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Cometary observations should be sent to the Editor in Cambridge; all data intended for publication in the *ICQ* that is not sent via computer electronic mail should be sent on standard *ICQ* observation report forms, which can be obtained upon request from the Editor. Those who can send observational data (or manuscripts) in machine-readable form are encouraged to do so [especially through e-mail via the computer networks *SPAN* (6700::DAN) or Internet (ICQ@CFA.HARVARD.EDU), or via floppy disks that can be read on an IBM PC], and should contact the Editor for further information. The *ICQ* has extensive information for comet observers on the World Wide Web, including the Keys to Abbreviations used in data tabulation (see URL http://cfa-www.harvard.edu/icq/icq.html). In early 1997, the *ICQ* published a 225-page *Guide to Observing Comets*; this edition is now out of print, but a revised edition is under preparation.

Most of the Observation Coordinators (OCs) listed below have e-mail contacts with the *ICQ* Editor; observers in the general area of such OCs who lack access to e-mail networks may send data to the OC for relay to the *ICQ* in electronic form.

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This issue is No. 134 of the publication originally called *The Comet* (founded March 1973) and is Vol. 27, No. 2, of the *ICQ*. *[ISSN 0736-6922]*

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CORRIGENDA

- In the January 2005 issue, page 83, "Designations of Recent Comets", third paragraph, *for* P/2004 NL_{159} *read* P/2003 YM_{159}
- In the July 2004 issue, page 116, third paragraph, first line, *for* humerous *read* humorous

Confirmation of Comet Discoveries*

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370 01 České Budějovice, Czech Republic

Abstract. *The majority of new ground-based discoveries of comets come from large surveys. The first step of exploring newly discovered cometary bodies consists of detection of their cometary features and confirming astrometric observations. A timely recognition of cometary features of a particular body having an unusual orbit can help in planning further research.*

1. Introduction

The number of newly discovered small bodies of the solar system has increased in recent years enormously — mainly due to the large survey programs known as LINEAR, Spacewatch, LONEOS, CSS, and NEAT. The majority of new ground-based discoveries of comets come from these large surveys devoted predominantly to near-earth minor planets. Considerable progress regarding comet discoveries dates to 1998, when the LINEAR project was started (Stokes *et al.* 2000). Only a small percentage of comet discoveries has been made by amateur astronomers and/or visually in recent years.

An efficient system in the form of the 'Near-Earth Object Confirmation Page' (NEOCP), a series of webpages maintained by the Minor Planet Center (Marsden and Williams 1998), gives observers access to newly-discovered fast-moving or other unusual objects in need of astrometric confirmation. Some of the objects listed on the NEOCP are comets, either recognized by discoverers or initially unrecognized as such. Therefore it is necessary not only to find these newly discovered objects and produce further astrometric measurements, but also to analyze them for possible cometary features and confirm their cometary nature, if any. For planning further physical observations, it is necessary to detect cometary activity as soon as possible.

We performed this searching for cometary activity in the framework of the Kleť Observatory NEO follow-up program up until 2001 using a 0.57-m reflector (equipped with an SBIG ST-8 CCD camera) and found or confirmed cometary features of 54 objects.

In 2002, we brought into operation a new 1-m-aperture-class facility on a permanent basis — the KLENOT telescope, devoted especially to follow-up astrometry of NEOs and distant objects, but confirmation of cometary features of newly discovered bodies is one of main goals of the KLENOT Project. The KLENOT telescope has a 'Photometrics S300' CCD camera equipped with a 'SITe SI003B' chip that has enhanced quantum efficiency and excellent blue response, enabling the detection of both dust particles in comets and any plasma tail and/or coma (Tichá *et al.* 2002).

2. KLENOT Project

'KLENOT' is an acronym for the "Kleť Observatory Near-Earth and Other Unusual Objects Observations Team (and Telescope)". The KLENOT Telescope contains a 1.06-m $f/2.7$ main mirror and a four-lens primary-focus corrector. The Photometrics Series 300 CCD camera's 'SITe 003B' chip has an array of 1024 × 1024 pixels (pixel size 24 μm) and a liquid-nitrogen cooling system. The field-of-view of the KLENOT Telescope is $33' \times 33'$, with an image scale of $1''.9$/pixel. The quantum efficiency of the CCD camera is $> 80\%$ in the wavelength range λ = 550-800 nm and $> 60\%$ in the range λ = 370-880 nm. The limiting magnitude is $m_V = 22$ for am exposure time of 120 seconds in standard weather conditions (see `http://klenot.klet.org`).

3. Cometary features

For distinguishing newly discovered cometary bodies from minor planets, it is necessary to analyze the confirming astrometric observations, to see if their images are diffuse or display tails (Tichý *et al.* 2002).

3.1. Detection

The first concern regarding detection of cometary features is the sensitivity of chips of CCD cameras. Most low-end CCD cameras use detectors whose sensitivity starts around λ = 5000-6000 Å (500-600 nm). Such chips are not able to detect plasma tails and/or a plasma coma. Using such CCD cameras, we are able to detect only a dust tail and/or a dust coma. The new generation of CCD chips has better sensitivity, starting around λ = 3500 Å and ending around λ = 9500

* Written as a detailed version of a paper presented at the IWCA III, Meudon, France, 2004 June 4–6. Editor's note: contributed papers from IWCA III are being published over several *ICQ* issues in 2005.

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Å. Using such CCD detectors, we are able to detect not only dust features of cometary bodies, but also plasma features. Therefore, such newer CCD detectors are much better for the detection of cometary features of newly discovered bodies.

On the other hand, concerning astrometric observation of these bodies and their early follow-up, there is no problem using either low-end or new-generation CCD cameras. At the Kleť Observatory, we use both types of CCD cameras. A low-end 'SBIG ST-8' CCD camera is used at the 0.57-m $f/5.2$ reflector (Minor Planet Center code 046, 'Kleť'), while the "new generation" Photometrics S300 CCD camera is used on the new 1.06-m KLENOT Telescope (MPC code 246, 'Kleť Observatory-KLENOT').

3.2. Software

A special software package has been developed at the Kleť Observatory for the KLENOT Project, using a combination of programs running on Windows and Linux computer platforms. The system consists of observation planning tools, data-acquisition, camera control, and data-processing tools. Most of the software is associated with an 'SQL' database. The same system is also being used for the 0.57-m reflector now. `Astrometry` is the name of our software program for the reduction of CCD images, identification of stars using the USNO-A2.0 catalogue, and astrometry. This program also detects diffuse objects using a Gaussian distribution.

3.3. Image analysis

For numerical approximation of the profiles of objects on images, we have adopted the model of a two-dimensional Gaussian equation in simplified form:

$$I(x,y) = B + P\exp\left(-\frac{1}{2}\left[\left(\frac{x}{\sigma}\right)^2 + \left(\frac{y}{\sigma}\right)^2\right]\right),$$

where B is the background brightness, P is the peak value of the analyzed object, $I(x,y)$ is the total brightness of the given point (x,y) on the analyzed image, and σ is the standard deviation of the assumed distribution of the brightness.

There exists a critical value σ_{crit} for the width of a Gaussian so that an object having a profile with $\sigma > \sigma_{crit}$ is a diffuse object. For the analysis of most of our images, we have used the experimental value $\sigma_{crit} = 0.6$. This value was determined by an analysis of images of comets and nearby stars of the same brightness for standard weather conditions at Kleť. The value of σ_{crit} is site-dependent; it depends mainly on the steadiness and the clarity of the atmosphere during observation.

4. Examples

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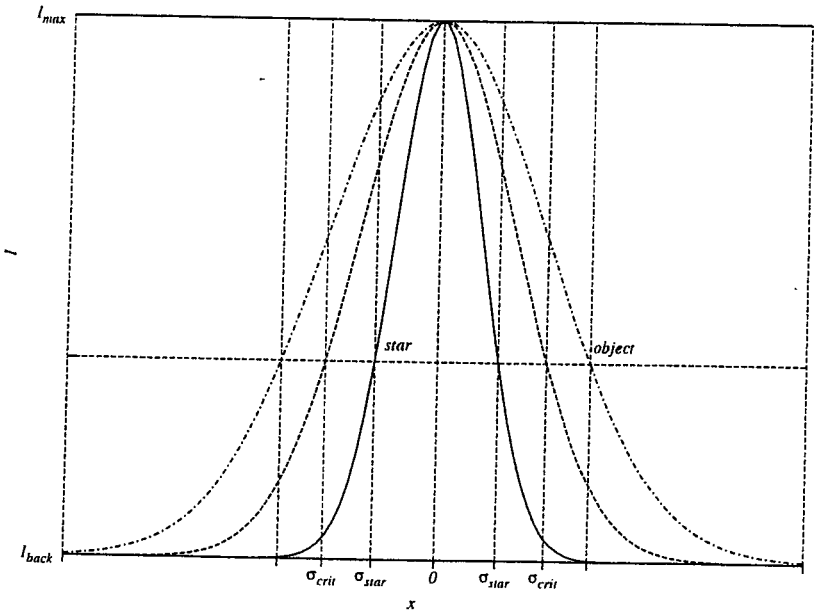

Figure 1. Plot of intensity profiles across the image of a star of the same brightness as the comet candidate and the image of the possible comet with a coma and no tail.

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4.1. Comet with coma only

Our first example is a comet with a coma only (no tail). The process is simple — we use a Gaussian equation directly. We produce a profile across the images of the possible comet and a nearby star of similar brightness. When we compare

these two profile curves, we see that the values $\sigma > \sigma_{crit}$ on both sides of each curve profile are symmetrical. Therefore we can say whether the new object is a comet or not. Figure 1 shows the profile of a star (solid line), an assumed limiting boundary separating a star's image profile from a diffuse object's image profile (dashed line), and the image profile of a comet with a small coma (dash-and-dot line). Figure 2 shows a practical example of such a comet — P/2000 U6.

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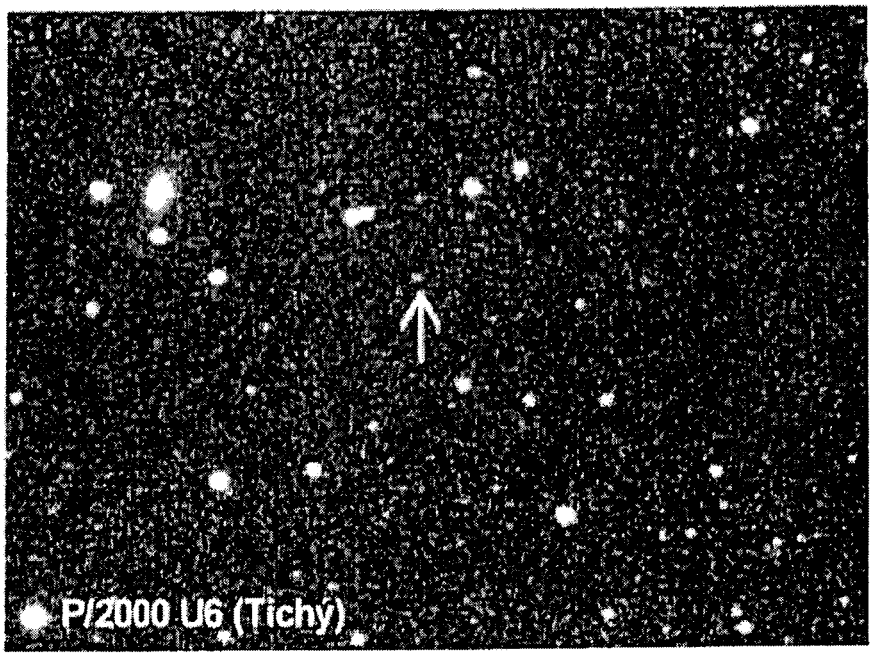
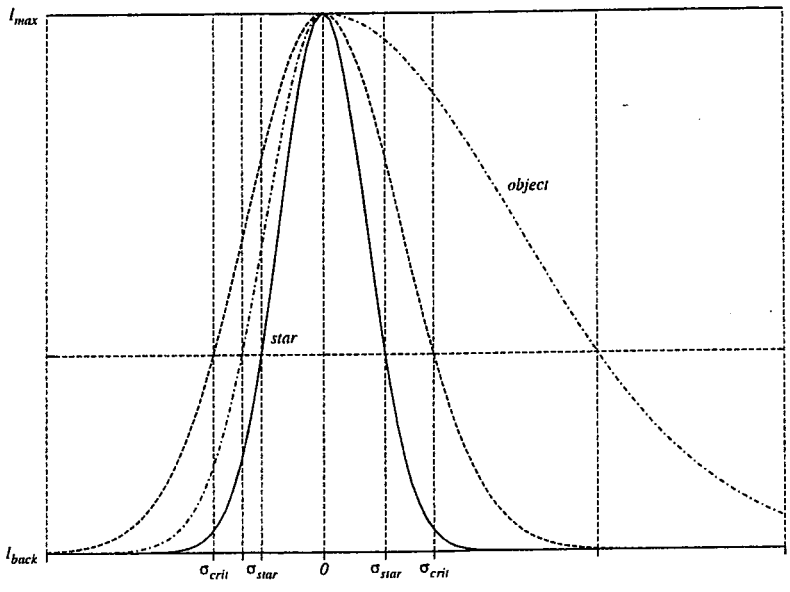


Figure 2 (above). Comet P/2000 U6 (Tichý): example of a comet with a coma but no tail.

Figure 3 (below). Plot of intensity profiles across the image of a star of the same brightness as the comet candidate and the image of the possible comet with a tail but no coma.



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4.2. Comet with tail only

The second example provided here is a comet with a tail only (no visible coma). We again derived intensity profiles across the images of the possible comet and of a star of the same brightness as the comet candidate. When we compare these two curves, we see that the relation $\sigma > \sigma_{crit}$ occurs on one side of the profile curve only. Therefore we can say that the new object under analysis is a comet with a tail and no coma. Figure 3 shows the profile of a star (solid line), an assumed limiting boundary separating a star's image profile from a diffuse object's image profile (dashed line), and the image profile of a comet (dash-and-dot line). Figure 4 shows a practical example of a comet with a tail only (no

(no coma) — 133P/Elst-Pizarro.

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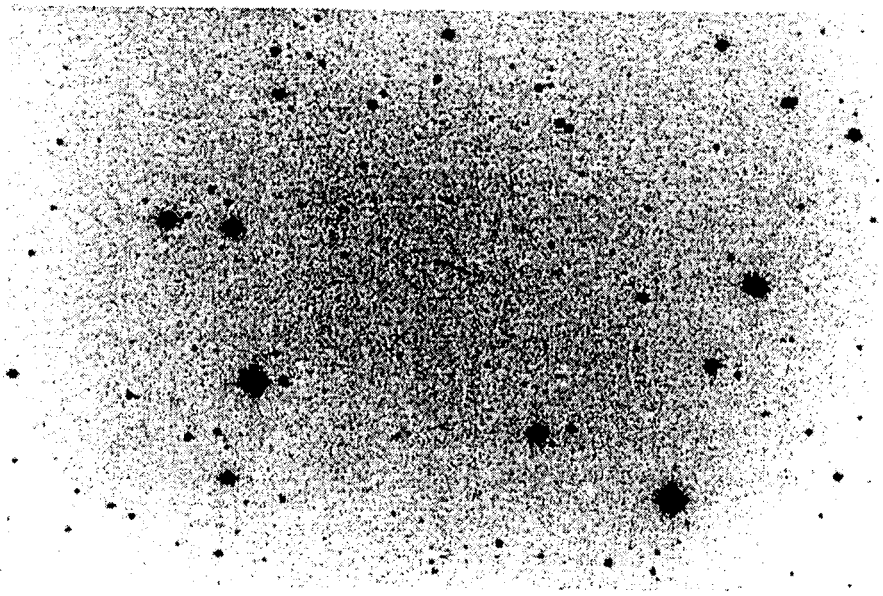
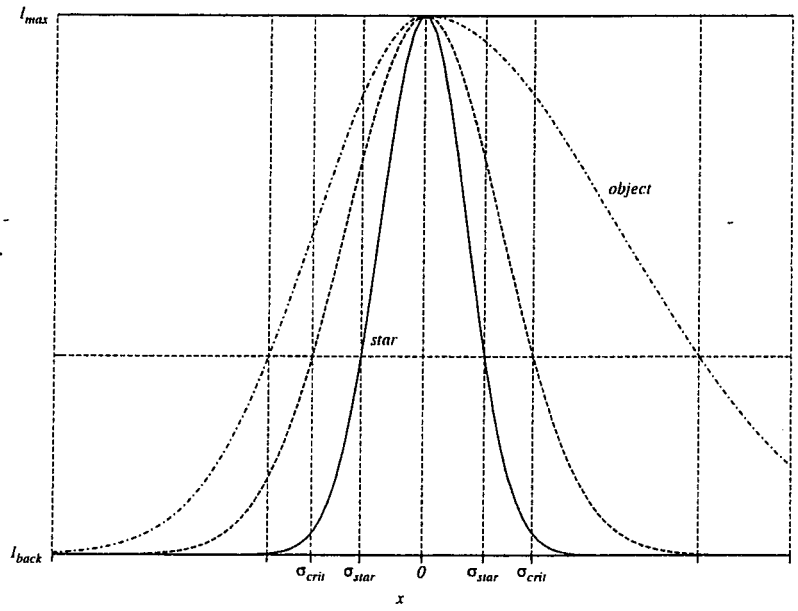


Figure 4 (above). Comet 133P/1996 N2 (Elst-Pizarro): example of a comet with a tail but no coma.

Figure 5 (below). Plot of profiles across an image of a field star with the same magnitude as the comet candidate and an image of the possible comet with both a coma and tail.



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4.3. Comet with coma and tail

The third example provided here is for a comet with both a coma and a tail. We again derived intensity profiles across the images of the possible comet and of a star of the same brightness as the comet candidate. When we compare the two resulting curves, we see that the relationship $\sigma > \sigma_{crit}$ is valid on both sides of each profile, but the curve of the comet is asymmetrical. Therefore we can say that the new object is a comet with both coma and a tail. Figure 5 shows the profile of a star (solid line), an assumed limiting boundary separating a star's image profile from a diffuse object's image profile (dashed line), and the image profile of a comet (dash-and-dot line). Figure 6 shows comet P/2004 T1 (LINEAR-NEAT) as an example of a comet with both a tail and a coma.

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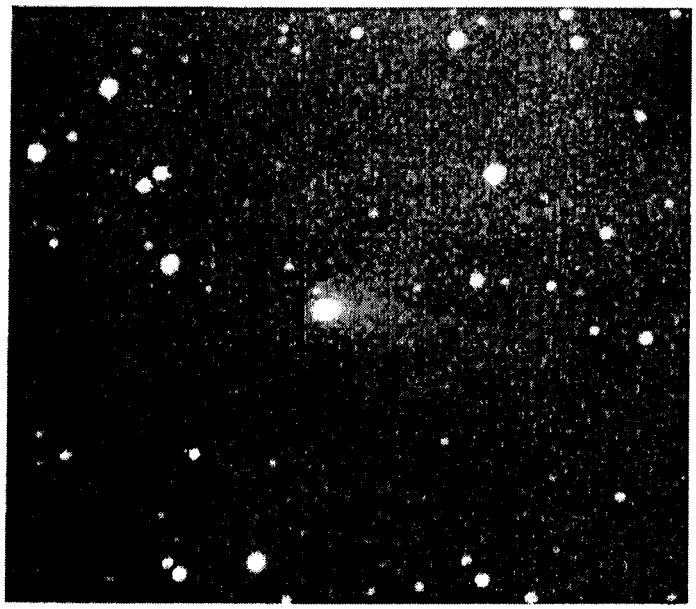

Figure 6. Image of comet P/2004 T1 (LINEAR-NEAT): example of a comet with both a coma and tail.

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5. Results

Comet	reference	Comet	reference
C/1999 H3	IAUC 7151	C/2000 U5 (LINEAR)	IAUC 7515
C/1999 J2	IAUC 7165	**P/2000 U6 (Tichý)**	IAUC 7515
C/1999 J3	IAUC 7166	C/2000 Y3 (Scotti)	IAUC 7553
C/1999 J4 (LINEAR)	IAUC 7170	C/2001 A1 (LINEAR)	IAUC 7561
C/1999 K2 (Ferris)	IAUC 7175	C/2001 A2 (LINEAR)	IAUC 7564
C/1999 K3 (LINEAR)	IAUC 7175	C/2001 B1 (LINEAR)	IAUC 7570
C/1999 K8 (LINEAR)	IAUC 7182	P/2001 CV8 (LINEAR)	IAUC 7581
C/1999 F2	IAUC 7194	P/2000 WT168	IAUC 7584
C/1999 N4 (LINEAR)	IAUC 7226	P/2001 F1 (NEAT)	IAUC 7604
P/1999 RO28 (LONEOS)	IAUC 7253	C/2001 G1	IAUC 7606
C/1999 S3	IAUC 7264	P/2001 H1 (NEAT)	IAUC 7613
C/1999 S4	IAUC 7267	C/2001 J1	IAUC 7623
C/1999 T2	IAUC 7280	P/2001 K1 (NEAT)	IAUC 7629
C/1999 U1	IAUC 7283	C/2001 K3 (Skiff)	IAUC 7631
C/1999 T3 (LINEAR)	IAUC 7289	C/2001 K5 (LINEAR)	IAUC 7634
C/1999 U3	IAUC 7295	C/2001 Q1 (NEAT)	IAUC 7685
C/1999 U4 (Catalina-Skiff)	IAUC 7298	C/2001 Q4 (NEAT)	IAUC 7695
C/1999 Y1 (LINEAR)	IAUC 7338	P/2001 Q5 (LINEAR-NEAT)	IAUC 7697
C/1999 XS87	IAUC 7344	C/2001 Q6 (NEAT)	IAUC 7698
C/2000 B2 (LINEAR)	IAUC 7354	P/2001 T3 (NEAT)	IAUC 7733
C/2000 G1 (LINEAR)	IAUC 7396	C/2001 RX14 (NEAT)	IAUC 7739
C/2000 H1 (LINEAR)	IAUC 7410	C/2001 U6 (LINEAR)	IAUC 7746
C/2000 G2 (LINEAR)	IAUC 7411	C/2001 W2	IAUC 7758
C/2000 K1	IAUC 7430	C/2001 X2	IAUC 7775
C/2000 K2	IAUC 7430	C/2002 C2 (LINEAR)	IAUC 7815
C/2000 O1 (Koehn)	IAUC 7462	C/2002 B1 (LINEAR)	IAUC 7817
P/2000 R2 (LINEAR)	IAUC 7492	C/2002 B2 (LINEAR)	IAUC 7821
C/2000 S1	IAUC 7496	C/2002 E2	IAUC 7850
C/2000 S2 (LINEAR)	IAUC 7498	C/2002 O7 (LINEAR)	IAUC 7949
C/2000 SV74 (LINEAR)	IAUC 7510		

Table 1: Comets confirmed with the 0.57-m f/5.2 reflector + CCD at Kleť.

5.1. The 0.57-m $f/5.2$ reflector at Kleť

Since 1993, we have used a 0.57-m $f/5.2$ reflector equipped with a CCD camera. Between 1993 and 1996, we used an SBIG ST-6 camera, and since 1996, we have used an SBIG ST-8 camera. Between 1999 and 2002, we found or confirmed cometary features for 59 bodies (see Table 1) and discovered one new fainter comet — P/2000 U6 (Tichý). The majority of confirmed cometary bodies were discovered by the large surveys LINEAR, NEAT, Spacewatch, and/or LONEOS.

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Comet	reference	Comet	reference
P/2002 CW134 (LINEAR)	IAUC 7858	C/2003 G1 (LINEAR)	IAUC 8115
P/2002 EJ57 (LINEAR)	IAUC 7890	C/2003 H2 (LINEAR)	IAUC 8122
C/2002 J4 (NEAT)	IAUC 7899	P/2003 O3 (LINEAR)	IAUC 8174
C/2002 J5 (LINEAR)	IAUC 7904	P/2003 QX29 (NEAT)	IAUC 8192
C/2002 K2 (LINEAR)	IAUC 7904	P/2003 R1 (LINEAR)	IAUC 8195
component B of 57P	IAUC 7934	P/2003 S1 (NEAT)	IAUC 8208
C/2002 R3 (LONEOS)	IAUC 7970	C/2004 D1 (NEAT)	IAUC 8294
C/2002 V2 (LINEAR)	IAUC 8013	P/2004 CB (LINEAR)	IAUC 8314
P/2002 X2 (NEAT)	IAUC 8029	C/2004 H1 (LINEAR)	IAUC 8325
C/2003 A1	IAUC 8044	C/2004 P1 (NEAT)	IAUC 8383
C/2003 A2	IAUC 8049	P/2004 T1 (LINEAR-NEAT)	IAUC 8416
P/2003 F2 (NEAT)	IAUC 8104		

Table 2: Comets confirmed with the KLENOT Telescope at Kleť.

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Altogether, 27 of these confirmed comets were discovered as apparently asteroidal objects with unusual motion, then posted on the 'NEO Confirmation Page' due to unusual motion, and subsequently found to be cometary. A further 32 objects were detected as cometary by their discoverers and we confirmed their cometary features prior to formal announcement as comets. The list of confirmed objects contains several remarkable comets; for example, we confirmed the cometary features of C/1999 S4 (LINEAR) and C/2001 Q4 (NEAT).

5.2. The 1.06-m KLENOT Telescope

During the operation of the KLENOT Telescope (since March 2002), we have found or confirmed cometary features for 23 bodies (see Table 2). Altogether, 16 bodies were discovered as apparently asteroidal objects with unusual motion, then posted on the 'NEO Confirmation Page' due to unusual motion, and were subsequently found to be cometary. A further seven objects were detected as cometary by their discoverers and we confirmed their cometary features prior to formal announcement as comets. We also recovered three comets. One of our important results was the confirmation of component B of the fragmented comet 57P/du Toit-Neujmin-Delporte.

6. Discussion

The method used for the detection of cometary characteristics of a newly discovered object on CCD images is based on a simplified form of the two-dimensional Gaussian equation. This model is successfully used for comet detection. We are considering extending our technique of detection of cometary features by the use of a more complex numerical analysis, supposing that it is possible to detect such features. Although this current method for detection of cometary features seems somewhat simple, it works and has given many useful results up to now.

Acknowledgments

This work was supported by grants from The Grant Agency of the Czech Republic Reg. No. 205/98/0266 and No. 205/02/P114, and from "The 2000 NEO Shoemaker Grant" of The Planetary Society.

REFERENCES

Stokes, G. H.; J. B. Evans; H. E. M. Viggh; F. C. Shelly; and E. C. Pearce (2000). "Lincoln Near-Earth Asteroid Program (LINEAR)", *Icarus* **148**, 21-28.

Marsden, B. G.; and G. V. Williams (1998). "The NEO Confirmation Page", *Planet Space Sci.* **46**, 299-302.

Tichá, J.; M. Tichý; and M. Kočer (2002). "KLENOT — Kleť Observatory Near Earth and other Unusual Objects Observations Team and Telescope", in *Asteroids, Comets, and Meteors*, ed. by B. Warmbein (ESA SP-500; Noordwijk: European Space Agency/ESTEC), 793-796.

Sekanina, Z.; P. W. Chodas; M. Tichý; J. Tichá; and M. Kočer (2003). "Peculiar Pair of Distant Periodic Comets C/2002 A1 and C/2002 A2 (LINEAR)", *Ap.J.* **591**, L67-70.

Tichý, M.; J. Tichá; and M. Kočer (2002). "Confirmation of cometary features of newly discovered bodies", *Earth, Moon, and Planets* **90**, 507-513.

Michel Festou (1945-2005)

French astronomer Michel Festou passed away on 2005 May 11 after a short illness at age 60. He devoted most of his professional life to the study of comets and became an international expert on the ultraviolet spectra and aeronomical processes in cometary atmospheres. For nearly 20 years, he has been a member of the *ICQ* editorial advisory board.

Michel Festou was born on 1945 January 28 at Bénouville, a small town of Lower Normandy, France. He wrote his thesis (1978, *L'hydrogène atomique et le radical oxhydryle dans les comètes*, Paris VI University) under the supervision of Prof. Jacques Blamont at Service d'Aéronomie du CNRS. Festou soon obtained a research position at CNRS (Centre National de la Recherche Scientifique) and was successively posted to Service d'Aéronomie (at Verrières-le-Buisson, close to Paris), to Institut d'Astrophysique de Paris, to Observatoire de Besançon (where he was director from 1985 to 1989), and finally to Observatoire Midi-Pyrénées in Toulouse. In addition, Festou made several stays in the United States as a visiting scientist, especially at the University of Michigan (Ann Arbor) and at the Southwest Research Institute at Boulder (Colorado).

Festou worked on the very first ultraviolet observations of comets from space. The targets were the great comets C/1969 Y1 (Bennett) and C/1973 E1 (Kohoutek), the short-period comet 2P/Encke (he confessed that he had a life-long preference for this comet), and C/1975 N1 (Kobayashi-Berger-Milon). Observations were made from the satellites *OAO-2*, *IGO-5*, and *Copernicus*, from the *Skylab* space station, or from rockets. These allowed him to study the emission of the Lymanα line emission of the huge hydrogen cloud enveloped around comets and the emission bands in the near-ultraviolet of the OH radical.

Festou then took part in most major space projects related to ultraviolet observations of comets: the Optical Probe Explorer on *Giotto*, which explored Halley's comet; the *International Ultraviolet Explorer* (IUE), which yielded an ultraviolet database of no less than 55 comets; the *Hubble Space Telescope*; recently, the *Far Ultraviolet Spectroscopic Explorer* (FUSE); and, finally, in collaboration with the team of Alan Stern, the ultraviolet spectrometer "Alice" onboard the *Rosetta* probe to explore 67P/Churyumov-Gerasimenko. Festou also participated in ground-based cometary observations, from visible to radio wavelengths.

On theoretical grounds, Michel Festou was the creator of the 'vectorial model' (Festou 1981, "The density distribution of neutral compounds in cometary atmospheres", *Astron. Astrophys.* **95**, 69–79, and **96**, 52–57), which describes the kinematics of the hydrogen atom and of the OH radical in cometary atmospheres, following photodissociation of the water molecule. These particles are created with an additional velocity due to the excess energy of the photodissociation process. This 'ejection velocity', which has a random direction, adds vectorially to the initial velocity of the water molecule. This model rapidly became a standard; it took the place of the previously popular Haser model, where the particles followed the same trajectory as their parent molecule. Festou's model explains the molecular line profiles of OH and atomic hydrogen, as well as their observed spatial density distribution, and it is a requisite for a reliable estimation of the cometary water production from the observations of H and OH.

Festou also wrote or published several general books on comets, including a popular book in French[1] with P. Véron and J.-C. Ribes; a scholarly monograph[2] with Hans Rickman and Richard West, where modern comet science is put into its historical perspective; and quite recently, the editing of *Comets II* [3] with Uwe Keller and Hal Weaver, a monumental review of comet science which includes the contribution of many collaborators.

Jacques Crovisier

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Tabulation of Comet Observations

A new code for CCD photometric software has been given: '**SI5**' = 'StellaImage5'.

Note that descriptive text for Andreas Kammerer (observer code **KAM01**) for comet C/2004 Q2 was inadvertently left out of the January issue (though his tabulated data were published therein); that descriptive text appears below. Time still has not permitted the entry of numerous backlogged observations contributed on paper (as was noted in the January issue, page 8).

Descriptive Information, to complement the Tabulated Data (all times UT):

See the July 2001 issue (page 98) for explanations of the abbreviations used in the descriptive information.

◇ *Comet 9P/Tempel* $\Longrightarrow$ 2005 Feb. 3.62, Mar. 7.68, Apr. 9.71, and 30.61: **Guide 8.0** software used for comp.-star mags [OHS]. Feb. 3.62: $B-V$ values of comp.-star mags were +0.59 and +0.72 [OHS]. Feb. 5.80: $B-V$ values of comp.-star

[1] M. Festou, P. Véron, and J.-C. Ribes (1985), *Les Comètes, Mythes et Réalités* (Paris: Flammarion)

[2] M. C. Festou, H. Rickman, and R. M. West (1993), "Comets", *Astron. Astrophys. Reviews*, **4**, 363–447, and **5**, 37–163

[3] M. C. Festou, H. U. Keller, and H. A. Weaver, editors (2005), *Comets II* (Tucson: University of Arizona Press)

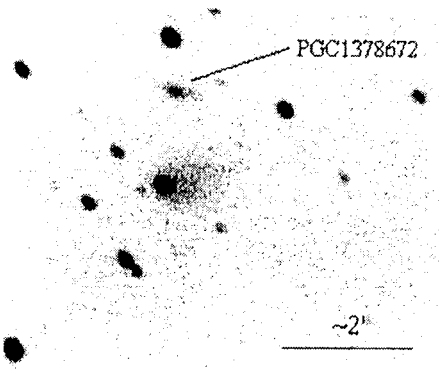

Image of comet 9P/Tempel from Giovanni Sostero (Remanzacco, Italy, 45-cm f/4.5 L + Starlight Xpress SXV-M7 camera + Cousins R filter) on 2005 Mar. 1.11 UT (fifty co-added 30-sec exposures). North is up and east to the left. The comet is just left of center, with a diffuse tail extending to the west; the galaxy PGC 1378672 is identified ≈ 1'.5 north of the comet.

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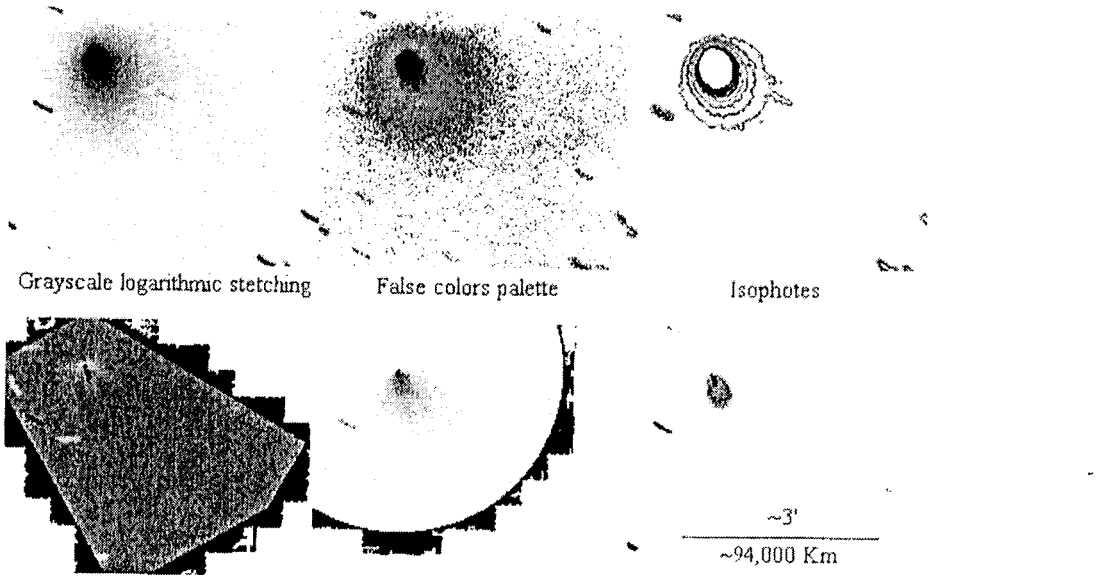

Another image of comet 9P by Sostero, this time from eighty co-added 30-sec R-band CCD exposures taken on 2005 Apr. 26.85, showing the same field via four six different presentations.

