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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 (odd-numbered years); the *ICQ* is also indexed in *Astronomy and Astrophysics Abstracts* and in *Science Abstracts Section 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 via the computer networks *SPAN* (6700::DAN) or Internet (ICQ@CFA.HARVARD.EDU), or via floppy disks that can be read on an IBM PC], and should contact the Editor for further information. The *ICQ* has extensive information for comet observers on the World Wide Web, including the Keys to Abbreviations used in data tabulation (see URL http://cfa-www.harvard.edu/cfa/ps/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. 110 of the publication originally called *The Comet* (founded March 1973) and is Vol. 21, No. 2, of the *ICQ*. *[ISSN 0736-6922]*

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EDITORIAL NOTICE. This April issue was delayed to a June publication, and with the IWCA II in August, the annual *ICQ Comet Handbook* will not be issued until September, when it will be mailed with the October *ICQ*.

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CORRIGENDUM

• In the Jan. 1999 *ICQ*, two observations on 1999 01 12 by observer YOS04 indicated the wrong instrument, which *should read* H *instead of* L: for comets 93P/Lovas 1 (page 37) and 140P/Bowell-Skiff (page 39).

IWCA II

The second International Workshop on Cometary Astronomy (IWCA II) at New Hall, The University, in Cambridge, England, is looking to be a very good meeting. A preliminary schedule for talks and discussions is in preparation and will likely be posted on the *ICQ* website (`http://cfa-www.harvard.edu/icq/IWCA2.html`) in July. Note that we have a reception on Friday evening at Cambridge University Press, for those who arrive by Friday. The talks (and panel discussions) are planned for Saturday morning/afternoon, Sunday afternoon, and Monday morning. Sunday morning is free time, and Monday afternoon and evening are reserved for the bus tour to Avesbury and Stonehenge (scheduled to leave just after lunch, around 2 p.m., returning to Cambridge around 11 p.m. or midnight).

Most of the formal talks are invited; we have requested that most contributed talks be presented in the form of "poster papers", as there will be room in back of the main meeting room at New Hall for posters; numerous people have already expressed a desire to present poster papers. As with earlier *ICQ*-sponsored Workshops on Cometary Astronomy, both in the USA and Europe, we will continue to provide much time for open discussions, including some panel discussions as well as lengthy times during the day and evening for open conversation. Many people attending this Workshop will be meeting each other for the first time, and there is great interest amongst the participants to have open discussions and limited formal talks. We are thus arranging some invited talks as part of panel discussions.

Note that the early-registration form has been revised by Jonathan Shanklin (published in the April issue of *The Comet's Tale* and available at the BAA Comet Section website, `http://www.ast.cam.ac.uk/~jds/iwcform.htm`). We need pre-registration forms from everybody who plans to attend, whether or not you are able to send a deposit. We expect that there will be no registration fee for those staying at New Hall, but we must charge a registration fee for people who will not be staying at New Hall; this will be determined closer to the opening date of the IWCA II. We strongly encourage all people attending this meeting to stay at New Hall if at all possible, as this will help bring costs down and ensures a maximum amount of time participating in discussions; all talks and most meals and discussions will take place at New Hall. We are also planning to help pay for the room and board for a few people with limited expenses, and we would welcome anybody donating a bit of money for this worthy cause; about 6 or 8 people attending from other countries have noted a severe financial hardship, and we are trying to help them in this small but significant manner.

Please note that New Hall will be able to accept VISA credit cards for payment of room and board by the time of the meeting in mid-August. We therefore ask that people now submitting their early registration deposits should send their credit-card information to Jonathan Shanklin, and these cards will be debited as soon as New Hall is able to make the transactions. Note that one tends to get a very good exchange rate on credit-card charges, as opposed to checks or money orders.

A form is provided on the last page of this issue, for which we ask that all people planning to attend the IWCA II to complete and mail to Jonathan Shanklin as soon as possible. We need to know how many people plan to attend, how many nights each person plans to stay at New Hall, how many meals are planned to be eaten by each person at New Hall, and how many people plan to go on the Stonehenge tour. There will only be one tour bus, and reservations will be taken on a first-come, first-served basis; it is expected that the cost of the tour will be no more than 20 British pounds.

To receive last-minute information on the IWCA II via e-mail, send a request to `icq@cfa.harvard.edu`.

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Tabulation of Comet Observations

Observations contributed on paper, as well as several large batches of older observations contributed via e-mail, will be published in the July issue.

Corrigendum. In the January, April, and July 1998 issues (pages 13, 59, and 125, respectively), *for* Comet P/1997 BA_6 *read* Comet C/1997 BA_6

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

◇ *Comet C/1995 O1 (Hale-Bopp)* $\Longrightarrow$ 1998 Dec. 14.193: w/ 8-inch $f/1.5$ Schmidt camera (+ SBIG ST-5 CCD at the "Newtonian" focus + 'minus-IR' Corion NR-400 filter, equating to broadband V), $V = 13.15$ in a $20'' \times 20''$ CCD square centered on the comet nucleus ("comparison stars were all taken from Project Pluto's 'Guide 6.0', which is to say from the Hipparcos/Tycho catalogues") [William Liller, Viña del Mar, Chile]. Dec. 15.187: $V = 12.98$ (see note for Dec. 14.193) [W. Liller]. Dec. 17.178: 13.17 (see note for Dec. 14.193) [W. Liller]. Dec. 20.188: 11.54 (see note for Dec. 14.193) [W. Liller]. Dec. 22.249: 11.62 (see note for Dec. 14.193) [W. Liller]. Dec. 24.127: 11.73 (see note for Dec. 14.193) [W. Liller]. Dec. 27.097: 12.03 (see note for Dec. 14.193); "images taken since the outburst clearly show the nuclear cond. enlarging slowly and moving out through the coma" [W. Liller]. 1999 Feb. 4.44: comet clearly fainter than in Jan., but could still be glimpsed with 15×80 B [SEA]. Feb. 15.61: obs. from Waddi Farm, W. Australia [TSU02]. Feb. 21.60:

◇ *Comet C/1995 O1 (Hale-Bopp) [cont. from previous page]* ⟹ comet was still a relatively easy object with binoculars from a true-dark site, despite its distance of 7.8 AU from the sun and the earth; no nucleus or tail were noted; comet was situated in the W part of the Large Magellanic Cloud, near the star clusters NGC 1711, NGC 1702, and NGC 1704 (m_1 estimate somewhat uncertain due to the nebulous background; a star of mag 12.2 was within the N part of the coma); 44.5-cm L (125×) did not reveal much more details; alt. 41°; obs. from Yerecoin, Western Australia [KAR02]. Apr. 12.38: "a stellar object was seen in the comet, assumed (though not confirmed) to be a background star, and it may have affected the obs." [RAE]. Apr. 12.49: very condensed (but w/o point central cond.) in 25.4-cm L (71×); possible minor outburst [SEA]. Apr. 14.47: "tonight this comet appears well condensed at 40× and 75×, w/ the central coma appearing almost stellar at times; hence, I have estimated with some uncertainty DC ~ 6/; this makes me wonder whether the 'stellar' object observed in the coma on Apr. 12.38 was perhaps a nuclear outburst and not a star, as I had assumed; the background 'star' seen on the Apr. 12 is not visible tonight, though the conditions tonight are very poor (making obs. difficult!); I am certain that tonight and on Apr. 12, the comet appeared very different than on Apr. 11, when it was quite flat and diffuse" [RAE]. Apr. 18.32: "highly condensed and therefore possibly experiencing high nuclear activity; at low power, the outer coma is almost invisible due to an unusually bright background sky (caused by a local sports event); the inner coma appears almost stellar at times; the coma has also decreased in size since a week ago; it now seems that the stellar object seen in the coma on Apr. 12.38 was in fact part of the coma!" [RAE]. Apr. 19.53: "comet appears to contain an almost-stellar core that indicates a recent nuclear outburst has occured" [MAT08].

◇ *Comet C/1997 BA$_6$ (Spacewatch)* ⟹ 1999 Apr. 7.57: comet located quite close to 11th-mag GSC star, which may have affected coma dia. estimate [PEA].

◇ *Comet C/1998 J1 (SOHO)* ⟹ 1998 May 18.35: coma easily seen via naked eye; alt. 6°; w/ 10×50 B, a narrow, straight tail in p.a. 112° extends from a parabolic coma; w/ 15-cm L (43×), coma has an obvious bluish hue [DRE01]. May 20.35: long, thin wedge (gas) tail 7°.6 long, centered at p.a. 120°, width ~ 0°.5 at 6° from coma; small fan-like (dust) tail ~ 1° long adjacent to gas tail in p.a. 105° [DRE01]. May 24.34: dust tail ~ 0°.5 in p.a. 105° [SCH04]. May 25.35: dust tail ~ 0°.7 in p.a. 105° [SCH04]. May 28.36-June 10.35: moonlight interference [DRE01]. June 12.35: short tail visible once again in 10×50 B, w/o moonlight [DRE01].

◇ *Comet C/1998 M5 (LINEAR)* ⟹ 1999 Jan. 31.72, Mar. 12.83, and 20.83: small, strong central cond. [LEH]. Feb. 20.82, Mar. 11.60, 16.47, 22.60, Apr. 4.46, 5.47, 13.55, 14.45, and 20.45: `HOC2.exe` software was used for comparison-star mags [NAG08]. Mar. 15.85: observed comet only 38′ from Polaris and 29′ from the Pole, but haze prevented photometric measurments [KAM01]. Mar. 16.47 andApr. 11.52: `GUIDE 7.0` software was used for comparison-star mags [YOS02]. Apr. 3.76: fan-like coma [BAR06]. Apr. 5.78: possible tail [BAR06]. Apr. 8.47 and 16.66: CCD frames for these and other comet observations with obs. code YOS04 were obtained by K. Kadota, at Ageo, Saitama, and measured by S. Yoshida [YOS04]. Apr. 10.81: slightly brighter and bigger w/ a Lumicon Swan Band Filter [MEY]. Apr. 15.85: comet near a bright star [BAR06]. Apr. 16.95: bright, well condensed; a faint, fuzzy and wide tail ~ 2′ long extended E from the coma [WAR01].

◇ *Comet C/1998 P1 (Williams)* ⟹ 1998 Nov. 28.85: `GUIDE 7.0` software was used for comparison-star magnitudes; comet shows an anti-tail [NAK01]. 1999 Feb. 4.47 and 14.49: `HOC2.exe` software was used for comparison-star mags [NAG08]. Feb. 13.50 and 17.58: `GUIDE 7.0` software was used for comparison-star mags [YOS02]. Feb. 18.13: central cond. of dia. slightly > 2″ and mag 14.0; tail appeared diffuse and featureless [ROQ]. Mar. 7.01: central cond. of dia. ~ 2″ and mag 13.3; diffuse tail w/o substructure in R, V, or B [ROQ]. Mar. 28.69: central cond. of dia. ~ 2″ and mag 16.1; the short tail appeared faint and irregularly defined w/o substructure [ROQ]. Apr. 17.92: comet very close to star of (GSC) mag 11.2 [BOU]. Apr. 18.93: comet still close to star of mag 11.2 [BOU].

◇ *Comet C/1998 U5 (LINEAR)* ⟹ 1998 Nov. 16.01: w/ 40.6-cm f/5 L (70×), coma dia. 3′.5, DC = 6 [BOR]. 1999 Apr. 20.08 and 21.07: "comet was close to the visibility limit on Apr. 20.08, but on the next night (Apr. 21.07), there were very good sky conditions (naked-eye limiting mag ~ 6.3 at position of comet) and comet was seen better; positions of comet were confirmed with Digital Sky Survey, as comet was not near any stars brighter than mag 16"; ref. HS gives m_1 = 12.9, "but USNO-A2.0 comp. stars, using formula $V = R + 0.375(B–R)$, gives m_1 = 13.6 — in better agreement with my impression of observing this comet" [HOR02].

◇ *Comet C/1998 W3 (LINEAR)* ⟹ 1999 Jan. 6.85, 10.86, Mar. 6.88, 8.90, 12.89, and 13.90: small, strong central cond. [LEH].

◇ *Comet C/1999 A1 (Tilbrook)* ⟹ 1999 Feb. 2.44: sky somewhat light w/ twilight and rising moon; comet enhanced through Swan Band filter [SEA]. Feb. 4.44: comet between two bright stars and visible w/ 15×80 B [SEA]. Mar. 26.88: comet position low in the SE sky, observed 10 min after the commencement of astronomical twilight; no sign of any obvious diffuse object [PEA].

◇ *Comet C/1999 H1 (Lee)* ⟹ 1999 Apr. 16.5: "discovery with 16-inch f/6 Newtonian reflector (~ 75×) on a Dobsonian mount; I was hunting for NGC 5189 (a very peculiar planetary nebula) when I stumbled across the comet — a pure chance discovery; I am a telescope operator (night assistant) at the Anglo-Australian Telescope, and an amateur astronomer for many years (before joining the observatory)" [Steven Lee, Mudgee, N.S.W.]. Apr. 17.31: comet easily spotted while still in twilight; well-condensed object [RAE]. Apr. 17.517: one day after discovery; very diffuse coma; obs. from Bathurst, N.S.W. [BEM]. Apr. 18.45: somewhat enhanced using Swan Band filter [SEA]. Apr. 19.99: at 92×, comet very diffuse; obvious change in appearance using comet filter; `Guide 7.0` software was used for ref. stars [DES01]. Apr. 20.97, 22.97, and 23.97: `Guide 7.0` software was used for ref. stars [DES01]. Apr. 21.65: "coma elongated in p.a. 8°

◇ *Comet C/1999 H1 (Lee) [cont. from previous page]* ⟹ (tail?)" [DRE01]. Apr. 21.98: at 92×, comet very diffuse; `Guide 7.0` software used for ref. stars [DES01]. Apr. 25.41: moonlight interference [DRE01]. Apr. 25.98 and 26.98: `Guide 7.0` software was used for ref. stars; interference from moonlight [DES01]. Apr. 30.97: `Guide 7.0` software used for ref. stars; obs. made before moonrise [DES01].

◇ *Comet 21P/Giacobini-Zinner* ⟹ 1999 Feb. 1.08: central cond. of dia. < 2″ and mag 14.1; coma appeared large, evenly graded, symmetrical with short, diffuse projection at p.a. 72° [ROQ]. Feb. 13.48: `GUIDE 7.0` software was used for comparison-star mags [YOS02]. Mar. 2.10: central cond. of mag 14.5; coma showed some asymmetry in p.a. 90°; tail appeared faint and diffuse with no apparent substructuring [ROQ]. Apr. 6.14: central cond. of dia. ≈ 3″ and mag 15.4; tail curved SW from its origin at p.a. 106° to its apparent termination at p.a. 120° [ROQ].

◇ *Comet 29P/Schwassmann-Wachmann 1* ⟹ 1999 Mar. 16.79: "strong cond. indicates that a small outburst occurred 1-2 days earlier" [NAK01]. Mar 30.84: "rapid brightening has evidently taken place since last negative observation (m_1 = [14.0) made 3 days ago; strongly condensed small coma suggests that this is the early stage of an outburst" [PEA]. Mar. 31.87: "bright moonlit sky, obs. made at onset of astronomical twilight such that Moon is as low in the sky as possible; comet relatively easy to see even at low power; moderately condensed object" [PEA]. Apr. 1.86: "bright moonlit sky; moderately condensed object; slightly fainter than last night" [PEA]. Apr. 16.81: "comet not visible, although faint diffuse object suspected at the position on a few occasions; the above magnitude limit is applicable for the coma size of 0′.5; for a larger object, this would have reduced to around mag 13.5 or so" [PEA].

◇ *Comet 37P/Forbes* ⟹ 1999 Mar. 22.87: "comet observed as a distinct diffuse object at predicted position through breaks in the clouds; unfortunately there wasn't enough time to check for motion and to make a more accurate magnitude estimate" [PEA]. Mar. 23.88: "comet again seen as a diffuse object with some DC, which confirms last night's obs.; accurate m_1 was obtained due to close proximity of the variable star RR Sgr, which has a good sequence from VSS RASNZ; clouds again made the obs. brief" [PEA].

◇ *Comet 52P/Harrington-Abell* ⟹ 1998 Nov. 28.86: `GUIDE 6.0` software was used for the comparison-star magnitudes [YOS02]. 1999 Jan. 6.76: bright, small central region surrounded by faint outer and ill-defined coma [MEY]. Feb. 4.10: central cond. of dia. = 1″ and mag 13.9; aymmetrical coma [ROQ]. Feb. 4.46: `HOC2.exe` software was used for comparison-star mags [NAG08]. Feb. 7.88: difficult obs.; comet very close to star of mag 10.8 (RF: HS) [BAR06]. Feb. 22.52: another 1′.2-long tail extends in p.a. 105° [FUK02]. Feb. 23.14: central cond. of dia. ~ 3″ and mag 14.7; short tail w/o substructure [ROQ]. Mar. 10.13: central cond. of dia. ~ 1″ and mag 15.5; very faint, diffuse tail w/o substructure [ROQ]. Apr. 7.14: central cond. of dia. > 2″ and mag 16.7; tail was diffuse w/o apparent substructure [ROQ]. Apr. 10.84: very diffuse, only visible w/ averted vision [MEY]. Apr. 11.54: difficult obs. in bright sky and low alt. [PEA].

◇ *Comet 60P/Tsuchinshan 2* ⟹ 1999 Mar. 6.81-13.87: small, strong central cond. [LEH].

◇ *Comet 93P/Lovas 1* ⟹ 1999 Jan. 17.79: comet near star of mag 12 [MEY]. Feb. 14.22: central cond. of dia. > 2″ and mag 17.2; coma and tail appeared faint and poorly defined [ROQ]. Mar. 6.14: central cond. of dia. slightly > 1″ and mag 17.1; coma generally symmetrical, but irregularly defined [ROQ].

◇ *Comet 140P/Bowell-Skiff* ⟹ 1999 Mar. 12.90, 13.89, and 18.88: small, strong central cond. [LEH].

◇ *Comet P/1998 S1 (LINEAR-Mueller)* ⟹ 1999 Jan. 6.80 and 10.81: small, strong central cond. [LEH].

