15.8	238.32039	228.37084	114.66971	12.40312	0.0699473	2.9995414233099
(333181)	15.9	156.24759	20.65483	342.59529	7.82803	0.0605818	3.0587881233086	(333233)	16.2	159.17023	314.12965	104.88582	15.03247	0.0507283	2.6564960233099
(333182)	16.7	354.83246	175.51539	0.14654	4.67781	0.0941670	2.7969079233086	(333234)	17.4	328.28180	107.52698	147.51863	3.70642	0.1258615	2.6292898233099
(333183)	16.6	30.18534	56.23284	77.50947	7.06951	0.0512159	2.4705615233086	(333235)	15.8	317.99641	165.58133	105.38734	15.75228	0.0937289	2.6106004233099
(333184)	17.2	187.70562	149.63384	190.72364	3.72184	0.0674205	2.5660976233087	(333236)	15.4	16.13434	117.43305	69.50077	18.77978	0.0467265	3.0730263233100
(333185)	16.4	247.48680	156.98690	142.21598	5.90610	0.1467482	3.0663392233087	(333237)	16.3	293.73656	130.44848	171.34585	9.69944	0.1324075	2.7553436233100
(333186)	18.2	64.19246	300.74944	157.70958	2.81905	0.1425190	2.3212316233087	(333238)	16.6	286.78491	163.75126	137.47537	10.30799	0.1290644	3.12550903233100
(333187)	15.9	317.67462	119.23551	91.53987	6.94201	0.1020104	3.1189194233087	(333239)	16.1	301.70175	237.79172	43.55850	5.78384	0.1107966	3.1223989233101
(333188)	18.0	338.00949	32.93220	178.62457	3.69128	0.0914682	2.4099645233088	(333240)	16.7	268.79333	245.15569	80.00000	4.28888	0.1888139	2.6861051233101
(333189)	16.1	200.23425	317.64935	37.37953	11.81202	0.1781755	2.7414128233088	(333241)	16.6	327.69285	195.95147	63.39624	4.00564	0.0724609	2.6562205233101
(333190)	15.4	302.34799	167.04161	91.82119	13.12010	0.0914069	3.1785732233088	(333242)	17.3	13.62675	336.12908	223.70219	5.10200	0.1032127	2.2989192233101
(333191)	17.0	297.31715	245.34825	25.53830	3.83446	0.1993178	2.6254869233088	(333243)	16.5	52.67635	67.72443	71.76259	12.19083	0.1303399	2.6274472233102
(333192)	17.4	284.24806	194.69553	108.68824	3.62304	0.1978777	2.3773488233089	(333244)	16.7	51.59873	63.21553	86.68549	12.96806	0.1199885	2.5636641233102
(333193)	17.7	92.56480	265.73499	164.61923	2.65415	0.1596210	2.3267754233089	(333245)	15.4	336.56452	195.29930	48.45009	10.92625	0.1191072	3.2219010233102
(333194)	16.6	356.46470	175.63142	28.50776	11.28585	0.1499880	2.6484837233089	(333246)	15.5	251.38660	207.46096	155.38013	13.98564	0.2200212	2.5717684233102
(333195)	17.8	28.17491	244.32074	258.32767	1.30521	0.1519638	2.3313016233089	(333247)	16.5	332.16143	192.12177	58.74085	5.78087	0.1101713	2.7747352233102
(333196)	15.4	1.50197	15.11647	192.17436	15.82388	0.1687459	3.1620208233090	(333248)	16.8	286.87043	59.23332	234.89413	11.26471	0.0367280	2.6515493233103
(333197)	17.1	264.03699	60.14608	232.52806	1.57548	0.0288662	2.6986090233090	(333249)	16.5	349.74556	149.48346	87.18860	2.69862	0.1316673	3.1056808233103
(333198)	16.9	336.80862	0.54078	230.45603	5.79402	0.0986829	2.4462289233090	(333250)	16.6	308.20638	59.12639	220.02723	4.25847	0.0300433	2.7453581233103
(333199)	16.4	47.22851	347.86894	155.32688	9.79951	0.1297072	2.5559697233090	(333251)	15.6	26.48663	117.51506	62.13038	12.49675	0.0349089	3.0122187233103

(333252) 16.7 28.15025 96.23188 73.25878 7.44027 0.1047051 2.5893189233104
 (333253) 15.3 334.44894 126.46365 123.53503 20.87988 0.0473821 3.1979923233104
 (333254) 17.2 268.07967 69.58146 239.63312 4.83041 0.0181454 2.4491048233104
 (333255) 17.4 72.30297 143.84708 359.75643 1.36363 0.0193346 2.6251663233104
 (333256) 16.0 12.94844 99.57251 98.40329 7.26160 0.1876301 3.0604111233105
 (333257) 15.5 278.45786 75.65718 235.07665 8.85857 0.0661716 3.0094737233105
 (333258) 16.1 325.65490 178.98962 79.46262 3.20683 0.0601021 3.0457915233105
 (333259) 15.6 276.95643 264.28367 47.44312 9.80840 0.0736752 3.1624549233106
 (333260) 16.4 331.27564 150.67369 106.26308 16.88821 0.0966921 2.4653405233106
 (333261) 17.2 261.97072 266.38411 56.03160 6.23850 0.1150313 2.3618594233106
 (333262) 17.6 313.86937 40.95010 234.06922 5.78575 0.1037767 2.4210756233106
 (333263) 17.7 57.27261 96.67237 53.87810 22.08233 0.0560342 1.9445081233106
 (333264) 15.7 22.08217 126.13310 51.16121 16.11050 0.1213565 3.1247576233107
 (333265) 15.1 292.95633 214.09829 101.01078 31.31357 0.3070097 3.1497174233107
 (333266) 17.9 281.71156 65.30571 252.75386 1.79917 0.2200668 2.3108360233107
 (333267) 17.6 17.72794 306.01317 241.77596 1.57195 0.1248386 2.2868933233107
 (333268) 15.9 49.31023 82.54455 61.78429 10.19204 0.1401645 3.1469939233108
 (333269) 17.2 297.49914 66.86119 221.29803 22.34739 0.1127456 1.9430718233108
 (333270) 16.0 306.61706 143.02084 199.12728 8.38186 0.4145191 2.6674892233108
 (333271) 16.3 246.36169 143.68310 225.36423 4.24862 0.2030930 2.6876245233109
 (333272) 15.3 274.83107 174.79068 180.36501 15.41567 0.2507575 3.2053999233109
 (333273) 17.5 268.11841 200.79608 148.18017 4.55638 0.2179017 2.3448938233109

SUMMARY OF IDENTIFICATIONS

Further details, orbital elements and residuals for the identifications listed below are given in the *Minor Planet Orbit Supplement*.

