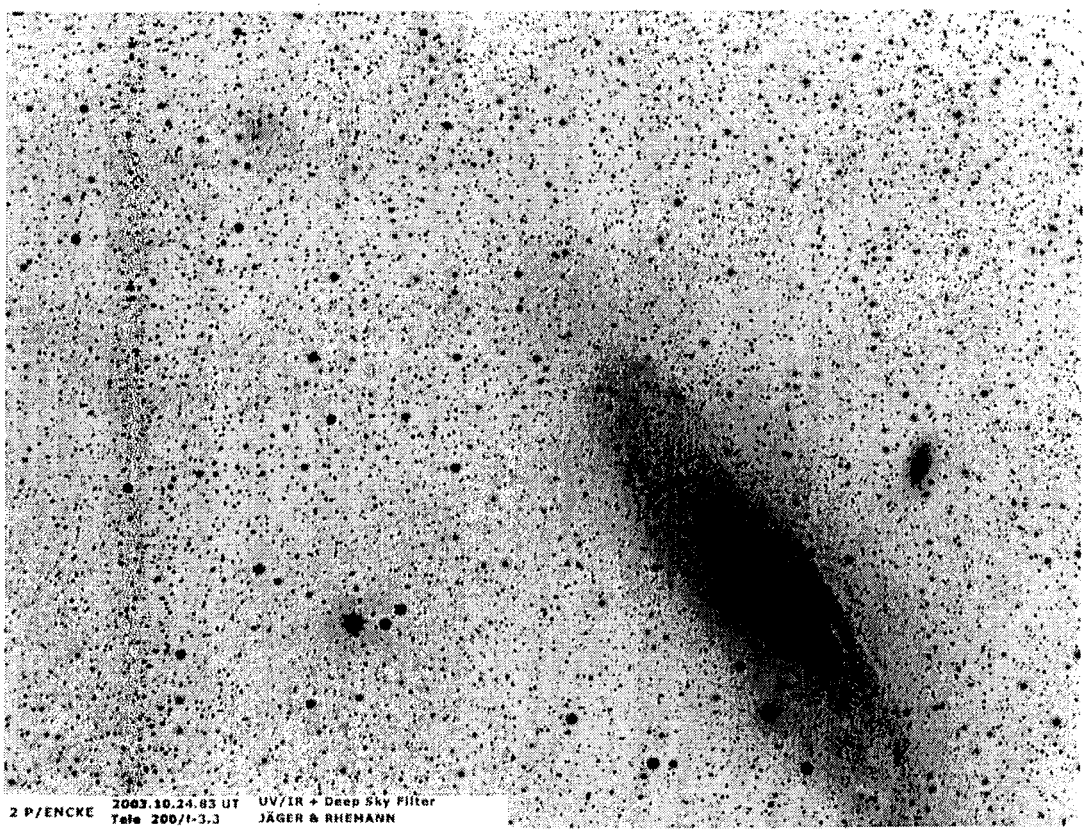
INTERNATIONAL COMET QUARTERLY

Whole Number 128 OCTOBER 2003 Vol. 25, No. 4



CCD image of comet 2P/Encke taken by Michael Jäger and Gerald Rhemann (near Vienna, Austria) on 2003 Oct. 24.83 UT with a 200-mm f/3.3 telephoto lens.

SMITHSONIAN ASTROPHYSICAL OBSERVATORY
60 Garden Street · Cambridge, MA 02138 · U.S.A.

The International Comet Quarterly (*ICQ*) is a journal devoted to news and observation of comets, published by the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts. Regular issues are published 4 times per year (January, April, July, and October), with an annual *Comet Handbook* of ephemerides published normally in the first half of the year as a special fifth issue. An index to each volume normally is published in every other October issue (even-numbered years); the *ICQ* is also indexed in *Astronomy and Astrophysics Abstracts* and in *Science Abstracts Section A*.

The regular (invoiced) subscription rate is US$31.00 per year for surface-mail delivery (price includes the annual *Comet Handbook*; the price without the *Handbook* is US$23.00 per year). Subscribers who do not wish to be billed may subscribe at the special rate of US$23.00 per year for surface-mail delivery (rate is $15.00 without *Handbook*). Add $15.00/year to each of these rates for airmail delivery outside of the United States or for first-class delivery within the U.S. [The last set of digits (after the hyphen) on the top line of the mailing address label gives the Whole Number that signifies the last *ICQ* issue which will be sent under the current subscription status. An asterisk after these numbers indicates credit for the next annual Comet Handbook. The first five digits represent the subscriber's account number.] Make checks or money orders payable in U.S. funds (and drawn on a U.S. bank) to *International Comet Quarterly* and send to Mail Stop 18; Smithsonian Astrophysical Observatory; 60 Garden St.; Cambridge, MA 02138, U.S.A.

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Group subscription rates available upon request. Back issues are $6.00 each — *except* for "current" *Comet Handbooks*, which are available for $15.00 ($8.00 to subscribers if ordered with their *ICQ* subscription; see above). Up-to-date information concerning comet discoveries, orbital elements, and ephemerides can be obtained by subscribing to the *IAU Circulars* and/or the *Minor Planet Circulars* (via postal mail and also available via computer access); for further information, contact the above e-mail address (or the *ICQ* at the above postal address).

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 to ICQ@CFA.HARVARD.EDU], 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. 128 of the publication originally called *The Comet* (founded March 1973) and is Vol. 25, No. 4, of the *ICQ*. *[ISSN 0736-6922]*

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CORRIGENDA

• In the July 1997 ***ICQ***, page 211, Comet 81P, the date 1995 03 28.97 (obs. GRA04) *should read* 1997 03 28.97 (presumably)

• In the April 2001 issue of the *ICQ*, page 145, Comet C/2001 N2 (LINEAR), the observation for observer TIC was made in 2001, not 2010.

• In the January 2003 *ICQ*, page 37, Comet 81P/Wild, first observation, the magnitude *should read* 18.0, *not* 13.5.

• In the July 2003 *ICQ*, page 139, Comet C/2002 X1 (LINEAR), the year for the first observation by TOT03 *should read* 2003 (not 2002)

2004 Comet Handbook

The *ICQ*'s *2004 Comet Handbook* is being issued at about the same time as this October regular issue. The 2004 edition contains orbital elements, magnitude parameters, and ephemerides for about 140 comets predicted to be brighter than mag ≈ 21 in the year 2004 (we changed the limit from ≈ 22 to 21 this year, after we determined that close to zero comets were observed in the last year that were predicted to be fainter than mag 21 and for which ephemerides were published in the *2003 Comet Handbook*). The price remains unchanged at US$15.00 per copy (with one copy only available to *ICQ* subscribers at the special rate of $8.00). As usual, the annual *Comet Handbook* includes up-to-date magnitude parameters for all included comets, based on close scrutiny of photometric data over the past year.

Corrigenda. In the indices to the 1999, 2000, 2001, 2002, and 2003 *Comet Handbooks*, *for* 133P/Elst-Pizzaro *read* 133P/Elst-Pizarro

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COMETS FOR THE VISUAL OBSERVER IN 2004

Alan Hale

Southwest Institute for Space Research

Visual comet observers, especially those observing from the southern hemisphere, have the potential of experiencing a most unusual sight during May and June 2004: two possibly conspicuous naked-eye comets being simultaneously visible in the evening sky. Both of the comets in question were discovered by automated surveys while the comets were located at large heliocentric distances, and both have been well-observed since emerging into the morning sky around mid-2003. Meanwhile, a third comet has the potential of achieving faint-naked-eye visibility during the latter months of 2004, and a handful of fainter long-period comets should also become visually detectable during the year. There are no short-period comets that are expected to become bright during 2004, although there are several fainter objects that should become within reach of moderate to large visual instruments.

Perihelion information (utilizing the most recently computed orbits at the time of this writing) for the comets discussed below is given in Table 1, in chronological order of perihelion passage. Ephemerides are available in the annual *Comet Handbooks* published by the *ICQ* (see above).

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TABLE 1.
PERIHELION INFORMATION FOR POTENTIALLY VISUAL COMETS IN 2004

Designation/Name	T (TT)	q (AU)
81P/Wild	2003 Sept. 25.94	1.590
123P/West-Hartley	2003 Dec. 9.12	2.129
40P/Väisälä	2004 Jan. 22.90	1.796
C/2003 H1 (LINEAR)	2004 Feb. 22.61	2.240
43P/Wolf-Harrington	2004 Mar. 17.86	1.579
88P/Howell	2004 Apr. 12.56	1.368
C/2002 T7 (LINEAR)	2004 Apr. 23.08	0.615
C/2001 Q4 (NEAT)	2004 May 15.95	0.962
34D/Gale	2004 June 3.72	1.205
29P/Schwassmann-Wachmann	2004 July 10.83	5.724
42P/Neujmin	2004 July 15.96	2.015
121P/Shoemaker-Holt	2004 Sept. 1.71	2.648
C/2003 K4 (LINEAR)	2004 Oct. 13.71	1.024
78P/Gehrels	2004 Oct. 27.08	2.008
62P/Tsuchinshan	2004 Dec. 7.95	1.489
(944) Hidalgo	2005 Jan. 21.61	1.951
32P/Comas Solá	2005 Apr. 1.32	1.833

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Bright Long-period Comets

C/2001 Q4 (NEAT)

Discovered as long ago as 2001 August 24 when at the unusually large heliocentric distance of $r = 10.1$ AU, this comet emerged into the morning sky in May 2003 at total mag $m_1 \sim 13$, and at this writing (mid-Sept. 2003) has brightened to $m_1 \sim 12$. It remains in southern circumpolar skies through the remainder of 2003 — reaching declination $\delta \sim -79°$ in November — and for the first four months of 2004. Brightness predictions should be considered somewhat uncertain, but (based on recent trends) it should be near $m_1 \sim 9$ near the beginning of 2004, and should achieve naked-eye visibiliy by sometime in March.

The comet passes 0.32 AU from Earth on May 6, and at that time is rapidly moving northward at 5° per day, quickly becoming accessible from the northern hemisphere. It is possible that the comet could be a prominent naked-eye object around this time, perhaps as bright as $m_1 \sim$ 0-1, although it could be distinctly fainter than this. Following this, the comet moves into the far-northern sky, remaining visible to the naked eye until perhaps the end of June, and enters northern circumpolar skies shortly thereafter (reaching $\delta \sim +70°$ near the end of October). It may still be as bright as $m_1 \sim$ 11-12 at the end of 2004.

C/2002 T7 (LINEAR)

This comet was discovered on 2002 October 14, at $r = 6.9$ AU, and emerged into the morning sky in August 2003 at $m_1 \sim 13$. It is at opposition in mid-November 2003, may be near $m_1 \sim$ 8-9 at the beginning of 2004, and perhaps at $m_1 \sim 7$ when it enters the solar glare near the beginning of March.

Following conjunction, the comet emerges into the morning sky after mid-April, perhaps as bright as $m_1 \sim 3$, and better observed from the southern hemisphere. This morning-sky appearance is brief, however, for the comet reaches inferior conjunction in mid-May (although some 40° south of the sun), and passes 0.26 AU from Earth on May 19. Subsequently the comet, briefly moving as fast as 9° per day, moves into the evening sky and may be as bright at $m_1 \sim$ 1. While it is initially visible only from the southern hemisphere and will remain more favorably located for observers in southern latitudes, the comet should again become accessible to northern-hemisphere observers by the latter days of May, although by that time it will probably have faded to $m_1 \sim$ 2-3.

When C/2002 T7 enters the evening sky after mid-May, it will share visibility with C/2001 Q4, which will be some 70° to its northeast. If both comets come relatively close to achieving their potential maximum brightnesses, comet observers (especially in the southern hemisphere) will witness two simultaneously visible naked-eye comets, the first occurrence of this phenomenon since 1941. It should be noted, however, that both comets appear to be "new" in the Oort sense, so it is entirely possible that either comet (or both) could be distinctly fainter than my forecasts here.

The comet should fade rapidly, dropping below naked-eye visibility by the latter part of June, remaining detectable for another 1-2 months before entering the solar glare. Following conjunction, it emerges into the morning sky about the beginning of November (m_1 perhaps 12), fading by perhaps one additional magnitude by the end of the year.

C/2003 K4 (LINEAR)

Like the above two comets, this object was also at a relatively large heliocentric distance (6.2 AU) when discovered on 2003 May 28. At this writing (mid-Sept. 2003), CCD observations are indicating m_1 near 15-16; the comet may reach $m_1 \sim$ 13-14, and thus become visually detectable, by the time it enters the solar glare near the end of 2003. It emerges into the morning sky about February 2004 (m_1 perhaps 12-13) and, when at opposition in mid-June, may be as bright as $m_1 \sim$ 8-9. It may reach $m_1 \sim 6$ by the time it enters the solar glare in early September.

The comet is on the opposite side of the sun from Earth around the time of perihelion and thus will be undetectable from the ground; however, it will be in the field-of-view of the LASCO C3 coronagraph aboard *SOHO* between September 28 and October 11, briefly entering the C2 field-of-view around October 5. It emerges into the morning sky near the end of October (perhaps at $m_1 \sim$ 5-6) and should fade by ≈ 1 magnitude by the end of the year, by which time it will have entered southern circumpolar skies.

Other Long-period Comets

C/2003 H1 (LINEAR)

Following conjunction, this comet enters the morning sky in December 2003, and should be near $m_1 \sim$ 12-13 at the beginning of 2004. Traveling in a strongly retrograde orbit ($i = 139°$), it is at opposition in mid-March, at which time it may be near $m_1 \sim 11$. The comet will probably fade to $m_1 \sim 13$ by the time it enters evening twilight around June.

Short-period Comets

81P/Wild

The current return of this comet is very unfavorable, with conjunction occurring almost simultaneously with perihelion. The comet emerges into the morning sky near the beginning of 2004, at $m_1 \sim 13$, and will fade slowly during the subsequent months, probably dropping below visual detectability by the end of March. It is at opposition in early July but is unlikely to be any brighter than $m_1 \sim 15$ at that time.

The *Stardust* spacecraft, launched in February 1999, is scheduled to pass through the coma of comet 81P on 2004 January 2, collecting samples of cometary dust to be returned to Earth in January 2006.

123P/West-Hartley

This comet is at opposition in early April 2004, following its perihelion passage in late 2003. Brightness information for the comet is rather sparse; however, a handful of visual observation reports from the previous return in 1996 suggest that it could reach a peak brightness of $m_1 \sim 14$ around March.

40P/Väisälä

This comet's 2004 return is moderately favorable, with opposition occurring in mid-May. Visual observations at the previous return in 1993 suggest a peak brightness of $m_1 \sim 14$ occurring between 2004 February and April.

43P/Wolf-Harrington

This comet is at opposition in mid-September 2003 and should become visually detectable at $m_1 \sim 13$ by the end of the year. It should remain visible for the first few months of 2004, peaking at perhaps $m_1 \sim 12$ around February and fading perhaps a half-magnitude by the time it enters evening twilight around the end of April.

88P/Howell

Brightness predictions for this comet in 2004 are somewhat problematical, since it was significantly brighter at its last return in 1998 than it had been at previous returns. The comet emerges into the morning sky by the end of January and may be detectable with visual instruments until as late as August or September; brightness measurements obtained at early returns suggest a peak brightness of $m_1 \sim 12$ taking place during April and May, but if the higher brightness observed in 1998 is maintained, the comet may be a magnitude or more brighter than this.

34P/Gale

This comet was observed at its 1927 (discovery) and 1938 returns but has not been seen since; it is entirely possible that it no longer exists. Any predictions for current returns must thus be regarded as quite uncertain; however, the nominal prediction for 2004 suggests that this return should be the most favorable since that of 1938; the elongation remains in excess of 100° between late February and early December (with opposition occurring in late September), and the minimum distance from Earth (in late May) is 0.47 AU. The comet's brightness in 1938 suggests a peak brightness in 2004 of $m_1 \sim 11$ taking place around the time of perihelion; however, this must be regarded as extremely uncertain, and the comet, if it indeed still exists, may well be much fainter than this.

29P/Schwassmann-Wachmann

This object was at opposition at the beginning of September 2003, and is thus an evening object in early 2004, although it will disappear into evening twilight by the end of January. After conjunction, it emerges into the morning sky near the beginning of May, is at opposition in late September, and remains well-placed in the evening sky for the remainder of the year.

The comet has been unusually active for the past couple of years, remaining in a state of almost continuous outburst throughout the 2002 and 2003 viewing seasons. It is not possible to predict whether or not this level of activity will be maintained in 2004, but as is always the case with this comet, continuous monitoring is recommended.

42P/Neujmin

The past observational history of this comet, especially in regard to brightness behavior, is very spotty. In 2004, however, the geometric conditions for visibility are very favorable, with opposition occurring almost simultaneously with perihelion. Any brightness predictions must be regarded as quite uncertain, but a peak brightness of $m_1 \sim 13$ may possibly be attained around the time of perihelion, with the comet's remaining visually detectable for perhaps two to three months on either side of that time.

121P/Shoemaker-Holt

The geometric circumstances of this comet's 2004 return are almost identical to those at the two previously-observed returns in 1988 and 1996. The comet is at opposition in late February 2005, and may become visually detectable at $m_1 \sim$ 13-14 in late 2004.

78P/Gehrels

After being distinctly fainter at previous returns, this comet was unexpectedly bright at the most recent return in 1997, when it reached $m_1 \sim 12$. The geometric circumstances in 2004 are very favorable, with opposition taking place in early November, only two weeks after perihelion passage. In light of its previous behavior, any predictions for its brightness in 2004 must be considered somewhat uncertain, but it seems likely that the comet should reach at least $m_1 \sim 12$, and if the 1997 brightness is maintained, it may well be one to two magnitudes brighter than this.

62P/Tsuchinshan

The geometric conditions of this comet's 2004 return are moderately favorable, with opposition taking place in late March 2005. There is some evidence for asymmetry in the comet's light curve based on observations at previous returns, although this is somewhat inconclusive; in any event, the comet is likely to reach $m_1 \sim$ 11-12 during the last one or two months of 2004, and perhaps become slightly brighter in early 2005.

32P/Comas Solá

Although not at perihelion until April 2005, this comet is at opposition in early November 2004, and will probably reach its peak brightness — unlikely to be any brighter than $m_1 \sim 13$ — between December 2004 and February 2005.

Other Objects

(944) Hidalgo

This object, discovered in October 1920, was the first-known of the "cometary" asteroids, having orbital parameters ($e = 0.66$, $P = 13.8$ years) that distinctly resemble those of a comet. Hidalgo has been observed at every subsequent return since its discovery, but (despite careful scrutiny) has to date shown no signs of any cometary activity.

Visual observations obtained by this writer at the previous return in 1990-1991 indicate that Hidalgo should become visually detectable at $m_v \sim 15$ around August 2004, and should reach a peak brightness near $m_v \sim 13$ during the latter part of October when near opposition. It should fade about one magnitude by the end of the year, and remain detectable for the first few months of 2005. During late November, it will spend approximately three days in transit across the Andromeda Galaxy, M31.

The current return of Hidalgo is, from a geometric standpoint, the most favorable one observed so far (albeit only marginally so). This, combined with currently available observational techniques that have succeeded in detecting weak cometary activity around other ostensible "asteroids" during the recent past, suggests the possibility that cometary activity on Hidalgo, if any exists, may be detected at this return.

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IWCA III in Paris (June 2004)

The list of planned attendees and speakers for the third International Workshop on Cometary Astronomy (IWCA III), which is co-sponsored by the *ICQ* and co-hosted by the Observatoire de Paris and the Société Astronomique de France, looks to be very good. The two full days (2004 June 4 and 5) at the Paris Observatory will include seven scientific sessions that have invited speakers introducing specific topics, each with panel discussions to follow; there will also be an eighth session devoted to national amateur comet groups. Each session (excepted the first one) includes a few invited and contributed talks, followed by a panel discussion of at least 30 minutes led by 4-5 specialists (including the invited speakers for that session). One can check the French-host website (`http://wwwusr.obspm.fr/biver/IWCAIII/`) and the *ICQ* website for updates. Pre-registration and hotel bookings are strongly encouraged. See also page 193 of this issue.

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Tabulation of Comet Observations

New reference code for comparison-star magnitudes: `AU` = ASAS-3 V magnitudes, available from the website URL `http://archive.princeton.edu/~asas/asas3_catalog.html` (click on "Search: V-band" under "Photometric Catalog")

New code for CCD camera chips: `K42` = Kodak KAF-0402ME.

New code for CCD cameras: `PIX` = Pictor 216 XT.

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 2P/Encke* ⟹ 2003 Sept. 2.75: comp. star has $B-V = +0.51$ [TSU02]. Sept. 2.75, 18.59, Oct. 8.51, 17.54, 18.52, 19.55, and 24.51: `GUIDE 8.0` software used for comp.-star mags [TSU02]. Sept. 3.65: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Sept. 5.97, 17.91, 18.91, 19.90, 21.88, and 24.95: stellar appearance [HOR02]. Sept. 17.91 and 18.91: moonlight [HOR02]. Sept. 18.59: comp. star has $B-V = +0.66$ [TSU02]. Sept. 26.72: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87; coma fans toward NE [NAK01]. Oct. 4.66, 23.61, 26.61, and 29.52: `GUIDE 6.0` software used for comp.-star mags [NAG08]. Oct. 8.51: comp. star has $B-V = +0.65$ [TSU02]. Oct. 17.54: comp.-star $B-V = +0.59$ [TSU02]. Oct. 17.57: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87; fan-shaped coma expands northward [NAK01]. Oct. 18.52: comp.-star $B-V = +0.41$ [TSU02]. Oct. 19.55: comp.-star $B-V = +0.68$ [TSU02]. Oct. 19.56: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85; fan-shaped coma expands northward, centered around p.a. 350° [NAK01]. Oct. 23.51, 25.58, 28.66, and 30.67: `GUIDE 8.0` software used for comp.-star mags [YOS02]. Oct. 23.65: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01]. Oct. 24.51: comp.-star $B-V = +0.62$ [TSU02]. Oct. 26.00: comet not seen at

ephemeris position despite a quite-dark sky; stellar limiting mag in nearby RX And sequence was slightly fainter than 14.0 [GRA04]. Oct. 27.53: `MegaStar ver. 5.0` software used for comp.-star mags [MUR02].

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CCD images of comet 2P/Encke taken by Gerald Rhemann and Michael Jäger near Vienna, Austria. Above: images taken with a 25-cm telescope on 2003 Oct. 28.75 (left, two 120-sec exposures) and Oct. 28.86 (right, four 90-sec exposures), showing the comet's rapid motion over ~ 2.5 hr (Jäger reports that the 10′ visible coma was around total mag 9 on these images; field size ~ 35′ × 35′). Below: CCD image taken on Oct. 31.00 by Jäger and Rhemann with a 200-mm f/2.5 telephoto lens (+ green filter); the 9′ coma was not fainter than mag 10.0, according to Jäger (field ~ 2° × 2°). North is up and east to the left in both images.

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◇ *Comet 22P/Kopff* ⟹ 2003 Sept. 8.76: B–V values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 26.61: `GUIDE 8.0` software used for comp.-star mags; comp. star has B–V = +0.51 [TSU02]. Oct. 2.70: B–V values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87; cond. extends to SE, then curves counter-clockwise [NAK01].