◇ *Comet P/1998 U3 (Jäger)* ⟹ 1998 Nov. 28.84: `GUIDE 6.0` software was used for comparison-star mags [YOS02]. 1999 Feb. 3.11: central cond. of dia. > 2″ and mag 14.0; coma appeared asymmetrical where it blended into a diffuse tail [ROQ]. Feb. 4.45, 14.45, Mar. 16.48: `HOC2.exe` software was used for comparison-star mags [NAG08]. Feb. 9.95: haze [BAR06]. Feb. 10.76: comet near star of mag 11 [MEY]. Feb. 15.11: central cond. of dia. 2″ and mag 14.0; diffuse, featureless tail [ROQ]. Feb. 17.47 and Apr. 11.56: `GUIDE 7.0` software was used for comparison-star mags [YOS02]. Feb. 22.76 and Mar. 18.81: small, strong central cond. [LEH]. Mar. 4.11: central cond. of dia. ≈ 2″ and mag 14.5; coma appeared asymmetrical in p.a. 90°; tail was diffuse w/o apparent substructure [ROQ]. Mar. 6.88: comet near star of mag 10 [MEY]. Apr. 14.51: faint fan-shaped tail spans p.a. 60°-295° [NAK01]. Apr. 16.91: round, diffuse, very weakly condensed; alt. 18° [WAR01].

◇ *Comet P/1998 W1 (Spahr)* ⟹ 1999 Mar. 8.81, 12.80, and 13.86: small, strong central cond. [LEH].

◇ *Comet P/1999 E1 (Li)* ⟹ 1999 Mar. 17.76 and 18.86: small, strong central cond. [LEH]. Mar. 21.13: central cond. of dia. 2″ and mag 16.1; coma was asymmetrical in p.a. 90° [ROQ].

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TABULATED DATA

The headings for the tabulated data are described in the January 1999 issue, page 8, and in most previous issues (omitted here due to space constraints). 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 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].

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 Assn.; 16 = Japanese observers (c/o Akimasa Nakamura, Kuma, Japan); 23 = Czech group (c/o P. Pravec and V. Znojil); 32 = Hungarian group (c/o K. Sarneczky); 37 = Ukrainian Comet Section (c/o A. R. Baransky and K. I. Churyumov); 42 = Belarus observers, c/o V. S. Nevski, Vitebsk; etc.]. Those with asterisks (*) preceding the 5-character code are new additions to the Observer Key:*

BAR06	37	Alexandr R. Baransky, Ukraine
BEM		Colin S. Bembrick, Australia
BIV		Nicolas Biver, France
BOR		John E. Bortle, NY, U.S.A.
BOU		Reinder J. Bouma, Netherlands
*CER01	23	Jakub Cerny, Praha, Czech Rep.
CHE03	33	Kazimieras T. Cernis, Lithuania
CLE	07	David H. Clegg, England
COM		Georg Comello, The Netherlands
CRE01		Phillip J. Creed, OH, U.S.A.
DES01		Jose G. de Souza Aguiar, Brazil
DIE02		Alfons Diepvens, Belgium
DRE01		Colin E. Drescher, Australia
ERO	42	Alexei V. Erohin, Kursk, Russia
FUK02	16	Hideo Fukushima, Mitaka, Japan
GAS01	33	Darius Gasiunas, Lithuania
GIL01	11	G. Gilein, The Netherlands
HAS02		Werner Hasubick, Germany
HAS08	16	Yuji Hashimoto, Hiroshima, Japan
HOR02	23	Kamil Hornoch, Czech Republic
KAM01		Andreas Kammerer, Germany
KAR02	21	Timo Karhula, Sweden
KOR01	19	Valeriy L. Korneyev, Russia
KOS	07	Attila Kosa-Kiss, Romania
KUJ	23	Josef Kujal, Czech Republic
LEH		Martin Lehky, Czechoslovakia
MAR02	13	Jose Carvajal Martinez, Spain
MAT08		Michael Mattiazzo, S. Australia
*MER04		Sergey Merzlakov, Russia
MEY		Maik Meyer, Germany
MIT	16	Shigeo Mitsuma, Honjo, Japan
MIY01	16	Osamu Miyazaki, Ishioka, Japan
MOE		Michael Moeller, Germany
NAG08	16	Yoshimi Nagai, Koufu, Japan
NAK01	16	Akimasa Nakamura, Kuma, Japan
NEV	42	Vitali S. Nevski, Belarus
PEA		Andrew R. Pearce, Australia
PER01		Alfredo J. S. Pereira, Portugal
RAE		Stuart T. Rae, New Zealand
RES		Maciej Reszelski, Poland
ROQ		Paul Roques, AZ, U.S.A.
SAN04	38	Juan M. San Juan, Madrid, Spain
SAR02	32	Krisztian Sarneczky, Hungary
SCH04	11	Alex H. Scholten, Netherlands
SCO04	37	Borys Skorichenko, Ukraine
SEA		David A. J. Seargent, Australia
SHA02	07	Jonathan D. Shanklin, England
SHU	42	Sergey E. Shurpakov, Belarus
SPR		Christopher E. Spratt, Canada
SUZ02	16	Masayuki Suzuki, Japan
SVE	23	Milan Svehla, Czech Republic
TRO02	35	Victor Trombotto, Argentina
TSU02	16	Mitsunori Tsumura, Japan
VIT01	40	Catarina Vitorino, Portugal
VIT02	35	Helio C. Vital, Brazil
WAR01		Johan Warell, Sweden
WAT01	16	Nobuo Watanabe, Matsumoto, Japan
YOS02	16	Katsumi Yoshimoto, Hirao, Japan
YOS04	16	Seiichi Yoshida, Ibaraki, Japan

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Comet C/1995 O1 (Hale-Bopp)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 04 15.33		S	8.9	AA	4.0	B		8	&10	1			SCH04
1998 04 18.36		S	8.8	AA	4.0	B		8	11	2			SCH04
1998 04 23.35		S	9.0	AA	4.0	B		8	& 8	2			SCH04
1998 04 24.32		S	8.9	AA	4.0	B		8	&10	2/			SCH04
1998 04 26.38		S	8.8	AA	4.0	B		8	&10	3			SCH04
1999 01 26.58		S	11.0	TT	11	L	4	16	2	4			RAE
1999 01 27.62		S	11.0	TT	11	L	4	16	2	4			RAE
1999 02 04.44		M	11.0	GA	25.4	L	4	71					SEA
1999 02 04.50		S	11.0	TI	15	L	8	40	2	4			MAT08
1999 02 06.41		S	11.0	TT	11	L	4	16	2.5	4			RAE
1999 02 07.41		S	11.1	TT	11	L	4	16	2.5	3			RAE
1999 02 08.44		S	11.1	TT	11	L	4	16	2.5	3			RAE
1999 02 12.40		S	11.1	TT	11	L	4	16	2.5	3			RAE
1999 02 13.40		S	11.1	TT	11	L	4	16	2.5	3			RAE
1999 02 15.61		M	11.0	HS	25.0	L	6		1.2	4	2.5m	60	TSU02
1999 02 17.58		S	11.6	VN	41	L	4	90	1.2	3			PEA
1999 02 21.60		S	10.9:	HS	10.0	B		20	3.2	3			KAR02
1999 03 07.48		S	11.5	TI	20	L	7	45	2	5			MAT08
1999 03 09.53		S	11.7	VN	41	L	4	90	1.3	4			PEA
1999 03 14.50		S	11.6	TI	20	L	7	45	1.5	4			MAT08
1999 03 15.47		S	11.3	GA	10.0	B		25					SEA
1999 03 15.53		S	11.8	VN	41	L	4	90	1.3	3/			PEA

Comet C/1995 O1 (Hale-Bopp) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 17.46		S	11.2	GA	10.0	B		25					SEA
1999 03 17.52		S	11.8	VN	41	L	4	90	1.5	4			PEA
1999 03 18.52		S	11.6	TI	20	L	7	45	1.5	4			MAT08
1999 03 20.52		S	11.8	VN	41	L	4	90	1.5	3			PEA
1999 03 21.51		S	11.8	VN	41	L	4	90	1.4	3			PEA
1999 03 21.61		S	11.6	TI	20	L	7	45	1.5	4			MAT08
1999 04 04.47		S	11.5	VN	20	L	4	45	3.2	3			PEA
1999 04 07.46		S	12.0	TI	20	L	7	158	1	3			MAT08
1999 04 11.35		S	11.8	HS	25	L	5	40	3	3			RAE
1999 04 12.38		S	11.9	HS	25	L	5	40	2.4	3			RAE
1999 04 12.49		S	11.3	GA	10.0	B		25					SEA
1999 04 14.48		M	11.8	HS	25	L	5	40	2.1	6/			RAE
1999 04 18.32		M	12.0:	HS	25	L	5	40	1.5	7			RAE
1999 04 19.53		M	11.7	TI	20	L	7	158	0.5	s7			MAT08
1999 04 21.40		M	11.9	HS	25	L	5	40	0.8	6/			RAE
1999 04 21.59		S	11.9	TI	20	L	7	158	0.5	5			MAT08
1999 04 22.36		M	11.8	HS	25	L	5	40	1	6			RAE

Comet C/1997 BA6 (Spacewatch)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 28.83	a	C	15.2	GA	60.0	Y	6	a120	0.75				NAK01
1999 02 17.66		S	13.6	VN	41	L	4	200	0.8	3			PEA
1999 02 20.73		S	13.7	VN	41	L	4	200	0.5	2			PEA
1999 02 21.73		S	13.7	VN	41	L	4	200	0.5	2			PEA
1999 02 22.72		S	13.7	VN	41	L	4	200	0.6	2			PEA
1999 02 23.73		S	13.7	VN	41	L	4	200	0.5	2			PEA
1999 03 14.54		S	13.3	HS	20	L	7	158	0.5	4			MAT08
1999 03 15.74		S	13.6	VN	41	L	4	200	0.8	2			PEA
1999 03 18.51		S	13.5	HS	20	L	7	158	0.5	3			MAT08
1999 03 20.73		S	13.5	VN	41	L	4	200	0.6	2/			PEA
1999 03 21.59		S	13.4	HS	20	L	7	158	0.5	3			MAT08
1999 03 21.73		S	13.4	VN	41	L	4	200	0.5	3			PEA
1999 03 25.73		S	13.5	VN	41	L	4	200	0.7	3			PEA
1999 04 05.53		S	13.4	VN	41	L	4	200	0.5	2			PEA
1999 04 06.50		S	13.4	VN	41	L	4	200	0.8	2			PEA
1999 04 07.49		S	13.3	HS	20	L	7	158	0.5	4			MAT08
1999 04 07.57		S	13.5	VN	41	L	4	200	0.7	2			PEA
1999 04 11.53		S	13.3	VN	41	L	4	200	1.1	3			PEA
1999 04 15.43		S	13.6	GA	25.4	L		114					SEA
1999 04 16.43		S	13.3	GA	25.4	L		71					SEA
1999 04 16.52		S	13.3	VN	41	L	4	200	0.7	3			PEA
1999 04 18.51		S	13.5	VN	41	L	4	200	0.7	2			PEA
1999 04 19.54		S	13.4	HS	20	L	7	158	0.5	3			MAT08
1999 04 19.55		S	13.4	VN	41	L	4	90	0.7	3			PEA
1999 04 20.55		S	13.4	VN	41	L	4	90	0.7	3			PEA

Comet C/1998 J1 (SOHO)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 18.35	&	M	3.1:	YG	5.0	B		10			>1.7	112	DRE01
1998 05 20.34		S	4.6	SC	4.0	B		8	< 1	9	2	127	SCH04
1998 05 20.35	$	M	4.2	YG	5.0	B		10		6	7.6	120	DRE01
1998 05 21.34		S	4.4	SC	4.0	B		8	3	8	2	128	SCH04
1998 05 21.35	$	M	4.5	YG	5.0	B		10		7	8.2	124	DRE01
1998 05 22.34		S	4.4	SC	4.0	B		8	3	8	0.7	130	SCH04
1998 05 23.33		S	4.5	SC	4.0	B		8	4	8	0.8	129	SCH04
1998 05 23.35	a	M	4.9	TT	5.0	B		10	& 4	7	7.3	130	DRE01
1998 05 24.34		S	4.5	SC	4.0	B		8	4	8	3	140	SCH04
1998 05 24.36	a	M	5.1	TT	5.0	B		10		6	5.9	133	DRE01
1998 05 25.35		S	4.5	SC	4.0	B		8	8	8	2.5	130	SCH04
1998 05 25.35	a	M	4.8	TT	5.0	B		10	5	7	6.3	134	DRE01
1998 05 26.35		S	4.9	SC	4.0	B		8	8	8	0.9	132	SCH04
1998 05 26.36	a	M	4.8	TT	5.0	B		10	5	7	5.7	134	DRE01
1998 05 27.36	a	M	5.3	TT	5.0	B		10	5	6/	3.8	136	DRE01

Comet C/1998 J1 (SOHO) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 05 28.36	a	M	5.1	TT	5.0	B		10	6	6	2.8	137	DRE01
1998 05 29.36	a	M	5.2	TT	5.0	B		10	6	6	1.7	137	DRE01
1998 05 30.36		M	5.3	TT	5.0	B		10	6	6	1.8	137	DRE01
1998 05 31.36		M	5.4	TT	5.0	B		10	6	6/	1.0	137	DRE01
1998 06 02.36		M	4.3	TT	5.0	B		10	7	7/	3.8	139	DRE01
1998 06 02.36		S	4.4	SC	4.0	B		8	7	7/	1	140	SCH04
1998 06 03.36		M	4.7	TT	5.0	B		10	6	6/	3.5	140	DRE01
1998 06 03.38		S	4.8	SC	4.0	B		8	6	8			SCH04
1998 06 04.36		M	5.4	TT	5.0	B		10	6	6	0.7	140	DRE01
1998 06 04.37		S	5.0	SC	4.0	B		8	5	8	0.5	105	SCH04
1998 06 05.35		M	5.6	TT	5.0	B		10	5	6	0.3	143	DRE01
1998 06 06.36		M	5.8	TT	5.0	B		10	5	6/			DRE01
1998 06 07.36		M	5.9	TT	5.0	B		10	6	7			DRE01
1998 06 07.38		S	6.1	SC	4.0	B		8	6	7			SCH04
1998 06 08.35		M	5.9	TT	5.0	B		10	5	7			DRE01
1998 06 09.35		M	6.1	TT	5.0	B		10	4	6/			DRE01
1998 06 10.35		M	6.3	TT	5.0	B		10	4	6			DRE01
1998 06 11.38		S	6.5:	SC	4.0	B		8	8	5			SCH04
1998 06 12.35		M	6.3	TT	5.0	B		10	6	5/	0.4	140	DRE01
1998 06 13.36		S	6.7	SC	4.0	B		8	10	5			SCH04
1998 06 14.36		S	6.7	SC	4.0	B		8	8	5			SCH04
1998 06 17.42		S	6.7	SC	4.0	B		8	8	5			SCH04
1998 06 18.42		S	6.7	SC	4.0	B		8	11	3			SCH04
1998 08 14.38		S	12.7	HS	25.4	L	6	119	1	2			DRE01

Comet C/1998 K1 (Mueller)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 25.80		C	17.9:	HS	18.0	L	6	a 60	0.25				YOS04
1999 03 22.73	1	C	[16.6	TJ	18.0	L	6	a 60					YOS04

Comet C/1998 K5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 08.59		V	14.2	LA	50.0	C	12	a180	0.16	8	1.1m	264	FUK02
1998 11 11.59		V	14.2	LA	50.0	C	12	a180	0.17	8	1.3m	264	FUK02
1998 11 14.57		V	14.2	LA	50.0	C	12	a240	0.15	8	1.3m	264	FUK02
1998 12 11.52		V	15.9	LA	50.0	C	12	a360	0.21	8	1.1m	265	FUK02
1998 12 13.52		V	16.0	LA	50.0	C	12	a360	0.18	8	0.8m	265	FUK02
1998 12 17.52		V	16.3	LA	50.0	C	12	a360	0.15	8	0.9m	266	FUK02
1998 12 19.53		V	16.3	LA	50.0	C	12	a360	0.16	8	0.7m	265	FUK02
1998 12 21.51		V	16.3	LA	50.0	C	12	a360	0.12	8	0.7m	265	FUK02
1998 12 24.46		V	16.6	LA	50.0	C	12	a360	0.17	8	0.8m	266	FUK02
1999 02 05.49		H	16.9	LA	50.0	C	12	a600	0.12	8	0.4m	266	FUK02
1999 02 13.46		H	17.0	LA	50.0	C	12	a480	0.14	8	0.3m	260	FUK02
1999 02 14.46		C	18.1	GA	60.0	Y	6	a240	0.3	8	0.4m	263	NAK01

Comet C/1998 M1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 22.82	1	C	[16.8	TJ	18.0	L	6	a 60					YOS04

Comet C/1998 M2 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 12.83		C	16.4	TJ	18.0	L	6	a 60	0.3				YOS04

Comet C/1998 M3 (Larsen)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 22.78		C	18.1:	TJ	18.0	L	6	a 60	0.25				YOS04
1999 03 16.80		C	18.6	GA	60.0	Y	6	a240	0.25				NAK01
1999 03 22.76		C	18.1	TJ	18.0	L	6	a120	0.35				YOS04
1999 04 13.71	1	C	[18.0	TJ	18.0	L	6	a 60					YOS04
1999 04 14.77		C	18.8	GA	60.0	Y	6	a240	0.25				NAK01