1995 SC₄₁ = 2012 LL₁₇
 1999 NY₄ = 2012 KR₅₀
 2001 VS₁₁₁ = 2012 JH₄₅
 2002 GU₁₈₆ = 2012 LQ₂₀
 2002 NY₇₈ = 2012 LB₂₃
 2002 NW₇₉ = 2010 KC₁₁₃
 2002 OF₃₄ = 2012 LF₁₃
 2002 OA₃₇ = 2008 WZ₈₈ = 2010 CD₆₄ = 2011 HN₉₇
 2002 PX₁₉₉ = 2011 DW₂₀
 2002 PY₁₉₉ = 2009 WP₇₈
 2002 PZ₁₉₉ = 2005 EL₁₁₇
 2002 PE₂₀₀ = 2009 WA₁₁₂
 2002 PF₂₀₀ = 2009 UH₁₂₅
 2002 PK₂₀₀ = 2008 UR₂₉₀
 2002 PL₂₀₀ = 2006 SQ₁₂₃ = 2008 DH₂₅ = 2010 XV₈₃
 2002 PX₂₀₀ = 1998 WZ₂₇
 2002 PB₂₀₁ = 2006 UA₁₀₇
 2002 PC₂₀₁ = 2012 DC₈₀
 2002 PE₂₀₁ = 2001 HG₅₂ = 2008 RU₈₀ = 2010 ER₃₀
 2002 QK₁₀₁ = 2012 GT₃₈
 2002 QD₁₅₀ = 2006 PY₂₀ = 2011 WJ₅₈
 2002 QG₁₅₀ = 2007 WS₅₆ = 2010 DH₇₁
 2002 QJ₁₅₀ = 2005 GB₂₄ = 2006 SB₈₇
 2002 QN₁₅₀ = 2006 RU₄₄

2002 QT₁₅₀ = 2012 LQ₁₃
 2002 QZ₁₅₀ = 2009 OG₁₈
 2002 QC₁₅₁ = 2006 QY₁₀₆
 2002 QD₁₅₁ = 2007 DO₈₄ = 2010 NV₁₀₃ = 2010 TN₁₂
 2002 QE₁₅₁ = 2008 UV₃₁₀ = 2010 CQ₂₅
 2002 QG₁₅₁ = 2011 SJ₁₈
 2002 QK₁₅₁ = 2010 BK₅₀
 2002 QN₁₅₁ = 2009 CD₁₉
 2002 QO₁₅₁ = 2010 MZ₉₅ = 2011 SP₁₀₈
 2002 RK₂₆₉ = 2010 GY₆₇ = 2012 KP₄₇
 2002 TW₃₀₃ = 2010 CE₉₈
 2002 UB₄₄ = 2012 KV₄₇
 2002 UN₄₇ = 2012 LM₃
 2002 VB₁₇ = 2011 LR₃
 2003 FW₁₀₇ = 2012 HG₇₉
 2003 GU₅₁ = 2012 MN₁
 2003 SQ₄₀₆ = 2012 KB₅₀
 2003 UR₂₂₅ = 2012 KN₂₇
 2004 JQ₃₁ = 2012 GM₄₀
 2004 RA₆₆ = 2012 LN₉
 2004 RD₃₃₂ = 2012 LJ₃
 2005 AR₇₅ = 2012 MY₁₃
 2005 GH₆₉ = 2012 HF₈₄
 2005 GE₁₄₂ = 2012 LY₁₈
 2005 JH₁₂₁ = 2012 LO₁₈
 2005 KD₁₂ = 2012 FR₈₀
 2005 LG₄ = 2012 LE₂₄
 2005 NC₂₀ = 2012 ML₅
 2005 SK₂₃₃ = 2005 UO₄₂₃
 2005 UT₃₂₈ = 2005 UC₁₉₄
 2005 UF₄₃₄ = 2005 UX₂₅₉
 2005 UN₄₃₇ = 2012 LV₉
 2005 UQ₄₅₆ = 2012 MY₁₀
 2005 VX₁₈ = 2005 WX₂₀₆
 2005 WK₁₀₃ = 2010 PA₇₂ = 2010 VY₃₇
 2005 YT₂₇₅ = 2012 MD₁₁
 2006 BB₂₃ = 2006 BW₂₇₂
 2006 CF = 1999 CK₁₂₉
 2006 DN₁₄₈ = 2012 LR₂₁
 2006 EG₂₂ = 2006 BS₁₂₅
 2006 FU₁₀ = 2012 FT₅₀
 2006 HR₆₈ = 2012 LC₇
 2006 HW₁₀₃ = 2012 MU₁₀
 2006 KQ₇₅ = 2012 LJ₁₅
 2006 MN₁ = 2010 AJ₉ = 2012 LY₂₃
 2006 SR₇ = 2012 MZ₁₀
 2006 TY₇₉ = 2002 QP₁₅₀
 2006 XX₆₂ = 2012 LR₁₇
 2006 YS₂₅ = 2012 LL₁₉
 2007 EG₁₉₁ = 2012 LY₁₁
 2007 HR₇₂ = 2012 HM₅₅
 2007 TD₂₉ = 2007 TW₃₀₅

2007 TS₄₄₀ = 2012 ME₄
 2007 US₁ = 2012 MN₁₄
 2007 UD₁₀₂ = 2012 MQ₁₅
 2007 WE₁ = 2012 MN₅
 2007 YN = 2012 KT₄₄
 2008 AK₄₃ = 2005 EQ₁₅₀ = 2012 HP₅₉
 2008 CD₁₁ = 2012 LD₁₀
 2008 CV₁₃₀ = 2012 JY₆₂
 2008 CQ₁₅₉ = 2008 CK₁₈₅
 2008 CM₂₀₅ = 2012 JQ₃₉
 2008 DO₃₉ = 2012 LZ₈
 2008 DA₆₀ = 2005 OK₂₂ = 2012 JC₆₆
 2008 EN₇₂ = 2012 LT₁₈
 2008 FO₁₃₁ = 2012 LX₁₀
 2008 GX₄₄ = 2008 HS₃₈
 2008 GV₁₀₀ = 2012 GE₂₅
 2008 HR₅₀ = 2012 MX₇
 2008 JH₁₃ = 2008 JJ₃₃
 2008 JW₃₀ = 2007 AT₁₅ = 2012 HW₅₈
 2008 MS = 2012 LR₂₂
 2008 NQ₁ = 2012 LA₂₃
 2008 PN₁₆ = 2008 OZ₂₂
 2008 QY = 2006 YO₄₄
 2008 QM₃₄ = 2012 LF₁₅
 2008 QC₄₄ = 2012 MM₄
 2008 RS₁₈ = 2012 JC₅₄
 2008 TK₁₄₈ = 2012 LL₁₀
 2008 UJ₈ = 2012 MV₃
 2008 UY₁₃₇ = 2002 QS₁₅₀
 2008 UG₂₁₇ = 2012 LE₂₂
 2008 UJ₂₇₅ = 2012 LT₂₄
 2008 UD₂₈₅ = 2008 UH₃₃₃
 2008 UA₃₃₆ = 2012 MN₁₅
 2008 WN₃ = 2012 KB₄₉
 2008 WR₆₁ = 2008 WU₆₂
 2009 BO₂ = 2012 KS₄₂
 2009 OV₁₇ = 2012 LS₈
 2009 SY₂₃ = 2012 JD₆₆
 2009 SJ₇₉ = 2012 MP₁
 2009 SC₂₇₁ = 2012 MH₄
 2009 SQ₃₄₁ = 2012 LX₅
 2009 UH₁₄₈ = 2012 LW₂₁
 2009 VF₁₁₃ = 2009 WY₁₃₂
 2009 WH₄₉ = 2003 SJ₄₀₄ = 2012 JW₁₂
 2009 WY₁₃₃ = 2009 UX₃₃
 2009 WO₁₄₂ = 2012 MY₁
 2009 XM₅ = 2012 MF₈
 2009 XN₂₁ = 2012 KU₄₉
 2010 BM₃₀ = 2012 HN₄₂
 2010 BH₁₃₀ = 2010 PQ₁₉
 2010 CZ₂₃₇ = 2012 KA₃₅
 2010 GK₃₂ = 2010 OA₁₁₂
 2010 HO₂₁ = 2012 MK₇
 2010 SO₃₅ = 2010 RA₁₄₅
 2010 UP₁₀ = 2010 PB₃₇ = 2004 TT₂₂₆
 2010 UY₉₁ = 2010 OV₁₂₂
 2010 XP₃₉ = 2012 GP₃₆
 2011 BY₂₅ = 2012 LV₁₆
 2011 BB₆₅ = 2012 LQ₁₄
 2011 BG₁₂₁ = 2012 LL₁₄
 2011 BR₁₂₈ = 2008 KT₁ = 2012 LP₂₀
 2011 CF₅₈ = 2012 LL₄
 2011 CU₆₄ = 2012 GL₃₈
 2011 CM₉₁ = 2012 LK₁₄
 2011 CR₁₁₅ = 2012 MU₆
 2011 EU₄₂ = 2010 ES₁₁₄ = 2012 LY₂₀
 2011 EP₅₀ = 2010 EO₁₈ = 2012 LE₂₃
 2011 FM₇ = 2012 LM₁₀
 2011 GM₄₂ = 2012 LS₁₃
 2011 GZ₈₁ = 2007 RB₁₄ = 2012 MB₉
 2011 HJ₉₉ = 2012 MP₁₅
 2011 JJ₂₆ = 2012 MC₁₅
 2011 QG = 2012 MJ₇
 2011 SL₂₅₈ = 2002 QF₁₅₁
 2011 VC₁₁ = 2011 SZ₁₇₁
 2011 WG₆₃ = 2007 RP₂₇₀
 2011 WK₁₀₄ = 2010 JD₁₄
 2011 WA₁₄₀ = 2009 HZ₃₃
 2012 BR₁₅ = 2011 YN₆₅
 2012 BP₇₃ = 2010 OU₅₅
 2012 BP₁₂₂ = 2009 SW₃₂₁
 2012 CX₄₄ = 2002 RR₁₇₈ = 2010 AN₁₀₂
 2012 CG₅₀ = 2008 EW₅₇
 2012 DM₆ = 2003 XA₂₇ = 2007 WT₁₁
 2012 DB₁₅ = 2008 AV₁₀
 2012 DA₄₁ = 2005 YF₂₈₉
 2012 DJ₄₇ = 1998 QT₂₆
 2012 DC₆₆ = 2002 QF₇₃
 2012 DH₇₅ = 2005 LR₂₉ = 2008 AL₆₂
 2012 DU₇₅ = 2010 CQ₂₄₂
 2012 DL₈₈ = 2004 DG₈
 2012 DL₈₉ = 2010 WR₄
 2012 FV₉ = 2007 GC₁₃
 2012 FA₁₅ = 2006 UT₂₂₈
 2012 FB₂₆ = 2005 EF₁₅₅ = 2006 SV₁₀₅
 2012 FD₂₇ = 2002 PS₁₄₃
 2012 FV₃₁ = 2009 WV₂₂₉
 2012 FU₃₈ = 2002 XB₉₂
 2012 FT₄₃ = 2005 UX₄₀₀ = 2009 SV₁₉₁
 2012 FY₆₂ = 2007 EO₂₀₅
 2012 FK₆₇ = 2010 VR₇₄
 2012 FT₇₄ = 2004 HK₁₇ = 2010 VG₁₉₁
 2012 FY₇₅ = 2007 HR₆₃
 2012 FW₇₆ = 2003 FQ₇ = 2009 SA₁₅₂