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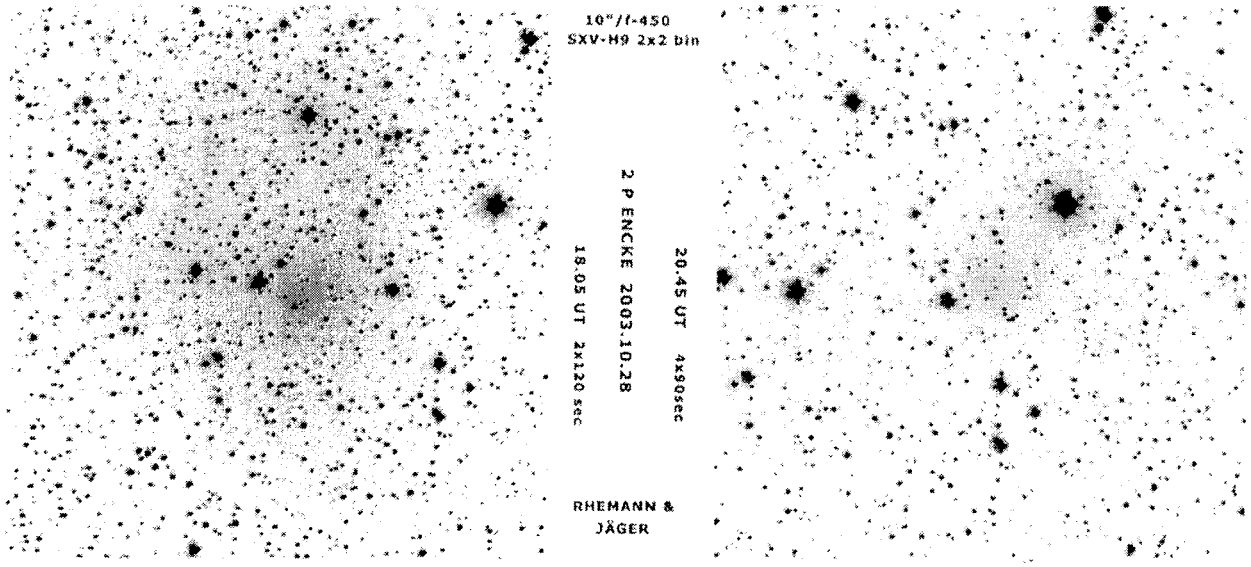

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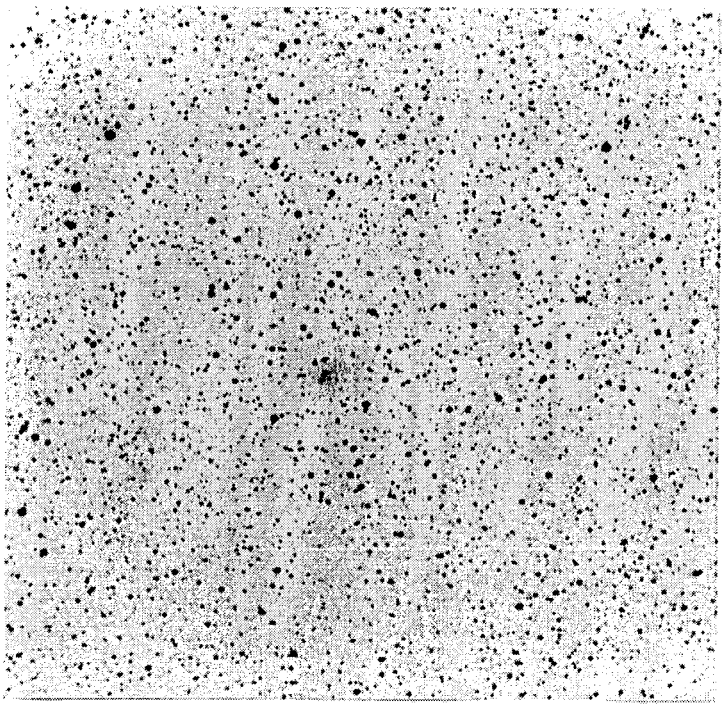

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◇ *Comet 22P/Kopff* ⟹ 2003 Sept. 8.76: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 26.61: `GUIDE 8.0` software used for comp.-star mags; comp. star has $B-V = +0.51$ [TSU02]. Oct. 2.70: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87; cond. extends to SE, then curves counter-clockwise [NAK01].

Oct. 4.73: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.66$ [OHS].

◇ *Comet 28P/Neujmin* ⟹ 2003 Sept. 26.80: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 23.76: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

◇ *Comet 29P/Schwassmann-Wachmann* ⟹ 2002 Mar. 27.80: total mag 14.4, in outburst; stellar cond., but slightly diffuse (astrometry published on *MPC* 45331, code 897); a week earlier, on Mar. 20.83 UT, no image of the comet brighter than mag 16 was found on a CCD frame taken with his 25-cm $f/6$ L [Takuo Kojima, Chiyoda, Japan]. 2003 Aug. 2.69: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 23.10: fan-shaped coma of dia. 1′.5 w/ pointlike central cond. [HOR02]. Aug. 24.08: eleven 60-sec co-added images taken on Aug. 24.08 show very bright and strongly condensed object of dia. 10″ ("sharply limited"); very faint, fan-shaped outer coma of dia. 1′.5; comet obs. from Aug. 24.079 to 24.124 (comet moved w/ predicted direction and velocity, and no star brighter than $R = 17$ is present at comet's location; total of twenty-six 60-sec images taken [HOR02]. Aug. 25.10: comet appeared as on previous night, w/ faint fan-shaped coma of dia. 2′.7 and very bright, strongly condensed central region of dia. 22″ ("sharply limited"); ten 60-sec images [HOR02]. Aug. 25.92: ∼ 2 days after outburst [LEH]. Aug. 27.09: comet was strongly condensed (though not as much as on Aug. 25.10); faint fan-shaped coma larger than on Aug. 25.10 (dia. now 3′.6); strongly condensed central region of dia. 24″ ("sharply limited"); fifteen 40-sec images [HOR02]. Sept. 2.87 and 20.84: ephemeris from MPC ephemeris service, checked w/ Digitized Sky Survey; limiting stellar mag 15.8 [HAS02]. Sept. 4.59: $B-V$ values of comp. stars were +0.55, +0.61, and +0.70; coma expands toward E-SW, w/ slightly clockwise curved jet-like structure in p.a. 208° [NAK01]. Sept. 6.06, 7.06, 17.04, 19.03, 20.01, 22.00, 25.00, and Oct. 12.97: fan-shaped coma [HOR02]. Sept. 7.06, 17.04, 19.03, and Oct. 12.97: moonlight [HOR02]. Sept. 18.56: comp. star has $B-V = +0.47$ [TSU02]. Sept. 18.56, 26.55, 29.46, and Oct. 16.53: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 18.58: $B-V$ values of comp. stars were +0.51, +0.55, and +0.70; coma spans in ESE-SSW [NAK01]. Sept. 20.01: comet close to star [HOR02]. Sept. 26.55: comp. star has $B-V = +0.47$; fan-shaped coma spans p.a. 45°-208° [TSU02]. Sept. 26.65: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87; very distinct inner coma (0′.35 in dia.) shows the comet is in a new outburst [NAK01]. Sept. 27.53: GUIDE 8.0 software used [YOS02]. Sept. 27.66: outburst [MAT08]. Sept. 28.43: comp. star w/ $B-V = +0.42$ [KAD02]. Sept. 29.46: comp. star has $B-V = +0.50$ [TSU02]. Sept. 29.61 and Oct. 4.64: GUIDE 6.0 software used for comp.-star mags [NAG08]. Sept. 30.59: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 4.65: GUIDE 8.0 software used for comp.-star mags; $B-V$ values of comp. stars were +0.67 and +0.67 [OHS]. Oct. 16.53: comp. star $B-V = +0.424$; coma size 2′.5 × 3′.0, elongated NNE-SSW [TSU02]. Oct. 17.47: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 19.48: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 19.49: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.63$ [OHS]. Oct. 24.47: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.65: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet 31P/Schwassmann-Wachmann* ⟹ 2003 May 5.54: seven comp. stars w/ $B-V$ in range +0.51 to +0.85 [NAK01].

◇ *Comet 36P/Whipple* ⟹ 2003 Oct. 2.71: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.51: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.70$ [TSU02]. Oct. 19.68: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet 40P/Väisälä* ⟹ 2003 Oct. 24.80: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.78$ [OHS].

◇ *Comet 43P/Wolf-Harrington* ⟹ 2003 Aug. 11.07, Sept. 5.89, 6.90, 14.82, 16.87, 17.85, 20.05, and Oct. 12.78: moonlight [HOR02]. Aug. 23.06 and Sept. 17.85: comet close to star [HOR02]. Aug. 25.85: dia. noticeably decreased; comet more starlike in appearance (two images) [SHU]. Sept. 3.62: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Sept. 18.58: comp. star has $B-V = +0.54$ [TSU02]. Sept. 18.58, 29.52, Oct. 8.50, and 19.54: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 18.61: $B-V$ values of comp. stars were +0.51, +0.55, and +0.70 [NAK01]. Sept. 20.82: ephemeris from MPC ephemeris service, checked w/ Digitized Sky Survey; limiting stellar mag 15.8 [HAS02]. Sept. 29.52: comp. star has $B-V = +0.51$ [TSU02]. Sept. 30.64: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 4.65: comp. star has $B-V = +0.66$ [OHS]. Oct. 4.65, 19.59 and 29.59: GUIDE 8.0 software used for comp.-star mags [OHS]. Oct. 8.50: comp. star has $B-V = +0.75$ [TSU02]. Oct. 17.53: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 19.54: comp.-star $B-V = +0.46$ [TSU02]. Oct. 19.59: comp.-star $B-V = +0.89$ [OHS]. Oct. 29.49: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 29.59: comp.-star $B-V = +0.67$ [OHS].

◇ *Comet 53P/Van Biesbroeck* ⟹ 2003 July 17.43: in close proximity to star of mag 13.7 [MAT08]. Aug. 19.51: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.74$ [TSU02]. Aug. 22.49: $B-V$ values of comp. stars were +0.32, +0.66, and +0.84 [NAK01].

◇ *Comet 65P/Gunn* ⟹ 2003 July 17.45: Milky-Way interference [MAT08]. Sept. 2.48: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.56$ [TSU02].

◇ *Comet 66P/du Toit* ⟹ 2003 July 17.44: quite diffuse; slight enhancement w/ Swan-band filter; "first visual observation of this comet since its discovery apparition in 1944?" [MAT08]. July 27.46 and Aug. 15.41: slight enhancement w/ Swan-band filter [MAT08]. Aug. 26.44: comet very diffuse, but possibly a little enhanced through Swan Band filter; very easy to see in a dark sky [SEA]. Sept. 21.43: Milky-Way interference [MAT08].

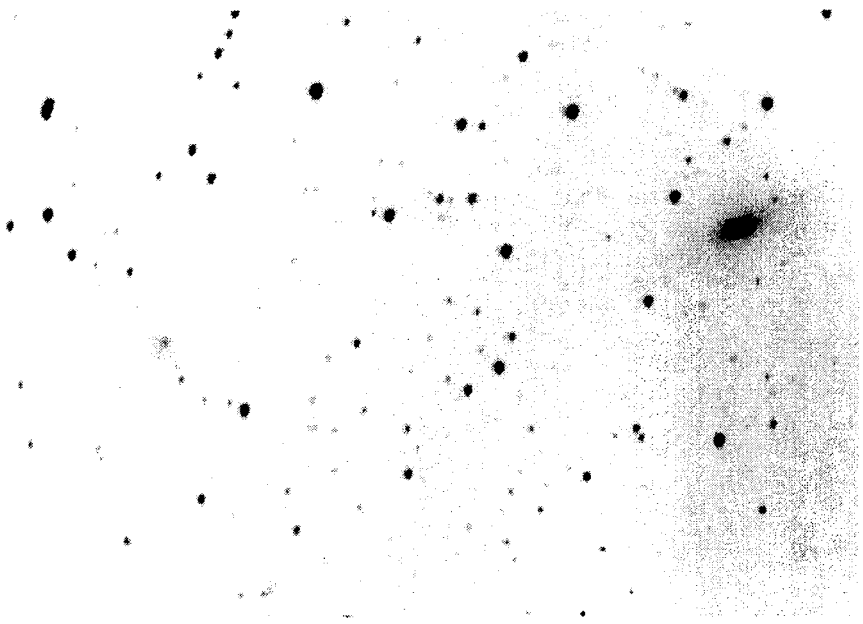

Image of comet 66P (at left, with the galaxy NGC 5253 at right) taken by M. Mattiazzo (Wallaroo, S. Australia; 11-cm f/3.3 T + Starlight Express MX7c imager) on 2003 Aug. 15.44; image field 15′.5 × 19′ (north to left/upper-left; east toward right of top).

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◇ *Comet 104P/Kowal* ⟹ 1973 Jan. 11.83: large diffuse coma with small distinct nucleus (DC = s3 entered by *ICQ* Editor based on this description); MM = B presumably, based on other *ICQ*-archive data from BOE around this time, though he did evidently use VSS method sometimes also, esp. in the 1980s; "brilliant clear skies with no artificial light interfering" (letter of 1973 Mar. 1 from Boethin to B. G. Marsden); this was at the time an unconfirmed visual discovery report by BOE, in which he provided obs. on three consecutive nights w/ approximate positions, moving SSE at 8′/day; searches by others yielded no comet (BOE had reported the total mag as 9.5, based on the comet being as bright as SAO 180084 — given as mag 9.5 in the *SAOC* — but this star is listed as $V = 10.44$ in the Tycho-satellite cat.); Gary W. Kronk proposed the identification with comet 104P in 2003, confirmed by Marsden (see *IAUC* 8255) [BOE]. Jan. 14.8: date assumed from Boethin's letter of 1973 Feb. 11 to B. G. Marsden, in which he states "on the 4th day, on Monday, ..." (Monday would be Jan. 15 local time and Jan. 14.8 UT), and then seems to say that the moon didn't interfere until the following day ("Tuesday") — first-quarter moon occurring on Jan. 12.7 UT; the comet "had darkened considerably, [to] mag ≈ 12-13! Very strange, but true!"; he waited for last-quarter moon to confirm, but could no longer find the comet; Vehrenberg photographic star chart Nr. 285 used for his obs., but no position provided for this last night [BOE].

◇ *Comet 115P/Maury* ⟹ 2003 Oct. 2.66: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 23.67: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

◇ *Comet 116P/Wild* ⟹ 2003 July 17.43: no enhancement w/ Swan-band filter [MAT08]. Aug. 19.49: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.55$ [TSU02]. Aug. 22.48: GUIDE 8.0 software used for comp.-star mags; comp. star w/ $B-V = +0.52$ [NAK01].

◇ *Comet 118P/Shoemaker-Levy* ⟹ 2003 Oct. 24.79: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.79$ [OHS].

◇ *Comet 119P/Parker-Hartley* ⟹ 2003 Aug. 2.68: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01].

◇ *Comet 121P/Shoemaker-Holt* ⟹ 2003 Oct. 19.64 and 29.68: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet 123P/West-Hartley* ⟹ 2003 Sept. 29.81: $B-V$ values of comp. stars were +0.54 and +0.69 [KAD02]. Sept. 30.80: comp. star w/ $B-V = +0.55$ [KAD02]. Oct. 19.84: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.79$ [TSU02]. Oct. 24.76: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.78$ [OHS].

◇ *Comet 129P/Shoemaker-Levy* ⟹ 2003 Oct. 29.53: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet 157P/2003 T1 (Tritton)* ⟹ 2003 Oct. 8.81: GUIDE 7.0 software used for comp.-star mags [MIY01]. Oct. 15.74: 1′.2 × 0′.8 coma elongated in p.a. 113°-293° [KAD02]. Oct. 18.85, 19.81, and 24.81: GUIDE 8.0 software used for

comp.-star mags [TSU02]. Oct. 18.85: comp.-star $B-V = +0.36$ [TSU02]. Oct. 19.81: comp.-star $B-V = +0.45$ [TSU02]. Oct. 23.82: GUIDE 8.0 software used for comp.-star mags [YOS02]. Oct. 23.84: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01]. Oct. 24.76: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V =$ +0.78 [OHS]. Oct. 24.81: comp.-star $B-V = +0.47$ [TSU02].

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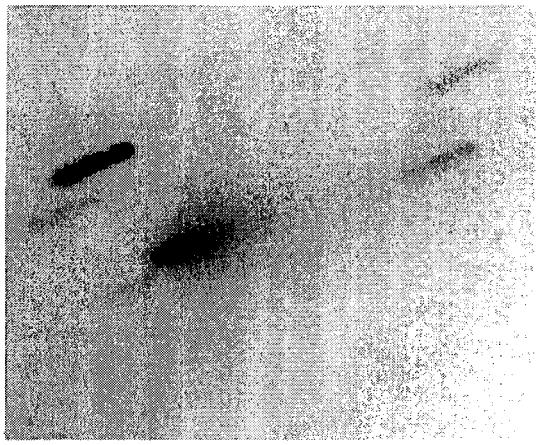

Unfiltered CCD image of comet 157P/Tritton taken on 2003 Oct. 16.12 by G. Sostero (45-cm f/4.5 L + SBIG ST6V); "average" of twenty 30-sec exposures. Sostero reported the comet at mag 12.6 in a 1'.4 aperture.

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◇ *Comet C/2001 HT_{50} (LINEAR-NEAT)* ⟹ 2003 Aug. 10.78, Sept. 22.64, Oct. 4.63, 23.59, 26.60, and 29.53: GUIDE 6.0 software used for comp.-star mags [NAG08]. Aug. 26.81, Sept. 27.74, Oct. 17.55, and 23.60: GUIDE 8.0 software used for comp.-star mags [YOS02]. Aug. 27.11: comet close to bright star [HOR02]. Aug. 27.17: astron. twilight [GON05]. Sept. 2.80: comp. star has $B-V = +0.40$ [TSU02]. Sept. 2.81, 26.64, and Oct. 19.60: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 7.07 and 20.02: moonlight [HOR02]. Sept. 8.82: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 22.76, 30.78, Oct. 8.82, and 23.77: GUIDE 7.0 software used for comp.-star mags [MIY01]. Sept. 26.64: comp. star has $B-V = +0.47$ [TSU02]. Sept. 26.77: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 19.60: comp.-star $B-V = +0.48$ [TSU02]. Oct. 19.63 and 29.67: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 26.02: faint, but definitely seen at correct position [GRA04]. Oct. 27.55: MegaStar ver. 5.0 software used for comp.-star mags [MUR02]. Oct. 27.96: "surprisingly easy object"; small coma, strongly condensed towards center; at 242×, starlike false nucleus of mag 13.5 [KAM01].

◇ *Comet C/2001 K5 (LINEAR)* ⟹ 2003 Aug. 2.60: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 7.90, 10.94, 15.92, Sept. 5.84, 6.85, 14.85, 16.90, 17.87, Oct. 12.80, and 14.89: moonlight [HOR02]. Aug. 19.61, Sept. 27.47, and Oct. 16.50: GUIDE 8.0 software used for comp.-star mags [TSU02]. Aug. 19.61: comp. star has $B-V = +0.34$ [TSU02]. Aug. 26.81: at 162×, limiting mag ~ 16; second confirming detection made at Aug. 26.90 [LEH]. Sept. 19.47: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73; tail curved counter-clockwise, ending 4'.3 from the nucleus in p.a. 203° [NAK01]. Sept. 19.87 and 30.91: comet close to star [HOR02]. Sept. 27.47: comp. star has $B-V = +0.36$ [TSU02]. Oct. 1.46: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73; tail curved counter-clockwise, ending at p.a. 202° from the nucleus [NAK01]. Oct. 16.50: comp.-star $B-V = +0.31$; tail extends first in p.a. 190°, then curves toward p.a. 215° [TSU02]. Oct. 24.43: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01].

◇ *Comet C/2001 Q4 (NEAT)* ⟹ 2003 Aug. 4.70 and 6.71: comet has now become a very easy object in the 25-cm L [SEA]. Aug. 26.56: comet very easy to see in a dark sky with the 25-cm L — small and intense; possibly glimpsed in 25×100 B [SEA]. Oct. 2.13: Tycho comp. stars had $V_t = 11.24$ ($B-V = +0.46$) and 12.22 ($B-V = +0.82$); averted vision [AMO01]. Oct. 17.08: ASAS-3 comp. star 043215–6906.0 ($V = 12.28$) [AMO01]. Oct. 18.10: Tycho comp. stars w/ $m_V = 11.07$ ($B-V = +0.40$) and 10.85 ($B-V = +0.96$) [AMO01]. Oct. 24.04: TK comp. stars had $m_V = 10.98$ ($B-V = +0.39$) and $m_V = 11.6$ ($B-V = +0.30$) [AMO01].

◇ *Comet C/2001 RX_{14} (LINEAR)* ⟹ 2003 Mar. 22.86: w/ 25.6-cm L (169×), central cond. of mag 13.9 [BIV]. Mar. 24.86: w/ 25.6-cm L (169×), central cond. of mag 14.4 [BIV]. Mar. 31.89: w/ 25.6-cm L (169×), central cond. of mag 14.2 [BIV].

◇ *Comet P/2002 BV (Yeung)* ⟹ 2003 Oct. 1.56: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Oct. 2.58: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 19.54: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 24.49: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01].

◇ *Comet C/2002 CE_{10} (LINEAR)* ⟹ 2002 Nov. 28.68: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85,

and +0.87 [NAK01]. 2003 Sept. 6.02, 17.02, 19.01, 20.00, 21.97, and 24.97: stellar appearance [HOR02]. Sept. 6.02, 17.02, 19.01, and 20.00: moonlight [HOR02]. Sept. 18.57: $B-V$ values of comp. stars were +0.51, +0.55, and +0.70 [NAK01]. Sept. 20.83: ephemeris from MPC ephemeris service; motion detected; completely stellar appearance; limiting stellar mag 15.8 [HAS02]. Oct. 17.45: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 24.46: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01].

◇ *Comet C/2002 J5 (LINEAR)* ⟹ 2003 Sept. 19.48: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01].

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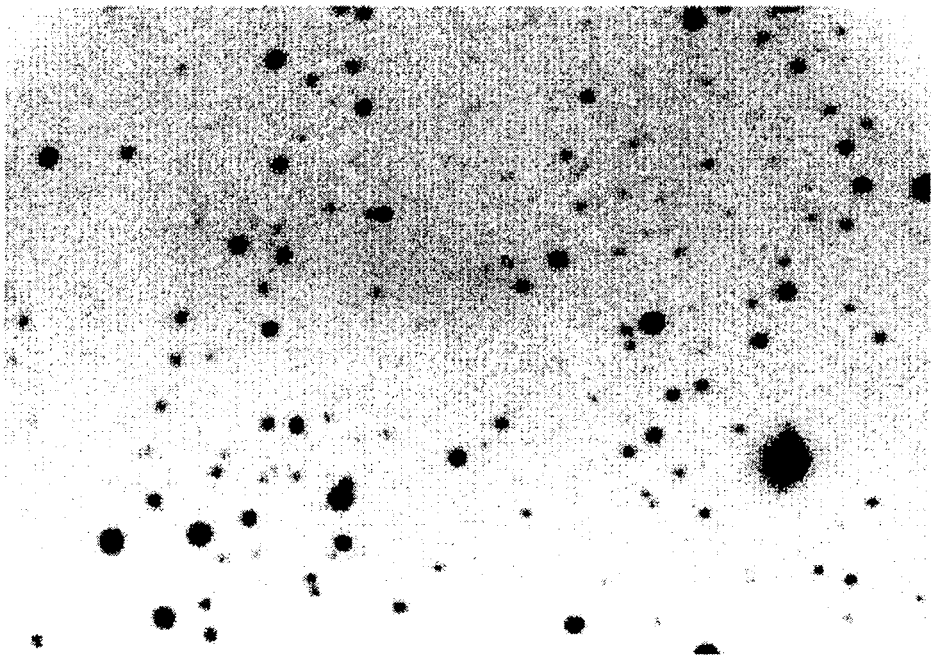

Image of comet C/2002 O7 (just above center) taken by Michael Mattiazzo (Wallaroo, South Australia; 11-cm f/3.3 T + Starlight Express MX7c imager) from ten 20-sec exposures taken on 2003 Sept. 27.79. See text below. North is to the upper left, and east is to the lower left; the shorter side of the image field is ~ 12′ in length.