Comet C/1998 M5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 06.72		S	10.3	AC	6.3	R	13	52	4	2			KOS
1998 11 07.70		S	10.3	AC	6.3	R	13	52	6	2			KOS
1998 11 08.48		V	12.2	LA	50.0	C	12	a360	2.19	3	4.0m	106	FUK02
1998 11 08.70		S	10.3	AC	6.3	R	13	52	6	2			KOS
1998 11 11.48		V	11.3	LA	50.0	C	12	a360	1.50	3	3.3m	97	FUK02
1998 11 12.98		S	10.4	TI	40.6	L	5	70	2.0	5			BOR
1998 11 13.70		S	10.2	AC	6.3	R	13	52	6	1			KOS
1998 11 14.47		V	11.8	LA	50.0	C	12	a360	1.55	3	3.7m	97	FUK02
1998 11 17.71		S	10.0	AC	6.3	R	13	52	4	1			KOS
1998 11 18.99		S	10.1	TI	40.6	L	5	70	2.1	5			BOR
1998 12 09.98		S	9.8	TI	40.6	L	5	70	2.3	5			BOR
1998 12 11.99		S	9.8	TI	40.6	L	5	70	2.6	5			BOR
1998 12 13.67		E	9.8:	S	6	R	6	51	2	3			ERO
1998 12 14.69		S	10.2	AC	6.3	R	13	52	4	1			KOS
1998 12 17.69		S	10.4	AC	6.3	R	13	52	3	1			KOS
1998 12 18.98		S	9.7	TI	40.6	L	5	70	2.4	5			BOR
1998 12 19.38		V	10.4	LA	50.0	C	12	a360	2.44	3/	2.7m	94	FUK02
1998 12 21.36		V	9.7	LA	50.0	C	12	a360	2.57	3/	2.7m	92	FUK02
1998 12 23.67		S	10.0	AC	6.3	R	13	52	4	2			KOS
1998 12 23.78		S	10.2:	VF	21.5	L	6	80	2.9	4			SC004
1998 12 24.37		V	10.7	LA	50.0	C	12	a240	2.18	3/	2.7m	90	FUK02
1998 12 24.68		E	9.6	S	6	R	6	51	2.5	2/			ERO
1998 12 25.68		S	10.0	AC	6.3	R	13	52	4	2			KOS
1998 12 28.69		S	10.0	AC	6.3	R	13	52	4	2			KOS
1998 12 29.67		S	9.8	AC	6.3	R	13	52	5	2			KOS
1999 01 04.98		S	9.5	TI	40.6	L	5	70	2.1	4			BOR
1999 01 05.72		M	9.5	TI	10	B	4	25	3.1	3			LEH
1999 01 05.75	x	S	10.1	TJ	25.4	L	5	65	3.3	3/			MEY
1999 01 05.98		S	9.6	TI	40.6	L	5	70	1.8	4/			BOR
1999 01 06.67		S	10.0	AC	6.3	R	13	52	3	1			KOS
1999 01 06.72	x	S	9.8	TJ	25.4	L	5	65	4.0	s4			MEY
1999 01 06.74		M	9.5	TI	10	B	4	25	3.2	3			LEH
1999 01 07.98		S	9.6	TI	40.6	L	5	70	2.4	4/			BOR
1999 01 10.73		M	9.7	TI	10	B	4	25	3.1	3			LEH
1999 01 10.98		S	9.7	TI	40.6	L	5	70	2.1	4			BOR
1999 01 11.73		E	9.3	S	6	R	6	51	3.1	3/			ERO
1999 01 12.81		S	9.0	TT	10.0	B		25	4.3	4			HAS02
1999 01 12.85		S	10.4	HS	31.7	L	6	63	1.8	5			MIY01
1999 01 15.86		S	10.5	HS	31.7	L	6	63	2.5	4			MIY01
1999 01 16.72		S	10.0	VF	21.5	L	6	80	3.8	D2			SC004
1999 01 16.87		S	9.4	TT	10.0	B		25	3.6	3			HAS02
1999 01 17.69		S	10.0	AC	6.3	R	13	52	4	1			KOS
1999 01 17.75	x	M	9.7	TJ	25.4	L	5	65	3.9	4			MEY
1999 01 17.79		S	9.1:	TI	6	R	12	37	2.5	5			SVE
1999 01 19.74	x	M	9.8	TJ	25.4	L	5	65	3.3	S4/			MEY
1999 01 20.78	x	S	9.3	TJ	10.0	B		20	6	3/			MEY
1999 01 27.70		S	10.2:	VF	21.5	L	6	80	3.1	3			SC004
1999 01 30.19		M	9.3	TT	13	L	8	69	3	3			HOR02
1999 01 31.72		M	9.3	TI	10	B	4	25	3.4	4			LEH
1999 02 03.86		C	10.8	TJ	10.7	A	6	a 60	2.3				YOS04
1999 02 05.78	x	S	9.7	TT	25.4	J	6	58	3.2	3/			BOU
1999 02 06.75		S	10.2	AC	15.2	L	5	42	3.5	3			MOE
1999 02 07.94	w	M	9.9	PA	25	L	4	64	2	3/			SHU
1999 02 08.18		S	9.7	TT	8.0	B		10	4.5	2/			HOR02
1999 02 08.80		S	10.0	HS	31.7	L	6	63	1.5	3/			MIY01
1999 02 08.85	x	S	9.8	TT	25.4	J	6	58	2.7	4			BOU
1999 02 09.18		S	9.7	TT	8.0	B		10	4.5	2/			HOR02
1999 02 09.75		S	10.1	AC	15.2	L	5	42	3.5	3			MOE
1999 02 10.75	x	M	9.6	TJ	25.4	L	5	65	2.6	4			MEY
1999 02 12.75	w	M	10.3	SE	25	L	4	64	4	3			SHU
1999 02 12.79	x	S	9.7	TT	25.4	J	6	58	3.2	3/			BOU
1999 02 12.80		S	10.0	HS	31.7	L	6	63	2.4	4			MIY01
1999 02 12.81		S	10.2	AC	15.2	L	5	42	3.5	4			MOE
1999 02 13.68	w	M	9.9	SE	25	L	4	64	3	3			SHU
1999 02 13.72		S	10.8	HS	31.7	L	6	63	1.8	4/			MIY01

Comet C/1998 M5 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 13.73		S	9.3	TJ	31.7	L	6	63	4.0	6			YOS04
1999 02 13.77		S	9.8	TT	30.5	L	5	96	2.5	5			GIL01
1999 02 13.80	x	S	9.8	TT	25.4	J	6	58	3.0	3			BOU
1999 02 13.83		M	10.1	NP	15.0	B		25	3.5	5			MIT
1999 02 15.01		S	9.2	TI	40.6	L	5	70	3.4	4/			BOR
1999 02 15.61		S	9.8	TJ	25.6	L	5	42	3.5	4			BIV
1999 02 15.73		M	9.2	TI	10	B	4	25	3.1	3			LEH
1999 02 16.01		S	9.4	TI	40.6	L	5	70	2.8	4			BOR
1999 02 16.78		S	9.7	AC	15.2	L	5	42	4.5	5			MOE
1999 02 17.77		S	9.3	TT	8.0	B		10	5	3			HOR02
1999 02 17.77		S	9.9	AC	15.2	L	5	42	4.5	4			MOE
1999 02 17.79		S	8.8:	TI	6	R	12	37	4.3	5			SVE
1999 02 17.80		S	9.8	TT	30.5	T	10	117	& 2.5	2/			COM
1999 02 18.91		S	9.3	TT	8.0	B		10	5	3			HOR02
1999 02 19.80		M	10.1	NP	15.0	B		25	4.3	5			MIT
1999 02 19.82		S	10.4	HS	31.7	L	6	63	2.2	4			MIY01
1999 02 19.84		S	9.9	AC	15.2	L	5	42	4.5	4			MOE
1999 02 20.76		S	9.9	HS	31.7	L	6	63	2.7	5			MIY01
1999 02 20.82	x	S	9.5	TJ	32.0	L	5	58	2.7	5			NAG08
1999 02 20.92		M	9.0	TT	8.0	B		10	6.5	3			HOR02
1999 02 21.01		S	9.3	TI	40.6	L	5	70	2.4	4			BOR
1999 02 21.75		M	9.9	NP	15.0	B		25	4.8	5			MIT
1999 02 22.73		M	9.4	TT	10	B	4	25	3.2	3			LEH
1999 02 23.08		S	9.0	TT	8.0	B		10	7	3			HOR02
1999 02 24.76		M	9.1	TT	10	B	4	25	3.1	3			LEH
1999 02 24.82		S	10.1	AC	15.2	L	5	42	3.5	4			MOE
1999 02 25.15		S	9.4	AC	20	L	4	42	& 4	6			SCH04
1999 02 25.16	x	M	9.6	TT	25.4	J	6	58	2.8	4/			BOU
1999 02 27.16		S	9.2	TT	8.0	B		10	7	2/			HOR02
1999 02 27.80		M	9.0	TI	10	B	4	25	3.0	3			LEH
1999 03 03.78	x	S	9.6	TT	25.4	J	6	58	3.1	4			BOU
1999 03 04.77		S	8.7	AC	6.0	B		20	2	2/			RES
1999 03 04.78		M	9.0	TT	10	B	4	25	3.3	3			LEH
1999 03 04.78		S	8.9	TT	8.0	B		10	7.5	3			HOR02
1999 03 06.76		M	8.6	TT	8.0	B		10	7	3/			HOR02
1999 03 06.78		M	9.2	TT	10	B	4	25	3.5	3			LEH
1999 03 06.86	x	M	9.8	TJ	25.4	L	5	65	3.6	4			MEY
1999 03 07.01		S	8.7	AC	6.0	B		20	3	2/			RES
1999 03 07.32		S	10.1	TJ	25.6	L	5	42	4.0	4			BIV
1999 03 08.76		M	8.6	TT	10	B	4	25	7.5	3			LEH
1999 03 08.76		M	9.6	TT	42	L	5	66	3.0	3/			LEH
1999 03 08.77		M	9.2	TT	42	L	5	66	3.5	3			KUJ
1999 03 08.81		M	8.7	TT	8.0	B		10	7	3			HOR02
1999 03 08.82	x	S	10.0	TJ	25.4	L	5	65	2.3	3/			MEY
1999 03 08.93		S	9.3	AA	31.0	L	4	40	7	3			KOR01
1999 03 10.03		S	9.4	NP	10	B		20	6	3			SHA02
1999 03 10.82		S	9.9	NP	33	L	5	60	2.1	2			SHA02
1999 03 10.93		S	10.2	NP	20	L	4	42	6	6/			SCH04
1999 03 11.60	x	S	9.5	TJ	10.0	B		20	5	5			NAG08
1999 03 11.86		S	8.9:	TT	8.0	B		10	7	3			HOR02
1999 03 11.89	x	S	9.7	TT	25.4	J	6	58	2.8	4/			BOU
1999 03 11.98		S	10.5	NP	20	L	4	42	& 2.5	6			SCH04
1999 03 11.99	x	M	9.6	TJ	25.4	L	5	65	5.4	4			MEY
1999 03 12.29		S	9.7	TJ	25.6	L	5	42	5.0	4			BIV
1999 03 12.80		S	9.9	AC	15.2	L	5	42	3.5	4			MOE
1999 03 12.81	x	M	9.8	TJ	25.4	L	5	65	4.1	4			MEY
1999 03 12.83		M	8.7	TT	8.0	B		10	7	3			HOR02
1999 03 12.83		M	8.7	TT	10	B	4	25	7.5	4			LEH
1999 03 12.84		C	12.5	TJ	18.0	L	6 a	30	1.3				YOS04
1999 03 12.93		M	9.2	TT	42	L	5	66	5.5	4/			LEH
1999 03 13.01		S	9.2	HV	20.3	T	10	50	3.5	3			KAM01
1999 03 13.06		S	9.8	NP	20	L	4	42	6	6			SCH04
1999 03 13.59		S	11.0	HS	31.7	L	6	63	1.7	3/			MIY01
1999 03 13.77		M	8.8	TT	10	B	4	25	8.0	3			LEH
1999 03 13.77		M	9.3	TT	42	L	5	66	5.2	3/			LEH

Comet C/1998 M5 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 13.78		M	9.8	TT	42	L	5	66	4	2			KUJ
1999 03 13.84		S	8.8	TT	8.0	B		10	7.5	3			HOR02
1999 03 13.89		S	9.5	AA	30.0	L	6	85	4	5			DIE02
1999 03 13.93		S	9.4	TJ	20.3	T	10	50	3.6	3			KAM01
1999 03 13.94	x	M	9.7	TJ	25.4	L	5	65	3.8	4			MEY
1999 03 14.04		S	10.1	NP	33	L	5	100	2.4	3			SHA02
1999 03 14.31		S	9.9	TJ	25.6	L	5	42	4.0	3			BIV
1999 03 14.80		S	9.2	AC	6.3	R	13	52	5	1			KOS
1999 03 14.90		S	9.2	AA	15.6	L	7	36	6	3			KOR01
1999 03 14.91		S	9.2	AA	15.6	L	7	36	6	3			MER04
1999 03 14.91	w	M	9.7	SE	25	L	4	64	6	5			SHU
1999 03 14.92		S	10.4	TT	30.5	L	5	72	4	5			GIL01
1999 03 14.93		S	9.3	AA	15.6	L	7	62	7	3			KOR01
1999 03 14.93	x	M	9.7	TT	25.4	J	6	58	3.0	4/			BOU
1999 03 14.94	x	S	9.8	TT	10.0	T	10	31	3.2	4			BOU
1999 03 14.95		S	9.6	NP	33	L	5	45	2.5	3			SHA02
1999 03 15.35		S	9.8	TJ	25.6	L	5	42	5.0	4			BIV
1999 03 15.78		M	8.9	TT	10	B	4	25	7.1	3			LEH
1999 03 15.83		S	9.7	TT	30.5	T	10	55	& 3.5	3			COM
1999 03 15.85	x	M	9.7	TT	25.4	J	6	58	3.0	4/			BOU
1999 03 15.86		S	8.8	TT	8.0	B		10	7	3			HOR02
1999 03 15.90		S	9.3	AA	31.0	L	4	40	7	3/			KOR01
1999 03 15.92		S	9.3	AA	15.0	M	8	67	8	3			KOR01
1999 03 15.92		S	10.1	TT	30.5	L	5	72	4	5			GIL01
1999 03 15.94		S	9.9	NP	33	L	5	60	1.9	3			SHA02
1999 03 15.96		S	9.5	AA	15.0	R	8	75	4	5			DIE02
1999 03 16.47	x	M	9.9	TT	25.4	L	4	46	3.8	5			YOS02
1999 03 16.47	x	S	9.7:	TJ	32.0	L	5	58	3.3	5			NAG08
1999 03 16.52		C	12.0	TJ	18.0	L	6	a 60	0.9				YOS04
1999 03 16.56		S	10.0	NP	15.0	B		25	4.1	3			MIT
1999 03 16.68		M	10.1	HS	15.0	B		25	3	3			HAS08
1999 03 16.72		S	10.0	NP	30	L	5	60	2.5	3			NEV
1999 03 16.72		S	11.2	HS	31.7	L	6	63	1.5	3/			MIY01
1999 03 16.82		S	9.7	TJ	11.0	B		20	3.0	3/			CHE03
1999 03 16.83		S	8.9	AC	6.0	B		20	4.5	2/			RES
1999 03 16.91		S	9.9	NP	33	L	5	75	1.7	2			SHA02
1999 03 16.96		B	10.2	TJ	40.6	T	10	65	1.8	4/			CHE03
1999 03 16.96		S	9.6	TJ	12.0	R	5	35	3.2	4			GAS01
1999 03 17.00		S	9.3	AA	31.0	L	4	40	7	3			KOR01
1999 03 17.03		S	9.3	AA	15.0	M	8	67	8	3			KOR01
1999 03 17.77		B	9.9	TJ	11.0	B		20	2.8	3			CHE03
1999 03 17.78		B	10.1	TJ	25.0	C	5	39	& 3	4			CHE03
1999 03 17.78		M	9.1	TT	10	B	4	25	6.2	3			LEH
1999 03 17.78		S	9.2	AC	6.0	B		20	4	3			RES
1999 03 17.78		S	10.0	HS	11	L	7	50	3.6	3			BAR06
1999 03 17.80	w	M	9.9	PA	25	L	4	64	5	5			SHU
1999 03 17.82		S	8.8	TT	8.0	B		10	7.5	3			HOR02
1999 03 17.83		S	9.9	NP	33	L	5	45	2.4	2			SHA02
1999 03 17.86		S	9.5	AA	15.0	R	8	75	4	5			DIE02
1999 03 17.93		S	9.3	AA	15.6	L	7	62	6	3			MER04
1999 03 17.96		S	9.4	AA	15.6	L	7	62	8	3			KOR01
1999 03 18.04		S	10.0	HS	11	L	7	50	3.8	3			BAR06
1999 03 18.72		S	10.2	NP	30	L	5	60	2.8	3			NEV
1999 03 18.75		M	10.1	SE	25	L	4	64	4	5			SHU
1999 03 18.79		M	9.9	TT	42	L	5	66	4.5	3/			LEH
1999 03 18.80		B	10.0	TJ	25.0	C	4	39		4			CHE03
1999 03 18.80		M	9.6	TT	10	B	4	25	5.5	3			LEH
1999 03 18.80		S	8.7	TT	8.0	B		10	7.5	3			HOR02
1999 03 18.80		S	9.4	AC	6.0	B		20	4	2			RES
1999 03 18.81		M	10.7	TT	42	L	5	66	4	2			KUJ
1999 03 18.82		S	9.4	AC	6.3	R	13	52	5	1			KOS
1999 03 18.89		S	9.6	HS	8.0	B		12	5	2			BAR06
1999 03 18.89		S	9.9	HS	20	L	5	70	4	3/			BAR06
1999 03 18.91		S	9.6	NP	33	L	5	45	2.1	2			SHA02
1999 03 18.95		S	9.9	TT	12.5	R	5	32	4	4			GIL01