2012 FK₇₇ = 2002 JQ₁₄₀
 2012 FU₈₀ = 2008 EA₈₅
 2012 FX₈₀ = 2001 KM₆₈
 2012 FZ₈₀ = 2007 NE = 2010 EC₄
 2012 GQ₄ = 2005 GK₁₉₀
 2012 GP₁₃ = 2012 GM₁₇
 2012 GM₁₅ = 2010 DY₈₉
 2012 GY₂₃ = 2006 DG₁₂₁
 2012 GA₂₆ = 2007 HG₅₁ = 2009 SE₂₁₂
 2012 GH₂₇ = 2003 UU₁₆₀ = 2010 CA₁₆
 2012 GR₂₈ = 2009 WT₂₄₅
 2012 GX₂₉ = 2005 EZ₁₅₅ = 2010 VD₁₄₆
 2012 GJ₃₃ = 2005 UK₄₄₄
 2012 GY₃₃ = 2005 QT₁₂₇
 2012 GZ₃₃ = 2008 OW₁₁
 2012 GV₃₅ = 2008 SU₂₁₅
 2012 GC₃₆ = 1999 EO₆
 2012 GT₃₇ = 2006 CH₃₀
 2012 GK₃₈ = 2012 HN₇₅
 2012 HC = 2002 TP₁₄₈
 2012 HM₆ = 2005 VX₇₄
 2012 HX₆ = 2008 CQ₁₇₈
 2012 HG₁₄ = 2007 CC₁₃
 2012 HE₁₅ = 2008 RZ₅₁
 2012 HS₂₁ = 2006 KS₈₈
 2012 HN₃₁ = 2007 EK₁₂₂
 2012 HQ₃₁ = 2004 FU₁₃₅ = 2010 CJ₁₃₆
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 2012 HU₃₅ = 1999 GB₆₂
 2012 HV₃₇ = 2002 RT₂₇₈
 2012 HV₃₈ = 2005 OD₅
 2012 HL₄₀ = 2010 DK₅₄
 2012 HU₄₀ = 2004 RD₂₂₇ = 2009 SG₁₅₁
 2012 HV₄₀ = 2007 DH₇₇ = 2009 UO₆₈
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 2012 HY₄₄ = 2003 SV₂₀₀
 2012 HC₄₅ = 2001 WX₇₆ = 2009 ST₂₂₆
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 2012 HB₄₇ = 1994 VX₅
 2012 HR₄₇ = 2004 LD₉ = 2009 SW₂₁₈
 2012 HS₄₉ = 2003 SE₃₈₂ = 2005 EL₂₀
 2012 HW₄₉ = 2009 WO₂₅₈
 2012 HF₅₀ = 2004 WK₂
 2012 HV₅₀ = 2009 WJ₄₃
 2012 HV₅₂ = 2003 UT₁₂₃
 2012 HG₅₅ = 2009 US₁₁₄
 2012 HQ₅₅ = 2001 SB₁₉₁
 2012 HC₅₆ = 2008 KA₁₁

2012 HO₅₇ = 2008 HG₂₉
 2012 HJ₅₈ = 2006 UX₁₂₁
 2012 HV₅₉ = 2009 UZ₁₁₈
 2012 HB₆₀ = 2003 SF₃₅₂ = 2006 DM₈
 2012 HX₆₁ = 1995 FW₉ = 2003 US₄₀₅
 2012 HM₆₂ = 2000 CT₁₃₈
 2012 HN₆₂ = 2005 YV₅₄ = 2006 CP₆₄
 2012 HK₆₃ = 2010 XH₈₄
 2012 HM₆₃ = 2012 HD₇₇
 2012 HT₆₃ = 2008 KG₃₄
 2012 HL₆₅ = 2010 DZ₆₂
 2012 HJ₆₆ = 2009 WA₂₂₄ = 2011 CC
 2012 HX₆₆ = 2005 VJ₇₆ = 2010 AK₁₃₆
 2012 HP₆₇ = 2009 WQ₂₄₀
 2012 HT₆₇ = 2003 KO₃₄
 2012 HX₆₈ = 2007 BD₅
 2012 HC₇₁ = 2007 HR₇₃ = 2009 WT₂₃₃ = 2010 DT₃₁
 2012 HD₇₁ = 2005 WL₁₂₄
 2012 HK₇₁ = 2006 UV₂₃₉
 2012 HE₇₂ = 2002 CT₁₈₇
 2012 HF₇₂ = 2010 EE₁₆₅
 2012 HS₇₄ = 2010 WT₇₃
 2012 HT₇₄ = 2006 WR₁₃₆ = 2006 WR₂₀₄
 2012 HO₇₆ = 2010 VK₁₆₇
 2012 HW₇₇ = 2006 UW₂₇₈
 2012 HF₇₈ = 2003 UH₁₀₈ = 2010 DV₁₄
 2012 HJ₇₈ = 2008 TH₁₀₈
 2012 HC₇₉ = 2008 PU₁₀
 2012 HJ₈₂ = 2010 CV₁₂
 2012 HO₈₂ = 2010 VB₁₇₉
 2012 JN = 2010 VB₁₁
 2012 JT = 1999 GU₄₉ = 2009 UH₂₆
 2012 JG₂ = 2009 UR₁₄₁
 2012 JB₃ = 2005 UC₁₂₆ = 2009 WS₃₅
 2012 JN₃ = 2005 GK₁₆₆
 2012 JY₄ = 2004 GB₄₀
 2012 JZ₄ = 2007 YP₆₁
 2012 JY₅ = 2007 YM₅₉
 2012 JF₈ = 2003 UQ₁₆₇ = 2010 EJ₁₆₇
 2012 JL₈ = 1997 SN₁₃
 2012 JR₉ = 2009 UZ₄₈
 2012 JB₁₃ = 2009 WM₁₂₁
 2012 JC₁₃ = 2009 UX₁₀₆
 2012 JE₁₃ = 2010 CO₁₃₁
 2012 JF₁₃ = 2001 UR₂₂₃ = 2003 DJ₁₉ = 2009 SQ₁₆₇
 2012 JH₁₃ = 2005 VU₁₃₆
 2012 JR₁₃ = 2003 KP₇
 2012 JM₁₈ = 2005 WP₁₈₆
 2012 JO₁₈ = 2010 DE₈₁
 2012 JD₁₉ = 2004 RU₂₅₈ = 2009 UG₁₁₄
 2012 JK₁₉ = 2006 DZ₁₅₅
 2012 JL₁₉ = 2011 FU₁₅