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◇ *Comet C/2002 O7 (LINEAR)* ⟹ 2003 July 17.41 and 27.40: slight enhancement w/ Swan-band filter [MAT08]. Sept. 27.79: w/ 11-cm $f/3.3$ T (+ Starlight Express MX7c CCD imager), ten 20-s exposures indicate that the comet's nucleus had totally disrupted (see image above), showing only a diffuse, sunward-pointing tail of debris [MAT08]. Dec. 3: w/ 2.2-m reflector (+ WFI + R filter), the New Technology Telescope (+ SOFI + JHK filters), and the 3.6-m reflector (+ EFOSC2 + V, R, and i filters) at the European Southern Observatory, the comet was not found to limiting mag $R \sim$ 20.5 within an area of size 30′ × 30′ centered on the comet's position [G. P. Tozzi (INAF, Arcetri, Italy), H. Boehnhardt (Max-Planck-Institut, Heidelberg), O. R. Hainaut, F. Selman, I. Saviane, M. Pizarro, G. Roman, and F. Labrana].

◇ *Comet P/2002 O8 (NEAT)* ⟹ 2003 Sept. 26.70: $B-V$ values of comp. stars were +0.68, +0.79, and +0.87 [NAK01]. Oct. 2.65: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 19.70: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 24.59: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01].

◇ *Comet C/2002 P1 (NEAT)* ⟹ 2003 Sept. 30.62: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 19.50: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2002 R3 (LONEOS)* ⟹ 2003 Aug. 8.02, 11.04, and 24.01: elongated coma [HOR02]. Aug. 23.00: elongated coma in p.a. 300° [HOR02]. Aug. 11.04: moonlight [HOR02]. Sept. 3.62: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Sept. 5.88: elongated coma in p.a. 110° [HOR02]. Sept. 5.88, 6.92, 19.97, and Oct. 12.93: moonlight [HOR02]. Sept. 18.62: $B-V$ values of comp. stars were +0.51, +0.55, and +0.70 [NAK01]. Sept. 30.63: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.46: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 19.52: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V$ = +0.58 [TSU02]. Oct. 29.50: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85; tail extends eastward [NAK01].

◇ *Comet C/2002 T5 (LINEAR)* ⟹ 2003 Oct. 23.83: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67,

and +0.85 [NAK01].

◇ *Comet P/2002 T6 (NEAT-LINEAR)* ⟹ 2003 Oct. 23.78: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

◇ *Comet C/2002 T7 (LINEAR)* ⟹ 2003 Aug. 8.01: comet is very compact and starlike; no tail visible on three consecutive images [SHU]. Aug. 23.08: moonlight [HOR02]. Aug. 26.78, 31.81, Sept. 21.78, 27.77, Oct. 17.56, 23.63, 25.56, 28.67, and 30.72: GUIDE 8.0 software used for comp.-star mags [YOS02]. Sept. 2.79: comp. star has $B-V = +0.47$ [TSU02]. Sept. 2.79, 26.65, Oct. 8.61, 19.62, and 24.53: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 6.00: situated 1′ NW of a star of mag 10.8 [KAR02]. Sept. 6.04: hint of tail in p.a. 260° [HOR02]. Sept. 6.05: comet close to star [HOR02]. Sept. 7.04, 17.06, and 20.03: moonlight [HOR02]. Sept. 8.81: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 22.63, Oct. 4.62, 23.60, 26.54, and 29.54: GUIDE 6.0 software used for comp.-star mags [NAG08]. Sept. 22.78, 30.79, and Oct. 23.79: GUIDE 7.0 software used for comp.-star mags [MIY01]. Sept. 26.65: comp. star has $B-V = +0.62$; coma size 0′.6 × 0′.35, elongated N-S [TSU02]. Sept. 26.78: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 8.61: $B-V$ values of comp. stars were +0.56 and +0.62 [TSU02]. Oct. 18.16: Tycho comp. stars w/ $m_V = 10.82$ ($B-V = +1.72$) and 11.29 ($B-V = +1.96$) [AMO01]. Oct. 19.09: small and quite-easy object [GRA04]. Oct. 19.62: comp.-star $B-V = +0.82$ [TSU02]. Oct. 19.70: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 24.53: comp.-star $B-V = +0.44$; coma size 0′.9 × 0′.7, elongated NNW-SSE [TSU02]. Oct. 26.04: compact object w/ a rather sharp outer boundary, not unlike a planetary nebula; visible without difficulty [GRA04]. Oct. 27.56: MegaStar ver. 5.0 software used for comp.-star mags [MUR02]. Oct. 27.95: comet appeared as a 'soft star' [MEY]. Oct. 29.70: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85; distinct inner coma 1′.2 × 0′.9, elongated in p.a. 165°-345° [NAK01].

◇ *Comet C/2002 V1 (NEAT)* ⟹ 2003 Mar. 16.45: moonlight; light pollution [MAT08]. Mar. 17.45: moonlight [MAT08].

◇ *Comet C/2002 V2 (LINEAR)* ⟹ 2003 Sept. 26.76: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 23.73: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

◇ *Comet C/2002 VQ$_{94}$ (LINEAR)* ⟹ 2002 Nov. 28.56: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. 2003 Oct. 19.55: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 29.64: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2002 X1 (LINEAR)* ⟹ 2003 Sept. 8.80: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 30.75: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 19.53: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.42$ [TSU02]. Oct. 19.65: GUIDE 8.0 software used for comp.-star mags; comp.-star $B-V = +0.74$ [OHS]. Oct. 23.69: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

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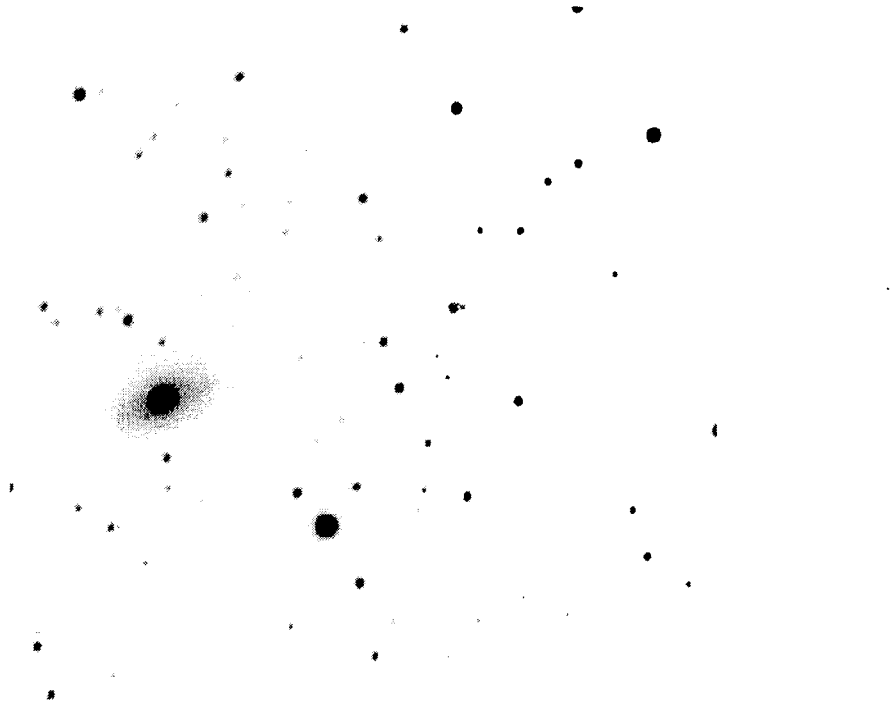

Image of comet C/2002 Y1 (right of center) taken by Michael Mattiazzo (Wallaroo, South Australia; 11-cm f/3.3 T + Starlight Express MX7c imager) on 2003 July 29. The galaxy NGC 1543 is to the left. North is to the upper left, and east is to the lower left; each field side is ~ 21′ in length.

◇ *Comet C/2002 Y1 (Juels-Holvorcem)* ⟹ 2003 Mar. 22.83 and Apr. 1.18: w/ 25.6-cm L (169×), central cond. of mag 11.4 [BIV]. Mar. 23.82: w/ 25.6-cm L (169×), central cond. of mag 11.2 [BIV]. Mar. 24.84 and Apr. 3.18: w/ 25.6-cm L (169×), central cond. of mag 11.1 [BIV]. Apr. 9.17: w/ 25.6-cm L (169×), central cond. of mag 10.8 [BIV]. Apr. 11.17: w/ 25.6-cm L (169×), central cond. of mag 10.5 [BIV]. May 25.82: moonlight [MAT08]. May 29.82: coma well enhanced w/ Swan-band filter [MAT08].

◇ *Comet C/2003 F1 (LINEAR)* ⟹ 2003 Aug. 23.86: comet close to star [HOR02].

◇ *Comet C/2003 G1 (LINEAR)* ⟹ 2003 Aug. 7.87, 10.87, 15.90, 16.88, Sept. 5.81, and 6.81: moonlight [HOR02]. Aug. 19.58, Sept. 2.47, 22.47, 26.47, and Oct. 17.40: GUIDE 8.0 software used for comp.-star mags [TSU02]. Aug. 19.58: comp. star has $B-V = +0.47$ [TSU02]. Aug. 22.84, 23.84, and Sept. 21.76: comet close to star [HOR02]. Sept. 2.47: comp. star has $B-V = +0.52$ [TSU02]. Sept. 22.47: comp. star has $B-V = +0.61$ [TSU02]. Sept. 26.47: comp. star has $B-V = +0.47$ [TSU02]. Oct. 17.40: comp.-star $B-V = +0.42$ [TSU02].

◇ *Comet C/2003 H1 (LINEAR)* ⟹ 2003 July 26.94 and Aug. 23.82: comet close to star [HOR02]. Aug. 7.84, 10.86, Sept. 5.79, and 6.79: moonlight [HOR02]. Aug. 19.47: comp. star has $B-V = +0.59$ [TSU02]. Aug. 19.47 and Sept. 26.41: GUIDE 8.0 software used for comp.-star mags [TSU02]. Aug. 22.45: tail curved clockwise, reaching at p.a. 83°; $B-V$ values of comp. stars were +0.32, +0.66, and +0.84 [NAK01]. Sept. 26.41: comp. star has $B-V = +0.38$ [TSU02].

◇ *Comet C/2003 H3 (NEAT)* ⟹ 2003 July 27.04: possible faint tail 0′.9 long in p.a. 199° [HOR02]. Aug. 2.66: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 6.01: comet close to two stars [HOR02]. Aug. 7.01, 11.02, 22.94 and 23.93: dense star field [HOR02]. Aug. 19.59: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.35$ [TSU02]. Aug. 22.53: GUIDE 8.0 software used for comp.-star mags; comp. star w/ $B-V = +0.601$ [NAK01]. Oct. 1.48: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Oct. 19.47: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.63$ [OHS]. Oct. 29.44: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2003 J1 (NEAT)* ⟹ 2003 Aug. 2.65: $B-V$ values of comp. stars were +0.64 and +0.93 [NAK01].

◇ *Comet C/2003 K4 (LINEAR)* ⟹ 2003 July 27.06, Aug. 2.97, 22.92, 23.92, 26.99, Sept. 6.88, 14.90, 16.88, 17.89, 18.89, 19.89, 21.91, 24.90, and 30.90: dense star field [HOR02]. Aug. 2.67: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 7.86, 10.89, 15.99, Sept. 5.86, 6.88, 14.90, 16.88, 17.89, 18.89, Oct. 12.82, and 14.91: moonlight [HOR02]. Aug. 19.65: comp. star has $B-V = +0.35$ [TSU02]. Aug. 19.61, Sept. 27.55, and Oct. 16.46: GUIDE 8.0 software used for comp.-star mags [TSU02]. Aug. 21.60: GUIDE 8.0 software used for comp.-star mags; $B-V$ values of comp. stars were +0.49 and +0.60 [NAK01]. Sept. 5.86: comet close to star [HOR02]. Sept. 19.52: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Sept. 27.55: comp. star has $B-V = +0.55$ [TSU02]. Oct. 1.49: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73; faint tail to E [NAK01]. Oct. 16.46: comp. star has $B-V = +0.39$ [TSU02]. Oct. 19.45: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet P/2003 KV$_2$ (LINEAR)* ⟹ 2003 July 2.42: no enhancement w/ the Swan-band filter [MAT08]. July 17.42: not visible w/ Swan-band filter [MAT08].

◇ *Comet C/2003 L2 (LINEAR)* ⟹ 2003 Aug. 2.60: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 7.92, 10.92, 15.88, Sept. 5.83, and 6.83: moonlight [HOR02]. Sept. 19.46: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Sept. 26.46: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.38$ [TSU02]. Oct. 1.45: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73; faint tail to E [NAK01]. Oct. 17.42: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01].

◇ *Comet C/2003 O1 (LINEAR)* ⟹ 2003 Aug. 2.62: $B-V$ values of comp. stars were +0.58, +0.68, +0.72, +0.73, and +0.86 [NAK01]. Aug. 21.61: GUIDE 8.0 software used for comp.-star mags; $B-V$ values of comp. stars were +0.49 and +0.60 [NAK01]. Sept. 19.49: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Sept. 27.55: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.51$ [TSU02]. Oct. 1.47: $B-V$ values of comp. stars were +0.68, +0.72, and +0.73 [NAK01]. Oct. 17.43: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01].

◇ *Comet P/2003 O2 (LINEAR)* ⟹ 2003 Aug. 11.05, Sept. 7.02, and 19.04: moonlight [HOR02]. Aug. 23.05 and 24.02: comet close to bright star [HOR02]. Aug. 25.00: weak, broad tail; comet moving w/ predicted motion, in two images [SHU]. Sept. 3.69: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Sept. 8.74: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 26.62: comp. star has $B-V = +0.72$ [TSU02]. Sept. 26.62 and Oct. 18.55: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 26.74: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 18.55: comp. star has $B-V = +0.43$ [TSU02]. Oct. 19.66: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet P/2003 O3 (LINEAR)* ⟹ 2003 Sept. 3.67: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Sept. 8.75: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 26.73: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 17.56: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.63$ [TSU02]. Oct. 19.62: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2003 QX$_{29}$ (NEAT)* ⟹ 2003 Sept. 4.64: $B-V$ values of comp. stars were +0.75 and +0.93 [NAK01].

Sept. 30.60: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.50: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 19.52: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2003 R1 (LINEAR)* ⟹ 2003 Sept. 8.77: $B-V$ values of comp. stars were +0.62, +0.67, +0.85, and +0.93 [NAK01]. Sept. 26.68: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Oct. 2.63: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.46: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.70$ [TSU02]. Oct. 17.54: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 24.54: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.51: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet P/2003 S1 (NEAT)* ⟹ 2003 Sept. 26.69: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Sept. 29.54: comp. star has $B-V = +0.50$ [TSU02]. Sept. 29.54 and Oct. 17.50: GUIDE 8.0 software used for comp.-star mags [TSU02]. Sept. 30.66: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 4.67: comp. star has $B-V = +0.66$ [OHS]. Oct. 4.67 and 29.55: GUIDE 8.0 software used for comp.-star mags [OHS]. Oct. 17.50: comp. star has $B-V = +0.63$ [TSU02]. Oct. 17.55: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 24.55: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.55: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.81$ [OHS]. Oct. 29.60: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet P/2003 S2 (NEAT)* ⟹ 2003 Sept. 26.67: $B-V$ values of comp. stars were +0.68, +0.79, +0.84, and +0.87 [NAK01]. Sept. 30.67: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.51: GUIDE 8.0 software used for comp.-star mags; comp. star has $B-V = +0.32$ [TSU02]. Oct. 17.58: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 24.56: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.55: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2003 S3 (LINEAR)* ⟹ 2003 Sept. 30.74: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 19.67: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01]. Oct. 23.72: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01].

◇ *Comet C/2003 S4 (LINEAR)* ⟹ 2003 Oct. 2.59: $B-V$ values of comp. stars were +0.62, +0.67, +0.68, +0.85, and +0.87 [NAK01]. Oct. 17.51: $B-V$ values of comp. stars were +0.68, +0.72, +0.73, and +0.87 [NAK01]. Oct. 29.46: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet C/2003 T2 (LINEAR)* ⟹ 2003 Oct. 23.82: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01]. Oct. 30.73: $B-V$ values of comp. stars were +0.45, +0.59, +0.63, +0.83, and +0.85 [NAK01].

◇ *Comet C/2003 T3 (Tabur)* ⟹ 2003 Oct. 16.94: ASAS-3 comp. stars of mag $V = 11.4$ (200138–5635.9) and 12.3 (200057–5637.0) [AMO01]. Oct. 23.94: ASAS-3 comp. stars of mag $V = 11.9$ (200458–5413.6) and 12.4 (200505–5416.4) [AMO01].

◇ *Comet C/2003 T4 (LINEAR)* ⟹ 2003 Oct. 23.80: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01]. Oct. 30.72: $B-V$ values of comp. stars were +0.45, +0.59, +0.63, +0.83, and +0.85 [NAK01].

◇ *Comet C/2003 U1 (LINEAR)* ⟹ 2003 Oct. 23.74: $B-V$ values of comp. stars were +0.59, +0.62, +0.63, +0.67, and +0.85 [NAK01]. Oct. 29.69: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85; broad tail expands to the NW [NAK01].

◇ *Comet P/2003 U2 (LINEAR)* ⟹ 2003 Oct. 24.44: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.45: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, and +0.85 [NAK01].

◇ *Comet P/2003 U3 (NEAT)* ⟹ 2003 Oct. 24.57: $B-V$ values of comp. stars were +0.51, +0.55, +0.70, and +0.75 [NAK01]. Oct. 29.57: $B-V$ values of comp. stars were +0.51, +0.55, +0.62, +0.67, +0.70, 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.]:*

ABB 07 James Abbott, Essex, England
AMO01 35 Alexandre Amorim, Brazil
BARO6 37 Alexandr R. Baransky, Ukraine
BIV Nicolas Biver, France
BOE Leo Boethin, The Philippines
CERO1 23 Jakub Černý, Praha, Czech Rep.
DESO1 Jose G. de Souza Aguiar, Brazil
EZA 16 Yuusuke Ezaki, Osaka, Japan
GONO5 Juan J. Gonzalez, Asturias, Spain
GRAO4 24 Bjoern Haakon Granslo, Norway
GRE Daniel W. E. Green, U.S.A.
HASO2 Werner Hasubick, Germany
HORO2 23 Kamil Hornoch, Czech Republic
JON Albert F. Jones, New Zealand

KAD02 16 Ken-ichi Kadota, Saitama, Japan
KAM01 Andreas Kammerer, Germany
KAR02 21 Timo Karhula, Virsbo, Sweden
LAB02 C. Labordena, Castellon, Spain
LEH Martin Lehky, Czech Republic
LIN04 Mike Linnolt, HI, U.S.A.
MAT08 Michael Mattiazzo, S. Australia
MEY 28 Maik Meyer, Germany
MIY01 16 Osamu Miyazaki, Ibaraki, Japan
MOM 16 Masahiko Momose, Nagano, Japan
MUR02 16 Shigeki Murakami, Niigata, Japan
NAG08 16 Yoshimi Nagai, Nagano, Japan
NAK01 16 Akimasa Nakamura, Ehime, Japan
NED 23 Martin Nedved, Praha, Czech Rep.
NEV 42 Vitali S. Nevski, Belarus
OHS 16 Yuuji Ohshima, Nagano, Japan
SEA 14 David A. J. Seargent, Australia
SHA02 07 Jonathan D. Shanklin, England
SHU 42 S. E. Shurpakov, Baran, Belarus
SOU01 35 W. C. de Souza, Sao Paulo, Brazil
TSU02 16 M. Tsumura, Wakayama, Japan
YOS02 16 Katsumi Yoshimoto, Hirao, Japan
YOS04 16 Seiichi Yoshida, Ibaraki, Japan

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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 old-style CCD tabulated data are on page 177; new-style CCD tabulated data also begin on page 177.*

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Visual Data

Comet 2P/Encke

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR		COMA	DC	TAIL	PA	OBS.
2003 10 04.66	x	S	[13.3:	HS	32.0	L	5	91	!	1.0				NAG08
2003 10 16.79		S	[13.9	HS	30	R	20	400						SHA02
2003 10 19.86		S	13.2	TK	30	L	5	100		1	1			NEV
2003 10 19.99		S	13.5	VB	30	R	20	300		0.7	1			SHA02
2003 10 22.89		B	12.1	TI	23.5	T	10	188		1	3			LAB02
2003 10 23.51	x	S	11.8	HS	25.4	L	4	46		6	0			YOS02
2003 10 23.61	x	S	12.0:	HS	32.0	L	5	91	&	3	1			NAG08
2003 10 24.89		S	12.9	VB	30	R	20	230		0.8	1			SHA02
2003 10 24.94		S	10.7	TI	7.6	L	9	35		3.5	1			CER01
2003 10 25.58	x	S	11.3	HS	25.4	L	4	46		5	0/			YOS02
2003 10 26.00		B	[12.7	VB	20.3	T	10	77	!	1.0				GRA04
2003 10 26.61	x	S	11.7	HS	32.0	L	5	91		5	1			NAG08
2003 10 27.01		S	12.4	VB	30	R	20	185		1.4	1			SHA02
2003 10 27.53	x	S	9.4	TK	45.7	L	4	68		4	1			MUR02
2003 10 27.94		S	9.9	VB	8.0	B		20		4.5	3			SHA02
2003 10 28.01		S	10.4	TI	11.4	L	8	23		5	2			CER01
2003 10 28.66	x	S	10.9	TK	25.4	L	4	46		5	1			YOS02
2003 10 29.52	x	S	10.9	HS	32.0	L	5	58		5	1			NAG08
2003 10 29.64		S	[10.7	TJ	25.4	T	6	67	!	3				YOS04
2003 10 29.73	w	M	12.8	PA	41	L	4	89		1	2/			SHU
2003 10 30.04		S	11.3	HS	36	L	6	70		3	2			BAR06
2003 10 30.67	x	S	11.1	TK	25.4	L	4	46		5	1			YOS02
2003 10 31.15		S	9.9	TJ	25.4	L	4	38	&	5	1/			GRE

Comet 24P/Schaumasse

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1993 03 18.55		S	9.0	S	15.0	L	6	36	3	2			YOS02

Comet 29P/Schwassmann-Wachmann

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 06 27.13		S	13.7	HS	20.3	T	10	160	1.2	3			BIV
2003 06 27.14		S	13.6	HS	20.3	T	10	77	1.5	2			BIV
2003 06 28.06		S	13.6	HS	20.3	T	10	77	1.5	3			BIV
2003 06 28.07		S	13.6	HS	20.3	T	10	160	1.2	4			BIV
2003 06 29.05		S	13.8	HS	20.3	T	10	77	1.4	2			BIV
2003 06 29.06		S	13.9	HS	20.3	T	10	160	1.0	2			BIV
2003 07 27.70		S	14.0:	HS	28	T	10	133	1.0	3			MAT08
2003 08 23.98		B	12.8	TI	23.5	T	10	188	3	2			LAB02
2003 08 24.10		M	13.6	HS	35	L	5	158	0.2	8			HOR02
2003 08 25.11		M	13.3	HS	35	L	5	158	0.6	7			HOR02
2003 08 25.92		M	12.6	HS	42	L	5	81	0.6	7			LEH
2003 08 26.85		M	11.5	HS	42	L	5	81	1.0	6			LEH
2003 08 27.08		M	12.9	HS	35	L	5	158	0.9	6			HOR02
2003 08 27.12		S	12.7	HS	20.3	T	10	206	1	5			GON05
2003 08 30.09		S	13.9:	VB	30	R	20	230	0.4	6			SHA02
2003 08 31.40		S	13.2	HS	37	L	3	256	1.1	5			LIN04
2003 09 02.87		S	13.0	HS	44.0	L	5	156	0.5	3			HAS02
2003 09 06.08		S	12.1	TK	35	L	5	68	2.2	2/			HOR02

Comet 29P/Schwassmann-Wachmann [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 20.84		S	15.0	HS	44.0	L	5	156	0.5	2			HAS02
2003 09 27.53	x	M	12.8	HS	25.4	L	4	113	0.8	7			YOS02
2003 09 27.66		S	13.0	HS	28	T	10	133	0.8	7			MAT08
2003 09 28.35		S	12.2	TK	37	L	3	256	0.8	7			LIN04
2003 09 29.61	x	S	12.6	HS	32.0	L	5	91	1.5	5			NAG08
2003 09 30.84		S	13.0	HS	25.4	T	10	98	0.4	4			HAS02
2003 10 04.64	x	S	13.0	HS	32.0	L	5	91	1.0	4/			NAG08
2003 10 16.78		S	12.9	HS	30	R	20	230	0.7	3			SHA02
2003 10 27.78		S	13.2:	VB	30	R	20	185	0.6	3			SHA02