Comet C/1998 M5 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/		PWR	COMA	DC	TAIL	PA	OBS.
1999 03 19.05		S	9.8	HS	20	L	5		70	4	4			BAR06
1999 03 19.16		S	9.6	AA	15.0	R	8		75	3	4			DIE02
1999 03 19.79		M	9.3	TT	10	B	4		25	6.0	3			LEH
1999 03 19.80		S	10.1	AC	15.2	L	5		42	3.5	4			MOE
1999 03 19.84		S	9.6	HS	8.0	B			12	6	2			BAR06
1999 03 19.84		S	9.7	HS	20	L	5		70	4.5	4			BAR06
1999 03 19.95		M	9.9	NP	10	R	5		27	7	5			MAR02
1999 03 20.76		S	8.8	TT	8.0	B			10	7	3			HOR02
1999 03 20.77		M	9.1	TT	8.0	B			10	7.5	3			LEH
1999 03 20.79		S	9.1	AC	6.0	B			20	3.5	2/			RES
1999 03 20.83		M	10.0	TT	35	L	5		92	4.5	4			LEH
1999 03 20.84		M	9.8	TT	35	L	5		92	3.0	3/			HOR02
1999 03 20.98		M	9.3	NP	10	R	5		27	6	4/			MAR02
1999 03 20.98		S	9.5	AA	15.6	L	7		62	8	2			MER04
1999 03 21.00		S	9.6	AA	15.6	L	7		62	11	2/			KOR01
1999 03 22.60	x	S	10.4	TJ	32.0	L	5		58	3.3	4/			NAG08
1999 03 22.70		S	10.1	NP	25.0	L	6		37	3.8	4			WAT01
1999 03 22.78		S	9.8	HS	20	L	5		70	4.5	4			BAR06
1999 03 22.79		M	9.5	TT	10	B	4		25	5.0	3			LEH
1999 03 22.80		S	8.9	AC	6.0	B			20	4	2/			RES
1999 03 23.83		S	9.7	HS	20	L	5		70	4.5	4			BAR06
1999 03 23.97		S	9.0	AC	6.0	B			20	5	2/			RES
1999 03 24.08		S	10.3	AC	6.3	R	13		52	4	0			KOS
1999 03 25.09	x	S	9.8	TJ	10.0	B			20	4.5	s3/			MEY
1999 03 25.87		S	9.6	HS	20	L	5		70	5	4			BAR06
1999 03 26.07		S	9.6	HS	8.0	B			12	6	2			BAR06
1999 03 26.87		S	9.6	HS	20	L	5		70	5	4			BAR06
1999 03 27.97		S	9.9:	HS	20	L	5		70	4	3			BAR06
1999 03 31.58		C	11.6	TJ	18.0	L	6	a	60	1.5		1.2m	42	YOS04
1999 03 31.87		S	9.5	TJ	20	R	14		90	1.1	3			SHA02
1999 04 01.84		S	9.7	TJ	33	L	5		100	1.8	3			SHA02
1999 04 02.76		S	9.8	HS	20	L	5		70	4	3/			BAR06
1999 04 02.82	x	S	10.1	TT	25.4	J	6		58	3.0	3/			BOU
1999 04 03.76		S	9.0	HS	8.0	B			12	7	3			BAR06
1999 04 03.76		S	9.7	HS	11	L	7		50	4	4			BAR06
1999 04 03.76	a	M	10.5	SE	25	L			64	2.5	5			SHU
1999 04 03.81		S	8.9	TT	8.0	B			10	7	2/			HOR02
1999 04 03.82		M	9.4	TT	35	L	5		92	3.8	3			HOR02
1999 04 03.83	x	S	9.9	TJ	25.4	L	5		65	3.0	3/			MEY
1999 04 03.84		S	9.5	AC	6.0	B			20	3.5	3			RES
1999 04 04.46	x	S	9.6	TJ	32.0	L	5		58	3.0	4			NAG08
1999 04 04.80	a	M	10.5	SE	25	L	4		64	3	5			SHU
1999 04 04.81		S	8.9	TT	8.0	B			10	7	2/			HOR02
1999 04 04.81		S	9.4	S	6.0	B			20	3.5	3/			RES
1999 04 05.47	x	S	9.8	TJ	32.0	L	5		58	3.4	3/			NAG08
1999 04 05.50		S	10.1	HS	15.0	B			25	3.5	3			HAS08
1999 04 05.78		S	9.2	HS	8.0	B			12	6	3			BAR06
1999 04 05.78		S	9.4	HS	20	L	5		50	4.3	s4			BAR06
1999 04 05.85		S	9.4:	NP	33	L	5		60	2.5	3			SHA02
1999 04 05.86		S	9.6	AC	6.0	B			20	2.5	2			RES
1999 04 05.88		S	8.9	TT	8.0	B			10	6.5	2/			HOR02
1999 04 06.75	a	M	10.3	PA	25	L	4		64	2.5	5			SHU
1999 04 06.78		S	9.9	NP	30	L	5		60	3	4			NEV
1999 04 07.57		C	11.1	GA	60.0	Y	6	a	60	3.1				NAK01
1999 04 07.90		S	9.7:	HS	20	L	5		70	4	3			BAR06
1999 04 07.95		S	10.1:	NP	33	L	5		60	1.8	4			SHA02
1999 04 08.47		C	11.7	TJ	16.0	H	3	a	60	2.4				YOS04
1999 04 08.51		S	10.2	HS	31.7	L	6		63	1.6	4			MIY01
1999 04 08.84		S	9.0	TT	8.0	B			10	6	2/			HOR02
1999 04 08.84		S	9.4	AC	6.0	B			20	2.5	3/			RES
1999 04 08.88		S	10.5	TJ	25.3	L	6		58	& 3.0	3			PER01
1999 04 08.88		S	10.7	TJ	25.3	L	6		58	& 2.3	4			VIT01
1999 04 08.93		S	10.0	HS	11.0	B			20	3	2			CHE03
1999 04 08.96		B	10.2	HS	12.0	R	5		35		3			GAS01
1999 04 09.19		S	9.9	AC	20.0	T	10		64	3.0	5			SPR

Comet C/1998 M5 (LINEAR) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 09.58		C	11.5	GA	20.3	T	9	a 60	2.7				SUZ02
1999 04 09.81		S	9.5	HS	8.0	B		12	5	2			BAR06
1999 04 09.82	x	S	10.1	TJ	25.4	L	5	65	4.8	s3/			MEY
1999 04 09.83		S	9.0	TT	8.0	B		10	6	2/			HOR02
1999 04 09.92		S	9.8	TJ	20	R	14	40	2.9	3			SHA02
1999 04 09.95		S	10.8	NP	21	L	6	60	2	5			MAR02
1999 04 10.81	x	S	10.2	TJ	25.4	L	5	65	3.2	4			MEY
1999 04 10.96		S	10.3	NP	32	L	5	75	4	5			SAN04
1999 04 10.96		S	11.0	NP	32	L	5	75	3	6			MAR02
1999 04 11.06		S	10.3	TJ	10	B		20	1.8	3			SHA02
1999 04 11.08	x	S	10.4	TT	25.4	J	6	72	2.5	4			BOU
1999 04 11.52	x	S	10.5	TT	25.4	L	4	46	3.5	4			YOS02
1999 04 11.82		S	9.5	AC	6.0	B		20	3.5	2/			RES
1999 04 12.79		S	10.1	HS	11	L	7	50	3.7	s3			BAR06
1999 04 12.90	x	S	10.5	TT	25.4	J	6	72	2.4	3/			BOU
1999 04 13.55	x	S	10.3	TJ	32.0	L	5	58	4.1	3			NAG08
1999 04 13.81		S	10.1:	HS	11	L	7	50	3.9	3			BAR06
1999 04 13.83		S	10.5	AC	15.2	L	5	42	3	3			MOE
1999 04 13.85		S	9.3	TT	8.0	B		10	5.5	2/			HOR02
1999 04 13.88		S	9.8	HS	11.0	B		20	3	2			CHE03
1999 04 13.89		M	10.9	NP	32	L	5	75	4	4			MAR02
1999 04 14.07		S	10.4	TJ	20	T	10	110	2.0	3			SHA02
1999 04 14.45	x	S	10.5	TJ	32.0	L	5	58	3	3			NAG08
1999 04 14.51		S	10.9	HS	15.0	B		25	2.5	2			MIT
1999 04 14.52		C	11.4	GA	60.0	Y	6	a 60	2.6		> 5.5m	16	NAK01
1999 04 14.82		S	9.4	AC	6.0	B		20	3	2/			RES
1999 04 14.84		S	9.4	TT	8.0	B		10	5	3			HOR02
1999 04 14.84		S	10.6	AC	15.2	L	5	42	3	3			MOE
1999 04 14.87		S	10.5	TT	30.5	T	10	117	& 2.5	4			COM
1999 04 14.90	x	S	10.6	TT	25.4	J	6	72	2.5	3/			BOU
1999 04 14.97		B	10.5	HS	14.0	R	7	29	2	3			CHE03
1999 04 15.75	a	M	10.2	SE	25	L	4	64	1.5	5			SHU
1999 04 15.84		S	9.5	TT	8.0	B		10	5	2/			HOR02
1999 04 15.85		S	10.3:	HS	20	L	5	70	3.4	3			BAR06
1999 04 15.94	x	S	10.6	TT	25.4	J	6	72	2.5	4			BOU
1999 04 15.98		B	10.9	HS	40.6	T	10	65	2.2	4			CHE03
1999 04 16.55		S	10.6	HS	15.0	B		25	2.5	2			HAS08
1999 04 16.56		V	12.0	LA	50.0	C	12	a120	2.31	S3	3.4m	32	FUK02
1999 04 16.66		C	12.3	TJ	18.0	L	6	a 60	1.3				YOS04
1999 04 16.94		S	10.6	TJ	20	R	14	40	2.6	3			SHA02
1999 04 16.95		S	11.1	HS	44.5	L	5	110	1.5	6	0.03	70	WAR01
1999 04 17.85		S	10.5:	HS	20	L	5	70	3.6	3			BAR06
1999 04 17.89	a	M	11.2	NP	25	L	4	64	2	4			SHU
1999 04 17.90	x	S	10.6	TT	25.4	J	6	72	2.3	4			BOU
1999 04 18.83		S	10.5	HS	20	L	5	70	3.5	3			BAR06
1999 04 18.84		S	9.5	TT	8.0	B		10	5.5	2/			HOR02
1999 04 18.89		S	10.4	TT	30.5	L	5	72	4	4			GIL01
1999 04 18.93	a	S	11.2	NP	25	L	4	64	2	3			SHU
1999 04 18.97	x	M	10.6	TT	25.4	J	6	58	2.7	4			BOU
1999 04 19.86		S	10.5	TJ	33	L	5	60	2.1	3			SHA02
1999 04 19.86	a	M	11.2	NP	25	L	4	64	3	4			SHU
1999 04 19.87		M	10.1	TT	35	L	5	92	3.8	3			HOR02
1999 04 19.97	x	M	10.7	TT	25.4	J	6	58	2.7	4			BOU
1999 04 20.07		S	9.6	TT	8.0	B		10	5.5	2/			HOR02
1999 04 20.45	x	S	11.2	TJ	32.0	L	5	91	1.8	2			NAG08
1999 04 20.82		M	10.1	TT	35	L	5	92	3.9	3			HOR02
1999 04 20.85		S	10.8	AC	15.2	L	5	42	2.5	3			MOE
1999 04 20.87		S	10.3	HS	20	L	5	70	3.3	3			BAR06
1999 04 20.97		S	10.5	TJ	20	R	14	40	2.3	2			SHA02
1999 04 21.06		S	9.6	TT	8.0	B		10	5	2/			HOR02
1999 04 21.91		S	10.3	HS	20	L	5	70	3.4	3			BAR06
1999 04 29.52		C	12.2	TJ	18.0	L	6	a 60	1.4				YOS04
1999 04 29.91		I[	13.1	HS	20	R	14	140					SHA02

Comet C/1998 P1 (Williams)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 28.85	x	C	9.9	TJ	60.0	Y	6	a 60	4.1		> 5.3m	158	NAK01
1998 12 23.21		E	10.1:	S	6	R	6	51	2.3	3/			ERO
1998 12 25.20		E	10.0:	S	6	R	6	51	3	3/			ERO
1998 12 29.19		S	9.8	AC	6.3	R	13	52	4	2			KOS
1999 01 11.82		S	9.2	HS	31.7	L	6	63	3	5			MIY01
1999 01 12.82		S	9.0	HS	31.7	L	6	63	3.3	5			MIY01
1999 01 15.80		S	9.8	HS	31.7	L	6	63	4	5			MIY01
1999 01 16.76		S	9.2	HS	31.7	L	6	63	3.8	5			MIY01
1999 01 17.15		S	10.1:	VF	21.5	L	6	80	5.4	1/			SC004
1999 01 18.02		B	9.2:	HS	12.0	R	5	27	4	5			GAS01
1999 01 18.14		S	10.1	AC	6.3	R	13	52	3	2			KOS
1999 01 18.96	x	M	9.8	TJ	25.4	L	5	65	4.5	4/			MEY
1999 01 20.96	x	S	9.0	TJ	10.0	B		20	8	4			MEY
1999 01 21.96		S	10.0	VF	21.5	L	6	80	4.4	3			SC004
1999 01 23.98	x	M	9.3	TJ	25.4	L	5	65	5.2	S5			MEY
1999 01 26.63		M	9.5	TT	11	L	4	16	4.5	4			RAE
1999 01 27.63		M	9.6	TT	11	L	4	16	4.5	4			RAE
1999 01 29.90		S	9.2	TT	13	L	8	69	3	2			HOR02
1999 02 04.47	x	S	10.3	TJ	32.0	L	5	91	5.3	3			NAG08
1999 02 05.49		S	10.8	HS	31.7	L	6	63	1	4			MIY01
1999 02 06.61		S	9.2	TJ	25.4	T	6	32	3.0	6			YOS04
1999 02 06.78		S	9.9	AC	15.2	L	5	42	5.5	4			MOE
1999 02 06.87		M	9.0	TT	8.0	B		10	7	3			HOR02
1999 02 07.60		S	10.7	HS	31.7	L	6	63	2.3	5			MIY01
1999 02 08.16		S	9.0	TT	8.0	B		10	7	2/			HOR02
1999 02 08.80		S	10.2	HS	31.7	L	6	63	2.5	4			MIY01
1999 02 08.84	x	S	10.0	TT	25.4	J	6	58	3.5	2/			BOU
1999 02 08.87		S	9.8	AC	15.2	L	5	42	5	3			MOE
1999 02 08.88		S	9.8	TT	30.5	T	10	116	& 4.5	2			COM
1999 02 09.27		S	9.6	TJ	5.0	B		7	8	3			BIV
1999 02 09.76		S	9.8	AC	15.2	L	5	42	5	3			MOE
1999 02 09.95		S	10.5:	HS	11	L	7	50	2.5	2			BAR06
1999 02 10.29		M	9.1	NP	8.0	R		16	7.0	3			CRE01
1999 02 10.80	x	S	9.8	TJ	10.0	B		20	6	2/			MEY
1999 02 10.86		S	9.9	AC	15.2	L	5	42	5	3			MOE
1999 02 11.06		S	10.1	TT	30.5	T	10	55	> 4	1/			COM
1999 02 11.89		S	10 :	TT	30.5	T	10	115	> 4	1			COM
1999 02 11.98		S	9.7	TT	30.5	L	5	72	& 5	3			GIL01
1999 02 11.99		S	9.6	TJ	20.3	T	10	50	4.0	2			KAM01
1999 02 12.52		S	10.4	AC	15.0	B		25	5	2			MIT
1999 02 12.78		S	11.3:	HS	31.7	L	6	63	2.1	4			MIY01
1999 02 12.83		S	9.8	AC	15.2	L	5	42	5	3			MOE
1999 02 12.83	x	S	10.2	TT	25.4	J	6	58	3.5	2			BOU
1999 02 12.87		S	10.5	AC	30.5	T	10	117	> 4	1			COM
1999 02 13.34		S	10.1	TJ	25.6	L	5	42	5	4	0.2	160	BIV
1999 02 13.50	x	M	10.4	TT	25.4	L	4	46	4.2	4			YOS02
1999 02 13.54		M	9.6	TT	11	L	4	16	5	3/			RAE
1999 02 13.71		S	11.0:	HS	31.7	L	6	63	2.0	5			MIY01
1999 02 13.74		S	10.6	HS	31.7	L	6	63	3.8	5			YOS04
1999 02 13.76		S	10.4	AC	15.0	B		25	5	3			MIT
1999 02 13.83	x	S	10.3	TT	25.4	J	6	58	3.7	2			BOU
1999 02 14.41		S	10.1	TJ	25.6	L	5	42	5	3	0.4	150	BIV
1999 02 14.49	x	S	10.4	TJ	32.0	L	5	58	4.4	4			NAG08
1999 02 14.53		S	10.8	HS	31.7	L	6	63	1.5	5			MIY01
1999 02 15.50		S	10.0	TJ	25.6	L	5	42	7	3	0.4	150	BIV
1999 02 15.76		M	9.2	TI	10	B	4	25	5.5	3			LEH
1999 02 16.77		S	10.1	AC	15.2	L	5	42	4.5	3			MOE
1999 02 16.89		S	9.4	TT	8.0	B		10	7	2/			HOR02
1999 02 16.92		S	10.0	NP	21	L	6	60	3	2/			MAR02
1999 02 16.94		S	10.2	TI	7.6	L	9	35	> 3	2			CER01
1999 02 17.58	x	M	10.4	TT	25.4	L	4	46	3.5	5			YOS02
1999 02 17.64		C	11.4	GA	60.0	Y	6	a 60	2.8		> 7.1m	141	NAK01
1999 02 17.65		S	10.8	VN	20	L	4	45	3.9	3			PEA
1999 02 17.65		S	11.1	VN	41	L	4	90	3.3	3	0.2	138	PEA
1999 02 17.78		M	10.2	TT	35	L	5	92	4	2			HOR02

Comet C/1998 P1 (Williams) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.79		S	10.2	AC	15.2	L	5	42	4.5	3			MOE
1999 02 17.81		S	9.0	TI	6	R	12	37	6	5			SVE
1999 02 17.95		S	9.5	NP	21	L	6	60	4	3			MAR02
1999 02 18.13		J	10.5	SC	25.4	T	5	a 60	3.81	s5/	3.6m	143	ROQ
1999 02 18.30		S	10.6	TJ	25.6	L	5	42	5	2	0.3	145	BIV
1999 02 18.91		S	10.1	TT	35	L	5	92	4.5	2			HOR02
1999 02 18.95		S	9.5	NP	21	L	6	34	5	2/			MAR02
1999 02 19.01		S	10.5:	AC	30.5	T	10	117	> 4	1			COM
1999 02 19.56		S	10.8	HS	25.4	T	6	50	3.3	3			MIT
1999 02 19.81		S	10.8:	HS	31.7	L	6	63	1.5	3/			MIY01
1999 02 19.83		S	10.3	AC	15.2	L	5	42	4	3			MOE
1999 02 20.74		S	10.6	HS	31.7	L	6	63	2.2	3/			MIY01
1999 02 20.85		S	10.0	TT	13	L	8	69	3.8	2			HOR02
1999 02 21.50		S	11.3	HS	31.7	L	6	63	1.6	4			MIY01
1999 02 21.74		S	10.7	HS	15.0	B		25	4.5	3			MIT
1999 02 22.77		M	10.3	TT	10	B	4	25	3.9	3/			LEH
1999 02 23.10		S	10.0	TT	13	L	8	69	4.5	2			HOR02
1999 02 23.76		M	10.4	TT	10	B	4	25	3.8	3			LEH
1999 02 23.80		S	10.0	TT	35	L	5	92	4	2			HOR02
1999 02 24.77		M	10.3	TT	10	B	4	25	3.8	3			LEH
1999 02 25.15	x	S	10.7	TT	25.4	J	6	58	2.9	2			BOU
1999 02 27.18		S	10.3	TT	35	L	5	92	3.8	2			HOR02
1999 03 04.76		M	10.4	TT	10	B	4	25	3.8	3			LEH
1999 03 06.78		S	10.9	TT	35	L	5	92	3.2	2			HOR02
1999 03 06.85	x	S	11.0	TJ	25.4	L	5	65	2.6	3			MEY
1999 03 06.90		M	10.7	TT	10	B	4	25	3.5	3			LEH
1999 03 07.01		J	10.6	SC	25.4	T	5	a 60	1.17	s4	3.5m	124	ROQ
1999 03 07.30		S	11.1	HS	25.6	L	5	42	3.0	2			BIV
1999 03 08.82	x	S	10.9	TJ	25.4	L	5	65	3.5	2/			MEY
1999 03 08.86		S	11.0	TT	35	L	5	92	3.5	2			HOR02
1999 03 08.92		M	11.0	TT	10	B	4	25	3.0	3			LEH
1999 03 09.31		S	11.6	HS	25.6	L	5	84	3.0	2			BIV
1999 03 10.94		S	13.6	VB	30	R	20	185	0.5	3			SHA02
1999 03 11.87		S	11.2	TT	35	L	5	92	3.4	2			HOR02
1999 03 11.91	x	S	11.8	TT	25.4	J	6	88	1.8	0/			BOU
1999 03 11.97	x	S	11.0	TJ	25.4	L	5	65	4.0	2/			MEY
1999 03 12.31		S	11.9	HS	25.6	L	5	42	2.5	1			BIV
1999 03 12.81		S	10.9	AC	15.2	L	5	42	3	2			MOE
1999 03 12.82		S	11.1	TT	35	L	5	92	3.4	2			HOR02
1999 03 12.84	x	S	11.4	TJ	25.4	L	5	65	3.1	2/			MEY
1999 03 12.87		S	11.7	HS	44.5	L	4	82	4	2			SAR02
1999 03 12.92		M	11.2	TT	10	B	4	25	2.8	3			LEH
1999 03 13.63		C	14.3	TJ	18.0	L	6	a 60	0.45		0.9m	120	YOS04
1999 03 13.82		M	11.0	TT	10	B	4	25	2.5	3			LEH
1999 03 13.84		S	11.3	TT	35	L	5	92	3.3	2			HOR02
1999 03 14.27		S	11.9	HS	25.6	L	5	42	2.0	1			BIV
1999 03 15.80		M	11.3	TI	10	B	4	25	2.3	3			LEH
1999 03 15.85		S	11.4	AC	30.5	T	10	117	> 3	1			COM
1999 03 15.85		S	11.5	TI	35	L	5	92	3	2			HOR02
1999 03 15.91		S	12.0	AC	25.4	J	6	100	1.8	0/			BOU
1999 03 16.49		C	14.4	TJ	18.0	L	6	a 60	0.45		0.8m	98	YOS04
1999 03 16.80		S	11.2	HS	44.0	L	5	63	1.6	2			HAS02
1999 03 16.95		S	11.9	HS	40.6	T	10	65	0.8	3			CHE03
1999 03 17.81		S	11.9	TI	35	L	5	92	2.6	2			HOR02
1999 03 18.81		S	11.8	TI	35	L	5	92	2.5	2			HOR02
1999 03 18.84		M	11.6	TI	10	B	4	25	2.0	3			LEH
1999 03 18.93		S	11.6:	HS	20	L	5	70	2.0	1/			BAR06
1999 03 19.82		S	11.4	AC	15.2	L	5	42	2.5	2			MOE
1999 03 20.81		S	11.5	TI	35	L	5	92	2.7	2			HOR02
1999 03 20.82		M	11.4	TI	35	L	5	92	2.1	3			LEH
1999 03 22.48		C	15.0	TJ	18.0	L	6	a 60	0.75		2.3m	120	YOS04
1999 03 28.69		J	13.2	SC	25.4	T	5	a 60	1.64	s3	0.5m	99	ROQ
1999 03 31.57		C	14.7:	TJ	18.0	L	6	a 60	0.65	2			YOS04
1999 04 03.83		S	11.6	TI	35	L	5	92	2.0	1/			HOR02
1999 04 05.82		S	12.2	HS	20	L	5	70	1.9	1/			BAR06