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[text continued from page 93]

were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Feb. 9.93: stellar appearance [SRB]. Feb. 10.85: `Guide 8.0` software used for comp.-star mags [MIY01]. Mar. 1.65, 5.58, 30.58, Apr. 5.58, and 16.49: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.65: comp. star has $B-V = +0.55$ [TSU02]. Mar. 5.58: comp. star has $B-V = +0.56$ [TSU02]. Mar. 7.68: $B-V$ values of comp.-star mags were +0.70 and +0.86 [OHS]. Mar. 18.13: w/ 40.7-cm L (233×), central cond. of mag 14.6 [BIV]. Mar. 20.94 and Apr. 21.97: moonlight [SRB]. Mar. 21.10: moonlight [HOR02]. Mar. 21.11: moonlight [HOR02]. Mar. 30.58: comp. star has $B-V = +0.54$ [TSU02]. Mar. 31.64: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 1.02: sky was just dark enough to see this comet [GRA04]. Apr. 1.96: possible second tail > 1'.5 long in p.a. 207° [SRB]. Apr. 4.57: `Guide 8.0` software used for comp.-star mags [YOS02]. Apr. 4.94: possible second tail > 2' long in p.a. 202° [SRB]. Apr. 5.58: comp. star has $B-V = +0.54$ [TSU02]. Apr. 9.71: comp. star has $B-V = +0.70$ [OHS]. Apr. 11.09: faint and not seen w/ certainty using lower power [GRA04]. Apr. 11.46: "obs. in the binoculars after first being located with 25.4-cm L at 71×; less visible using Swan Band filter" [SEA]. Apr. 11.88: comet close to star of mag 12.2 (ref: AU); at 155×, near-stellar cond. of mag 13 visible, asymmetrically placed towards the N edge of the coma [BOU]. Apr. 13.03: diffuse coma w/ a distinct central cond.; comet faintly visible [GRA04]. Apr. 14.60: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01]. Apr. 16.49: comp. star has $B-V = +0.35$ [TSU02]. Apr. 27.24: w/ 35.6-cm $f/10$ T + CCD, apparently unfiltered photometry (ref: USNO-A2.0 catalogue's reddish star magnitudes) within 15″ of the coma's center yields mag 11.8-12.0 (he calibrates to R-band); the comet has a bright, round coma of dia. 127″ and a very faint

outer coma extending an additional 30″ in diameter; a 120°-wide fan-shaped tail 75″ long is centered at p.a. 230° [J. McGaha, Tucson, AZ, U.S.A.]. Apr. 27.48: `Guide 8.0` software used for comp.-star mags [YOS02]. Apr. 27.55: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01]. Apr. 30.56: `MegaStar` ver. 5.0 software used for comp.-star mags [MUR02]. Apr. 30.61: $B-V$ values of comp.-star mags were +0.56, +0.57, +0.66, and +0.69 [OHS].

◇ *Comet 21P/Giacobini-Zinner* ⟹ 2005 Mar. 14.79: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.57 and +0.68 [OHS]. Apr. 4.81: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01].

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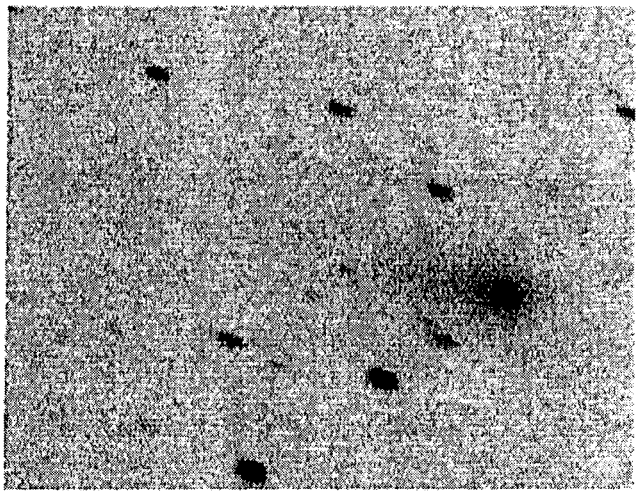

CCD image of comet 21P taken by Michael Mattiazzo (Penwortham, South Australia) with a Celestron-11 f/3.3 reflector (+ Starlight Express MX7c imager) on 2005 May 12. This cropped view is ≈ 7′.8 × 5′.7 in size; south is up and west is to the left.

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◇ *Comet 29P/Schwassmann-Wachmann* ⟹ 2004 Nov. 4.88: comet close to bright star; moonlight [BAR06]. Dec. 15.85: "comet looks like slightly foggy star" [BAR06]. 2005 Jan. 6.82: outburst; bright stellar cond. [HOR02]. Jan. 6.82, 9.77, 10.83, 11.79, 23.81, and Feb. 6.75: fan-shaped coma [HOR02]. Jan. 23.81: moonlight [HOR02]. Jan. 30.74: zodiacal light [BAR06]. Feb. 6.78: comet large and very diffuse; some interference from zodiacal light [BOU].

◇ *Comet 32P/Comas Solá* ⟹ 2005 Feb. 2.45, Mar. 1.45, and 30.47: `Guide 8.0` software used for comp.-star mags [TSU02]. Feb. 2.45: comp. star has $B-V = +0.66$ [TSU02]. Feb. 6.57 and Mar. 7.53: `Guide 8.0` software used for comp.-star mags [OHS]. Feb. 6.57: $B-V$ values of comp.-star mags were +0.58 and +0.67 [OHS]. Mar. 1.45: comp. star has $B-V = +0.40$ [TSU02]. Mar. 6.48: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 7.53: $B-V$ values of comp.-star mags were +0.70 and +0.86 [OHS]. Mar. 20.83: moonlight [HOR02]. Mar. 20.83 and Apr. 21.91: moonlight [SRB]. Mar. 20.83: star of mag 15 only 0′.8 from central cond. [SRB]. Mar. 30.47: comp. star has $B-V = +0.72$ [TSU02]. Mar. 30.83: two stars (of mag 13.1 and 13.4) within ≈ 1′ of central cond. [SRB]. Apr. 1.82: limiting stellar mag ≈ 15.5 at comet [HOR02]. Apr. 1.86: star of mag 14.8 only 0′.4 from central cond. [SRB]. Apr. 4.84: star of mag 14.8 only 0′.9 from central cond. [SRB]. Apr. 21.91: low alt.; dense star field in M37 [SRB].

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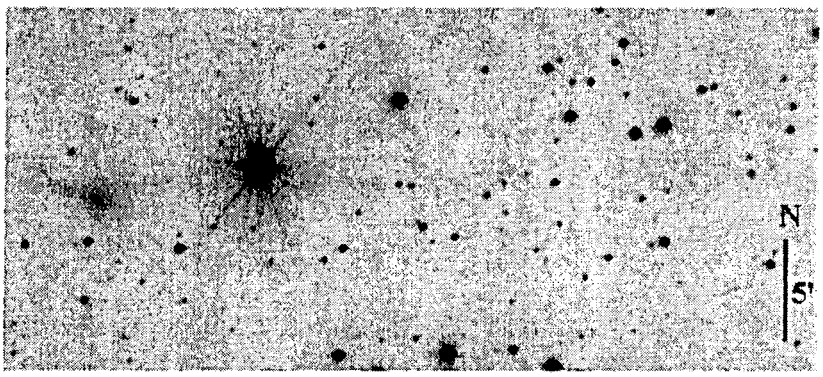

Co-added CCD image of comet 49P from three 190-sec exposures by Michael Jäger and Gerald Rhemann of Vienna, Austria, on 2005 Feb. 7.76 (20-cm T). North is up, and the bar at right indicates 5′.

◇ *Comet 37P/Forbes* ⟹ 2005 Apr. 4.74: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01]. Apr. 9.70: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.70$ [OHS].

◇ *Comet 49P/Arend-Rigaux* ⟹ 2005 Feb. 3.54: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.59 and +0.72 [OHS]. Feb. 6.77: comet well visible as a small, somewhat-condensed nebula [BOU]. Feb. 13.45: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 1.48 and 30.49: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.48: comp. star has $B-V = +0.58$ [TSU02]. Mar. 6.45: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 8.46: small and rather strongly condensed [YOS04]. Mar. 19.89, 20.79, 24.78, and Apr. 21.88: moonlight [SRB]. Mar. 20.79: moonlight [HOR02]. Mar. 30.49: comp. star has $B-V = +0.73$ [TSU02]. Mar. 30.81 and 31.83: dense star field [SRB]. Apr. 1.80: limiting stellar mag ≈ 15.5 at comet [HOR02]. Apr. 2.82: star of mag 13.3 only 0′.8 from central cond. [SRB]. Apr. 21.88: star of mag 13.7 only 0′.5 from central cond. [SRB]. Apr. 27.47: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

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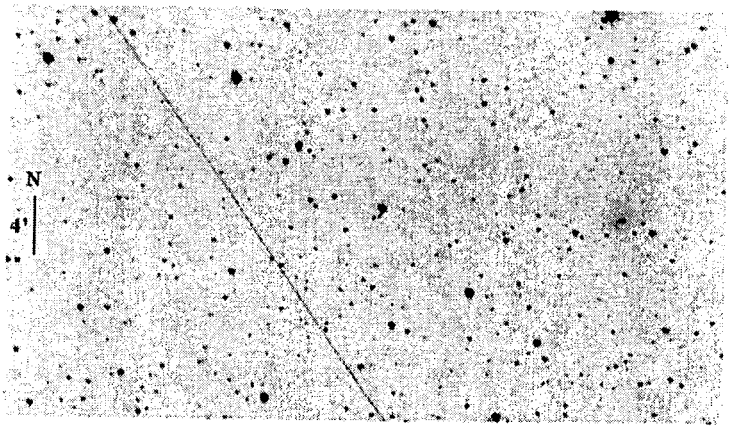

Image of comet 62P taken by Jäger and Rhemann on 2004 Oct. 24.10 (five co-added 2-min exposures, 20-cm T). North is up and the bar at left represents 4′. The comet is the diffuse object centered near the right edge; an apparent satellite or meteor crosses the image from top to bottom at left.

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◇ *Comet 62P/Tsuchinshan* ⟹ 2004 Dec. 11.73: `Guide 8.0` software used for comp.-star mags [NAG04]. 2005 Feb. 3.60: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.59 and +0.72 [OHS]. Feb. 3.83, 4.84, 5.84, 10.83, and 13.84: `Guide 8.0` software used for comp.-star mags [MIY01]. Feb. 9.91: star of mag 13.5 only 1′ from central cond. [SRB]. Mar. 1.63, 30.57, and Apr. 16.49: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.63: comp. star has $B-V = +0.80$ [TSU02]. Mar. 7.68: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.70 and +0.86 [OHS]. Mar. 8.56: still visible, but extremely diffuse and hard to see [YOS04]. Mar. 20.90: moonlight [HOR02]. Mar. 20.96: moonlight [SRB]. Mar. 30.57: comp. star has $B-V = +0.46$ [TSU02]. Mar. 31.63: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 4.92: star of mag 15.3 only 1′.3 from central cond. [SRB]. Apr. 16.49: comp. star has $B-V = +0.57$ [TSU02]. Apr. 29.61: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet 69P/Taylor* ⟹ 2004 Dec. 23.67 and 2005 Apr. 9.59: `Guide 8.0` software used for comp.-star mags [OHS]. 2004 Dec. 23.67: comp. star has $B-V = +0.73$ [OHS]. 2005 Feb. 9.86: possible tail 1′ long in p.a. 230° [SRB]. Feb. 13.55: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 7.56: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Apr. 9.59: $B-V$ values of comp.-star mags were +0.77, +0.81, and +0.83 [OHS].

◇ *Comet 78P/Gehrels* ⟹ 2004 Nov. 4.82: starlike central cond., parabolic coma [BAR06]. Dec. 6.69, 11.69 and 2005 Feb. 5.56: `Guide 8.0` software used for comp.-star mags [NAG04]. 2005 Jan. 9.78: ellipsoidal coma of size 4′ × 2′, extended in p.a. 50-230° [BAR06]. Feb. 2.51, Mar. 5.50, and Apr. 4.45: `Guide 8.0` software used for comp.-star mags [TSU02]. Feb. 2.51: comp. star has $B-V = +0.69$ [TSU02]. Feb. 3.50, 5.44, and 13.46: `Guide 8.0` software used for comp.-star mags [MIY01]. Feb. 3.56 and Apr. 9.47: `Guide 8.0` software used for comp.-star mags [OHS]. Feb. 3.56: $B-V$ values of comp.-star mags were +0.59 and +0.72 [OHS]. Feb. 6.55: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 6.85: second tail 5′.6 long in p.a. 275° [HOR02]. Feb. 9.78: star of mag 14 only 0′.5 from central cond. [SRB]. Feb. 9.90: "significantly less condensed than during the weeks before" [KAM01]. Mar. 5.50: comp. star has $B-V = +0.59$ [TSU02]. Mar. 7.51: > 7′.0 anti-tail in p.a. 274°; $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 8.48: in the Hyades, w/ many bright stars in the field-of-view [YOS04]. Mar. 20.81: moonlight [HOR02]. Mar. 20.85, 30.80, and 31.85: dense star field [SRB]. Mar. 20.85: moonlight [SRB]. Mar. 30.47: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Apr. 4.45: comp. star has $B-V = +0.50$ [TSU02]. Apr. 4.80: star of mag 15.8 only 0′.6 from central cond. [SRB]. Apr. 9.47:

comp. star has $B-V = +0.70$ [OHS]. Apr. 21.85: low alt. [SRB].

◇ *Comet 88P/Howell* ⟹ 2005 Mar. 7.45: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01].

◇ *Comet 99P/Kowal* ⟹ 2005 Feb. 13.58: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 7.58: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01].

◇ *Comet 103P/Hartley* ⟹ 2005 Feb. 6.70: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.41 and +0.49 [OHS]. Mar. 31.61: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 14.57: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01].

◇ *Comet 105P/Singer Brewster* ⟹ 2005 Mar. 30.60: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Apr. 16.46: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.42$ [TSU02].

◇ *Comet 117P/Helin-Roman-Alu* ⟹ 2005 Apr. 4.75: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01].

◇ *Comet 121P/Shoemaker-Holt* ⟹ 2004 Dec. 23.65: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.50 and +0.73 [OHS]. 2005 Feb. 5.72: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Feb. 9.88: possible fan tail 1′ long in p.a. 200°-290° [SRB]. Mar. 7.60: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 31.52: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 1.93: stellar appearance [SRB]. Apr. 29.56: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet 129P/Shoemaker-Levy* ⟹ 2005 Feb. 2.58: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.53$ [TSU02]. Feb. 3.58: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.54 and +0.70 [OHS]. Feb. 13.53: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01].

◇ *Comet 141P/Machholz (component A assumed)* ⟹ 2005 Feb. 27.75: three CCD images taken by Michael Jäger w/ a 20-cm f/1.5 Schmidt camera show component A of comet 141P/Machholz (recovery); comet alt. only 5° above Jaeger's horizon in Austria; comet appears at mag ≈ 11, and it is condensed w/ coma dia. ≈ 1′; Jäger subsequently also obs. the comet on Feb. 28.8, Mar. 1.8, and 13.8 (cf. *IAUC* 8495), the comet's positions corresponding roughly to a correction in T of −0.29 day [MEY]. Mar. 8.41: very low, evening sky not clear, "so the limiting magnitude was not deep; position calculated from orbital elements with T = Feb. 28.22 TT, based on the recent images by Michael Jäger" [YOS04]. Mar. 11.83: obs. from 1135 m above sea level; zodical light; comet alt. 10° [GON05]. Mar. 30.44: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.82$ [NAK01]. Mar. 30.78, 31.79, and Apr. 21.79: low alt. [SRB]. Mar. 31.83: "faint, but definitely seen as a diffuse glow in excellent sky w/ some interference from twilight and zodiacal light"; comet at alt. 13° [BOU]. Apr. 21.79: twilight [SRB].

◇ *Comet 159P/2003 UD$_{16}$ (LONEOS)* ⟹ 2005 Feb. 2.62: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.48$ [TSU02]. Feb. 6.62: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Mar. 7.53: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 14.68: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.50, +0.84, and +0.86 [OHS].

◇ *Comet 162P/2004 TU$_{12}$ (Siding Spring)* ⟹ 2005 Feb. 2.44: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.50$ [TSU02]. Mar. 6.52: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 7.68: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.46 and +0.62 [OHS].

◇ *Comet 163P/2004 V4 (NEAT)* ⟹ 2005 Feb. 2.52: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.50$ [TSU02]. Feb. 6.59: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.41 and +0.49 [OHS]. Feb. 6.66: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Mar. 6.51: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01].

◇ *Comet 164P/2004 Y1 (Christensen)* ⟹ 2004 Dec. 23.65 and 2005 Apr. 9.61: `Guide 8.0` software used for comp.-star mags [OHS]. Dec. 23.65: comp. star has $B-V = +0.50$ [OHS]. 2005 Mar. 1.60: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.44$ [TSU02]. Mar. 7.61: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 20.86: moonlight [HOR02]. Apr. 5.56: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Apr. 9.61: $B-V$ values of comp.-star mags were +0.77, +0.81, and +0.83 [OHS]. Apr. 29.58: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet C/1995 O1 (Hale-Bopp)* ⟹ 2005 Feb. 8.63: `GUIDE 8.0` software used for comp.-star mags ($B-V$ values of comp. stars were +0.42 and +0.48); S. Nakano writes that he has measured the images of this comet from the original CCD frames, and the residuals indicate that he did indeed observe the comet (and that it is has been brighter than has been reported elsewhere); this observation was curiously made with a Takahashi 530-mm f/5.0 R (leading to a difficult astrometric measurement — uncertainty ± 3″), while the previous ones by Tsumura were made using a 0.20-m f/5

reflector; those obs. made in 2004 and 2005 were made from Waddi Farm, Western Australia; comet was very diffuse w/ almost no central cond.; Nakano obtained total mag 17.9 from Tsumura's 2004 Mar. 21.63 image (which is a co-addition of fourteen 300-sec CCD images), mag 17.8 ± 0.4 from his 2004 Mar. 25.56 image (which is a co-addition of nine 300-sec images and four 600-sec images), and 18.3 ± 0.5 from the 2005 Feb. 8.61 image (where the limiting stellar mag was near 19.0; note that Tsumura took ≥ 18 300-sec images on Feb. 8.61-8.64, combined into three co-added images that were each measured astrometrically by Nakano (with residuals < 3″ w/ respect to his orbit on *MPC* 42547 and in the *ICQ*'s *2005 Comet Handbook*; the previous astrometry available for comparison were made in late Dec. 2003) [TSU02].

◇ *Comet C/2000 SV$_{74}$ (LINEAR)* ⟹ 2005 Apr. 5.65: *B–V* values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01].

◇ *Comet C/2001 Q4 (NEAT)* ⟹ 2004 May 8.13: w/ 61-cm *f*/16 reflector, CCD images show a nuclear cond. of mag 11.5 that appears as a 2″-diameter round 'dot'; "nothing unusual is seen around the nuclear cond. or its immediate vicinity (no jets or swirls noted); the visual impression as seen with the unaided eye that of a 4th-mag object, but it is difficult to see because of the Los Angeles glow to the SW (45 miles to City Hall!)" [Jim Young, Table Mountain Observatory (Jet Propulsion Laboratory, NASA), Wrightwood, CA, U.S.A.]. Nov. 4.88: moonlight [BAR06]. 2005 Jan. 15.80: very dense star field [HOR02]. Feb. 5.43 and 13.45: `Guide 8.0` software used for comp.-star mags [MIY01]. Feb. 5.74 and 7.74: at 81×, limiting mag ~ 15 [LEH]. Feb. 6.87: comet very faint and diffuse [BOU]. Feb. 7.84 and 10.81: *V* comp.-star mags from TASS-IV where *V–I* < +1.0 (as usual w/ use of stars from this ref.) [BOU]. Feb. 27.43: *B–V* values of comp.-star mags were +0.59 and +0.63 [NAK01]. Mar. 8.45: many faint Milky Way stars in field; sky conditions not great [YOS04]. Mar. 19.87, 20.85, and 30.88: dense star field [SRB]. Mar. 19.87 and 20.85: moonlight [SRB]. Mar. 20.85: bright star (mag 10.4) only 0′.8 from central cond. [SRB].

◇ *Comet C/2002 J5 (LINEAR)* ⟹ 2005 Feb. 3.64: `Guide 8.0` software used for comp.-star mags; *B–V* values of comp.-star mags were +0.54 and +0.70 [OHS]. Feb. 5.81: *B–V* values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Apr. 4.70: *B–V* values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01].

◇ *Comet P/2002 T5 (LINEAR)* ⟹ 2005 Apr. 5.61: *B–V* values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01].

◇ *Comet C/2002 T7 (LINEAR)* ⟹ 2005 Feb. 5.73: *B–V* values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Feb. 9.96: low alt. [SRB]. Mar. 1.58 and Apr. 4.50: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.58: comp. star has *B–V* = +0.62 [TSU02]. Mar. 7.59: *B–V* values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 30.53: *B–V* values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Apr. 4.50: comp. star has *B–V* = +0.50 [TSU02]. Apr. 21.83: moonlight [SRB]. Apr. 27.49: *B–V* values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01]. Apr. 30.51: `Guide 8.0` software used for comp.-star mags; *B–V* values of comp.-stars mags were +0.56, +0.57, +0.66, and +0.69 [OHS].

◇ *Comet C/2003 A2 (Gleason)* ⟹ 2005 Feb. 13.65: *B–V* values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 31.57: *B–V* values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01].

◇ *Comet C/2003 K4 (LINEAR)* ⟹ 2005 Jan. 28.56: "comet is fading and becoming more diffuse" [PEA]. Feb. 2.00: comp. stars have *V* = 8.39 (*B–V* = +0.36) and 8.75 (*B–V* = +0.44) [AMO01]. Feb. 4.47 and Mar. 14.45: `Guide 8.0` software used for comp.-star mags [YOS02]. Feb. 5.40, 13.42, and 26.43: `Guide 8.0` software used for comp.-star mags [MIY01]. Feb. 5.43, 11.46, and Mar. 7.46: `Guide 8.0` software used for comp.-star mags [NAG04]. Feb. 6.44 and 11.42: `StellaNavigator` ver. 6.1 software used for comp.-star mags [NAG08]. Feb. 6.76: comet only 7° over S horizon [BOU]. Feb. 7.98, 13.10, 14.01, and 15.96: comp. stars have *V* = 8.79 (*B–V* = +0.29) and 9.22 (*B–V* = +0.68) [AMO01]. Feb. 11.46: w/ 30.4-cm L (61×), 9′ tail in p.a. 110° [NAG04]. Feb. 13.48: *B–V* values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Feb. 15.96: moonlight interference [AMO01]. Mar. 1.44 and Apr. 4.43: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.44: comp. star has *B–V* = +0.66 [TSU02]. Mar. 4.99: comp. stars have *V* = 10.06 (*B–V* = +0.51) and 10.57 (*B–V* = +0.63) [AMO01]. Mar. 6.44: > 4′.7 anti-tail in p.a. 290°; *B–V* values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 7.48: `Guide 8.0` software used for comp.-star mags; *B–V* values of comp.-star mags were +0.70 and +0.86 [OHS]. Mar. 7.96: comp. stars have *V* = 10.26 (*B–V* = +0.37) and 10.67 (*B–V* = +0.51) [AMO01]. Mar. 8.44: very diffuse and hard to see in the low evening sky [YOS04]. Mar. 8.94 and 11.94: comp. stars have *V* = 10.26 (*B–V* = +0.37) and 10.70 (*B–V* = +0.40) [AMO01]. Mar. 15.05: poor conditions [ROB06]. Mar. 15.95: comp. stars have *V* = 10.04 (*B–V* = +0.68) and 10.73 (*B–V* = +0.65) [AMO01]. Apr. 4.43: comp. star has *B–V* = +0.48 [TSU02].

◇ *Comet C/2003 O1 (LINEAR)* ⟹ 2005 Apr. 4.78: *B–V* values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01]. Apr. 13.76: `Guide 8.0` software used for comp.-star mags; comp. star has *B–V* = +0.59 [OHS]. Apr. 14.65: *B–V* values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01].

◇ *Comet C/2003 T3 (Tabur)* ⟹ 2005 Feb. 5.75 and Apr. 5.55: *B–V* values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Mar. 6.63: *B–V* values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 21.02: moonlight [HOR02]. Apr. 9.65: `Guide 8.0` software used for comp.-star mags; *B–V* values of comp.-star mags were +0.77, +0.81, and +0.83 [OHS].

◇ *Comet C/2003 T4 (LINEAR)* ⟹ 2005 Feb. 3.85, 4.84, 5.85, 10.84, 13.84, and Mar. 7.82: `Guide 8.0` software

used for comp.-star mags [MIY01]. Feb. 6.84: `StellaNavigator` ver. 6.1 software used for comp.-star mags [NAG08]. Feb. 10.18: "estimate corrected for presence of mag-10.2 star in coma"; at 45×, faint tail visible — 8′ long in p.a. 278° [BOU]. Feb. 11.82 and Mar. 6.82: `Guide 8.0` software used for comp.-star mags [NAG04]. Feb. 20.20: "faintly visible in 10.0-cm R, but clearly seen w/ the larger instrument; w/ 20.3-cm T, the inner part of the coma was quite bright, while its outer boundary was faint and diffuse; moonlight and astron. twilight" [GRA04]. Mar. 8.82: unexpectedly bright and large [YOS04]. Mar. 13.78: "appeared unchanged, or possibly a little fainter, through Swan-band filter" [SEA]. Mar. 14.12, 17.14, 20.13, and 21.15: low alt. [HOR02]. Mar. 15.21: w/ 25.6-cm L (169×), central cond. of mag 11.6 [BIV]. Mar. 15.83: `Guide 8.0` software used for comp.-star mags [YOS02]. Mar. 19.12: "comet only barely visible, but detected at correct location; alt. 8°.5, twilight (sun 12° below horizon)" [GRA04]. Mar. 19.80: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.60$ [OHS]. Mar. 20.20: w/ 25.6-cm L (169×), central cond. of mag 11.8 [BIV]. Apr. 11.77: "broad tail that appeared to emerge mainly from N side of coma and spiral to the S; in 24.4-cm L (71×), morphology of comet reminded me a little of C/1995 O1 in mid-Apr. 1997, w/ brightest part of tail emerging from N of coma somewhat in the shape of the number '6'; coma and broad tail gave suggestion of a parabolic envelope, like a large dust comet in miniature, but w/ the central cond. being 'softer' than the more-usual sharp stellar or planetary appearance of these comets" [SEA]. Apr. 13.75: "comet appeared fainter and tail less prominent than at previous obs., although this may have been due to proximity of several stars" [SEA].

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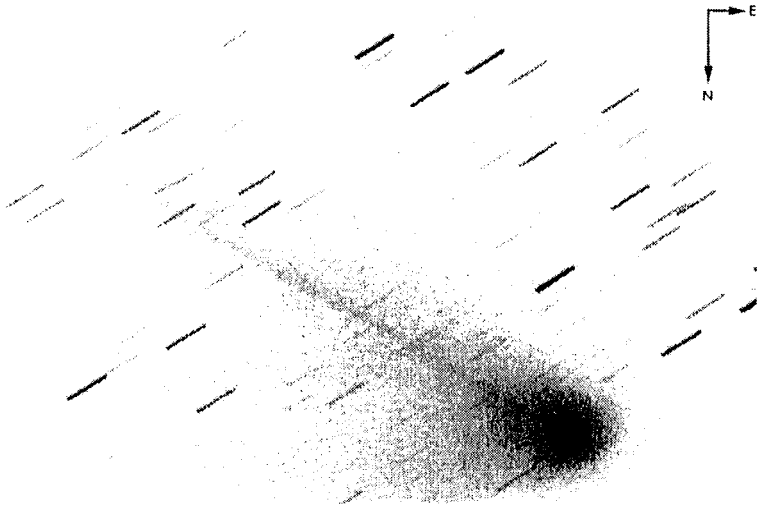

Image of comet C/2003 T4 by John Drummond (Gisborne, New Zealand, 41-cm f/4.5 Meade L + Canon EOS 10D camera) on 2005 Apr. 16.71, from eighteen 2-min exposures at ASA 800. He estimated the coma size as 4′, the DC as 5, and the total mag as 8.0. North is down and east to the right in this view; the cropped field here spans ≈ 28′ × 18′ in size on the sky.

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◇ *Comet C/2003 WT$_{42}$ (LINEAR)* ⟹ 2005 Feb. 6.57: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 2.60, Mar. 1.54, and Apr. 4.47: `Guide 8.0` software used for comp.-star mags [TSU02]. Feb. 2.60: comp. star has $B-V = +0.59$ [TSU02]. Feb. 6.65 and Apr. 30.48: `Guide 8.0` software used for comp.-star mags [OHS]. Feb. 6.65: $B-V$ values of comp.-star mags were +0.58 and +0.67 [OHS]. Mar. 1.54: comp. star has $B-V = +0.59$ [TSU02]. Mar. 6.56: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 19.87 and 20.87: stellar appearance; dense star field; moonlight [SRB]. Mar. 30.50: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Apr. 4.47: comp. star has $B-V = +0.39$ [TSU02]. Apr. 30.48: $B-V$ values of comp.-star mags were +0.56, +0.57, +0.66, and +0.69 [OHS].

◇ *Comet P/2004 A1* ⟹ 2005 Feb. 5.76 and Apr. 5.57: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Mar. 6.66: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 21.05: moonlight [HOR02]. Apr. 29.59: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet C/2004 B1 (LINEAR)* ⟹ 2005 Feb. 2.54 and Mar. 5.49: `Guide 8.0` software used for comp.-star mags [TSU02]. Feb. 2.54: comp. star has $B-V = +0.52$ [TSU02]. Feb. 13.50: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 5.49: comp. star has $B-V = +0.38$ [TSU02]. Mar. 7.44: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01].

◇ *Comet C/2004 D1 (NEAT)* ⟹ 2005 Feb. 6.59: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01].

◇ *Comet P/2004 F3 (NEAT)* ⟹ 2005 Apr. 4.82: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01].

◇ *Comet C/2004 K1 (Catalina)* ⟹ 2005 Mar. 14.78 and Apr. 30.66: **Guide 8.0** software used for comp.-star mags [OHS]. Mar. 14.78: $B-V$ values of comp.-star mags were +0.57 and +0.68 [OHS]. Mar. 30.98: low alt.; dense star field [SRB]. Apr. 4.75: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01]. Apr. 30.66: $B-V$ values of comp.-star mags were +0.56, +0.57, +0.66, and +0.69 [OHS].

◇ *Comet C/2004 L1 (LINEAR)* ⟹ 2005 Mar. 14.73 and Apr. 9.52: **Guide 8.0** software used for comp.-star mags [OHS]. Mar. 14.73: $B-V$ values of comp.-star mags were +0.57 and +0.68 [OHS]. Mar. 30.59: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Apr. 4.55: **Guide 8.0** software used for comp.-star mags; comp. star has $B-V = +0.56$ [TSU02]. Apr. 9.52: comp. star has $B-V = +0.70$ [OHS]. Apr. 21.81: moonlight [SRB]. Apr. 27.48: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

◇ *Comet C/2004 Q1 (Tucker)* ⟹ 2004 Dec. 14.43: **Guide 8.0** software used for comp.-star mags [NAG04]. 2005 Jan. 15.78: dense star field [HOR02]. Feb. 2.41, Mar. 5.45, and 30.45: **Guide 8.0** software used for comp.-star mags [TSU02]. Feb. 2.41: comp. star has $B-V = +0.44$ [TSU02]. Feb. 5.41, 13.44, and 26.46: **Guide 8.0** software used for comp.-star mags [MIY01]. Feb. 9.92: "still displaying a more condensed inner coma" [KAM01]. Feb. 11.44: **StellaNavigator** ver. 6.1 software used for comp.-star mags [NAG08]. Feb. 27.44: $B-V$ values of comp.-star mags were +0.59 and +0.63 [NAK01]. Mar. 5.45: comp. star has $B-V = +0.52$ [TSU02]. Mar. 20.84: very dense star field; moonlight [HOR02]. Mar. 30.45: comp. star has $B-V = +0.67$ [TSU02]. Apr. 1.88: star of mag 12.8 only 0.′6 from central cond. [SRB]. Apr. 2.86: star of mag 11.9 only 0.′8 from central cond. [SRB]. Apr. 4.85: star of mag 14.2 only 0.′9 from central cond. [SRB]. Apr. 21.93: two mag-13.6 stars only 1.′9 from central cond.; moonlight [SRB]. Apr. 27.46: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

◇ *Comet C/2004 Q2 (Machholz)* ⟹ 2004 Nov. 15.01: conspicuous object (in spite of alt. of only 10°) w/ rather large coma and a faint tail [KAM01]. Dec. 6.65: two tails (14′ long in p.a. 345° and 16′ long in p.a. 275°) visible w/ 30.4-cm L (61×) [NAG04]. Dec. 6.65, 11.62, 14.52, 2005 Feb. 5.49, 11.62, Mar. 6.74, and 7.52: **Guide 8.0** software used for comp.-star mags [NAG04]. Dec. 6.99: conspicuous object w/ faint tail; w/ 30-cm T (75×), broad dust tail suspected ⊥ to the gas tail; at 242×, starlike false nucleus of mag 10.5 [KAM01]. Dec. 10.58, 11.58, 14.58, 16.58, 17.58, 18.58, and 20.50: **Skychart III** ver. 3.6.4 software used for comp.-star mags [END]. Dec. 11.62: two tails (16′ long in p.a. 325° and 24′ long in p.a. 265°) visible w/ 30.4-cm L (61×) [NAG04]. Dec. 14.52: two tails (42′ long in p.a. 20° and 21′ long in p.a. 265°) visible w/ 30.4-cm L (61×) [NAG04]. Dec. 14.96: conspicuous object w/ very faint ion tail; broad brightening at the W side of the coma (dust tail); w/ 30-cm T (75×), coma showed well-defined E side and very diffuse, broad brightening at the W side of the coma; starlike false nucleus of mag 9.5-10.0 [KAM01]. Dec. 15.87: w/ 10×50 B, faint gas tail 2° long in p.a. 22°, fan-like dust tail 0.°6 long open in p.a. 260°-285° [BAR06]. Dec. 15.96: conspicuous object w/ very faint ion tail; broad dust tail of length 0.°4 in p.a. 260°, more conspicuous than ion tail; w/ 30-cm T (75×), starlike false nucleus of mag 10.0 [KAM01]. Dec. 20.99: despite bright moonlight, the ion tail could be seen rather well [KAM01]. Dec. 23.54, 24.62, 2005 Jan. 12.42, 18.46, 18.48, 27.41, 28.41, Feb. 6.42, 11.43, 26.42, Mar. 2.67, 14.44, 19.54, Apr. 8.50, 13.50, and 29.61: **StellaNavigator** ver. 6.1 software used for comp.-star mags [NAG08]. Dec. 29.89: bright moonlight; no tail discernible; glimpsed w/ unaided eye [KAM01].