Comet 43P/Wolf-Harrington

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 20.82		S	13.5	HS	44.0	L	5	226	0.8	3			HAS02

Comet 45P/Honda-Mrkos-Pajdušáková

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1995 12 17.39		S	8.8	S	15.0	L	6	36	4	7			YOS02
1995 12 23.39		S	8.2	S	15.0	L	6	36	3	7			YOS02

Comet 53P/Van Biesbroeck

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 07 17.43		S	14.0:	HS	28	T	10	310	0.5	6			MAT08

Comet 65P/Gunn

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 06 27.03		S	11.7	HS	20.3	T	10	77	1.5	5			BIV
2003 06 28.05		S	12.0	HS	20.3	T	10	77	1.3	5			BIV
2003 06 28.06		S	12.0	HS	20.3	T	10	160	1.5	5			BIV
2003 06 28.94		S	11.9	HS	20.3	T	10	77	1.0	5			BIV
2003 07 17.45		S	13.0:	HS	28	T	10	133	1	4			MAT08
2003 08 23.99		S	12.6	TJ	27	L	5	55	2	1/			DES01
2003 08 24.01		S	12.5	TJ	27	L		55	1	1			SOU01

Comet 66P/du Toit

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 07 17.44		S	13.3	HS	28	T	10	133	2	2			MAT08
2003 07 22.43		S	12.4	TK	28	T	10	133	2	2			MAT08
2003 07 22.43		S	12.9	HS	28	T	10	133	2	2			MAT08
2003 07 27.46		S	12.3	TK	28	T	10	133	2	2			MAT08
2003 07 27.46		S	12.8	HS	28	T	10	133	2	2			MAT08
2003 07 29.44		S	12.4	TK	28	T	10	133	2	2			MAT08
2003 08 15.41		S	12.0	TK	28	T	10	133	2	2			MAT08
2003 08 26.44		S	12.0	GA	25.4	L	4	71	2				SEA
2003 08 26.47		S	11.7	TK	28	T	10	133	2	3			MAT08
2003 08 28.48		S	12.1	GA	25.4	L	4	71	2	2			SEA
2003 09 19.45		S	12.7	GA	25.4	L	4	71					SEA
2003 09 21.43		S	12.9	HS	28	T	10	133	1	2			MAT08

Comet 73P/Schwassmann-Wachmann

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1995 10 12.40		B	6.2	S	15.0	L	6	36	2.5	8	0.42	100	YOS02
1995 10 18.42		B	6.4	S	4.2	B		7	3	8	0.5	100	YOS02
1995 10 25.42		S	7.7	S	15.0	L	6	36	4	4	0.25	90	YOS02

Comet 104P/Kowal

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1973 01 11.83			10.4	TJ	20.3	L			8	s3			BOE
1973 01 12.83			10.4	TJ	20.3	L							BOE

Comet 104P/Kowal [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1973 01 13.83			10.4	TJ	20.3	L							BOE
1973 01 15.83			12.5:		20.3	L							BOE

Comet 116P/Wild

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 06 28.90		S	12.4	TK	20.3	T	10	77	1.6	4			BIV
2003 07 17.43		S	13.0	HS	28	T	10	133	1.5	3			MAT08

Comet 122P/de Vico

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1995 09 24.82		B	5.7	S	15.0	L	6	36	5	6	0.33	275	YOS02
1995 10 11.84		S	5.6	S	15.0	L	6	36	7	6	0.17	300	YOS02

Comet 157P/Tritton

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 08.19		S	11.4	TK	20.3	T	10	77	1.3	5			GON05
2003 10 08.81	x	S	12.1	HS	31.7	L	6	152	0.6	3			MIY01
2003 10 23.82	x	S	12.7	HS	25.4	L	4	113	1.2	1			YOS02
2003 10 30.06		S	12.9	HS	36	L	6	70	1.3	3			BAR06

Comet C/1990 K1 (Levy)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1990 07 04.72		S	8.5	S	15.0	L	6	36	4	5			YOS02

Comet C/1991 Y1 (Zanotta-Brewington)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1992 01 09.41		S	8.5	AA	15.0	L	6	36	4	3			YOS02

Comet C/1993 Y1 (McNaught-Russell)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 04 13.46		S	8.0	S	15.0	L	6	36	7	3			YOS02

Comet C/1994 G1 (Takamizawa-Levy)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1994 05 12.71		S	9.0	S	15.0	L	6	36	2	3			YOS02

Comet C/1995 O1 (Hale-Bopp)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1995 09 18.49		S	10.5:	HS	15.0	L	6	100	1	2			YOS02
1995 10 12.43		S	10.5:	HS	15.0	L	6	100	1	2			YOS02

Comet C/1995 Y1 (Hyakutake)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1995 12 30.86		S	10.0:	HS	15.0	L	6	36	4	2			YOS02
1996 01 20.86		S	9.2	S	15.0	L	6	36	5	2			YOS02
1996 01 30.86		S	8.6	S	15.0	L	6	36	4	4			YOS02

Comet C/1996 B1 (Szczepanski)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1996 01 30.84		S	9.0	S	15.0	L	6	36	6	3			YOS02
1996 02 11.55		S	8.8	S	15.0	L	6	36	7	3			YOS02
1996 02 21.69		S	9.3	HS	15.0	L	6	36	9	3			YOS02

Comet C/1996 B2 (Hyakutake)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1996 03 11.81		M	5.2	AA	4.2	B		7	10	4			YOS02
1996 03 12.67		M	4.7	AA	4.2	B		7	12	5			YOS02
1996 03 13.68		M	4.5	AA	4.2	B		7	12	6	0.67		YOS02
1996 03 15.81		M	3.6	AA	4.2	B		7	20	6	0.67		YOS02
1996 03 22.62		M	0.8	YF	0.0	E		1	90	7	15	240	YOS02
1996 03 23.62		M	0.2	YF	0.0	E		1	90	6	18	230	YOS02
1996 03 30.50		B	1.8	AA	4.2	B		7	25	8	6	30	YOS02
1996 04 02.45		M	2.5	AA	4.2	B		7	15	7	3	40	YOS02
1996 04 05.46		M	2.5	AA	4.2	B		7	10	8	7	45	YOS02
1996 04 11.47		M	2.3	AA	4.2	B		7	10	8	15	45	YOS02
1996 04 20.46		M	2.0:	Y	4.2	B		7	& 8	8/	4	40	YOS02

Comet C/2001 HT_50 (LINEAR-NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 03 24.88		S	12.7	HS	25.6	L	5	84	0.6	5			BIV
2003 03 31.88		S	12.9	HS	25.6	L	5	42	0.9	6			BIV
2003 08 10.78	xl	[	11.0:	HS	32.0	L	5	91					NAG08
2003 08 26.81	x	S	12.3	HS	25.4	L	4	113	1.0	5			YOS02
2003 08 27.17		S	12.5	HS	20.3	T	10	206	1	2			GON05
2003 08 28.99		S	13.2	HS	30	L	5	100	0.5	3			NEV
2003 08 30.11		S	13.3	VB	30	R	20	230	0.6	3			SHA02
2003 09 01.01		S	12.9	HS	30	L	5	100	0.8	2			NEV
2003 09 02.81	x	M	13.0	HS	35.0	C	14	210	0.4				TSU02
2003 09 04.79		S	11.4	TJ	25.4	T	6	116	1.4	4			YOS04
2003 09 05.09		M	11.3	TI	11.4	L	8	75	1.5	3			CER01
2003 09 06.11		M	12.1	HS	35	L	5	68	1.5	6			HOR02
2003 09 07.00	s	M	12.9	PA	41	L	4	89	& 1	3			SHU
2003 09 21.08		M	10.7	TT	42	L	5	81	2	4			LEH
2003 09 22.07		M	11.5	TI	11.4	L	8	76	1.5	4			CER01
2003 09 22.09		S	12.1	TI	11.4	L	8	76	1.5				NED
2003 09 22.10		M	10.7	TT	42	L	5	81	2	4			LEH
2003 09 22.64	x	S	12.4	HS	32.0	L	5	91	0.9	5			NAG08
2003 09 22.73		S	11.5	HS	25.4	T	6	116	1.9	4			YOS04
2003 09 22.76	x	S	12.2	HS	31.7	L	6	63	1.2	4			MIY01
2003 09 24.13		S	12.8	VB	30	R	20	185	0.8	5			SHA02
2003 09 25.05		M	11.5	TI	11.4	L	8	76	1.5	5			CER01
2003 09 25.15		S	12.1	TK	20.3	T	10	133	1.5	2			GON05
2003 09 26.09		M	11.5	TI	11.4	L	8	76	1.5	4			CER01
2003 09 26.10		S	11.5	TI	11.4	L	8	76	1				NED
2003 09 27.01		M	11.8	TK	35	L	5	68	1.3	5			HOR02
2003 09 27.05	s	M	12.5	PA	41	L	4	89	1	3/			SHU
2003 09 27.74	x	S	12.2	HS	25.4	L	4	113	1.3	6			YOS02
2003 09 27.79		S	11.6	HS	25.4	T	6	62	1.7	4			YOS04
2003 09 27.98		B	11.6	TI	23.5	T	10	188	1.5	2			LAB02
2003 09 29.10		S	12.7	VB	30	R	20	185	0.4	5			SHA02
2003 09 30.78	x	S	11.4	HS	31.7	L	6	63	1.4	3/			MIY01
2003 10 01.01		M	11.4	TI	11.4	L	8	76	2	2			CER01
2003 10 04.63	x	S	11.9	HS	32.0	L	5	91	1.6	5			NAG08
2003 10 05.04		S	11.8	TK	20.3	T	10	77	1.4	4			GRA04
2003 10 05.13		S	12.5	VB	30	R	20	185	0.5	6			SHA02
2003 10 08.82	x	S	11.3	HS	31.7	L	6	63	1.4	3/			MIY01
2003 10 17.55	x	S	12.0	HS	25.4	L	4	113	1.3	4			YOS02
2003 10 19.85		M	11.9	TK	30	L	5	60	1.5	4			NEV
2003 10 20.00		S	11.8	VB	30	R	20	185	0.9	s3			SHA02
2003 10 22.90		B	11.1	TI	23.5	T	10	188	3	3			LAB02
2003 10 23.59	x	S	11.3	HS	32.0	L	5	58	1.6	6			NAG08
2003 10 23.60	x	M	11.9	HS	25.4	L	4	81	1.3	D6			YOS02
2003 10 23.77	x	S	11.2	HS	31.7	L	6	63	1.1	4/			MIY01
2003 10 24.91		S	11.0	VB	30	R	20	185	0.7	3			SHA02
2003 10 24.98		M	11.1	TI	7.6	L	9	35	1.8	3			CER01
2003 10 26.02		S	11.7	TK	20.3	T	10	77	1.0	4			GRA04
2003 10 26.60	x	S	11.0	TJ	32.0	L	5	58	1.5	6			NAG08
2003 10 27.02		S	11.3	VB	30	R	20	185	0.6	4			SHA02
2003 10 27.55	x	S	11.5	HS	45.7	L	4	68	1.7	6	3.4	75	MUR02

Comet C/2001 HT_50 (LINEAR-NEAT) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 27.96		S	11.7	TK	30.5	T	10	115	1.0	7			KAM01
2003 10 28.06		M	11.5	TI	11.4	L	8	76	2	4			CER01
2003 10 28.06		S	11.6	TI	11.4	L	8	76	1.5	6			NED
2003 10 28.83		M	10.9	TT	42	L	5	81	2	4/			LEH
2003 10 29.53	x	S	10.9	TJ	32.0	L	5	58	1.7	6			NAG08
2003 10 29.59		S	10.5	TJ	25.4	T	6	67	1.9	5/			YOS04
2003 10 29.79	w	M	12.0	PA	41	L	4	89	1	5			SHU
2003 10 30.02		S	11.5	TT	36	L	6	70	1.5	5			BAR06
2003 10 31.21		S	11.1	TJ	25.4	L	4	38	& 3	4/			GRE

Comet C/2001 K5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 08 26.81		B	14.2	HS	42	L	5	81	0.7	5			LEH

Comet C/2001 Q4 (NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 07 22.69		S	13.0	GA	28	T	10	133	1.0	5			MAT08
2003 07 22.69		S	13.5	HS	28	T	10	133	1.0	5			MAT08
2003 07 27.71		S	12.9	TK	28	T	10	133	1.0	5			MAT08
2003 08 04.70		S	12.6	GA	25.4	L	4	71					SEA
2003 08 06.71		M	12.5	GA	25.4	L	4	71	0.9	5			SEA
2003 08 26.56		S	12.0	GA	25.4	L	4	71					SEA
2003 08 28.57		M	12.0	GA	25.4	L	4	71					SEA
2003 08 28.59		S	12.1	GA	10.0	B		25					SEA
2003 09 17.56		S	11.6	GA	10.0	B		25					SEA
2003 09 18.58		S	12.1	TK	28	T	10	133	1.0	5			MAT08
2003 09 19.53		S	11.6	GA	10.0	B		25					SEA
2003 09 20.31		S	12.3	HS	14.3	L	6	80	0.5	0/			AMO01
2003 09 21.58		S	12.0	TK	28	T	10	133	1.0	5			MAT08
2003 09 22.33		S	11.7:	TK	14.3	L	6	80		0/			AMO01
2003 09 27.67		S	11.9	TK	28	T	10	133	1.0	6			MAT08
2003 10 02.13		S	12.0	TK	14.3	L	6	80		0/			AMO01
2003 10 17.08		S[	12.3	AU	14.3	L	6	80					AMO01
2003 10 18.10		S	11.0	TK	14.3	L	6	80	1	2			AMO01
2003 10 24.04		S	11.2	TK	14.3	L	6	80	1	4			AMO01
2003 10 28.62		S	12.1	AU	31.7	L	5	97	1	1			JON
2003 10 28.62		S	12.2	TK	31.7	L	5	97	1	1			JON
2003 10 30.60		S	12.0	AU	31.7	L	5	97	1	1			JON
2003 10 30.60		S	12.1	TK	31.7	L	5	97	1	1			JON
2003 10 31.59		S	12.1	AU	31.7	L	5	97	1	1			JON
2003 10 31.59		S	12.6	HS	31.7	L	5	97	1	1			JON

Comet C/2001 RX_14 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 03 21.85		M	10.5	TI	7.6	L	9	35	2	6			CER01
2003 03 22.85		S	11.1	TK	25.6	L	5	42	2.5	5			BIV
2003 03 24.86		S	11.4	TK	25.6	L	5	42	2.5	5			BIV
2003 03 31.89		S	11.4	TK	25.6	L	5	42	2.5	5			BIV
2003 04 03.16		S	11.5	TK	25.6	L	5	42	2.0	5			BIV
2003 04 07.15		S	11.7	TK	25.6	L	5	42	2.0	5			BIV
2003 04 09.15		S	11.5	TK	25.6	L	5	42	2.0	5			BIV
2003 04 21.89		S	11.9	TK	20.3	L	6	48	2.0	5			BIV

Comet C/2002 CE_10 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 09 20.83		S	15.5	HS	44.0	L	5	416		9			HAS02

Comet C/2002 J4 (NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 07 17.46		S[	14.0	HS	28	T	10	310	! 1				MAT08

Comet C/2002 O7 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR		COMA	DC	TAIL	PA	OBS.
2003 06 28.93		S	12.6:	HS	20.3	T	10	77		1.0	4			BIV
2003 06 29.89		S	12.8	HS	20.3	T	10	77		1.5	2			BIV
2003 06 29.90		S	13.1	HS	20.3	T	10	160		1.0	3			BIV
2003 07 17.41		S	11.4	TK	28	T	10	133		2	3			MAT08
2003 07 22.42		S	11.4	TK	28	T	10	133		2	3			MAT08
2003 07 27.40		S	10.9	TK	28	T	10	133		3	4			MAT08
2003 09 27.79		S[12	:	TK	28	T	10	133	!	1				MAT08

Comet C/2002 T7 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR		COMA	DC	TAIL	PA	OBS.
2003 08 23.09		M	13.0	HS	35	L	5	158		0.3	7/			HOR02
2003 08 24.08		B	12.7	TI	23.5	T	10	313		0.5	3			LAB02
2003 08 25.03		S	12.3	HS	11.4	L	8	75		1	3			CER01
2003 08 26.78	x	S	12.2	HS	25.4	L	4	113		0.6	7			YOS02
2003 08 27.07		M	12.9	HS	35	L	5	158		0.5	7			HOR02
2003 08 27.14		S	12.9	HS	20.3	T	10	206		0.5	3			GON05
2003 08 28.98		M	12.2	TK	30	L	5	100		0.6	5			NEV
2003 08 30.12		S	13.0	VB	30	R	20	230		0.4	6			SHA02
2003 08 31.81	x	S	12.3:	HS	25.4	L	4	113		0.6	6			YOS02
2003 09 01.00		M	12.6	TK	30	L	5	100		0.4	4			NEV
2003 09 02.82	x	M	12.6	HS	35.0	C	14	208		0.4				TSU02
2003 09 04.77		S	12.7	HS	25.4	T	6	116		0.6	6			YOS04
2003 09 05.07		S	12.2	HS	11.4	L	8	75		0.5	3			CER01
2003 09 05.08		S	12.6	HS	11.4	L	8	75		0.5				NED
2003 09 06.00		S	12.3	HS	20	T	10	200		0.8	2			KAR02
2003 09 06.05		M	12.6	HS	35	L	5	158		0.7	7			HOR02
2003 09 06.96	s	M	12.3	PA	41	L	4	89		0.5	4			SHU
2003 09 19.00		S	11.8:	TI	11.4	L	8	101		0.5	6			CER01
2003 09 21.10		M	11.6	TT	42	L	5	81		1.6	6			LEH
2003 09 21.78	x	S	12.3	HS	25.4	L	4	113		0.5	6			YOS02
2003 09 21.98		S	11.8	HS	36	L	6	70		0.9	4			BAR06
2003 09 22.03		S	12.1	TI	11.4	L	8	101		0.5	5			CER01
2003 09 22.05		S	12.4:	HS	11.4	L	8	101		0.5				NED
2003 09 22.12		M	11.5	TT	42	L	5	81		1.5	6			LEH
2003 09 22.63	x	S	12.3	HS	32.0	L	5	91		0.8	6			NAG08
2003 09 22.71		S	11.5	TJ	25.4	T	6	116		0.8	7	1.2m	260	YOS04
2003 09 22.78	x	S	12.1	HS	31.7	L	6	63		1.1	5/			MIY01
2003 09 22.94		S	11.4	HS	36	L	6	70		1.3	4			BAR06
2003 09 23.98	s	M	12.5	PA	41	L	4	89	&	1	3			SHU
2003 09 24.14		S	13.0	VB	30	R	20	185		0.3	7			SHA02
2003 09 25.03		M	11.7	TI	11.4	L	8	76		1	5			CER01
2003 09 25.05		S	11.9	TI	11.4	L	8	76		1				NED
2003 09 25.07		M	11.9	TK	35	L	5	68		0.8	7/			HOR02
2003 09 25.12		S	11.9	TK	20.3	T	10	206		0.8	5			GON05
2003 09 25.99		S	12.2	TK	30	L	4	96		0.6	5			ABB
2003 09 26.06		M	11.6	TI	11.4	L	8	76		0.7	5			CER01
2003 09 26.08		S	11.6	TI	11.4	L	8	76		1				NED
2003 09 27.04		M	12.0	TK	35	L	5	68		0.7	7/			HOR02
2003 09 27.07	s	M	12.6	PA	41	L	4	89		0.33	4			SHU
2003 09 27.74		S	11.7	TJ	25.4	T	6	133		1.3	6/			YOS04
2003 09 27.77	x	M	12.0	HS	25.4	L	4	113		0.9	7			YOS02
2003 09 27.99		B	11.8	TI	23.5	T	10	188		1	2			LAB02
2003 09 28.96		S	12.0	TK	30	L	4	96		0.6	5			ABB
2003 09 29.13		S	12.0	VB	30	R	20	185		0.5	7			SHA02
2003 09 29.92		S	11.3	HS	36	L	6	70		1.4	3			BAR06
2003 09 30.79	x	S	11.6	HS	31.7	L	6	63		0.9	7			MIY01
2003 10 01.00		M	11.5	TI	11.4	L	8	76		1	5			CER01
2003 10 01.03		M	11.9	TK	35	L	5	68		0.6	7			HOR02
2003 10 04.62	x	S	11.3	HS	32.0	L	5	91		1.0	7			NAG08
2003 10 05.05		S	11.7	TK	20.3	T	10	77		1.1	4			GRA04
2003 10 05.14		S	12.0	VB	30	R	20	185		0.5	7			SHA02
2003 10 08.21		S	11.6	TK	20.3	T	10	77		0.9	6			GON05
2003 10 17.56	x	S	11.3	TK	25.4	L	4	113		1.0	6			YOS02
2003 10 18.16		S	11.1	TK	14.3	L	6	112		0.5	1/			AMO01

Comet C/2002 T7 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 19.09		M	11.3	TK	15.2	L	5	58	1.0	4			GRA04
2003 10 19.84		M	11.6	TK	30	L	5	60	0.8	5			NEV
2003 10 20.02		S	11.1	VB	30	R	20	185	0.6	5			SHA02
2003 10 21.10		M	11.3	TK	20.3	T	10	77	1.3	5			GRA04
2003 10 22.91		B	10.8	TI	23.5	T	10	188	2	5			LAB02
2003 10 23.43		S	11.0	TK	37	L	3	256	1.3	7			LIN04
2003 10 23.60	x	M	10.8	TJ	32.0	L	5	58	1.3	7			NAG08
2003 10 23.63	x	M	11.0	TK	25.4	L	4	81	1.0	6			YOS02
2003 10 23.79	x	S	11.1	HS	31.7	L	6	63	0.9	5/			MIY01
2003 10 24.10		M	11.2	TK	15.2	L	5	44	1.0	5			GRA04
2003 10 24.56		S	11.5	TK	25.0	L	5	46	1.0	6			MOM
2003 10 24.92		S	10.8	VB	30	R	20	185	0.7	6			SHA02
2003 10 24.96		M	10.4	TI	7.6	L	9	35	0.8	6			CER01
2003 10 25.56	x	M	11.2	TK	25.4	L	4	81	1.1	6			YOS02
2003 10 26.04		M	11.1	TK	20.3	T	10	77	1.2	5			GRA04
2003 10 26.54	x	M	10.9	TJ	32.0	L	5	58	1.2	7			NAG08
2003 10 27.03		S	10.7	VB	30	R	20	185	0.7	6			SHA02
2003 10 27.56	x	S	10.7	HS	45.7	L	4	68	0.7	7			MUR02
2003 10 27.95		S	10.8	TK	10.0	B		20	& 1	8			MEY
2003 10 27.95		S	11.1	TK	10	B		25	& 1.0	9			SHA02
2003 10 28.07		M	11.0	TK	15.2	L	5	44	1.1	5			GRA04
2003 10 28.08		M	10.4	TI	11.4	L	8	76	1.0	6			CER01
2003 10 28.67	x	M	11.1	HS	25.4	L	4	46	1.2	6			YOS02
2003 10 28.87		M	11.0	TT	42	L	5	81	1.7	6			LEH
2003 10 28.90		S	10.6	TK	10.0	B		20	1	7/			MEY
2003 10 29.54	x	M	10.6	TJ	32.0	L	5	58	1.2	7/			NAG08
2003 10 29.60		S	10.4	TJ	25.4	T	6	67	1.3	7			YOS04
2003 10 29.81	w	M	10.4	PA	41	L	4	89	1	4			SHU
2003 10 29.84		M	11.0	TT	36	L	6	70	1.4	5	0.05		BAR06
2003 10 30.72	x	M	10.9	TK	25.4	L	4	46	1.2	6			YOS02