Comet C/1998 P1 (Williams) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 07.51		C	14.9	GA	60.0	Y	6	a120	1.0	1	3.5m	117	NAK01
1999 04 08.48		C	14.9	TJ	16.0	H	3	a 60	1.0	1			YOS04
1999 04 08.53		S	11.9	HS	31.7	L	6	152	0.8	2/			MIY01
1999 04 08.83		S	13.3	HS	35	L	5	158	1.4	1/			HOR02
1999 04 09.84		S	13.3:	HS	35	L	5	158	1.2	1/			HOR02
1999 04 09.85		S	11.8	HS	20	L	5	70	1.9	1/			BAR06
1999 04 13.88		S	11.9	NP	32	L	5	125	1	2			MAR02
1999 04 14.50		C	15.0	GA	60.0	Y	6	a240	1.2	1	3.9m	114	NAK01
1999 04 14.85		S	13.0	HS	35	L	5	158	1.5	2			HOR02
1999 04 15.87		S	12.3:	HS	20	L	5	70	1.7	1			BAR06
1999 04 15.92		S	13.0	AC	25.4	J	6	100	1.2	0/			BOU
1999 04 17.92		S	13.3	AC	25.4	J	6	150	1.0	1			BOU
1999 04 18.86		S	13.0:	HS	35	L	5	158	1.4	2			HOR02
1999 04 18.93		S	13.0	AC	25.4	J	6	100	1.2	1			BOU

Comet C/1998 T1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 06.78		M	13.1	HS	42	L	5	162	1.5	3/			LEH
1999 01 10.74		B	13.3	HS	42	L	5	162	1.4	3/			LEH
1999 02 06.40		C	16.0	TJ	18.0	L	6	a 60	0.3				YOS04
1999 04 29.79		C	14.2	TJ	16.0	H	3	a 20	0.4				YOS04

Comet C/1998 U5 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 12.07		S	8.7	TI	8.0	B		20	7	4			BOR
1998 11 12.07		S	9.6	TI	40.6	L	5	70	2.0	6	0.05	140	BOR
1998 11 13.04		S	8.2	TI	8.0	B		20	9	3			BOR
1998 11 13.04		S	8.9	TI	40.6	L	5	70	3.6	6			BOR
1998 11 14.00		S	8.1	TI	8.0	B		20	8	3/			BOR
1998 11 14.07		S	7.8	TI	5.0	B		10	13	3			BOR
1998 11 15.92		S	10.4	TJ	25	T	10	97	2	4	0.03	150	CLE
1998 11 16.01		S	7.6	TI	5.0	B		10	14	3			BOR
1998 11 16.01		S	8.1	TI	8.0	B		20	9	4			BOR
1998 11 16.91		S	10.5	TJ	25	T	10	97	2	4	0.03	160	CLE
1998 11 17.77		S	9.3	AA	6.3	R	13	52	7	3			KOS
1998 11 18.92		S	9.5	AA	6.3	R	13	52	6	2			KOS
1998 12 09.99		S	9.4	TI	40.6	L	5	70	2.6	5			BOR
1998 12 15.99		S	9.5	TI	40.6	L	5	70	2.6	4			BOR
1998 12 18.99		S	9.6	TI	40.6	L	5	70	3.0	3/			BOR
1998 12 21.90		B	10.8:	HS	34.0	L	4	44	& 3	1			CHE03
1999 01 04.99		S	10.5:	TI	40.6	L	5	70	2	1			BOR
1999 01 05.73		M	10.8	TI	10	B	4	25	3.9	3			LEH
1999 01 05.75	x	S	11.0	TJ	25.4	L	5	65	2.3	2/			MEY
1999 01 06.71	x	S	10.6	TJ	25.4	L	5	65	2.2	3			MEY
1999 01 06.75		M	10.9	TI	10	B	4	25	3.7	3			LEH
1999 01 07.99		S	10.3	TI	40.6	L	5	70	2.2	1			BOR
1999 01 10.72		M	10.8	TI	42	L	5	81	3.0	3			LEH
1999 01 17.74	x	S	11.0	TJ	25.4	L	5	65	2.5	2			MEY
1999 01 19.73	x	S	11.0	TJ	25.4	L	5	65	2.7	3			MEY
1999 02 22.82		C	14.7	TJ	18.0	L	6	a 30	0.65				YOS04
1999 02 25.85		C	14.5	TJ	18.0	L	6	a 60	0.45				YOS04
1999 03 16.84	a	C	14.9:	GA	60.0	Y	6	a120	0.8				NAK01
1999 03 22.81		C	15.1	TJ	18.0	L	6	a 60	0.65	0			YOS04
1999 04 08.78		C	15.3	TJ	16.0	H	3	a 30	0.6	0			YOS04
1999 04 14.79		C	15.1	TJ	16.0	H	3	a 30	0.5				YOS04
1999 04 14.81	a	C	15.6	GA	60.0	Y	6	a240	0.9				NAK01
1999 04 16.74		C	15.4	TJ	18.0	L	6	a 60	0.35				YOS04
1999 04 18.89		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 19.89		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 20.08		S	12.9	HS	35	L	5	237	1.2	2			HOR02
1999 04 21.07		S	12.9	HS	35	L	5	237	1.2	2			HOR02

Comet C/1998 W3 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 06.85		B	14.9	HS	42	L	5	162	0.5	4			LEH
1999 01 10.86		B	14.7	HS	42	L	5	162	0.6	4			LEH
1999 02 07.61		C	17.0	TJ	18.0	L	6	a 90	0.45				YOS04
1999 02 14.59		C	17.1	GA	60.0	Y	6	a240	0.35		1.5m	136	NAK01
1999 03 06.88		B	14.9	HS	42	L	5	162	0.6	4			LEH
1999 03 08.90		B	14.9	HS	42	L	5	162	0.6	4			LEH
1999 03 12.84		S[	14.0	HS	44.5	L	4	230	! 1				SAR02
1999 03 12.89		B	14.9	HS	42	L	5	162	0.6	4			LEH
1999 03 13.59		C	16.1	TJ	18.0	L	6	a 60	0.4				YOS04
1999 03 13.90		B	14.9	HS	42	L	5	162	0.5	4			LEH
1999 03 16.48	1	C[	17.2	TJ	18.0	L	6	a 60					YOS04
1999 03 22.50		C	16.8	TJ	18.0	L	6	a120	0.3				YOS04

Comet C/1999 A1 (Tilbrook)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 02.44		M	10.6	GA	25.4	L	4	71	3	5			SEA
1999 02 04.44		M	10.6	GA	25.4	L	4	71	2	5			SEA
1999 02 04.49		S	10.4	TI	15	L	8	40	2	5			MAT08
1999 02 08.42		S	10.3	TT	11	L	4	16	2.5	4			RAE
1999 02 12.40		S	10.1	TT	11	L	4	16	3	4/			RAE
1999 02 16.48		S	11.0	TI	20	L	7	45	2	4			MAT08
1999 02 17.51		S	11.3	VN	41	L	4	90	1.5	3/			PEA
1999 03 26.88		S[	13.0	VN	41	L	4	200	! 0.5				PEA

Comet C/1999 G1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 13.62		C	17.0	TJ	18.0	L	6	a 60	0.35				YOS04
1999 04 14.61		C	17.6	GA	60.0	Y	6	a240	0.35		1.2m	350	NAK01

Comet C/1999 H1 (Lee)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 17.31		M	9.6	TT	25	L	5	40	2.2	5			RAE
1999 04 17.46		S	9.2	VN	41	L	4	90	2.0	5			PEA
1999 04 17.52			10.0	HS	8.0	B		11		2			BEM
1999 04 17.67		M	8.9	TT	11	L	4	16	3	5			RAE
1999 04 17.73		S	9.0	TI	20	L	7	45	4	4			MAT08
1999 04 17.76		S	9.1	VN	41	L	4	90	2.4	6			PEA
1999 04 18.31		M	9.0	TT	11	L	4	16	3.0	4/			RAE
1999 04 18.42		S	9.0	TI	20	L	7	45	4	5			MAT08
1999 04 18.45		S	9.0	AA	10.0	B		25					SEA
1999 04 18.49		S	8.8	VN	20	L	4	45	3.6	5			PEA
1999 04 19.45		S	8.4	AA	5.0	B		10					SEA
1999 04 19.52		S	9.3	TI	20	L	7	45	4	5			MAT08
1999 04 19.54		S	8.9	VN	20	L	4	45	3.6	5			PEA
1999 04 19.99	x	S	9.2	TJ	23.0	L		67	3	2			DES01
1999 04 20.44		S	8.4	AA	10.0	B		25					SEA
1999 04 20.46		M	8.3	TT	11	L	4	16	5.5	5			RAE
1999 04 20.50		M	8.3	TT	5.0	B		10	6	4/			RAE
1999 04 20.54		S	8.9	VN	20	L	4	45	4.4	4/			PEA
1999 04 20.97	x	S	8.9	TJ	23.0	L		67	3	2			DES01
1999 04 21.39		M	8.2	TT	5.0	B		10	7	4/			RAE
1999 04 21.58		S	9.0	TI	20	L	7	45	4	D5/			MAT08
1999 04 21.65		M	8.6	TT	15.1	L	12	43	4.7	4			DRE01
1999 04 21.98	x	S	8.8	TJ	23.0	L		67	4	2/			DES01
1999 04 22.00		S	9.1	AA	20.0	L	6	200	2.5	3			TR002
1999 04 22.35		M	8.3	TT	5.0	B		10	7	4/			RAE
1999 04 22.54		S	8.7	VN	20	L	4	45	3.5	5			PEA
1999 04 22.96	x	S	8.7	TJ	23.0	L		67	6	3			DES01
1999 04 23.64		S	8.6	VN	20	L	4	45	3.3	5			PEA
1999 04 23.66		M	8.3	TT	8.0	B		20	6	4/			DRE01
1999 04 23.73		M	8.1	TT	5.0	B		10	7	5			RAE
1999 04 23.97	x	S	8.7	TJ	23.0	L	5	67	6	3			DES01

Comet C/1999 H1 (Lee) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 24.07		S	8.7	TJ	20.3	T		77	3.0	5			VIT02
1999 04 25.41		M	8.6	TT	8.0	B		20	6	5			DRE01
1999 04 25.53		S	8.7	VN	20	L	4	45	3.5	5			PEA
1999 04 25.68		M	8.4	TT	8.0	B		20	7	4			DRE01
1999 04 25.98	x	S	8.6	TJ	23.0	L	5	67		2/			DES01
1999 04 26.98	x	S	8.6	TJ	23.0	L	5	67		2/			DES01
1999 04 26.99		S	9.0	AA	20.0	L	6	200	3	3			TRO02
1999 04 27.36		M	8.3	TT	11	L	4	16	4	5			RAE
1999 04 30.91	x	S	8.5	TJ	23.0	L		36	& 5	2/			DES01
1999 05 02.46		S	8.0	AA	8.0	B		20	9	4			PEA
1999 05 02.46		S	8.2	AA	20	L	4	45	7	5			PEA

Comet C/1999 H3 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 26.77		C	14.6	GA	60.0	Y	6	a120	1.0				NAK01
1999 04 27.70		C	14.5:	TJ	16.0	H	3	a 30	0.7				YOS04
1999 04 29.68		C	14.7	TJ	16.0	H	3	a 30	0.7				YOS04

Comet 9P/Tempel 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.63		C	19.4	GA	60.0	Y	6	a240		9			NAK01
1999 04 08.54		C	19.5	GA	60.0	Y	6	a240		9			NAK01

Comet 10P/Tempel 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 22.80		C	18.7	TJ	18.0	L	6	a120	0.3				YOS04
1999 03 13.11		[	13.7	HS	35	L	5	237	! 0.7				HOR02
1999 03 16.82		C	18.3	GA	60.0	Y	6	a240		9			NAK01
1999 03 22.79		C	18.0	HS	18.0	L	6	a 60	0.35				YOS04
1999 03 22.79		C	18.4:	GA	60.0	Y	6	a240		9			NAK01
1999 03 27.87		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 13.70		C	16.4	TJ	18.0	L	6	a 60	0.3				YOS04
1999 04 14.73		C	15.5	TJ	16.0	H	3	a 30	1.0				YOS04
1999 04 14.78		C	17.2	GA	60.0	Y	6	a240	0.35	8			NAK01
1999 04 16.80		S[	14.0	VN	41	L	4	200	0.5				PEA
1999 04 17.81		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 18.85		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 19.82		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 26.73		C	16.4	GA	60.0	Y	6	a120	0.35	8			NAK01
1999 04 26.85		S[	14.0	VN	41	L	4	200	! 0.5				PEA

Comet 21P/Giacobini-Zinner

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 03.39		V	9.9	LA	50.0	C	12	a180	2.41	4	>10.1m	67	FUK02
1998 11 05.70		S	9.3	AA	6.3	R	13	52	4	4			KOS
1998 11 05.98		S	8.8	TI	8.0	B		20	5.5	5			BOR
1998 11 05.98		S	9.2	TI	40.6	L	5	70	2.7	5/	0.05	55	BOR
1998 11 06.71		S	9.2	AA	6.3	R	13	52	4	4			KOS
1998 11 07.71		S	9.1	AA	6.3	R	13	52	4	5			KOS
1998 11 07.98		S	8.6	TI	8.0	B		20	6	5			BOR
1998 11 08.41		V	10.1	LA	50.0	C	12	a180	3.76	4	>11.3m	66	FUK02
1998 11 08.71		S	9.1	AA	6.3	R	13	52	4	5			KOS
1998 11 11.41		V	10.4	LA	50.0	C	12	a180	3.64	4	>11.4m	69	FUK02
1998 11 11.98		S	8.6	TI	8.0	B		20	5.5	5			BOR
1998 11 11.98		S	9.0	TI	40.6	L	5	70	2.3	5/	?	75	BOR
1998 11 12.98		S	8.5	TI	8.0	B		20	5	4			BOR
1998 11 13.99		S	8.4	TI	8.0	B		20	5	4			BOR
1998 11 14.40		V	9.1	LA	50.0	C	12	a180	2.95	4	>11.0m	64	FUK02
1998 11 15.99		S	8.5	TI	8.0	B		20	6	4			BOR
1998 11 17.73		S	9.0	AA	6.3	R	13	52	3	3			KOS
1998 11 18.98		S	9.1	TI	40.6	L	5	70	2.1	5/	?	75	BOR