2005 Jan. 1.78: small, very condensed inner coma and rather diffuse outer coma; elongated ENE-WSW, indicating ion tail (p.a. about 60°); 'appendix' towards SSW indicating dust tail; w/ 9×63 B, 22′ coma, DC = 7 [KAM01]. Jan. 2.89: ion tail and broad dust tail (0.°3 long in p.a. 170°) were faint; w/ 20-cm T (50×), stellar false nucleus of mag 9.0 [KAM01]. Jan. 4.04: naked-eye limiting mag 5.7; no tail visible, even in binoculars; w/ 7×50 B, coma dia. 25′, DC = 6; comp. stars HIP 16369 ($V = 4.13$), 16322 ($V = 5.13$), HIP 20889 ($V = 3.54$) [BAL07]. Jan. 4.73: ion tail faint; broad dust tail (0.°4 in p.a. 170°) was easier to see; w/ 30-cm T (75×), stellar false nucleus of mag 8.5; "at 333×, 15″ jet towards p.a. 250° (just glimpsed?)" [KAM01]. Jan. 6.77: comet 3.°5 SW of M45; easy object w/ unaided eye, but not conspicuous; w/ 9×63 B, long and narrow ion and broad dust tail (0.°8 long in p.a. 180°), both well visible [KAM01]. Jan. 7.96: comet 2.°5 SW of M45; coma slightly less condensed; ion tail very vaguely visible, seemingly much broader than during the days before; dust tail (0.°9 long in p.a. 188°) easy; w/ 30-cm T (75×), stellar false nucleus of mag 9.5 (no additional structural coma details discernible) [KAM01]. Jan. 8.99: w/ 10×50 B, parabolic gas tail 2° long in p.a. 90°; fan-like dust tail 40′ long, open in p.a. 110°-185°, is more sharply outlined and lengthened on its edges [BAR06]. Jan. 9.68: w/ 10×50 B, gas tail 2° long in p.a. 85°; fan-like dust tail 40′ long open in p.a. 105-175°; w/ 36-cm L $f/6$ (90×), a 'fountain' consisting of three bright, short streams (jets) emanate from the nucleus in the direction of the sun [BAR06]. Jan. 9.96: w/ 9×63 B, long, narrow ion and broad dust tail (0.°6 long in p.a. 170°), both well visible; "w/ 30-cm T (242×), a 10″-long narrow section vaguely brighter than the bright coma background suspected in p.a. ≈ 250° (fountain, jet?)" [KAM01]. Jan. 10.95: long and narrow ion tail easily detectable; broad dust tail (0.°6 long in p.a. 168°) not as easy to see as during the last few days; w/ 30-cm T (75×), stellar false nucleus of mag 10.0; "at 242×, a narrow section vaguely brighter than the bright coma background suspected in p.a. ≈ 250° (fountain, jet?)" [KAM01]. Jan. 11.94: ion tail easily visible as a very long narrow streak; broad dust tail started at p.a. 160° at the coma, then curved towards p.a. 175° at the end [KAM01]. Jan. 13.91: broad dust tail 0.°7 long in p.a. 170°; both tails faint [KAM01]. Jan. 14.91: broad dust tail 0.°8 in p.a. 165°; ion tail easy to see w/ averted vision, but dust tail more difficult; w/ 30-cm T (75×), stellar false nucleus of mag 9.5; at 333×, fountain-like structure 10″-15″ long in solar direction (p.a. ≈ 270°) was slightly brighter than the bright coma background; a sector spanning ≈ 90° in p.a., on the sunlit side of the false nucleus, showed a significantly enhanced surface brightness compared to the other parts of the coma [KAM01]. Jan. 15.95: broad dust tail 0.°6 long in p.a. 155°; ion tail well visible; dust tail easy only near the coma, but difficult farther out [KAM01]. Jan. 16.96: broad dust tail 0.°7 long in p.a. 150°; ion tail easy, dust tail difficult [KAM01]. Jan. 17.55, 26.51, 27.54, 28.42, 30.48, Feb. 3.52, 5.43, and 6.43: **StellaNavigator** ver. 7 software used for comp.-star mags [MOM]. Jan. 22.72: strong moonlight [GRA04]. Jan. 22.72: large, diffuse, extended coma w/ brighter center; straight, diffuse tail; faintly seen w/

naked eye; comet near zenith; gibbous moon at alt. 43° in E-SE; clear, light-polluted sky [WAR01]. Jan. 22.99: near the moon [BAR06]. Jan. 22.82 and 23.75: bright moonlight interference [ZAN01]. Jan. 23.99: faintly seen w/ naked eye; strong moonlight [GRA04]. Jan. 24.92: w/ 25.6-cm L (169×), jets visible in p.a. 250°, 280°, and 330°; central cond. of mag 11.5 [BIV]. Jan. 27.85: diffuse coma extended in p.a. 140°; gibbous moon at alt. 25° in E-SE; clear, light-polluted sky [WAR01]. Jan. 28.42, Feb. 3.49, 4.48, 6.47, 11.44, 26.45, Mar. 6.68, 7.69, 15.80, 29.49, 29.51, Apr. 4.48, 12.58, 13.69, 14.68, and 27.50: `Guide 8.0` software used for comp.-star mags [YOS02]. Jan. 30.97: comet close to star of mag 5.6 [ZAN01]. Jan. 31.95: w/ 15×80 B, weak ion tail of length ≈ 3° in p.a. 80° and dust tail of length ≈ 1° in p.a. 145° [SCH04].

Feb. 1.19: diffuse coma; straight, diffuse tail; waning third-quarter moon at alt. 15° in W-SW; low clouds (clear at comet's location) — hazy, light-polluted sky [WAR01]. Feb. 2.88: w/ 7×50 B, a very faint gas tail was seen, 3° long in p.a. ≈ 90°; very favorable conditions [SKI]. Feb. 2.92: tab. tail info is for ion tail; also dust tail 0°.4 long in p.a. 145° [GON05]. Feb. 3.49, Mar. 1.43, 7.50, 14.53, and 29.51: **The Sky** ver. 5 software used for comp.-star mags [MIT]. Feb. 3.51, 4.45, 5.45, 10.86, 13.47, 26.47, Mar. 7.81, 8.81, 14.48, 16.47, 20.79, 31.48, Apr. 22.77, 26.48, and 28.53: `Guide 8.0` software used for comp.-star mags [MIY01]. Feb. 4.91: w/ 8×40 B, ion tail of length 1°.0 in p.a. 80° and dust tail of length 1°.0 in p.a. 145° [RIE]. Feb. 4.91: w/ 15×80 B, weak ion tail of length ≈ 1° in p.a. 85° and dust tail of length ≈ 0°.3 in p.a. 140° [SCH04]. Feb. 4.94: broad dust tail 0°.4 long in p.a. 150°; both tails rather faint except near the coma [KAM01]. Feb. 5.78: w/ 10×56 B, ion tail of length ≈ 0°.5 in p.a. 80° and dust tail of length ≈ 0°.5 in p.a. 150° [BUS01]. Feb. 5.91: "broad dust tail 0°.4 long in p.a. 145°; ion tail easy, dust tail more difficult; w/ 30-cm T (75×), stellar false nucleus of mag; no additional structures discernible; radial brightness distribution" [KAM01]. Feb. 6.45: `Guide 8.0` software used for comp.-star mags [OHM]. Feb. 6.76: strong narrow jet in plasma tail; second tail > 19′ long in p.a. 138° [SRB]. Feb. 6.80: w/ 15×80 B, weak ion tail of length ≈ 2° in p.a. 80° and dust tail of length ≈ 0°.3 in p.a. 150° [SCH04]. Feb. 6.83: comet still easily visible to naked eye; in 7×50 B, besides very faint gas tail, also more conspicuous dust tail visible — rather broad and 1°.7 long in p.a. 140° [BOU]. Feb. 8.91: in 11×80 B, also a shorter tail 0°.75 long in p.a. 150°, w/ a diffuse, fan-shaped area between the two tails [WAR01]. Feb. 9.81: second tail > 18′ long in p.a. 147° [SRB]. Feb. 9.85: tab. tail info is for ion tail; also dust tail 0°.4 long in p.a. 145° [GON05]. Feb. 9.93: broad dust tail 0°.4 long in p.a. 135°; w/ 30-cm T (75×), stellar false nucleus of mag 9.5 [KAM01]. Feb. 11.08: clearly larger and brighter than M13 [GRA04]. Feb. 11.62: two tails (1° in p.a. 75° and 0°.45 long in p.a. 135°) visible w/ 30.4-cm L (47×) [NAG04]. Feb. 12.97: w/ 25.6-cm L (169×), jets visible in p.a. 280° and 315°; central cond. of mag 12.0 [BIV]. Feb. 13.82: rather difficult obs.; dense Milky Way star field in Cas [LEH]. Feb. 14.92 and 27.79: moonlight [JAN03]. Feb. 18.82: moonlight interference [GON05]. Feb. 20.05: still somewhat brighter than M13; moonlight [GRA04]. Feb. 27.85: w/ 15×80 B, weak dust tail of length ≈ 0°.6 in p.a. 150° [SCH04]. Feb. 28.86: tab. tail data for dust tail; ion tail too weak to be visible w/ 10×50 B [SCH04]. Feb. 28.89 and Mar. 10.88: only the dust tail was visible [KAM01].

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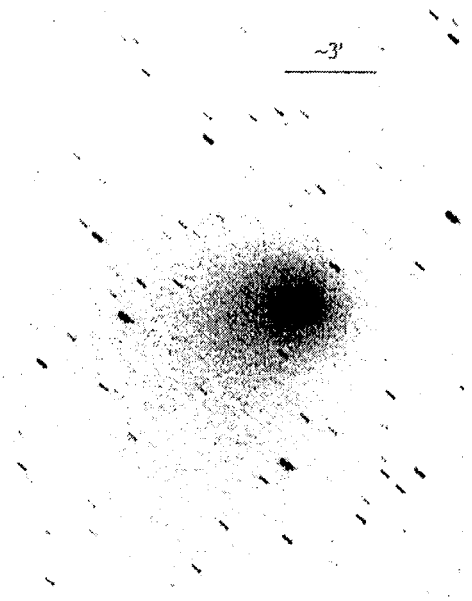

Image of comet C/2004 Q2 by G. Sostero from eight co-added 180-sec CCD exposures with a 15-cm f/6 Maksutov reflector (+ SXV-M7 camera + dust-continuum narrowband filter centered at 647 nm; FWHM = 10 nm) on 2005 Mar. 1.88. North is up and east to the left. The bar at top right indicates a distance of ≈ 3′ on the sky.

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Mar. 3.20: close to a 5th-mag star [GRA04]. Mar. 5.43: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.47$ [TSU02]. Mar. 5.88: still just visible to the naked eye in good conditions; 8×21 B showed a moderately condensed and slightly elongated coma; < 6° from the north celestial pole [KAR02]. Mar. 6.74: two 1°.0 tails (in p.a. 135° and 160°) visible w/ 30.4-cm L (61×) [NAG04]. Mar. 7.11: coma diffuse and somewhat larger than M13, but less

condensed and w/ a weaker glow [GRA04]. Mar. 7.97: tab. tail info is for ion tail; also dust tail 0°.5 long in p.a. 170° [GON05]. Mar. 10.88: w/ 30-cm T (242×), stellar false nucleus of mag 11.5 [KAM01]. Mar. 11.91: tab. tail info is for ion tail; also dust tail 0°.5 long in p.a. 190° [GON05]. Mar. 15.79, 21.13, and 31.11: moonlight [HOR02]. Mar. 20.17: w/ 25.6-cm L (169×), jets visible in p.a. 30°, 70°, and 110°; central cond. of mag 12.7 [BIV]. Mar. 20.92, 24.81, 30.81, 31.90, Apr. 1.86, 2.89, 4.87, and 21.95: dense star field [SRB]. Mar. 20.92, 24.81, and Apr. 21.95: moonlight [SRB]. Mar. 20.92: dust tail > 6′ long in p.a. 222° [SRB]. Mar. 20.95: moonlight [HOR02]. Mar. 24.81: dust tail > 10′ long in p.a. 207° [SRB]. Mar. 27.91: comet somewhat easier to see than M81 [GRA04]. Mar. 30.85: very bright star (of mag 7.8) located 5′.1 from central cond. [SRB]. Mar. 31.10: smaller in angular extent, but slightly brighter than M81 [GRA04]. Mar. 31.90: ion tail 10′ long in p.a. 172° [SRB].

Apr. 1.85: no tail visible either in 9×63 B or w/ 30-cm T (75×); at 167×, stellar false nucleus of mag 11.5 [KAM01]. Apr. 1.86: ion tail > 8′ long in p.a. 172° [SRB]. Apr. 2.08: obs. affected by mist and haze [GRA04]. Apr. 2.83: star of mag 9.3 in coma [SCH04]. Apr. 2.86: coma slightly larger but much more condensed w/ a Lumicon Swan Band Filter; comet involved w/ a 9th-mag star [MEY]. Apr. 2.86: estimation disturbed by stars of mag 8.4 and 9.3 in coma; coma slightly elongated in p.a. ≈ 250°; hint of dust tail in p.a. ≈ 250° and hint of ion tail in p.a. ≈ 160° [BUS01]. Apr. 2.89: dust tail > 8′ long in p.a. 256°; star of mag 9.2 only 1′.2 from central cond. [SRB]. Apr. 4.58: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.57$; a CCD frame taken w/ 10.0-cm R shows ion tail > 0.6° long in p.a. 86° and dust tail > 0.35° long in p.a. 159° [TSU02]. Apr. 4.87: star of mag 9.4 located 5′.3 from central cond. [SRB]. Apr. 5.85: in 30.5-cm T (56×), broad, faint dust tail visible, ≈ 10′ long [COM]. Apr. 5.86: coma slightly elongated in p.a. ≈ 250°; hint of dust tail in p.a. ≈ 250° and hint of ion tail in p.a. ≈ 160° [BUS01]. Apr. 6.06: slightly fainter than M81, brighter than M51; transparent sky [GRA04]. Apr. 11.89: coma slightly elongated in p.a. ≈ 225° [SCH04]. Apr. 12.02: diffuse coma; somewhat fainter and smaller than M81 [GRA04]. Apr. 19.93: coma relatively diffuse and not too easy to see in moonlight [SKI]. Apr. 26.99: appearance quite similar to M51 [GRA04]. Apr. 30.68: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.56, +0.57, +0.66, and +0.69 [OHS].

◇ *Comet C/2004 RG_{113} (LINEAR)* ⟹ 2005 Feb. 6.63: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 6.97: "comet very faint; only seen at moments of good seeing; a quick sketch at the telescope later showed that the comet was seen at the correct location w/ respect to angles and distances to nearby stars" [BOU]. Mar. 1.56 and 30.52: `Guide 8.0` software used for comp.-star mags [TSU02]. Mar. 1.56: comp. star has $B-V = +0.45$ [TSU02]. Mar. 6.60: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 20.89: dense star field; moonlight [SRB]. Mar. 30.52: comp. star has $B-V = +0.60$ [TSU02]. Mar. 31.51: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 27.53: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

◇ *Comet P/2004 T1 (LINEAR-NEAT)* ⟹ 2005 Mar. 6.46: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 7.47: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01].

◇ *Comet C/2004 U1 (LINEAR)* ⟹ 2005 Feb. 2.56 and Mar. 1.48: `Guide 8.0` software used for comp.-star mags [TSU02]. Feb. 2.56: comp. star has $B-V = +0.47$ [TSU02]. Feb. 6.52: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 6.61: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.58 and +0.67 [OHS]. Feb. 6.91: dense star field [HOR02]. Feb. 27.47: $B-V$ values of comp.-star mags were +0.59 and +0.63 [NAK01]. Mar. 1.48: comp. star has $B-V = +0.60$ [TSU02].

◇ *Comet P/2004 V1 (Skiff)* ⟹ 2005 Feb. 27.46: $B-V$ values of comp.-star mags were +0.59 and +0.63 [NAK01].

◇ *Comet C/2004 V13 (SWAN)* ⟹ 2004 Dec. 26.35: bright twilight; alt. 4°; comp. star has $B-V = +0.48$ [KAD02].

◇ *Comet P/2004 V5 (LINEAR-Hill)* ⟹ 2005 Feb. 5.71: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Feb. 13.61: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 6.61: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 14.70: `Guide 8.0` software used for comp.-star mags; $B-V$ values of comp.-star mags were +0.50, +0.84, and +0.86 [OHS]. Mar. 30.55: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01]. Mar. 30.55: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.53$ [TSU02]. Apr. 27.54: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

◇ *Comet P/2004 VR_8 (LONEOS)* ⟹ 2005 Feb. 6.53: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Mar. 6.49: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 30.46: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01].

◇ *Comet P/2004 WR_9 (LINEAR)* ⟹ 2005 Feb. 6.61: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 13.51: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 6.58: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 30.52: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.59, +0.63, +0.80, and +0.83 [NAK01].

◇ *Comet C/2004 X2 (LINEAR)* ⟹ 2005 Feb. 6.65: $B-V$ values of comp.-star mags were +0.58, +0.59, +0.61, +0.63, +0.67, and +0.79 [NAK01]. Feb. 13.57: $B-V$ values of comp.-star mags were +0.60, +0.61, +0.75, +0.76, +0.79, and +0.80 [NAK01]. Mar. 7.54: $B-V$ values of comp.-star mags were +0.45, +0.59, +0.61, +0.63, and +0.83 [NAK01]. Mar. 14.54: $B-V$ values of comp.-star mags were +0.61, +0.76, and +0.79 [NAK01].

◇ *Comet C/2004 X3 (LINEAR)* ⟹ 2005 Feb. 5.78: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Mar. 5.57: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.54$ [TSU02]. Mar. 6.65: $B-V$ values of comp.-star mags were +0.59, +0.61, +0.63, +0.76, and +0.79 [NAK01]. Mar. 14.56: $B-V$ values of comp.-star mags were +0.61, +0.76, and +0.79 [NAK01]. Mar. 31.55: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01]. Apr. 14.55: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01]. Apr. 27.51: $B-V$ values of comp.-star mags were +0.58, +0.61, +0.67, and +0.79 [NAK01].

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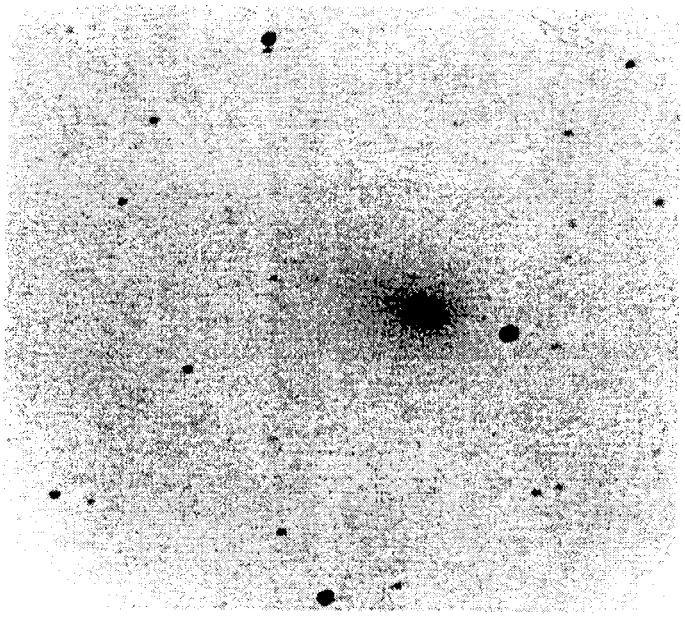

Image of comet C/2005 A1 by Michael Mattiazzo, taken on 2005 May 12.83 (ten co-added 15-sec exposures) with a Celestron-11 f/3.3 T (+ Starlight Express MX7c imager). East is up and north to the right; field size 17′ × 15′.

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◇ *Comet C/2005 A1 (LINEAR)* ⟹ 2005 Feb. 3.54: "very marginal, but possibly enhanced w/ Swan Band filter" [SEA]. Feb. 6.82: "relatively bright and moderately condensed" [PEA]. Feb. 7.81: "at higher power (200×), a faint starlike false nucleus visible within the central cond." [PEA]. Feb. 10.51: "comet more easily visible as a rather large and very diffuse object of low surface brightness; little (if any) alteration when obs. through Swan-band filter" [SEA]. Feb. 14.52: appeared more condensed (DC = 5) in 25×100 B, where it was very readily visible [SEA]. Feb. 14.83: "comet located on the outskirts of the open cluster NGC 5749; moderately condensed object" [PEA]. Feb. 17.81: "this comet has brightened significantly in the last few days, becoming quite condensed w/ a very prominent central cond. that was especially notable in the 41-cm L" [PEA]. Feb. 22.86: "obs. just at moonset, so the sky was relatively dark" [PEA]. Feb. 28.50: "probably an underestimate, as comet appeared faint in light sky (glow from Sydney, and moon just risen)" [SEA]. Mar. 1.43: comet close to bright star [SEA]. Mar. 4.99: comp. stars have $V = 7.56$ ($B-V = +0.04$) and $V = 8.15$ ($B-V = +0.61$) [AMO01]. Mar. 6.05: comp. stars have $V = 7.89$ ($B-V = +0.63$) and $V = 8.39$ ($B-V = +0.22$) [AMO01]. Mar. 7.12 and 15.03: poor conditions [ROB06]. Mar. 7.97, 8.95, 11.94, and 14.98: comp. stars have $V = 8.15$ ($B-V = +0.44$) and $V = 8.33$ ($B-V = +0.38$) [AMO01]. Mar. 10.94: low alt.; light pollution [SOU01]. Mar. 11.41: "light pollution from Sydney may have influenced the estimate somewhat, but I did feel that there had been some genuine fading since previous observations" [SEA]. Mar. 15.93: comp. stars have $V = 7.99$ ($B-V = +0.52$) and $V = 8.72$ ($B-V = +0.40$) [AMO01]. Mar. 29.94: comp. stars have $V = 7.70$ ($B-V = +0.10$) and $V = 8.20$ ($B-V = +0.53$) [AMO01]. Apr. 1.38: "through Swan Band Filter, seemed slightly larger and less condensed, but little if any brighter" [SEA]. Apr. 7.92: comp. stars have $V = 7.91$ ($B-V = +0.69$) and $V = 8.14$ ($B-V = +0.26$) [AMO01]. Apr. 11.40: comet close to star and at very low alt. [SEA].

◇ *Comet C/2005 B1 (Christensen)* ⟹ 2005 Feb. 5.83: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63, +0.76, +0.79, and +0.85 [NAK01]. Mar. 20.97: moonlight [HOR02]. Mar. 30.60: `Guide 8.0` software used for comp.-star mags; comp. star has $B-V = +0.51$ [TSU02]. Apr. 4.68: $B-V$ values of comp.-star mags were +0.51, +0.63, +0.68, +0.72, +0.73, and +0.85 [NAK01]. Apr. 14.61: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01]. Apr. 29.65: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet P/2005 E1 (Tubbiolo)* ⟹ 2005 Mar. 31.59: $B-V$ values of comp.-star mags were +0.56, +0.61, +0.66, +0.69, +0.76, and +0.79 [NAK01].

◇ *Comet C/2005 G1 (LINEAR)* ⟹ 2005 Apr. 5.68: $B-V$ values of comp.-star mags were +0.51, +0.61, +0.63,

+0.76, +0.79, and +0.85 [NAK01]. Apr. 13.72: Guide 8.0 software used for comp.-star mags; comp. star has $B-V$ = +0.59 [OHS]. Apr. 14.67: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01]. Apr. 29.66: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

◇ *Comet P/2005 GF8 (LONEOS)* ⟹ 2005 Apr. 14.63: $B-V$ values of comp.-star mags were +0.48, +0.55, +0.66, +0.76, +0.80, and +0.84 [NAK01]. Apr. 29.63: $B-V$ values of comp.-star mags were +0.48, +0.51, +0.55, +0.63, +0.80, and +0.85 [NAK01].

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Key to observers with observations published in this issue, *with 2-digit numbers between Observer Code and Observer's Name indicating source [07 = Comet Section, British Astronomical Association; 11 = Dutch Comet Section (Werkgroep Kometen); 16 = Japanese observers (via Akimasa Nakamura, Kuma, Japan); 35 = South American observers (c/o Jose G. de Souza Aguiar, Brazil); 42 = Belarus observers (c/o V. S. Nevski and S. E. Shurpakov, Vitebsk); 48 = Ukrainian observers (c/o Denis A. Svechkarev); etc.]:*

ADA05 23 Martin Adamovsky, Czech Republic
AMO01 35 Alexandre Amorim, Brazil
BAL07 35 Gustavo E. Ballan, Argentina
BAR06 37 Alexandr R. Baransky, Ukraine
BIV Nicolas Biver, France
BOU Reinder J. Bouma, Netherlands
BUS01 11 E. P. Bus, The Netherlands
*CAP02 Emili Capella, Sabadell, Spain
CHE03 33 Kazimieras T. Cernis, Lithuania
COM 11 Georg Comello, The Netherlands
DIE02 Alfons Diepvens, Belgium
DIJ Edwin van Dijk, The Netherlands
END 16 Tsunenobu Endo, Matsumoto, Japan
GIA01 A. Giambersio, Potenza, Italy
GIL01 11 Guus Gilein, The Netherlands
GON05 J. J. Gonzalez, Asturias, Spain
GON06 Virgilio Gonano, Udine, Italy
GRA04 24 Bjoern Haakon Granslo, Norway
HAS02 Werner Hasubick, Germany
HOR02 23 Kamil Hornoch, Czech Republic
HOR03 23 Petr Horalek, Czech Republic
HUR Guy M. Hurst, England
JAN03 23 Otto Janoušek, Czech Republic
JON Albert F. Jones, New Zealand
KAD02 16 Ken-ichi Kadota, Ageo, Japan
KAM01 Andreas Kammerer, Germany
KAN 16 Kiyotaka Kanai, Gunma, Japan
KAN05 Ralf Kannenberg, Switzerland
KAR02 21 Timo Karhula, Virsbo, Sweden
KOZ02 42 Alexandr Kozlovski, Russia
LAB02 C. Labordena, Castellon, Spain
LEH Martin Lehký, Czech Republic
MAR02 Jose Carvajal Martinez, Spain
MEY Maik Meyer, Germany
MIT 16 Shigeo Mitsuma, Saitama, Japan
MIY01 16 Osamu Miyazaki, Ibaraki, Japan
MOE Michael Moeller, Germany
MOM 16 Masahiko Momose, Nagano, Japan
MUR02 16 Shigeki Murakami, Niigata, Japan
NAG04 16 Kazuro Nagashima, Nara, Japan
NAG08 16 Yoshimi Nagai, Nagano, Japan
NAK01 16 Akimasa Nakamura, Ehime, Japan
NEV 42 Vitali S. Nevski, Belarus
*NIC 42 Ivan Nicolaev, Belarus
OHM 16 Fumihiko Ohmori, Miyazaki, Japan
OHS 16 Yuuji Ohshima, Nagano, Japan
PEA 14 Andrew R. Pearce, Australia
PIL01 Uwe Pilz, Leipzig, Germany
*PIL02 23 Lukáš Pilarčík, Slovak Republic
RES 18 M. Reszelski, Szamotuly, Poland
RIE 11 Hermanus Rietveld, Netherlands
ROB06 Walter R. Robledo, Argentina
SCA02 Toni Scarmato, Calabria, Italy
SCH04 11 Alex H. Scholten, Netherlands
SEA 14 David A. J. Seargent, Australia
SEM02 42 Andrey S. Semenyuta, Kazakstan
SER 42 Ivan M. Sergey, Belarus
SHU 42 Sergey E. Shurpakov, Belarus
SIE 33 Henryk Sielewicz, Lithuania
SKI 24 Oddleiv Skilbrei, Norway
SOU01 35 Willian Carlos de Souza, Brazil
SOW 16 Toshihide Sowa, Wakayama, Japan
SRB 23 Jiri Srba, Vsetin, Czech Rep.
TSU02 16 M. Tsumura, Wakayama, Japan
URB01 23 Ľubomír Urbančok, Slovak Rep.
WAR01 Johan Warell, Sweden
YOS02 16 K. Yoshimoto, Yamaguchi, Japan
YOS04 16 Seiichi Yoshida, Japan
ZAN01 11 W. T. Zanstra, The Netherlands

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TABULATED VISUAL DATA (also format for old-style CCD data)

NOTE: As begun in the October 2001 issue, the CCD and visual tabulated data are separated. The tabulated CCD data are also now generally further separated into two "CCD" sections: the first in the old format for those observations submitted only in the old format, and the second in the new format (whose columns are described on page 208 of the July 2002 *ICQ*).

The headings for the tabulated data are as follows: "DATE (UT)" = Date and time to hundredths of a day in Universal Time; "N" = notes [* = correction to observation published in earlier issue of the *ICQ*; an exclamation mark

(!) in this same location indicates that the observer has corrected his estimate in some manner for atmospheric extinction (prior to September 1992, this was the standard symbol for noting extinction correction, but following publication of the extinction paper — July 1992 *ICQ* — this symbol is only to be used to denote corrections made using procedures different from that outlined by Green 1992, *ICQ* **14**, 55-59, and in Appendix E of the *ICQ Guide to Observing Comets* — and then only for situations where the observed comet is at altitude > 10°); '**&**' = comet observed at altitude 20° or less with no atmospheric extinction correction applied; '**$**' = comet observed at altitude 10° or lower, observations corrected by the observer using procedure of Green (*ibid.*); for a correction applied by the observer using Tables Ia, Ib, or Ic of Green (*ibid.*), the letters '**a**', '**w**', or '**s**', respectively, should be used; **x** indicates that a secondary source (often amateur computer software) was used to get supposedly correct comparison-star magnitudes from an accepted catalogue].

"MM" = the method employed for estimating the total (visual) magnitude; see article on page 186 of the Oct. 1996 issue [B = VBM method, M = Morris method, S = VSS or In-Out method, I = in-focus, C = unfiltered CCD, c = same as 'C', but for 'nuclear' magnitudes, V = electronic observations — usually CCD — with Johnson *V* filter, *etc.*]. "MAG." = total (visual) magnitude estimate; a colon indicates that the observation is only approximate, due to bad weather conditions, *etc.*; a left bracket ([) indicates that the comet was not seen, with an estimated limiting magnitude given (if the comet IS seen, and it is simply estimated to be fainter than a certain magnitude, a "greater-than" sign (>) must be used, not a bracket). "RF" = reference for total magnitude estimates (see pages 98-100 of the October 1992 issue, and Appendix C of the *ICQ Guide to Observing Comets*, for all of the 1- and 2-letter codes; an updated list is also maintained at the *ICQ* World Wide Website). "AP." = aperture in centimeters of the instrument used for the observations, usually given to tenths. "T" = type of instrument used for the observation (R = refractor, L = Newtonian reflector, B = binoculars, C = Cassegrain reflector, A = camera, T = Schmidt-Cassegrain reflector, S = Schmidt-Newtonian reflector, E = naked eye, *etc.*). "F/" and "PWR" are the focal ratio and power or magnification, respectively, of the instrument used for the observation — given to nearest whole integer (round even); note that for CCD observations, in place of magnification is given the exposure time in seconds [see page 11 of the January 1997 issue; a lower-case "**a**" indicates an exposure time under 1000 seconds, an upper-case "**A**" indicates an exposure time of 1000-1999 seconds (with the thousands digit replaced by the "**A**"), an upper-case "**B**" indicates an exposure time of 2000-2999 seconds (with the thousands digit replaced by the "**B**"), etc.].

"COMA" = estimated coma diameter in minutes of arc; an ampersand (&) indicates an approximate estimate; an exclamation mark (!) precedes a coma diameter when the comet was not seen (*i.e.*, was too faint) and where a limiting magnitude estimate is provided based on an "assumed" coma diameter (a default size of 1′ or 30″ is recommended; cf. *ICQ* **9**, 100); a plus mark (+) precedes a coma diameter when a diaphragm was used electronically, thereby specifying the diaphragm size (i.e., the coma is almost always larger than such a specified diaphragm size). "DC" = degree of condensation on a scale where 9 = stellar and 0 = diffuse (preceded by lower- and upper-case letters S and D to indicate the presence of stellar and disklike central condensations; cf. July 1995 issue, p. 90); a slash (/) indicates a value midway between the given number and the next-higher integer. "TAIL" = estimated tail length in degrees, to 0.01 degree if appropriate; again, an ampersand indicates a rough estimate. Lower-case letters between the tail length and the p.a. indicate that the tail was measured in arcmin ("m") or arcsec ("s"), *in which cases the decimal point is shifted one column to the right.* "PA" = estimated measured position angle of the tail to nearest whole integer in degrees (north = 0°, east = 90°). "OBS" = the observer who made the observation (given as a 3-letter, 2-digit code).