2012 JP₂₂ = 2010 WR₃₉
 2012 JR₂₂ = 2010 BM₉₂
 2012 JO₂₃ = 2008 KE₃₇
 2012 JV₂₃ = 2010 DA₈₅
 2012 JW₂₃ = 2005 XX₁₁
 2012 JY₂₃ = 2009 WT₁₉₇
 2012 JD₂₄ = 2008 EF₅₃ = 2010 BJ₃₃
 2012 JL₂₄ = 2005 QN₇₇
 2012 JZ₂₄ = 2001 XR₂₆₀ = 2005 UV₄₀₉
 2012 JB₂₅ = 2009 SK₃₉
 2012 JF₂₅ = 2009 WV₁₀₈
 2012 JR₂₅ = 2004 PX₉₂
 2012 JX₂₅ = 2007 BE₅₅
 2012 JJ₂₆ = 2006 DK₁₈₄
 2012 JC₂₈ = 2009 SA₇₁
 2012 JK₃₀ = 2009 RF₄₁
 2012 JK₃₃ = 2008 JE₁₄
 2012 JB₃₅ = 2008 ED₆₂
 2012 JC₃₅ = 2009 SJ₁₉₁
 2012 JG₃₇ = 2005 PJ₁₅ = 2005 QZ₁₅₄ = 2009 WX₂₉
 2012 JH₃₇ = 2003 SW₉₇
 2012 JK₃₈ = 2003 KS₃₂
 2012 JF₄₁ = 2010 EA₁₁₉
 2012 JC₄₂ = 1999 FK₈₁
 2012 JM₄₅ = 2007 ES₁₇₉
 2012 JR₄₅ = 2006 JU₆₁
 2012 JX₄₅ = 2004 YE₂₈ = 2009 US₇₂
 2012 JF₄₆ = 1999 KG₁₈ = 2008 RK₇₉
 2012 JL₄₆ = 1996 JJ₁₀ = 2009 WQ₃₄ = 2010 EM₂₄
 2012 JP₄₇ = 2006 HD₁₃₀
 2012 JG₄₈ = 2009 WR₁₁₈
 2012 JC₅₁ = 2007 KA₃
 2012 JV₅₁ = 2008 UH₆₈ = 2011 EW₈₁
 2012 JF₅₂ = 2009 WP₉₉
 2012 JO₅₂ = 2005 UF₃₅₇
 2012 JN₅₃ = 2004 VN₁₂₂
 2012 JN₅₄ = 2006 JG₁₃ = 2010 FC₅₂
 2012 JN₅₈ = 2011 CK₃₆
 2012 JO₅₈ = 2009 SN₂₁₄ = 2010 AG₉₉ = 2011 CE₁₁₇
 2012 JP₅₈ = 2005 WB₁₀₈ = 2009 ST₂₀₆
 2012 JX₅₉ = 2009 SU₂₆₀ = 2011 BB₁₅₉
 2012 JS₆₀ = 2008 LQ₂
 2012 JB₆₁ = 1999 VE₇₅
 2012 JT₆₃ = 2005 DB₃
 2012 JS₆₄ = 2005 GS₁₀₂
 2012 JB₆₅ = 2008 GR₉₅
 2012 JH₆₅ = 2006 XJ₃ = 2010 XJ₃₄
 2012 JJ₆₆ = 2000 WO₅₂
 2012 KM₂ = 2001 SJ₁₉₉ = 2003 BK₂₃ = 2009 SB₈₀
 2012 KW₄ = 2011 BJ₁₁₅
 2012 KR₆ = 2001 NA₈
 2012 KU₈ = 2008 CF₆₈

2012 KV₉ = 2011 CL₇₇
 2012 KS₁₀ = 2009 WP₂₄₁
 2012 KE₁₁ = 2009 BQ₁₅₁
 2012 KQ₁₁ = 6851 P-L
 2012 KR₁₁ = 2002 UJ₃₅
 2012 KD₁₂ = 2011 GC₈
 2012 KE₁₂ = 2010 EU₁₄
 2012 KV₁₄ = 2004 XN₁₂₆ = 2010 FA₈
 2012 KD₁₅ = 2011 BU₁₀₆
 2012 KW₁₅ = 2011 BQ₁₄₂
 2012 KK₁₆ = 2004 TA₂₇₁
 2012 KA₁₇ = 2010 DV₇₂
 2012 KH₁₇ = 2011 CN₁₀₁
 2012 KL₁₇ = 2010 CM₁₈₇
 2012 KM₁₇ = 2007 PN₄₀
 2012 KU₁₇ = 2000 OK₃₁ = 2004 NB₁₈
 2012 KB₁₈ = 2010 XT₅₉
 2012 KF₁₉ = 2010 XS₇
 2012 KK₁₉ = 2008 RV₆₅
 2012 KC₂₁ = 2010 WP₅₀
 2012 KH₂₃ = 2011 FU₈₄
 2012 KM₂₃ = 2011 EV₄₉
 2012 KL₂₄ = 2001 AN₂
 2012 KY₂₄ = 2004 CN₉ = 2008 CT₁₅₈
 2012 KD₂₅ = 2010 BF₂₄
 2012 KG₂₅ = 2010 FK₁₁₀
 2012 KM₂₆ = 1997 NF₄
 2012 KL₂₇ = 2007 BN₈₇
 2012 KM₂₈ = 1993 TL₁₉ = 2001 QT₁₇₂
 2012 KS₂₈ = 2004 OO₁
 2012 KU₂₈ = 2004 XF₈₃ = 2006 FP₄₇
 2012 KO₃₀ = 2004 XW₁₁₇ = 2010 EZ₁₄₅
 2012 KW₃₀ = 2005 YB₁₅₅ = 2007 GN₉ = 2011 EZ₄₆
 2012 KE₃₃ = 2005 JY₁₄₁
 2012 KL₃₃ = 2008 PG₁₆ = 2011 BY₁₁₂
 2012 KO₃₄ = 2000 QX₁₀₇ = 2011 DL₃₉
 2012 KS₃₄ = 2005 UE₂₃₆
 2012 KB₃₅ = 2003 UM₁₅₆ = 2007 LS₂₁
 2012 KE₃₉ = 2009 WE₁₁₁
 2012 KL₄₀ = 2010 CM₅₄
 2012 KT₄₀ = 2006 CW₆₄
 2012 KE₄₂ = 2009 TA₃₂
 2012 KN₄₂ = 2003 UH₁₅₉ = 2006 GX₄₉ = 2010 CQ₅₂
 2012 KA₄₃ = 2012 JZ₆₅ = 2008 JP₇
 2012 KM₄₃ = 2007 GT₂₆
 2012 KN₄₃ = 2005 NL₆₈
 2012 KC₄₄ = 2010 BL₅₆ = 2010 VK₁₉₄
 2012 KG₄₄ = 2009 WO₆₂
 2012 KN₄₄ = 2005 ME₁₁ = 2009 SR₁₂₁
 2012 KQ₄₄ = 2006 BM₄₁
 2012 KH₄₅ = 2008 UJ₂₁₇
 2012 KN₄₅ = 2010 FD₄₅ = 2011 FW₇₉