Comet 21P/Giacobini-Zinner [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 12 09.98		S	9.6	TI	40.6	L	5	70	2.0	5			BOR
1998 12 11.98		S	9.7	TI	40.6	L	5	70	2.0	4			BOR
1998 12 13.39		V	11.2	LA	50.0	C	12	a240	1.59	4	4.8m	59	FUK02
1998 12 14.98		S	9.6	TI	40.6	L	5	70	2.3	4			BOR
1998 12 17.39		V	11.3	LA	50.0	C	12	a180	2.51	4	4.5m	59	FUK02
1998 12 18.98		S	9.8	TI	40.6	L	5	70	2.6	4			BOR
1998 12 21.42		V	11.3	LA	50.0	C	12	a180	1.67	4	3.8m	56	FUK02
1999 01 09.41		S	12.0	HS	31.7	L	6	152	1.5	3			MIY01
1999 02 01.08	!	J	10.7	SC	25.4	T	5	a 60	2.62	s6	?		ROQ
1999 02 05.43		V	12.0	LA	50.0	C	12	a240	1.51	4	2.4m	57	FUK02
1999 02 06.46		S	11.9	AC	15.0	B		25	2				MIT
1999 02 07.43	a	C	12.4	GA	60.0	Y	6	a120	1.9			59	NAK01
1999 02 13.26		S	11.9	HS	25.6	L	5	42	2.0	4			BIV
1999 02 13.48	x	S	11.8	HS	25.4	L	4	113	1.6	2/			YOS02
1999 02 14.25		S	11.6	HS	25.6	L	5	42	1.5	4			BIV
1999 02 16.31		S	11.7	HS	25.6	L	5	42	1.5	3			BIV
1999 02 16.43		V	12.1	LA	50.0	C	12	a240	1.33	4	2.3m	66	FUK02
1999 02 17.44	x	S	12.5	HS	25.4	L	4	113	& 2.0	2			YOS02
1999 02 17.54		S	12.2	VN	41	L	4	90	2.1	4			PEA
1999 02 21.45		S	12.8	HS	31.7	L	6	152	0.9	2			MIY01
1999 02 22.43		V	11.6	LA	50.0	C	12	a240	1.17	4	2.0m	66	FUK02
1999 03 02.10	!	J	11.4	SC	25.4	T	5	a 60	1.78	s5	0.5m	78	ROQ
1999 03 07.25		S	12.5	HS	25.6	L	5	84	1.3	3			BIV
1999 03 09.25		S	12.6	HS	25.6	L	5	84	1.3	5			BIV
1999 03 12.26		S	12.5	HS	25.6	L	5	84	1.1	4			BIV
1999 03 12.79		S	13.6	HS	44.0	L	5	156	0.4	3			HAS02
1999 03 14.26		S	12.8	HS	25.6	L	5	84	1.0	3			BIV
1999 03 16.43		C	13.9	TJ	18.0	L	6	a 60	0.55				YOS04
1999 03 22.42		C	14.4	TJ	18.0	L	6	a 60	0.45				YOS04
1999 04 06.14	!	J	12.8	SC	25.4	T	5	a 60	1.13	s5	3.5m	120	ROQ
1999 04 07.44	a	C	14.0	GA	60.0	Y	6	a120	1.2				NAK01
1999 04 08.45		C	13.3	TJ	16.0	H	3	a 30	1.0				YOS04
1999 04 16.44		H	16.4	LA	50.0	C	12	a180	0.30	1			FUK02
1999 04 29.45		C	15.0	TJ	18.0	L	6	a 30	0.35				YOS04

Comet 29P/Schwassmann-Wachmann 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 12.82		C	16.9	TJ	18.0	L	6	a 60	0.3				YOS04
1999 02 17.77		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 20.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 21.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 22.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 23.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 25.79		C	16.9	TJ	18.0	L	6	a 60	0.25				YOS04
1999 02 26.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 14.63		S[	13.0	HS	20	L	7	158					MAT08
1999 03 15.78		S[	13.8	VN	41	L	4	200	! 0.5				PEA
1999 03 16.79	a	C	15.3	GA	60.0	Y	6	a120	0.65	8			NAK01
1999 03 16.79	a	c	16.2	GA	60.0	Y	6	a120					NAK01
1999 03 18.56		S[	13.0	HS	20	L	7	158					MAT08
1999 03 21.60		S[	13.0	HS	20	L	7	158					MAT08
1999 03 21.80		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 22.74		C	16.1	TJ	18.0	L	6	a 60	0.35				YOS04
1999 03 22.77	a	C	15.3:	GA	60.0	Y	6	a120	0.75	4/			NAK01
1999 03 22.77	a	c	16.5:	GA	60.0	Y	6	a120					NAK01
1999 03 25.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 26.80		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 27.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 30.84		S	12.8	VN	41	L	4	200	0.5	6			PEA
1999 03 31.87		S	12.6	VN	41	L	4	200	0.7	5			PEA
1999 04 01.86		S	12.8	VN	41	L	4	200	0.7	5			PEA
1999 04 07.51		S[	13.0	HS	20	L	7	158					MAT08
1999 04 08.55		S	13.3	HS	20	L	7	158	1	4			MAT08
1999 04 08.70		C	13.0	TJ	16.0	H	3	a 30	0.9				YOS04

Comet 29P/Schwassmann-Wachmann 1 [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 09.71		C	13.4:	TJ	16.0	H	3	a 30	0.5				YOS04
1999 04 11.80		S	13.5	VN	41	L	4	200	1.1	3			PEA
1999 04 12.54		S	12.8	GA	25.4	L	4	71					SEA
1999 04 12.81		S	13.7	VN	41	L	4	200	0.7	2			PEA
1999 04 13.66		C	15.4:	TJ	18.0	L	6	a 60	0.6	0			YOS04
1999 04 14.68		C	14.7:	TJ	16.0	H	3	a 30	1.2	0			YOS04
1999 04 14.73	a	C	13.0	GA	60.0	Y	6	a120	2.0	s1			NAK01
1999 04 14.73	a	c	16.5	GA	60.0	Y	6	a120					NAK01
1999 04 16.67		C	14.7:	TJ	18.0	L	6	a 60	0.4	0			YOS04
1999 04 16.81		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 17.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 18.83		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 19.55		S[	13.0	HS	20	L	7	158					MAT08
1999 04 19.86		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 20.83		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 25.79		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 04 26.68	a	C	13.8	GA	60.0	Y	6	a120	1.3	s0/			NAK01
1999 04 26.68	a	c	16.9	GA	60.0	Y	6	a120					NAK01
1999 04 26.80		S[	14.0	VN	41	L	4	200	! 0.5				PEA

Comet 37P/Forbes

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.80		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 02 23.86		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 16.86		S[	14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 22.87		S	13.5:	VN	41	L	4	200					PEA
1999 03 23.88		S	13.6	VN	41	L	4	200	0.7	3			PEA
1999 03 25.86		S	13.6	VN	41	L	4	200	0.7	2			PEA
1999 03 26.87		S	13.6	VN	41	L	4	200	0.9	2			PEA
1999 03 27.86		S	13.5	VN	41	L	4	200	0.6	2			PEA
1999 04 08.80		C	13.8	TJ	16.0	H	3	a 30	0.6				YOS04
1999 04 11.89		S	13.2	VN	41	L	4	200	0.8	2			PEA
1999 04 12.83		S	13.2	VN	41	L	4	200	0.7	3			PEA
1999 04 14.79		C	13.3	TJ	16.0	H	3	a 30	1.0				YOS04
1999 04 17.86		S	13.2	VN	41	L	4	200	0.9	2			PEA
1999 04 19.86		S	13.3	VN	41	L	4	90	0.7	3			PEA
1999 04 20.85		S	13.3	VN	41	L	4	90	0.8	2			PEA
1999 04 25.88		S	12.9	VN	41	L	4	90	1.5	2			PEA
1999 04 26.89		S	12.8	VN	41	L	4	90	1.4	2			PEA
1999 04 27.88		S	12.9	VN	41	L	4	90	1.3	2			PEA
1999 04 28.89		S	12.9	VN	41	L	4	90	1.4	2			PEA
1999 04 29.76		C	13.6	TJ	16.0	H	3	a 20	0.75				YOS04

Comet 49P/Arend-Rigaux

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 30.80	1	C[	17.9	HS	18.0	L	6	a120					YOS04
1999 03 16.76		C	18.4	GA	60.0	Y	6	a240		9			NAK01
1999 04 07.66		C	18.7	GA	60.0	Y	6	a240		9			NAK01

Comet 52P/Harrington-Abell

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 11.64		V	11.6	LA	50.0	C	12	a180	1.46	4	>10.2m	275	FUK02
1998 11 14.64		V	11.9	LA	50.0	C	12	a180	1.41	4	>10.4m	276	FUK02
1998 11 28.86	x	S	11.4	HS	25.4	L	4	46	1.7	3	4 m	260	YOS02
1998 12 11.60		V	11.6	LA	50.0	C	12	a240	2.49	4	> 9.8m	269	FUK02
1998 12 13.62		V	11.3	LA	50.0	C	12	a240	2.16	4	> 9.8m	269	FUK02
1998 12 17.59		V	11.3	LA	50.0	C	12	a360	2.53	4	> 9.9m	268	FUK02
1998 12 19.62		V	11.2	LA	50.0	C	12	a360	2.54	4	> 9.1m	267	FUK02
1998 12 21.57		V	11.4	LA	50.0	C	12	a360	2.30	4	> 9.3m	268	FUK02
1998 12 23.84		S	11.0:	VF	21.5	L	6	80	1.7	2			SC004
1998 12 24.06		E	11.1	VF	21.5	R	5	40	3.4	2			SC004
1998 12 24.66		V	11.2	LA	50.0	C	12	a360	3.46	4	> 9.4m	270	FUK02

Comet 52P/Harrington-Abell [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 05.02		S	10.8	TI	40.6	L	5	70	1.5	5/			BOR
1999 01 05.74		M	10.4	TI	10	B	4	25	3.1	3			LEH
1999 01 05.78	x	S	9.8	TJ	25.4	L	5	65	3.1	3/			MEY
1999 01 06.76	x	M	10.3	TJ	25.4	L	5	65	2.6	D4			MEY
1999 01 06.86		M	10.4	TI	10	B	4	25	3.2	3/			LEH
1999 01 08.04		S	10.5	TI	40.6	L	5	70	1.9	6			BOR
1999 01 09.44		S	11.0	HS	31.7	L	6	152	0.8	5			MIY01
1999 01 10.49		S	11.0	HS	31.7	L	6	152	1.4	4/			MIY01
1999 01 10.78		M	10.3	TI	10	B	4	25	3.1	3			LEH
1999 01 11.01		S	10.7	TI	40.6	L	5	70	1.5	5/	?	275	BOR
1999 01 11.81		S	11.2	HS	31.7	L	6	63	1.2	4			MIY01
1999 01 12.81		S	11.4	HS	31.7	L	6	63	1.3	4/			MIY01
1999 01 15.78		S	11.3	HS	31.7	L	6	63	2	5			MIY01
1999 01 16.75		S	11.2	HS	31.7	L	6	63	1	5			MIY01
1999 01 17.70		S	10.7	AC	6.3	R	13	52	4	1			KOS
1999 01 17.77	x	M	10.7	TJ	25.4	L	5	65	3.0	4			MEY
1999 01 17.83		B	10.6:	HS	34.0	L	4	45		2			GAS01
1999 01 18.94	x	M	10.7	TJ	25.4	L	5	65	2.9	4			MEY
1999 01 19.76	x	M	10.9	TJ	25.4	L	5	65	3.0	3/			MEY
1999 01 20.04		S	10.6	TI	40.6	L	5	70	2.3	4/			BOR
1999 01 20.81	x	S	10.5	TJ	10.0	B		20	6.5	3			MEY
1999 01 20.89		S	10.5	VF	21.5	L	6	80	3.4	2			SCO04
1999 01 21.01		S	10.8	TI	40.6	L	5	70	1.8	4			BOR
1999 01 21.89		S	11.7	VF	21.5	L	6	80	1.4	2/			SCO04
1999 01 23.95	x	M	10.8	TJ	25.4	L	5	65	3.5	3/			MEY
1999 01 24.54		S	11.0:	TT	11	L	4	16	1.5	3			RAE
1999 02 04.10		J	11.4	SC	25.4	T	5	a 60	1.06	s3			ROQ
1999 02 04.46	x	S	10.7	TJ	32.0	L	5	91	2.3	4			NAG08
1999 02 04.52		S[	11.5	HS	15	L	8	130					MAT08
1999 02 05.46		S	12.0	HS	31.7	L	6	63	1.2	3			MIY01
1999 02 05.67		V	11.3	LA	50.0	C	12	a360	4.10	3	> 9.2m	277	FUK02
1999 02 05.79	x	S	11.1	TT	25.4	J	6	72	2.2	4			BOU
1999 02 06.55		S	11.7	HS	15.0	B		25	2.5	4			MIT
1999 02 06.59		S	10.9	HS	25.4	T	6	62	2.4	4/			YOS04
1999 02 06.77		S	11.1	AC	15.2	L	5	42	2	3			MOE
1999 02 06.83		M	11.1	TI	35	L	5	92	2.8	4			HOR02
1999 02 07.56		S	11.0	HS	31.7	L	6	63	1	3/			MIY01
1999 02 07.74		S	11.1:	TI	35	L	5	92	2.6	3			HOR02
1999 02 07.75		M	10.0	TI	10	B	4	25	3.0	3			LEH
1999 02 07.88		S	11.0:	HS	11	L	7	50	2	3			BAR06
1999 02 08.80	x	S	11.3	TT	25.4	J	6	72	2.0	2			BOU
1999 02 08.88		S	11.1	AC	15.2	L	5	42	2	3			MOE
1999 02 09.58		V	11.6	LA	50.0	C	12	a240	3.22	3	> 8.8m	278	FUK02
1999 02 09.78		S	11.1	AC	15.2	L	5	42	2	4			MOE
1999 02 09.86		S	11.2	TT	35	L	5	92	2.3	2/			HOR02
1999 02 09.89		S	10.9	HS	11	L	7	50	1.9	4			BAR06
1999 02 10.77	x	S	11.0	TJ	25.4	L	5	65	3.9	2/			MEY
1999 02 10.88		S	11.1	AC	15.2	L	5	42	2.5	3			MOE
1999 02 11.01		S	11.3	AC	40.6	L	5	70	2.1	3			BOR
1999 02 12.71		S	10.7:	TJ	25.4	T	6	62	3	4			YOS04
1999 02 12.78	x	S	11.5	TT	25.4	J	6	88	1.8	1/			BOU
1999 02 12.81		S	11.4	AC	30.5	T	10	117	& 2	1/			COM
1999 02 12.82		S	11.2	AC	15.2	L	5	42	2.5	3			MOE
1999 02 13.30		S	11.3	HS	25.6	L	5	42	2.0	2			BIV
1999 02 13.57		V	11.6	LA	50.0	C	12	a240	3.54	3	> 8.3m	278	FUK02
1999 02 13.67		S	12.2	HS	31.7	L	6	63	1.1	2/			MIY01
1999 02 13.74		S	10.7	HS	25.4	T	6	62	3.2	4			YOS04
1999 02 13.81	x	S	11.6	TT	25.4	J	6	72	1.8	1			BOU
1999 02 14.36		S	11.3	HS	25.6	L	5	42	1.5	2			BIV
1999 02 14.51		S	11.0	HS	31.7	L	6	63	1.4	3			MIY01
1999 02 14.60		C	11.8	GA	60.0	Y	6	a120	2.7		7.2m	280	NAK01
1999 02 15.48		S	11.3	HS	25.6	L	5	42	1.5	2			BIV
1999 02 15.75		M	10.8	TI	10	B	4	25	2.4	3			LEH
1999 02 16.23		S	12.0	NP	32	L	5	53	1.9	1			CRE01
1999 02 16.51		V	12.1	LA	50.0	C	12	a240	2.64	3	> 9.7m	281	FUK02

Comet 52P/Harrington-Abell [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 16.76		S	11.1	AC	15.2	L	5	42	2	4			MOE
1999 02 16.91		S	11.9	NP	21	L	6	100	1	2			MAR02
1999 02 16.92		S	11.0	TI	13	L	8	69	2.4	3			HOR02
1999 02 17.63		S	12.5	VN	41	L	4	90	0.9	2			PEA
1999 02 17.74		M	11.1	TI	35	L	5	92	2.4	3			HOR02
1999 02 17.79		S	11.3	AC	15.2	L	5	42	2	2			MOE
1999 02 18.27		S	12.0:	HS	25.6	L	5	84	1.5	2			BIV
1999 02 19.85		S	11.3	AC	15.2	L	5	42	2	3			MOE
1999 02 20.87		S	11.4	TT	13	L	8	69	2.1	3			HOR02
1999 02 21.43		S	11.5	HS	31.7	L	6	63	1.6	2			MIY01
1999 02 22.52		V	12.1	LA	50.0	C	12	a240	2.57	4	> 9.5m	283	FUK02
1999 02 22.74		M	10.5	TT	10	B	4	25	2.6	3/			LEH
1999 02 23.10		S	11.7	TI	13	L	8	69	2.0	2/			HOR02
1999 02 23.14		J	11.7	SC	25.4	T	5	a 60	1.60	s4	0.9m	102	ROQ
1999 02 23.82		S	11.6	TI	35	L	5	92	2.0	2/			HOR02
1999 03 05.95	x	S	12.4	TJ	23.0	L		92	& 1	2			DES01
1999 03 06.77		S	11.4	TT	35	L	5	92	2.0	3			HOR02
1999 03 06.81		S	11.2	HS	20	L	5	70	1.9	2			BAR06
1999 03 06.83		M	12.4	HS	42	L	5	81	1.8	3			LEH
1999 03 06.89		S	11.9	AC	25.4	L	5	65	2.1	1/			MEY
1999 03 07.27		S	12.4	HS	25.6	L	5	84	1.4	1			BIV
1999 03 07.75		S	11.3	HS	20	L	5	70	2	1/			BAR06
1999 03 08.78		M	11.4	TT	35	L	5	92	2.1	2/			HOR02
1999 03 08.83		S	11.8	AC	25.4	L	5	104	1.4	1/			MEY
1999 03 08.86		M	12.0	HS	42	L	5	81	1.8	3			LEH
1999 03 09.31		S	12.5	HS	25.6	L	5	84	1.3	2			BIV
1999 03 10.13		J	12.5	SC	25.4	T	5	a 60	1.69	s7	2.5m	97	ROQ
1999 03 10.92		S	13.5	VB	30	R	20	185	0.4	3			SHA02
1999 03 11.95		S	11.9	HS	35	L	5	92	2.0	2/			HOR02
1999 03 12.46		S	12.3	HS	25.6	L	5	84	1.5	1			BIV
1999 03 12.80		M	11.8	HS	35	L	5	92	2.1	2/			HOR02
1999 03 12.80		S	11.5	HS	44.0	L	5	156	0.6	4			HAS02
1999 03 12.83		S	11.7	AC	25.4	L	5	65	3.7	1/			MEY
1999 03 12.86		M	12.2	HS	42	L	5	81	1.4	3			LEH
1999 03 12.90		S	12.5	HS	44.5	L	4	230	1	3			SAR02
1999 03 13.58		C	13.9	TJ	18.0	L	6	a 60	0.5		0.5m	107	YOS04
1999 03 13.76		M	12.4	HS	42	L	5	81	1.8	3			LEH
1999 03 13.85		S	11.7	HS	35	L	5	92	2.1	2/			HOR02
1999 03 14.30		S	12.7	HS	25.6	L	5	84	1.0	2			BIV
1999 03 14.92		S	12.3	AC	25.4	J	6	100	1.6	0/			BOU
1999 03 14.97		S[	11.5	HS	30	R	20	185					SHA02
1999 03 15.42		S	12.7	HS	25.6	L	5	84	1.2	1			BIV
1999 03 15.81		M	12.4	HS	42	L	5	81	1.8	3			LEH
1999 03 15.84		S	11.3	TI	35	L	5	92	2.1	2/			HOR02
1999 03 15.93		S	13.0	VB	30	R	20	185	0.5	3			SHA02
1999 03 16.49		C	14.2	TJ	18.0	L	6	a 60	0.55				YOS04
1999 03 16.55		C	12.9	GA	60.0	Y	6	a120	1.9				NAK01
1999 03 16.93		S	13.5:	VB	30	R	20	230	0.5	2			SHA02
1999 03 16.94		S	11.7	HS	40.6	T	10	65	2	1			CHE03
1999 03 17.77		M	12.5	HS	42	L	5	81	1.6	3			LEH
1999 03 17.80		S	11.6	TI	35	L	5	92	1.9	3			HOR02
1999 03 17.90		S	12.4	HS	40.6	T	10	104	2	1			CHE03
1999 03 18.82		S	11.8	TI	35	L	5	158	2.0	2/			HOR02
1999 03 18.83		M	12.2	HS	42	L	5	81	1.8	3			LEH
1999 03 18.88		S	12.5:	HS	40.6	T	10	65	2	1			CHE03
1999 03 19.88		S	12.0	HS	20	L	5	70	1.9	2			BAR06
1999 03 20.80		S	11.8	TI	35	L	5	92	2.0	2/			HOR02
1999 03 20.81		M	12.5	HS	35	L	5	92	1.7	3/			LEH
1999 03 22.46		C	14.1	HS	18.0	L	6	a 60	0.65		0.7m	101	YOS04
1999 03 31.56		C	15.5	TJ	18.0	L	6	a 60	0.6				YOS04
1999 04 05.80		S	12.2	HS	20	L	5	70	1.9	2			BAR06
1999 04 05.89		S[	13.0	VB	30	R	20	230					SHA02
1999 04 07.14		J	13.6	SC	25.4	T	5	a 60	1.91	s5	0.5m	93	ROQ
1999 04 07.50		S[	12.5	HS	20	L	7	158					MAT08
1999 04 07.56		C	14.1	GA	60.0	Y	6	a120	1.3				NAK01