A complete list of the Keys to abbrevations used in the *ICQ* is available from the Editor for $4.00 postpaid (available free of charge via e-mail); these Keys (with the exception of the Observer Codes) are also available in the *Guide to Observing Comets* and via the *ICQ*'s World Wide Web site. *Please note that data in archival form, and thus the data to be sent in machine-readable form, use a format that is different from that of the Tabulated data in the printed pages of the ICQ;* see pages 59-61 of the July 1992 issue, p. 10 of the January 1995 issue, and p. 100 of the April 1996 issue for further information [note correction on page 140 of the October 1993 issue]. Further guidelines concerning reporting of data may be found on pages 59-60 of the April 1993 issue, and in the *ICQ Guide to Observing Comets.*

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NOTE: *The new-style CCD tabulated data begin on page 124 of this issue.*

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Visual Data

Comet 9P/Tempel

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.65		S	[13.9	HS	40.0	L	4	144	! 0.4				YOS04
2005 03 03.97		S	13.1	AU	31.0	J	6	109	0.7	1/			DIJ
2005 03 03.97		S	13.2	AU	31.0	J	6	109	0.9	3/			BOU
2005 03 06.16		S	13.1	AU	25.4	J	6	125	0.8	3			BOU
2005 03 08.01		S	13.1	TK	20.3	T	10	100	0.7	4			GON05
2005 03 08.57		S	12.7	AU	40.0	L	4	144	0.8	4			YOS04
2005 03 09.91		S	12.8	HS	23.5	T	10	94	2	2			LAB02

Comet 9P/Tempel [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 10.91		M	12.3	HS	25	L	5	125	1.1	7			HOR03
2005 03 10.95		S	13.7	HS	30	L	5	180	0.5	3			NEV
2005 03 11.94		S	12.7	TK	20.3	T	10	100	1.2	3			GON05
2005 03 12.90		S	12.7	HS	25.6	L	5	84	1.0	3			BIV
2005 03 12.91		S	12.9	HS	25.6	L	5	169	1.0	4			BIV
2005 03 13.96		S	12.5	AU	25.4	J	6	125	1.2	3/			BOU
2005 03 15.15		S	12.6	HS	25.6	L	5	84	1.1	4			BIV
2005 03 18.13		S	12.7	HS	40.7	L	4	58	1.2	4			BIV
2005 03 18.18		S	12.4	TK	20.3	T	10	100	1.2	4			GON05
2005 03 20.18		S	12.6	HS	25.6	L	5	84	1.3	4			BIV
2005 03 21.11		M	12.9	HS	35	L	5	158	1.3	6			HOR02
2005 03 31.91		M	12.0	AU	31.0	J	6	72	1.6	5			BOU
2005 03 31.91		S	11.9	AU	31.0	J	6	72	2.5	3			DIJ
2005 04 01.02		S	12.1	AU	20.3	T	10	77	1.5	3			GRA04
2005 04 01.91		S	11.9	AU	25.4	J	6	72	1.7	4			BOU
2005 04 02.11		M	12.1	HS	35	L	5	158	1.5	5/			HOR02
2005 04 03.86		S	12.0	HS	44.0	L	5	63	1.0	4			HAS02
2005 04 04.11		M	11.8	TK	35	L	5	68	1.6	6			HOR02
2005 04 04.57		M	11.5	AU	25.4	L	4	46	1.7	6			YOS02
2005 04 05.10		M	11.7	TK	35	L	5	68	1.5	6			HOR02
2005 04 05.55		M	11.6	AU	40.0	L	4	144	1.2	7			YOS04
2005 04 05.87		M	11.7	AU	25.4	J	6	72	1.8	4/			BOU
2005 04 07.88		M	11.5	AU	31.0	J	6	72	1.6	4/			BOU
2005 04 07.89		S	11.6	AU	31.0	J	6	72	2.6	4			DIJ
2005 04 09.90		S	11.7	TI	23.5	T	10	94	1	3			LAB02
2005 04 10.00		S	11.6	TK	20.3	T	10	100	1.8	4			GON05
2005 04 10.86		S	11.4	TK	15.0	R		75	1	6			DIE02
2005 04 11.09		S	11.5	AU	20.3	T	10	100	1.3	4			GRA04
2005 04 11.46		S	11.4	GA	10.0	B		25	2				SEA
2005 04 11.87		S	11.4	TK	15.0	R		75	1	6			DIE02
2005 04 11.88		M	11.6	AU	31.0	J	6	72	1.8	6			BOU
2005 04 12.14		S	11.6	TK	20.3	T	10	100	1.8	4			GON05
2005 04 12.42		S	11.4	GA	10.0	B		25					SEA
2005 04 13.03		S	11.3	AU	20.3	T	10	83	1.6	5			GRA04
2005 04 15.91		S	11.9	TI	23.5	T	10	94	1.5	2			LAB02
2005 04 25.86		M	11.1	AU	25.4	J	6	72	2.2	4			BOU
2005 04 27.48	x	M	10.9	TK	25.4	L	4	46	2.5	5/			YOS02
2005 04 27.86		S	11.3	TK	15.0	R	15	75	1	5			DIE02
2005 04 27.87		S	10.7	AU	30.5	T	10	56	& 2.5	4			COM
2005 04 27.91		M	11.1	AU	25.4	J	6	58	2.2	5/			BOU
2005 04 27.91		M	11.2	AU	25.4	J	6	58	3.2	5			DIJ
2005 04 28.95		S	11.3	TK	20.3	T	10	100	3.0	5			GON05
2005 04 28.97		S	10.9	TK	10.0	B		25	3	5			GON05
2005 04 30.56	x	S	10.6	TK	45.7	L	4	68	1.6	6	4	m 180	MUR02
2005 04 30.82		M	11.4	TJ	41	L	4	63	1.8	5			SHU
2005 04 30.86		S	11.3	TK	15.0	R	15	75	1	5			DIE02
2005 04 30.88		S	10.7	TK	30	L	5	60	2.5	s5			NEV

Comet 21P/Giacobini-Zinner

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 04 05.78		S[	12.4	AU	40.0	L	4	144	! 0.7				YOS04

Comet 29P/Schwassmann-Wachmann

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 21.87		S	13.4	HS	36	L	6	70	0.6	3			BAR06
2003 09 22.89		S	13.6:	HS	36	L	6	70	0.6	3			BAR06
2003 09 29.91		S	13.1	HS	36	L	6	70	0.7	s3			BAR06
2003 09 29.93		S	12.9	HS	36	L	6	90	1.0	s4			BAR06
2004 11 04.88		S	11.5:	HS	36	L	6	80	2	2/			BAR06
2004 12 15.85		S	12.9	HS	36	L	6	80	0.7	7			BAR06
2005 01 09.73		S	12.7	HS	36	L	6	80	1.4	3			BAR06
2005 01 30.74		S	12.4:	HS	36	L	6	80	1.2	3			BAR06
2005 02 05.41		S	12.5:	HS	40.0	L	4	144	1.2	1			YOS04

Comet 29P/Schwassmann-Wachmann [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.73		S	13.2	HS	30	L	5	100	1.5	1			NEV
2005 02 06.78		S	12.8	AU	31.0	J	6	109	1.8	0/			BOU
2005 02 06.79		S	12.8	AU	31.0	J	6	109	1.2	0/			DIJ

Comet 32P/Comas Solá

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 12 15.99		S	13.0:	HS	36	L	6	80	0.9	7			BAR06
2005 01 09.75		S	12.9	HS	36	L	6	80	1.3	3			BAR06
2005 02 01.82		S	11.5	HS	32.0	L		72		1			PIL01
2005 02 05.45		S	12.2	HS	40.0	L	4	144	0.9	5			YOS04
2005 02 05.75		S	12.2	TK	30	L	5	60	1.5	2			NEV
2005 02 05.80		M	12.6:	HS	42	L	5	81	1.6	3/			LEH
2005 02 05.98		B	12.8	HS	42	L	5	81	0.9	7/			HOR03
2005 02 06.85		S	12.7	TA	31.0	J	6	109	0.8	1/			DIJ
2005 02 06.85		S	13.1	TA	31.0	J	6	155	0.9	3			BOU
2005 02 07.82		M	12.4	HS	42	L	5	81	1.7	3			LEH
2005 02 07.86		S	12.7	TA	31.0	J	6	155	1.3	1			DIJ
2005 02 07.86		S	13.0	TA	31.0	J	6	155	0.9	3			BOU
2005 03 07.94		S	13.2	HS	20.3	T	10	100	0.8	3			GON05
2005 03 08.84		S	12.2	TI	23.5	T	10	94	2	2			LAB02
2005 03 09.85		S	13.2	AU	31.0	J	6	155	0.7	3			BOU
2005 03 10.76		S	14.1	HS	30	L	5	180	0.4	3			NEV
2005 03 13.80		S	12.8	HS	44.0	L	5	156	0.6	4			HAS02
2005 03 31.82		S	13.9	HS	35	L	5	237	0.6	3			HOR02
2005 03 31.86		S	13.3	TA	31.0	J	6	109	1.1	1/			DIJ
2005 03 31.86		S	13.4	TA	31.0	J	6	109	1.0	3			BOU
2005 04 01.82		S	14.2	HS	35	L	5	237	0.5	3/			HOR02
2005 04 05.46		S	12.4	TJ	40.0	L	4	144	1.8	4			YOS04
2005 04 07.85		S	13.2	TA	31.0	J	6	155	0.8	2			DIJ
2005 04 07.85		S	13.3	TA	31.0	J	6	155	0.8	3			BOU
2005 04 09.88		S	12.3	TI	23.5	T	10	94	1.5	2			LAB02
2005 04 09.94		S	12.9	TK	20.3	T	10	100	0.8	4			GON05

Comet 49P/Arend-Rigaux

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.74		S	13.8	HS	30	L	5	180	0.5	2			NEV
2005 02 06.77		S	13.2	AU	31.0	J	6	109	0.8	3/			BOU
2005 02 06.78		S	13.3	AU	31.0	J	6	109	1.3	2			DIJ
2005 02 07.76		M	12.8	HS	42	L	5	81	2	3/			LEH
2005 02 08.70		S	13.5	HS	30	L	5	180	0.4	3			NEV
2005 02 10.78		S	12.9	AU	31.0	J	6	109	1.1	2/			BOU
2005 03 08.46		S	12.8	AU	40.0	L	4	144	0.9	4			YOS04
2005 03 08.83		S	12.3	HS	23.5	T	10	188	1.5	1			LAB02
2005 03 09.81		S	12.9	AU	31.0	J	6	109	0.8	3			BOU
2005 03 10.77		S	14.2	HS	30	L	5	180	0.5	2			NEV
2005 03 11.87		S	12.8	TK	20.3	T	10	100	1.0	3			GON05
2005 03 12.83		S	12.5	HS	25.6	L	5	84	1.0	5			BIV
2005 03 13.79		S	13.2	HS	44.0	L	5	156	0.6	4			HAS02
2005 03 31.80		S	13.8	HS	35	L	5	237	0.5	3/			HOR02
2005 03 31.84		S	13.1	AU	31.0	J	6	109	0.9	2/			BOU
2005 03 31.85		S	13.2	AU	31.0	J	6	109	0.9	2/			DIJ
2005 04 01.80		S	14.0	HS	35	L	5	237	0.5	4			HOR02
2005 04 05.47		S[	12.0	AU	40.0	L	4	144	! 1.1				YOS04
2005 04 09.87		S	12.8	TI	23.5	T	10	94	1	3			LAB02

Comet 62P/Tsuchinshan

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 12 11.73	x	B	12.0	HS	30.4	L	5	61	1.1	1/			NAG04
2005 01 17.08		S	12.5	HS	36	L	6	80	1.7	2			BAR06
2005 02 03.83	x	S	12.0	HS	31.7	L	6	63	1.6	3/			MIY01
2005 02 04.84	x	S	12.2	TJ	31.7	L	6	63	1.6	3			MIY01
2005 02 05.11		B	12.7:	HS	30	T	10	124	2	2			ADA05

Comet 62P/Tsuchinshan [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.80		S	13.1	HS	40.0	L	4	75	1.2	0/			YOS04
2005 02 05.84	x	S	12.7	HS	31.7	L	6	86	1.6	3			MIY01
2005 02 05.92		S	12.0	TK	30	L	5	60	3	1			NEV
2005 02 06.85		S	12.7	AU	32.0	L	5	87	1.3	3			NAG08
2005 02 06.98		S	12.6	AU	31.0	J	6	109	1.2	0			DIJ
2005 02 06.98		S	12.7	AU	31.0	J	6	109	1.6	1/			BOU
2005 02 08.93		M	12.8	TJ	41	L	4	113	1	3			SHU
2005 02 09.05		S	12.4	HS	25.6	L	5	84	1.3	3			BIV
2005 02 10.83	x	S	12.5	HS	31.7	L	6	63	2.0	3			MIY01
2005 02 13.84	x	S	12.1	HS	31.7	L	6	86	1.1	3			MIY01
2005 03 08.56		S	13.3	AU	40.0	L	4	144	0.8	1			YOS04
2005 03 13.80		S	13.0	HS	44.0	L	5	156	0.6	4			HAS02
2005 04 05.53		S	13.8	AU	40.0	L	4	144	1.8	2			YOS04

Comet 78P/Gehrels

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 08 26.02		S	14.1	UO	13.0	L	7	70	0.5	7	0.05	255	RES
2004 11 04.82		S	10.4	TK	36	L	6	80	2.5	3/			BAR06
2004 11 16.99		S	9.6	TK	20	L	5	70	3	3/			BAR06
2004 12 06.69	x	B	11.8	TJ	30.4	L	5	100	1.0	6			NAG04
2004 12 11.69	x	B	11.8	TJ	30.4	L	5	61	1.2	6			NAG04
2004 12 15.95		S	10.3	TK	36	L	6	80	2.9	3/			BAR06
2005 01 09.78		S	10.8	TK	36	L	6	80	2.0	4/			BAR06
2005 01 16.99		S	11.3	TK	36	L	6	80	2.7	3			BAR06
2005 02 01.80		S	11.6	HS	32.0	L		72		2			PIL01
2005 02 03.50	x	S	12.0	HS	31.7	L	6	86	1.0	3/			MIY01
2005 02 04.88		S	12.1	TK	25.6	L	5	84	1.3	5			BIV
2005 02 05.44	x	S	12.2	HS	31.7	L	6	86	1.4	3/			MIY01
2005 02 05.46		S	12.2	HS	40.0	L	4	144	1.4	3			YOS04
2005 02 05.56	x	B	13 :	HS	30.4	L	5	79		2			NAG04
2005 02 05.77		M	12.8	HS	42	L	5	81	1.5	3			LEH
2005 02 05.79		S	11.7	TK	30	L	5	60	2	3			NEV
2005 02 05.87		M	12.6	HS	42	L	5	81	1.4	6			HOR03
2005 02 06.45		S	12.4	AU	32.0	L	5	87	0.9	3			NAG08
2005 02 06.80		S	12.2	AU	31.0	J	6	89	1.8	3/			DIJ
2005 02 06.80		S	12.2	AU	31.0	J	6	89	2.0	2/			BOU
2005 02 07.80		M	13.1	HS	42	L	5	81	1.5	3			LEH
2005 02 07.83		S	12.1	AU	31.0	J	6	89	2.0	2			BOU
2005 02 07.83		S	12.5	AU	31.0	J	6	89	1.3	2/			DIJ
2005 02 08.73		S	12.5	HS	30	L	5	60	1.5	3			NEV
2005 02 09.90		S	12.0	TK	30.5	T	10	115	1.5	2			KAM01
2005 02 10.79		S	12.3	AU	31.0	J	6	89	1.7	2			BOU
2005 02 13.46	x	S	11.7	HS	31.7	L	6	86	1.2	2			MIY01
2005 03 08.48		S	12.6	AU	40.0	L	4	144	1.3	2/			YOS04
2005 03 08.86		S	12.7	HS	23.5	T	10	188	1	1			LAB02
2005 03 09.82		S	12.7	AU	31.0	J	6	143	1.2	2			BOU
2005 03 10.75		S	13.3	HS	30	L	5	180	0.7	2			NEV
2005 03 11.88		S	12.8	TK	20.3	T	10	100	0.8	2			GON05
2005 03 13.80		S	12.0	HS	44.0	L	5	156	0.4	4			HAS02
2005 04 05.45		S	12.9	AU	40.0	L	4	144	1.6	0/			YOS04
2005 04 09.85		S	12.2	TI	23.5	T	10	94	1	2			LAB02

Comet 121P/Shoemaker-Holt

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.63		S[	14.0	HS	40.0	L	4	144	! 0.6				YOS04

Comet 153P/Ikeya-Zhang

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2002 06 01.94		B	6.9	TJ	5.0	B		10	6	3			MOE

Comet 141P/Machholz

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 08.41		S[	9.1	TJ	40.0	L	4	144	! 1.4				YOS04
2005 03 11.83		S	11.7	TK	20.3	T	10	77	0.8	2			GON05
2005 03 31.83		S	12.1	AU	31.0	J	6	109	0.7	1/			DIJ
2005 03 31.83		S	12.4	AU	31.0	J	6	109	1.2	2			BOU
2005 04 05.44		S	11.1	TJ	40.0	L	4	144	2.0	1			YOS04

Comet C/2001 HT_50 (LINEAR-NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 22.01		S	11.6	TK	36	L	6	80	0.8	3			BAR06
2003 09 27.95		S	11.5	TK	36	L	6	80	2.0	3			BAR06
2003 09 28.98		S	11.6	TK	36	L	6	80	1.7	2			BAR06
2003 09 29.95		S	11.5	TK	36	L	6	80	2.0	3			BAR06

Comet C/2001 Q4 (NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 05 18.89		S	4.6	TJ	5.0	B		10	7	7	0.5	90	MOE
2004 11 04.88		S	11.0:	TK	36	L	6	80	2	3/			BAR06
2005 02 05.42		S	12.0	HS	40.0	L	4	144	0.9	2			YOS04
2005 02 05.43	x	S	11.4	TJ	31.7	L	6	86	0.8	3/			MIY01
2005 02 05.74		B	13.8:	HS	42	L	5	81	0.4	8			HOR03
2005 02 05.74		M	13.1:	HS	42	L	5	81	1.3	3			LEH
2005 02 06.87		S	13.2	HN	31.0	J	6	155	1.2	0/			DIJ
2005 02 06.87		S	13.5	HN	31.0	J	6	155	0.8	1			BOU
2005 02 07.74		M	13.1	HS	42	L	5	81	1.4	3/			LEH
2005 02 13.45	x	S	11.6	TJ	31.7	L	6	86	1.1	2			MIY01
2005 03 08.45		S[	11.0	TJ	40.0	L	4	144	! 1.2				YOS04

Comet C/2002 T7 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 28.94		S	11.9	TK	36	L	6	80	1.3	4			BAR06
2004 02 09.75		S	7.6	TJ	5.0	B		10	7	3			MOE
2004 02 11.75		S	7.4	TJ	5.0	B		10	7	4			MOE
2004 02 18.75		S	7.2	TJ	5.0	B		10	6	5			MOE
2004 02 19.75		S	7.2	TJ	5.0	B		10	5	5			MOE
2004 02 20.76		S	7.2	TJ	5.0	B		10	4	5			MOE
2004 02 22.75		S	7.1	TJ	5.0	B		10	4	4			MOE
2005 02 05.64		S[	14.1	HS	40.0	L	4	144	! 0.5				YOS04

Comet C/2002 X5 (Kudo-Fujikawa)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2002 12 31.72		S	6.9	TJ	5.0	B		10	8	3			MOE
2003 01 06.73		S	3.7	TJ	5.0	B		10	7	3			MOE

Comet C/2003 K4 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 11 06.65		S	7.3	TK	7.8	R	4	15	5	1			JON
2005 01 27.44		S	8.1	AA	3.5	B		6					SEA
2005 01 28.46		S	8.1	AA	3.5	B		6					SEA
2005 01 28.56	x	S	8.6	TT	8.0	B		20	6	2			PEA
2005 01 29.46		S	8.3	AA	5.0	B		10					SEA
2005 01 29.56	x	S	8.6	TT	8.0	B		20	6	2			PEA
2005 01 30.55	x	S	8.7	TT	8.0	B		20	5.5	2			PEA
2005 01 31.46		S	8.4	AA	5.0	B		10					SEA
2005 01 31.56	x	S	8.8	TT	8.0	B		20	5	2			PEA
2005 02 01.58	x	S	8.9	TT	8.0	B		20	5	2/			PEA
2005 02 02.00		S	8.4	TK	8.0	B		20	5	3			AMO01
2005 02 03.49		S	8.7	AA	10.0	B		25					SEA
2005 02 03.57	x	S	8.8	TT	8.0	B		20	6	2			PEA
2005 02 04.47	x	S	8.8	TK	10.0	B		20	4	3			YOS02
2005 02 05.40		S	9.6	TJ	40.0	L	4	75	3.1	4			YOS04

Comet C/2003 K4 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.40	x	S	9.7	TJ	31.7	L	6	63	2.0	3/			MIY01
2005 02 05.43	x	B	9.4	TJ	30.4	L	5	61	3.4	4	11	m 110	NAG04
2005 02 05.56	x	S	9.0	TT	8.0	B		20	5	2			PEA
2005 02 06.44	x	S	9.2	TJ	32.0	L	5	58	2.4	4			NAG08
2005 02 06.58	x	S	9.0	TT	8.0	B		20	5	2			PEA
2005 02 06.76		S	9.1	TK	31.0	J	6	58	3	3			BOU
2005 02 06.76		S	9.1	TK	31.0	J	6	58	3	3			DIJ
2005 02 07.58	x	S	9.2	TT	8.0	B		20	4.8	2			PEA
2005 02 07.98		S	8.9	TK	8.0	B		20	2	4			AMO01
2005 02 08.58	x	S	9.1	TT	8.0	B		20	5	2			PEA
2005 02 09.59	x	S	9.3	TT	8.0	B		20	4.8	2			PEA
2005 02 10.50		S	9.7	AA	10.0	B		25	6				SEA
2005 02 11.42	x	S	9.8	TJ	32.0	L	5	58	2.4	3/			NAG08
2005 02 11.46	x	B	9.7	TJ	30.4	L	5	47	2.3	5			NAG04
2005 02 13.10		S	9.1	TK	8.0	B		20					AMO01
2005 02 13.42	x	S	9.9	TJ	31.7	L	6	63	1.9	3/			MIY01
2005 02 14.01		S	9.1	TK	8.0	B		20	3	4			AMO01
2005 02 14.01		S	9.2	TK	14.3	L	6	40	3	3			AMO01
2005 02 15.96		S	9.1	TK	14.3	L	6	40	2	2			AMO01
2005 02 26.43	x	S	10.6	TJ	31.7	L	6	86	1.2	4			MIY01
2005 03 04.99		S	10.2:	TK	14.3	L	6	40					AMO01
2005 03 06.81		S	11.0:	TK	25.6	L	5	84	1.5	2			BIV
2005 03 07.46	x	B	11.5	TJ	30.4	L	5	61	0.75	2			NAG04
2005 03 07.86		S	9.9	TK	20.3	T	10	77	4	3			GON05
2005 03 07.96		S	10.2	TK	14.3	L	6	40	2	2/			AMO01
2005 03 08.44		S	9.7	TJ	40.0	L	4	144	2.5	2			YOS04
2005 03 08.82		S	11.8	TI	23.5	T	10	67	2	2			LAB02
2005 03 08.94		S	10.5	TK	14.3	L	6	112	0.5	8			AMO01
2005 03 10.74		S	11.0	TK	30	L	5	60	1	3			NEV
2005 03 11.85		S	10.4	TK	20.3	T	10	77	4	3			GON05
2005 03 11.94		S	10.3	TK	14.3	L	6	45		5			AMO01
2005 03 12.81		S	10.9	TK	25.6	L	5	84	2.5	4			BIV
2005 03 12.82		S	10.7	TK	25.6	L	5	42	3.0	3			BIV
2005 03 14.45	xw	S	10.8	TK	25.4	L	4	46	1.8	3			YOS02
2005 03 15.05		S	11.0	TK	20.3	T	10	57	2	2			ROB06
2005 03 15.95		S	10.7:	TK	14.3	L	6	45					AMO01

Comet C/2003 T4 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 10 05.78		S	13.6	HS	36	L	6	80	1.0	3			BAR06
2004 10 14.01		S	13.4	HS	36	L	6	80	1.5	2			BAR06
2004 11 04.80		S	12.8	HS	36	L	6	80	1.9	3			BAR06
2005 01 09.72		S	11.0	HS	36	L	6	80	1.8	2			BAR06
2005 01 17.10		S	10.9	HS	36	L	6	80	1.6	2			BAR06
2005 02 03.85	x	S	10.4	TJ	31.7	L	6	63	2.1	4			MIY01
2005 02 04.84	x	S	10.4	TJ	31.7	L	6	63	1.5	4			MIY01
2005 02 05.12		B	10.5	TJ	30	T	10	76	1.1	3			ADA05
2005 02 05.21		S	9.8	TK	20.0	L	4	42	& 4	1/			SCH04
2005 02 05.80		S	10.3	TJ	40.0	L	4	75	1.9	4/			YOS04
2005 02 05.85	x	S	10.4	TJ	31.7	L	6	63	1.6	4			MIY01
2005 02 06.10		M	10.4	TK	11	L	7	32	4	1			SER
2005 02 06.19		M	8.7	TI	10	B		25	2.3	5			HOR03
2005 02 06.19		M	9.2	TI	10	B	4	25	3	4/			LEH
2005 02 06.84	x	S	10.0	TJ	32.0	L	5	58	2.0	5			NAG08
2005 02 10.84	x	S	11.0	TJ	31.7	L	6	63	1.5	4			MIY01
2005 02 11.82	x	B	10.1	TJ	30.4	L	5	79	1.2	4			NAG04
2005 02 13.84	x	S	10.1	TJ	31.7	L	6	63	1.9	4	?		MIY01
2005 02 14.19		M	9.9	TK	25.4	J	6	72	1.8	4/			BOU
2005 02 15.16		M	9.2	TT	13	L	8	69	3.1	3			HOR02
2005 02 20.20		M	8.7	TK	10.0	R	6	30	4.5	4/			GRA04
2005 02 20.20		M	8.8	TK	20.3	T	10	83	4	5			GRA04
2005 03 02.12		M	8.9	TJ	15	B		25	2.5	4			SHU
2005 03 06.82	x	S	8.8	TJ	30.4	L	5	61	1.7	5/			NAG04
2005 03 07.18		S	8.6	TK	15	L	6	45	2.1	2/			URB01

Comet C/2003 T4 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 07.82	x	S	8.9:	TJ	31.7	L	6	63	2.2	4			MIY01
2005 03 08.82		S	7.8	TJ	40.0	L	4	36	6	5/			YOS04
2005 03 10.18		M	8.3	TK	15.6	L	6	36	3.5	6			BOU
2005 03 10.20		S	8.6	TK	10.0	B		25	3	5	0.15	290	GON05
2005 03 10.22		S	8.4	TK	5.0	B		7	3	6			GON05
2005 03 13.18		M	8.3	TK	15.6	L	6	29	3.5				BOU
2005 03 13.21		S	7.9:	TK	5.0	B		7	3	5			BIV
2005 03 13.21		S	8.5	TK	25.6	L	5	42	2.5	7			BIV
2005 03 13.78		S	8.1	AA	10.0	B		25					SEA
2005 03 14.12		S	8.1	TT	8.0	B		10	8.5	3			HOR02
2005 03 15.20		B	8.2	TK	5.0	B		7	3	7			BIV
2005 03 15.20		S	8.4	TK	25.6	L	5	42	3.0	7			BIV
2005 03 15.83	xa	S	8.2	TK	25.4	L	4	46	2.4	5			YOS02
2005 03 17.14		S	7.9	TT	8.0	B		10	8	3			HOR02
2005 03 18.19		S	8.5	TK	20.3	T	10	77	4	5	0.1	290	GON05
2005 03 18.20		S	8.2	TK	10.0	B		25	4	5			GON05
2005 03 19.12		S	7.8:	TK	20.3	T	10	83	3	4			GRA04
2005 03 20.13		S	7.8	TT	8.0	B		10	7	3/			HOR02
2005 03 20.17		M	8.2	TK	15.6	L	6	29	3.5	5/			BOU
2005 03 20.19		S	8.4	TK	25.6	L	5	42	3.5	6			BIV
2005 03 21.15		S	7.8	TT	8.0	B		10	9	3			HOR02
2005 04 11.77		B	7.8	AA	10.0	B		25	3		0.46	235	SEA
2005 04 13.75		S	8.1	AA	10.0	B		25			0.27	245	SEA
2005 04 17.77		S	8.1	AA	5.0	B		10					SEA

Comet C/2004 L1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 04 05.50		S	[12.0	AU	40.0	L	4	144	! 1.2				YOS04

Comet C/2004 Q1 (Tucker)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 11 04.76		S	9.7	HS	36	L	6	80	3.5	4			BAR06
2004 11 16.97		S	10.4	HS	20	L	5	70	2	4			BAR06
2004 12 14.43	x	B	11.1	TJ	30.4	L	5	61	1.4	2/			NAG04
2004 12 15.90		S	10.4	HS	36	L	6	80	3.2	4			BAR06
2005 02 01.81		S	11.4	HS	32.0	L		72					PIL01
2005 02 05.41	x	S	10.9	TJ	31.7	L	6	63	1.3	3			MIY01
2005 02 05.44		S	12.0	TJ	40.0	L	4	144	1.3	5			YOS04
2005 02 05.80		S	11.7	TK	30	L	5	60	1	4			NEV
2005 02 07.78		M	12.1	HS	42	L	5	81	1.4	3/			LEH
2005 02 07.84		S	11.8	TA	31.0	J	6	89	1.7	2			DIJ
2005 02 07.84		S	11.9	TA	31.0	J	6	89	2.0	2			BOU
2005 02 08.74		S	12.0	TK	30	L	5	60	1.2	2			NEV
2005 02 08.75		M	12.2	TJ	41	L	4	89	1	4			SHU
2005 02 09.04		S	11.8	TK	25.6	L	5	84	1.0	3			BIV
2005 02 09.92		S	11.8	HS	30.5	T	10	115	1.5	3/			KAM01
2005 02 10.81		S	11.9	TA	31.0	J	6	89	1.5	3			BOU
2005 02 11.44	x	S	12.2	TJ	32.0	L	5	87	0.9	5			NAG08
2005 02 13.44	x	S	11.6	TJ	31.7	L	6	86	1.3	3			MIY01
2005 02 26.46	x	S	12.5	HS	31.7	L	6	152	0.6	2/			MIY01
2005 03 08.48		S	12.3	TJ	40.0	L	4	144	0.8	1/			YOS04
2005 03 08.85		S	12.1	HS	23.5	T	10	94	2	2			LAB02
2005 03 09.83		S	12.5	TA	31.0	J	6	109	1.2	3			BOU
2005 03 10.81		S	[12.0	HS	32.0	L		72					PIL01
2005 03 13.96	a	S	12.6	HN	25.4	J	6	125	1.2	2			BOU
2005 03 31.83		S	12.8	HS	35	L	5	158	2.1	2			HOR02
2005 03 31.87		S	12.8	TA	31.0	J	6	109	0.9	3			DIJ
2005 03 31.87		S	12.9	TA	31.0	J	6	109	0.8	4			BOU
2005 04 01.84		S	12.6	HS	35	L	5	158	2.4	2			HOR02
2005 04 01.90		S	12.9	TA	25.4	J	6	88	0.9	3			BOU
2005 04 02.81		S	12.6	HS	35	L	5	158	2.3	2			HOR02
2005 04 03.83		S	12.3	HS	35	L	5	68	2.9	1/			HOR02
2005 04 04.84		S	12.3	HS	35	L	5	68	2.7	2			HOR02

Comet C/2004 Q1 (Tucker) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 04 05.48		S	12.6	TJ	40.0	L	4	144	1.4	2			YOS04
2005 04 07.86		S	12.8	TA	31.0	J	6	109	1.1	3/			BOU
2005 04 07.87		S	12.9	TA	31.0	J	6	109	0.8	2/			DIJ
2005 04 11.85		S	13.0	TA	31.0	J	6	109	1.0	3			BOU
2005 04 30.85		S	12.8	HS	30	L	5	100	1	1			NEV

Comet C/2004 Q2 (Machholz)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2004 04 28.96		M	8.2	TK	10.0	R	6	25	7	4			GRA04
2004 11 14.14		B	7.3	TI	5.0	B		7	10	8		310	CAP02
2004 11 17.00		S	6.6	TK	5.0	B		10	9	3			BAR06
2004 12 06.64		B	5.6	AA	17.5	L	5	36	20	7			SOW
2004 12 06.65	x	B	5.0	HV	5.0	B		10	20	6			NAG04
2004 12 07.56		B	5.6	AA	17.5	L	5	36	20	7			SOW
2004 12 08.49		B	5.6	AA	17.5	L	5	36	20	7			SOW
2004 12 09.62		B	5.0	AA	5.0	B		7	15	6			SOW
2004 12 10.56		B	5.0	AA	17.5	L	5	36	20	7			SOW
2004 12 10.58	x	S	5.0	TJ	5.0	B		7	17	6/			END
2004 12 11.50		B	5.0	AA	17.5	L	5	36	20	7			SOW
2004 12 11.58	x	S	4.9	TJ	3.0	B		6	16	6			END
2004 12 11.62	x	B	4.6	HV	5.0	B		10	24	6			NAG04
2004 12 12.88		M	5.0	HD	3	O		8	16	3			SER
2004 12 13.93		B	5.1	TJ	5.0	B		10	18	5			SIE
2004 12 13.98		M	4.4	TK	5.0	B		10	27	5			BAR06
2004 12 14.52	x	B	4.4	HV	3.5	B		7	21	6			NAG04
2004 12 14.58	x	S	4.6	TJ	3.0	B		6	20	6			END
2004 12 14.93		M	4.4	TK	5.0	B		10	28	5			BAR06
2004 12 15.50		B	5.0	AA	17.5	L	5	36	30	7			SOW
2004 12 15.87					5.0	B		10	24	5	2	22	BAR06
2004 12 15.87		M	4.3	TK	3.0	B		4	25	5			BAR06
2004 12 16.53		S	4.5	YG	7.0	R		10	16	6			YOS04
2004 12 16.56		B	5.0	AA	17.5	L	5	36	30	8			SOW
2004 12 16.58	x	S	4.5	TJ	3.0	B		6	19	7			END
2004 12 17.58	x	S	4.4	TJ	3.0	B		6	19	6/			END
2004 12 18.58	x	S	4.4	TJ	3.0	B		6	20	7			END
2004 12 20.50	x	S	4.4	TJ	3.0	B		6	19	6			END
2004 12 20.65		S	4.1	YG	7.0	R		10	18	6			YOS04
2004 12 22.49		M	3.8	YG	7.0	R		10	20	7			YOS04
2004 12 23.54	x	M	4.1	TJ	3.5	B		7	20	7			NAG08
2004 12 24.55		B	4.0	AA	5.0	B		7	30	8			SOW
2004 12 24.62	x	M	3.8	TJ	3.5	B		7	22	6/			NAG08
2004 12 25.63		S	3.9	YG	7.0	R		10	16	6/			YOS04
2004 12 25.94		M	4.5	TK	5.0	B		10	25	5			BAR06
2004 12 26.52		B	4.0	AA	5.0	B		7	30	8			SOW
2004 12 29.70		S	3.8	TJ	5.0	B		10	14	5	0.3	70	MOE
2004 12 30.55		B	3.9	AA	5.0	B		7	30	8			SOW
2004 12 31.52		B	3.9	AA	5.0	B		7	40	8			SOW
2005 01 02.81		B	4.3	TJ	5.0	B		10	20	6			SIE
2005 01 03.60		B	3.9	AA	5.0	B		7	40	8			SOW
2005 01 03.66		B	4.2	TJ	5.0	B		10	20	6			SIE
2005 01 04.04		S	4.1	HV	0.0	E		1		6			BAL07
2005 01 04.90		B	4.2:	SC	5.0	B		10	&25	2/			KAN05
2005 01 05.52		S	3.4	PA	5	R		8	7.6	6			SEM02
2005 01 05.54		S	3.6	AA	5.0	B		7	32	6	0.6	110	KAN
2005 01 05.55		B	3.6	AA	5.0	B		7	32	6	0.6	110	KAN
2005 01 05.66		B	4.1	TJ	5.0	B		10	21	6			SIE
2005 01 07.94		B	3.7:	SC	5.0	B		10	&25	2/			KAN05
2005 01 08.62		B	3.6	AA	5.0	B		7	29	6	0.7	85	KAN
2005 01 08.62		S	3.3	AA	5.0	B		7	29	6	0.7	85	KAN
2005 01 08.79		S	3.2	TI	0.7	E		1	32	s8			SCA02
2005 01 08.85		B	3.8	TJ	5.0	B		7	21	5	0.2		CHE03
2005 01 08.87		B	4.0	TJ	5.0	B		10	22	6	0.3	108	SIE
2005 01 08.90		B	4.0	TK	3.5	B		7		8			PIL02
2005 01 08.99		B	3.9	TK	0.0	E		1	28	5/			BAR06