2012 KL₄₆ = 2010 BX₁₀₁
 2012 KN₄₆ = 2009 UY₄₄ = 2010 BM₄₁
 2012 KP₄₆ = 2010 FT₇₉
 2012 KS₄₆ = 2002 RS₁₈₅
 2012 KT₄₆ = 2003 LE₄ = 2010 CG₂₂₈
 2012 KW₄₆ = 2001 XQ₂₃₄ = 2011 AV₅
 2012 KZ₄₆ = 2000 PC₂₂ = 2004 OJ₆ = 2009 WZ₁₄₇
 2012 KG₄₇ = 2011 EJ₃₁
 2012 KW₄₇ = 2010 CM₂₄₁
 2012 KZ₄₇ = 2005 SL₂₀₁ = 2005 UF₃₂₅
 2012 KC₄₈ = 2005 GP₁₄₇
 2012 KD₄₈ = 2007 DF₉₆ = 2008 LG₁₁
 2012 KG₄₈ = 2005 YK₂₂₄
 2012 KK₄₈ = 1998 HK₉
 2012 KY₄₈ = 2006 BJ₁₈₅ = 2009 WJ₂₆₅
 2012 KQ₄₉ = 2008 SK₁₁₅
 2012 KT₄₉ = 2005 YG₁₉₇ = 2007 FC₁₅
 2012 KZ₄₉ = 2009 WA₂₄₅
 2012 KE₅₀ = 2003 SR₄₀₀
 2012 KG₅₀ = 2005 EN₃₉
 2012 KJ₅₀ = 2005 LA₄₀
 2012 KN₅₀ = 2004 NV₁₇
 2012 KS₅₀ = 2007 TB₃₆₅
 2012 LH = 2009 FQ₅₉ = 2010 UA
 2012 LK = 2009 SR₁₆₆
 2012 LN = 2011 AD₆₃
 2012 LQ = 2011 AC₇₈
 2012 LS = 2006 BG₁₉₂
 2012 LV = 2007 LH₁₆
 2012 LX = 2010 VV₁₉
 2012 LL₁ = 2007 VR₂₆₃
 2012 LG₂ = 2006 GJ₁₃ = 2007 RW₁₄
 2012 LP₂ = 2007 RS₂₁₃
 2012 LQ₂ = 2005 LP₁₆
 2012 LU₂ = 2006 JC₂₇
 2012 LM₄ = 2010 CF₇₀
 2012 LN₄ = 2004 TY₁₅₈
 2012 LA₅ = 2008 QQ₃₂
 2012 LB₅ = 2010 EM₁₁₇
 2012 LK₆ = 2000 QW₂₄₆ = 2003 CJ₂₃
 2012 LN₆ = 2010 EG₁₅₆ = 2011 EN₄₉
 2012 LP₆ = 2004 XX₉₅
 2012 LM₇ = 2009 SF₂₉₉
 2012 LO₇ = 2007 RL₂₅
 2012 LT₇ = 2009 MH₁
 2012 LB₈ = 2010 CH₁₀₂
 2012 LC₈ = 2009 WH₂₃₂
 2012 LH₈ = 2007 PC₉
 2012 LP₈ = 1995 MW₆
 2012 LJ₁₀ = 2010 CH₁₈₉
 2012 LW₁₀ = 2010 CH₂₁₅
 2012 LU₁₁ = 1999 XO₂₂₄ = 2009 WV₉₂

2012 LH₁₂ = 2006 DJ₁₃₈ = 2010 EN₁₆₇
 2012 LB₁₃ = 2010 BN₉
 2012 LJ₁₃ = 2003 EQ₃₀
 2012 LO₁₅ = 2005 UO₂₀₃ = 2010 XP₅₅
 2012 LY₁₅ = 2002 TO₃₂₈ = 2011 DK₆
 2012 LP₁₇ = 2003 CE₂
 2012 LY₁₇ = 2010 DQ₁₆
 2012 LH₁₉ = 2008 EA₈₂
 2012 LV₂₁ = 2010 VG₉₅
 2012 LL₂₄ = 2004 AP₂₄ = 2011 HZ₃₈
 2012 LZ₂₄ = 2010 GU₈
 2012 MW = 2005 WJ₁₃₉
 2012 MT₁ = 2011 CO₃₀
 2012 MJ₃ = 2011 GM₈
 2012 ME₅ = 2006 AP₂₉
 2012 MX₅ = 2008 CK₁₀₆
 2012 MT₆ = 2004 SQ₉ = 2005 YN₂₉₂ = 2009 WY₁₆₉
 2012 MN₇ = 2000 LG₂₅ = 2008 LE₂
 2012 MS₈ = 2012 LO₁₆ = 2003 EU₆
 2012 MD₉ = 2005 MF₄₄
 2012 MJ₁₀ = 1996 VV₂₂
 2012 MS₁₁ = 2007 RN₈₂

NEW NAMES OF MINOR PLANETS

(7036) Kentarohirata = 1995 BH₃

Discovered 1995 Jan. 29 by Y. Shimizu and T. Urata at Nachi-Katsuura.

Kentaro Hirata (b. 1946) is an amateur astronomer in Yanagawa city. In addition to astronomical education in elementary schools, he takes part in the continuing education for astronomy in the region of Fukuoka.

(7757) Kameya = 1990 KO

Discovered 1990 May 22 by E. F. Helin at Palomar.

Radio astronomer Osamu Kameya (b. 1956) is a researcher at the National Astronomical Observatory of Japan. He studies the formation mechanism of massive star-forming regions through radio observations. He has also contributed to the construction of VERA (VLBI Experiment for Radio Astrometry).

(8272) Iitatemura = 1989 SG

Discovered 1989 Sept. 24 by Y. Mizuno and T. Furuta at Kani.

Iitatemura is a village located in Fukushima Prefecture, Japan. All the villagers were forced to evacuate their homes due to the 2011 March 11 tsunami. Name suggested by H. Ohno.

(8355) Masuo = 1989 RQ₁

Discovered 1989 Sept. 5 by E. F. Helin at Palomar.

Infrared astronomer Masuo Tanaka (b. 1955) is a researcher at the Institute of Astronomy, University of Tokyo. His research interests include excitation of infrared molecular hydrogen emission, ices in molecular clouds, final-stage evolution of massive stars, and mass loss from massive stars.

(9414) Masamimurakami = 1995 UV₄

Discovered 1995 Oct. 25 by T. Kobayashi at Oizumi.

Masami Murakami (b. 1948) has been one of the leading observers within the Mars Section of the Oriental Astronomical Association since 1988. Since 1996 he has

served the OAA as its Mars Section webmaster and since 2010 as the Mars Section director. In 2006 he received the OAA's Issei Yamamoto Prize.

(13162) Ryokkochigaku = 1995 UK₄₄

Discovered 1995 Oct. 22 by M. Hirasawa and S. Suzuki at Nyukasa.

Ryokkochigaku is the nickname of the Yokohama Midorigaoka High School earth-science club, known for its research of whale fossils and observation of solar prominences. The discoverers of this minor planet were members of Ryokkochigaku.

(14425) Fujimimachi = 1991 TJ₂

Discovered 1991 Oct. 13 by M. Hirasawa and S. Suzuki at Nyukasa.

Fujimimachi is a health resort town in central Japan known for its beautiful scenery and clean air. Mt. Nyukasa station, where this minor planet was discovered, is located in this town.