Comet C/2002 V1 (NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 01 31.80		B	5.2	TI	5.0	B		10	8	7	30 m		LAB02
2003 02 02.78		B	5.2	TI	8.0	B		11	8	8	60 m	102	LAB02
2003 02 04.79		B	4.9	TI	10.2	R	5	20	6	8	55 m	65	LAB02
2003 02 06.78		B	5.0	TI	8.0	B		11	6	8	51 m	60	LAB02
2003 03 07.35		S	5.4	TK	4.5	R	6	13	3	8			JON
2003 03 08.25		S	5.3	TK	4.5	R	6	13	4	7			JON
2003 03 25.33		S	8.8	TK	31.7	L	5	64	3	8			JON

Comet C/2002 X5 (Kudo-Fujikawa)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 02 26.37		S	7.7	TK	7.8	R	8	30	3	3			JON
2003 03 01.36		S	8.3	TK	31.7	L	5	64	3	6			JON
2003 03 03.37		S	9.3	TK	31.7	L	5	64	2	5			JON
2003 03 04.38		S	9.1	TK	31.7	L	5	64	2	3			JON
2003 03 06.39		S	9.6	TK	31.7	L	5	64	2	3			JON
2003 03 07.36		S	9.1	TK	31.7	L	5	64	2	3			JON
2003 03 08.37		S	9.4	TK	31.7	L	5	64	4	3			JON
2003 03 11.36		S	10.7	TK	31.7	L	5	64	1	2			JON
2003 03 14.35		S	10.3	TK	31.7	L	5	64	1	2			JON
2003 03 22.34		S	11.7	TK	31.7	L	5	64	1	1			JON
2003 03 22.81		S	10.8:	TK	25.6	L	5	42	2	2			BIV
2003 03 23.34		S	12.0	TK	31.7	L	5	64	1	1			JON
2003 03 24.81		S	10.2	TK	25.6	L	5	42	3	3			BIV
2003 03 24.82		S	10.4	TK	25.6	L	5	84	2.5	3			BIV
2003 03 31.84		S	10.7	TK	25.6	L	5	42	3	2			BIV

Comet C/2002 Y1 (Juels-Holvorcem)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 03 21.82		M	6.3	TI	5.0	B		10	10	4			CER01

Comet C/2002 Y1 (Juels-Holvorcem) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 03 22.83		S	6.9	TK	5.0	B		7	4	7			BIV
2003 03 22.83		S	6.9	TK	25.6	L	5	42	3.5	6			BIV
2003 03 23.81		S	6.8	TK	5.0	B		7	5	5			BIV
2003 03 23.82		S	7.0	TK	25.6	L	5	42	3	6			BIV
2003 03 24.83	!	S	6.6	TK	5.0	B		7	5	6			BIV
2003 03 24.83	!	S	6.7	TK	25.6	L	5	42	3	7	0.3	345	BIV
2003 03 31.81		S	6.5:	HV	5.0	B		7	4	7			BIV
2003 03 31.82		S	6.7	HV	25.6	L	5	42	2.5	7			BIV
2003 04 01.16		S	6.7	HV	5.0	B		7	3	7	0.6	345	BIV
2003 04 01.17		S	6.9	HV	25.6	L	5	42	2.5	7	0.4	345	BIV
2003 04 03.17		B	6.7	HV	5.0	B		7	3	7			BIV
2003 04 03.18		S	6.6	HV	25.6	L	5	42	2.5	7	0.3	345	BIV
2003 04 07.16		S	6.6	HV	5.0	B		7	3	7			BIV
2003 04 07.17		S	6.7	HV	25.6	L	5	42	2	7	0.25	335	BIV
2003 04 09.16		B	6.5	HV	5.0	B		7	2	7			BIV
2003 04 09.17		S	6.6	HV	25.6	L	5	42	2	8	0.2	320	BIV
2003 04 11.16		B	6.6	HV	5.0	B		7	3	7			BIV
2003 04 11.17		S	6.8	HV	25.6	L	5	42	2	7	0.2	320	BIV
2003 07 27.68		S	10.6	TK	10	B		25	4.0	3			MAT08
2003 07 27.69		S	10.9	TK	28	T	10	133	3.0	3			MAT08

Comet P/2003 KV_2 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 07 17.42		S[	14.0	HS	28	T	10	133	! 1				MAT08
2003 07 29.45		S[	14.0	HS	28	T	10	133	! 1				MAT08

Comet C/2003 T3 (Tabur)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 16.94		S	12.0	AU	14.3	L	6	80	0.5	0/			AM001
2003 10 23.94		S	12.0:	AU	14.3	L	6	112		0/			AM001

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Non-Visual Data (old format)

Comet C/2001 HT_50 (LINEAR-NEAT)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 17.07		C	12.5:	GA	5.3	A	3	a 30	1	d0			MOR09

Comet C/2002 T7 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2003 10 18.01		C	11.9:	GA	5.3	A	3	a 30	0.75	d0			MOR09

◇ ◇ ◇

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 169-170 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 2P/Encke

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 08.04	d	k	19.1	LA	35	L	5	a900	0.22				C 0.22m	T24	GAI	5*		ST6	HORO2
2003 08 23.02	d	k	18.5	LA	35	L	5	a780	0.27				C 0.27m	T24	GAI	5*		ST6	HORO2
2003 08 24.04	d	k	18.2	LA	35	L	5	a810	0.25				C 0.25m	T24	GAI	5*		ST6	HORO2
2003 08 27.04	d	k	18.9	LA	35	L	5	a900	0.23				C 0.23m	T24	GAI	5*		ST6	HORO2
2003 09 02.75	ax	C	18.5	HV	35.0	C	9	a120	< 0.15				S 0.25m	KAIaSI3		5		ST2	TSUO2
2003 09 03.65		C	18.4	GA	60.0	Y	6	a240		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 05.97	d	k	18.0	LA	35	L	5	a900	0.27				C 0.27m	T24	GAI	5*	P	ST6	HORO2
2003 09 17.91	d	k	16.8	LA	35	L	5	A380	0.32				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 17.91	d	k	16.9	LA	35	L	5	A380	0.32				C 0.32m	T24	GAI	5*	P	ST6	HORO2
2003 09 18.59	ax	C	17.9	HV	35.0	C	9	a120	< 0.15				S 0.25m	KAIaSI3		5		ST2	TSUO2
2003 09 18.91	d	k	17.2	LA	35	L	5	a720	0.22				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 18.91	d	k	17.2	LA	35	L	5	a720	0.22				C 0.22m	T24	GAI	5*	P	ST6	HORO2
2003 09 19.90	d	k	16.8	LA	35	L	5	a720	0.27				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 19.90	d	k	16.9	LA	35	L	5	a720	0.27				C 0.27m	T24	GAI	5*	P	ST6	HORO2
2003 09 21.88	d	k	16.9	LA	35	L	5	a780	0.33				C 0.33m	T24	GAI	5*	P	ST6	HORO2
2003 09 21.88	d	k	16.9	LA	35	L	5	a780	0.33				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 24.95	d	k	16.8	LA	35	L	5	a540	0.20				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 24.95	d	k	16.8	LA	35	L	5	a540	0.20				C 0.20m	T24	GAI	5*	P	ST6	HORO2
2003 09 26.72		C	15.1	GA	60.0	Y	6	a120	0.55	8			S 0.55m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 30.93	d	k	16.5	LA	35	L	5	a600	0.33				C 0.50m	T24	GAI	5*	P	ST6	HORO2
2003 09 30.93	d	k	16.6	LA	35	L	5	a600	0.33				C 0.33m	T24	GAI	5*	P	ST6	HORO2
2003 10 08.51	ax	C	16.4	HV	35.0	C	9	a 60	< 0.15	9			S 0.35m	KAIaSI3		5		ST2	TSUO2
2003 10 17.54	ax	C	13.9	HV	35.0	C	9	a 60	1.5				S 2.03m	KAIaSI3		5		ST2	TSUO2
2003 10 17.57		C	14.4	GA	60.0	Y	6	a120	1.4	8			S 1.4 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 17.57		c	15.5	GA	60.0	Y	6	a120					S 0.2 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 18.52	ax	C	12.9	HV	35.0	C	9	a240	1.8				S 3.66m	KAIaSI3		5		ST2	TSUO2
2003 10 19.55	ax	C	13.2	HV	35.0	C	9	a 90	1.8				S 2.20m	KAIaSI3		5		ST2	TSUO2
2003 10 19.56		C	13.3	GA	60.0	Y	6	a120	2.6	8			S 2.6 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 19.56		c	15.5	GA	60.0	Y	6	a120					S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 23.65		C	12.4	GA	60.0	Y	6	a120	4.2	8			S 4.2 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 23.65		c	15.3	GA	60.0	Y	6	a120					S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 24.51	ax	C	12.3	HV	35.0	C	9	a 90	3.2				S 3.91m	KAIaSI3		5		ST2	TSUO2
2003 10 29.41	a	V	15.2	LA	30.0	L	6	a300	0.4	8			C 0.4 m	SIA	MIm	5*	U	Ap7	EZA
2003 10 29.42	a	H	14.4	LA	30.0	L	6	a300	0.4	8			C 0.4 m	SIA	MIm	5*	U	Ap7	EZA
2003 10 29.65		C	12.3:	GA	60.0	Y	6	a120	3.9	8			S 3.9 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 29.65		c	15.2	GA	60.0	Y	6	a120					S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1

Comet 22P/Kopff

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 08.76		C	16.5	GA	60.0	Y	6	a240	0.7				S 0.7 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 26.61	ax	C	16.2	HV	35.0	C	9	a720	0.4	3			S 1.13m	KAIaSI3		5		ST2	TSUO2

Comet 22P/Kopff [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 02.70		C	16.4	GA	60.0	Y	6	a240	0.7				S 0.7 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 04.73	x	C	17.1	TJ	25.0	L	5	a240	0.3				S 0.3 m	K42	SI4	5	U	SE7	OHS

Comet 28P/Neujmin

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 26.80		C	18.5	GA	60.0	Y	6	a240		9			S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 23.76		C	18.2	GA	60.0	Y	6	a240		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1

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.
2003 08 02.69		C	12.8	GA	60.0	Y	6	a120	3.3	3			S 3.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 08 02.69		c	16.2	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAKO1
2003 08 23.10	d	k	13.8	LA	35	L	5	a540	1.5				C 1.50m	T24	GAI	5*		ST6	HORO2
2003 08 23.10	d	k	14.2	LA	35	L	5	a540	1.5				C 1.00m	T24	GAI	5*		ST6	HORO2
2003 08 23.10	d	k	14.5	LA	35	L	5	a540	1.5				C 0.75m	T24	GAI	5*		ST6	HORO2
2003 08 23.10	d	k	14.9	LA	35	L	5	a540	1.5				C 0.50m	T24	GAI	5*		ST6	HORO2
2003 08 23.10	d	k	15.6	LA	35	L	5	a540	1.5				C 0.25m	T24	GAI	5*		ST6	HORO2
2003 08 24.08	d	k	13.1	LA	35	L	5	a660	1.5				C 1.50m	T24	GAI	5*		ST6	HORO2
2003 08 24.08	d	k	13.2	LA	35	L	5	a660	1.5				C 1.00m	T24	GAI	5*		ST6	HORO2
2003 08 24.08	d	k	13.3	LA	35	L	5	a660	1.5				C 0.75m	T24	GAI	5*		ST6	HORO2
2003 08 24.08	d	k	13.4	LA	35	L	5	a660	1.5				C 0.50m	T24	GAI	5*		ST6	HORO2
2003 08 24.08	d	k	13.7	LA	35	L	5	a660	1.5				C 0.25m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	12.8	LA	35	L	5	a540	2.7				C 2.70m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	13.0	LA	35	L	5	a540	2.7				C 1.50m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	13.2	LA	35	L	5	a540	2.7				C 1.00m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	13.3	LA	35	L	5	a540	2.7				C 0.75m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	13.4	LA	35	L	5	a540	2.7				C 0.50m	T24	GAI	5*		ST6	HORO2
2003 08 25.10	d	k	13.8	LA	35	L	5	a540	2.7				C 0.25m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	12.7	LA	35	L	5	a600	3.6				C 2.00m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	12.9	LA	35	L	5	a600	3.6				C 1.50m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	13.1	LA	35	L	5	a600	3.6				C 1.00m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	13.3	LA	35	L	5	a600	3.6				C 0.75m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	13.5	LA	35	L	5	a600	3.6				C 0.50m	T24	GAI	5*		ST6	HORO2
2003 08 27.09	d	k	13.8	LA	35	L	5	a600	3.6				C 0.25m	T24	GAI	5*		ST6	HORO2
2003 09 04.59		C	12.9	GA	60.0	Y	6	a120	2.3	5			S 2.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 04.59		c	15.8	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAKO1
2003 09 06.06	d	k	12.5	LA	35	L	5	a600	2.3				C 2.30m	T24	GAI	5*P		ST6	HORO2
2003 09 06.06	d	k	13.3	LA	35	L	5	a600	2.3				C 1.00m	T24	GAI	5*P		ST6	HORO2
2003 09 06.06	d	k	14.2	LA	35	L	5	a600	2.3				C 0.50m	T24	GAI	5*P		ST6	HORO2
2003 09 07.06	d	k	13.0	LA	35	L	5	a440	1.7				C 1.70m	T24	GAI	5*P		ST6	HORO2
2003 09 07.06	d	k	13.5	LA	35	L	5	a440	1.7				C 1.00m	T24	GAI	5*P		ST6	HORO2
2003 09 07.06	d	k	14.2	LA	35	L	5	a440	1.7				C 0.50m	T24	GAI	5*P		ST6	HORO2
2003 09 17.04	d	k	12.8	LA	35	L	5	a540	1.9				C 1.90m	T24	GAI	5*P		ST6	HORO2
2003 09 17.04	d	k	13.7	LA	35	L	5	a540	1.9				C 1.00m	T24	GAI	5*P		ST6	HORO2
2003 09 17.04	d	k	14.5	LA	35	L	5	a540	1.9				C 0.50m	T24	GAI	5*P		ST6	HORO2
2003 09 18.56	a	xC	14.6	HV	35.0	C	9	a 90	0.8	7			S 1.33m	KAIa	SI3	5		ST2	TSU02
2003 09 18.58		C	13.3	GA	60.0	Y	6	a120	2.0	2			S 2.0 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 18.58		c	16.4	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.03	d	k	12.6	LA	35	L	5	a540	2.0				C 3.00m	T24	GAI	5*P		ST6	HORO2
2003 09 19.03	d	k	12.9	LA	35	L	5	a540	2.0				C 2.00m	T24	GAI	5*P		ST6	HORO2
2003 09 19.03	d	k	13.3	LA	35	L	5	a540	2.0				C 1.50m	T24	GAI	5*P		ST6	HORO2
2003 09 19.03	d	k	13.9	LA	35	L	5	a540	2.0				C 1.00m	T24	GAI	5*P		ST6	HORO2
2003 09 19.03	d	k	14.8	LA	35	L	5	a540	2.0				C 0.50m	T24	GAI	5*P		ST6	HORO2
2003 09 20.01	d	k	13.1	LA	35	L	5	a540	1.9				C 1.90m	T24	GAI	5*P		ST6	HORO2
2003 09 20.01	d	k	13.4	LA	35	L	5	a540	1.9				C 1.50m	T24	GAI	5*P		ST6	HORO2
2003 09 20.01	d	k	14.0	LA	35	L	5	a540	1.9				C 1.00m	T24	GAI	5*P		ST6	HORO2
2003 09 20.01	d	k	14.8	LA	35	L	5	a540	1.9				C 0.50m	T24	GAI	5*P		ST6	HORO2
2003 09 22.00	d	k	13.1	LA	35	L	5	a720	2.2				C 2.20m	T24	GAI	5*		ST6	HORO2
2003 09 22.00	d	k	13.4	LA	35	L	5	a720	2.2				C 1.50m	T24	GAI	5*		ST6	HORO2
2003 09 22.00	d	k	13.9	LA	35	L	5	a720	2.2				C 1.00m	T24	GAI	5*		ST6	HORO2
2003 09 22.00	d	k	14.8	LA	35	L	5	a720	2.2				C 0.50m	T24	GAI	5*		ST6	HORO2
2003 09 25.00	d	k	12.4	LA	35	L	5	a600	2.5				C 3.50m	T24	GAI	5*P		ST6	HORO2
2003 09 25.00	d	k	12.8	LA	35	L	5	a600	2.5				C 2.50m	T24	GAI	5*P		ST6	HORO2

Comet 29P/Schwassmann-Wachmann [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 25.00	d	k	13.1	LA	35	L	5	a600	2.5				C 2.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.00	d	k	13.4	LA	35	L	5	a600	2.5				C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.00	d	k	14.0	LA	35	L	5	a600	2.5				C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.00	d	k	14.9	LA	35	L	5	a600	2.5				C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 26.55	ax	C	12.9	HV	35.0	C	9	a 90	3.0	9			S 3.06m	KAIa	SI3	5		ST2	TSU02
2003 09 26.65	a	C	12.2	GA	60.0	Y	6	a120	4.2				S 4.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 26.65	a	C	13.6	GA	60.0	Y	6	a120	4.2				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 09 26.65	a	c	14.0	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAK01
2003 09 28.43		C	13.3	TJ	25.0	L	5	a 60	0.8				S 0.8 m	K26	SI4	5	U	ST9	KAD02
2003 09 29.46	ax	C	13.0	HV	35.0	C	9	a 60	0.5	6			S 1.70m	KAIa	SI4	5		ST2	TSU02
2003 09 30.59	a	C	13.6	GA	60.0	Y	6	a120	4.4				S 0.6 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.59	a	c	15.3	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAK01
2003 10 04.64	x	C	14.2	TJ	25.0	L	5	a 60	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS
2003 10 12.97	d	k	12.6	LA	35	L	5	a900	3.0				C 3.00m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.97	d	k	13.1	LA	35	L	5	a900	3.0				C 2.00m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.97	d	k	13.5	LA	35	L	5	a900	3.0				C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.97	d	k	14.3	LA	35	L	5	a900	3.0				C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 10 16.53	ax	C	13.4	HV	35.0	C	9	a120	2.5	4			S 2.93m	KAIa	SI3	5		ST2	TSU02
2003 10 17.47		C	12.8	GA	60.0	Y	6	a120	2.9	3/			S 2.9 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.47		c	16.4	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.48		C	12.7	GA	60.0	Y	6	a120	3.9	3			S 3.9 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.48		C	16.4	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.49	x	C	14.2	TJ	25.0	L	5	a120	0.8				S 0.8 m	K42	SI4	5	U	SE7	OHS
2003 10 24.47		C	12.8	GA	60.0	Y	6	a120	3.0	4			S 3.0 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.47		c	15.7	GA	60.0	Y	6	a120					S10.0 s	SIA	IPL	5	U	Ap7	NAK01

Comet 30P/Reinmuth

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 02 25.94		C	14.2	UO	8	M	6	a360	0.12	3				T25	A32	5	U	PIX	SHU

Comet 31P/Schwassmann-Wachmann

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 05 05.54		C	19.1	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet 36P/Whipple

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 02.71		C	19.2	GA	60.0	Y	6	a240	0.2		1.2m	264	S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.61	ax	C	18.4	HV	35.0	C	9	a480	0.3	4			S 0.39m	KAIa	SI3	5		ST2	TSU02
2003 10 19.68		C	18.9	GA	60.0	Y	6	a240	0.25		1.6m	262	S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet 40P/Väisälä

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 24.80	x	C	17.1	TJ	25.0	L	5	a120	0.5		1.2m	279	S 0.5 m	K42	SI4	5	U	SE7	OHS

Comet 43P/Wolf-Harrington

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 27.01	d	k	16.2	LA	35	L	5	a600	0.33		0.6m	222	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 07 27.01	d	k	16.3	LA	35	L	5	a600	0.33		0.6m	222	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 07 27.01	d	k	16.5	LA	35	L	5	a600	0.33		0.6m	222	C 0.33m	T24	GAI	5	*P	ST6	HOR02
2003 08 11.07	d	k	15.7	LA	35	L	5	a900	0.42		0.8m	236	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 11.07	d	k	16.1	LA	35	L	5	a900	0.42		0.8m	236	C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 08 18.92		C	15.8	UO	11.0	L	7	a720	0.30	5				T25	A32	4		PIX	SHU
2003 08 23.06	d	k	15.3	LA	35	L	5	a540	0.62		0.6m	231	C 0.62m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.06	d	k	16.0	LA	35	L	5	a540	0.62		0.6m	231	C 0.25m	T24	GAI	5	*P	ST6	HOR02
2003 08 24.06	d	k	15.2	LA	35	L	5	a600	0.55		1.9m	223	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 24.06	d	k	15.6	LA	35	L	5	a600	0.55		1.9m	223	C 0.55m	T24	GAI	5	*P	ST6	HOR02
2003 08 24.98	d	k	15.3	LA	35	L	5	a540	0.68		1.5m	232	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 24.98	d	k	15.5	LA	35	L	5	a540	0.68		1.5m	232	C 0.68m	T24	GAI	5	*P	ST6	HOR02
2003 08 24.98	d	k	15.7	LA	35	L	5	a540	0.68		1.5m	232	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 25.85		C	16.8	UO	11.0	L	7	a900	0.31	6				T25	A32	4		PIX	SHU

Comet 43P/Wolf-Harrington [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 26.98	d	k	15.2	LA	35	L	5	a600	0.78		1.7m	232	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.98	d	k	15.3	LA	35	L	5	a600	0.78		1.7m	232	C 0.78m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.98	d	k	15.5	LA	35	L	5	a600	0.78		1.7m	232	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 03.62		C	15.8	GA	60.0	Y	6	a120	0.55				S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2003 09 05.89	d	k	14.7	LA	35	L	5	a540	0.83		1.2m	208	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.89	d	k	14.8	LA	35	L	5	a540	0.83		1.2m	208	C 0.83m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.89	d	k	15.1	LA	35	L	5	a540	0.83		1.2m	208	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.90	d	k	14.8	LA	35	L	5	a660	0.62		2.4m	218	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.90	d	k	15.1	LA	35	L	5	a660	0.62		2.4m	218	C 0.62m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.90	d	k	15.2	LA	35	L	5	a660	0.62		2.4m	218	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.82	d	k	14.8	LA	35	L	5	a540	0.70		1.7m	219	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.82	d	k	14.9	LA	35	L	5	a540	0.70		1.7m	219	C 0.70m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.82	d	k	15.0	LA	35	L	5	a540	0.70		1.7m	219	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 16.87	d	k	14.4	LA	35	L	5	a600	0.63		1.7m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 16.87	d	k	14.7	LA	35	L	5	a600	0.63		1.7m	206	C 0.63m	T24	GAI	5	*P	ST6	HOR02
2003 09 17.85	d	k	14.3	LA	35	L	5	a600	0.65		2.6m	202	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 17.85	d	k	14.7	LA	35	L	5	a600	0.65		2.6m	202	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 17.85	d	k	14.7	LA	35	L	5	a600	0.65		2.6m	202	C 0.65m	T24	GAI	5	*P	ST6	HOR02
2003 09 18.58	ax	C	14.9	HV	35.0	C	9	a120	0.4	4	0.7m	196	S 1.14m	KAIa	SI3	5		ST2	TSU02
2003 09 18.61		C	14.9	GA	60.0	Y	6	a120	0.7		1.3m	203	S 0.7 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 18.81	d	k	14.5	LA	35	L	5	a540	0.63		1.3m	201	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 18.81	d	k	14.6	LA	35	L	5	a540	0.63		1.3m	201	C 0.63m	T24	GAI	5	*P	ST6	HOR02
2003 09 20.05	d	k	14.4	LA	35	L	5	a540	0.83		1.8m	206	C 0.83m	T24	GAI	5	*P	ST6	HOR02
2003 09 20.05	d	k	14.8	LA	35	L	5	a540	0.83		1.8m	206	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 21.81	d	k	14.2	LA	35	L	5	a660	0.82		1.3m	201	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 21.81	d	k	14.3	LA	35	L	5	a660	0.82		1.3m	201	C 0.82m	T24	GAI	5	*P	ST6	HOR02
2003 09 21.81	d	k	14.7	LA	35	L	5	a660	0.82		1.3m	201	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.01	d	k	14.2	LA	35	L	5	a540	0.95		1.7m	198	C 0.95m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.01	d	k	14.6	LA	35	L	5	a540	0.95		1.7m	198	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.74		C	15.7	UO	11.0	L	7	a180	0.40	4				T25	A32	4		PIX	SHU
2003 09 29.52	ax	C	14.1	HV	35.0	C	9	a 90	0.6	5	1.4m	203	S 1.94m	KAIa	SI4	5		ST2	TSU02
2003 09 30.64		C	14.5	GA	60.0	Y	6	a120	0.85		1.3m	187	S 0.85m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.94	d	k	14.1	LA	35	L	5	a480	0.92		1.6m	212	C 0.92m	T24	GAI	5	*P	ST6	HOR02
2003 09 30.94	d	k	14.5	LA	35	L	5	a480	0.92		1.6m	212	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 10 04.65	x	C	14.8	TJ	25.0	L	5	a120	0.7				S 0.7 m	K42	SI4	5	U	SE7	OHS
2003 10 08.50	ax	C	14.7	HV	35.0	C	9	a 90	0.7	4			S 0.60m	KAIa	SI3	5		ST2	TSU02
2003 10 12.78	d	k	13.7	LA	35	L	5	a720	1.2		1.3m	175	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.78	d	k	13.8	LA	35	L	5	a720	1.2		1.3m	175	C 1.20m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.78	d	k	14.1	LA	35	L	5	a720	1.2		1.3m	175	C 0.75m	T24	GAI	5	*P	ST6	HOR02
2003 10 12.78	d	k	14.4	LA	35	L	5	a720	1.2		1.3m	175	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 10 17.53		C	14.2	GA	60.0	Y	6	a120	1.0		1.6m	121	S 1.0 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.54	ax	C	13.9	HV	35.0	C	9	a 90	0.8	5			S 2.09m	KAIa	SI3	5		ST2	TSU02
2003 10 19.59	x	C	14.1	TJ	25.0	L	5	a120	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS
2003 10 29.46	a	H	13.6	LA	30.0	L	6	a360	0.5				C 0.5 m	SIA	MIm	5	*U	Ap7	EZA
2003 10 29.46	a	V	14.6	LA	30.0	L	6	a360	0.5				C 0.5 m	SIA	MIm	5	*U	Ap7	EZA
2003 10 29.49		C	13.9	GA	60.0	Y	6	a120	1.2		1.6m	101	S 1.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.59	x	C	14.3	TJ	25.0	L	5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS
2003 10 30.77		C	14.8	UO	11.0	L	7	a200	0.26	5				T25	A32	4		PIX	SHU