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 01 08.99		M	4.0	TK	3.0	B		4	25	5	2	90	BAR06
2005 01 09.01		B	3.7	TJ	0.0	E		1		6			CHE03
2005 01 09.01		B	4.0	TJ	5.0	B		10	21	5	0.3	108	SIE
2005 01 09.68					5.0	B		10	25	6	2	85	BAR06
2005 01 09.68		M	3.8	TK	0.0	E		1	30	S5/			BAR06
2005 01 09.83		B	3.9	TK	3.5	B		7		8			PIL02
2005 01 09.83		B	4.0	TJ	5.0	B		10	20	5	0.2		SIE
2005 01 09.94		S	3.9	TJ	5.0	B		10	20	6	2.0	80	MOE
2005 01 10.41		B	3.8	AA	5.0	B		7	32	6	0.4	105	KAN
2005 01 10.41		S	3.4	AA	5.0	B		7	32	6	0.4	105	KAN
2005 01 10.79		B	3.8	TK	3.5	B		7		8			PIL02
2005 01 11.64		B	4.1	TJ	5.0	B		10	22	5	0.3	125	SIE
2005 01 11.64		B	4.1	TJ	5.0	B		10	22	5	0.3		SIE
2005 01 11.77		M	4.1	HD	0.0	E		1	24	4	1.5m	120	NIC
2005 01 11.81		B	3.8:	SC	5.0	B		10	&30	2/			KAN05
2005 01 11.89		B	3.9	TJ	5.0	B		7	16	5	0.2		CHE03
2005 01 12.42	x	M	3.6	TJ	3.5	B		7	20	7			NAG08
2005 01 12.77		S	3.6:	PA	6	R	10	30	6.8	7			SEM02
2005 01 12.83		S	3.9	TJ	5.0	B		10	17	5			MOE
2005 01 13.68		M	4.0	HD	0.0	E		1	15	6			SER
2005 01 13.73		B	4.1	TJ	5.0	B		15	20	4/			SIE
2005 01 13.73		B	4.1	TJ	5.0	B		15	20	4/			SIE
2005 01 13.77		S	3.9	TJ	5.0	B		10	18	5	1.5	90	MOE
2005 01 13.82		B	4.0	TK	3.5	B		7		8			PIL02
2005 01 14.72		S	3.8	TJ	5.0	B		10	17	4	3.5	90	MOE
2005 01 14.76		S	3.4	TI	0.7	E		1	30	s7/			SCA02
2005 01 14.89		B	4.0:	SC	5.0	B		10	&30	3/			KAN05
2005 01 15.67		I	3.7	HD	0.0	E		1	15	5	0.3m	95	SER
2005 01 15.68		M	3.8	HD	0.0	E		1	22	4			NIC
2005 01 15.72		B	4.1	TJ	5.0	B		10	24	6	1.5	85	SIE
2005 01 15.83		M	3.6	HD	0.0	E		1	10	5			SER
2005 01 15.84		B	3.7	TJ	0.0	E		1					CHE03
2005 01 15.84		I	3.5	HD	0.0	E		1	25	4			NIC
2005 01 15.89		B	3.8	TJ	5.0	B		7	18	5	0.5		CHE03
2005 01 15.99					5.0	B		10	13	4	1.9	88	HAS02
2005 01 15.99		I	3.9	TK	0.8	E		1					HAS02
2005 01 16.01		B	4.0	TJ	5.0	B		15	20	4/	0.6		SIE
2005 01 16.75		I	4.0	TK	0.8	E		1					HAS02
2005 01 17.09		M	3.6	TK	0.0	E		1	25	4/			BAR06
2005 01 17.55	x	S	3.9	TK	3.0	B		6	16	7			MOM
2005 01 17.73		B	4.1	TJ	5.0	B		10	18	4			SIE
2005 01 17.93		M	3.8:	TT	5.0	B		7	22	6			JAN03
2005 01 18.46	x	M	4.1	TJ	3.5	B		7	18	7			NAG08
2005 01 18.48	x	I	3.8	TJ	0.0	E		1		8/			NAG08
2005 01 18.74		S	3.8	TK	5.0	B		20	25	6			DIE02
2005 01 18.79		S	4.1	PA	6	R	10	30	8.4	7			SEM02
2005 01 18.83		B	4.3:	TJ	5.0	B		15	16	4			SIE
2005 01 21.91		M	5.0:	TT	5.0	B		7	22	6			JAN03
2005 01 22.72		B	4.3	TK	8.0	B		11	20	6	0.5	100	WAR01
2005 01 22.72		M	4.2	TK	5.0	B		7	18	6			GRA04
2005 01 22.82		S	4.6	TK	5.0	B		10	27	3			ZAN01
2005 01 22.90		M	5.1	TT	5.0	B		7	22	6			JAN03
2005 01 22.99		M	4.0	TK	5.0	B		10	25	4/			BAR06
2005 01 23.72		S	4.3	TJ	15.2	L	5	42	20	4	0.4	90	MOE
2005 01 23.75		S	4.7	TK	5.0	B		10	27	3			ZAN01
2005 01 23.99		M	4.3	TK	5.0	B		7	15	5/			GRA04
2005 01 24.67		S	4.2	PA	6	R	10	30	8.0	7			SEM02
2005 01 24.92		S	4.4	HV	5.0	B		7	12	6			BIV
2005 01 24.94		B	4.3	HV	0.7	E		1	10	5			BIV
2005 01 25.79		S	4.4	TJ	5.0	B		10	14	5			MOE
2005 01 25.93		S	4.5	HV	5.0	B		7	12	6	0.7	80	BIV
2005 01 26.51	x	S	4.0	TK	3.0	B		6	16	6			MOM
2005 01 26.74		S	4.0	TK	5.0	B		20	20	6			DIE02
2005 01 26.88		S	4.5	HV	5.0	B		7	12	6	0.8	80	BIV
2005 01 26.90		B	4.3	HV	0.7	E		1	10	5			BIV

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 01 27.41	x	M	4.2	TJ	3.5	B		7	16	7			NAG08
2005 01 27.54	x	S	4.1	TK	3.0	B		6	15	6			MOM
2005 01 27.85		B	4.4	TK	8.0	B		11	15	6			WAR01
2005 01 28.41	x	M	4.3	TJ	3.5	B		7	16	7			NAG08
2005 01 28.42	x	M	4.0	TK	3.5	B		7	20	7			YOS02
2005 01 28.42	x	S	4.1	TK	3.0	B		6	15	6			MOM
2005 01 28.68		S	4.5:	HV	6	R	10	30	6.4	6			SEM02
2005 01 28.78		B	4.4	TK	3.2	B		8					HAS02
2005 01 29.62		I	4.1	HD	0.0	E		1	22	4			SER
2005 01 29.68		E	4.9	PA	6	R	10	30	8.1	7			SEM02
2005 01 29.78		M	4.3	TK	5.0	B		10	14	4/			MEY
2005 01 29.82		B	4.2	TK	0.8	E		1		6			MEY
2005 01 29.86		B	4.2	S	0.0	E		1	25	5			MAR02
2005 01 30.48	x	S	4.4	TK	3.0	B		6	15	6			MOM
2005 01 30.75		M	4.7	TK	5.0	B		10	17	4			BAR06
2005 01 30.82		B	4.1	S	0.0	E		1	25	5			MAR02
2005 01 30.87		B	4.3	TK	3.2	B		8	14	4			HAS02
2005 01 30.87		I	4.3	TK	0.8	E		1					HAS02
2005 01 30.97		S	4.5	TK	5.0	B		10	17	4			ZAN01
2005 01 31.74		S	4.2	TI	0.7	E		1	20	s8			SCA02
2005 01 31.79		S	4.6	TK	5.0	B		10	17	4			ZAN01
2005 01 31.91		B	4.2	S	0.0	E		1	25	5			MAR02
2005 01 31.95		I	4.4	TK	0.0	E		1	&20	6/			SCH04
2005 01 31.95		S	4.5	TK	5.0	B		10	&20	6			SCH04
2005 02 01.16		M	4.6	TK	5.0	B		7	14	5/			GRA04
2005 02 01.19		B	4.7	TK	8.0	B		11	17	5/	0.5	90	WAR01
2005 02 01.52		S	4.3	YG	7.0	R		10	11	6/	19 m	105	YOS04
2005 02 01.67		M	4.6	HD	6	R	10	10	14	6			KOZ02
2005 02 01.74	G	M	4.5	TI	0.8	E		1	7	7			HOR03
2005 02 01.75		S	4.8	TJ	5.0	B		10	10	5			MOE
2005 02 01.78		B	4.2	TI	5.0	B		10	15	7	30 m		LAB02
2005 02 01.79					32.0	L		72	10	5	0.5	110	PIL01
2005 02 01.79		S	4.7	TJ	0.7	E		1					PIL01
2005 02 01.79	G	M	5.4	TK	0.8	E		1	19	3/			URB01
2005 02 01.80		M	5.0	TK	5.0	B		7	15	4/			URB01
2005 02 01.86		B	4.1	S	0.0	E		1	>25	6			MAR02
2005 02 01.86		B	4.1	S	0.0	E		1	>25	6			MAR02
2005 02 02.55		S	4.5	YG	7.0	R		10	14	6			YOS04
2005 02 02.81		S	4.6	TJ	5.0	B		10	11	5			MOE
2005 02 02.83		M	5.4	TK	5.0	B		7	16	4/			URB01
2005 02 02.85		B	4.1	S	0.0	E		1	>25	6			MAR02
2005 02 02.88		M	4.6	TK	0.7	E		1					SKI
2005 02 02.88		M	4.6	TK	5.0	B		7	15	6/	3	90	SKI
2005 02 02.91		I	4.4	TK	0.0	E		1	15	8			GON05
2005 02 02.92		B	4.5	TK	5.0	B		7	13	7	1.2	95	GON05
2005 02 03.49	x	M	4.6	HV	3.5	B		7	18	7			MIT
2005 02 03.49	x	M	4.6	TK	3.5	B		7	16	7			YOS02
2005 02 03.51	x	S	4.8	HV	5.0	B		7	15	5	0.5	125	MIY01
2005 02 03.52	x	S	4.5	TK	3.0	B		6	12	7			MOM
2005 02 03.55		S	4.5	YG	7.0	R		10	13	6/			YOS04
2005 02 03.61		M	4.7	HD	6	R	10	10	14	6			KOZ02
2005 02 03.75		S	4.3	TI	0.7	E		1	18	s8			SCA02
2005 02 03.76		M	4.6	TI	5.0	B		7	17	5/			HOR03
2005 02 03.76	G	M	4.5	TI	0.8	E		1	8	7			HOR03
2005 02 03.77		B	4.7:	TK	3	O		8	19	3			SER
2005 02 03.85		I	4.5	TJ	0.8	E		1	20	7			ADA05
2005 02 03.86		M	4.7	TJ	3.0	B		8	15	6			ADA05
2005 02 03.88		B	4.8	TK	3.2	B		8	16.9	4			HAS02
2005 02 03.88		I	4.8	TK	0.8	E		1					HAS02
2005 02 03.90		B	4.1	S	0.0	E		1	>25	6			MAR02
2005 02 03.90		B	4.6	TJ	10	B		25	10	7	0.8	86	ADA05
2005 02 04.18		B	4.8	TJ	5.0	B		10	14	3/			SIE
2005 02 04.45	x	S	4.9	HV	5.0	B		7	15	5	?		MIY01
2005 02 04.48	x	M	4.6	TK	3.5	B		7	17	6			YOS02
2005 02 04.51		S	4.6	YG	7.0	R		10	14	6			YOS04

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 04.61		M	4.7	HD	6	R	10	10	14	6			KOZ02
2005 02 04.73		S	4.8	HV	6	R	10	30	8.3	6			SEM02
2005 02 04.75		S	4.3	TK	5.0	B		20	15	6			DIE02
2005 02 04.76		M	4.9	TT	5.0	B		10	10	4	0.5		LEH
2005 02 04.76		S	4.8	TK	8.0	B		15	16	4			HUR
2005 02 04.77		B	4.8	TJ	5.0	B		10	14	4			SIE
2005 02 04.77		I	4.7	TK	0.0	E		1		3			HUR
2005 02 04.77		S	4.7	TK	5.0	B		10	12	5			HUR
2005 02 04.80		I	4.7	TK	0.8	E		1		8			MEY
2005 02 04.80		M	4.7	TK	5.0	B		10	18	4/			MEY
2005 02 04.81		M	5.4	TT	5.0	B		7	20	6			JAN03
2005 02 04.82		B	4.6	HV	0.7	E		1	15	5			BIV
2005 02 04.82		S	4.7	HV	5.0	B		7	15	6	2.0	80	BIV
2005 02 04.85		B	4.7	TJ	5.0	B		7	12	4			CHE03
2005 02 04.85		I	4.6	TK	0.0	E		1	&20	6			RIE
2005 02 04.87		B	4.7	TJ	10	B		25	15	7	1	86	ADA05
2005 02 04.88		B	5.0	TK	3.2	B		8					HAS02
2005 02 04.88		I	5.0	TK	0.8	E		1					HAS02
2005 02 04.89		I	4.6	TJ	0.8	E		1	18	6			ADA05
2005 02 04.91		I	4.8	TK	0.0	E		1	&20	6			SCH04
2005 02 04.91		M	5.7	TK	5.0	B		7	18	5			URB01
2005 02 04.91		S	4.7	TK	4.0	B		8	&20	6			SCH04
2005 02 04.92		M	4.7	TI	5.0	B		7	15	6			HOR03
2005 02 04.92	G	S	4.7	TT	0.8	E		1	23	5			HOR02
2005 02 04.93		M	4.8	TT	5.0	B		10	16	6	1.5	80	HOR02
2005 02 04.94		S	4.7	HV	6.3	B		9	21	6	1.4	85	KAM01
2005 02 05.00		M	4.6	TK	5.0	B		7	15	6			BOU
2005 02 05.01		S	4.9	TK	5.0	B		10	18	4			ZAN01
2005 02 05.43	x	S	4.8	TK	3.0	B		6	12	7			MOM
2005 02 05.45	x	S	4.9	HV	5.0	B		7	15	5	1	130	MIY01
2005 02 05.49		I	4.7	YG	0.0	E		1		8			YOS04
2005 02 05.49		S	4.6	YG	2.4	B		10	15	6/			YOS04
2005 02 05.49	x	B	4.8	HV	5.0	B		10	19	6	2.0	80	NAG04
2005 02 05.70		B	4.7	HD	3	O		8	15	3			SER
2005 02 05.70		S	5.0:	HV	6	R	10	30	7.1	6			SEM02
2005 02 05.72		M	4.7	TI	10	B		25	19	5/			HOR03
2005 02 05.75		S	4.2	TI	0.7	E		1	20	s7/			SCA02
2005 02 05.76		I	4.5	TK	0.0	E		1					BUS01
2005 02 05.76		S	4.3	TK	3.4	R	4	5	&20	6/			BUS01
2005 02 05.78		M	4.7	TK	5.0	B		10	15	5			MEY
2005 02 05.78		S	4.4	TK	5.6	B		10	&18	7	&0.5	80	BUS01
2005 02 05.78	G	M	4.8	TT	0.8	E		1	22	4/			HOR02
2005 02 05.79		B	4.8	TJ	5.0	B		10	14	3/	0.3	90	SIE
2005 02 05.79		I	4.7	TK	0.8	E		1		8			MEY
2005 02 05.80		B	4.9	TJ	5.0	B		7	12	4/			CHE03
2005 02 05.80		M	4.7	TJ	0.8	E		1	20	6			ADA05
2005 02 05.81		M	4.6	TJ	3.0	B		8	18	6			ADA05
2005 02 05.81		M	5.4	TT	5.0	B		7	20	6			JAN03
2005 02 05.82		M	4.3	HD	11	B		20	13	7	1	80	NEV
2005 02 05.82		M	5.0	TT	5.0	B		10	17	6	1.9	80	HOR02
2005 02 05.83		M	4.8	TJ	15	R	5	30	13	7	0.75	82	ADA05
2005 02 05.83		M	4.8	TT	0.8	E		1	15	7			LEH
2005 02 05.84		M	4.9	TT	5.0	B		10	10	4	1		LEH
2005 02 05.88		S	4.8	TJ	5.0	B		10	9	6			MOE
2005 02 05.91		S	4.9	HV	6.3	B		9	18	6	1.8	83	KAM01
2005 02 05.92		S	5.0	TK	5.0	B		10	25	4	1.5	95	ZAN01
2005 02 05.96		B	5.0	TJ	12.0	R	5	27	12	3/			SIE
2005 02 06.15		M	5.7	TK	5.0	B		7	13	6			URB01
2005 02 06.42	x	M	5.1	TJ	3.5	B		7	14	7			NAG08
2005 02 06.43	x	S	4.9	TK	3.0	B		6	10	6			MOM
2005 02 06.45	x	S	5.3	HV	3.0	B		8	14	3			OHM
2005 02 06.47	x	M	4.9	TK	3.5	B		7	15	6			YOS02
2005 02 06.65		M	4.9	HD	6	R	10	10	13	5/			KOZ02
2005 02 06.74		B	5.1	HD	3	O		8	17	3			SER
2005 02 06.75		S	4.4	TI	0.7	E		1	16	s7			SCA02

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 06.75		S	4.8	TJ	15.2	L	5	42	9	6	1.5	80	MOE
2005 02 06.76		S	4.4	TK	5.0	B		20	15	6			DIE02
2005 02 06.78		M	4.7	TK	5.0	B		10	15	5			MEY
2005 02 06.79		I	4.7	TK	0.8	E		1		8/			MEY
2005 02 06.79	G	S	4.9	TT	0.8	E		1	20	4			HOR02
2005 02 06.80		I	5.2	TK	0.0	E		1	&15	6			SCH04
2005 02 06.80		M	4.8	TI	5.0	B		7	15	6/			HOR03
2005 02 06.80		M	4.8	TJ	3.0	B		8	15	5			ADA05
2005 02 06.80		M	5.1	TT	5.0	B		10	17	5/	2.1	80	HOR02
2005 02 06.81		M	5.4	TT	5.0	B		7	20	6			JAN03
2005 02 06.82		B	4.7	HV	0.7	E		1	15	5			BIV
2005 02 06.82		S	4.8	HV	5.0	B		7	12	6	1.5	80	BIV
2005 02 06.83		M	4.6	TK	5.0	B		7	16	6	1	83	DIJ
2005 02 06.83		M	4.7	TK	5.0	B		7	16	7	1.0	85	BOU
2005 02 06.83		M	5.0	TT	5.0	B		10	10	4	0.5		LEH
2005 02 06.85		B	5.1	TJ	5.0	B		7	12	5	0.1		CHE03
2005 02 06.93		B	5.0	TJ	5.0	B		10	12	3/			SIE
2005 02 06.93		M	5.0	TK	5.0	B		10	&15	6			COM
2005 02 06.93		S	5.0	TK	8.0	B		15	12	4			HUR
2005 02 06.97		S	4.9	TK	5.0	B		10	16	4			HUR
2005 02 06.98		S	5.1	TK	5.0	B		10	18	4			ZAN01
2005 02 07.68		S	5.0	S	6	R	10	10	13	5			KOZ02
2005 02 07.74		B	5.2	TJ	7.0	R	6	12	12	3/			SIE
2005 02 07.77		S	4.4	TK	5.0	B		20	15	5			DIE02
2005 02 07.78		S	5.0	TJ	15.2	L	5	42	9	5	1.2	80	MOE
2005 02 07.80		M	5.4	TT	5.0	B		7	20	6			JAN03
2005 02 07.81		B	4.8	TK	5.0	B		10	10.3	4	1.0	80	HAS02
2005 02 07.81		I	4.9	TK	0.8	E		1					HAS02
2005 02 07.81		S	4.9	TK	5.0	B		10	16	4			HUR
2005 02 07.81		S	5.0	TK	8.0	B		15	12	3			HUR
2005 02 07.83		M	5.0	TT	5.0	B		10	10	4	0.5		LEH
2005 02 07.83		S	5.1	TK	5.0	B		10	18	4	1.7	95	ZAN01
2005 02 07.84		M	4.9	TI	5.0	B		7	17	6			HOR03
2005 02 07.86		B	5.1	TJ	5.0	B		7		5			CHE03
2005 02 07.86		M	4.7	TK	5.0	B		7	14	7			BOU
2005 02 07.86		S	4.7	TK	5.0	B		7	13	6	1.3	85	DIJ
2005 02 07.87		B	5.1	TJ	5.0	B		10	12	3/			SIE
2005 02 07.90		M	4.9	TJ	3.0	B		8	12	6			ADA05
2005 02 07.91		M	5.0	TK	5.0	B		10		6			COM
2005 02 07.95	G	S	4.9	TT	0.8	E		1	24	4			HOR02
2005 02 07.96		M	5.1	TT	5.0	B		10	18	5	1.8	80	HOR02
2005 02 08.17		B	5.2	TJ	7.0	R	6	12	13	3/			SIE
2005 02 08.71		B	5.2	TJ	5.0	B		10	12	3/			SIE
2005 02 08.75		M	4.8	HD	11	B		20	14	7	1.5	75	NEV
2005 02 08.76		B	5.0	TK	3	O		8	20	4			SER
2005 02 08.76		B	5.1	TJ	5.0	B		10	9	5			MOE
2005 02 08.77		S	4.4	TK	5.0	B		10	15	5			GON06
2005 02 08.78		S	4.5	TK	5.0	B		20	15	5			DIE02
2005 02 08.79		M	4.7	TK	5.0	B		10	17	4			MEY
2005 02 08.79		M	4.9	TK	5.0	B		7	14	6			BOU
2005 02 08.80		M	5.6	TT	5.0	B		7	20	6			JAN03
2005 02 08.85		M	5.5	TK	5.0	B		7	11	6			URB01
2005 02 08.85		S	4.9	TK	5.0	B		10	12	4			HUR
2005 02 08.85		S	4.9	TK	5.0	B		10	&15	5/			SCH04
2005 02 08.85		S	5.1	TK	8.0	B		15	12	3			HUR
2005 02 08.88		M	4.9	TI	5.0	B		7	16	6			HOR03
2005 02 08.88		S	5.2	TK	5.0	B		10	18	4			ZAN01
2005 02 08.89		M	5.1	TK	5.0	B		10	15	6			COM
2005 02 08.90		B	4.9	TK	0.0	E		1					WAR01
2005 02 08.91					8.0	B		11	17	5/	2.5	65	WAR01
2005 02 08.93		B	5.3	TJ	7.0	R	6	12	13	3/			SIE
2005 02 08.94	G	S	4.9	TT	0.8	E		1	22	4			HOR02
2005 02 08.95		M	5.1	TT	5.0	B		10	17	5	1.6	80	HOR02
2005 02 09.00		S	5.0	HV	5.0	B		7	10	6	1.5	85	BIV
2005 02 09.01		B	4.9	HV	0.7	E		1	15	6			BIV

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 09.16		B	5.2	TJ	5.0	B		10	12	3/			SIE
2005 02 09.70		S	5.0	S	6	R	10	10	13	5			KOZ02
2005 02 09.71		B	5.2	TJ	7.0	R	6	12	13	3/			SIE
2005 02 09.81		M	5.5	TT	5.0	B		7	20	6			JAN03
2005 02 09.82		B	4.5	TI	5.0	B		10	15	7	30 m		LAB02
2005 02 09.83		B	5.2	TJ	5.0	B		7	12	5	0.1		CHE03
2005 02 09.84		I	5.0	TK	0.0	E		1	17	8			GON05
2005 02 09.85		B	5.2	TK	5.0	B		7	17	7	1.8	85	GON05
2005 02 09.86		B	4.6	S	0.0	E		1	20	5/			MAR02
2005 02 09.89		M	5.0	TI	5.0	B		7	16	6			HOR03
2005 02 09.90		B	5.4	TJ	7.0	R	6	12	12	3/			SIE
2005 02 09.93		S	5.1	HV	6.3	B		9	15	5/	1.2	86	KAM01
2005 02 09.96		B	5.2:	SC	5.0	B		10	&25	4/			KAN05
2005 02 10.17		B	5.2	TJ	5.0	B		10	13	3/			SIE
2005 02 10.73		B	5.1	TJ	5.0	B		7	12	5			CHE03
2005 02 10.75		S	5.1	TJ	5.0	B		10	10	5	0.8	80	MOE
2005 02 10.76		S	4.7	TK	3.4	R	4	5	>15	6			BUS01
2005 02 10.77		B	5.2	TJ	5.0	B		10	12	3			SIE
2005 02 10.77		S	4.8	TK	5.6	B		10	&15	6/			BUS01
2005 02 10.81		M	4.9	TK	5.0	B		7	14	6/			BOU
2005 02 10.85		I	4.9	TJ	0.0	E		1	8	4			SHU
2005 02 10.85		M	5.1	TJ	3.0	B		8	12	5			SHU
2005 02 10.86	x	B	5.2:	HV	5.0	B		7	14	5			MIY01
2005 02 10.95	G	S	5.0	TT	0.8	E		1	23	4			HOR02
2005 02 10.96		M	5.2	TT	5.0	B		10	18	4/	1.3	85	HOR02
2005 02 11.08		I	5.0	TK	0.7	E		1					GRA04
2005 02 11.08		M	4.9	TK	5.0	B		7	14	6			GRA04
2005 02 11.43	x	M	5.2	TJ	3.5	B		7	12	7	1	135	NAG08
2005 02 11.44	x	M	5.1	TK	3.5	B		7	15	5/			YOS02
2005 02 11.62	x	B	5.1	HV	5.0	B		10	15	5/	1.0	75	NAG04
2005 02 11.81		S	5.2	TJ	5.0	B		10	9	4			MOE
2005 02 11.98		I	5.0	TK	0.7	E		1					GRA04
2005 02 11.98		M	5.0	TK	5.0	B		7	14	6			GRA04
2005 02 12.64		S	5.2	S	6	R	10	10	13	5			KOZ02
2005 02 12.83		S	5.1	TK	5.0	B		10	10	4			HUR
2005 02 12.83		S	5.5	TK	8.0	B		15	10	4			HUR
2005 02 12.85		S	5.1	TK	4.0	B		8	12	7			SCH04
2005 02 12.92		M	5.2	TK	5.0	B		10	&13	6			COM
2005 02 12.92		S	5.1	HV	5.0	B		7	12	6	1.4	80	BIV
2005 02 12.96		B	5.0	HV	0.7	E		1	10	5			BIV
2005 02 13.47	x	S	5.2	HV	5.0	B		7	12	5			MIY01
2005 02 13.79		B	5.0	TI	8.0	B		11	12	7	20 m		LAB02
2005 02 13.80		M	5.4	TT	5.0	B		10	18	4			HOR02
2005 02 13.81		M	5.1	TT	5.0	B		10	10	3/			LEH
2005 02 13.82		M	5.0	TT	0.8	E		1	15	6			LEH
2005 02 13.82		M	5.4	TT	5.0	B		7	20	6			JAN03
2005 02 13.89		S	5.3	TK	5.0	B		10	18	4			ZAN01
2005 02 13.90		M	5.1	TK	5.0	B		7	14	6			BOU
2005 02 13.90		M	5.3	TK	5.0	B		7	13	4/			DIJ
2005 02 13.91		S	5.0	TK	5.0	B		20	15	6			DIE02
2005 02 14.74		B	5.3	TJ	10	B		25	6	6			ADA05
2005 02 14.74		M	5.2	TJ	5.0	B		10	12	6			ADA05
2005 02 14.79		S	5.3	TK	5.0	B		10	18	4			ZAN01
2005 02 14.84		M	5.3	TK	5.0	B		7	13	5			DIJ
2005 02 14.85		S	5.1	TK	8.0	B		15	12	4			HUR
2005 02 14.86		S	5.2	TK	5.0	B		10	15	3			HUR
2005 02 14.89		S	5.0	TK	5.0	B		20	15	6			DIE02
2005 02 14.92		M	5.2	TI	5.0	B		7	18	4/			HOR03
2005 02 14.92		M	5.5	TT	5.0	B		7	20	6			JAN03
2005 02 14.92		S	5.2	TK	5.0	B		10	15	7			GON06
2005 02 14.97	G	S	5.2	TT	0.8	E		1	20	5/			HOR02
2005 02 14.98		M	5.5	TT	5.0	B		10	17	4/	0.6	80	HOR02
2005 02 15.11		M	5.2	TK	5.0	B		7	14	6			GRA04
2005 02 15.84		S	5.3	TK	8.0	B		15	12	4			HUR
2005 02 15.85		S	5.2	TK	5.0	B		10	12	5			HUR

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 15.98		M	5.4	TK	5.0	B		7	12	4			DIJ
2005 02 15.99		M	5.2	TK	5.0	B		7	13	5/			BOU
2005 02 15.99		S	5.3	TK	5.0	B		10	18	4			ZANO1
2005 02 17.78		S	5.6	TJ	5.0	B		10	7	4			MOE
2005 02 18.82		B	5.5	TK	5.0	B		7	15	7			GONO5
2005 02 18.87		S	5.3	TK	5.0	B		10	15	3			HUR
2005 02 18.87		S	5.4	TK	8.0	B		15	12	4			HUR
2005 02 18.95		M	5.4	TK	5.0	B		7	12	6			BOU
2005 02 18.98		M	5.5	TK	5.0	B		7	12	4			DIJ
2005 02 19.99		S	5.5	HV	5.0	B		7	17	5			BIV
2005 02 20.05		M	5.5	TK	5.0	B		7	14	5/			GRA04
2005 02 20.81		S	5.6	TK	8.0	B		15	9	4			HUR
2005 02 20.82		S	5.5	TK	5.0	B		10	12	4			HUR
2005 02 21.02		M	5.2	TJ	3.0	B		8	9	3/			SHU
2005 02 21.02		M	5.2	TJ	3.0	B		8	9	3/			SHU
2005 02 21.75		S	5.6	TI	5.0	B		7	14	s6			SCA02
2005 02 21.86		S	5.9:	HV	5.0	B		7	8	6			BIV
2005 02 21.88		B	5.0	TI	8.0	B		11	10	6			LAB02
2005 02 22.75		S	5.7	TI	5.0	B		7	12	s5			SCA02
2005 02 22.81		S	5.5	TK	8.0	B		15	9	3			HUR
2005 02 22.83		S	6.0:	HV	5.0	B		7	12	5			BIV
2005 02 22.88		M	5.6	TK	8.0	B		15	10	5			BOU
2005 02 22.89		M	5.3	TJ	3.0	B		8	8	3			SHU
2005 02 22.95		M	5.8	TK	5.0	B		7	10	4/			DIJ
2005 02 24.75		S	5.8	TI	5.0	B		7	10	s4			SCA02
2005 02 24.85		M	5.3	TJ	3.0	B		8	9	3			SHU
2005 02 25.61		I	6.0:	S	0.0	E		1	& 7	1			KOZ02
2005 02 25.77		M	5.9	TK	5.0	B		10	11	3/			MEY
2005 02 25.89		M	5.4	TJ	3.0	B		8	9	4			SHU
2005 02 25.94		S	6.0	TK	5.0	B		10	10	4			GONO6
2005 02 26.42	x	M	5.5	TJ	3.5	B		7	12	5/			NAGO8
2005 02 26.45	x	M	5.8	TK	3.5	B		7	14	6			YOSO2
2005 02 26.47	x	S	5.9	HV	5.0	B		7	15	4/			MIYO1
2005 02 26.81		B	6.5	TI	8.0	B		11	10	6			LAB02
2005 02 26.82		M	5.8	TK	5.0	B		7	12	5			BOU
2005 02 26.84		S	5.4	TK	5.0	B		10	11	3			ZANO1
2005 02 26.89		M	5.8	TK	5.0	B		7	11	4/			GRA04
2005 02 27.77		M	5.8	TK	5.0	B		10	12	4			MEY
2005 02 27.78		S	5.5	TK	5.0	B		20	15	5			DIE02
2005 02 27.79		M	6.3	TT	5.0	B		7	20	6			JANO3
2005 02 27.80		M	6.3	TT	8.0	B		10	14	4	0.6	70	HORO2
2005 02 27.81		M	5.5	TI	5.0	B		7	15	5			HORO3
2005 02 27.84		S	5.9	TK	5.0	B		7	10	5			BIV
2005 02 27.85		S	5.8	TK	5.0	B		10	&15	4			SCH04
2005 02 27.86		M	5.8	TJ	3.0	B		8	14	5			ADA05
2005 02 27.86		S	6.0	TK	5.0	B		10	12	3			HUR
2005 02 27.86		S	6.1	TK	8.0	B		15	12	4			HUR
2005 02 27.87		M	5.8	TK	5.0	B		7	12	5/			BOU
2005 02 27.87		M	6.0	TK	5.0	B		7	11	4			DIJ
2005 02 27.88		S	5.9	TK	5.0	B		7	10	6			BIV
2005 02 27.98		S	5.4	TK	5.0	B		10	11	3			ZANO1
2005 02 28.58		S	5.3	YG	7.0	R		10	20	5			YOSO4
2005 02 28.78		M	5.8	TK	5.0	B		10	13	4			MEY
2005 02 28.78		M	5.9	TK	5.0	B		7	11	5			BOU
2005 02 28.79		M	6.0	TJ	3.0	B		8	11	5			ADA05
2005 02 28.79		M	6.2	TK	5.0	B		7	12	6			URBO1
2005 02 28.82		B	5.7	TK	5.0	B		10	8.5	4			HASO2
2005 02 28.84		M	5.7	TI	5.0	B		7	13	5			HORO3
2005 02 28.86		S	5.8	TK	5.0	B		10	&14	4	&0.3	130	SCH04
2005 02 28.89		S	5.8	HV	6.3	B		9	13	5/	0.7	125	KAMO1
2005 02 28.94		M	6.3	TT	8.0	B		10	14	4/	0.7	80	HORO2
2005 02 28.94		S	6.0	TK	5.0	B		10	10	6			GONO6
2005 02 28.97		S	6.0	TK	5.0	B		7	11	5			BIV
2005 03 01.13		S	5.8	TJ	3.0	B		8	9	3			SHU
2005 03 01.43	x	M	5.6	HV	3.5	B		7	14	5			MIT