Comet 52P/Harrington-Abell [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 07.93			S[13.9	VB	30	R	20	185					SHA02
1999 04 08.48			C 15.2	TJ	16.0	H	3	a 60	0.6				YOS04
1999 04 08.82			S 12.4	HS	35	L	5	158	1.7	2			HOR02
1999 04 09.85			S 12.4	HS	35	L	5	158	1.8	2			HOR02
1999 04 09.90			S[13.8	VB	30	R	20	185					SHA02
1999 04 10.84			S 12.4	AC	25.4	L	5	104	1.3	1			MEY
1999 04 11.54			S 13.0:	VN	41	L	4	200	0.5				PEA
1999 04 14.83			S 12.7	HS	35	L	5	158	1.7	2			HOR02
1999 04 17.91			S 12.8	AC	25.4	J	6	100	1.5	0			BOU
1999 04 18.83			S 12.6	HS	35	L	5	158	1.7	2/			HOR02
1999 04 18.91			S 13.1	AC	25.4	J	6	100	1.2	0/			BOU
1999 04 19.87			S 13.5	HS	35	L	5	237	1.2	2			HOR02
1999 04 20.50			H 15.5	LA	50.0	C	12	a600	0.24	2			FUK02
1999 04 29.51			C 16.5	TJ	18.0	L	6	a 60	0.3				YOS04

Comet 60P/Tsuchinshan 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR		COMA	DC	TAIL	PA	OBS.
1999 02 06.89			S 14.6	HS	35	L	5	237		0.7	2			HOR02
1999 02 07.59			C 16.7	TJ	18.0	L	6	a 90		0.45				YOS04
1999 02 14.53			C 17.2	GA	60.0	Y	6	a120		0.3		0.4m	81	NAK01
1999 02 17.64			S[14.0	VN	41	L	4	200	!	0.5				PEA
1999 03 06.81			B 14.5	HS	42	L	5	162		0.7	4			LEH
1999 03 08.85			B 14.5	HS	42	L	5	162		0.7	4			LEH
1999 03 12.85			B 14.7	HS	42	L	5	162		0.6	4			LEH
1999 03 12.85			S[13.5	HS	44.5	L	4	230	!	1				SAR02
1999 03 13.87			B 14.8	HS	42	L	5	162		0.6	4			LEH
1999 03 16.46			C 16.4	TJ	18.0	L	6	a 60		0.45				YOS04
1999 03 16.53			C 17.4	GA	60.0	Y	6	a120		0.3		0.4m	85	NAK01
1999 03 17.80			S[14.0	HS	44.0	L	5	156						HAS02
1999 03 22.45			C 16.8	TJ	18.0	L	6	a 60		0.25				YOS04
1999 04 07.54			C 17.6	GA	60.0	Y	6	a240		0.3		0.6m	87	NAK01

Comet 65P/Gunn

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 06.45			C 17.9	TJ	18.0	L	6	a120	0.35				YOS04
1999 02 17.47			C 18.3	GA	60.0	Y	6	a240	0.35				NAK01

Comet 74P/Smirnova-Chernykh

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 06.47			C 16.9	TJ	18.0	L	6	a120	0.25				YOS04
1999 02 17.48			C 17.8	GA	60.0	Y	6	a240	0.35				NAK01

Comet 88P/Howell

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 09 16.44	a	C	11.5	GA	60.0	Y	6	a120	2.2			100	NAK01
1999 02 06.41			C 14.7	TJ	18.0	L	6	a 60	0.85	2			YOS04

Comet 93P/Lovas 1

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 06.83			B 13.4	HS	42	L	5	162	1.4	3			LEH
1999 01 10.80			B 13.5	HS	42	L	5	162	1.3	3			LEH
1999 01 17.79			S 13.0	AC	25.4	L	5	104	0.9	3			MEY
1999 01 18.95			S 13.0	AC	25.4	L	5	104	0.7	3			MEY
1999 01 19.75			S 13.0	AC	25.4	L	5	104	1.3	2/			MEY
1999 01 23.97			S 13.0	GA	25.4	L	5	104	1.3	2/			MEY
1999 02 06.51			C 15.4	TJ	18.0	L	6	a 60	0.65				YOS04
1999 02 06.86			S 13.8	HS	35	L	5	158	1.0	2/			HOR02
1999 02 07.62			C 15.3	TJ	18.0	L	6	a 90	0.5				YOS04
1999 02 14.22			J 15.7	SC	25.4	T	5	a 60	0.42	s5	1.8m	92	ROQ
1999 02 14.51			C 15.2	GA	60.0	Y	6	a120	0.75				NAK01

Comet 93P/Lovas 1 [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.60		S	14.2	VN	41	L	4	200	0.9	1			PEA
1999 02 18.89		S	14.0	HS	35	L	5	237	0.7	2			HOR02
1999 03 06.14		J	16.1	SC	25.4	T	5	a 60	0.42	s			ROQ
1999 03 06.78		S	14.2	HS	35	L	5	237	0.7	2			HOR02
1999 03 06.85		B	14.0	HS	42	L	5	162	1.1	3			LEH
1999 03 08.82		S	14.1	HS	35	L	5	237	0.7	2/			HOR02
1999 03 08.89		B	13.9	HS	42	L	5	162	1.2	3/			LEH
1999 03 12.86		S	14.1	HS	35	L	5	237	0.7	3			HOR02
1999 03 12.88		B	13.9	HS	42	L	5	162	1.2	3			LEH
1999 03 13.61		C	16.3:	TJ	18.0	L	6	a 60	0.25				YOS04
1999 03 13.83		B	13.9	HS	42	L	5	162	1.2	3			LEH
1999 03 13.87		S	14.1	HS	35	L	5	237	0.8	2/			HOR02
1999 03 15.87		S	14.2	HS	35	L	5	237	0.8	2/			HOR02
1999 03 16.47		C	15.9:	TJ	18.0	L	6	a 60	0.35				YOS04
1999 03 16.54		C	15.9	GA	60.0	Y	6	a120	0.8				NAK01
1999 03 17.79		S[	14.0	HS	44.0	L	5	156					HAS02
1999 03 17.82		S	14.1	HS	35	L	5	259	0.8	3			HOR02
1999 03 18.83		S	14.0	HS	35	L	5	237	0.8	3			HOR02
1999 03 18.85		B	14.1	HS	42	L	5	162	1.1	3			LEH
1999 03 20.85		B	14.0	HS	35	L	5	237	1.1	4			LEH
1999 03 20.85		S	14.1	HS	35	L	5	237	0.8	2/			HOR02
1999 03 22.50		C	16.3	TJ	18.0	L	6	a120	0.4				YOS04
1999 04 07.52		C	16.5	GA	60.0	Y	6	a240	0.7				NAK01
1999 04 09.81		S	14.1	HS	35	L	5	237	0.7	3			HOR02
1999 04 14.86		S	14.2	HS	35	L	5	237	0.7	2/			HOR02

Comet 95P/Chiron

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 12.81		C	16.3	TJ	18.0	L	6	a 60	0.2				YOS04
1999 03 22.75		C	16.5	TJ	18.0	L	6	a 60		9			YOS04
1999 04 14.69		C	16.5:	TJ	16.0	H	3	a 30		9			YOS04

Comet 103P/Hartley 2

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 22.69		C	18.5:	GA	60.0	Y	6	a240	0.3				NAK01
1999 04 08.58		C	18.5:	GA	60.0	Y	6	a240	0.3				NAK01

Comet 105P/Singer Brewster

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 16.71	1	C[	17.5	TJ	18.0	L	6	a 60					YOS04

Comet 135P/Shoemaker-Levy 8

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 22.74	1	C[	18.0	HS	18.0	L	6	a 60					YOS04
1999 04 07.61		C	18.3	GA	60.0	Y	6	a240	0.3				NAK01

Comet 139P/Vaisala-Oterma

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.50		C	19.1	GA	60.0	Y	6	a240	0.25				NAK01

Comet 140P/Bowell-Skiff

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 07.60		C	17.2	TJ	18.0	L	6	a 90	0.3				YOS04
1999 02 14.54		C	16.5	GA	60.0	Y	6	a240	0.5				NAK01
1999 03 06.84		S	14.2	HS	35	L	5	237	0.6	2/			HOR02
1999 03 12.84		S	14.3	HS	35	L	5	237	0.7	2			HOR02
1999 03 12.86		S	14.0	HS	44.5	L	4	230	0.5	D5			SAR02
1999 03 12.90		B	14.8	HS	42	L	5	162	0.5	4			LEH
1999 03 13.61		C	16.1	TJ	18.0	L	6	a 60	0.3				YOS04

Comet 140P/Bowell-Skiff [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 13.88		S	14.3	HS	35	L	5	237	0.6	2			HOR02
1999 03 13.89		B	14.4	HS	42	L	5	162	0.8	4			LEH
1999 03 16.47		C	16.1	TJ	18.0	L	6	a 60	0.3				YOS04
1999 03 16.54		C	15.9	GA	60.0	Y	6	a120	0.45				NAK01
1999 03 18.88		B	14.4	HS	42	L	5	162	0.8	4			LEH
1999 03 22.46		C	15.8	TJ	18.0	L	6	a 60	0.4				YOS04
1999 04 07.53		C	15.8	GA	60.0	Y	6	a120	0.5		0.7m	96	NAK01
1999 04 08.87		S	14.4	HS	35	L	5	237	0.6	2/			HOR02
1999 04 14.83		S	14.3	HS	35	L	5	237	0.6	2/			HOR02

Comet P/1998 G1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 17.57		S	[14.0	VN	41	L	4	200	! 0.5				PEA

Comet P/1998 S1 (LINEAR-Mueller)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 01 06.80		B	14.9	HS	42	L	5	162	0.5	4			LEH
1999 01 10.81		B	14.9	HS	42	L	5	162	0.3	4			LEH
1999 02 06.43		C	16.4	TJ	18.0	L	6	a120	0.4				YOS04
1999 02 14.44		C	17.0	GA	60.0	Y	6	a240	0.4				NAK01
1999 02 17.52		S	[14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 06.77		O	[15.3	HS	42	L	5	162	! 0.5				LEH
1999 03 16.42	1	C	[17.0	TJ	18.0	L	6	a 60					YOS04

Comet P/1998 U3 (Jager)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 25.22		S	11.2	AC	40.6	L	5	70	1.9	4			BOR
1998 11 28.84	x	S	10.7	HS	25.4	L	4	46	2.5	4	6 m	280	YOS02
1998 12 15.14		S	10.8	TI	40.6	L	5	70	2.0	5/			BOR
1998 12 24.19		S	10.8	VF	21.5	L	6	80	1.9	4			SC004
1999 01 05.76		M	10.7	TI	10	B	4	25	3.2	3			LEH
1999 01 05.77	x	M	10.0	TJ	25.4	L	5	65	3.5	4/			MEY
1999 01 06.05		S	10.5	TI	40.6	L	5	70	2.5	6			BOR
1999 01 06.69		S	10.1	AC	6.3	R	13	52	5	1			KOS
1999 01 06.74	x	S	10.3	TJ	25.4	L	5	65	3.7	D4			MEY
1999 01 06.88		M	10.4	TI	10	B	4	25	3.4	3			LEH
1999 01 07.69		S	10.2	AC	6.3	R	13	52	4	1			KOS
1999 01 09.47		S	11.2	HS	31.7	L	6	152	0.7	4/			MIY01
1999 01 10.48		S	11.2	HS	31.7	L	6	152	0.8	4			MIY01
1999 01 10.79		M	10.3	TI	10	B	4	25	3.3	3			LEH
1999 01 11.02		S	10.5	TI	40.6	L	5	70	2	5/			BOR
1999 01 14.75		S	10.2	AC	6.3	R	13	52	3	1			KOS
1999 01 15.81		S	10.5	HS	31.7	L	6	63	1.5	4			MIY01
1999 01 16.75		S	10.7	HS	31.7	L	6	63	1	4/			MIY01
1999 01 17.70		S	9.8	AC	6.3	R	13	52	6	0			KOS
1999 01 17.76	x	M	10.8	TJ	25.4	L	5	65	3.6	S5			MEY
1999 01 17.84		S	10.3	HS	34.0	L	4	45	1.5	3			GAS01
1999 01 18.97	x	M	10.6	TJ	25.4	L	5	65	2.2	S5			MEY
1999 01 19.77	x	M	10.3	TJ	25.4	L	5	65	2.6	S4/			MEY
1999 01 20.05		S	10.4	TI	40.6	L	5	70	1.8	6			BOR
1999 01 20.79	x	S	10.0	TJ	10.0	B		20	5.5	3/			MEY
1999 01 20.85		S	10.5	VF	21.5	L	6	80	1.5	6			SC004
1999 01 21.00		S	10.3	TI	40.6	L	5	70	2.1	5			BOR
1999 01 21.94		S	11.4	VF	21.5	L	6	80	1.3	6			SC004
1999 01 23.96	x	M	10.6	TJ	25.4	L	5	65	3.1	S5			MEY
1999 01 24.52		S	10.6	TT	11	L	4	16	2.5	4			RAE
1999 02 03.11		J	11.5	SC	25.4	T	5	a 60	1.04	s3	2.7m	103	ROQ
1999 02 04.45	x	S	10.8:	TJ	32.0	L	5	91	2.7	3/			NAG08
1999 02 04.51		S	11.4	TI	15	L	8	130	2	3			MAT08
1999 02 05.45		S	10.9	HS	31.7	L	6	63	1.5	4			MIY01
1999 02 05.80	x	S	10.7	TT	25.4	J	6	72	2.2	4			BOU
1999 02 06.53		S	10.7	AC	15.0	B		25	2.5	5			MIT

Comet P/1998 U3 (Jager) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 06.60		S	10.3	HS	25.4	T	6	62	2.1	5			YOS04
1999 02 06.76		S	10.8	AC	15.2	L	5	42	2.5	3			MOE
1999 02 06.84		M	10.4	TT	35	L	5	92	2.8	4			HOR02
1999 02 07.55		S	10.8	HS	31.7	L	6	63	1.1	4			MIY01
1999 02 07.75		M	10.5	TT	35	L	5	92	2.7	3/			HOR02
1999 02 07.77		M	10.2	TI	10	B	4	25	2.8	3/			LEH
1999 02 07.86		S	11.3	HS	22.0	L		122	1.0	5			WAR01
1999 02 07.89		S	10.7	HS	11	L	7	50	2	2			BAR06
1999 02 07.92	w	M	10.8	PA	25	L	4	64	1.5	3			SHU
1999 02 08.85	x	S	10.6	TT	25.4	J	6	72	2.0	4			BOU
1999 02 08.87		S	10.7	AC	15.2	L	5	42	2.5	4			MOE
1999 02 09.77		S	10.8	AC	15.2	L	5	42	2.5	3			MOE
1999 02 09.87		S	10.8	TT	35	L	5	92	2.6	3			HOR02
1999 02 09.90		S	10.9:	HS	11	L	7	50	2	2			BAR06
1999 02 10.76	x	S	10.4	TJ	25.4	L	5	65	3.2	4			MEY
1999 02 10.87		S	10.8	AC	15.2	L	5	42	2.5	3			MOE
1999 02 10.90		S	10.2	TJ	20.3	T	10	50	2.0	4			KAM01
1999 02 11.01		S	10.6	TI	40.6	L	5	70	2.6	5			BOR
1999 02 11.95		S	10.7	TT	30.5	L	5	72	2	4			GIL01
1999 02 12.70		S	10.0:	TJ	25.4	T	6	62	3	5			YOS04
1999 02 12.79	w	M	11.2	PA	25	L	4	64	0.9	2			SHU
1999 02 12.80	x	S	10.6	TT	25.4	J	6	72	2.0	4			BOU
1999 02 12.81		S	11 :	TT	30.5	T	10	117	& 2	2			COM
1999 02 12.82		S	10.9	AC	15.2	L	5	42	3	2			MOE
1999 02 13.28		S	10.9:	HS	25.6	L	5	42	1.5	5			BIV
1999 02 13.65		S	11.2	HS	31.7	L	6	63	1.0	3/			MIY01
1999 02 13.70		M	11.1	PA	25	L	4	64	0.9	2			SHU
1999 02 13.73		S	9.9	TJ	25.4	T	6	62	2.6	5			YOS04
1999 02 13.82	x	S	10.5	TT	25.4	J	6	72	2.0	3			BOU
1999 02 13.96		S	10.6	TT	30.5	L	5	96	2	5			GIL01
1999 02 14.34		S	10.7	HS	25.6	L	5	42	2.0	3			BIV
1999 02 14.45	x	S	10.0	TJ	32.0	L	5	58	2.8	4			NAG08
1999 02 14.50		S	10.2	HS	31.7	L	6	63	1.5	3/			MIY01
1999 02 14.52		C	11.2	GA	60.0	Y	6	a120	3.0				NAK01
1999 02 14.52		S	10.2	HS	15.0	B		25	5	3			MIT
1999 02 15.11		J	11.1	SC	25.4	T	5	a 60	1.56	s5	1.6m	101	ROQ
1999 02 15.46		S	11.1	HS	25.6	L	5	42	1.8	3			BIV
1999 02 15.74		M	10.5	TI	10	B	4	25	2.6	3			LEH
1999 02 16.76		S	10.9	AC	15.2	L	5	42	2.5	3			MOE
1999 02 16.90		S	10.8	NP	21	L	6	100	1	3			MAR02
1999 02 17.47	x	S	10.7	TT	25.4	L	4	46	2.4	4			YOS02
1999 02 17.62		S	11.6	VN	41	L	4	90	1.2	4/			PEA
1999 02 17.75		M	10.8	TT	35	L	5	92	2.5	3/			HOR02
1999 02 17.78		S	11.0	AC	15.2	L	5	42	2.5	3			MOE
1999 02 17.93		S	11.0	NP	21	L	6	100	2	3			MAR02
1999 02 18.32		S	10.7	HS	25.6	L	5	42	1.5	5			BIV
1999 02 18.89		S	10.7	TT	35	L	5	92	2.6	3			HOR02
1999 02 18.94		S	11.0	NP	21	L	6	100	1.5	2			MAR02
1999 02 19.57		S	11.5	HS	25.4	T	6	50	1.5	2/			MIT
1999 02 19.85		S	11.1	AC	15.2	L	5	42	2.5	4			MOE
1999 02 21.42		S	10.5	HS	31.7	L	6	63	1.8	4			MIY01
1999 02 22.76		M	10.3	TI	10	B	4	25	2.8	4			LEH
1999 02 28.56		C	11.7	GA	20.3	T	9	a120	2.2				SUZ02
1999 03 04.11		J	11.5	SC	25.4	T	5	a 60	1.73	s5/	2.3m	98	ROQ
1999 03 04.75		M	10.4	TT	10	B	4	25	2.2	3			LEH
1999 03 05.01		S[	9.2	TJ	8.0	B		20					SHA02
1999 03 05.93	x	S	11.3	TJ	23.0	L		67	2	2			DES01
1999 03 06.77		M	10.8	TT	35	L	5	92	2.4	3			HOR02
1999 03 06.80		M	10.7	TI	10	B	4	25	2.1	3			LEH
1999 03 06.88		S	12.5:	AC	25.4	L	5	104	1.3	3			MEY
1999 03 07.29		S	11.3	HS	25.6	L	5	84	1.5	3			BIV
1999 03 08.81	x	S	11.5	TJ	25.4	L	5	65	1.9	3			MEY
1999 03 08.83		M	11.0	TI	10	B	4	25	2.0	3			LEH
1999 03 08.83		S	10.9	TT	35	L	5	92	2.3	2/			HOR02
1999 03 08.90		S	11.6	NP	32	L	5	125	0.5	6			MAR02