(16623) Muenzel = 1993 GM₁

Discovered 1993 Apr. 14 by H. Debehogne at La Silla.

Gisela Muenzel (b. 1929) was the life partner of Hilmar W. Duerbeck (1948–2012). Over the last 20 years, she contributed various papers on the history of astronomy, and collaborated with Duerbeck on diverse historical archives of astronomers and observatories.

(18553) Kinkakuji = 1997 AZ₂₁

Discovered 1997 Jan. 6 by N. Sato at Chichibu.

Kinkakuji is the popular name of a gilded pavilion in the Rokuon-ji temple complex (a World Cultural Heritage site) in Kyoto, Japan, that attracts about 1.5 million visitors annually. The temple is intimately connected with Ashikaga Yoshimitsu (1358–1408), the third shogun of the Muromachi Shogunate.

(18649) Fabrega = 1998 FU₁₀

Discovered 1998 Mar. 24 by the OCA-DLR Asteroid Survey at Caussols.

Joaquin Fabrega (b. 1967) is an amateur astronomer from Panama. He is a long-time member, past president and benefactor of the Asociacion Panameña de Aficionados a la Astronomia, he now uses a mobile observatory to view the sky in remote places in Panama.

(22189) Gijskatgert = 2049 P-L

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Gijs Katgert (1981–2011), Dutch physicist and son of Leiden astronomers Peter and Jet Katgert, was one of the pioneers of the research on the flow properties of foams.

(22190) Stellakwee = 2100 P-L

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Stella Vooren Kwee (1964–2005) was the daughter of Leiden astronomer K. K. Kwee and his wife, Sunny Kwee.

(22449) Ottijeff = 1996 VC

Discovered 1996 Nov. 1 by T. B. Spahr at the Catalina Station.

Ottlie Malfliet (b. 1944) and Jeffrey Levine (b. 1948) are the parents of the discoverer's wife. They are a constant source of support and inspiration to both the discoverer and his wife.

(22717) Danycardoen = 1998 SF₁₃

Discovered 1998 Sept. 21 by the OCA-DLR Asteroid Survey at Caussols.

Dany Cardoen (b. 1949) is a Belgian amateur astronomer and optician. In 1995 he built a very large amateur telescope in the world (1.06-m aperture) and operated a large amateur resort which many amateurs visited. He now specializes in high-quality optics for the professional market.

(24827) Maryphil = 1995 RA

Discovered 1995 Sept. 2 by T. B. Spahr at the Catalina Station.

Mary Clark (b. 1938) and Phil Spahr (b. 1938) are the parents of the discoverer. They have been very supportive of the scientific career choice of their son.

(28107) Sapar = 1998 SA₁₃

Discovered 1998 Sept. 22 by L. Šarounová at Ondřejov.

Arved-Ervin Sapar (b. 1933) carried out pioneering studies of cosmology in Tartu, Estonia. He took into account the photon and neutrino background in cosmological equations. His contribution to modelling of stellar atmospheres has found acknowledgement among the astronomical community.

(29080) Astrocourier = 1978 RK

Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.

The Eurasian Astronomical Society, created in 1990, is an affiliated member of the European Astronomical Society. The Society publishes *Astronomical and Astrophysical Transactions* and the electronic bulletin *Astrocourier*.

(29157) Higashinohon = 1989 ET₁

Discovered 1989 Mar. 11 by T. Seki at Geisei.

“Higashi Nihon” (East Japan) was struck by one of the most destructive earthquakes in history on 2011 Mar. 11. The whole nation has risen to the task of reconstruction with the spirit of “Ganbarou” (“do your best and don't give up”). Coincidentally, this minor planet was discovered on Mar. 11.

(30719) Isserstedt = 1963 RJ

Discovered 1963 Sept. 13 by K. W. Kamper at Tautenburg.

Isserstedt is a part of Jena, situated high above the town and near the scene of the 1806 battle of Jena-Auerstedt. F. Börngen, who took the plates that led to the discovery of this minor planet, lives in the town.

(30888) Okitsumisaki = 1993 BG₂

Discovered 1993 Jan. 19 by T. Seki at Geisei.

Okitsumisaki in western Kochi prefecture is a small promontory jutting into the Pacific Ocean. It is a well-known scenic spot with popular swimming beaches.

(31124) Slavíček = 1997 SJ₁

Discovered 1997 Sept. 22 by M. Tichý at Kleť.

Karel Slavíček (1678–1735), Jesuit missionary and scientist was the first Czech sinologist. Together with Ignatius Kegler he went to China in 1716. He worked on astronomy, mathematics and music and prepared maps of Beijing in 1718 and 1728.

(32858) Kitakamigawa = 1993 BA₃

Discovered 1993 Jan. 25 by T. Seki at Geisei.

Kitakamigawa is the largest river in the Tohoku district, flowing from Iwate to Miyagi prefecture. The tsunami waves of the 2011 Mar. 11 earthquake rushed upstream along the river.

(32969) Motohikosato = 1996 PP₉

Discovered 1996 Aug. 6 by T. Okuni at Nanyo.

Motohiko Sato (b.1939) organized the Yamagata Astronomical Society in 1961 and actively popularizes astronomy.

(35265) Takeosaitou = 1996 NS₅

Discovered 1996 July 12 by T. Okuni at Nanyo.

Takeo Saitou (b.1934) became a member of the Yamagata Astronomical Society in 1994 and actively popularizes astronomy.

(35274) Kenziarino = 1996 RF₂₄

Discovered 1996 Sept. 7 by T. Okuni at Nanyo.

Kenzi Arino (b.1947) became a member of the Yamagata Astronomical Society in 1998 and actively popularizes astronomy.

(36169) Grosseteste = 1999 RG₂₄₀

Discovered 1999 Sept. 11 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Robert Grosseteste (1175–1253) was an English statesman, natural philosopher and theologian. His commentaries on Aristotle underlaid what was to become the scientific method: generalizing from observations to universal laws, and then using those laws to predict outcomes.

(37720) Kawanishi = 1996 SH₇

Discovered 1996 Sept. 23 by T. Okuni at Nanyo.

Kawanishi is situated in the southern part of Yamagata, Japan. It has a population of 17000 and is famous for its Dahlia Park and old burial mounds.

(39536) Lenhof = 1990 TA₁₁

Discovered 1990 Oct. 10 by L. D. Schmadel and F. Börngen at Tautenburg.

Helmut Lenhof (b.1924) is a retired professor of physics. He was one of the founders of the Carinthian Astronomical Association in Klagenfurt, Austria, and dedicated much of his time to astronomy. He still contributes a monthly column for their journal. Name proposed by the first discoverer.

(39655) Muneharuasada = 1995 UM₃

Discovered 1995 Oct. 17 by T. Okuni at Nanyo.

Muneharu Asada (b.1961) became a member of the Yamagata Astronomical Society in 2009 and actively popularizes astronomy.

(39679) Nukuhiyama = 1996 OD₃

Discovered 1996 July 19 by T. Okuni at Nanyo.

Nukuhiyama mountain (height 990 m) is located in the west of the discoverer's home town, Shirataka, Yamagata prefecture.

(40463) Frankkameny = 1999 RE₄₄

Discovered 1999 Sept. 15 by G. W. Billings at Calgary.

Frank L. Kameny (1925–2011) trained as a variable star astronomer in the 1950s, but joined the Civil Rights struggle. His contributions included removing homosexuality from being termed a mental disorder in 1973 and shepherding passage of the District of Columbia marriage equality law in 2009.

(42492) Brüggenthies = 1991 TD₇

Discovered 1991 Oct. 3 by L. D. Schmadel and F. Börngen at Tautenburg.

Wilhelm Brüggenthies (b.1920), a former civil engineer, has been compiling biographies of thousands of astronomers for many years. This collection served as the basis for the *Biographical Index of Astronomy*. Name proposed by W. R. Dick and L. D. Schmadel.