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 01.76		M	6.3	TK	5.0	B		7	10	4/			URB01
2005 03 01.78		M	5.9	TK	5.0	B		10	14	4			MEY
2005 03 01.84		S	5.8	TJ	3.0	B		8	10	3			SHU
2005 03 01.86		B	5.8	TJ	5.0	B		7	11	4			CHE03
2005 03 01.86		B	5.9	TJ	5.0	B		10	12	3			SIE
2005 03 01.86		B	5.9	TJ	5.0	B		10	12	3			SIE
2005 03 01.90		M	5.8	TI	5.0	B		7	14	4/			HOR03
2005 03 01.95		M	6.2	TT	8.0	B		10	15	5	0.6	80	HOR02
2005 03 02.10		S	5.8	TJ	3.0	B		8	12	3			SHU
2005 03 02.13		M	5.9	TK	5.0	B		7	11	4			GRA04
2005 03 02.67	x	M	5.8	TJ	8.0	B		11	10	6			NAG08
2005 03 02.78		M	6.4	TK	5.0	B		7	9	3			URB01
2005 03 02.88		M	5.9	TI	5.0	B		7	13	5			HOR03
2005 03 02.91		B	6.1	TI	8.0	B		11	6	5	6 m		LAB02
2005 03 03.20		M	5.9	TK	5.0	B		7	11	4/			GRA04
2005 03 03.75		S	5.9	TI	5.0	B		7	10	s3			SCA02
2005 03 03.78		B	5.9:	TJ	5.0	B		10	10	2/			SIE
2005 03 03.79		M	6.2	TI	25	L	5	50	19	4			HOR03
2005 03 03.80		M	5.9	TK	5.0	B		10	15	4			MEY
2005 03 03.82		M	6.2	TK	5.0	B		7	11	4			DIJ
2005 03 03.82		M	6.2	TK	5.0	B		10	&13	5/			COM
2005 03 03.83		S	5.5	TK	5.0	B		10	8	3			ZAN01
2005 03 03.87		S	5.6	TJ	3.0	B		8	8	3/			SHU
2005 03 03.87		S	5.9	TK	8.0	B		15	9	4			HUR
2005 03 03.88		S	5.7	TK	5.0	B		10	9	3			HUR
2005 03 03.89		M	6.0	S	3	O		8	9	1			SER
2005 03 03.95		M	5.9	TK	5.0	B		7	14	5			BOU
2005 03 04.83		B	6.0	TK	5.0	B		7	13	6			GON05
2005 03 04.83		M	6.0	TK	5.0	B		10	14	4/			MEY
2005 03 04.99		S	6.0	TK	5.0	B		10	9	4			HUR
2005 03 04.99		S	6.3	TK	8.0	B		15	9	4			HUR
2005 03 05.78		M	6.0	TK	5.0	B		10	14	4/			MEY
2005 03 05.80		M	6.3	TI	5.0	B		7	11	5			HOR03
2005 03 05.85		S	5.5	TK	5.0	B		10	8	3			ZAN01
2005 03 05.88		B	6.0	TK	2.1	B		8	14	5			KAR02
2005 03 05.88		I	5.8	TK	0.0	E		1					KAR02
2005 03 05.95		M	6.0	TK	5.0	B		7	11	4/			DIJ
2005 03 06.16		M	6.1	TK	5.0	B		7	14	4/			BOU
2005 03 06.68		I	6.0	S	0.0	E		1	& 4	1			KOZ02
2005 03 06.68	x	M	6.0	TK	3.5	B		7	14	6			YOS02
2005 03 06.70		S	5.8	S	6	R	10	30	8	4			KOZ02
2005 03 06.74	x	B	6.3	HV	5.0	B		10	9.5	5/			NAG04
2005 03 06.78		S	6.6	TJ	5.0	B		10	7	4			MOE
2005 03 06.79		M	6.0	TK	5.0	B		10	13	4/			MEY
2005 03 06.82		B	6.1	TI	8.0	B		11	10				LAB02
2005 03 06.83		S	6.2	TK	5.0	B		7	9	5	0.6	115	BIV
2005 03 06.84		B	6.0:	TK	0.7	E		1	10	5			BIV
2005 03 06.87		S	6.0	TK	5.0	B		10	10	5			GON06
2005 03 06.91		M	6.6	TK	5.0	B		7	11	4			URB01
2005 03 06.95		M	5.7	S	3.0	B		6	15	5			MAR02
2005 03 07.11		M	6.0	TK	5.0	B		7	12	4			GRA04
2005 03 07.50	x	M	6.3	HV	8.0	B		11	13	5			MIT
2005 03 07.52	x	B	6.5	HV	5.0	B		10	10	5/	12 m	130	NAG04
2005 03 07.69	x	M	6.1	TK	3.5	B		7	14	6			YOS02
2005 03 07.78		B	6.6	TJ	5.0	B		10	6.5	4			MOE
2005 03 07.81	x	S	6.2	HV	5.0	B		7	13	4/			MIY01
2005 03 07.97		B	6.0	TK	5.0	B		7	12	5	0.9	110	GON05
2005 03 07.97		M	5.8	S	3.0	B		6	15	4/			MAR02
2005 03 08.50		S	5.6	YG	7.0	R		10	13	6/			YOS04
2005 03 08.78		B	6.7	TJ	5.0	B		10	7	5			MOE
2005 03 08.81		B	5.9	TI	8.0	B		11	10	6	20 m		LAB02
2005 03 08.81		B	6.1:	TJ	5.0	B		10	10	2			SIE
2005 03 08.81	x	S	6.3	HV	5.0	B		7	13	4			MIY01
2005 03 08.86		B	6.4	TK	5.0	B		10	&10	4/			COM
2005 03 08.86		M	6.2	TK	8.0	B		15	12	4			BOU

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 08.98		M	5.8	S	3.0	B		6	15	5			MARO2
2005 03 09.78		M	6.3	TK	7	R	14	50	11	6			URBO1
2005 03 09.79		B	6.2	TJ	10.0	B		25	12	3			SIE
2005 03 09.81		M	6.2	TK	5.0	B		7	12	4/			BOU
2005 03 09.82		M	6.3	TT	8.0	B		10	14	4			HORO2
2005 03 09.82		S	5.9	TK	5.6	B		10	&12	4/			BUSO1
2005 03 09.84		B	6.5	TJ	5.0	B		10	8	5			MOE
2005 03 09.87		B	6.2	TJ	5.0	B		7	10	4			CHEO3
2005 03 09.88		M	6.3	TK	5.0	B		7	12	4/			GRAO4
2005 03 09.89		M	6.5	TK	5.0	B		10	&10	4/			COM
2005 03 09.95		M	6.3	TK	5.0	B		7	11	4/			DIJ
2005 03 09.98		M	5.7	S	3.0	B		6	15	4/			MARO2
2005 03 10.02		S	5.6	TK	5.0	B		10	8	3			ZANO1
2005 03 10.19		B	6.0	TK	5.0	B		7	12	6			GONO5
2005 03 10.23		I	5.9	TK	0.0	E		1	15	8			GONO5
2005 03 10.75		B	6.2	TJ	5.0	B		10	10	3			SIE
2005 03 10.78		M	6.2	HD	11	B		20	6	5			NEV
2005 03 10.78		S	6.0	TK	5.0	B		20	9	5			DIEO2
2005 03 10.78		S	6.5:	TJ	32.0	L		36	4	6	0.1	120	PILO1
2005 03 10.80		B	6.0	TK	5.0	B		10	8.9	4			HASO2
2005 03 10.80		M	6.1	TK	5.0	B		10	13.5	4/			MEY
2005 03 10.84		M	6.3	TK	5.0	B		7	10	6			URBO1
2005 03 10.88		S	6.0	HV	6.3	B		9	11	5	0.5	135	KAMO1
2005 03 10.91		M	6.7	TI	25	L	5	50	13	5	0.3	320	HORO3
2005 03 10.91		S	6.1	TK	5.0	B		10	15	4			SCHO4
2005 03 10.99		B	6.3	TJ	10.0	B		25	11	3			SIE
2005 03 11.82		S	6.1	TK	5.6	B		10	&12	4/			BUSO1
2005 03 11.83		M	6.3	TK	5.0	B		7	10	4/			DIJ
2005 03 11.90		M	5.9	S	3.0	B		6	15	4			MARO2
2005 03 11.91		B	6.1	TK	5.0	B		7	12	6	0.6	140	GONO5
2005 03 12.02		S	5.7	TK	5.0	B		10	8	3			ZANO1
2005 03 12.79		M	6.2	TT	8.0	B		10	14	5			HORO2
2005 03 12.83		S	6.2	S	6	R	10	10	7	4			KOZO2
2005 03 12.85		S	6.2	TK	5.0	B		7	13	6	0.7	185	BIV
2005 03 12.88		S	5.9:	TK	0.7	E		1	15	5			BIV
2005 03 12.97		S	6.4	TK	8.0	B		15	7	3			HUR
2005 03 12.98		S	6.4	TK	5.0	B		10	11	3			HUR
2005 03 13.08		B	7.4:	SC	5.0	B		10	& 8	5			KANO5
2005 03 13.17		M	6.3	TK	5.0	B		7	11	4/			BOU
2005 03 13.78		M	6.3	TT	8.0	B		10	13	5			HORO2
2005 03 13.81		B	6.2	TK	5.0	B		10	7.9	4			HASO2
2005 03 13.82		B	6.3	TJ	5.0	B		10	9	2/			SIE
2005 03 13.83		M	7.1	TI	5.0	B		7	10	4/			HORO3
2005 03 13.85		M	6.8	TJ	3.0	B		8	7	2/			SHU
2005 03 13.89		S	6.5	TK	5.0	B		10	5	5			GONO6
2005 03 13.94		B	6.5	TJ	10.0	B		25	10	3			SIE
2005 03 13.97		M	6.4	TK	5.0	B		7	12	5			BOU
2005 03 13.99		M	6.4	TK	5.0	B		7	11	3/			DIJ
2005 03 14.02		S	5.8	TK	5.0	B		10	8	3			ZANO1
2005 03 14.44	x	M	6.4	TJ	8.0	B		11	9	6			NAGO8
2005 03 14.48	x	S	6.6	HV	5.0	B		7	12	4			MIYO1
2005 03 14.53	x	M	6.6	HV	8.0	B		11	11	5			MIT
2005 03 14.71		B	6.4	TJ	5.0	B		10	9	3			SIE
2005 03 14.72		M	6.8	TJ	3.0	B		8	7	2			SHU
2005 03 14.78		M	7.1	TI	5.0	B		7	9	4			HORO3
2005 03 14.80		B	6.5	TJ	5.0	B		10	8.5	4			MOE
2005 03 14.86		S	6.8	TJ	7.0	B		16	8	5			GIAO1
2005 03 14.94		S	6.5	TK	5.0	B		20	9	5			DIEO2
2005 03 14.98		S	6.4	TK	8.0	B		15	8	3			HUR
2005 03 14.99		S	6.4	TK	5.0	B		10	11	2			HUR
2005 03 15.03		S	6.4	TK	5.0	B		10	11	3/			SCHO4
2005 03 15.16		M	6.0	TK	5.0	B		7	12	4			GRAO4
2005 03 15.16		S	6.3	TK	5.0	B		7	10	5	0.3	190	BIV
2005 03 15.77		M	6.3	TJ	3.0	B		8	9	2/			SHU
2005 03 15.79		M	6.5	TT	8.0	B		10	13	3/			HORO2

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 15.80	x	M	6.3	TK	3.5	B		7	12	6			YOS02
2005 03 15.83		M	7.0	TI	25	L	5	50	11	5			HOR03
2005 03 15.92		B	6.5	TK	5.0	B		10					HAS02
2005 03 16.00		S	6.4	HV	6.3	B		9	12	5			KAM01
2005 03 16.47	x	S	6.3	HV	5.0	B		7	12	4			MIY01
2005 03 16.74		M	6.3	TJ	3.0	B		8	8	3			SHU
2005 03 16.75		M	7.2	TI	25	L	5	50	11	5			HOR03
2005 03 16.79		B	6.7	TK	10.0	R	5	20	10.3	4			HAS02
2005 03 17.12		M	6.6	TT	8.0	B		10	15	5			HOR02
2005 03 17.81		S	6.4	TK	5.0	B		20	9	5			DIE02
2005 03 17.83		S	6.6	TK	8.0	B		15	12	2			HUR
2005 03 18.11		M	6.5	TK	5.0	B		7	11	3			URB01
2005 03 18.14		S	6.5	TK	5.0	B		7	8	5	0.3	200	BIV
2005 03 18.17		B	6.5	TK	5.0	B		7	11	6			GON05
2005 03 18.95		S	6.8	TK	8.0	B		15	18	2			HUR
2005 03 18.96		S	6.9	TK	8.0	B		15	15	2			HUR
2005 03 19.08		M	6.4	TK	5.0	B		7	11	4			GRA04
2005 03 19.54	x	M	6.6	TJ	8.0	B		11	8	5/			NAG08
2005 03 19.84		B	6.6	TK	3.2	B		8					HAS02
2005 03 19.84		S	7.0	TK	8.0	B		15	9	2			HUR
2005 03 19.87		B	6.8	TJ	5.0	B		10	8	3			SIE
2005 03 19.97		S	5.9	TK	5.0	B		10	8	2			ZAN01
2005 03 19.98		B	7.0	TJ	10.0	B		25	9	3			SIE
2005 03 20.08		M	6.6	TK	6.0	B		15	13	4			DIJ
2005 03 20.15		M	6.5	TT	8.0	B		10	13	4			HOR02
2005 03 20.15		M	6.6	TK	5.0	B		7	10	4			BOU
2005 03 20.16		S	6.6	TK	5.0	B		7	10	5	0.3	210	BIV
2005 03 20.78		B	6.8	TJ	5.0	B		10	7	2/			SIE
2005 03 20.79	x	S	6.4	HV	5.0	B		7	18	3/			MIY01
2005 03 20.80		S	6.6	TJ	5.0	B		10	7	3			MOE
2005 03 21.02		M	6.6	TK	5.0	B		7	10	3/			DIJ
2005 03 21.03		S	6.6	TK	8.0	B		15	10	3/			BOU
2005 03 21.04		S	5.9	TK	5.0	B		10	8	2			ZAN01
2005 03 21.13		M	6.5	TT	8.0	B		10	14	4			HOR02
2005 03 21.78		B	7.2	TJ	12.0	R	5	27	6	2			SIE
2005 03 23.15		S	6.7	TK	8.0	B		15	8	3/			BOU
2005 03 24.83		S	6.8	TK	8.0	B		15	9	2			HUR
2005 03 24.83		S	7.0	TK	8.0	B		15	6	2			HUR
2005 03 25.82		S	6.9	TK	8.0	B		15	9	2			HUR
2005 03 25.83		S	7.0	TK	5.0	B		10	9	2			HUR
2005 03 26.81		S	6.9	TK	5.0	B		20	6	3			DIE02
2005 03 26.83		B	7.6	TI	10.2	T	5	20	10	5			LAB02
2005 03 27.82		M	6.7	TT	8.0	B		10	14	3/			HOR02
2005 03 27.91		M	6.7	TK	5.0	B		7	10	3/			GRA04
2005 03 28.74		M	6.9	TJ	3.0	B		8	7.5	2/			SHU
2005 03 28.80		B	7.3	TJ	12.0	R	5	27	8	3/			SIE
2005 03 28.83		M	6.7	TT	8.0	B		10	15	4			HOR02
2005 03 29.49	x	S	7.0	TK	3.5	B		7	10	4			YOS02
2005 03 29.51	x	M	7.1	HV	8.0	B		11	11	5			MIT
2005 03 29.51	x	M	7.3	TK	10.0	B		20	7	5/			YOS02
2005 03 29.76		M	7.0	TJ	3.0	B		8	10	2/			SHU
2005 03 29.79		B	7.4	TJ	12.0	R	5	27	7	3/			SIE
2005 03 29.84		M	6.8	TT	8.0	B		10	15	4			HOR02
2005 03 30.81		B	7.4	TJ	12.0	R	5	27	7	3/			SIE
2005 03 30.82		S	7.2	TJ	5.0	B		10	6	3			MOE
2005 03 31.10		M	6.8	TK	5.0	B		7	10	3/			GRA04
2005 03 31.11		M	6.9	TT	8.0	B		10	13	3/			HOR02
2005 03 31.48	x	S	7.9	TJ	8.0	B		11	8	4			MIY01
2005 03 31.77		B	7.4	TJ	10.0	B		25	7	3/			SIE
2005 03 31.82		B	7.3	TJ	10.0	B		25	7	4			CHE03
2005 03 31.82		S	7.1	TJ	15.2	L	5	42	6	4			MOE
2005 03 31.83		S	6.9	TK	5.0	B		10	10	3			MEY
2005 03 31.84		S	6.9	TK	5.0	B		7	8	3			URB01
2005 03 31.85		M	6.8	TT	8.0	B		10	15	4			HOR02
2005 03 31.86		S	6.8	TK	5.6	B		10	&11	3			BUS01

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 03 31.88		M	6.9	TK	6.0	B		15	8	4/			DIJ
2005 03 31.88		M	6.9	TK	8.0	B		15	9	4/			BOU
2005 03 31.88		S	7.0	TK	5.0	B		20	6	3			DIE02
2005 03 31.91		S	7.0	TK	5.0	B		10	&13	3			SCH04
2005 03 31.94		S	7.3	TK	8.0	B		15	7	4			COM
2005 04 01.81		S	7.2	TJ	15.2	L	5	42	6.5	5			MOE
2005 04 01.82		S	7.0	TK	5.0	B		10	11	3			MEY
2005 04 01.82		S	7.0	TK	5.0	B		20	6	3			DIE02
2005 04 01.85		S	7.0	HV	6.3	B		9	12	4			KAM01
2005 04 01.86		M	7.0	TT	8.0	B		10	14	4			HOR02
2005 04 01.88		M	6.9	TK	6.0	B		15	8	5			DIJ
2005 04 01.89		S	6.8	TK	5.6	B		10	&10	3			BUS01
2005 04 01.89		S	7.0	TK	5.0	B		10	8	4			GIL01
2005 04 01.90		M	7.0	TK	8.0	B		15	9	4/			BOU
2005 04 02.08		M	6.9	TK	5.0	B		7	10	3			GRA04
2005 04 02.75		S	7.4	S	6	R	10	10	6	3			KOZ02
2005 04 02.82		S	7.2	TJ	5.0	B		10	6	4			MOE
2005 04 02.83		M	7.0	TT	8.0	B		10	13	5			HOR02
2005 04 02.83		S	7.0	TK	5.0	B		10	11	4			SCH04
2005 04 02.86		S	7.0:	TK	5.6	B		10	>10	3/			BUS01
2005 04 02.86		S	7.3:	TK	15.0	R	5	38	8	3/			MEY
2005 04 02.88		S	7.2	TK	5.0	B		10	7	4			MEY
2005 04 02.91		B	6.7	TK	3.2	B		8	8.1	4			HAS02
2005 04 02.94		M	6.9	TK	6.0	B		15	9	4/			DIJ
2005 04 03.81		M	7.1	TT	8.0	B		10	15	4			HOR02
2005 04 03.81		S	7.3	TK	5.0	B		10	14	3/			MEY
2005 04 03.82		S	7.0	TK	5.0	B		20	6	3			DIE02
2005 04 03.82		S	7.4	TJ	5.0	B		10	5	3			MOE
2005 04 03.86		B	6.8	TK	5.0	B		10	7.8	4			HAS02
2005 04 03.95		M	7.2	TK	5.0	B		7	10	4/			URB01
2005 04 04.05		M	7.0	TK	6.0	B		15	11	4			DIJ
2005 04 04.48	x	S	6.9	TK	3.5	B		7	12	5			YOS02
2005 04 04.82		M	7.1	TT	8.0	B		10	14	4			HOR02
2005 04 04.83		S	7.0	TK	5.0	B		10	12	3/			MEY
2005 04 04.85		B	7.0	TJ	5.0	B		7	7	3			CHE03
2005 04 04.86		M	7.6	TJ	15	L	5	42	6.5	3			SHU
2005 04 04.89		M	7.3	TK	5.0	B		7	11	4			URB01
2005 04 04.89		S	7.5	TK	5.0	B		10	6	4			GON06
2005 04 05.51		S	6.8	TJ	7.0	R		10	15	5			YOS04
2005 04 05.70		S	7.5	S	6	R	10	30	7	4			KOZ02
2005 04 05.82		S	7.5	TK	15.2	L	5	42	7	4			MOE
2005 04 05.85		S	7.4	TK	5.0	B		7	10	4/			URB01
2005 04 05.85		S	7.4	TK	8.0	B		15	& 8	4			COM
2005 04 05.86		S	7.0	TK	5.6	B		10	>11	3/			BUS01
2005 04 05.86		S	7.2	TK	8.0	B		15	9	3/			BOU
2005 04 05.87		B	7.2	TJ	5.0	B		7	6	3			CHE03
2005 04 05.92		M	7.1	TK	6.0	B		15	12	4			DIJ
2005 04 06.06		M	7.2	TK	5.0	B		7	10	3			GRA04
2005 04 06.74		S	7.5	S	6	R	10	30	7	4			KOZ02
2005 04 06.83		M	7.7	TJ	15	L	5	42	7	3			SHU
2005 04 06.84		M	7.1	TT	8.0	B		10	14	4			HOR02
2005 04 06.87		B	7.9	TI	8.0	B		11	4	4	4	m	LAB02
2005 04 06.88		S	7.2	TK	4.0	B		8	&10	4			SCH04
2005 04 06.88		S	7.3	TK	5.0	B		7	12	3			URB01
2005 04 07.76		S	7.6	S	6	R	10	10	6	3			KOZ02
2005 04 07.82		S	7.5	TK	5.0	B		10	7	3			MOE
2005 04 07.83		M	8.0	TJ	15	L	5	42	6	3			SHU
2005 04 07.87		M	7.1	TK	6.0	B		15	8	4			DIJ
2005 04 07.87		M	7.3	TK	8.0	B		15	8	4			BOU
2005 04 07.89		S	7.1	TK	5.0	B		20	6	4			DIE02
2005 04 08.50	x	M	7.3	TJ	10.0	B		20	7	5			NAG08
2005 04 08.77		S	7.6	S	6	R	10	10	6	3			KOZ02
2005 04 08.82		S	7.6	TK	5.0	B		10	7	2			MOE
2005 04 09.73		S	7.7	S	6	R	10	10	5	3			KOZ02
2005 04 09.83		B	7.3	TI	8.0	B		11	5	5	5	m	LAB02

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 04 09.84		S	7.6	TK	5.0	B		10	7	4			MOE
2005 04 10.02		S	7.2	TK	5.0	B		7	12	3			GON05
2005 04 10.72		S	7.7	S	6	R	10	10	5	3			KOZ02
2005 04 10.85		S	7.2	TK	5.0	B		20	6	4			DIE02
2005 04 11.04		S	7.4	TK	5.0	B		7	10	3			GRA04
2005 04 11.77		M	8.1	TJ	15	L	5	42	6	3			SHU
2005 04 11.83		S	7.7	TK	5.0	B		10	6	2			MOE
2005 04 11.86		S	7.4	TK	8.0	B		15	8	3/			BOU
2005 04 11.87		S	7.2	TK	5.0	B		20	6	4			DIE02
2005 04 11.89		S	7.3	TK	5.0	B		10	14	4			SCH04
2005 04 11.92		S	7.3	TK	5.6	B		10	>10	3/			BUS01
2005 04 11.94		M	7.2	TK	6.0	B		15	9	3/			DIJ
2005 04 11.94		S	7.5	TK	5.0	B		10	7	4			GIL01
2005 04 11.96		S	7.7	TK	8.0	B		15	& 7	3			COM
2005 04 12.02		M	7.2	TK	5.0	B		7	12	4			GRA04
2005 04 12.13		S	7.3	TK	5.0	B		7	10	4			GON05
2005 04 12.58	x	S	7.4	TK	3.5	B		7	9	4			YOS02
2005 04 13.03		M	7.3	TK	5.0	B		7	11	4			GRA04
2005 04 13.50	x	M	7.7	TJ	3.5	B		7	8	5			NAG08
2005 04 13.69	x	M	7.9	TK	10.0	B		20	8	5			YOS02
2005 04 14.09		M	7.4	TK	5.0	B		7	10	3			GRA04
2005 04 14.68	x	M	7.9	TK	10.0	B		20	7	5/			YOS02
2005 04 15.88		B	8.1	TI	8.0	B		11	5	4			LAB02
2005 04 16.85		S	7.6	TJ	5.0	B		10					PIL01
2005 04 17.00		S	7.7	TK	6.0	B		15	10	2/			DIJ
2005 04 19.03		M	7.7	TK	5.0	B		7	8	3			GRA04
2005 04 19.93		S	7.8	TK	5.0	B		7	& 9	4			SKI
2005 04 20.99		S	7.8	TK	8.0	B		15	6	3			BOU
2005 04 21.01		S	8.0	TK	6.0	B		15	9	1/			DIJ
2005 04 22.77	x	S	8.5	TJ	8.0	B		11	8.5	4			MIY01
2005 04 25.84		B	8.6	TI	8.0	B		11	5	4			LAB02
2005 04 26.48	x	S	8.6	TJ	8.0	B		11	6.5	4			MIY01
2005 04 26.99		M	8.2	TK	10.0	R	6	25	8	4			GRA04
2005 04 27.50	x	M	8.3	TK	10.0	B		20	6	5			YOS02
2005 04 27.86		S	8.1	TK	5.0	B		20	3	4			DIE02
2005 04 27.93		M	8.2	TK	8.0	B		15	8	4			BOU
2005 04 27.93		M	8.5	TK	8.0	B		15	7	4			DIJ
2005 04 27.98		M	8.2	TK	7.0	R	7	20	7	3/			GRA04
2005 04 28.53	x	S	8.5	TJ	8.0	B		11	8.0	3/			MIY01
2005 04 28.98		S	7.9	TK	5.0	B		7	9	3			GON05
2005 04 29.61	x	M	8.1	TJ	10.0	B		20	7	5			NAG08
2005 04 30.86		M	9.3	TJ	41	L	4	63	5	5			SHU
2005 04 30.87		M	8.0	HD	11	B		20	7	4			NEV
2005 04 30.87		S	8.1	TK	5.0	B		20	3	4			DIE02

Comet C/2004 RG_113 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 06.97		S	14.3	HN	31.0	J	6	155	0.5	3			DIJ
2005 02 06.97		S	14.3	HN	31.0	J	6	155	0.6	4			BOU
2005 03 31.90		S[	14.5	HS	31.0	J	6	155	! 0.5				BOU

Comet C/2004 U1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 05.48		S[	12.9	HS	40.0	L	4	144	! 0.9				YOS04
2005 02 06.83		S[	14.0	HN	31.0	J	6	155	! 0.7				BOU

Comet C/2005 A1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 03.54		S	10.4	AA	10.0	B		25					SEA
2005 02 05.82		S	11.4	TJ	40.0	L	4	144	1.2	3			YOS04
2005 02 06.82	x	S	11.3	TT	41	L	4	90	1.4	4			PEA
2005 02 07.51		S	10.2	AA	10.0	B		25					SEA

Comet C/2005 A1 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2005 02 07.81	x	S	11.3	TT	41	L	4	90	1.5	4/			PEA
2005 02 08.83	x	S	11.4	TT	41	L	4	90	1.4	4/			PEA
2005 02 09.83	x	S	11.0	TT	41	L	4	90	1.3	4/			PEA
2005 02 10.51		S	9.8	AA	10.0	B		25	10	2			SEA
2005 02 13.32		S	9.7	TK	20.3	T	10	57	2.5	3			ROB06
2005 02 14.52		S	9.2	AA	5.0	B		10	8				SEA
2005 02 14.83	x	S	10.8	TT	41	L	4	90	1.3	5			PEA
2005 02 15.82	x	S	10.6	TT	41	L	4	90	1.5	5			PEA
2005 02 17.81	x	S	9.5	TT	8.0	B		20	3.5	4			PEA
2005 02 17.81	x	S	9.9	TT	41	L	4	90	1.7	6			PEA
2005 02 18.81	x	S	9.4	TT	8.0	B		20	3.5	4/			PEA
2005 02 20.81	x	S	9.3	TT	8.0	B		20	4	5			PEA
2005 02 22.86	x	S	9.0	TT	8.0	B		20	4	4			PEA
2005 02 28.50		S	8.8	AA	10.0	B		25					SEA
2005 03 01.43		S	8.7	AA	10.0	B		25					SEA
2005 03 03.50		S	7.9	AA	3.5	B		6					SEA
2005 03 04.43		S	7.8	AA	8.0	B		15					SEA
2005 03 04.99		S	8.0	TK	8.0	B		20	4	2			AMO01
2005 03 06.05		S	8.0	TK	8.0	B		20	4	3			AMO01
2005 03 06.47		S	8.0	AA	5.0	B		10					SEA
2005 03 07.12		S	8.0	TK	20.3	T	10	57	3.5	3			ROB06
2005 03 07.45		S	8.0	AA	5.0	B		10					SEA
2005 03 07.97		S	8.2	TK	8.0	B		20	4	5			AMO01
2005 03 08.95		S	8.2	TK	8.0	B		20	4	4			AMO01
2005 03 11.41		M	8.5	AA	10.0	B		25					SEA
2005 03 11.94		S	8.0:	TK	20	T		77					SOU01
2005 03 11.94		S	8.1	TK	8.0	B		20	3	6			AMO01
2005 03 14.98		S	8.1	TK	8.0	B		20	3	6			AMO01
2005 03 15.03		B	8.3	TK	20.3	T	10	57	4	6	>15	m 175	ROB06
2005 03 15.93		S	8.0	TK	8.0	B		20	4	5			AMO01
2005 03 29.94		S	7.9	TK	8.0	B		20	4	7			AMO01
2005 04 01.38		S	7.9	AA	10.0	B		25	4	5			SEA
2005 04 03.37		S	8.0	AA	10.0	B		25					SEA
2005 04 06.91		S	8.0	TK	8.0	B		20	3	7			AMO01
2005 04 07.92		S	8.0	TK	8.0	B		20	3	7			AMO01
2005 04 11.40		S	8.4	AA	10.0	B		25					SEA

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Non-Visual Data (new format)

TABULATED NON-VISUAL DATA

The new format for non-visual data was introduced in the October 2001 issue of the *ICQ*, chiefly to help researchers make more sense of comet photometry obtained with CCD cameras, to determine what effects various instrumental factors play (spectral responses, exposure times, photometric aperture sizes, etc.). As described in that issue, almost all of the new information is added to the original observation records in columns 81-129, thereby leaving the first 80 columns essentially unchanged (except that in the "coma-diameter" column, true coma diameters are now given without exception in the new format; the old format allowed CCD users to put instead an aperture size in the "coma-diameter" column, but this is now allowed for in columns 87-93 of the new-format records). See also page 208 of the July 2002 issue.

Most of the columns below are as for the visual data (described on pages 104-105 of this issue). While electronic magnitudes *can* be submitted to 0.01 magnitude, for many reasons it is highly advised to continue giving total comet magnitudes only to 0.1 mag. Similarly, it is advised to continue giving all times to 0.01 day, as 0.001 day is usually unnecessary for cometary photometry.

The headings for the tabulated data are as follows: The date (UT), notes, magnitude method (including filters for CCDs, and "P" for photographs), magnitude, reference, instrument aperture, instrument type, instrument *f*-ratio, exposure time, coma diameter, degree of condensation, tail length and position angle, and observer are all as described for the visual tabulation. The column headed "APERTUR" gives the photometric aperture, preceded by "S" for square aperture and "C" for circular aperture, and followed by "d" for degrees, "m" for arcmin, and "s" for arcsec. The column "Chp" contains the 3-character code for the computer chip, given to indicate spectral response of the CCD camera.

This column will also be used to indicate photographic emulsion when such information is provided for photographic photometry. The column "Sfw" contains the 3-character code for the software used to actually perform the photometric measures (not solely to extract comparison-star magnitudes). A lower-case "a" between these two columns indicates an anti-blooming CCD. The column headed "C" gives a number as follows: 0 = no correction; 1 = correction for bias (bias subtracted); 2 = flat-field corrected (flat-fielded); 3 = 1 + 2; 4 = dark-subtracted (and bias-subtracted) 5 = 2 + 4. The column headed "P" includes a P if the images used to measure the photometry were also measured for astrometry *and* those astrometric measures were published in the *Minor Planet Circulars* (meaning they were refereed); a U in this column indicates that the respective astrometric was sent to the MPC for publication but that either (a) they are unpublished at the time of reporting the photometry or (b) the observer is unaware of the publication status; a blank in this column indicates that no astrometry was measured. The 3-character CCD-camera code is listed under "Cam".