Comet 53P/Van Biesbroeck

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 19.51	ax	C	14.6	HV	35.0	C	9	a 90	0.5	5			S 0.94m	KAIa	SI3	5		ST2	TSU02
2003 08 22.49	a	C	14.3	GA	60.0	Y	6	a120	0.8		0.8m	99	S 0.8 m	SIA	IPL	5	U	Ap7	NAK01

Comet 65P/Gunn

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 02.48	ax	C	14.8	HV	35.0	C	9	a 90	0.3	4			S 0.30m	KAIa	SI3	5		ST2	TSU02

Comet 115P/Maury

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 02.66		C	19.1	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 23.67		C	19.4	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet 116P/Wild

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 19.49	ax	C	15.2	HV	35.0	C	9	a 90	0.4	3			S 0.82m	KAIa	SI3	5		ST2	TSU02
2003 08 22.48	x	C	14.3	HV	60.0	Y	6	a120	0.8		1.6m	102	S 0.8 m	SIA	IPL	5	U	Ap7	NAK01

Comet 118P/Shoemaker-Levy

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 24.79	x	C	15.4	TJ	25.0	L	5	a120	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS

Comet 119P/Parker-Hartley

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 02.68		C	20.0	GA	60.0	Y	6	a240	0.2				S 0.2 m	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.
2003 10 19.64		C	19.4	GA	60.0	Y	6	a240	0.25	8			S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.68		C	19.2:	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet 123P/West-Hartley

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 29.81		C	16.3	TJ	25.0	L	5	a180	0.45		0.5m	298	S 0.45m	K26	SI4	5	U	ST9	KAD02
2003 09 30.80		C	16.2	TJ	25.0	L	5	a180	0.5		0.7m	297	S 0.5 m	K26	SI4	5	U	ST9	KAD02
2003 10 19.84	ax	C	16.6	HV	35.0	C	9	a120	0.3	4			S 0.57m	KAIa	SI3	5		ST2	TSU02
2003 10 24.76	x	C	15.9	TJ	25.0	L	5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS

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.
2003 10 29.53		C	19.7	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet 157P/Tritton

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 15.74		C	13.4	HS	25.0	L	5	a 90	1.2		4 m	293	S 1.2 m	K26	SI4	5	U	ST9	KAD02
2003 10 18.85	ax	C	13.2	HV	35.0	C	9	a 60					S 1.80m	KAIa	SI3	5		ST2	TSU02
2003 10 19.81	ax	C	12.7	HV	35.0	C	9	a 90					S 2.33m	KAIa	SI3	5		ST2	TSU02
2003 10 23.84	a	C	13.5	GA	60.0	Y	6	a120	1.2		6.8m	294	S 1.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.76	x	C	14.7	TJ	25.0	L	5	a120	0.6		> 8.0m	290	S 0.6 m	K42	SI4	5	U	SE7	OHS
2003 10 24.81	ax	C	12.7	HV	35.0	C	9	a360					S 3.09m	KAIa	SI3	5		ST2	TSU02

Comet C/2001 HT_50 (LINEAR-NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 25.09	d	k	12.6	LA	35	L	5	a300	1.6		5.6m	102	C 1.60m	T24	GAI	5*	P	ST6	HOR02
2003 08 25.09	d	k	12.8	LA	35	L	5	a300	1.6		5.6m	102	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 08 25.09	d	k	13.3	LA	35	L	5	a300	1.6		5.6m	102	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 08 27.11	d	k	12.7	LA	35	L	5	a420	1.7		5.1m	101	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 08 27.11	d	k	13.2	LA	35	L	5	a420	1.7		5.1m	101	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 09 02.80	ax	C	13.1	HV	35.0	C	9	a 90	1.3	5	5 m	93	S 1.14m	KAIa	SI3	5		ST2	TSU02
2003 09 06.09	d	k	12.4	LA	35	L	5	a480	1.7		> 6.5m	103	C 1.70m	T24	GAI	5*	P	ST6	HOR02
2003 09 06.09	d	k	12.7	LA	35	L	5	a480	1.7		> 6.5m	103	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 09 06.09	d	k	13.2	LA	35	L	5	a480	1.7		> 6.5m	103	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 09 07.07	d	k	12.5	LA	35	L	5	a420	1.6		6.5m	103	C 1.60m	T24	GAI	5*	P	ST6	HOR02
2003 09 07.07	d	k	12.8	LA	35	L	5	a420	1.6		6.5m	103	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 09 07.07	d	k	13.2	LA	35	L	5	a420	1.6		6.5m	103	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 09 08.82		C	12.7	GA	60.0	Y	6	a120	1.6		> 5.6m	101	S 1.6 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 19.06	d	k	12.5	LA	35	L	5	a720	1.4		3.0m	100	C 1.40m	T24	GAI	5*	P	ST6	HOR02
2003 09 19.06	d	k	12.7	LA	35	L	5	a720	1.4		3.0m	100	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 09 19.06	d	k	13.1	LA	35	L	5	a720	1.4		3.0m	100	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 09 20.02	d	k	12.5	LA	35	L	5	a420	1.6		7.9m	102	C 1.60m	T24	GAI	5*	P	ST6	HOR02
2003 09 20.02	d	k	12.6	LA	35	L	5	a420	1.6		7.9m	102	C 1.00m	T24	GAI	5*	P	ST6	HOR02
2003 09 20.02	d	k	13.1	LA	35	L	5	a420	1.6		7.9m	102	C 0.50m	T24	GAI	5*	P	ST6	HOR02
2003 09 21.02		C	14.4	U0	11.0	L	7	a240	0.5	3				T25	A32	4		PIX	SHU

Comet C/2001 HT_50 (LINEAR-NEAT) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 22.02	d	k	12.2	LA	35	L	5	a420	2.1		9.3m	102	C 2.10m	T24	GAI	5	*P	ST6	HOR02
2003 09 22.02	d	k	12.6	LA	35	L	5	a420	2.1		9.3m	102	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 22.02	d	k	13.1	LA	35	L	5	a420	2.1		9.3m	102	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.05	d	k	12.1	LA	35	L	5	a360	2.1		9.6m	100	C 2.10m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.05	d	k	12.3	LA	35	L	5	a360	2.1		9.6m	100	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.05	d	k	12.5	LA	35	L	5	a360	2.1		9.6m	100	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 25.05	d	k	13.0	LA	35	L	5	a360	2.1		9.6m	100	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 26.64	ax	C	12.6	HV	35.0	C	9	a 90	1.2	5	6	m114	S 1.90m	KAIa	SI3	5		ST2	TSU02
2003 09 26.77		C	12.5	GA	60.0	Y	6	a120	1.7		7.0m	96	S 1.7 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 27.00	d	k	12.1	LA	35	L	5	a280	2.3		11.6m	101	C 2.30m	T24	GAI	5	*P	ST6	HOR02
2003 09 27.00	d	k	12.4	LA	35	L	5	a280	2.3		11.6m	101	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 27.00	d	k	12.6	LA	35	L	5	a280	2.3		11.6m	101	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 27.00	d	k	13.1	LA	35	L	5	a280	2.3		11.6m	101	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 30.99	d	k	12.2	LA	35	L	5	a480	2.0		> 9.9m	98	C 2.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 30.99	d	k	12.5	LA	35	L	5	a480	2.0		> 9.9m	98	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 30.99	d	k	13.0	LA	35	L	5	a480	2.0		> 9.9m	98	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 10 08.63	ax	C	13.2	HV	35.0	C	9	a 90	0.5	5			S 1.52m	KAIa	SI3	5		ST2	TSU02
2003 10 19.60	ax	C	12.1	HV	35.0	C	9	a 90	1.8	5	10	m 93	S 2.42m	KAIa	SI3	5		ST2	TSU02
2003 10 19.63		C	12.2	GA	60.0	Y	6	a120	2.2		> 7.7m	93	S 2.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.67		C	12.0	GA	60.0	Y	6	a120	2.0		> 8.4m	90	S 2.0 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2001 K5 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 03 25.93		C	15.0	UO	11.0	L	7	a240	0.15	3				T25	A32	4		PIX	SHU
2003 03 27.03		C	14.8	UO	11.0	L	7	a480	0.10	7	2.7m	190		T25	A32	4		PIX	SHU
2003 03 28.00		C	15.0	UO	11.0	L	7	a480	0.10	5	2.5m	239		T25	A32	4		PIX	SHU
2003 04 05.10		C	15.1	UO	11.0	L	7	a480	0.10	6	1.5m			T25	A32	4		PIX	SHU
2003 04 11.04		C	15.3	UO	11.0	L	7	a480	0.05	9	> 2.5m	208		T25	A32	4		PIX	SHU
2003 08 02.60		C	15.5	GA	60.0	Y	6	a120	0.5		5.0m	199	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2003 08 02.95	d	k	14.8	LA	35	L	5	a540	0.40		> 9.2m	210	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.95	d	k	15.3	LA	35	L	5	a540	0.40		> 9.2m	210	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 03.95	d	k	15.3	LA	35	L	5	a600	0.40		> 7.9m	208	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.92	d	k	14.3	LA	35	L	5	a600	0.43		9.5m	208	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.92	d	k	14.6	LA	35	L	5	a600	0.43		9.5m	208	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.92	d	k	15.2	LA	35	L	5	a600	0.43		9.5m	208	C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.93	d	k	14.6	LA	35	L	5	a540	0.37		>10.1m	209	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.93	d	k	15.2	LA	35	L	5	a540	0.37		>10.1m	209	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.93	d	k	15.3	LA	35	L	5	a540	0.37		>10.1m	209	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.90	d	k	14.7	LA	35	L	5	a600	0.33		8.2m	206	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.90	d	k	14.9	LA	35	L	5	a600	0.33		8.2m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.90	d	k	15.2	LA	35	L	5	a600	0.33		8.2m	206	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.90	d	k	15.5	LA	35	L	5	a600	0.33		8.2m	206	C 0.33m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.94	d	k	14.9	LA	35	L	5	a600	0.43		4.7m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.94	d	k	15.4	LA	35	L	5	a600	0.43		4.7m	206	C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.92	d	k	14.7	LA	35	L	5	a600	0.47		7.7m	204	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.92	d	k	15.2	LA	35	L	5	a600	0.47		7.7m	204	C 0.47m	T24	GAI	5	*P	ST6	HOR02
2003 08 19.61	ax	C	15.3	HV	35.0	C	9	a120	0.3	4	2.0m	185	S 0.64m	KAIa	SI3	5		ST2	TSU02
2003 08 20.91	d	k	14.9	LA	35	L	5	a600	0.47		8.0m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 20.91	d	k	15.3	LA	35	L	5	a600	0.47		8.0m	206	C 0.47m	T24	GAI	5	*P	ST6	HOR02
2003 08 22.90	d	k	14.7	LA	35	L	5	a600	0.43		6.9m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 22.90	d	k	15.3	LA	35	L	5	a600	0.43		6.9m	206	C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.95	d	k	14.7	LA	35	L	5	a540	0.48		8.9m	207	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.95	d	k	14.9	LA	35	L	5	a540	0.48		8.9m	207	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.95	d	k	15.3	LA	35	L	5	a540	0.48		8.9m	207	C 0.48m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.88	d	k	14.7	LA	35	L	5	a600	0.48		> 7.7m	206	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.88	d	k	14.9	LA	35	L	5	a600	0.48		> 7.7m	206	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.88	d	k	15.3	LA	35	L	5	a600	0.48		> 7.7m	206	C 0.48m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.84	d	k	14.8	LA	35	L	5	a540	0.52		7.4m	209	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.84	d	k	15.4	LA	35	L	5	a540	0.52		7.4m	209	C 0.52m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.85	d	k	14.7	LA	35	L	5	a480	0.40		8.8m	207	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.85	d	k	15.4	LA	35	L	5	a480	0.40		8.8m	207	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.88	d	k	14.5	LA	35	L	5	a600	0.48		6.7m	209	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.88	d	k	14.7	LA	35	L	5	a600	0.48		6.7m	209	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.88	d	k	15.2	LA	35	L	5	a600	0.48		6.7m	209	C 0.48m	T24	GAI	5	*P	ST6	HOR02

Comet C/2001 K5 (LINEAR) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 16.90	d	k	14.7	LA	35	L	5	a540	0.47		5.4m	207	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 16.90	d	k	15.3	LA	35	L	5	a540	0.47		5.4m	207	C 0.47m	T24	GAI	5	*P	ST6	HORO2
2003 09 17.87	d	k	14.9	LA	35	L	5	a660	0.48		4.6m	202	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 17.87	d	k	15.4	LA	35	L	5	a660	0.48		4.6m	202	C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.85	d	k	14.6	LA	35	L	5	a660	0.52		7.2m	210	C 1.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.85	d	k	14.8	LA	35	L	5	a660	0.52		7.2m	210	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.85	d	k	15.3	LA	35	L	5	a660	0.52		7.2m	210	C 0.52m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.47		C	16.0	GA	60.0	Y	6	a120	0.35		4.3m	191	S 0.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.87	d	k	15.0	LA	35	L	5	a480	0.45		6.3m	209	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.87	d	k	15.4	LA	35	L	5	a480	0.45		6.3m	209	C 0.45m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.79	d	k	14.9	LA	35	L	5	a540	0.47		6.8m	208	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.79	d	k	15.3	LA	35	L	5	a540	0.47		6.8m	208	C 0.47m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.87	d	k	14.8	LA	35	L	5	a600	0.52		7.0m	208	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.87	d	k	15.2	LA	35	L	5	a600	0.52		7.0m	208	C 0.52m	T24	GAI	5	*P	ST6	HORO2
2003 09 27.47	ax	C	15.7	HV	35.0	C	9	a120	0.4	4	6.0m	210	S 0.70m	KAIa	SI3	5		ST2	TSUO2
2003 09 30.91	d	k	15.3	LA	35	L	5	a360	0.48		5.9m	207	C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 10 01.46		C	16.0	GA	60.0	Y	6	a120	0.4		2.8m	191	S 0.4 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 12.80	d	k	14.8	LA	35	L	5	a720	0.43		7.7m	211	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 10 12.80	d	k	15.4	LA	35	L	5	a720	0.43		7.7m	211	C 0.43m	T24	GAI	5	*P	ST6	HORO2
2003 10 14.89	d	k	15.4	LA	35	L	5	a480	0.42		6.4m	211	C 0.42m	T24	GAI	5	*P	ST6	HORO2
2003 10 16.50	ax	C	15.7	HV	35.0	C	9	a120	0.3	4	5.0m	215	S 0.70m	KAIa	SI3	5		ST2	TSUO2
2003 10 24.43		C	15.7	GA	60.0	Y	6	a120	0.55		3.9m	189	S 0.55m	SIA	IPL	5	U	Ap7	NAKO1

Comet P/2002 BV (Yeung)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 01.56	a	C	19.8	GA	60.0	Y	6	a240		9			S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 02.58	a	C	20.2	GA	60.0	Y	6	a240		9			S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 19.54	a	C	20.0	GA	60.0	Y	6	a240		9			S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 24.49	a	C	20.1	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAKO1

Comet C/2002 CE_10 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2002 11 28.68	a	C	18.1	GA	60.0	Y	6	a120		9			S 0.3 m	SIA	IPL	4	P	Ap7	NAKO1
2003 09 03.61		C	15.3	:HS	60.0	Y	6	a240		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 06.02	d	k	15.1	LA	35	L	5	a360	0.33				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 06.02	d	k	15.1	LA	35	L	5	a360	0.33				C 0.33m	T24	GAI	5	*P	ST6	HORO2
2003 09 07.03	d	k	15.1	LA	35	L	5	a320	0.27				C 0.27m	T24	GAI	5	*P	ST6	HORO2
2003 09 17.02	d	k	15.5	LA	35	L	5	a240	0.25				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 17.02	d	k	15.5	LA	35	L	5	a240	0.25				C 0.25m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.57		C	16.1	GA	60.0	Y	6	a120		9			S 0.4 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.01	d	k	15.7	LA	35	L	5	a360	0.23				C 0.23m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.01	d	k	15.7	LA	35	L	5	a360	0.23				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 20.00	d	k	15.5	LA	35	L	5	a360	0.28				C 0.28m	T24	GAI	5	*P	ST6	HORO2
2003 09 20.00	d	k	15.5	LA	35	L	5	a360	0.28				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.97	d	k	15.6	LA	35	L	5	a480	0.23				C 0.23m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.97	d	k	15.6	LA	35	L	5	a480	0.23				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.97	d	k	15.7	LA	35	L	5	a540	0.30				C 0.30m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.97	d	k	15.7	LA	35	L	5	a540	0.30				C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 30.96	d	k	15.9	LA	35	L	5	a480	0.25				C 0.25m	T24	GAI	5	*P	ST6	HORO2
2003 10 01.52		C	16.6	GA	60.0	Y	6	a120		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 17.45	a	C	17.4	GA	60.0	Y	6	a120		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 24.46	a	C	17.4	GA	60.0	Y	6	a120		9			S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1

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.
2003 09 19.48		C	17.2	GA	60.0	Y	6	a120	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1

Comet C/2002 O7 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 03 15.98		C	16.0	UO	11.0	L	7	a600	0.08	5				T25	A32	2	U	PIX	SHU
2003 04 04.98		C	14.8	UO	11.0	L	7	a420	0.11	3				T25	A32	4		PIX	SHU