(43804) Peterting = 1991 RL₄

Discovered 1991 Sept. 10 by L. D. Schmadel and F. Börngen at Tautenburg.

Peter M. Ting (b.1948), American anesthesiologist, has had a lifelong interest in many aspects of astronomy and bought his first telescope in his youth. He has a wide-ranging interest in the history of astronomy and works on special problems of minor-planet nomenclature. Name proposed by L. D. Schmadel.

(48638) Třebíč = 1995 TB

Discovered 1995 Oct. 3 by M. Tichý at Kleč.

The Moravian town of Třebíč is known mainly for the Basilica of St. Procopius built in the early 13th century and the old Jewish Quarter. These reminders of the co-existence of Christian and Jewish cultures from the Middle Ages to the 20th century are UNESCO World Heritage sites.

(48767) Skamander = 1997 JG₁₅

Discovered 1997 May 3 by E. W. Elst at the European Southern Observatory.

Skamander (Skamandros), a son of Zeus, fought on the side of the Trojans in the Trojan War and tried to kill Achilles three times.

(52225) Panchenko = 1968 OF₁

Discovered 1968 July 25 by G. A. Plyugin and Yu. A. Belyaev at Cerro El Roble.

Vladislav Yakovlevich Panchenko (b.1947) is an authority in laser information technologies, scientific instrumentation technologies, non-linear optics and medical physics. He is director of the Institute on laser and information technologies.

(54810) Molleigh = 2001 MS₂₄

Discovered 2001 June 16 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Molleigh Elena Struble (1994–2010) grew up near Yerkes Observatory, where she volunteered for educational programs such as one connecting Yerkes and the Science Museum, Tokyo. She helped design the Yerkes Astrophysics Academy for Young Scientists. Name suggested and citation by R. G. Kron.

(58679) Brenig = 1998 AH

Discovered 1998 Jan. 1 by N. Ehring at Bornheim.

Brenig, a part of Bornheim, is located near the Rhine river between Cologne and Bonn. It is home to the observatory where this minor planet was discovered.

(82638) Bottariclaudio = 2001 PF₁

Discovered 2001 Aug. 7 by L. Tesi and M. Tombelli at San Marcello Pistoiese.

Since 1980 Claudio Bottari (b.1960) has been interested in the technical aspects of amateur astronomy and in 1991 was among the first to use CCDs in the Italian amateur community. At the Mira observatory he uses a 0.6-m concentric Schmidt-Cassegrain in search of SNe and NEOs. He discovered SN 1996ai in NGC 5005.

(90830) Beihang = 1995 UX₇

Discovered 1995 Oct. 25 by the Beijing Schmidt CCD Asteroid Program at Xinglong.

Founded in 1952, Beihang University is one of the key institutes in the national agendas “211 Project” and “985 Scheme”. It has made great contributions to China's aeronautic and astronautic industry, as well as social and economic development.

(114725) Gordonwalker = 2003 GW₃₆

Discovered 2003 Apr. 6 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Gordon A. H. Walker (b. 1936), profesor emeritus at the University of British Columbia, was a member of the first group to report on the detection of extrasolar planets.

(118214) Agnesediboemia = 1996 AG₁

Discovered 1996 Jan. 12 by J. Tichá and M. Tichý at Kleť.

Agnese di Boemia (1211–1282), princess Anežka of the Přemyslid family, devoted her life to charity and religious works. She was the founder of a hospital and two convents that were among the first Gothic buildings in Prague. She was canonized in 1989.

(128562) Murdin = 2004 PM₉₀

Discovered 2004 Aug. 10 by the Lowell Observatory Near-Earth Object Search at the Anderson Mesa Station.

Paul Geoffrey Murdin (b. 1942) held senior positions at the Royal Greenwich Observatory and other major institutions, and was a vice president and treasurer of the International Astronomical Union. He is a prolific lecturer, broadcaster and writer on astronomy.

(138979) Černice = 2001 CM₃₂

Discovered 2001 Feb. 14 by M. Tichý at Kleť.

Černice is a small pleasant old South Bohemian village situated above the Vltava river. The village belonged to the Zlatá Koruna monastery from 1315 to 1787. Its stony church of the Holy Mary Magdalena was established after 1250 and rebuilt in Gothic style before 1515.

(158520) Ricardoferreira = 2002 FR₁

Discovered 2002 Mar. 19 by C. W. Juels and P. R. Holvorcem at Fountain Hills.

Over more than 60 years, Brazilian physicochemist Ricardo Ferreira (b. 1928) did research on the origins of the genetic code, on the observed uniform handedness of the molecules from which biological macro-molecules are built, molecular orbital theory, and the history of science.

(158913) Kreider = 2004 RC₂₅

Discovered 2004 Sept. 9 by C. Rinner at Ottmarsheim.

Christian Kreider (b. 1957) is an active French amateur astronomer.

(159799) Kralice = 2003 RF₁₄

Discovered 2003 Sept. 15 by KLENOT at Kleť.

Kralice nad Oslavou village is known for the printing house of the Unity of the Brethren (1578–1620). The Bible of Kralice was the first complete translation of the Holy Bible from its original languages into Czech. No other complete translation was made from 1613 until 1979.

(171588) Náprstek = 1999 WG₁

Discovered 1999 Nov. 26 by J. Tichá and M. Tichý at Kleť.

Vojta Náprstek (1826–1894) was a Czech philanthropist and advocate of progressive ideas. In 1865, after living in Wisconsin for a decade, he founded the American Club of Bohemian Women in Prague, offering lectures on various topics. He also co-founded the Czech Tourist Club in 1888.

(172315) Changqiaoxiaoxue = 2002 TL₃₀₀

Discovered 2002 Oct. 15 by NEAT at Palomar.

Suzhou ChangQiao Primary School was founded in 1911. It is located in Lishu, a town with a thousand years of history.

(179593) Penglangxiaoxue = 2002 LK₆₁

Discovered 2002 June 1 by NEAT at Palomar.

Penglang School, founded in 1906 in Kunshan City (Jiangsu Province), is an experimental primary School. As a popular science education base of the Purple Mountain Observatory, it undertakes long-term research in meteor showers and astronomical science education.

(184096) Kazlauskas = 2004 HB₄

Discovered 2004 Apr. 16 by K. Černis and J. Zdanavicius at the Moletai Astronomical Observatory in Lithuania.

Algirdas Kazlauskas (b. 1949), Lithuanian astronomer, is a deputy director of the Institute of Theoretical Physics and Astronomy at Vilnius University. He is an expert in the fields of stellar photometry, Galactic structure and a writer of popular articles.

(187707) Nandaxianlin = 2008 EQ₃₅

Discovered 2008 Mar. 2 at the XuYi Station of the Purple Mountain Observatory.

Nandaxianlin is the new campus of Nanjing University. The university will further education, scientific research and new technology industries.

(192439) Cílek = 1997 VC

Discovered 1997 Nov. 1 by J. Tichá and M. Tichý at Kleť.

Václav Cílek (b. 1955) is a Czech geologist, climatologist, writer, philosopher and science popularizer. He explores interactions between the environment and civilization. Since 2004 he has served as the director of the Geologic Institute of the Czech Academy of Sciences.

(192686) Aljuroma = 1999 TU₁₇

Discovered 1999 Oct. 15 by N. Ehrling at Bornheim.

Alexandra, Juri, Robin and Marlene are grandchildren of the discoverer.

(198820) Iwanowska = 2005 ET₂₄₉

Discovered 2005 Mar. 13 by K. Černis and J. Zdanavicius at the Moletai Astronomical Observatory in Lithuania.

Wilhelmina Iwanowska (1905–1999), distinguished Polish astronomer, worked at the Vilnius (1927–1940) and Torun (1945–1999) universities and was the Vice-President of the IAU from 1973 to 1979. She was the first Director of the Institute of Astronomy of the Copernicus University in Torun.

(199950) Sierpc = 2007 HK₁₆

Discovered 2007 Apr. 16 at the Astronomical Research Institute in Charleston.