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Comet 9P/Tempel

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 03.62	x	C	15.6	TJ	25.0	L	5	a120	0.7				S 0.7 m	K42	SI4	5	U	SE7	OHS
2005 02 05.80		C	15.7	GA	60.0	Y	6	a120	0.5			260	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 02 09.93	d	C	14.8	LB	6.3	M	8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.93	d	C	15.3	LB	6.3	M	8	a900					C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 01.65	a	xC	14.3	HV	35.0	C	10	a 90	0.5	5		0.5m255	S 0.91m	KAIa	SI4	5		ST2	TSU02
2005 03 05.58	a	xC	14.1	HV	35.0	C	10	a120	0.4	5			S 1.13m	KAIa	SI4	5		ST2	TSU02
2005 03 07.68	w	xC	14.0	TJ	25.0	L	5	a120	1.4			2.8m247	S 1.4 m	K42	SI4	5	U	SE7	OHS
2005 03 20.94	d	C	12.4	LB	6.3	M	8	a900	1.5		2	m236	C 2.95m	K40	GAI	5*		ST7	SRB
2005 03 20.94	d	C	12.5	LB	6.3	M	8	a900	1.5		2	m236	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 20.94	d	C	12.7	LB	6.3	M	8	a900	1.5		2	m236	C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 20.94	d	C	12.9	LB	6.3	M	8	a900	1.5		2	m236	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.94	d	C	13.5	LB	6.3	M	8	a900	1.5		2	m236	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 21.10	d	k	12.4	LA	35	L	5	a480	1.1			2.8m278	C 3.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 21.10	d	k	12.6	LA	35	L	5	a480	1.1			2.8m278	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 21.10	d	k	12.9	LA	35	L	5	a480	1.1			2.8m278	C 1.10m	T24	GAI	5*	P	ST6	HOR02
2005 03 21.10	d	k	13.2	LA	35	L	5	a480	1.1			2.8m278	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 03 30.58	a	xC	12.3	HV	35.0	C	10	a 90	1.0	5	2	m220	S 3.26m	KAIa	SI4	5		ST2	TSU02
2005 03 30.95	d	C	11.9	LB	6.3	M	8	a900	2.2		> 2	m233	C 2.95m	K40	GAI	5*		ST7	SRB
2005 03 30.95	d	C	12.0	LB	6.3	M	8	a900	2.2		> 2	m233	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 30.95	d	C	12.0	LB	6.3	M	8	a900	2.2		> 2	m233	C 2.20m	K40	GAI	5*		ST7	SRB
2005 03 30.95	d	C	12.4	LB	6.3	M	8	a900	2.2		> 2	m233	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.95	d	C	13.0	LB	6.3	M	8	a900	2.2		> 2	m233	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 31.64		C	12.4	GA	60.0	Y	6	a120	1.7			230	S 1.7 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 31.92	d	C	12.0	LB	6.3	M	8	a900	2.0		> 2	m245	C 2.95m	K40	GAI	5*		ST7	SRB
2005 03 31.92	d	C	12.1	LB	6.3	M	8	a900	2.0		> 2	m245	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 31.92	d	C	12.4	LB	6.3	M	8	a900	2.0		> 2	m245	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.92	d	C	13.0	LB	6.3	M	8	a900	2.0		> 2	m245	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 01.96	d	C	11.9	LB	6.3	M	8	a900	1.6		> 2	m243	C 3.20m	K40	GAI	5*		ST7	SRB
2005 04 01.96	d	C	12.1	LB	6.3	M	8	a900	1.6		> 2	m243	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 01.96	d	C	12.2	LB	6.3	M	8	a900	1.6		> 2	m243	C 1.60m	K40	GAI	5*		ST7	SRB
2005 04 01.96	d	C	12.4	LB	6.3	M	8	a900	1.6		> 2	m243	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.96	d	C	13.0	LB	6.3	M	8	a900	1.6		> 2	m243	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.94	d	C	11.8	LB	6.3	M	8	a900	2.4		> 3	m253	C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 04.94	d	C	11.9	LB	6.3	M	8	a900	2.4		> 3	m253	C 2.45m	K40	GAI	5*		ST7	SRB
2005 04 04.94	d	C	12.0	LB	6.3	M	8	a900	2.4		> 3	m253	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 04.94	d	C	12.4	LB	6.3	M	8	a900	2.4		> 3	m253	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.94	d	C	13.1	LB	6.3	M	8	a900	2.4		> 3	m253	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 05.58	a	xC	11.9	HV	35.0	C	10	a 90	1.1	5	3	m225	S 2.91m	KAIa	SI4	5		ST2	TSU02
2005 04 09.71	x	C	11.4	TJ	25.0	L	5	a120	2.8		?	223	S 2.8 m	K42	SI5	5	U	SE7	OHS
2005 04 14.60		C	11.8	GA	60.0	Y	6	a120	2.0			220	S 2.0 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 16.51	a	xC	11.6	HV	35.0	C	10	a 90	1.8	5	2	m225	S 2.52m	KAIa	SI4	5		ST2	TSU02
2005 04 21.97	d	C	11.1	LB	6.3	M	8	a900	2.2		> 1.5	m212	C 3.45m	K40	GAI	5*		ST7	SRB
2005 04 21.97	d	C	11.3	LB	6.3	M	8	a900	2.2		> 1.5	m212	C 2.20m	K40	GAI	5*		ST7	SRB
2005 04 21.97	d	C	11.4	LB	6.3	M	8	a900	2.2		> 1.5	m212	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 21.97	d	C	11.9	LB	6.3	M	8	a900	2.2		> 1.5	m212	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.97	d	C	12.5	LB	6.3	M	8	a900	2.2		> 1.5	m212	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 27.55		C	11.2	GA	60.0	Y	6	a120	2.7				S 2.7 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 30.61	x	C	11.5	TJ	25.0	L	5	a120	2.8		?	187	S 2.8 m	K42	SI5	5	U	SE7	OHS

Comet 21P/Giacobini-Zinner

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 14.79	wx	C	15.2	TJ	25.0	L	5	a120	0.4		?	274	S 0.4 m	K42	SI4	5	U	SE7	OHS
2005 04 04.81	a	C	14.3	GA	60.0	Y	6	a120	0.65		2.7m	263	S 0.65m	SIA	IPL	5	U	Ap7	NAK01

Comet 29P/Schwassmann-Wachmann

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 06.82	d	k	11.7	LA	35	L	5	a760	4.0				C 4.00m	T24	GAI	5	P	ST6	HOR02
2005 01 06.82	d	k	12.1	LA	35	L	5	a760	4.0				C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 01 06.82	d	k	12.6	LA	35	L	5	a760	4.0				C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 01 06.82	d	k	13.0	LA	35	L	5	a760	4.0				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 09.77	d	k	11.6	LA	35	L	5	a640	4.0				C 4.00m	T24	GAI	5	P	ST6	HOR02
2005 01 09.77	d	k	12.0	LA	35	L	5	a640	4.0				C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 01 09.77	d	k	12.6	LA	35	L	5	a640	4.0				C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 01 09.77	d	k	13.0	LA	35	L	5	a640	4.0				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 10.83	d	k	11.7	LA	35	L	5	a600	3.8				C 3.80m	T24	GAI	5	P	ST6	HOR02
2005 01 10.83	d	k	12.1	LA	35	L	5	a600	3.8				C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 01 10.83	d	k	12.6	LA	35	L	5	a600	3.8				C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 01 10.83	d	k	13.1	LA	35	L	5	a600	3.8				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 11.79	d	k	11.8	LA	35	L	5	a480	3.2				C 3.20m	T24	GAI	5*		ST6	HOR02
2005 01 11.79	d	k	12.1	LA	35	L	5	a480	3.2				C 2.00m	T24	GAI	5*		ST6	HOR02
2005 01 11.79	d	k	12.7	LA	35	L	5	a480	3.2				C 1.00m	T24	GAI	5*		ST6	HOR02
2005 01 11.79	d	k	13.2	LA	35	L	5	a480	3.2				C 0.50m	T24	GAI	5*		ST6	HOR02
2005 01 23.81	d	k	12.2	LA	35	L	5	a600	2.7				C 2.70m	T24	GAI	5	P	ST6	HOR02
2005 01 23.81	d	k	12.5	LA	35	L	5	a600	2.7				C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 01 23.81	d	k	13.2	LA	35	L	5	a600	2.7				C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 01 23.81	d	k	14.3	LA	35	L	5	a600	2.7				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 02 06.75	d	k	12.6	LA	35	L	5	a600	3.0				C 3.00m	T24	GAI	5*		ST6	HOR02
2005 02 06.75	d	k	13.0	LA	35	L	5	a600	3.0				C 2.00m	T24	GAI	5*		ST6	HOR02
2005 02 06.75	d	k	13.9	LA	35	L	5	a600	3.0				C 1.00m	T24	GAI	5*		ST6	HOR02
2005 02 06.75	d	k	14.9	LA	35	L	5	a600	3.0				C 0.50m	T24	GAI	5*		ST6	HOR02
2005 02 09.75	d	C	12.0	LB	6.3	M	8	a900	> 3.5				C 6.90m	K40	GAI	5*		ST7	SRB
2005 02 09.75	d	C	12.0	LB	6.3	M	8	a900	> 3.5				C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 09.75	d	C	12.2	LB	6.3	M	8	a900	> 3.5				C 3.45m	K40	GAI	5*		ST7	SRB
2005 02 09.75	d	C	12.6	LB	6.3	M	8	a900	> 3.5				C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.75	d	C	13.7	LB	6.3	M	8	a900	> 3.5				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.75	d	C	14.7	LB	6.3	M	8	a900	> 3.5				C 0.50m	K40	GAI	5*		ST7	SRB

Comet 32P/Comas Solá

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 16.80	d	k	13.0	LA	35	L	5	a480	1.4		3.1m	87	C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 01 16.80	d	k	13.2	LA	35	L	5	a480	1.4		3.1m	87	C 1.40m	T24	GAI	5	P	ST6	HOR02
2005 01 16.80	d	k	13.5	LA	35	L	5	a480	1.4		3.1m	87	C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 01 16.80	d	k	14.0	LA	35	L	5	a480	1.4		3.1m	87	C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 02 02.45	ax	C	13.9	HV	35.0	C	10	a120	0.8	5	3.0m	87	S 1.17m	KAIa	SI4	5		ST2	TSU02
2005 02 06.57	wx	C	14.6	TJ	25.0	L	5	a120	0.6		1.6m	70	S 0.6 m	K42	SI4	5	U	SE7	OHS
2005 02 06.87	d	k	13.2	LA	35	L	5	a440	1.0		2.2m	78	C 2.00m	T24	GAI	5	P	ST6	HOR02
2005 02 06.87	d	k	13.6	LA	35	L	5	a440	1.0		2.2m	78	C 1.00m	T24	GAI	5	P	ST6	HOR02
2005 02 06.87	d	k	14.1	LA	35	L	5	a440	1.0		2.2m	78	C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 02 09.79	d	C	13.4	LB	6.3	M	8	a900	1.0		> 1 m	85	C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.79	d	C	13.8	LB	6.3	M	8	a900	1.0		> 1 m	85	C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.79	d	C	14.4	LB	6.3	M	8	a900	1.0		> 1 m	85	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 01.45	ax	C	13.8	HV	35.0	C	10	a 90	0.4	4	2.2m	90	S 1.34m	KAIa	SI4	5		ST2	TSU02
2005 03 06.48		C	13.7	GA	60.0	Y	6	a120	1.05		4.0m	86	S 1.05m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.53	wx	C	13.9	TJ	25.0	L	5	a120	1.4		3.6m	75	S 1.4 m	K42	SI4	5	U	SE7	OHS
2005 03 20.83	d	C	13.4	LB	6.3	M	8	a720	0.8		> 0.8m	90	C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 20.83	d	C	13.6	LB	6.3	M	8	a720	0.8		> 0.8m	90	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.83	d	C	13.9	LB	6.3	M	8	a720	0.8		> 0.8m	90	C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 20.83	d	C	14.3	LB	6.3	M	8	a720	0.8		> 0.8m	90	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 20.83	d	k	13.5	LA	35	L	5	a400	0.9		2.3m	89	C 0.90m	T24	GAI	5	P	ST6	HOR02
2005 03 20.83	d	k	14.0	LA	35	L	5	a400	0.9		2.3m	89	C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 03 30.47	ax	C	13.6	HV	35.0	C	10	a 90	0.4	5	1.2m	90	S 1.49m	KAIa	SI4	5		ST2	TSU02
2005 03 30.83	d	C	13.1	LB	6.3	M	8	a900	1.2		1 m	63	C 2.45m	K40	GAI	5*		ST7	SRB
2005 03 30.83	d	C	13.4	LB	6.3	M	8	a900	1.2		1 m	63	C 1.25m	K40	GAI	5*		ST7	SRB
2005 03 30.83	d	C	14.2	LB	6.3	M	8	a900	1.2		1 m	63	C 0.50m	K40	GAI	5*		ST7	SRB

Comet 32P/Comas Solá [cont.]

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 31.86	d	C	12.6	LB	6.3M	8	a900	1.5		1.5m	82	C 2.95m	K40	GAI	5*		ST7	SRB
2005 03 31.86	d	C	12.8	LB	6.3M	8	a900	1.5		1.5m	82	C 2.45m	K40	GAI	5*		ST7	SRB
2005 03 31.86	d	C	13.0	LB	6.3M	8	a900	1.5		1.5m	82	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 31.86	d	C	13.4	LB	6.3M	8	a900	1.5		1.5m	82	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.86	d	C	14.2	LB	6.3M	8	a900	1.5		1.5m	82	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	13.4	LB	6.3M	8	a900	0.8		> 1 m	68	C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	13.6	LB	6.3M	8	a900	0.8		> 1 m	68	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	14.1	LB	6.3M	8	a900	0.8		> 1 m	68	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 02.83	d	C	13.7	LB	6.3M	8	a900	0.9				C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 02.83	d	C	14.0	LB	6.3M	8	a900	0.9				C 0.85m	K40	GAI	5*		ST7	SRB
2005 04 02.83	d	C	14.2	LB	6.3M	8	a900	0.9				C 0.75m	K40	GAI	5*		ST7	SRB
2005 04 02.83	d	C	14.3	LB	6.3M	8	a900	0.9				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.84	d	C	13.0	LB	6.3M	8	a900	1.1				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 04.84	d	C	13.5	LB	6.3M	8	a900	1.1				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.84	d	C	14.2	LB	6.3M	8	a900	1.1				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 21.91	d	C	12.8	LB	6.3M	8	a900	1.0				C 1.75m	K40	GAI	5*		ST7	SRB
2005 04 21.91	d	C	13.1	LB	6.3M	8	a900	1.0				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.91	d	C	13.6	LB	6.3M	8	a900	1.0				C 0.50m	K40	GAI	5*		ST7	SRB

Comet 37P/Forbes

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 04.74	a	C	16.2	GA	60.0Y	6	a120	0.5		1.2m	300	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 09.78	ax	C	15.6	TJ	25.0L	5	a120	0.3				S 0.3 m	K42	SI5	5	U	SE7	OHS

Comet 49P/Arend-Rigaux

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 03.54	wx	C	13.8	TJ	25.0L	5	a120	0.7		1.6m	63	S 0.7 m	K42	SI4	5	U	SE7	OHS
2005 02 09.76	d	C	12.3	LB	6.3M	8	a900	1.5		> 1.2m	61	C 2.95m	K40	GAI	5*		ST7	SRB
2005 02 09.76	d	C	12.6	LB	6.3M	8	a900	1.5		> 1.2m	61	C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.76	d	C	12.9	LB	6.3M	8	a900	1.5		> 1.2m	61	C 1.50m	K40	GAI	5*		ST7	SRB
2005 02 09.76	d	C	13.2	LB	6.3M	8	a900	1.5		> 1.2m	61	C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.76	d	C	13.8	LB	6.3M	8	a900	1.5		> 1.2m	61	C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 13.45		C	13.5	GA	60.0Y	6	a120	1.0		> 5.4m	75	S 1.0 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 01.48	ax	C	13.2	HV	35.0C	10	a 90	0.3	5	2.5m	73	S 1.25m	KAIa	SI4	5		ST2	TSU02
2005 03 06.45		C	13.5	GA	60.0Y	6	a120	1.05		4.6m	80	S 1.05m	SIA	IPL	5	U	Ap7	NAK01
2005 03 19.89	d	C	13.6	LB	6.3M	8	a720	0.5		> 0.5m	45	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 19.89	d	C	13.8	LB	6.3M	8	a720	0.5		> 0.5m	45	C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 19.89	d	C	14.3	LB	6.3M	8	a720	0.5		> 0.5m	45	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 20.79	d	C	13.6	LB	6.3M	8	a840	0.9		> 1.5m	69	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 20.79	d	C	13.9	LB	6.3M	8	a840	0.9		> 1.5m	69	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.79	d	C	14.5	LB	6.3M	8	a840	0.9		> 1.5m	69	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 20.79	d	k	13.2	LA	35 L	5	a440	0.8		3.1m	82	C 2.00m	T24	GAI	5*P		ST6	HOR02
2005 03 20.79	d	k	13.7	LA	35 L	5	a440	0.8		3.1m	82	C 0.80m	T24	GAI	5*P		ST6	HOR02
2005 03 20.79	d	k	14.0	LA	35 L	5	a440	0.8		3.1m	82	C 0.50m	T24	GAI	5*P		ST6	HOR02
2005 03 24.78	d	C	13.7	LB	6.3M	8	a900	0.8				C 1.25m	K40	GAI	5*		ST7	SRB
2005 03 24.78	d	C	14.0	LB	6.3M	8	a900	0.8				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 24.78	d	C	14.2	LB	6.3M	8	a900	0.8				C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 24.78	d	C	14.6	LB	6.3M	8	a900	0.8				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 30.49	ax	C	14.1	HV	35.0C	10	a 90	0.4	4	0.8m	80	S 0.71m	KAIa	SI4	5		ST2	TSU02
2005 03 30.81	d	C	13.9	LB	6.3M	8	a900	0.7		> 0.8m	81	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.81	d	C	14.1	LB	6.3M	8	a900	0.7		> 0.8m	81	C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 30.81	d	C	14.5	LB	6.3M	8	a900	0.7		> 0.8m	81	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 31.83	d	C	14.0	LB	6.3M	8	a900	1.1		> 1 m	82	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.83	d	C	14.0	LB	6.3M	8	a900	1.1		> 1 m	82	C 1.25m	K40	GAI	5*		ST7	SRB
2005 03 31.83	d	C	14.2	LB	6.3M	8	a900	1.1		> 1 m	82	C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 31.83	d	C	14.6	LB	6.3M	8	a900	1.1		> 1 m	82	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 02.82	d	C	13.6	LB	6.3M	8	a900	0.8		> 1 m	72	C 1.60m	K40	GAI	5*		ST7	SRB
2005 04 02.82	d	C	14.1	LB	6.3M	8	a900	0.8		> 1 m	72	C 0.80m	K40	GAI	5*		ST7	SRB
2005 04 02.82	d	C	14.8	LB	6.3M	8	a900	0.8		> 1 m	72	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.82	d	C	14.3	LB	6.3M	8	a900	0.9		> 0.8m	59	C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 04.82	d	C	14.4	LB	6.3M	8	a900	0.9		> 0.8m	59	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.82	d	C	14.8	LB	6.3M	8	a900	0.9		> 0.8m	59	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 21.88	d	C	13.0	LB	6.3M	8	a900					C 2.00m	K40	GAI	5*		ST7	SRB

Comet 49P/Arend-Rigaux [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 21.88	d	C	14.8	LB	6.3M		8	a900					C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 27.47		C	15.1	GA	60.0Y		6	a120	0.55			80	S 0.55m	SIA	IPL	5	U	Ap7	NAK01

Comet 62P/Tsuchinshan

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 03.60	wx	C	13.4	TJ	25.0	L	5	a120	1.8		3.0m	290	S 1.8 m	K42	SI4	5	U	SE7	OHS
2005 02 09.91	d	C	12.6	LB	6.3M		8	a900	> 3				C 2.95m	K40	GAI	5*		ST7	SRB
2005 02 09.91	d	C	12.6	LB	6.3M		8	a900	> 3				C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 09.91	d	C	12.6	LB	6.3M		8	a900	> 3				C 4.90m	K40	GAI	5*		ST7	SRB
2005 02 09.91	d	C	13.1	LB	6.3M		8	a900	> 3				C 1.75m	K40	GAI	5*		ST7	SRB
2005 02 09.91	d	C	13.8	LB	6.3M		8	a900	> 3				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.91	d	C	14.8	LB	6.3M		8	a900	> 3				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 01.63	ax	C	13.3	HV	35.0	C	10	a 90	1	1			S 2.90m	KAIa	SI4	5		ST2	TSU02
2005 03 07.63	wx	C	14.2	TJ	25.0	L	5	a120	1.6		4.2m	268	S 1.6 m	K42	SI4	5	U	SE7	OHS
2005 03 20.90	d	k	13.6	LA	35	L	5	A400	1.3				C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.90	d	k	14.0	LA	35	L	5	A400	1.3				C 1.30m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.90	d	k	15.2	LA	35	L	5	A400	1.3				C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.96	d	C	13.8	LB	6.3M		8	a900	> 1				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 20.96	d	C	14.5	LB	6.3M		8	a900	> 1				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.96	d	C	15.5	LB	6.3M		8	a900	> 1				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 30.57	ax	C	15.3	HV	35.0	C	10	a270	0.8	3			S 0.84m	KAIa	SI4	5		ST2	TSU02
2005 03 30.94	d	C	13.9	LB	6.3M		8	a900	1.2				C 3.90m	K40	GAI	5*		ST7	SRB
2005 03 30.94	d	C	14.1	LB	6.3M		8	a900	1.2				C 2.45m	K40	GAI	5*		ST7	SRB
2005 03 30.94	d	C	14.2	LB	6.3M		8	a900	1.2				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 30.94	d	C	15.1	LB	6.3M		8	a900	1.2				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.94	d	C	15.7	LB	6.3M		8	a900	1.2				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 31.63		C	14.8	GA	60.0Y		6	a120	1.2				S 1.2 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 01.94	d	C	14.0	LB	6.3M		8	a900	1				C 1.75m	K40	GAI	5*		ST7	SRB
2005 04 01.94	d	C	15.1	LB	6.3M		8	a900	1				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.94	d	C	16.3	LB	6.3M		8	a900	1				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.92	d	C	14.3	LB	6.3M		8	a900	1.5				C 2.95m	K40	GAI	5*		ST7	SRB
2005 04 04.92	d	C	14.5	LB	6.3M		8	a900	1.5				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 04.92	d	C	14.6	LB	6.3M		8	a900	1.5				C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 04.92	d	C	14.8	LB	6.3M		8	a900	1.5				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.92	d	C	16.0	LB	6.3M		8	a900	1.5				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 16.49	ax	C	16.4	HV	35.0	C	10	A320	0.5	2			S 1.29m	KAIa	SI4	5		ST2	TSU02
2005 04 29.61		C	17.0	GA	60.0Y		6	a240	0.6				S 0.6 m	SIA	IPL	5	U	Ap7	NAK01

Comet 69P/Taylor

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 23.67	x	C	16.5	TJ	25.0	L	5	a120	0.3				S 0.3 m	K42	SI4	5	U	SE7	OHS
2005 01 06.93	d	k	15.0	LA	35	L	5	a680	0.58		5.0m	273	C 1.50m	T24	GAI	5*	P	ST6	HOR02
2005 01 06.93	d	k	15.4	LA	35	L	5	a680	0.58		5.0m	273	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 06.93	d	k	15.7	LA	35	L	5	a680	0.58		5.0m	273	C 0.58m	T24	GAI	5*	P	ST6	HOR02
2005 01 07.97	d	k	14.4	LA	35	L	5	A020	1.2		8	m270	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 07.97	d	k	14.8	LA	35	L	5	A020	1.2		8	m270	C 1.20m	T24	GAI	5*	P	ST6	HOR02
2005 01 07.97	d	k	15.5	LA	35	L	5	A020	1.2		8	m270	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 01 15.90	d	k	14.5	LA	35	L	5	a660	1.0		5.8m	269	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 15.90	d	k	14.9	LA	35	L	5	a660	1.0		5.8m	269	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 15.90	d	k	15.5	LA	35	L	5	a660	1.0		5.8m	269	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.82	d	C[	15.5	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 07.00	d	k	15.2	LA	35	L	5	a520	0.60		2.5m	243	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 07.00	d	k	15.7	LA	35	L	5	a520	0.60		2.5m	243	C 0.60m	T24	GAI	5*	P	ST6	HOR02
2005 02 09.86	d	C	14.9	LB	6.3M		8	a900	0.7				C 1.50m	K40	GAI	5*		ST7	SRB
2005 02 09.86	d	C	15.4	LB	6.3M		8	a900	0.7				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.86	d	C	15.8	LB	6.3M		8	a900	0.7				C 0.75m	K40	GAI	5*		ST7	SRB
2005 02 09.86	d	C	16.1	LB	6.3M		8	a900	0.7				C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 13.55		C	16.1	GA	60.0Y		6	a240	0.7				S 0.7 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.56		C	16.8	GA	60.0Y		6	a240	0.55				S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2005 04 09.59	x	C	17.8	TJ	25.0	L	5	a240	0.3				S 0.3 m	K42	SI5	5	U	SE7	OHS

Comet 78P/Gehrels

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.51	a	xC	12.4	HV	35.0	C	10	a 90	1.5	5	2 m	66	S 2.04m	KAI	aSI4	5		ST2	TSU02
2005 02 03.56	w	xC	12.4	TJ	25.0	L	5	a120	2.6		3.0m	55	S 2.6 m	K42	SI4	5	U	SE7	OHS
2005 02 06.55		C	12.5	GA	60.0	Y	6	a120	2.0		3.4m	64	S 2.0 m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.85	d	k	11.9	LA	35	L	5	a520	3.2		3.8m	68	C 3.20m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.85	d	k	12.2	LA	35	L	5	a520	3.2		3.8m	68	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.85	d	k	12.8	LA	35	L	5	a520	3.2		3.8m	68	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.85	d	k	13.5	LA	35	L	5	a520	3.2		3.8m	68	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 09.78	d	C	12.1	LB	6.3M		8	a900	> 2.4				C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 09.78	d	C	12.4	LB	6.3M		8	a900	> 2.4				C 2.50m	K40	GAI	5*		ST7	SRB
2005 02 09.78	d	C	12.5	LB	6.3M		8	a900	> 2.4				C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.78	d	C	13.1	LB	6.3M		8	a900	> 2.4				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.78	d	C	13.9	LB	6.3M		8	a900	> 2.4				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 05.50	a	xC	14.4	HV	35.0	C	10	a 90	0.7	5	1 m	90	S 1.35m	KAI	aSI4	5		ST2	TSU02
2005 03 07.51		C	13.0	GA	60.0	Y	6	a120	1.7		2.8m	85	S 1.7 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 20.81	d	k	13.2	LA	35	L	5	a540	1.2		1.3m	90	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.81	d	k	13.3	LA	35	L	5	a540	1.2		1.3m	90	C 1.20m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.81	d	k	14.2	LA	35	L	5	a540	1.2		1.3m	90	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.96	d	C	13.3	LB	6.3M		8	a900	1.4				C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 20.96	d	C	13.3	LB	6.3M		8	a900	1.4				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 20.96	d	C	13.7	LB	6.3M		8	a900	1.4				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.96	d	C	14.4	LB	6.3M		8	a900	1.4				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 30.47		C	13.6	GA	60.0	Y	6	a120	1.6			80	S 1.6 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.80	d	C	13.0	LB	6.3M		8	a900	1.3				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.80	d	C	13.7	LB	6.3M		8	a900	1.3				C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 30.80	d	C	14.7	LB	6.3M		8	a900	1.3				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 31.85	d	C	13.2	LB	6.3M		8	a900	1.2				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 31.85	d	C	13.7	LB	6.3M		8	a900	1.2				C 1.25m	K40	GAI	5*		ST7	SRB
2005 03 31.85	d	C	13.9	LB	6.3M		8	a900	1.2				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.85	d	C	14.7	LB	6.3M		8	a900	1.2				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 02.80	d	C	14.5	LB	6.3M		8	a900	0.9				C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 02.80	d	C	14.7	LB	6.3M		8	a900	0.9				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 02.80	d	C	15.0	LB	6.3M		8	a900	0.9				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.45	a	xC	14.3	HV	35.0	C	10	a 90	0.6	5			S 1.08m	KAI	aSI4	5		ST2	TSU02
2005 04 04.80	d	C	13.2	LB	6.3M		8	a900	1.0				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 04.80	d	C	13.8	LB	6.3M		8	a900	1.0				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.80	d	C	14.8	LB	6.3M		8	a900	1.0				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 09.47	x	C	14.7	TJ	25.0	L	5	a120	0.6		0.9m	79	S 0.6 m	K42	SI5	5	U	SE7	OHS
2005 04 21.85	d	C	13.0	LB	6.3M		8	a900	1.0				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 21.85	d	C	13.3	LB	6.3M		8	a900	1.0				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.85	d	C	14.2	LB	6.3M		8	a900	1.0				C 0.50m	K40	GAI	5*		ST7	SRB

Comet 88P/Howell

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 07.45	a	C	18.4	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet 99P/Kowal

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 16.76		*C	19.8	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2005 02 13.58		C	19.1	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.58		C	19.0	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet 103P/Hartley

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 06.70	x	C	17.1	TJ	25.0	L	5	a240	0.6				S 0.6 m	K42	SI4	5	U	SE7	OHS
2005 03 31.61	a	C	17.6	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 14.57	a	C	18.0	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet 105P/Singer Brewster

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 30.60		C	17.8	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 04 16.46	a	xC	17.9	HV	35.0	C	10	B700					S 0.78m	KAI	aSI4	5		ST2	TSU02

Comet 117P/Helin-Roman-Alu

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 04.75	a	C	16.5	GA	60.0Y		6	a240	0.45		2.2m	295	S 0.45m	SIA	IPL	5	U	Ap7	NAK01

Comet 121P/Shoemaker-Holt

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 23.70	x	C	16.2	TJ	25.0L		5	a120	0.3				S 0.3 m	K42	SI4	5	U	SE7	OHS
2005 02 05.72		C	15.3	GA	60.0Y		6	a120	0.65			250	S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.83	d	C	14.1	LB	6.3M		8	a900	1				C 1.50m	K40	GAI	5*		ST7	SRB
2005 02 06.83	d	C	14.7	LB	6.3M		8	a900	1				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 06.83	d	C	15.4	LB	6.3M		8	a900	1				C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 09.88	d	C	14.2	LB	6.3M		8	a900	0.8				C 1.50m	K40	GAI	5*		ST7	SRB
2005 02 09.88	d	C	14.7	LB	6.3M		8	a900	0.8				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.88	d	C	14.9	LB	6.3M		8	a900	0.8				C 0.75m	K40	GAI	5*		ST7	SRB
2005 02 09.88	d	C	15.3	LB	6.3M		8	a900	0.8				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 07.60		C	15.5	GA	60.0Y		6	a120	0.65				S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.92	d	C[	15.5	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.52		C	16.0	GA	60.0Y		6	a120	0.6				S 0.6 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 01.93	d	C	15.4	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.93	d	C	15.6	LB	6.3M		8	a900					C 0.75m	K40	GAI	5*		ST7	SRB
2005 04 01.93	d	C	15.9	LB	6.3M		8	a900					C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.90	d	C[	15.8	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 29.56		C	16.5	GA	60.0Y		6	a120	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01

Comet 129P/Shoemaker-Levy

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 11.55		*C	17.3	GA	60.0Y		6	a240	0.35			260	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 02 02.58	a	xC	17.3	HV	35.0C		10	a480	0.3	3			S 0.57m	KAIa	SI4	5		ST2	TSU02
2005 02 03.58	w	xC	17.4	TJ	25.0L		5	a240	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS
2005 02 13.53		C	17.5	GA	60.0Y		6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet 141P/Machholz

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 30.44	x	C	14.2	TJ	60.0Y		6	a120	1.1				S 1.1 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.78	d	C[	15.5	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.79	d	C[	15.1	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.79	d	C[	14.1	LB	6.3M		8	a660					C 1.00m	K40	GAI	5*		ST7	SRB

Comet 159P/LONEOS

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.62	a	xC	17.7	HV	35.0C		10	a360	0.2	4			S 0.47m	KAIa	SI4	5		ST2	TSU02
2005 02 06.62		C	17.6	GA	60.0Y		6	a240	0.35			230	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.53		C	18.0	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 14.68	w	xC	17.2	TJ	25.0L		5	a240	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS

Comet 162P/Siding Spring

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.44	a	xC	17.2	HV	35.0C		10	a 60	< 0.2				S 0.22m	KAIa	SI4	5		ST2	TSU02
2005 02 06.89	d	k	16.1	LA	35	L	5	a400	0.22		16	s103	C 0.50m	T24	GAI	5*P		ST6	HOR02
2005 02 06.89	d	k	16.5	LA	35	L	5	a400	0.22		16	s103	C 0.22m	T24	GAI	5*P		ST6	HOR02
2005 03 06.52		C	17.8	GA	60.0Y		6	a240		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.63	w	xC	17.0	TJ	25.0L		5	a240	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS

Comet 163P/NEAT

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.52	a	xC	17.6	HV	35.0C		10	a360	0.2	4			S 0.29m	KAIa	SI4	5		ST2	TSU02
2005 02 06.59	x	C	17.3	TJ	25.0L		5	a240	0.6				S 0.6 m	K42	SI4	5	U	SE7	OHS
2005 02 06.66		C	17.7	GA	60.0Y		6	a240	0.4		0.7m	83	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.51		C	18.4	GA	60.0Y		6	a240	0.35			85	S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet 164P/Christensen

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 01.60	ax	C	17.0	HV	35.0	C	10	a240	0.3	3			S 0.48m	KAIa	SI4	5		ST2	TSU02
2005 03 07.61		C	17.1	GA	60.0	Y	6	a240	0.4			220	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 20.86	d	k	17.0	LA	35	L	5	a720	0.37				C 0.50m	T24	GAI	5*		ST6	HOR02
2005 03 20.86	d	k	17.1	LA	35	L	5	a720	0.37				C 0.37m	T24	GAI	5*		ST6	HOR02
2005 04 05.56		C	17.7	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 09.61	x	C	17.3	TJ	25.0	L	5	a240	0.5		?	195	S 0.5 m	K42	SI5	5	U	SE7	OHS
2005 04 29.58		C	18.5	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet C/1995 O1 (Hale-Bopp)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 08.63	ax	C	18.4	HV	10.6	R	5	E400	0.4	3			S 0.48m	KAIa	SI4	5		ST2	TSU02