Comet P/2002 O8 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 26.70		C	20.0:	GA	60.0	Y	6	a480	0.25				S 0.25m	SIA	IPL	5*U		Ap7	NAK01
2003 10 02.65		C	19.8	GA	60.0	Y	6	a480	0.2		0.7m	240	S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.70		C	19.7	GA	60.0	Y	6	a240	0.3		1.0m	247	S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.59		C	19.8	GA	60.0	Y	6	a240	0.25			250	S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 P1 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 30.62		C	19.6	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.50		C	19.7	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 R3 (LONEOS)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 27.03	d	k	15.5	LA	35	L	5	a600	0.53				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 07 27.03	d	k	15.6	LA	35	L	5	a600	0.53				C 0.53m	T24	GAI	5*P		ST6	HOR02
2003 08 07.04	d	k	15.1	LA	35	L	5	a600	0.70				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 07.04	d	k	15.4	LA	35	L	5	a600	0.70				C 0.70m	T24	GAI	5*P		ST6	HOR02
2003 08 07.04	d	k	15.5	LA	35	L	5	a600	0.70				C 0.50m	T24	GAI	5*P		ST6	HOR02
2003 08 08.02	d	k	15.3	LA	35	L	5	a600	0.55				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 08.02	d	k	15.5	LA	35	L	5	a600	0.55				C 0.55m	T24	GAI	5*P		ST6	HOR02
2003 08 11.04	d	k	15.5	LA	35	L	5	a540	0.48				C 0.48m	T24	GAI	5*P		ST6	HOR02
2003 08 11.04	d	k	15.5	LA	35	L	5	a540	0.48				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 23.00	d	k	15.2	LA	35	L	5	a480	0.58				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 23.00	d	k	15.4	LA	35	L	5	a480	0.58				C 0.58m	T24	GAI	5*P		ST6	HOR02
2003 08 24.01	d	k	15.3	LA	35	L	5	a480	0.60				C 1.50m	T24	GAI	5*P		ST6	HOR02
2003 08 24.01	d	k	15.3	LA	35	L	5	a480	0.60				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 24.01	d	k	15.4	LA	35	L	5	a480	0.60				C 0.60m	T24	GAI	5*P		ST6	HOR02
2003 08 25.06	d	k	15.1	LA	35	L	5	a600	0.58				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 25.06	d	k	15.4	LA	35	L	5	a600	0.58				C 0.58m	T24	GAI	5*P		ST6	HOR02
2003 08 27.00	d	k	15.3	LA	35	L	5	a540	0.57				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 08 27.00	d	k	15.4	LA	35	L	5	a540	0.57				C 0.57m	T24	GAI	5*P		ST6	HOR02
2003 09 03.62		C	15.6	GA	60.0	Y	6	a120	0.65			100	S 0.65m	SIA	IPL	5	U	Ap7	NAK01
2003 09 05.88	d	k	15.1	LA	35	L	5	a540	0.40				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 05.88	d	k	15.5	LA	35	L	5	a540	0.40				C 0.40m	T24	GAI	5*P		ST6	HOR02
2003 09 06.92	d	k	15.4	LA	35	L	5	a540	0.45				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 06.92	d	k	15.5	LA	35	L	5	a540	0.45				C 0.45m	T24	GAI	5*P		ST6	HOR02
2003 09 16.85	d	k	15.1	LA	35	L	5	a480	0.60				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 16.85	d	k	15.4	LA	35	L	5	a480	0.60				C 0.60m	T24	GAI	5*P		ST6	HOR02
2003 09 17.84	d	k	15.4	LA	35	L	5	a540	0.63				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 17.84	d	k	15.4	LA	35	L	5	a540	0.63				C 0.63m	T24	GAI	5*P		ST6	HOR02
2003 09 17.84	d	k	15.5	LA	35	L	5	a540	0.63				C 0.50m	T24	GAI	5*P		ST6	HOR02
2003 09 18.62		C	15.5	GA	60.0	Y	6	a120	0.55			110	S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2003 09 18.80	d	k	15.2	LA	35	L	5	a540	0.52				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 18.80	d	k	15.4	LA	35	L	5	a540	0.52				C 0.52m	T24	GAI	5*P		ST6	HOR02
2003 09 19.97	d	k	15.1	LA	35	L	5	a600	0.57				C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 19.97	d	k	15.4	LA	35	L	5	a600	0.57				C 0.57m	T24	GAI	5*P		ST6	HOR02
2003 09 21.95	d	k	15.3	LA	35	L	5	a600	0.63		0.8m	78	C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 21.95	d	k	15.4	LA	35	L	5	a600	0.63		0.8m	78	C 0.63m	T24	GAI	5*P		ST6	HOR02
2003 09 24.98	d	k	15.3	LA	35	L	5	a540	0.55		0.8m	90	C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 24.98	d	k	15.5	LA	35	L	5	a540	0.55		0.8m	90	C 1.50m	T24	GAI	5*P		ST6	HOR02
2003 09 24.98	d	k	15.5	LA	35	L	5	a540	0.55		0.8m	90	C 0.55m	T24	GAI	5*P		ST6	HOR02
2003 09 30.63		C	15.9	GA	60.0	Y	6	a120	0.55		1.4m	91	S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.98	d	k	15.3	LA	35	L	5	a720	0.53		1.0m	90	C 1.00m	T24	GAI	5*P		ST6	HOR02
2003 09 30.98	d	k	15.6	LA	35	L	5	a720	0.53		1.0m	90	C 0.53m	T24	GAI	5*P		ST6	HOR02
2003 10 12.93	d	k	15.7	LA	35	L	5	a780	0.55		0.5m	90	C 0.55m	T24	GAI	5*P		ST6	HOR02
2003 10 17.46		C	16.2	GA	60.0	Y	6	a120	0.5		1.9m	90	S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.52	ax	C	15.6	HV	35.0	C	9	a960	0.5	4	1.0m	75	S 1.19m	KAIa	SI3	5		ST2	TSU02
2003 10 29.50		C	16.5	GA	60.0	Y	6	a120	0.45				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.
2003 10 23.83		C	17.1	GA	60.0	Y	6	a240	0.4		0.8m	252	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2002 T6 (NEAT-LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 23.78		C	16.0	GA	60.0	Y	6	a240	0.55		1.0m	327	S 0.55m	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.
2003 08 08.01		C	13.9	UO	11.0	L	7	a480	0.1	6				T25	A32	4		PIX	SHU
2003 08 09.03		C	14.0	UO	11.0	L	7	a480	0.30	6				T25	A32	4		PIX	SHU
2003 08 19.00		C	13.4	UO	11.0	L	7	a420	0.26	8				T25	A32	4		PIX	SHU
2003 08 23.08	d	k	13.1	LA	35	L	5	a320	0.60				C 1.00m	T24	GAI	5	P	ST6	HOR02
2003 08 23.08	d	k	13.1	LA	35	L	5	a320	0.60				C 0.60m	T24	GAI	5	P	ST6	HOR02
2003 08 23.08	d	k	13.5	LA	35	L	5	a320	0.60				C 0.25m	T24	GAI	5	P	ST6	HOR02
2003 08 24.07	d	k	13.2	LA	35	L	5	a360	0.75				C 0.75m	T24	GAI	5	P	ST6	HOR02
2003 08 24.07	d	k	13.2	LA	35	L	5	a360	0.75				C 1.00m	T24	GAI	5	P	ST6	HOR02
2003 08 24.07	d	k	13.7	LA	35	L	5	a360	0.75				C 0.25m	T24	GAI	5	P	ST6	HOR02
2003 08 25.07	d	k	13.0	LA	35	L	5	a420	0.73				C 1.00m	T24	GAI	5	P	ST6	HOR02
2003 08 25.07	d	k	13.0	LA	35	L	5	a420	0.73				C 0.73m	T24	GAI	5	P	ST6	HOR02
2003 08 25.07	d	k	13.1	LA	35	L	5	a420	0.73				C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 08 25.07	d	k	13.5	LA	35	L	5	a420	0.73				C 0.25m	T24	GAI	5	P	ST6	HOR02
2003 08 27.06	d	k	12.9	LA	35	L	5	a480	0.83				C 1.00m	T24	GAI	5	P	ST6	HOR02
2003 08 27.06	d	k	12.9	LA	35	L	5	a480	0.83				C 0.83m	T24	GAI	5	P	ST6	HOR02
2003 08 27.06	d	k	13.0	LA	35	L	5	a480	0.83				C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 08 27.06	d	k	13.4	LA	35	L	5	a480	0.83				C 0.25m	T24	GAI	5	P	ST6	HOR02
2003 09 02.79	ax	C	13.3	HV	35.0	C	9	a 90	0.4	6			S 0.67m	KAIa	SI3	5		ST2	TSU02
2003 09 06.02		C	11.9	UO	11.0	L	7	a300	0.41	8				T25	A32	4		PIX	SHU
2003 09 06.04	d	k	12.7	LA	35	L	5	a480	1.0				C 1.00m	T24	GAI	5	P	ST6	HOR02
2003 09 06.04	d	k	12.9	LA	35	L	5	a480	1.0				C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 07.04	d	k	12.7	LA	35	L	5	a420	0.87		15	s270	C 1.50m	T24	GAI	5	P	ST6	HOR02
2003 09 07.04	d	k	12.7	LA	35	L	5	a420	0.87		15	s270	C 0.87m	T24	GAI	5	P	ST6	HOR02
2003 09 07.04	d	k	12.8	LA	35	L	5	a420	0.87		15	s270	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 08.81		C	13.0	GA	60.0	Y	6	a120	0.75				S 0.75m	SIA	IPL	5	U	Ap7	NAK01
2003 09 17.06	d	k	12.5	LA	35	L	5	a480	0.88		0.4m	259	C 0.88m	T24	GAI	5	P	ST6	HOR02
2003 09 17.06	d	k	12.6	LA	35	L	5	a480	0.88		0.4m	259	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 20.03	d	k	12.3	LA	35	L	5	a480	0.90		0.5m	244	C 1.50m	T24	GAI	5	P	ST6	HOR02
2003 09 20.03	d	k	12.4	LA	35	L	5	a480	0.90		0.5m	244	C 0.90m	T24	GAI	5	P	ST6	HOR02
2003 09 20.03	d	k	12.5	LA	35	L	5	a480	0.90		0.5m	244	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 20.97		C	13.3	UO	11.0	L	7	a210	0.35	8				T25	A32	4		PIX	SHU
2003 09 22.04	d	k	12.3	LA	35	L	5	a480	0.83		0.8m	242	C 1.50m	T24	GAI	5	P	ST6	HOR02
2003 09 22.04	d	k	12.4	LA	35	L	5	a480	0.83		0.8m	242	C 0.83m	T24	GAI	5	P	ST6	HOR02
2003 09 22.04	d	k	12.5	LA	35	L	5	a480	0.83		0.8m	242	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 25.06	d	k	12.2	LA	35	L	5	a360	0.97		0.7m	243	C 0.97m	T24	GAI	5	P	ST6	HOR02
2003 09 25.06	d	k	12.4	LA	35	L	5	a360	0.97		0.7m	243	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 09 26.65	ax	C	12.6	HV	35.0	C	9	a 90	0.6	6			S 0.97m	KAIa	SI3	5		ST2	TSU02
2003 09 26.78		C	12.5	GA	60.0	Y	6	a120	0.9				S 0.9 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 27.02	d	k	12.3	LA	35	L	5	a360	0.93		0.7m	237	C 0.93m	T24	GAI	5	P	ST6	HOR02
2003 09 27.02	d	k	12.4	LA	35	L	5	a360	0.93		0.7m	237	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 10 01.01	d	k	12.1	LA	35	L	5	a480	1.05		0.6m	235	C 1.05m	T24	GAI	5	P	ST6	HOR02
2003 10 01.01	d	k	12.3	LA	35	L	5	a480	1.05		0.6m	235	C 0.50m	T24	GAI	5	P	ST6	HOR02
2003 10 08.61	ax	C	12.2	HV	35.0	C	9	a 90	0.7	5			S 1.42m	KAIa	SI4	5		ST2	TSU02
2003 10 19.62	ax	C	11.7	HV	35.0	C	9	a 60	0.9	6			S 1.39m	KAIa	SI4	5		ST2	TSU02
2003 10 19.70		C	11.6	GA	60.0	Y	6	a120	1.0				S 1.0 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.53	ax	C	11.5	HV	35.0	C	9	a 90	1.1	6			S 1.66m	KAIa	SI4	5		ST2	TSU02
2003 10 29.70		C	11.2	GA	60.0	Y	6	a120	2.2				S 2.2 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 V2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 26.76		C	18.2	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 23.73		C	18.5	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 VQ94 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2002 11 28.56		C	19.4	GA	60.0	Y	6	a240		9			S 0.3 m	SIA	IPL	4	P	Ap7	NAK01
2003 10 19.55		C	17.6:	GA	60.0	Y	6	a240	0.3	8			S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.64		C	18.3:	GA	60.0	Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2002 X1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 08.80		C	14.9	GA	60.0Y		6	a120	0.8		2.5m	283	S 0.8 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.75		C	14.8	GA	60.0Y		6	a120	0.9		1.5m	319	S 0.9 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.53	ax	C	14.1	HV	35.0C		9	a180	0.7	5			S 1.80m	KAIaSI3		5		ST2	TSU02
2003 10 19.65	x	C	15.0	TJ	25.0L		5	a120	0.5				S 0.5 m	K42	SI4	5	U	SE7	OHS
2003 10 23.69		C	14.5	GA	60.0Y		6	a120	0.95		3.3m	40	S 0.95m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 F1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 26.95	d	k	16.7	LA	35	L	5	a450	0.35				C 0.50m	T24	GAI	5	*	ST6	HOR02
2003 07 26.95	d	k	16.8	LA	35	L	5	a450	0.35				C 0.35m	T24	GAI	5	*	ST6	HOR02
2003 08 02.90	d	k	16.8	LA	35	L	5	a600	0.33				C 0.33m	T24	GAI	5	*	ST6	HOR02
2003 08 16.86	d	k	16.9	LA	35	L	5	a780	0.33				C 0.33m	T24	GAI	5	*	ST6	HOR02
2003 08 23.86	d	k	16.7	LA	35	L	5	a720	0.35				C 0.35m	T24	GAI	5	*	ST6	HOR02
2003 08 24.81	d	k	17.1	LA	35	L	5	a720	0.35				C 0.50m	T24	GAI	5	*	ST6	HOR02
2003 08 24.81	d	k	17.2	LA	35	L	5	a720	0.35				C 0.35m	T24	GAI	5	*	ST6	HOR02
2003 08 26.84	d	k	16.8	LA	35	L	5	a720	0.35				C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.84	d	k	17.0	LA	35	L	5	a720	0.35				C 0.35m	T24	GAI	5	*P	ST6	HOR02

Comet C/2003 G1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 26.96	d	k	15.1	LA	35	L	5	a420	0.60		4.4m	198	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 07 26.96	d	k	15.5	LA	35	L	5	a420	0.60		4.4m	198	C 0.60m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.87	d	k	15.2	LA	35	L	5	a540	0.55		3.6m	195	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.87	d	k	15.5	LA	35	L	5	a540	0.55		3.6m	195	C 0.55m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.91	d	k	15.2	LA	35	L	5	a480	0.47		3.6m	190	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.91	d	k	15.5	LA	35	L	5	a480	0.47		3.6m	190	C 0.47m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.91	d	k	15.2	LA	35	L	5	a480	0.47		3.2m	193	C 1.00m	T24	GAI	5	*	ST6	HOR02
2003 08 06.91	d	k	15.6	LA	35	L	5	a480	0.47		3.2m	193	C 0.47m	T24	GAI	5	*	ST6	HOR02
2003 08 07.87	d	k	15.7	LA	35	L	5	a540	0.42		2.1m	195	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.87	d	k	15.9	LA	35	L	5	a540	0.42		2.1m	195	C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.87	d	k	15.6	LA	35	L	5	a540	0.40		3.0m	193	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.87	d	k	15.7	LA	35	L	5	a540	0.40		3.0m	193	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.90	d	k	15.7	LA	35	L	5	a540	0.52		1.3m	189	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.90	d	k	15.7	LA	35	L	5	a540	0.52		1.3m	189	C 0.52m	T24	GAI	5	*P	ST6	HOR02
2003 08 16.88	d	k	15.7	LA	35	L	5	a540	0.53		1.2m	188	C 0.53m	T24	GAI	5	*P	ST6	HOR02
2003 08 19.58	ax	C	15.5	HV	35.0C		9	a 90	0.4	4			S 0.78m	KAIaSI3		5		ST2	TSU02
2003 08 22.84	d	k	15.8	LA	35	L	5	a540	0.47		2.0m	190	C 0.47m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.84	d	k	15.7	LA	35	L	5	a900	0.43		1.6m	192	C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.83	d	k	15.5	LA	35	L	5	a600	0.37		2.7m	185	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.83	d	k	15.9	LA	35	L	5	a600	0.37		2.7m	185	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 08 28.83	d	k	15.8	LA	35	L	5	a480	0.42		1.7m	185	C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 09 02.47	ax	C	15.7	HV	35.0C		9	a 90	0.3	4			S 0.44m	KAIaSI4		5		ST2	TSU02
2003 09 05.81	d	k	15.9	LA	35	L	5	a540	0.53		1.8m	186	C 0.53m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.81	d	k	16.0	LA	35	L	5	a600	0.38		1.1m	187	C 0.38m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.77	d	k	15.6	LA	35	L	5	a780	0.40		1.3m	183	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 14.77	d	k	16.1	LA	35	L	5	a780	0.40		1.3m	183	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 09 17.78	d	k	15.4	LA	35	L	5	a540	0.40		1.0m	184	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 17.78	d	k	15.9	LA	35	L	5	a540	0.40		1.0m	184	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 09 21.76	d	k	16.0	LA	35	L	5	a480	0.38		0.8m	180	C 0.38m	T24	GAI	5	*P	ST6	HOR02
2003 09 22.47	ax	C	15.9	HV	35.0C		9	a 90	0.3	4	0.5m	180	S 0.80m	KAIaSI4		5		ST2	TSU02
2003 09 24.82	d	k	15.9	LA	35	L	5	a540	0.35		0.7m	190	C 0.35m	T24	GAI	5	*P	ST6	HOR02
2003 09 26.47	ax	C	16.1	HV	35.0C		9	a 90					S 0.63m	KAIaSI4		5		ST2	TSU02
2003 10 17.40	ax	C	16.2	HV	35.0C		9	a120	0.3	4	0.6m	196	S 0.64m	KAIaSI3		5		ST2	TSU02

Comet C/2003 H1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 26.94	d	k	15.1	LA	35	L	5	a360	0.45		2.1m	89	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 07 26.94	d	k	15.3	LA	35	L	5	a360	0.45		2.1m	89	C 0.45m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.86	d	k	14.9	LA	35	L	5	a600	0.42		2.8m	82	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.86	d	k	15.3	LA	35	L	5	a600	0.42		2.8m	82	C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 08 03.88	d	k	14.8	LA	35	L	5	a600	0.37		2.8m	84	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 03.88	d	k	15.3	LA	35	L	5	a600	0.37		2.8m	84	C 0.37m	T24	GAI	5	*P	ST6	HOR02

Comet C/2003 H1 (LINEAR) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 05.89	d	k	14.8	LA	35	L	5	a480	0.35		2.6m	81	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.89	d	k	15.1	LA	35	L	5	a480	0.35		2.6m	81	C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 05.89	d	k	15.3	LA	35	L	5	a480	0.35		2.6m	81	C 0.35m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.84	d	k	15.0	LA	35	L	5	a540	0.40		2.5m	88	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.84	d	k	15.4	LA	35	L	5	a540	0.40		2.5m	88	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.86	d	k	15.0	LA	35	L	5	a480	0.42		1.6m	83	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 10.86	d	k	15.4	LA	35	L	5	a480	0.42		1.6m	83	C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.84	d	k	14.7	LA	35	L	5	a420	0.43		2.0m	88	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.84	d	k	14.8	LA	35	L	5	a420	0.43		2.0m	88	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 15.84	d	k	15.4	LA	35	L	5	a420	0.43		2.0m	88	C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 16.81	d	k	14.7	LA	35	L	5	a540	0.38		2.1m	86	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 16.81	d	k	15.3	LA	35	L	5	a540	0.38		2.1m	86	C 0.38m	T24	GAI	5	*P	ST6	HOR02
2003 08 19.47	x	C	15.8	HV	35.0	C	9	a 90	0.2	5	3.0m	84	S 0.81m	KAIaSI3		5		ST2	TSU02
2003 08 20.82	d	k	14.9	LA	35	L	5	a540	0.37		2.3m	84	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 20.82	d	k	15.4	LA	35	L	5	a540	0.37		2.3m	84	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 08 22.45		C	15.2	GA	60.0	Y	6	a120	0.45		3.4m	92	S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2003 08 22.83	d	k	14.8	LA	35	L	5	a480	0.40		2.6m	83	C 1.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 22.83	d	k	14.9	LA	35	L	5	a480	0.40		2.6m	83	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 22.83	d	k	15.3	LA	35	L	5	a480	0.40		2.6m	83	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.82	d	k	14.8	LA	35	L	5	a660	0.37		2.4m	80	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.82	d	k	15.3	LA	35	L	5	a660	0.37		2.4m	80	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.81	d	k	14.8	LA	35	L	5	a600	0.37		2.3m	78	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 26.81	d	k	15.3	LA	35	L	5	a600	0.37		2.3m	78	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 08 28.81	d	k	15.0	LA	35	L	5	a600	0.40		1.9m	81	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 28.81	d	k	15.4	LA	35	L	5	a600	0.40		1.9m	81	C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.79	d	k	14.9	LA	35	L	5	a600	0.37		2.1m	78	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 05.79	d	k	15.2	LA	35	L	5	a600	0.37		2.1m	78	C 0.37m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.79	d	k	14.9	LA	35	L	5	a480	0.45		1.2m	82	C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 09 06.79	d	k	15.1	LA	35	L	5	a480	0.45		1.2m	82	C 0.45m	T24	GAI	5	*P	ST6	HOR02
2003 09 26.41	x	C	15.3	HV	35.0	C	9	a 90	0.3	5	3.3m	75	S 0.55m	KAIaSI3		5		ST2	TSU02

Comet C/2003 H3 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 07 27.04	d	k	14.5	LA	35	L	5	a420	0.63				C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 07 27.04	d	k	14.7	LA	35	L	5	a420	0.63				C 0.63m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.66		C	15.3	GA	60.0	Y	6	a120	0.55				S 0.55m	SIA	IPL	5	U	Ap7	NAK01
2003 08 03.00	d	k	14.5	LA	35	L	5	a540	0.57				C 1.00m	T24	GAI	5	*P	ST6	HOR02
2003 08 03.00	d	k	14.8	LA	35	L	5	a540	0.57				C 0.57m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.01	d	k	15.0	LA	35	L	5	a540	0.43				C 0.43m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.01	d	k	15.5	LA	35	L	5	a540	0.43				C 0.25m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.01	d	k	14.8	LA	35	L	5	a480	0.52				C 0.52m	T24	GAI	5	*P	ST6	HOR02
2003 08 07.01	d	k	15.6	LA	35	L	5	a480	0.52				C 0.25m	T24	GAI	5	*P	ST6	HOR02
2003 08 11.02	d	k	14.9	LA	35	L	5	a480	0.40				C 0.40m	T24	GAI	5	*P	ST6	HOR02
2003 08 19.59	ax	C	16.0	HV	35.0	C	9	a 90	0.25	4			S 0.25m	KAIaSI3		5		ST2	TSU02
2003 08 22.53	x	C	15.2	HV	60.0	Y	6	a120	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01
2003 08 22.94	d	k	15.2	LA	35	L	5	a360	0.48				C 0.48m	T24	GAI	5	*P	ST6	HOR02
2003 08 23.93	d	k	15.4	LA	35	L	5	a360	0.42				C 0.42m	T24	GAI	5	*P	ST6	HOR02
2003 10 01.48		C	16.3:	GA	60.0	Y	6	a120	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.47	x	C	16.0	TJ	25.0	L	5	a120	0.4				S 0.4 m	K42	SI4	5	U	SE7	OHS
2003 10 29.44		C	16.6	GA	60.0	Y	6	a120	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 J1 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 02.65	x	C	17.0	TJ	60.0	Y	6	a240	0.5				S 0.5 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.
2003 07 27.06	d	k	15.7	LA	35	L	5	a480	0.30				C 0.30m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.67		C	16.1	GA	60.0	Y	6	a120	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 08 02.97	d	k	15.6	LA	35	L	5	a600	0.32				C 0.50m	T24	GAI	5	*P	ST6	HOR02
2003 08 02.97	d	k	15.7	LA	35	L	5	a600	0.32				C 0.32m	T24	GAI	5	*P	ST6	HOR02
2003 08 06.03	d	k	15.5	LA	35	L	5	a540	0.35				C 0.50m	T24	GAI	5	*P	ST6	HOR02

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

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 06.03	d	k	15.6	LA	35	L	5	a540	0.35				C 0.35m	T24	GAI	5	*	P ST6	HORO2
2003 08 07.02	d	k	15.6	LA	35	L	5	a540	0.30				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 08 07.02	d	k	15.7	LA	35	L	5	a540	0.30				C 0.30m	T24	GAI	5	*	P ST6	HORO2
2003 08 07.86	d	k	15.9	LA	35	L	5	a480	0.30				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 08 07.86	d	k	15.9	LA	35	L	5	a480	0.30				C 0.30m	T24	GAI	5	*	P ST6	HORO2
2003 08 10.89	d	k	15.4	LA	35	L	5	a540	0.40				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 10.89	d	k	15.4	LA	35	L	5	a540	0.40				C 0.40m	T24	GAI	5	*	P ST6	HORO2
2003 08 15.99	d	k	15.6	LA	35	L	5	a600	0.30				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 08 15.99	d	k	15.7	LA	35	L	5	a600	0.30				C 0.30m	T24	GAI	5	*	P ST6	HORO2
2003 08 19.65	ax	C	15.2	HV	35.0	C	9	a 90	0.25	4			S 0.54m	KAIaSI3		5		ST2	TSUO2
2003 08 21.60	x	C	15.8	TJ	60.0	Y	6	a120	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAKO1
2003 08 22.92	d	k	15.2	LA	35	L	5	a600	0.37				C 0.37m	T24	GAI	5	*	P ST6	HORO2
2003 08 23.92	d	k	15.3	LA	35	L	5	a420	0.43				C 0.43m	T24	GAI	5	*	P ST6	HORO2
2003 08 26.99	d	k	15.4	LA	35	L	5	a480	0.35				C 0.35m	T24	GAI	5	*	P ST6	HORO2
2003 09 05.86	d	k	15.2	LA	35	L	5	a480	0.38				C 0.38m	T24	GAI	5	*	P ST6	HORO2
2003 09 06.88	d	k	15.2	LA	35	L	5	a600	0.35				C 0.35m	T24	GAI	5	*	P ST6	HORO2
2003 09 14.90	d	k	15.3	LA	35	L	5	a660	0.35				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 09 14.90	d	k	15.3	LA	35	L	5	a660	0.35				C 0.35m	T24	GAI	5	*	P ST6	HORO2
2003 09 16.88	d	k	15.2	LA	35	L	5	a480	0.38				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 09 16.88	d	k	15.3	LA	35	L	5	a480	0.38				C 0.38m	T24	GAI	5	*	P ST6	HORO2
2003 09 17.89	d	k	15.1	LA	35	L	5	a420	0.35				C 0.35m	T24	GAI	5	*	P ST6	HORO2
2003 09 18.89	d	k	15.2	LA	35	L	5	a420	0.37				C 0.37m	T24	GAI	5	*	P ST6	HORO2
2003 09 19.52		C	15.7	GA	60.0	Y	6	a120	0.35			100	S 0.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.89	d	k	15.1	LA	35	L	5	a480	0.45				C 0.45m	T24	GAI	5	*	P ST6	HORO2
2003 09 21.91	d	k	15.1	LA	35	L	5	a540	0.42				C 0.42m	T24	GAI	5	*	P ST6	HORO2
2003 09 24.90	d	k	15.0	LA	35	L	5	a480	0.40				C 0.40m	T24	GAI	5	*	P ST6	HORO2
2003 09 27.55	ax	C	15.6	HV	35.0	C	9	a 90	0.3	5			S 0.42m	KAIaSI3		5		ST2	TSUO2
2003 09 30.90	d	k	15.1	LA	35	L	5	a540	0.38				C 0.38m	T24	GAI	5	*	P ST6	HORO2
2003 10 01.49		C	15.5	GA	60.0	Y	6	a120	0.35			100	S 0.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 12.82	d	k	15.1	LA	35	L	5	A020	0.45				C 0.45m	T24	GAI	5	*	P ST6	HORO2
2003 10 12.82	d	k	15.1	LA	35	L	5	A020	0.45				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 10 14.91	d	k	15.0	LA	35	L	5	a540	0.43				C 0.75m	T24	GAI	5	*	P ST6	HORO2
2003 10 14.91	d	k	15.1	LA	35	L	5	a540	0.43				C 0.43m	T24	GAI	5	*	P ST6	HORO2
2003 10 16.46	ax	C	15.5	HV	35.0	C	9	a 90	0.3	5			S 0.44m	KAIaSI3		5		ST2	TSUO2
2003 10 19.45		C	15.5	GA	60.0	Y	6	a120	0.4			90	S 0.4 m	SIA	IPL	5	U	Ap7	NAKO1