Sierpc is one of the oldest towns in the Mazovie Region of Poland, established at the turn of the 11th century. It is situated at the crossroads of Prussia and Cracow, and is a pivotal railway junction in Poland. Since 2007, high schools in Sierpc have been active in minor-planet discoveries as part of IASC.

(210434) Fungyuancheng = 2008 YH₁₄

Discovered 2008 Dec. 20 by H.-C. Lin and Q.-z. Ye at Lulin.

Yuan-Cheng Fung, known as the Father of Modern Biomechanics, is the author of the famous Fung's Law (the exponential strain constitutive equation for soft tissues).

(221628) Hyatt = 2006 YE₁₃

Discovered 2006 Dec. 26 by A. R. Gibbs at Catalina Sky Survey.

Hyatt M. Gibbs (b.1938) is a professor of optical sciences at the University of Arizona. Well-known for research in quantum optics and books on optical bistability, he is a fellow of the APS, OSA, Franklin Institute, and AAAS. He is a recipient of the Humboldt Research Award and Michelson Medal.

(227770) Wischnewski = 2006 US₂₈₉

Discovered 2006 Oct. 30 by W. Ries at Altschwendt.

Erik Wischnewski (b.1952) has been a lecturer at adult education centers and planetaria since 1972 and is an author of several astronomical textbooks. His work contributes to the German-language astronomical education.

(228135) Sodnik = 2009 RE₄

Discovered 2009 Sept. 13 by M. Busch and R. Kresken at the ESA Optical Ground Station, Teide Observatory, Tenerife.

Zoran Sodnik (b.1957) is manager of the European Space Agency's Optical Ground Station. His support both to amateur astronomers and ESA colleagues has been instrumental in allowing this telescope to contribute significantly to the field of minor-planet observations.

(236111) Wolfgangbüttner = 2005 RW₄

Discovered 2005 Sept. 7 by M. Fiedler at Radebeul Observatory.

Wolfgang Büttner (1905–1998) was a German educator and sidewalk astronomer in Dresden. From 1938 he worked at Leipzig Observatory helping with the preparations of the “Third Fundamental Catalogue (FK3)”. Later he was an educator at the Observatory in Radebeul.

(240022) Demitra = 2001 TR₂₅₈

Discovered 2001 Oct. 15 by NEAT at Palomar.

Popular Slovak ice-hockey player Pavol Demitra (1974–2011) spent 16 seasons in the NHL. His most successful season was with St. Louis, being awarded the Lady Byng Memorial Trophy in 2000. A three-time Olympian, he was named to the All-Star Team in 2010. Name suggested by S. Kürti.

(246153) Waltermaria = 2007 PW₃₀

Discovered 2007 Aug. 15 by M. Mazzucato and F. Dolfi at San Marcello Pistoiese.

Walter E. B. Mazzucato (1921–2003) and Maria L. Pozzi (1927–2003) were the father and mother of the first discoverer.

(246247) Sheldoncooper = 2007 SP₁₄

Discovered 2007 Sept. 20 by Q.-z. Ye and H.-C. Lin at Lulin.

Sheldon Cooper, portrayed by Jim Parsons, is a geeky fictional character on the TV series “The Big Bang Theory”.

(251621) Lüthen = 2009 RR₂

Discovered 2009 Sept. 10 by M. Busch and R. Kresken at the ESA Optical Ground Station, Teide Observatory, Tenerife.

Hartwig Lüthen (b.1960), associate professor of plant physiology at the University of Hamburg, has been an amateur astronomer since childhood and an active lunar and planetary imager. He is the heart and soul of the Gesellschaft für volkstümliche Astronomie, Hamburg's amateur astronomy association.

(252470) Puigmarti = 2001 UE₁₄

Discovered 2001 Oct. 24 by J. Manteca at Begues.

Josep Puigmarti (b.1932) is an artist known for dreamlike and automatic surrealism over six decades of exhibitions throughout five continents. He has cultivated

various styles (Expressionism, Pop Art, Art Brut, Informalism) to create his own style.

(260235) Attwood = 2004 RU₂₈₉

Discovered 2004 Sept. 12 at the Jarnac Observatory.

Randy Attwood (b.1957) is a Canadian editor who has served as national President of the Royal Astronomical Society of Canada, editor of *Space Quarterly* and SpaceRef Interactive. He founded the Mississauga Astronomical Society, and created and hosted the cable television show “Astronomy Toronto”.

(279377) Lechmankiewicz = 2010 CH₁

Discovered 2010 Feb. 7 at the Astronomical Research Observatory in Charleston.

Lech Mankiewicz (b.1960) is a director of the Center for Theoretical Physics of the Polish Academy of Science in Warsaw. He has linked his scientific research with citizen science astronomy, and has developed projects for thousands of students, and established Hands-On Universe in Poland.

(281820) Monnaves = 2009 XW

Discovered 2009 Dec. 9 at the Observatorio Montcabre.

Ramon (“Mon”) Naves Jr. is the son of one of the discoverers.

(291849) Orchestralondon = 2006 OL₂

Discovered 2006 July 18 by Q.-z. Ye and H.-C. Lin at Lulin.

Orchestra London Canada, founded in 1937, is a professional orchestra in London, Ontario.

(294595) Shingareva = 2008 AH₁

Discovered 2008 Jan. 6 by T. V. Kryachko at the Zelenchukskaya Station of Engelhardt Observatory.

Kira B. Shingareva (b.1938) is a professor at the Moscow State University for Geodesy and Cartography, and the head of the Planetary Cartography Laboratory. She helped map the Moon, Mars, Phobos and Venus, and served as chairman of ICA Planetary Cartography Commission for three terms from 1999 to 2011.

(305953) Josiedubey = 2009 HV₃₆

Discovered 2009 Apr. 20 by N. Falla at the RAS Observatory, Mayhill.

Josie Elizabeth Chloe Jayne Dubey (b.1994) is the eldest granddaughter of the discoverer. Her interests include amateur dramatics together with Ballroom and Latin dancing.

(314988) Sireland = 2006 XO₆₇

Discovered 2006 Dec. 13 by D. D. Balam at Mauna Kea.

Sarah Ireland (b.1996) displayed unrivalled enthusiasm in the pursuit of astronomical knowledge, following in the Canadian tradition of astronomical excellence and embodying the spirit of Beyond the International Year of Astronomy.

(315012) Hutchings = 2007 BD₃₁

Discovered 2007 Jan. 20 by D. D. Balam at Mauna Kea.

John Barrie Hutchings (b.1941) uses observations from the X-ray to the radio regimes to probe intrinsically-luminous stars, X-ray binaries, neutron stars and stellar-mass black holes, and active galactic nuclei and quasars.

(315186) Schade = 2007 LD₃₀

Discovered 2007 June 11 by D. D. Balam at Mauna Kea.

Since 2001, David Joseph Schade (b.1953) has served as leader for the NRC-Canadian Astronomy Data Centre which has contributed numerous innovations to

data management for, inter alia, HST, CFHT, Gemini, JCMT and MOST observatories and to the Virtual Observatory.

(321324) Vytautas = 2009 HJ₆₈

Discovered 2009 Apr. 25 by K. Černis and I. Eglitis at the Baldone Astrophysical Observatory.

Vytautas Didysis the Great (1350–1430) was one of the most famous rulers of medieval Lithuania. As Grand Duke of Lithuania (1392–1430), he consolidated

his country's possessions, building a national consciousness. In modern Lithuania, Vytautas is revered as a national hero.

(322390) Planes de Son = 2011 QN₄₂

Discovered* 2004 June 9 by Spacewatch at Kitt Peak.

Les Planes de Son is a 1500-m-high plateau in the Catalan Pyrenees. It is the location of a facility used for both environmental education and research. The astronomical observatory, where this minor planet was rediscovered, combines scientific programs with activities for the general public and schools.