Comet C/2000 SV_74 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 05.65		C	18.4	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2001 Q4 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 15.80	d	k	14.3	LA	35	L	5	a900	> 1.0				C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 15.80	d	k	14.7	LA	35	L	5	a900	> 1.0				C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 27.43	a	C	15.9	GA	60.0	Y	6	a120	0.5				S 0.5 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 J5 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 03.64	x	C	17.0	TJ	25.0	L	5	a240	0.7				S 0.7 m	K42	SI4	5	U	SE7	OHS
2005 02 05.81		C	17.7	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 04.70		C	17.9	GA	60.0	Y	6	a240	0.45		1.9m	86	S 0.45m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2002 T5 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 05.61		C	18.6	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 T7 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.73	a	C	14.2	GA	60.0	Y	6	a120	1.1		6.2m	117	S 1.1 m	SIA	IPL	5	U	Ap7	NAK01
2005 02 09.96	d	C	13.6	LB	6.3	M	8	a900	0.7				C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.96	d	C	14.0	LB	6.3	M	8	a900	0.7				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.96	d	C	14.1	LB	6.3	M	8	a900	0.7				C 0.75m	K40	GAI	5*		ST7	SRB
2005 02 09.96	d	C	14.6	LB	6.3	M	8	a900	0.7				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 01.58	ax	C	14.2	HV	35.0	C	10	a120	0.4	5	0.7m	90	S 1.67m	KAIa	SI4	5		ST2	TSU02
2005 03 07.59	a	C	14.5	GA	60.0	Y	6	a120	1.0		4.2m	111	S 1.0 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.53	a	C	15.1	GA	60.0	Y	6	a120	0.65		1.7m	101	S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.90	d	C	15.0	LB	6.3	M	8	a900	0.8				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.90	d	C	15.0	LB	6.3	M	8	a900	0.8				C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 30.90	d	C	15.3	LB	6.3	M	8	a900	0.8				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.50	ax	C	14.4	HV	35.0	C	10	a120	0.5	5	0.8m	95	S 1.86m	KAIa	SI4	5		ST2	TSU02
2005 04 21.83	d	C[	15.6	LB	6.3	M	8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 27.49		C	15.8	GA	60.0	Y	6	a120	0.5		1.7m	105	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 30.51	x	C	15.7	TJ	25.0	L	5	a120	0.6				S 0.6 m	K42	SI5	5	U	SE7	OHS

Comet C/2003 A2 (Gleason)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 13.65		C	19.7	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 31.57		C	19.2	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 K4 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 13.48	a	C	10.4	GA	60.0Y		6	a120	3.2		> 6.7m	117	S 3.2 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 01.44	ax	C	10.5	HV	35.0C	10		a 60	2.5	5	> 8.0m	114	S 3.88m	KAIa	SI4	5		ST2	TSU02
2005 03 06.44	a	C	10.9	GA	60.0Y		6	a120	2.5		> 8.8m	115	S 2.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.48	wx	C	11.6	TJ	25.0L		5	a120	3.0		>0.3	112	S 3.0 m	K42	SI4	5	U	SE7	OHS
2005 04 04.43	ax	C	11.5	HV	35.0C	10		a 60	0.8	4	> 6.5m	113	S 1.73m	KAIa	SI4	5		ST2	TSU02

Comet C/2003 O1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 04.78		C	17.9	GA	60.0Y		6	a240	0.4		0.9m	105	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 13.76	x	C	17.1	TJ	25.0L		5	a240	0.5		0.6m	106	S 0.5 m	K42	SI4	5	U	SE7	OHS
2005 04 14.65		C	18.0	GA	60.0Y		6	a240	0.4		1.0m	104	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 T3 (Tabur)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 15.95	d	k	15.4	LA	35	L	5	a780	0.9		2.8m	327	C 0.90m	T24	GAI	5*	P	ST6	HOR02
2005 01 15.95	d	k	15.8	LA	35	L	5	a780	0.9		2.8m	327	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 05.75		C	15.8	GA	60.0Y		6	a120	0.9		> 6.8m	336	S 0.9 m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.94	d	k	15.6	LA	35	L	5	a840	0.67				C 0.67m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.94	d	k	15.7	LA	35	L	5	a840	0.67				C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 03 06.63		C	15.8	GA	60.0Y		6	a120	1.2		> 6.8m	349	S 1.2 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 21.02	d	k	16.9	LA	35	L	5	a600	0.40				C 1.00m	T24	GAI	5*		ST6	HOR02
2005 03 21.02	d	k	17.0	LA	35	L	5	a600	0.40				C 0.40m	T24	GAI	5*		ST6	HOR02
2005 04 05.55		C	16.8	GA	60.0Y		6	a240	0.65				S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 04 09.65	x	C	17.6	TJ	25.0L		5	a240	0.4				S 0.4 m	K42	SI5	5	U	SE7	OHS

Comet C/2003 T4 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 19.80	x	C	8.3	TJ	25.0L		5	a120	3.6		5.0m	303	S 3.6 m	K42	SI4	5	U	SE7	OHS

Comet C/2003 WT_42 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.60	ax	C	15.6	HV	35.0C	10		a 90	0.4	5			S 0.70m	KAIa	SI4	5		ST2	TSU02
2005 02 06.57		C	15.3	GA	60.0Y		6	a120	0.5				S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.65	wx	C	15.7	TJ	25.0L		5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS
2005 03 01.54	ax	C	15.7	HV	35.0C	10		A440	0.3	3			S 0.28m	KAIa	SI4	5		ST2	TSU02
2005 03 06.56		C	15.6	GA	60.0Y		6	a120	0.5			90	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 19.91	d	C	15.3	LB	6.3M		8	a660					C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.87	d	C	15.9	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.50		C	15.6	GA	60.0Y		6	a120	0.5				S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 04.47	ax	C	15.7	HV	35.0C	10		a120	0.4	4			S 0.63m	KAIa	SI4	5		ST2	TSU02
2005 04 30.48	x	C	15.6	TJ	25.0L		5	a120	0.4				S 0.4 m	K42	SI5	5	U	SE7	OHS

Comet P/2004 A1 (LONEOS)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.76		C	17.9	GA	60.0Y		6	a240	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.66		C	17.6	GA	60.0Y		6	a240	0.45			285	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 03 21.05	d	k	17.5	LA	35	L	5	A240	0.33				C 0.33m	T24	GAI	5*		ST6	HOR02
2005 03 21.05	d	k	17.5	LA	35	L	5	A240	0.33				C 0.50m	T24	GAI	5*		ST6	HOR02
2005 04 05.57		C	17.7	GA	60.0Y		6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 29.59		C	18.2	GA	60.0Y		6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 B1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 02.54	ax	C	15.3	HV	35.0C	10		a 90	0.4	4	0.6m	33	S 0.89m	KAIa	SI4	5		ST2	TSU02
2005 02 13.50	a	C	15.7	GA	60.0Y		6	a120	0.55		1.2m	48	S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2005 03 05.49	ax	C	15.1	HV	35.0C	10		a960	0.4	3			S 0.70m	KAIa	SI4	5		ST2	TSU02
2005 03 07.44	a	C	15.5	GA	60.0Y		6	a120	0.5		1.4m	61	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 D1 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 06.59		C	17.6	GA	60.0Y		6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 F3 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 04.82	a	C	15.4	GA	60.0Y		6	a120	0.5		2.1m	262	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 K1 (Catalina)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 14.78	wx	C	15.9	TJ	25.0L		5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS
2005 03 30.98	d	C[	15.9	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.75		C	15.6	GA	60.0Y		6	a120	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 04 30.66	x	C	15.5	TJ	25.0L		5	a120	0.4				S 0.4 m	K42	SI5	5	U	SE7	OHS

Comet C/2004 L1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 14.73	wx	C	15.4	TJ	25.0L		5	a120	0.5		1.1m	11	S 0.5 m	K42	SI4	5	U	SE7	OHS
2005 03 30.59	a	C	14.3	GA	60.0Y		6	a120	0.8		3.1m	81	S 0.8 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 04.55	ax	C	13.9	HV	35.0C		10	a 90	0.5	5	2.0m	90	S 1.38m	KAIa	SI4	5		ST2	TSU02
2005 04 09.52	x	C	14.9	TJ	25.0L		5	a120	0.6		1.9m	88	S 0.6 m	K42	SI5	5	U	SE7	OHS
2005 04 21.81	d	C[	15.7	LB	6.3M		8	a720					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 27.48		C	15.6	GA	60.0Y		6	a120	0.5		3.3m	106	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 Q1 (Tucker)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 15.78	d	k	10.8	LA	35	L	5	a780	4.0		>14 m	82	C 4.00m	T24	GAI	5*P		ST6	HOR02
2005 01 15.78	d	k	11.3	LA	35	L	5	a780	4.0		>14 m	82	C 2.00m	T24	GAI	5*P		ST6	HOR02
2005 01 15.78	d	k	11.9	LA	35	L	5	a780	4.0		>14 m	82	C 1.00m	T24	GAI	5*P		ST6	HOR02
2005 01 15.78	d	k	12.6	LA	35	L	5	a780	4.0		>14 m	82	C 0.50m	T24	GAI	5*P		ST6	HOR02
2005 02 02.41	ax	C	11.5	HV	35.0C		10	a 90					S 2.43m	KAIa	SI4	5		ST2	TSU02
2005 02 06.78	d	C	10.8	LB	6.3M		8	a900	3				C 3.45m	K40	GAI	5*		ST7	SRB
2005 02 06.78	d	C	11.1	LB	6.3M		8	a900	3				C 2.95m	K40	GAI	5*		ST7	SRB
2005 02 06.78	d	C	11.6	LB	6.3M		8	a900	3				C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 06.78	d	C	12.2	LB	6.3M		8	a900	3				C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 06.78	d	C	13.1	LB	6.3M		8	a900	3				C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 27.44		C	12.6	GA	60.0Y		6	a120	1.6				S 1.6 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 05.45	ax	C	12.9	HV	35.0C		10	a120	0.8	4			S 1.31m	KAIa	SI4	5		ST2	TSU02
2005 03 19.87	d	C	11.8	LB	6.3M		8	a780	1.4				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 19.87	d	C	12.4	LB	6.3M		8	a780	1.4				C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 19.87	d	C	12.7	LB	6.3M		8	a780	1.4				C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 19.87	d	C	13.6	LB	6.3M		8	a780	1.4				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 20.84	d	k	12.7	LA	35	L	5	a540	2.1				C 1.00m	T24	GAI	5*P		ST6	HOR02
2005 03 20.84	d	k	13.3	LA	35	L	5	a540	2.1				C 0.50m	T24	GAI	5*P		ST6	HOR02
2005 03 20.85	d	C	11.9	LB	6.3M		8	a900	1.6				C 2.20m	K40	GAI	5*		ST7	SRB
2005 03 20.85	d	C	13.1	LB	6.3M		8	a900	1.6				C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 20.85	d	C	13.7	LB	6.3M		8	a900	1.6				C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 30.45	ax	C	13.0	HV	35.0C		10	a120	0.8	5			S 1.34m	KAIa	SI4	5		ST2	TSU02
2005 03 30.88	d	C	11.5	LB	6.3M		8	a900	3.2				C 3.95m	K40	GAI	5*		ST7	SRB
2005 03 30.88	d	C	11.7	LB	6.3M		8	a900	3.2				C 3.20m	K40	GAI	5*		ST7	SRB
2005 03 30.88	d	C	11.9	LB	6.3M		8	a900	3.2				C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 30.88	d	C	12.6	LB	6.3M		8	a900	3.2				C 1.50m	K40	GAI	5*		ST7	SRB
2005 03 30.88	d	C	13.2	LB	6.3M		8	a900	3.2				C 0.75m	K40	GAI	5*		ST7	SRB
2005 03 30.88	d	C	13.8	LB	6.3M		8	a900	3.2				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 01.88	d	C	12.1	LB	6.3M		8	a900	> 2.5				C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 01.88	d	C	12.2	LB	6.3M		8	a900	> 2.5				C 2.45m	K40	GAI	5*		ST7	SRB
2005 04 01.88	d	C	12.4	LB	6.3M		8	a900	> 2.5				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 01.88	d	C	13.5	LB	6.3M		8	a900	> 2.5				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.88	d	C	13.9	LB	6.3M		8	a900	> 2.5				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 02.86	d	C	12.1	LB	6.3M		8	a900	1.5				C 2.95m	K40	GAI	5*		ST7	SRB
2005 04 02.86	d	C	12.3	LB	6.3M		8	a900	1.5				C 2.45m	K40	GAI	5*		ST7	SRB
2005 04 02.86	d	C	12.9	LB	6.3M		8	a900	1.5				C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 02.86	d	C	13.3	LB	6.3M		8	a900	1.5				C 1.00m	K40	GAI	5*		ST7	SRB

Comet C/2004 Q1 (Tucker) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 02.86	d	C	14.2	LB	6.3M		8	a900	1.5				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.85	d	C	12.2	LB	6.3M		8	a900	2.0				C 2.45m	K40	GAI	5*		ST7	SRB
2005 04 04.85	d	C	12.6	LB	6.3M		8	a900	2.0				C 1.50m	K40	GAI	5*		ST7	SRB
2005 04 04.85	d	C	13.1	LB	6.3M		8	a900	2.0				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.85	d	C	14.0	LB	6.3M		8	a900	2.0				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 21.93	d	C	12.4	LB	6.3M		8	a900	2.4				C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 21.93	d	C	12.6	LB	6.3M		8	a900	2.4				C 2.45m	K40	GAI	5*		ST7	SRB
2005 04 21.93	d	C	12.7	LB	6.3M		8	a900	2.4				C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 21.93	d	C	13.3	LB	6.3M		8	a900	2.4				C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.93	d	C	14.2	LB	6.3M		8	a900	2.4				C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 27.46	a	C	13.5	GA	60.0Y		6	a120	1.4				S 1.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 Q2 (Machholz)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 16.85	d	k	4.9	LA	35	L	5	a795	>13		>13	m 93	C 8.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 16.85	d	k	5.5	LA	35	L	5	a795	>13		>13	m 93	C 4.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 16.85	d	k	6.3	LA	35	L	5	a795	>13		>13	m 93	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 16.85	d	k	7.1	LA	35	L	5	a795	>13		>13	m 93	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 01 16.85	d	k	8.0	LA	35	L	5	a795	>13		>13	m 93	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 04.82	d	C	4.9	LB	6.3M		8	a300	16		>25	m 85	C 0.39d	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	5.1	LB	6.3M		8	a300	16		>25	m 85	C 0.26d	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	5.6	LB	6.3M		8	a300	16		>25	m 85	C 7.90m	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	6.2	LB	6.3M		8	a300	16		>25	m 85	C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	6.9	LB	6.3M		8	a300	16		>25	m 85	C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	7.7	LB	6.3M		8	a300	16		>25	m 85	C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 04.82	d	C	8.7	LB	6.3M		8	a300	16		>25	m 85	C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 05.86	d	k	5.8	LA	35	L	5	A200	>13		>13	m 85	C 8.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 05.86	d	k	6.3	LA	35	L	5	A200	>13		>13	m 85	C 4.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 05.86	d	k	6.9	LA	35	L	5	A200	>13		>13	m 85	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 05.86	d	k	7.7	LA	35	L	5	A200	>13		>13	m 85	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 02 05.86	d	k	8.5	LA	35	L	5	A200	>13		>13	m 85	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 02 06.76	d	C	5.2	LB	6.3M		8	a420	18		>28	m 85	C 0.30d	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	5.2	LB	6.3M		8	a420	18		>28	m 85	C 0.34d	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	5.3	LB	6.3M		8	a420	18		>28	m 85	C 0.25d	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	5.7	LB	6.3M		8	a420	18		>28	m 85	C 7.90m	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	6.3	LB	6.3M		8	a420	18		>28	m 85	C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	7.0	LB	6.3M		8	a420	18		>28	m 85	C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	7.8	LB	6.3M		8	a420	18		>28	m 85	C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 06.76	d	C	8.7	LB	6.3M		8	a420	18		>28	m 85	C 0.50m	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	5.4	LB	6.3M		8	a480	15.5		>20	m 84	C 0.39d	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	5.6	LB	6.3M		8	a480	15.5		>20	m 84	C 0.26d	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	6.0	LB	6.3M		8	a480	15.5		>20	m 84	C 7.90m	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	6.5	LB	6.3M		8	a480	15.5		>20	m 84	C 3.95m	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	7.2	LB	6.3M		8	a480	15.5		>20	m 84	C 2.00m	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	8.1	LB	6.3M		8	a480	15.5		>20	m 84	C 1.00m	K40	GAI	5*		ST7	SRB
2005 02 09.81	d	C	9.0	LB	6.3M		8	a480	15.5		>20	m 84	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 05.43	ax	C	6.7	HV	10.0R		4	a120	9.2	5	>0.8	97	S12.18m	KAIa	SI4	5		ST2	TSU02
2005 03 20.92	d	C	5.7	LB	6.3M		8	a900	>15		>10	m155	C15.80m	K40	GAI	5*		ST7	SRB
2005 03 20.92	d	C	6.7	LB	6.3M		8	a900	>15		>10	m155	C 7.90m	K40	GAI	5*		ST7	SRB
2005 03 20.92	d	C	7.5	LB	6.3M		8	a900	>15		>10	m155	C 3.95m	K40	GAI	5*		ST7	SRB
2005 03 20.92	d	C	8.4	LB	6.3M		8	a900	>15		>10	m155	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 20.92	d	C	9.3	LB	6.3M		8	a900	>15		>10	m155	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 20.92	d	C	10.2	LB	6.3M		8	a900	>15		>10	m155	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 20.95	d	k	7.1	LA	35	L	5	a780	>11		> 8	m151	C 8.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.95	d	k	7.7	LA	35	L	5	a780	>11		> 8	m151	C 4.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.95	d	k	8.3	LA	35	L	5	a780	>11		> 8	m151	C 2.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.95	d	k	9.1	LA	35	L	5	a780	>11		> 8	m151	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2005 03 20.95	d	k	10.0	LA	35	L	5	a780	>11		> 8	m151	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2005 03 24.81	d	C	7.8	LB	6.3M		8	a900	>13		>13	m160	C12.35m	K40	GAI	5*		ST7	SRB
2005 03 24.81	d	C	8.0	LB	6.3M		8	a900	>13		>13	m160	C 7.90m	K40	GAI	5*		ST7	SRB
2005 03 24.81	d	C	8.1	LB	6.3M		8	a900	>13		>13	m160	C 3.95m	K40	GAI	5*		ST7	SRB
2005 03 24.81	d	C	8.7	LB	6.3M		8	a900	>13		>13	m160	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 24.81	d	C	9.5	LB	6.3M		8	a900	>13		>13	m160	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 24.81	d	C	10.4	LB	6.3M		8	a900	>13		>13	m160	C 0.50m	K40	GAI	5*		ST7	SRB

Comet C/2004 Q2 (Machholz) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 30.85	d	C	7.7	LB	6.3M		8	a840	10.5		>10	m240	C15.80m	K40	GAI	5*		ST7	SRB
2005 03 30.85	d	C	8.0	LB	6.3M		8	a840	10.5		>10	m240	C 7.40m	K40	GAI	5*		ST7	SRB
2005 03 30.85	d	C	8.3	LB	6.3M		8	a840	10.5		>10	m240	C 3.95m	K40	GAI	5*		ST7	SRB
2005 03 30.85	d	C	9.0	LB	6.3M		8	a840	10.5		>10	m240	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 30.85	d	C	9.8	LB	6.3M		8	a840	10.5		>10	m240	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.85	d	C	10.6	LB	6.3M		8	a840	10.5		>10	m240	C 0.50m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	7.7	LB	6.3M		8	a900	12		>10	m214	C12.35m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	7.7	LB	6.3M		8	a900	12		>10	m214	C15.80m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	7.8	LB	6.3M		8	a900	12		>10	m214	C 7.90m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	8.3	LB	6.3M		8	a900	12		>10	m214	C 3.95m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	9.0	LB	6.3M		8	a900	12		>10	m214	C 2.00m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	9.8	LB	6.3M		8	a900	12		>10	m214	C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 31.90	d	C	10.7	LB	6.3M		8	a900	12		>10	m214	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	8.0	LB	6.3M		8	a900	10		>10	m220	C 9.85m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	8.0	LB	6.3M		8	a900	10		>10	m220	C15.80m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	8.1	LB	6.3M		8	a900	10		>10	m220	C 7.90m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	8.4	LB	6.3M		8	a900	10		>10	m220	C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	9.1	LB	6.3M		8	a900	10		>10	m220	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	9.8	LB	6.3M		8	a900	10		>10	m220	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 01.86	d	C	10.7	LB	6.3M		8	a900	10		>10	m220	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	7.9	LB	6.3M		8	a900	14.5		>10	m159	C14.55m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	8.0	LB	6.3M		8	a900	14.5		>10	m159	C11.85m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	8.1	LB	6.3M		8	a900	14.5		>10	m159	C 7.90m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	8.6	LB	6.3M		8	a900	14.5		>10	m159	C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	10.0	LB	6.3M		8	a900	14.5		>10	m159	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 02.89	d	C	10.9	LB	6.3M		8	a900	14.5		>10	m159	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 04.58	ax	C	8.0	HV	35.0C		10	a 60	6.5	5			S 8.68m	KAIaSI4		5		ST2	TSU02
2005 04 04.87	d	C	8.2	LB	6.3M		8	a900	14		> 9	m248	C15.80m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	8.2	LB	6.3M		8	a900	14		> 9	m248	C14.05m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	8.2	LB	6.3M		8	a900	14		> 9	m248	C 7.90m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	8.5	LB	6.3M		8	a900	14		> 9	m248	C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	9.2	LB	6.3M		8	a900	14		> 9	m248	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	10.0	LB	6.3M		8	a900	14		> 9	m248	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.87	d	C	11.0	LB	6.3M		8	a900	14		> 9	m248	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	8.5	LB	6.3M		8	a900	8.5		>10	m222	C12.35m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	8.5	LB	6.3M		8	a900	8.5		>10	m222	C 8.65m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	8.6	LB	6.3M		8	a900	8.5		>10	m222	C 7.90m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	9.0	LB	6.3M		8	a900	8.5		>10	m222	C 3.95m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	9.8	LB	6.3M		8	a900	8.5		>10	m222	C 2.00m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	10.5	LB	6.3M		8	a900	8.5		>10	m222	C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 21.95	d	C	11.4	LB	6.3M		8	a900	8.5		>10	m222	C 0.50m	K40	GAI	5*		ST7	SRB
2005 04 30.68	x	C	9.1	TJ	25.0L		5	a120	5.9				S 5.9 m	K42	SI5	5	U	SE7	OHS

Comet C/2004 RG_113 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 06.63		C	15.4	GA	60.0Y		6	a120	0.9				S 0.9 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 01.56	ax	C	16.1	HV	35.0C		10	a600	0.3	3			S 0.43m	KAIaSI4		5		ST2	TSU02
2005 03 06.60		C	15.7	GA	60.0Y		6	a120	0.65				S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 03 20.89	d	C[	16.0	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 03 30.52	ax	C	15.6	HV	35.0C		10	a360	0.6	3			S 1.05m	KAIaSI4		5		ST2	TSU02
2005 03 31.51		C	15.6	GA	60.0Y		6	a240	0.9				S 0.9 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 27.53		C	15.9	GA	60.0Y		6	a240	0.85				S 0.85m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 T1 (LINEAR-NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 06.46		C	19.0	GA	60.0Y		6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.47		C	19.0	GA	60.0Y		6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 U1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 15.97	d	k	14.7	LA	35	L	5	a480	0.62				C 0.62m	T24	GAI	5*	P	ST6	HOR02
2005 02 02.56	ax	C	15.6	HV	35.0C		10	a 90	0.4	4			S 0.73m	KAIaSI4		5		ST2	TSU02

Comet C/2004 U1 (LINEAR) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 06.52		C	15.2	GA	60.0	Y	6	a120	0.65				S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.61	wx	C	16.6	TJ	25.0	L	5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS
2005 02 06.91	d k		15.7	LA	35	L	5	a600	0.47				C 0.47m	T24	GAI	5	P	ST6	HOR02
2005 02 27.47		C	16.2	GA	60.0	Y	6	a120	0.5				S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 01.48	ax	C	16.8	HV	35.0	C	10	a900	0.3	4			S 0.47m	KAIa	SI4	5		ST2	TSU02

Comet P/2004 V1 (Skiff)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 27.46		C	18.5:	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 V13 (SWAN)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 26.35		C	10.1:	TJ	25.0	L	5	a 48	1.0				S 1.0 m	K26	SI4	5	U	ST9	KAD02

Comet P/2004 V5 (LINEAR-Hill) [component A]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.71		C	17.3	GA	60.0	Y	6	a240	0.45			290	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 02 13.61		C	17.3	GA	60.0	Y	6	a240	0.45		1.2m	284	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.61		C	17.4	GA	60.0	Y	6	a240	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 03 14.70	x	C	17.2	TJ	25.0	L	5	a240	0.4	?		270	S 0.4 m	K42	SI4	5	U	SE7	OHS
2005 03 30.55		C	17.5	GA	60.0	Y	6	a240	0.4			285	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.55	ax	C	17.0	HV	35.0	C	10	A680	0.3	5			S 0.68m	KAIa	SI4	5		ST2	TSU02
2005 04 27.54		C	17.7	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 V5 (LINEAR-Hill) [component B]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.71		C	17.8	GA	60.0	Y	6	a240	0.45			290	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 02 13.61		C	17.7	GA	60.0	Y	6	a240	0.45			280	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.61		C	17.9	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.55		C	18.0	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.55	ax	C	17.7	HV	35.0	C	10	A680	0.2	4			S 0.57m	KAIa	SI4	5		ST2	TSU02
2005 04 27.54		C	18.2	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 VR_8 (LONEOS)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 16.83	d k		17.0	LA	35	L	5	a680	0.30				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 16.83	d k		17.2	LA	35	L	5	a680	0.30				C 0.30m	T24	GAI	5	P	ST6	HOR02
2005 02 06.53		C	17.4	GA	60.0	Y	6	a240	0.4		0.5m	118	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.49		C	17.1	GA	60.0	Y	6	a240	0.4		0.6m	111	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.46	a	C	16.7	GA	60.0	Y	6	a240	0.4			120	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 WR_9 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 01 10.88	d k		17.0	LA	35	L	5	a780	0.30				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 10.88	d k		17.1	LA	35	L	5	a780	0.30				C 0.30m	T24	GAI	5	P	ST6	HOR02
2005 01 15.87	d k		17.2	LA	35	L	5	a720	0.33				C 0.50m	T24	GAI	5	P	ST6	HOR02
2005 01 15.87	d k		17.3	LA	35	L	5	a720	0.33				C 0.33m	T24	GAI	5	P	ST6	HOR02
2005 02 06.61		C	17.5	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 02 06.96	d k		17.8	LA	35	L	5	a240	0.25				C 0.25m	T24	GAI	5	P	ST6	HOR02
2005 02 13.51		C	17.9	GA	60.0	Y	6	a240	0.4		0.5m	101	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 06.58		C	18.6	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 30.52		C	19.2	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 X2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 06.65		C	17.7	GA	60.0	Y	6	a240	0.35		1.7m	3	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 02 13.57		C	17.7	GA	60.0	Y	6	a240	0.35		1.2m	5	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 07.54		C	18.0	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 X2 (LINEAR) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 14.54		C	18.2	GA	60.0Y		6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2004 X3 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.78		C	18.3:GA		60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 05.57	ax	C	17.5	HV	35.0C		10	a960	0.3	3			S 0.89m	KAIaSI4		5		ST2	TSU02
2005 03 06.65		C	17.9	GA	60.0Y		6	a240	0.35			15	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 14.56		C	17.7	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 03 31.55		C	18.1	GA	60.0Y		6	a240	0.35			50	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 04 14.55		C	18.5	GA	60.0Y		6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 27.51		C	18.4	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2004 Y1 (Christensen)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2004 12 23.65	x	C	17.4	TJ	25.0L		5	a120	0.2				S 0.2 m	K42	SI4	5	U	SE7	OHS

Comet C/2005 B1 (Christensen)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 02 05.83		C	17.5	GA	60.0Y		6	a240	0.4		0.7m	236	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2005 03 20.97	d	k	16.5	LA	35	L	5	a660	0.23		0.8m	225	C 1.00m	T24	GAI	5*P		ST6	HOR02
2005 03 20.97	d	k	16.7	LA	35	L	5	a660	0.23		0.8m	225	C 0.50m	T24	GAI	5*P		ST6	HOR02
2005 03 20.97	d	k	17.0	LA	35	L	5	a660	0.23		0.8m	225	C 0.23m	T24	GAI	5*P		ST6	HOR02
2005 03 30.60	ax	C	16.9	HV	35.0C		10	a360	0.3	4			S 0.74m	KAIaSI4		5		ST2	TSU02
2005 04 01.98	d	C[	16.0	LB	6.3M		8	a900					C 1.00m	K40	GAI	5*		ST7	SRB
2005 04 04.68		C	16.9	GA	60.0Y		6	a120	0.45		1.1m	235	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2005 04 14.61		C	17.0	GA	60.0Y		6	a120	0.35		0.7m	205	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 04 29.65		C	16.9	GA	60.0Y		6	a240	0.4		1.4m	196	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2005 E1 (Tubbiolo)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 03 31.59		C	19.6	GA	60.0Y		6	a240	0.3			50	S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2005 G1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 05.68		C	18.6	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 04 13.72	x	C	18.1	TJ	25.0L		5	a240	0.3				S 0.3 m	K42	SI5	5	U	SE7	OHS
2005 04 14.67		C	18.5	GA	60.0Y		6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2005 04 29.66		C	18.4	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2005 GF_8 (LONEOS)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2005 04 14.63	a	C	17.5	GA	60.0Y		6	a240	0.35		0.7m	300	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2005 04 29.63	a	C	17.5	GA	60.0Y		6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01

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DESIGNATIONS OF RECENT COMETS

Listed on page 138, for handy reference, are the last 25 comets to have been given designations in the new system. The name, preceded by a star (⋆) if the comet was a new discovery (compared to a recovery from predictions of a previously-known short-period comet) or a # if a re-discovery of a 'lost' comet. (The 'P/' prefix for designations is used for new comets with orbital periods < 30 yr; otherwise, 'C/' is used.) Also tabulated below are such values as the orbital period (in years) for periodic comets, date of perihelion, T (month/date/year), and the perihelion distance (q, in AU). Four-digit numbers in the last column indicate the *IAU Circular* (4-digit number) containing the discovery/recovery or permanent-number announcement.

Not included below are numerous recently-discovered comets observed only with the SOHO spacecraft — and seen only close to the sun with the SOHO instruments — most of which are presumed to be no longer in existence. Earlier lists and references to such comets appeared in the July 2002 issue (p. 219) and references therein.

Note that the designation and name P/2003 YM_{159} (LINEAR-Catalina) was changed to P/2004 V5 (LINEAR-Hill); cf. *IAUC* 8438 (the original designation was not deleted, but P/2004 V5 is considered the primary designation until permanent numbering occurs).

[This list updates that in the January 2005 issue, pp. 84-85.]

	New-Style Designation	*P*	*T*	*q*	*IAUC*
⋆	C/2004 X2 (LINEAR)		8/24/04	3.79	8450
⋆	P/2004 VR_8 (LONEOS)	10.7	9/2/05	2.38	8451
⋆	C/2004 V13 (SWAN)		12/21/04	0.18	8455
⋆	C/2004 X3 (LINEAR)		1/17/05	4.40	8457
⋆	164P/2004 Y1 (Christensen)	6.91	6/21/04	1.65	8458
⋆	C/2005 A1 (LINEAR)		4/10/05	0.91	8463
⋆	C/2005 B1 (Christensen)		2/23/06	3.21	8466
⋆	P/2005 E1 (Tubbiolo)	19.4	3/17/06	4.45	8491
⋆	C/2005 E2 (McNaught)		2/23/06	1.52	8494
⋆	C/2005 G1 (LINEAR)		2/27/06	4.96	8504
⋆	P/2005 GF_8 (LONEOS)	14.2	8/17/05	2.83	8510
⋆	C/2005 H1 (LINEAR)		10/28/04	4.77	8522
⋆	P/2005 J1 (McNaught)	6.73	4/17/05	1.53	8525
⋆	P/2005 EL_{173} (LONEOS)		3/6/07	3.90	8526
⋆	C/2005 J2 (Catalina)		3/30/05	4.28	8528
⋆	P/2005 JN (Spacewatch)	6.54	6/20/05	2.28	8528
⋆	P/2005 JQ_5 (Catalina)	4.42	7/28/05	0.83	8531
⋆	C/2005 K1 (Skiff)		11/20/05	3.69	8532
⋆	C/2005 K2 (LINEAR)		7/5/05	0.54	8533
⋆	P/2005 K3 (McNaught)	10.1	8/7/05	1.54	8535
⋆	P/2005 L1 (McNaught)	7.92	12/13/05	3.14	8535
⋆	C/2005 L2 (McNaught)		7/8/05	3.20	8536
⋆	C/2005 L3 (McNaught)		1/10/08	5.34	8536
⋆	P/2005 JY_{126} (Catalina)	2.13	2/21/06	2.13	8537
⋆	P/2005 L4 (Christensen)	8.32	8/24/05	2.37	8543

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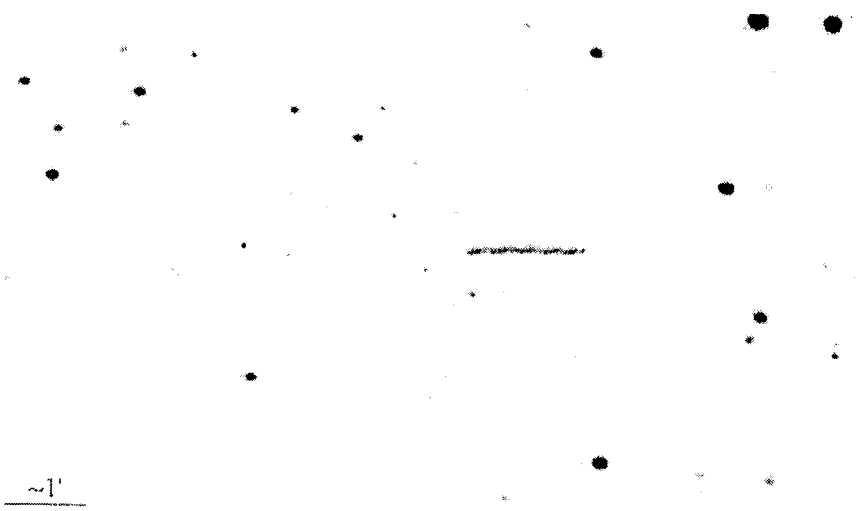

Image of the European Space Agency spacecraft Rosetta, produced from five co-added 180-sec unfiltered CCD images taken by G. Sostero and A. Lepardo (Remzacco, Italy) with a 25-cm f/7.2 Schmidt-Cassegrain reflector on 2005 Mar. 2.89 UT, when the probe passed near the earth. North is up and east to the left; the bar at lower left represents ≈ 1′ on the sky.