Comet P/2003 L1 (Scotti)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 06 20.53		C	19.0	GA	60.0	Y	6	a240	0.2				S 0.2 m	SIA	IPL	5	U	Ap7	NAKO1

Comet C/2003 L2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 02.60		C	17.1	GA	60.0	Y	6	a240	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAKO1
2003 08 07.92	d	k	16.7	LA	35	L	5	a540	0.33				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 08 07.92	d	k	16.8	LA	35	L	5	a540	0.33				C 0.33m	T24	GAI	5	*	P ST6	HORO2
2003 08 10.92	d	k	16.1	LA	35	L	5	A260	0.48				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 10.92	d	k	16.4	LA	35	L	5	A260	0.48				C 0.48m	T24	GAI	5	*	P ST6	HORO2
2003 08 15.88	d	k	16.3	LA	35	L	5	A080	0.43				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 15.88	d	k	16.7	LA	35	L	5	A080	0.43				C 0.43m	T24	GAI	5	*	P ST6	HORO2
2003 08 16.84	d	k	16.3	LA	35	L	5	a600	0.50				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 16.84	d	k	16.4	LA	35	L	5	a600	0.50				C 0.50m	T24	GAI	5	*	P ST6	HORO2
2003 08 20.88	d	k	16.0	LA	35	L	5	a720	0.52				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 20.88	d	k	16.3	LA	35	L	5	a720	0.52				C 0.52m	T24	GAI	5	*	P ST6	HORO2
2003 08 22.86	d	k	16.1	LA	35	L	5	a720	0.52				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 22.86	d	k	16.3	LA	35	L	5	a720	0.52				C 0.52m	T24	GAI	5	*	P ST6	HORO2
2003 08 23.89	d	k	15.8	LA	35	L	5	a900	0.43				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 23.89	d	k	16.4	LA	35	L	5	a900	0.43				C 0.43m	T24	GAI	5	*	P ST6	HORO2
2003 08 24.84	d	k	16.2	LA	35	L	5	a630	0.48				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 24.84	d	k	16.6	LA	35	L	5	a630	0.48				C 0.48m	T24	GAI	5	*	P ST6	HORO2
2003 08 26.86	d	k	16.1	LA	35	L	5	a720	0.52				C 1.00m	T24	GAI	5	*	P ST6	HORO2
2003 08 26.86	d	k	16.3	LA	35	L	5	a720	0.52				C 0.52m	T24	GAI	5	*	P ST6	HORO2
2003 09 05.83	d	k	16.2	LA	35	L	5	a900	0.43				C 0.43m	T24	GAI	5	*	P ST6	HORO2
2003 09 06.83	d	k	16.3	LA	35	L	5	A370	0.45				C 0.45m	T24	GAI	5	*	P ST6	HORO2

Comet C/2003 L2 (LINEAR) [cont.]

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 14.79	d	k	16.2	LA	35	L	5	A080	0.48				C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 14.79	d	k	16.5	LA	35	L	5	A080	0.48				C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 09 17.80	d	k	16.2	LA	35	L	5	a540	0.48				C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.79	d	k	16.5	LA	35	L	5	A080	0.47				C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 18.79	d	k	16.7	LA	35	L	5	A080	0.47				C 0.47m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.46		C	17.3	GA	60.0	Y	6	a120	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 21.78	d	k	15.9	LA	35	L	5	a810	0.45				C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.78	d	k	16.3	LA	35	L	5	a810	0.45				C 0.45m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.85	d	k	15.9	LA	35	L	5	a900	0.48				C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 24.85	d	k	16.4	LA	35	L	5	a900	0.48				C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 09 26.46	ax	C	17.2	HV	35.0	C	9	a720	0.3	3			S 0.70m	KAIaSI3		5		ST2	TSU02
2003 10 01.45		C	17.1	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 17.42	a	C	16.8	GA	60.0	Y	6	a240	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAKO1

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.
2003 08 02.62		C	18.0	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 08 21.61	x	C	17.9	TJ	60.0	Y	6	a240	0.25		0.5m	105	S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.49		C	18.0	GA	60.0	Y	6	a240	0.25		0.7m	103	S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 27.55	ax	C	17.4	HV	35.0	C	9	a360	0.2	4			S 0.33m	KAIaSI3		5		ST2	TSU02
2003 10 01.47		C	18.0	GA	60.0	Y	6	a240	0.25		0.6m	106	S 0.25m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 17.43		C	18.2	GA	60.0	Y	6	a240	0.25			100	S 0.25m	SIA	IPL	5	U	Ap7	NAKO1

Comet C/2003 O2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 08 06.06	d	k	15.9	LA	35	L	5	A500	0.33		7.4m	245	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 06.06	d	k	16.1	LA	35	L	5	A500	0.33		7.4m	245	C 0.50m	T24	GAI	5	*P	ST6	HORO2
2003 08 06.06	d	k	16.4	LA	35	L	5	A500	0.33		7.4m	245	C 0.33m	T24	GAI	5	*P	ST6	HORO2
2003 08 07.07	d	k	15.8	LA	35	L	5	A140	0.42		7.8m	246	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 07.07	d	k	16.3	LA	35	L	5	A140	0.42		7.8m	246	C 0.42m	T24	GAI	5	*P	ST6	HORO2
2003 08 08.07	d	k	16.2	LA	35	L	5	a450	0.32		4.9m	244	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 08.07	d	k	16.7	LA	35	L	5	a450	0.32		4.9m	244	C 0.32m	T24	GAI	5	*P	ST6	HORO2
2003 08 11.05	d	k	16.0	LA	35	L	5	a720	0.45		5.2m	247	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 11.05	d	k	16.3	LA	35	L	5	a720	0.45		5.2m	247	C 0.45m	T24	GAI	5	*P	ST6	HORO2
2003 08 23.05	d	k	16.3	LA	35	L	5	a540	0.38		3.5m	251	C 0.38m	T24	GAI	5	*P	ST6	HORO2
2003 08 24.02	d	k	16.0	LA	35	L	5	a450	0.40		4.6m	252	C 0.40m	T24	GAI	5	*P	ST6	HORO2
2003 08 25.00		C	17.0	UO	11.0	L	7	a900	0.33	2				T25	A32	4		PIX	SHU
2003 08 25.04	d	k	15.6	LA	35	L	5	a540	0.38		3.9m	248	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 25.04	d	k	16.2	LA	35	L	5	a540	0.38		3.9m	248	C 0.38m	T24	GAI	5	*P	ST6	HORO2
2003 08 27.02	d	k	15.5	LA	35	L	5	a720	0.42		5.9m	251	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 08 27.02	d	k	16.1	LA	35	L	5	a720	0.42		5.9m	251	C 0.42m	T24	GAI	5	*P	ST6	HORO2
2003 09 03.69		C	16.3	GA	60.0	Y	6	a240	0.5		4.3m	253	S 0.5 m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 06.00	d	k	15.6	LA	35	L	5	A980	0.47		4.0m	254	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 06.00	d	k	16.1	LA	35	L	5	A980	0.47		4.0m	254	C 0.47m	T24	GAI	5	*P	ST6	HORO2
2003 09 07.02	d	k	16.1	LA	35	L	5	a810	0.42		2.1m	255	C 0.42m	T24	GAI	5	*P	ST6	HORO2
2003 09 08.74		C	16.2	GA	60.0	Y	6	a120	0.45		3.8m	250	S 0.45m	SIA	IPL	5	U	Ap7	NAKO1
2003 09 19.04	d	k	15.7	LA	35	L	5	a630	0.40		4.8m	249	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.04	d	k	16.3	LA	35	L	5	a630	0.40		4.8m	249	C 0.40m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.92	d	k	15.4	LA	35	L	5	a720	0.40		3.3m	257	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 19.92	d	k	16.2	LA	35	L	5	a720	0.40		3.3m	257	C 0.40m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.99	d	k	15.4	LA	35	L	5	a720	0.48		5.7m	255	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 21.99	d	k	16.2	LA	35	L	5	a720	0.48		5.7m	255	C 0.48m	T24	GAI	5	*P	ST6	HORO2
2003 09 25.03	d	k	15.2	LA	35	L	5	a720	0.45		3.9m	251	C 1.50m	T24	GAI	5	*P	ST6	HORO2
2003 09 25.03	d	k	15.4	LA	35	L	5	a720	0.45		3.9m	251	C 1.00m	T24	GAI	5	*P	ST6	HORO2
2003 09 25.03	d	k	16.1	LA	35	L	5	a720	0.45		3.9m	251	C 0.45m	T24	GAI	5	*P	ST6	HORO2
2003 09 26.62	ax	C	16.1	HV	35.0	C	9	a 90	0.3	4			S 0.78m	KAIaSI3		5		ST2	TSU02
2003 09 26.74		C	16.2	GA	60.0	Y	6	a120	0.45		4.4m	249	S 0.45m	SIA	IPL	5	U	Ap7	NAKO1
2003 10 18.55	ax	C	16.3	HV	35.0	C	9	A680	0.3	4			S 0.65m	KAIaSI3		5		ST2	TSU02
2003 10 19.66		C	16.6	GA	60.0	Y	6	a120	0.45		2.6m	253	S 0.45m	SIA	IPL	5	U	Ap7	NAKO1

Comet P/2003 O3 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 03.67		C	17.9	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 09 08.75		C	18.0	GA	60.0	Y	6	a240	0.3		0.6m	244	S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 26.73		C	18.2	GA	60.0	Y	6	a240	0.3			240	S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.56	ax	C	18.3	HV	35.0	C	9	A200	0.15				S 0.53m	KAIaSI3		5		ST2	TSU02
2003 10 19.62		C	18.4	GA	60.0	Y	6	a240	0.3	8			S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2003 QX_29 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 04.64		C	19.6	GA	60.0	Y	6	a240	0.2				S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.60		C	19.8	GA	60.0	Y	6	a240	0.2				S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.50		C	19.6	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.52		C	19.7	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 R1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 08.77		C	19.2	GA	60.0	Y	6	a240	0.2				S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 26.68		C	18.7:	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 02.63		C	18.5	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.46	ax	C	18.4	HV	35.0	C	9	A260	0.2				S 0.45m	KAIaSI3		5		ST2	TSU02
2003 10 17.54	a	C	18.7	GA	60.0	Y	6	a240	0.25	8			S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.54	a	C	18.8	GA	60.0	Y	6	a240	0.25	8			S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.51	a	C	18.9	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2003 S1 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 26.69		C	18.0	GA	60.0	Y	6	a240	0.35		0.9m	235	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 09 29.54	ax	C	17.7	HV	35.0	C	9	a270	0.2	4			S 0.69m	KAIaSI4		5		ST2	TSU02
2003 09 30.66		C	17.6	GA	60.0	Y	6	a240	0.35		0.8m	237	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 10 04.67	x	C	17.5	TJ	25.0	L	5	a240	0.3		0.3m	235	S 0.3 m	K42	SI4	5	U	SE7	OHS
2003 10 17.50	ax	C	17.1	HV	35.0	C	9	A200	0.3	3			S 1.05m	KAIaSI4		5		ST2	TSU02
2003 10 17.55		C	17.7	GA	60.0	Y	6	a240	0.4			235	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.55		C	17.9:	GA	60.0	Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.55	x	C	18.2	TJ	25.0	L	5	a120	0.2				S 0.2 m	K42	SI4	5	U	SE7	OHS
2003 10 29.60		C	17.7	GA	60.0	Y	6	a240	0.35			230	S 0.35m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2003 S2 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 26.67		C	17.3	GA	60.0	Y	6	a240	0.4		1.5m	249	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2003 09 30.67		C	17.3	GA	60.0	Y	6	a240	0.35		1.8m	249	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.51	ax	C	16.9	HV	35.0	C	9	A500	0.3	4			S 1.03m	KAIaSI4		5		ST2	TSU02
2003 10 17.58		C	17.1	GA	60.0	Y	6	a240	0.4		1.7m	254	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 24.56		C	17.1	GA	60.0	Y	6	a240	0.4		0.9m	247	S 0.4 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.55		C	17.1	GA	60.0	Y	6	a240	0.45			255	S 0.45m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 S3 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 09 30.74		C	19.4	GA	60.0	Y	6	a240	0.2				S 0.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 19.67		C	19.2	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 23.72		C	19.1	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 S4 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 02.59		C	18.6	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 17.51		C	18.5	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.46		C	18.4	GA	60.0	Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 T2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 23.82	a	C	14.2	GA	60.0Y	6	a120	1.2			20	S 1.2 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 30.73	a	C	14.0	GA	60.0Y	6	a120	1.2				S 1.2 m	SIA	IPL	5	U	Ap7	NAK01

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.
2003 10 23.80		C	17.5	GA	60.0Y	6	a240	0.35				S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 10 30.72		C	17.4	GA	60.0Y	6	a120	0.4				S 0.4 m	SIA	IPL	5	U	Ap7	NAK01

Comet C/2003 U1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 23.74		C	16.5	GA	60.0Y	6	a240	0.5				S 0.5 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.69	a	C	16.4	GA	60.0Y	6	a120	0.45				S 0.45m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2003 U2 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 24.44		C	17.6	GA	60.0Y	6	a240	0.35		0.6m	77	S 0.35m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.45	a	C	17.5	GA	60.0Y	6	a240	0.3		0.6m	76	S 0.3 m	SIA	IPL	5	U	Ap7	NAK01

Comet P/2003 U3 (NEAT)

DATE (UT)	n	M	MAG.	RF	AP. T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2003 10 24.57	a	C	18.4	GA	60.0Y	6	a240	0.3				S 0.3 m	SIA	IPL	5	U	Ap7	NAK01
2003 10 29.57		C	18.5	GA	60.0Y	6	a240	0.25				S 0.25m	SIA	IPL	5	U	Ap7	NAK01

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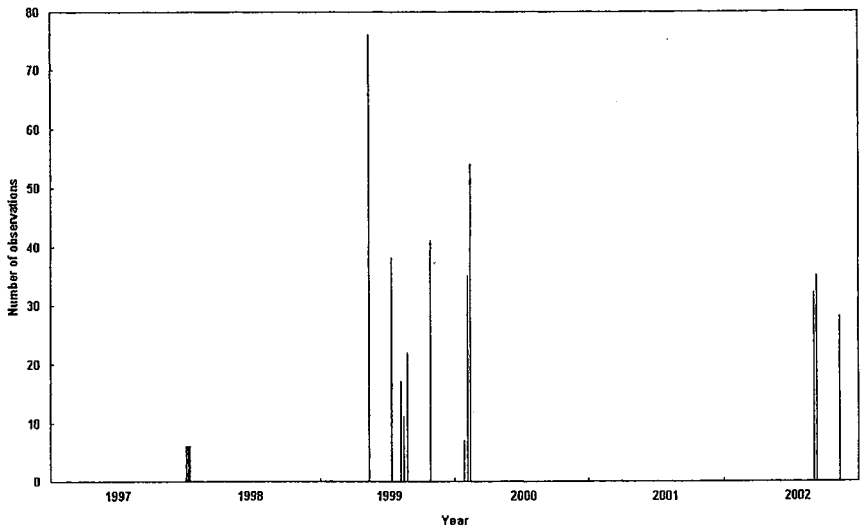
CORRIGENDUM

Figure 5 of Maik Meyer's paper, published in the middle of page 120 in the July 2003 issue, had the bar for comet C/1999 J6 (the highest line in the figure) inadvertently placed in 1998 instead of 1999. The correct figure is given below.



IWCA III in Paris (June 2004)

Preliminary scientific program of IWCA III

Following the format of earlier IWCAs, each session (except the first) will include 2-3 invited talks, followed by a panel discussion of 30-45 minutes, led by 4-5 specialists (including the introductory speakers for that session). The sessions on Friday, 2004 June 4, at Salle du Chateau, Meudon Observatory, will begin at 9:00; Session 1 will be the "Introduction of National Comet Groups", Session 2 will be "Professional Uses of Cometary Data Obtained by Amateurs. I" (radio fluxes, outgassing rates, optical photometry, spectrophotometry, light curves, and imaging), Session 3 will be "Professional Uses of Cometary Data Obtained by Amateurs. II" (astrometry, discovery, space missions to comets), and Session 4 will be "Standard Procedures for Broadband Visual/CCD Photometry" (including the use of filters). Friday evening will include a reception/dinner buffet at the Paris town hall and later a reception/visit of the Paris Observatory (with observing, weather permitting).

The sessions on Saturday, June 5, again in the Salle du Chateau at Meudon Observatory, will begin at 9:30 a.m. Session 5 will be "Spectroscopy and the potential of amateur CCD spectroscopy", and Session 6 will be on "Comet Discovery and Internet tools". In the afternoon, Session 7 will be on "Techniques, Software, and Problems Concerning Cometary Astrometry", followed by Session 8 on "Comet-Imaging Techniques (both photographic and CCD), Software, References, and Interpretation". Saturday evening will include a tour of the Meudon Observatory, with observations there after dinner (weather permitting).

Talks, papers

There will be some limited time for contributed oral presentations, and there will be some space for contributed poster presentations. One should submit proposed contribution titles and abstracts to `icq@cfa.harvard.edu` and to `Nicolas.Biver@obspm.fr` as soon as possible.

Registration

A registration fee, covering Friday and Saturday lunches, coffee breaks, bus transportation, the Saturday reception, and welcoming package (including abstracts), is asked from the attendees. This fee of 70 Euros (before Dec. 31, 2003; 80 Euros thereafter) applies to all the attendees of the scientific sessions in Meudon. Interested individuals can photocopy the abbreviated registration form below (or use the full form at the Paris website; see page 160 of this issue of the *ICQ*). The registration is made through the Société Astronomique de France (SAF), and can be mailed to the SAF, IWCA-III registration, 3 rue Beethoven, 75016 Paris, FRANCE, or faxed to (33) 1 42 30 75 47, or e-mailed to `ELISable@aol.com` and `ste.astro.france@wanadoo.fr`; Visa and Mastercard will be accepted (no checks).

---- Registration Form: IWCA III (Paris, 2004 June 4-5) ----

[I] Participant address and phone number:

Last Name:_____ First Name(s):_____

Affiliation:_____

Address:_____

City:_____ State:_____ Zip Code:_____ Country:_____

Phone Number:_____ E-mail:_____

[II] Method of payment: Credit cards (Visa, Mastercard)

Total amount to be charged (check): __ 70 Euros (before 12/31/03) __ 80 Euros

Type of Card:_____ Credit Card #:_____

Exp. Date:_____ Name on Credit Card: _____

Signature: (if not by E-mail)_____

DESIGNATIONS OF RECENT COMETS

Listed below, for handy reference, are the last 45 comets to have been given designations in the new system. The name, preceded by a star ($\star$) 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.

[This list updates that in the April 2003 issue, p. 112.]

	New-Style Designation	P	T	q	*IAUC*
$\star$	P/2003 A1	7.09	2/1/03	1.92	8044
$\star$	C/2003 A2 (Gleason)		11/6/03	11.4	8049
$\star$	P/2003 CP_7 (LINEAR-NEAT)	8.05	4/29/03	3.02	8092
$\star$	C/2003 E1 (NEAT)	50.8	2/13/04	3.25	8092
$\star$	C/2003 F1 (LINEAR)	93.9	6/28/03	4.0	8098
$\star$	P/2003 F2 (NEAT)	16.6	4/12/03	2.98	8104
$\star$	C/2003 G1 (LINEAR)		2/3/03	4.92	8115
$\star$	C/2003 G2 (LINEAR)		4/29/03	1.55	8116
$\star$	156P/2000 QD_{181} (Russell-LINEAR)	6.8	8/17/00	1.60	8118
$\star$	C/2003 H1 (LINEAR)		2/22/04	2.24	8122
$\star$	C/2003 H2 (LINEAR)		5/17/03	2.18	8122
$\star$	C/2003 H3 (NEAT)		4/24/03	2.90	8126
$\star$	P/2003 H4 (LINEAR)	6.1	5/14/03	1.70	8127
$\star$	C/2003 J1 (NEAT)		10/10/03	5.12	8133
$\star$	C/2003 K1 (Spacewatch)		12/21/02	2.09	8135
$\star$	P/2003 K2 (Christensen)	5.8	4/7/03	0.55	8136
$\star$	C/2003 K4 (LINEAR)		10/13/04	1.02	8139
$\star$	C/2003 KV_2 (LINEAR)	4.8	7/10/03	1.06	8139
$\star$	P/2003 L1 (Scotti)	17.3	3/7/03	5.01	8145
$\star$	C/2003 L2 (LINEAR)		1/19/04	2.86	8151
$\star$	P/2003 HT_{15} (LINEAR)	9.9	4/17/03	2.67	8156
$\star$	C/2003 O1 (LINEAR)		3/17/04	6.85	8170
$\star$	P/2003 O2 (LINEAR)	8.8	9/5/03	1.51	8172
$\star$	P/2003 O3 (LINEAR)	5.5	8/14/03	1.25	8174
$\star$	P/2003 QX_{29} (NEAT)	22.7	10/26/02	4.24	8192
$\star$	C/2002 CE_{10} (LINEAR)	30.8	6/22/03	2.05	8193
$\star$	C/2002 VQ_{94} (LINEAR)		2/6/06	6.80	8194
$\star$	C/2003 R1 (LINEAR)	87.0	6/29/03	2.10	8195
$\star$	P/2003 S1 (NEAT)	9.7	4/27/04	2.60	8208
$\star$	P/2003 S2 (NEAT)	7.5	9/7/03	2.46	8209
$\star$	C/2003 S3 (LINEAR)		4/10/03	8.13	8211
$\star$	C/2003 S4 (LINEAR)		5/26/04	3.86	8213
#	157P/2003 T1 (Tritton)	6.4	10/8/03	1.42	8215
$\star$	C/2003 T2 (LINEAR)		11/14/03	1.79	8222
$\star$	C/2003 T3 (Tabur)		4/28/04	1.48	8223
$\star$	C/2003 T4 (LINEAR)		4/3/05	0.85	8224
$\star$	C/2003 U1 (LINEAR)	110	11/3/03	1.80	8227
$\star$	P/2003 U2 (LINEAR)	9.6	12/4/03	1.71	8229
$\star$	P/2003 U3 (NEAT)	11.4	4/23/03	2.50	8230
$\star$	C/2003 V1 (LINEAR)		3/11/03	1.78	8236
$\star$	C/2003 W1 (LINEAR)		11/11/03	1.67	8239
$\star$	P/2002 LZ_{11} (LINEAR)	7.0	3/15/03	2.37	8240
$\star$	158P/2001 RG_{100} (Kowal-LINEAR)	10.3	7/25/02	4.59	8244
$\star$	P/2003 UY_{275} (LINEAR)	7.2	7/2/03	1.83	8247
$\star$	P/2003 UD_{16} (LONEOS)	14.3	3/3/04	3.65	8248