Comet P/1998 U3 (Jager) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 09.28		S	11.1	HS	25.6	L	5	84	1.8	4			BIV
1999 03 09.55		S	11.7	VN	41	L	4	90	0.8	3			PEA
1999 03 10.90		S	12.0	VB	30	R	20	185	1.0	3			SHA02
1999 03 11.92		S	11.9	AC	25.4	J	6	88	1.7	2			BOU
1999 03 11.94		S	10.9	TT	35	L	5	92	2	3			HOR02
1999 03 12.79		S	11.4	HS	44.0	L	5	156	0.5	3			HAS02
1999 03 12.81		M	10.9	TT	35	L	5	92	2.5	3			HOR02
1999 03 12.81		S	11.8	HS	44.5	L	4	230	0.8	4			SAR02
1999 03 12.82		M	11.7	TI	10	B	4	25	1.6	3			LEH
1999 03 12.82		S	11.3	AC	15.2	L	5	42	2	3			MOE
1999 03 12.82		S	11.3	AC	25.4	L	5	65	2.4	3			MEY
1999 03 13.60		C	12.9	TJ	18.0	L	6	a 60	0.6		0.6m	65	YOS04
1999 03 13.80		M	11.1	TI	10	B	4	25	2.0	3			LEH
1999 03 13.86		S	11.1	TT	35	L	5	92	2.4	3			HOR02
1999 03 14.03		S	12.3	VB	33	L	5	100	1.1	2			SHA02
1999 03 14.28		S	11.4	HS	25.6	L	5	42	1.8	4			BIV
1999 03 14.52		S	12.3	HS	20	L	7	158	1	2			MAT08
1999 03 14.85		S	12.8	VB	30	R	20	185	0.7	2			SHA02
1999 03 14.91		S	12.1	AC	25.4	J	6	100	1.5	1/			BOU
1999 03 15.82		M	11.4	TI	10	B	4	25	1.7	3			LEH
1999 03 15.84		S	11.1:	TI	35	L	5	92	2.5	3			HOR02
1999 03 15.92		S	12.7	VB	30	R	20	185	0.5	2			SHA02
1999 03 16.45		C	12.9	TJ	18.0	L	6	a 60	0.5		1.1m	63	YOS04
1999 03 16.48	x	S	11.3:	TJ	32.0	L	5	91	2.3	4			NAG08
1999 03 16.52		C	12.1	GA	60.0	Y	6	a120	1.8				NAK01
1999 03 16.93		S	12.0:	HS	40.6	T	10	65	1	1			CHE03
1999 03 17.79		S	11.1	HS	44.0	L	5	100	0.6	4			HAS02
1999 03 17.80		M	11.5	TI	42	L	5	66	1.7	3			LEH
1999 03 17.80		S	11.2:	HS	11	L	7	50	2	2			BAR06
1999 03 17.81		S	11.4	TI	35	L	5	92	2.6	2/			HOR02
1999 03 17.82		S	12.7	VB	30	R	20	185	0.7	1			SHA02
1999 03 18.53		S	12.1	HS	20	L	7	158	1	3			MAT08
1999 03 18.81		M	11.2	TI	42	L	5	66	1.8	4			LEH
1999 03 18.82		S	11.3	TT	35	L	5	92	2.3	3			HOR02
1999 03 18.90		S	13.0	VB	30	R	20	185	0.7	1			SHA02
1999 03 18.91		S	11.6	HS	20	L	5	70	1.7	2/			BAR06
1999 03 19.81		M	11.2	TI	10	B	4	25	2.0	3			LEH
1999 03 19.82		S	11.5	AC	15.2	L	5	42	2	3			MOE
1999 03 20.77		S	11.2	TT	35	L	5	92	2.3	2/			HOR02
1999 03 20.79		M	11.3	TI	35	L	5	92	1.8	3/			LEH
1999 03 20.92		S	12.2	NP	21	L	6	100	1	2			MAR02
1999 03 22.44		C	12.8	TJ	18.0	L	6	a 60	0.8		0.9m	63	YOS04
1999 03 31.55		C	13.7	TJ	18.0	L	6	a 60	0.45				YOS04
1999 04 01.87		S	12.1:	VB	30	R	20	185	0.6	2			SHA02
1999 04 03.79		S	11.4	TT	35	L	5	92	2.2	2/			HOR02
1999 04 05.88		S	11.6	HS	20	L	5	70	1.8	2			BAR06
1999 04 05.88		S	12.9:	VB	30	R	20	230	0.4	3			SHA02
1999 04 07.47		S[	12.0	TI	20	L	7	158					MAT08
1999 04 07.50		C	12.3	GA	60.0	Y	6	a120	2.0				NAK01
1999 04 07.92		S	13.5	VB	30	R	20	185	0.5	1			SHA02
1999 04 08.49		C	13.4	TJ	16.0	H	3	a 60	0.8				YOS04
1999 04 08.81		S	11.0	TT	35	L	5	68	2.5	2/			HOR02
1999 04 09.52		C	13.5	GA	20.3	T	9	a 60	0.8				SUZ02
1999 04 09.83	x	S	11.5	TJ	25.4	L	5	104	1.4	2/			MEY
1999 04 09.85		S	11.1	TT	35	L	5	68	2	2/			HOR02
1999 04 09.88		S	11.9	HS	20	L	5	70	1.5	2			BAR06
1999 04 09.88		S	13.6	VB	30	R	20	185	0.6	2			SHA02
1999 04 11.56	x	S	12.1:	HS	25.4	L	4	113	1.0	1			YOS02
1999 04 13.86		S	11.1	NP	32	L	5	75	1.75	1			MAR02
1999 04 14.51		C	12.4	GA	60.0	Y	6	a120	2.1				NAK01
1999 04 14.82		S	11.3	TT	35	L	5	92	2.0	2/			HOR02
1999 04 15.88		S	11.6	HS	20	L	5	70	1.8	2			BAR06
1999 04 16.91		S	11.9	HS	44.5	L	5	110	1.5	2			WAR01
1999 04 18.86		S	11.2	TT	35	L	5	92	2.0	2/			HOR02
1999 04 18.88		S	12.7	AC	25.4	J	6	100	1.3	1			BOU

Comet P/1998 U3 (Jager) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 04 19.85		S	11.2	TT	35	L	5	92	1.9	2/			HOR02
1999 04 29.49		C	13.9	TJ	18.0	L	6	a 60	0.45				YOS04

Comet P/1998 U4 (Spahr)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 06.43	l	C	[17.8	TJ	18.0	L	6	a120					YOS04
1999 02 14.48	a	C	17.8	GA	60.0	Y	6	a240	0.3		0.9m	292	NAK01

Comet P/1998 W1 (Spahr)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1998 11 28.69		C	15.4	GA	60.0	Y	6	a120	0.8				NAK01
1999 01 06.82		B	13.9	HS	42	L	5	162	1.1	3			LEH
1999 01 10.83		B	14.0	HS	42	L	5	162	0.8	3/			LEH
1999 02 06.50		C	16.7	TJ	18.0	L	6	a 60	0.45				YOS04
1999 02 14.49		C	16.4	GA	60.0	Y	6	a120	0.45				NAK01
1999 02 17.55		S	14.1	VN	41	L	4	200	1.0	2			PEA
1999 03 08.81		B	14.5	HS	42	L	5	162	0.7	4			LEH
1999 03 12.80		B	14.4	HS	42	L	5	162	0.6	4			LEH
1999 03 13.86		B	14.4	HS	42	L	5	162	0.6	4			LEH
1999 03 16.42		C	16.6:	TJ	18.0	L	6	a 60	0.25				YOS04
1999 03 22.42		C	16.8	TJ	18.0	L	6	a 60	0.3				YOS04
1999 04 07.48		C	17.9	GA	60.0	Y	6	a240	0.35				NAK01
1999 04 14.49		C	17.9	GA	60.0	Y	6	a240	0.35				NAK01

Comet P/1998 W2 (Hergenrother)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 14.42		C	18.8	GA	60.0	Y	6	a240	0.25				NAK01

Comet P/1998 X1 (ODAS)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 14.66		C	17.8	GA	60.0	Y	6	a240	0.35		0.8m	297	NAK01
1999 03 22.52		C	17.9:	HS	18.0	L	6	a120	0.25				YOS04

Comet P/1998 Y1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 07.63		C	17.0	TJ	18.0	L	6	a 90	0.3				YOS04
1999 02 14.57		C	18.9	GA	60.0	Y	6	a240	0.25				NAK01
1999 02 17.60		C	19.0	GA	60.0	Y	6	a240	0.25				NAK01

Comet P/1998 Y2 (Li)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 06.48		C	16.3	TJ	18.0	L	6	a 60	0.45				YOS04
1999 02 14.47		C	16.6	GA	60.0	Y	6	a120	0.4				NAK01
1999 02 17.46		C	16.5	GA	60.0	Y	6	a120	0.45				NAK01
1999 02 17.53		S	[14.0	VN	41	L	4	200	! 0.5				PEA
1999 03 12.80		S	[13.5	HS	44.5	L	4	230	! 1				SAR02
1999 03 16.44		C	16.5	TJ	18.0	L	6	a 60	0.5				YOS04
1999 04 07.45	a	C	16.9	GA	60.0	Y	6	a120	0.4				NAK01

Comet P/1999 D1 (Hermann)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 02 22.72		C	17.5:	HS	18.0	L	6	a 60	0.35				YOS04
1999 02 25.74		C	17.2	HS	18.0	L	6	a120	0.45				YOS04
1999 03 16.65		C	17.2	GA	60.0	Y	6	a240	0.45		0.7m	324	NAK01
1999 03 22.53		C	17.0:	TJ	18.0	L	6	a120	0.3				YOS04
1999 03 22.64		C	17.2:	GA	60.0	Y	6	a240	0.5				NAK01
1999 04 07.60	a	C	17.9	GA	60.0	Y	6	a240	0.35				NAK01
1999 04 14.59	a	C	18.6	GA	60.0	Y	6	a240	0.3				NAK01

Comet P/1999 E1 (Li)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1999 03 17.76		B	14.5	HS	42	L	5	162	0.7	4			LEH
1999 03 17.78		S	14.9	HS	35	L	5	259	0.5	3			HOR02
1999 03 17.80		S[	14.5	HS	44.0	L	5	226					HAS02
1999 03 18.80		S	14.8	HS	35	L	5	237	0.5	2/			HOR02
1999 03 18.86		B	14.5	HS	42	L	5	162	0.5	4			LEH
1999 03 21.13		J	15.3	SC	25.4	T	5	a 60	0.25	s5	?		ROQ
1999 03 22.44		C	15.4	TJ	18.0	L	6	a 60	0.5				YOS04
1999 03 22.48		C	15.8:	GA	60.0	Y	6	a120	0.45				NAK01
1999 04 07.46		C	16.1	GA	60.0	Y	6	a120	0.4			130	NAK01
1999 04 08.45		C	15.6	TJ	16.0	H	3	a 30	0.4				YOS04
1999 04 14.48		C	16.2	GA	60.0	Y	6	a120	0.35			130	NAK01

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DESIGNATIONS OF RECENT COMETS

Listed below, for handy reference, are the last 25 comets to have been given designations in the new system. The name, preceded by a star (⋆) if the comet was a new discovery (compared to a recovery from predictions of a previously-known short-period comet) or a # if a re-discovery of a lost comet. Also given 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 ESA/NASA Solar and Heliospheric Observatory (SOHO) spacecraft — and seen only close to the sun with the SOHO instruments — that are presumed to be Kreutz sungrazers that are no longer in existence (see lists and references in October 1997 *ICQ*, p. 286, and July 1998 *ICQ*, p. 160); recent SOHO discoveries were reported on *IAUC* 7123, 7142, 7147, 7157, 7162, 7173, 7197, and 7204, and include comets C/1999 C1, C/1999 G2, C/1999 H2, C/1999 H4, C/1999 J1, C/1999 K1, C/1999 K9, C/1999 K10, C/1999 L1, and C/1999 L4. [This list updates that in the January 1999 issue, p. 46.]

	New-Style Designation	*P*	*T*	*q*	*IAUC*
#	140P/1998 X2 (Bowell-Skiff)	16.2	5/14/99	1.97	7076
⋆	P/1998 Y1 (LINEAR)	108	11/21/98	1.75	7072
⋆	P/1998 Y2 (Li)	15.1	12/17/98	2.52	7075
⋆	C/1999 A1 (Tilbrook)		1/29/99	0.73	7084
⋆	P/1999 D1 (Hermann)	13.8	2/18/99	1.65	7111
⋆	P/1999 DN_3 (Korlević-Jurić)	9.6	9/27/98	3.9	7167
⋆	P/1999 E1 (Li)	66	1/31/99	3.9	7126
⋆	C/1999 F1 (Catalina)		2/13/02	5.8	7148
⋆	C/1999 F2 (Dalcanton)		8/23/98	4.7	7194
⋆	C/1999 G1 (LINEAR)		8/20/98	4.2	7140
⋆	C/1999 H1 (Lee)		7/11/99	0.71	7144
⋆	C/1999 H3 (LINEAR)		8/18/99	3.5	7151
⋆	C/1999 J2 (Skiff)		4/1/00	7.1	7165
⋆	C/1999 J3 (LINEAR)		9/23/99	1.15	7166
⋆	C/1999 J4 (LINEAR)		10/28/99	3.9	7170
⋆	P/1999 J5 (LINEAR)	9.4	5/12/99	3.7	7201
⋆	C/1999 K2 (Ferris)		10/30/99	5.2	7175
⋆	C/1999 K3 (LINEAR)		2/26/99	1.92	7175
⋆	C/1999 K4 (LINEAR)		5/16/99	1.45	7176
⋆	C/1999 K5 (LINEAR)		7/4/00	3.3	7178
⋆	C/1999 K6 (LINEAR)		7/24/99	2.25	7180
⋆	C/1999 K7 (LINEAR)		2/15/99	2.27	7181
⋆	C/1999 K8 (LINEAR)		1/17/00	4.8	7182
⋆	C/1999 L2 (LINEAR)		8/5/99	1.90	7199
⋆	C/1999 L3 (LINEAR)		12/31/99	2.10	7200

IWCA II Early Registration Form

Further information on the second Internationl Workshop on Cometary Astronomy (to be held at New Hall, Cambridge, U.K., during 1999 August 13-16) is given on page 49 of this issue. Below is a revised form that *all* meeting attendees are asked to fill out and mail to Jonathan Shanklin, 11 City Road, Cambridge CB1 1DP, ENGLAND, as soon as possible (with or without deposit monies). A deposit of 25 percent of the total cost, or 25 pounds per day per person, with a minimum deposit of 20 British pounds, is required as soon as possible. Please make checks or money orders payable to "British Astronomical Association"; VISA credit-card charges can now be accepted by New Hall.

(please print or type)

Name_____

Full postal address_____

_____

_____

e-mail address _____

Amount enclosed _____ Date _____

Those making deposits by VISA credit card should fill in below:

VISA credit-card number _____

Expiry date_____

The entire meeting will be held within the precincts of New Hall. The following rates apply, note that late booking is more expensive!

Date of booking	April	May - July	August
Daily full board, 'shared' facilities	£72.50	£75	£82.50
Daily full board, en-suite facilities	£87.50	£90	£99
Supplement for double	£17	£17	£21
Day visitor with lunch	£17.50	£18	£19.80
Discount for sharing a twin room	£10	£10	£10
Stonehenge (provisional)	£10	£10	£15

"En-suite" means shower and toilet internal to the room; "shared" means that they are external in separate rooms, but shared with other rooms. Supplement for double is the additional rate for a spouse or partner and covers bed and breakfast only. Other combinations of meals, day visits, nights etc are open to negotiation.

Please indicate your requirements with a tick or number in each box:

	Thursday	Friday	Saturday	Sunday	Monday
Full board					
Full board + ensuite					
Sharing					
Day visitor					
Lunch					
Dinner					
Stonehenge					

If booking meals please indicate any dietary requirements_____

_____

If sharing please indicate the name of a person you are willing to share with (or take a lottery!)_____